



**WORKS AND SERVICES DEPARTMENT
GOVERNMENT OF SINDH**



Asian Development Bank

**LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD
ASSISTANCE PROJECT (EFAP)**

PACKAGE No. 11

JM – 3

**REHABILITATION OF ROAD FROM MNV DRAIN TO FP
BUND JOHI CHINNI ROAD**

(Length: 9.050kms, Width; 3.65m)







Engineering Consultant Int'l. (Pvt.) Ltd.
A.A.ASSOCAITES

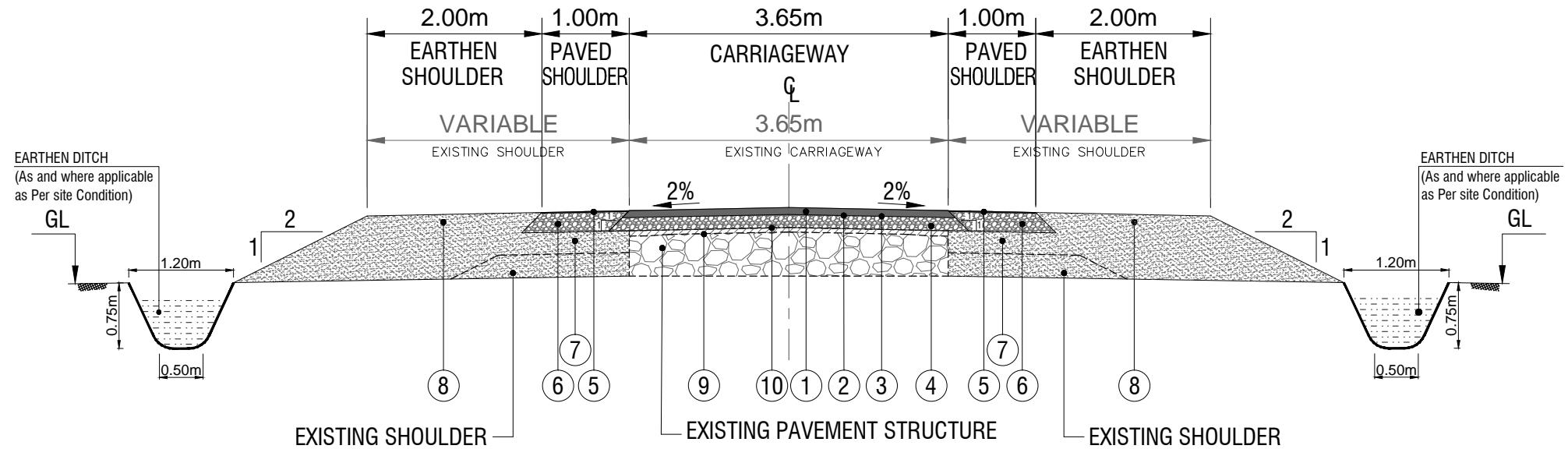
JULY - 2023

TENDER DRAWING

GENERAL DRAWINGS



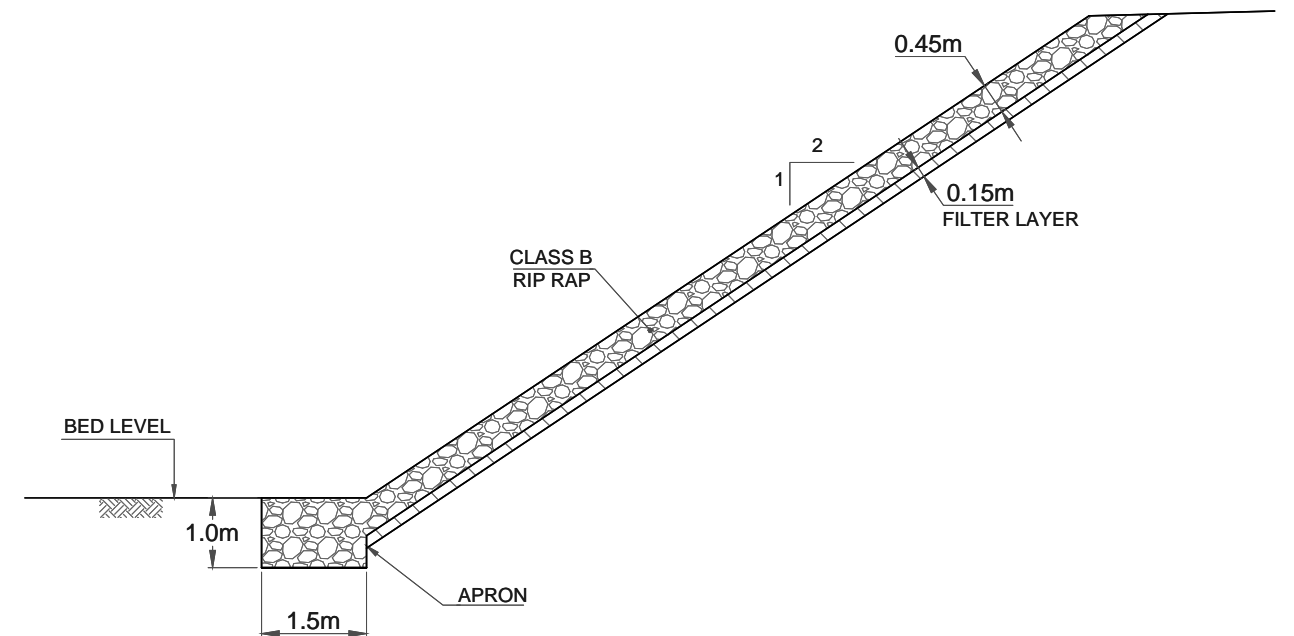
CLIENT:- <div>Asian Development Bank</div>		PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- JM - 3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road		ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. JM-3 GEN-02
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>				TITLE:- LOCATION PLAN					DESIGNED: HINA ZEESHAN	Scale:- 1:50000 (A1) 1:100000 (A3)
									CHECKED: NAVEED HASSAN	Edition. 0
									DATE: JULY, 2023	





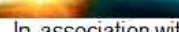

NOTES :-

1. ASPHALT CONCRETE WEARING COURSE (CLASS A) 5cm
2. TACK COAT
3. SINGLE SURFACE TREATMENT
4. WATER BOUND MACADAM 20cm
5. TRIPLE SURFACE TREATMENT
6. WATER BOUND MACADAM 15cm.
7. BORROW SOIL HAVING SOAKED CBR 7% & PI NOT GREATER THAN 6% 30cm
8. EARTHEN SHOULDER.
9. EXISTING ROAD BITUMINOUS SURFACING IS TO BE SCARIFIED AND REMOVED THE EXPOSED SURFACE AFTER SCARIFICATION SHALL BE COMPACTED TO SPECIFIED DENSITY.
10. IN STRETCHES / SEGMENTS WHERE THERE IS NO EXISTING BITUMINOUS SURFACING AS THE SAME HAS BEEN WORN OUT,SKIN PATCHES OF TRANSPORTED CONTAMINATED SOIL IS TO REMOVED FROM SURFACE AND COMPACTED TO SPECIFIED DENSITY.
11. ALL DIMENSIONS ARE IN METER EXCEPT OTHER WISE MENTIONED.

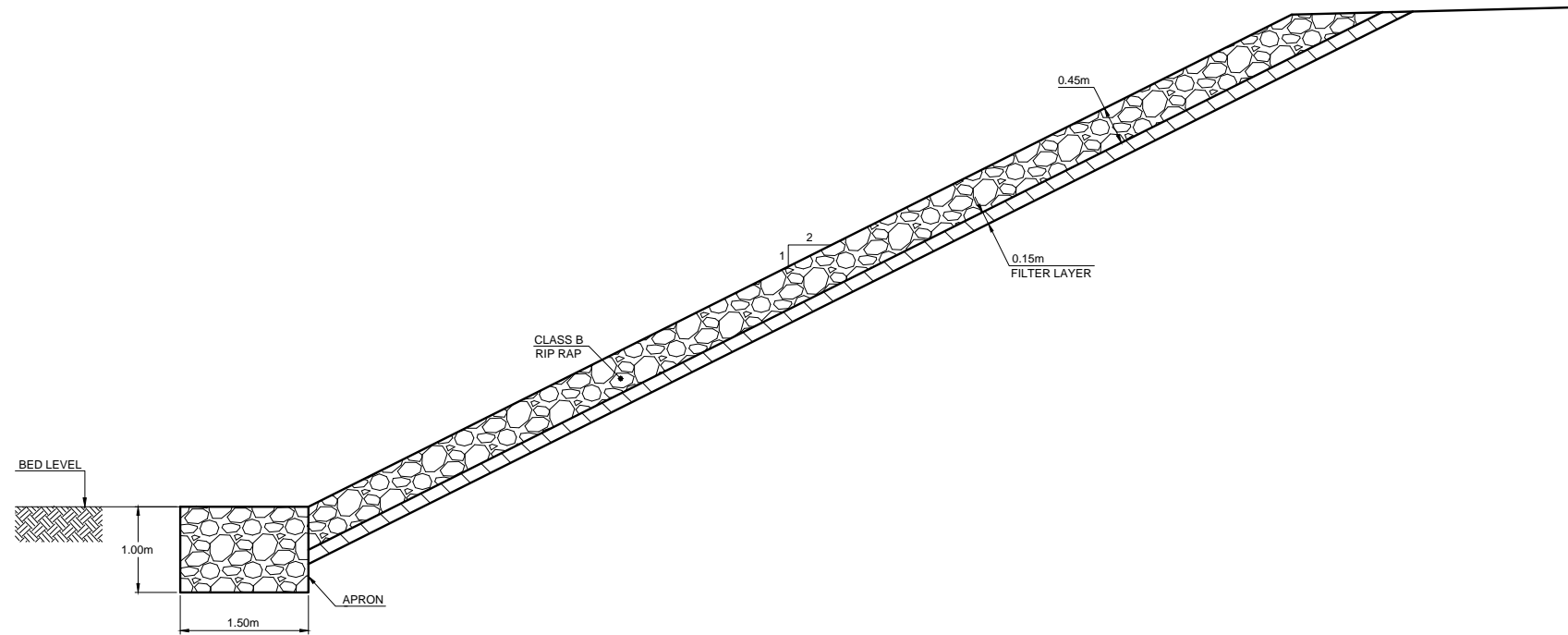
* REMOVAL OF BRICK EDGING SHALL BE CARRIED OUT AND PAID IN SHOULDER EXCAVATION



TYPICAL SECTION OF PROTECTION WORKS

<div>CLIENT:-</div> <div>Asian Development Bank</div>	<div>PROJECT:-</div> <div>LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)</div>	<div>DESIGN CONSULTANT</div> <div> In association with </div>	<div>PROJECT ROAD:-</div> <div>JM - 3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road</div>	<div>ED.NO.</div>	<div>DATE</div>	<div>DESCRIPTION</div>	<div>DRAWN:</div> <div>M. NOMAN SIDDIQUI</div>	<div>DRAWING NO.</div> <div>JM-3</div>
<div>EXECUTING AGENCY:-</div> <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>		<div>TITLE:-</div> <div>TYPICAL CROSS SECTION 0+000 TO END REHABILITATION (3.65m)</div>				<div>DESIGNED:</div> <div>ANDLEEB</div>	<div>Scale:-</div> <div>N.T.S.</div>	
						<div>CHECKED:</div> <div>BUX ALI ABRO</div>	<div>Edition.</div> <div>0</div>	
						<div>DATE:</div> <div>JUNE, 2023</div>		

anees D:\E drive (16-09-2015)\HIGHWAY SINDH ROADS\ZEESHAN SAHAB GENERAL DRAWINGS-JM-3\ PW-JM-3.dwg







TYPICAL SECTION OF PROTECTION WORKS

NOTES :-

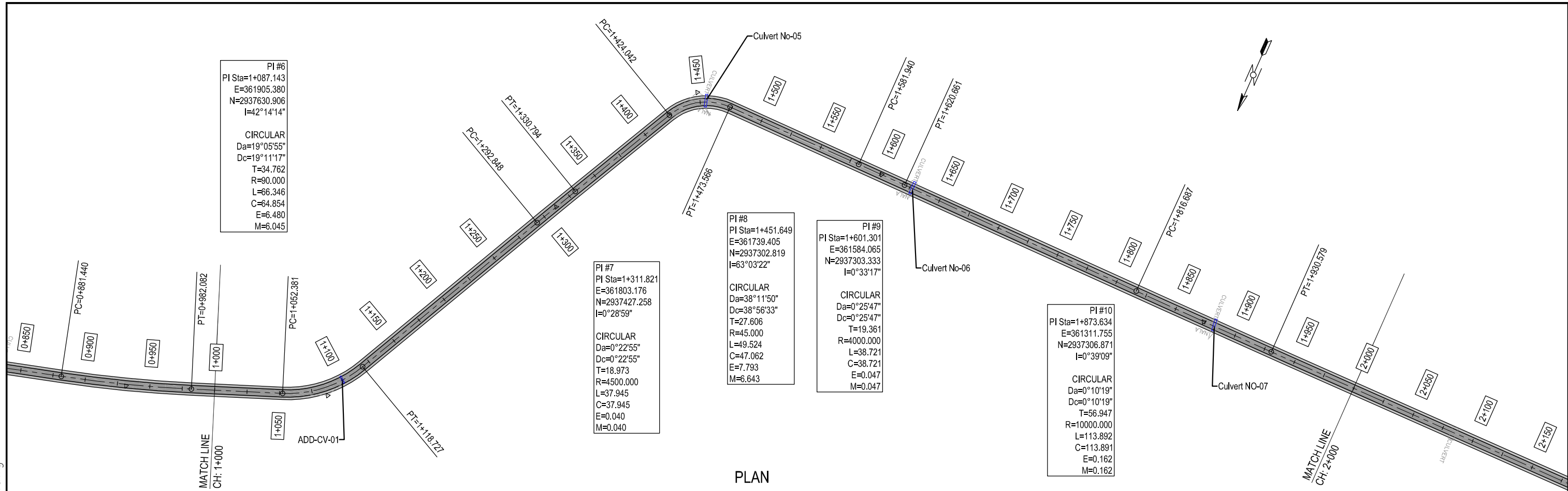
- 1. PROTECTION WORK SHALL BE APPLICABLE ON REACHES WHICH WILL BE IDENTIFIED IN THE HYDROLOGY REPORT AND AROUND ENTRY AND EXIT OF CULVERT/BRIDGES.
- 2. ALL DIMENSIONS ARE IN METERS EXCEPT OTHERWISE MENTIONED.

TENTATIVE SCHEDULE			
FROM	TO	SIDE	REMARKS
-	-	-	-

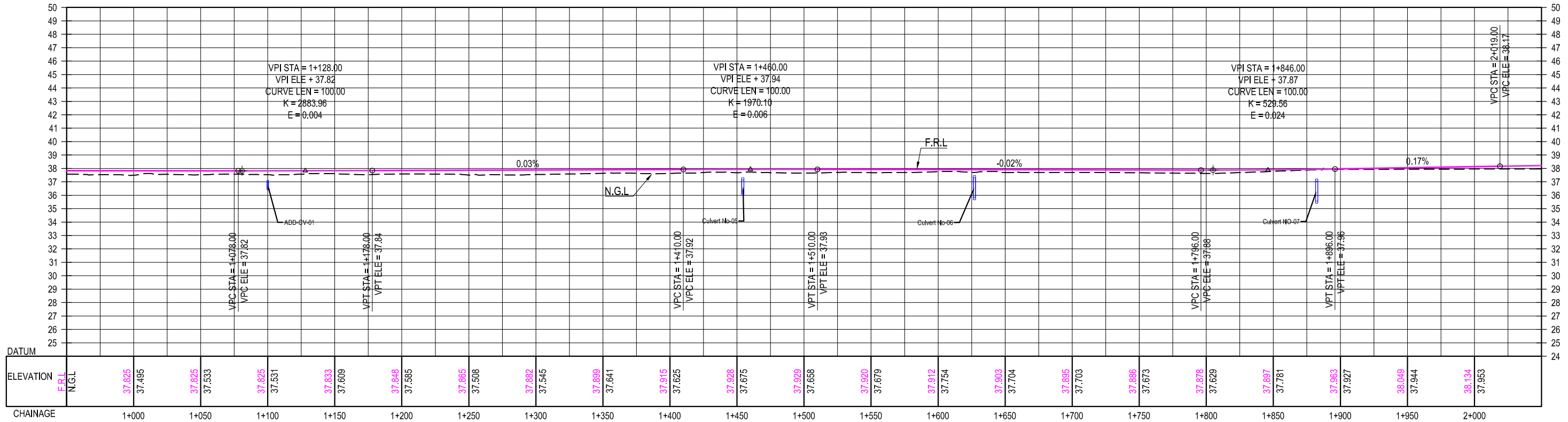
CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. PW-JM-3
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- PROTECTION WORK SCHEDULE				CHECKED: MAHMOOD	Scale:- N.T.S.
							DATE: JULY, 2023	Edition. 0

PLAN & PROFILE DRAWINGS





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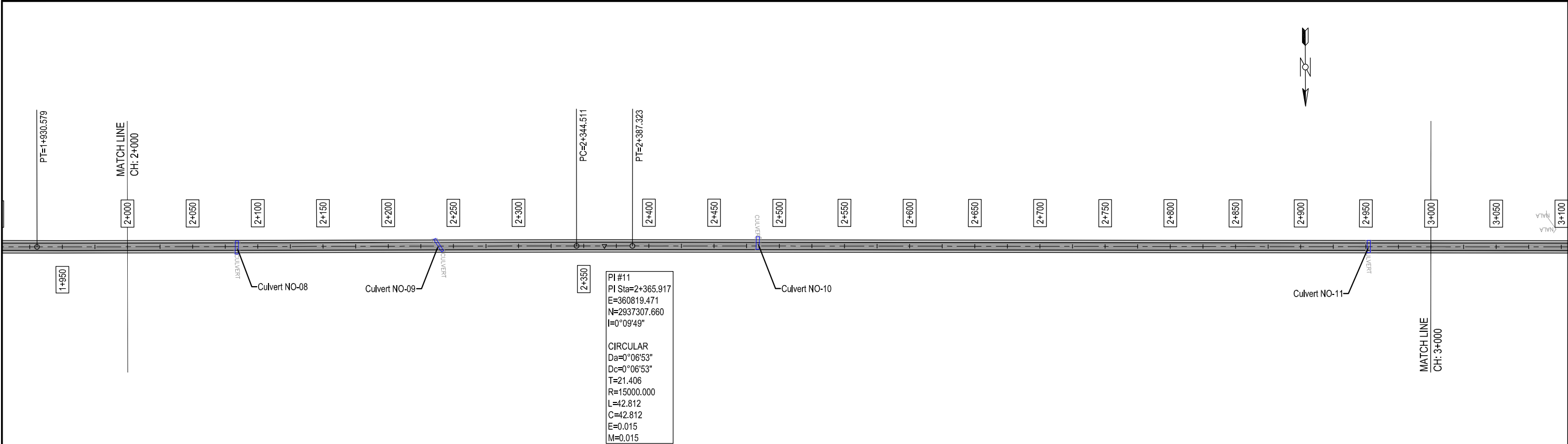
PLAN



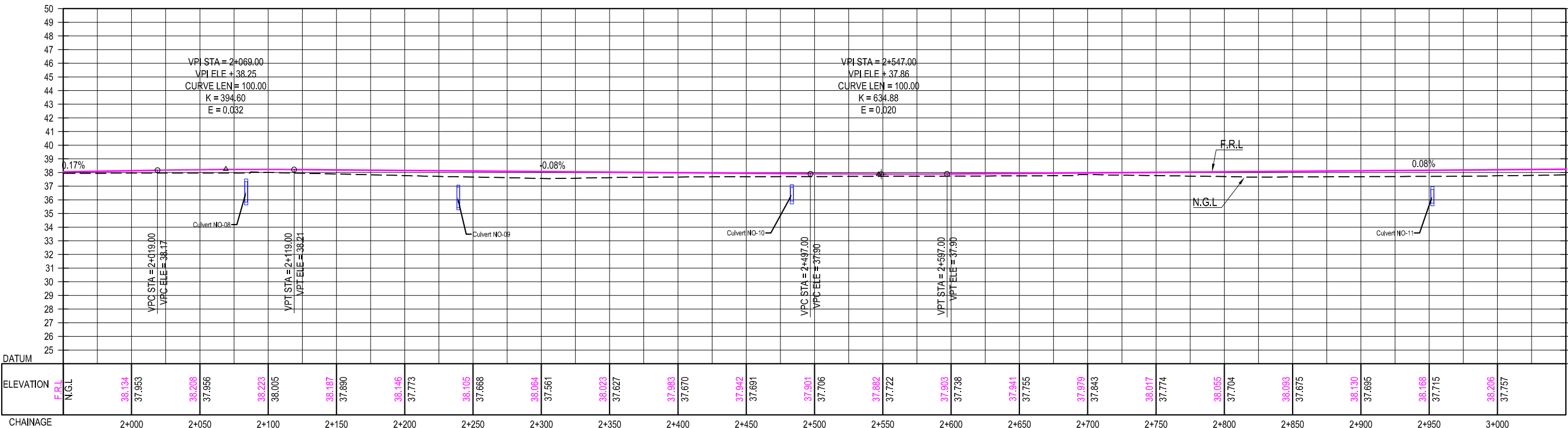
PROFILE

CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road TITLE:- PLAN & PROFILE OF JM-3 CH: 1+000 TO 2+000	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-02
							DESIGNED: HINA ZEESHAN	
							CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
							DATE: JULY, 2023	Edition, 0
				0	JUNE, 2023	ISSUED FOR APPROVAL		





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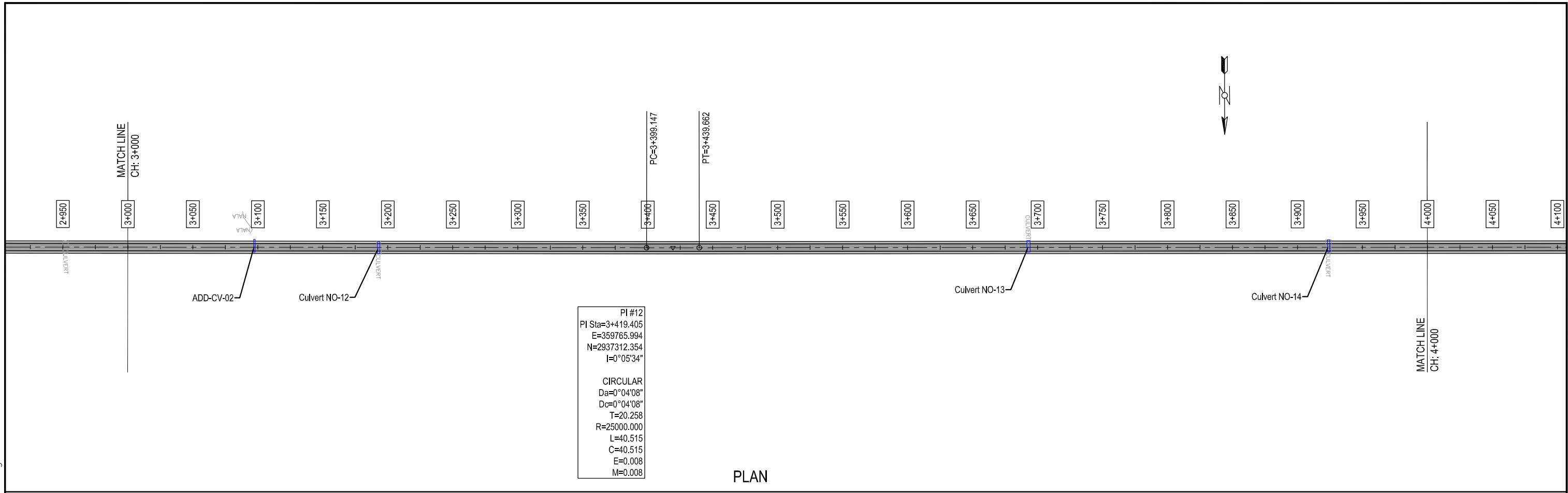
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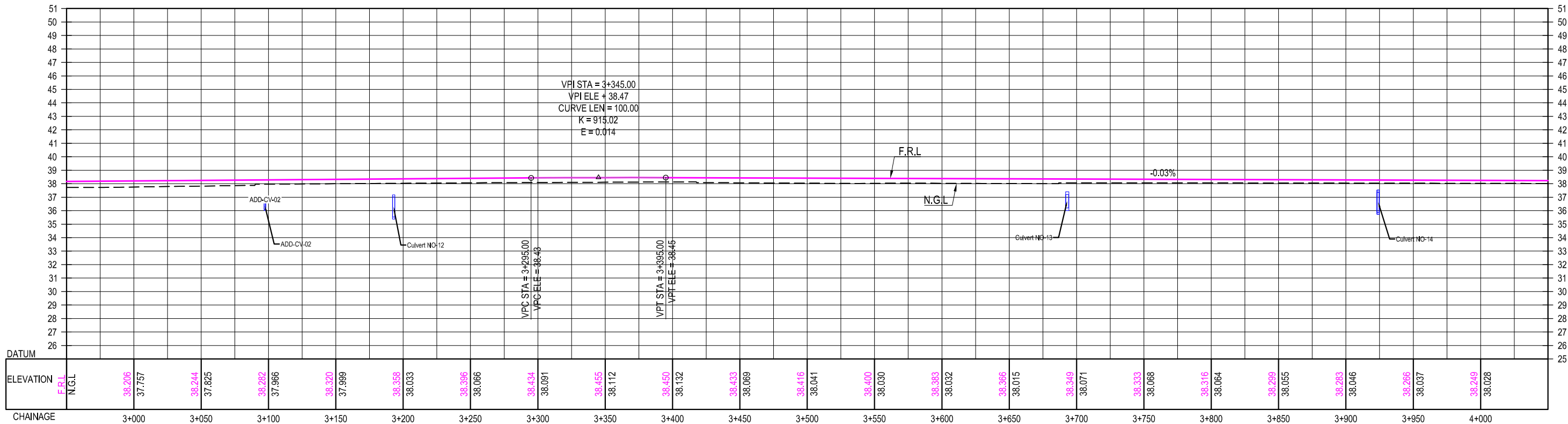
PROFILE

CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road			ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-03
			TITLE:- PLAN & PROFILE OF JM-3 CH: 2+000 TO 3+000						DESIGNED: HINA ZEESHAN	
									CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
						0	JUNE,2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	Edition. 0



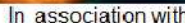

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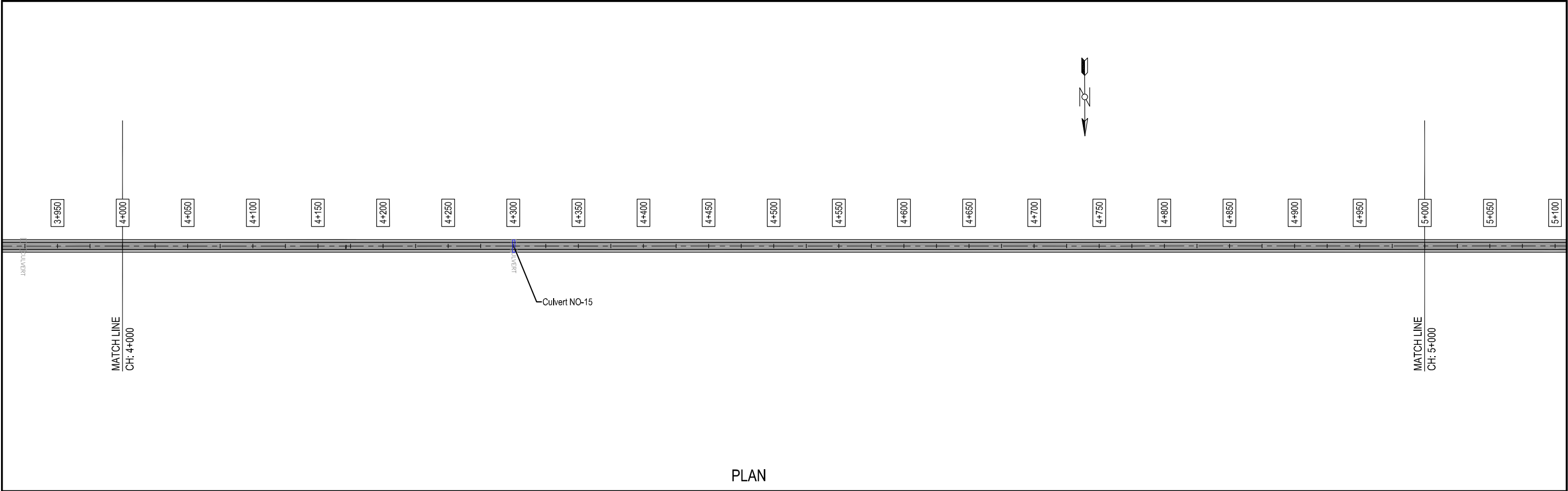
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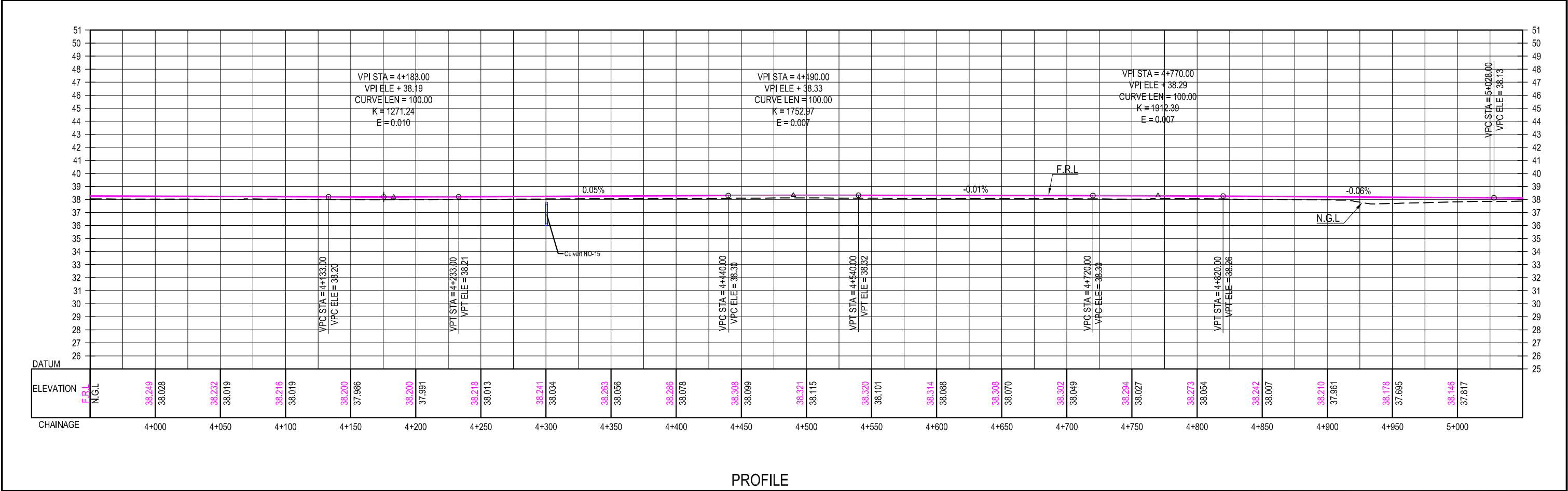
PROFILE

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EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>			TITLE:- PLAN & PROFILE OF JM-3 CH: 3+000 TO 4+000				DESIGNED: HINA ZEESHAN	Scale:- H=1:3000 V=1:200
							CHECKED: NAVEED HASSAN	Edition.
							DATE: JULY, 2023	0
			0	JUNE,2023	ISSUED FOR APPROVAL			





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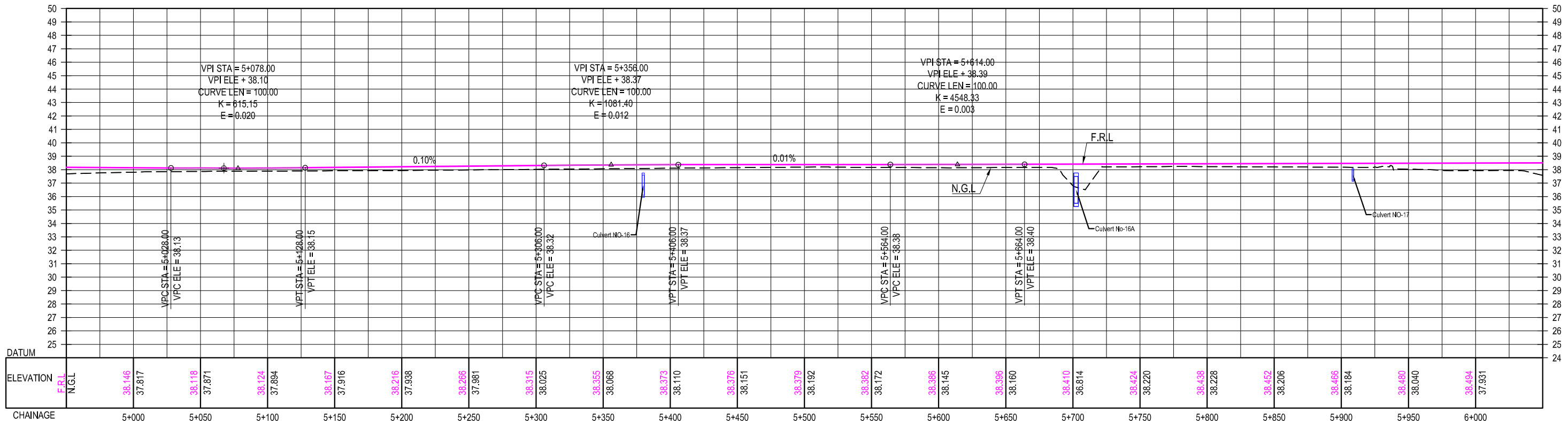
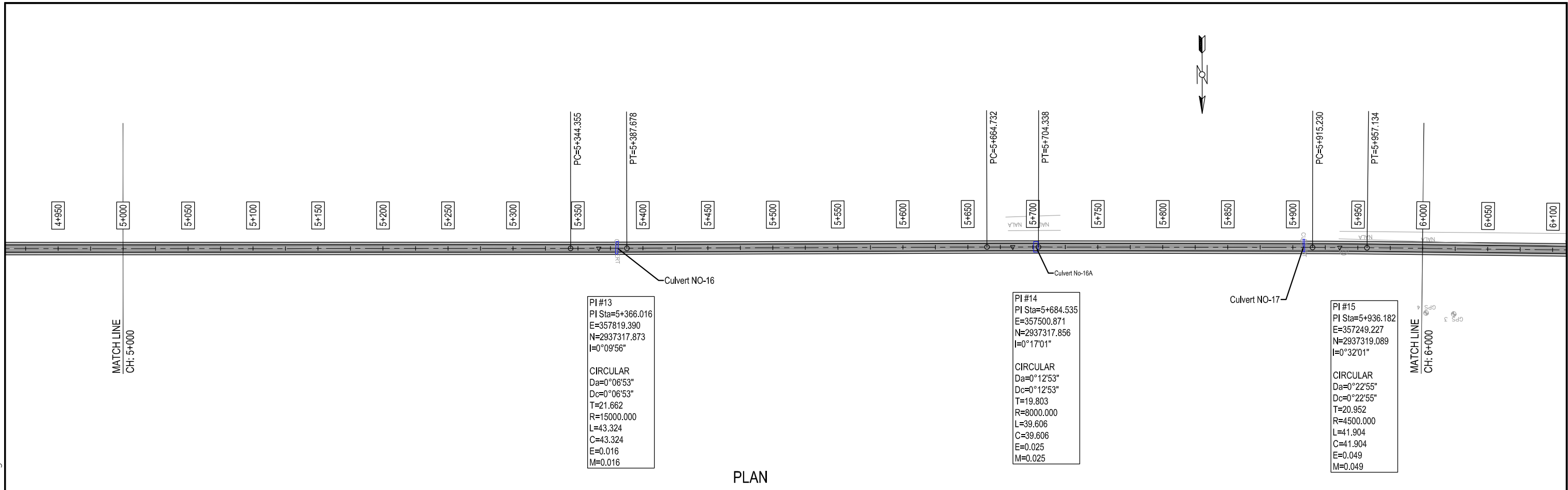
PLAN







PROFILE

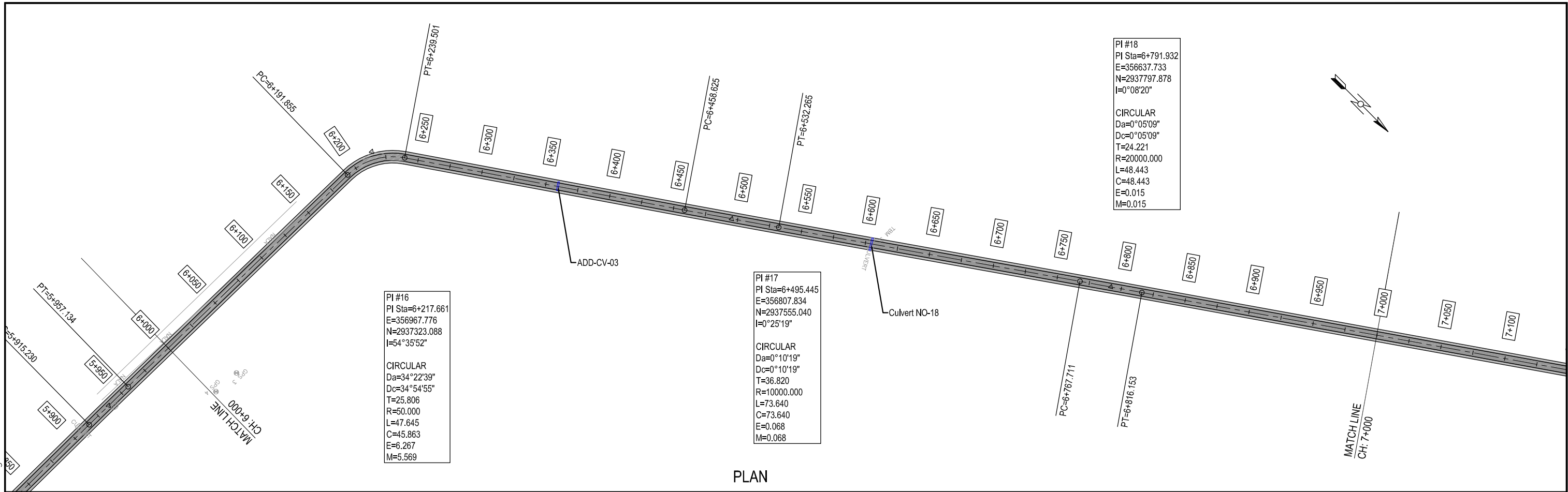
CLIENT:- <div>Asian Development Bank</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road			ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-05
			TITLE:- PLAN & PROFILE OF JM-3 CH: 4+000 TO 5+000						DESIGNED: HINA ZEESHAN	Scale:- H=1:3000 V=1:200
									CHECKED: NAVEED HASSAN	Edition. 0
						0	JUNE,2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>										

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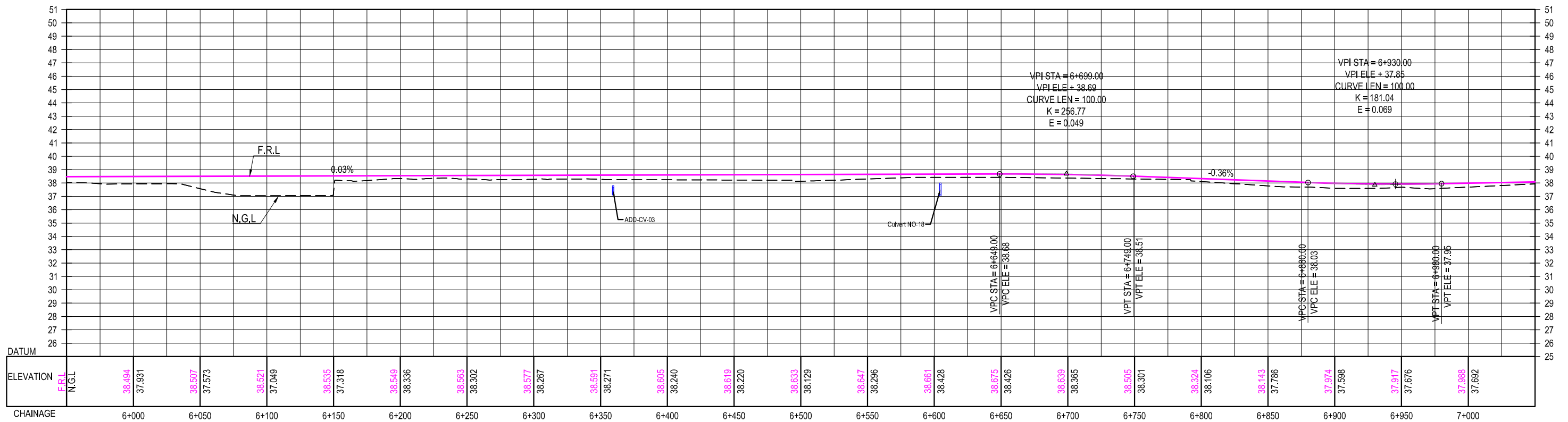


CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-06
			TITLE:- PLAN & PROFILE OF JM-3 CH: 5+000 TO 6+000				DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH							CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
				0	JUNE,2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	Edition. 0





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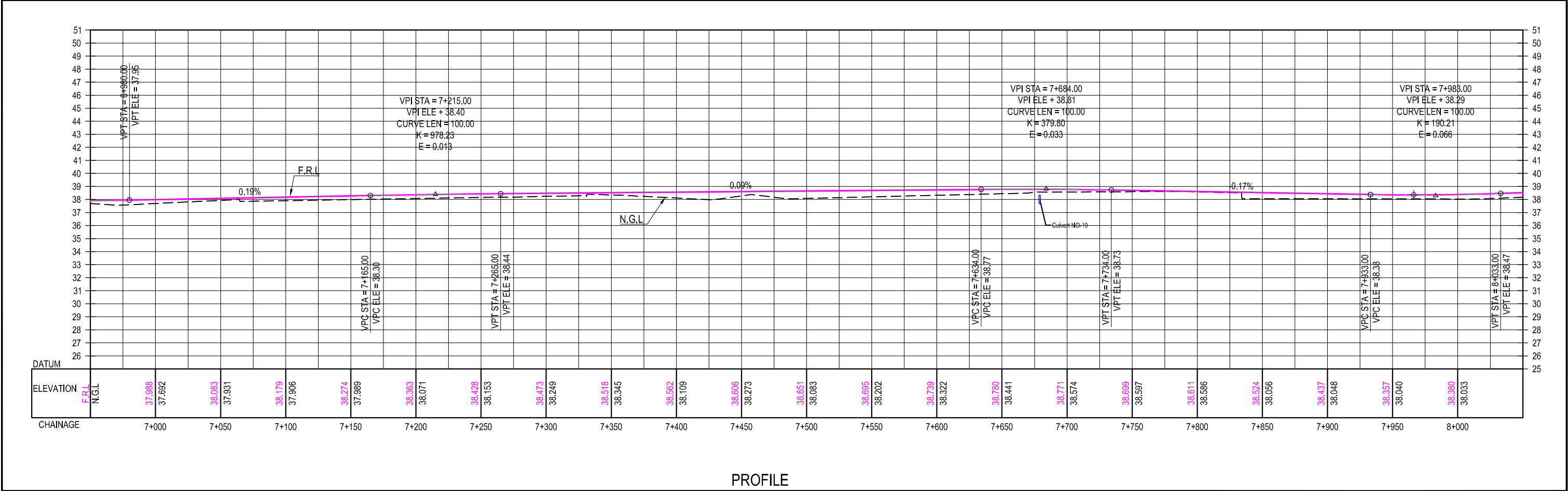
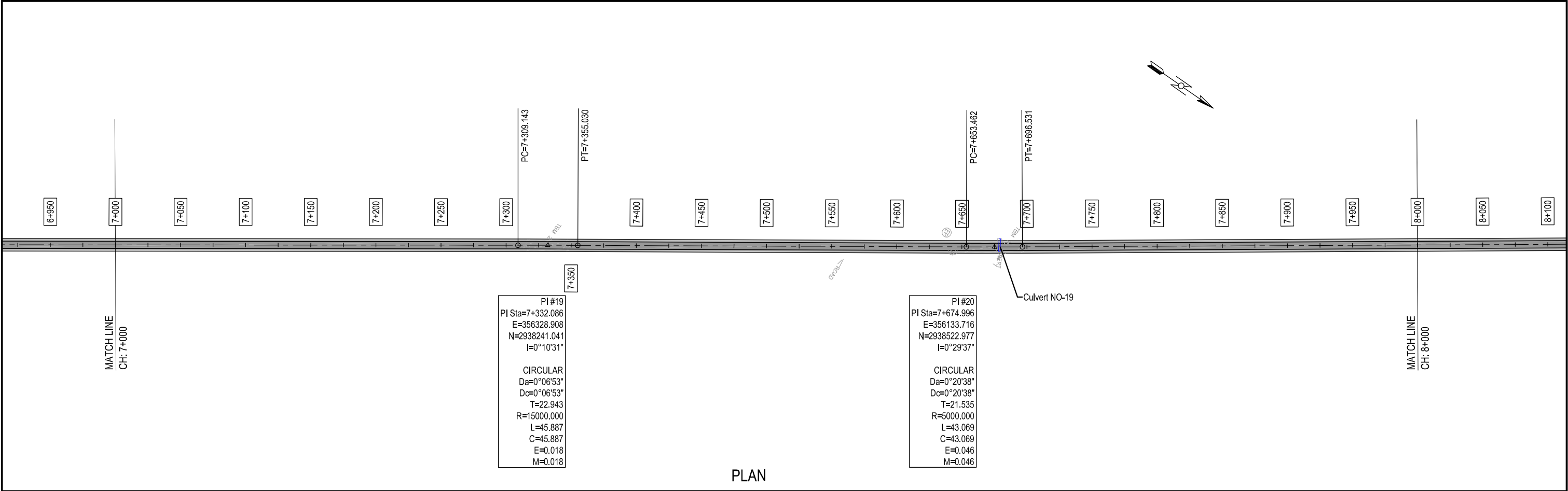
PLAN







PROFILE

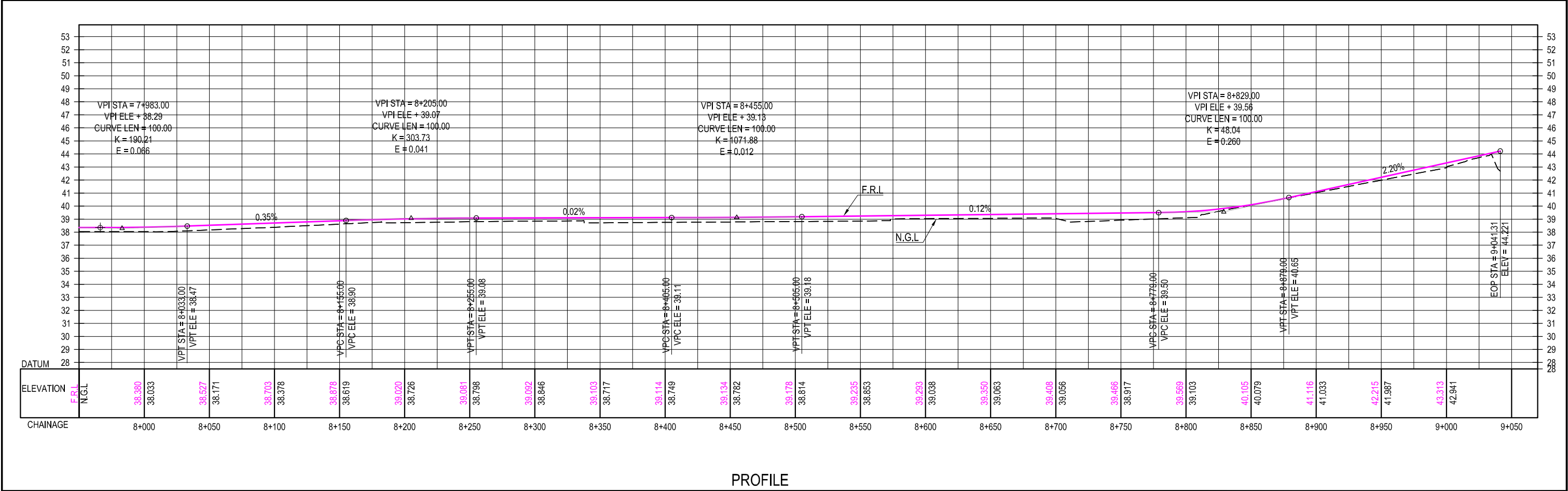
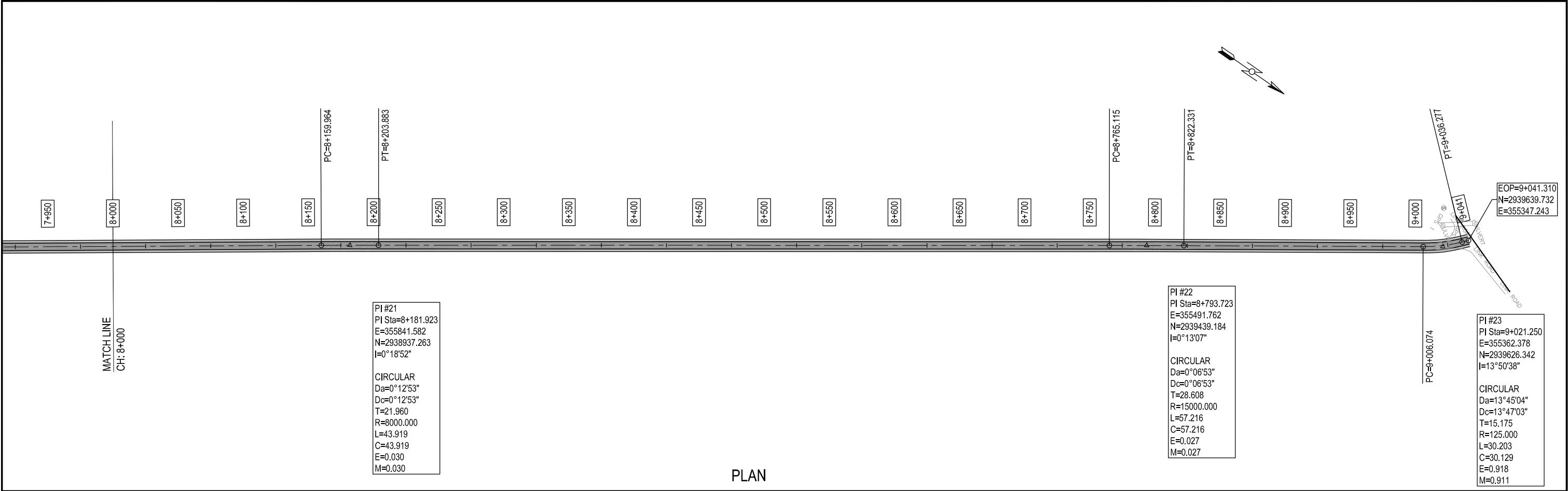
CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-07
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- PLAN & PROFILE OF JM-3 CH: 6+000 TO 7+000				CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
				0	JUNE,2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	Edition. 0





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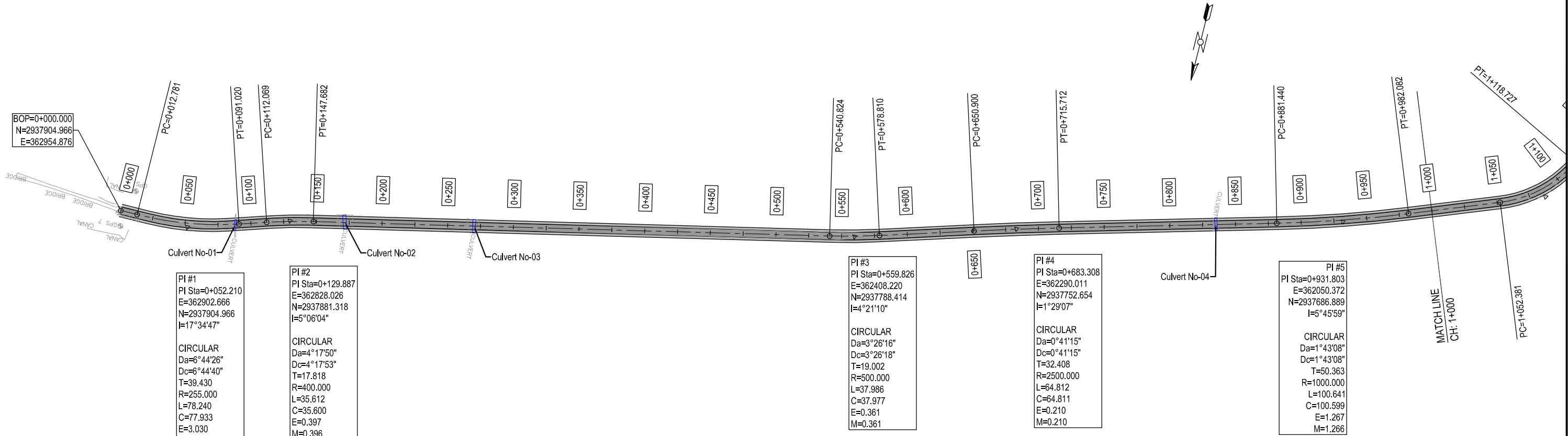
CLIENT:- <div>Asian Development Bank</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-08
			TITLE:- PLAN & PROFILE OF JM-3 CH: 7+000 TO 8+000					DESIGNED: HINA ZEESHAN
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>							CHECKED: NAVEED HASSAN	Edition.
				0	JUNE,2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	0

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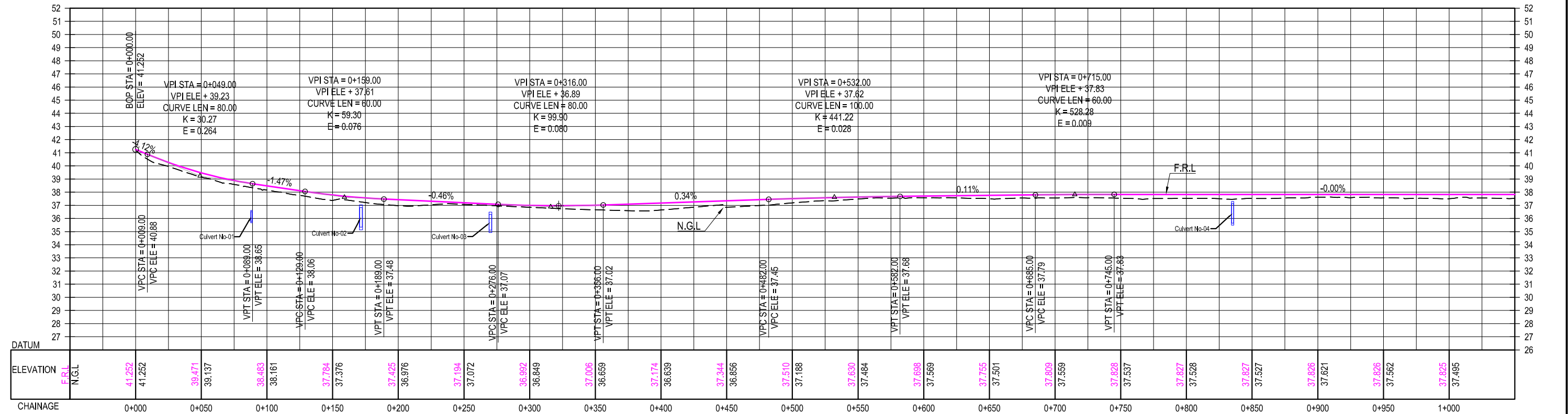


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			TITLE:- PLAN & PROFILE OF JM-3 CH: 8+000 TO 9+041.476				DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH							CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
				0	JUNE, 2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	Edition. 0





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PLAN



PROFILE

CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL); EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- JM-3 Rehabilitation of Road from MNV Drain to FP Bund Johi Chinni Road	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. HWY-JM-3-PP-01
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- PLAN & PROFILE OF JM-3 CH: 0+000 TO 1+000				CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:200
				0	JUNE, 2023	ISSUED FOR APPROVAL	DATE: JULY, 2023	Edition. 0

S. NO.	DESCRIPTION	DRAWING NO.
1	LIST OF DRAWING	2053-STR-JM03-LD-01
2	GENERAL NOTES	2053-STR-JM03-GN-01
CULVERTS		
1	SCHEDULE OF CULVERTS	2053-STR-JM03-CU-SCH-01
	BOX CULVERTS	
1	RCC BOX CULVERT - GENERAL ARRANGEMENT	2053-STR-JM03-BC-01
2	RCC BOX CULVERT - DETAILS OF APRON SLAB & WING WALLS	2053-STR-JM03-BC-02
3	RCC BOX CULVERT - REINFORCEMENT DETAILS OF BOX CULVERT	2053-STR-JM03-BC-03
4	RCC BOX CULVERT - REINFORCEMENT DETAILS OF APRON SLAB & WING WALLS (FOR CULVERT HEIGHT \leq 2m)	2053-STR-JM03-BC-04
5	REINFORCEMENT DETAILS OF APRON SLAB & WING WALLS FOR CULVERT HEIGHT > 2M	2053-STR-JM03-BC-05

[illegible]

GENERAL NOTES

1.

THE STRUCTURES ARE DESIGNED FOR CLASS AA AND CLASS A LOADING SPECIFIED IN GOVERNMENT OF WEST PAKISTAN, HIGHWAY DEPARTMENT CODE OF PRACTICE FOR HIGHWAY BRIDGES, 1967.
2.

CONCRETE IN ALL ELEMENTS OF SUBSTRUCTURE BELOW GROUND LINE TO BE MADE FROM ORDINARY PORTLAND CEMENT. IF SUBSOIL INVESTIGATIONS INDICATE THE PRESENCE OF SULPHATES IN BEARING SOIL, THEN SULPHATE RESISTING CEMENT INSTEAD OF ORDINARY PORTLAND CEMENT SHALL BE USED.
3.

ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO GENERAL SPECIFICATIONS (1998) AS GIVEN IN CONTRACT DOCUMENTS AND RELEVANT AASHTO STANDARDS UNLESS OTHERWISE STIPULATED. WHEREVER ASTM SPECIFICATIONS ARE REFERRED TO, THEY SHALL BE FOLLOWED. A COPY OF THE STANDARDS SHALL BE SUPPLIED BY THE CONTRACTOR TO THE ENGINEER.
4.

DIMENSION ON THE DRAWINGS ARE IN MILLIMETER EXCEPT OTHERWISE NOTED.
5.

THE LOAD FACTORS AND LOAD COMBINATIONS ARE BASED ON THE STIPULATION GIVEN IN AASHTO LRFD BRIDGES DESIGN SPECIFICATIONS.
6.

ALL BLINDING CONCRETE SHALL BE LEAN CONCRETE.
7.

ALL STRUCTURAL CONCRETE SHALL CONFORM TO AASHTO T–22, AASHTO T–23 AND AASHTO T–24 AS SPECIFIED. MINIMUM COMPRESSIVE STRENGTHS AS MEASURED ON CYLINDERS AT 28 DAYS SHALL BE AS FOLLOWS.

– CLASS A1 (210 kg./sq. cm.) FOR BARRIER, APPROACH SLAB AND ALL OTHER REINFORCED CONCRETE MEMBERS EXCEPT NOTED BELOW.

– CLASS A3 (280 kg./sq. cm.) FOR TRANSOMS, PILECAPS, ABUTMENTS & RETAINING WALLS, PILES, PIER SHAFTS, DECK SLAB, DIAPHRAGMS & CULVERTS

– CLASS D2 (425 kg./sq. cm.) FOR PRECAST PRESTRESSED CONCRETE GIRDERS.

8.

REINFORCING STEEL INDICATED ON DRAWINGS AS \varnothing SHALL BE AS PER AASHTO M31 GRADE 60

9.

ALL BAR DIAMETERS ARE IN MILLIMETERS. BARS ARE DESIGNATED BY A CODE CONSISTING OF THREE NUMBERS SEPARATED BY TWO HYPHENS, THE FIRST NUMBER IS THE BAR IDENTIFICATION MARK, THE MIDDLE NUMBER IS ITS DIAMETER IN MILLIMETERS AND THIRD NUMBER IS THE NUMBER OF BARS REQUIRED, FOR EXAMPLE

126

16

24

BAR MARKS

DIAMETER IN MILLIMETER

NUMBERS REQUIRED

10.

THE CONTRACTOR SHALL PREPARE ALL BAR BENDING SCHEDULES ETC. AND SUBMIT THEM FOR APPROVAL OF THE ENGINEER PRIOR TO CUTTING, BENDING AND PLACEMENT.

11.

ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMWORK AND HELD FIRMLY IN PLACE, BEFORE PLACING OF CONCRETE BY MEANS OF 16 GUAGE BLACK ANNEALED WIRE AND ADEQUATELY DESIGNED SPACERS.

12.

UNLESS OTHERWISE SHOWN ON THE DRAWING LAPS IN REINFORCING STEEL BARS SHALL BE STAGGERED. MINIMUM LENGTH OF LAP SHALL BE AS PER AASHTO REQUIREMENTS.

13.

THE GIRDERS SHALL BE PLACED IN SPANS BY APPROVED MEANS TO ENSURE THEIR PLACEMENT WITHOUT DAMAGE AND ACCIDENT, GIRDERS SHALL BE PLACED AT CORRECT POSITION AS SHOWN ON THE DRAWINGS AND TEMPORARILY BRACED LATERALLY UNTIL DIAPHRAGMS/TRANSOMS AND DECK SLABS ARE CAST. THE ERECTION PROCESS SHALL NOT HINDER NORMAL MOVEMENT OF TRAFFIC.

14.

MULTISTRAND PRESTRESSING SYSTEM HAS BEEN USED IN THE DESIGN. FIXTURES AND DETAILS SHALL CONFORM TO ONE OF THE FOLLOWING SYSTEMS:–

– OVM

– FREYSSINET

– VSL

– STRONGHOLD

15.

PRESTRESSING STEEL SHALL CONFORM TO ASTM–416 (GRADE–270) WITH MINIMUM ULTIMATE STRENGTH OF 1860 N/sq.mm.

16.

ALL TENDONS SHALL BE STRESSED FROM ONE END ALTERNATELY UNLESS OTHERWISE SHOWN ON DRAWINGS AND SUBSTITUTION OF LIVE ANCHORAGE WITH BLIND ANCHORAGE FOR ONE – END STRESSING IS PERMITTED.
17.

IF ANCHORAGE PULL–IN OF STRANDS EXCEEDS 6 mm, THE TENDON SHALL BE DESTRESSED BY APPROVED MEANS AND SHALL BE RESTRESSED USING NEW SET OF GRIPS.

18.

TENDONS SHALL BE STESSED AFTER THE CONCRETE HAS ATTAINED A CRUSHING STRENGTH OF 425 Kg/sq.cm. THE EXTENSIONS SHOWN IN DRAWINGS ARE THE TOTAL EXTENSION TO BE ACHIEVED BEFORE LOCKING AND ARE CALCULATED ON THE BASIS OF 200000 N/sq.mm AS MODULUS OF ELASTICITY OF STEEL. FOR OTHER VALUES OF MODULUS OF ELASATICITY, EXTENSIONS SHOULD BE CALCULATED ON PRO–RTA BASIS. TENDONS SHOULD NOT BE LOCKED IF THE ACTUAL EXTENSIONS VARY MORE THAN 10% FROM THE VALUES SHOWN OR CALCULATED AS THE CASE MAY BE AND THE MATTER REPORTED TO ENGINEER WHO SHALL GIVE FURTHER INSTRUCTION.

19.

PRESTRESSING TENDONS COMPRISE 0.5 INCHES DIAMETER 7 WIRES STRANDS IN NUMBERS STATED IN THE RESPECTIVE DRAWINGS.

20.

THE ORDER OF STRESSING SHALL BE AS STATED IN THE DRAWINGS.

21.

ANCHORAGE POCKET SHALL BE FILLED WITH CLASS A1 CONCRETE USING 12 mm DOWN AGGREGATES, AFTER GROUTING AND TRIMMING TENDONS.

22.

INTERMEDIATE GROUT VENTS SHALL BE PROVIDED AT ABOUT MID LENGTH OF THE TENDONS WHEN TENDON LENGTH IS MORE THAN 12 METERS.

23.

ALL EXPOSED CORNERS OF CONCRETE TO BE CHAMFERED 25 mm x 25 mm EXCEPT OTHER WISE SHOWN.

24.

ALL REINFORCED CONCRETE AND PRESTRESSED SHALL BE FAIR–FACED TO BE CAST IN STEEL FORMWORK AND PLATES OF NOT LESS THAN 3 mm THICKNESS. TIMBER AND STEEL–CLAD TIMBER FORMWORK SHALL NOT BE ALLOWED.

25.

THE DESIGN AND THE ENGINEERING OF THE FORMWORK AND FALSEWORK AS WELL AS ITS CONSTRUCTION SHALL BE RESPONSIBILITY OF THE CONTRACTOR, DESIGN OF FORMWORK AND FALSEWORK SHALL COMPLY WITH THE SPECIFICATIONS AND IN GENERAL CONFORM TO ACI 318–95 AND ACI SP–4.

26.

CONCRETE IN DECK SLAB SHALL BE PLACED IN FULL WIDTH. NO CONSTRUCTION JOINT SHALL BE PERMITTED EXCEPT AS MENTIONED IN THE DRAWING OF CONSTRUCTION SEQUENCE OF DECK SLAB.

27.

ELASTOMERIC BEARING PADS SHALL CONFORM TO SECTION 25, DIVISION 2 OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 1992 AS AMENDED IN 1994, FULLY ENCLOSED IN RUBBER

28.

BRIDGE BEARINGS SHALL BE PLACED IN HORIZONTAL POSITIONS. INCLINED OR TAPERED BEARINGS SHALL NOT BE ALLOWED.

29.

BEFORE COMMENCEMENT OF CONSTRUCTION OF PERMANENT PILES, TEST PILES SHALL BE CONSTRUCTED, TESTED AND THE LOAD TEST RESULT SHALL BE SUBMITTED TO THE ENGINEER, WHO SHALL APPROVE OR AMMEND THE PILE TIP LEVEL.

30.

THE PILES SHALL BE BORED–CAST–IN–PLACE. THE WORKING LOAD AND DIAMETER OF THE PILE ARE STATED ON THE GENERAL ARRANGEMENT DRAWING.

31.

THE PILING WORK SHALL BE EXECUTED USING APPROPRIATE PILING EQUIPMENT AND METHODOLOGY TO BE APPROVED IN WRITING BY THE ENGINEER.

32.

THE PILE TIP LEVELS ARE TENTATIVE AND TO BE CONFIRMED BY THE ENGINEER UPON COMPLETION OF SUBSOIL INVESTIGATION AND REPORT BY THE GEOTECHNICAL ENGINEER OF THE CONTRACTOR.

33.

CLEAR COVER TO REINFORCEMENT TO BE:

(a) 25 mm IN DECK SLAB & APPROACH SLAB (BOTTOM REINF.)

40 mm IN DECK SLAB & APPROACH SLAB (TOP REINF.)

(b) 25 mm IN BARRIER.

(c) 40 mm IN GIRDERS, TRANSOMS, DIAPHRAGMS (TOP & BOTTOM REINF.).








(d) 40 mm IN WALLS.

(e) 50 mm IN PILECAP

(f) 75 mm IN PILES & PIER SHAFTS

UNLESS OTHERWISE SPECIFIED.

34.

FOR CORRECT FIXATION OF FINISHED DECK LEVELS OF BRIDGES LOCATED ON CURVES WITH SUPER ELEVATION, REFER TO PLAN AND PROFILE DRAWINGS PRIOR TO CASTING OF DECK SLAB.
- LEGEND AND SYMBOLS
- | | |
|---|---|
|  | (IN ELEVATION OR SECTION)
FINISHED SURFACE ELEVATION |
|  | REINFORCEMENT |
| E.F. | EACH FACE |
| EA | EACH |
| R | RADIUS |
| DWG. | DRAWING |
| N.T.S. | NOT TO SCALE |
| CRS | (ON) CENTRES |
| I.F | INNER FACES |
| O.F | OUTER FACES |
| B.F. | BOTH FACES |
| EL. | ELEVATION |
| N/mm. ² | NEWTON PER SQUARE MILLIMETER. |
| T | TOP |
| ℄ | CENTRELINE |
| B | BOTTOM |
| ALT | ALTERNATELY |
| E.J. | EXPANSION JOINT |
| C.J. | CONSTRUCTION JOINT |
| N.S.I.E | NOT SHOWN IN ELEVATION |
| N.S.I.P | NOT SHOWN IN PLAN |
|  | GANTRY |
|  | SYMMETRICAL |
- | | | | | | | | | |
|---|---|--|---|--------|------|-------------|---------------------------------|--|
| CLIENT:- <div>Asian Development Bank</div> | PROJECT:- <div>LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)</div> | DESIGN CONSULTANT <div>In association with </div> | PROJECT ROAD:- <div>DISTRICT : JAMSHORO - JM-03
REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI
CHINNI ROAD</div> | ED.NO. | DATE | DESCRIPTION | DRAWN: <div>F.A.S</div> | DRAWING NO. <div>2053-STR-JM03-GN-01</div> |
| | | | TITLE:- <div>GENERAL NOTES</div> | | | | DESIGNED : <div>R.I / M.A</div> | Scale:- <div>1:1</div> |
| | | | | | | | CHECKED : <div>S.A</div> | Edition. |
| | | | | | | | DATE: <div>JUNE 2023</div> | |

CULVERTS

SCHEDULE OF CULVERTS





CULVERT NO.	LATITUDE	LONGITUDE	EXISTING/ PROPOSED	EXISTING CULVERT					DESIGN STRATEGY	PROPOSED DESIGN				
				TYPE	NO. OF CELLS	WIDTH/ DIA	HEIGHT	SKEW		TYPE	NO. OF CELLS	WDTH/ DIA	HEIGHT	SKEW
C1	26.55492	67.6225	EXISTING	SLAB	3	3	3.5	0	RETAINED / REPAIR	-	-	-	-	-
C2	26.55473	67.62154	EXISTING	SLAB	2	4.5	3.2	0	REPLACE WITH NEW	BOX	3	3	3	0
C3	26.55346	67.61602	EXISTING	SLAB	1	1	3	0	RETAINED / REPAIR	-	-	-	-	-
C4	26.55206	67.61355	PROPOSED	-	-	-	-	-	NEW	BOX	1	1.5	2	0
C5	26.54912	67.61023	EXISTING	SLAB	1	1.5	2	0	RETAINED / REPAIR	-	-	-	-	-
C6	26.54958	67.60765	EXISTING	SLAB	1	1.2	2.5	0	RETAINED / REPAIR	-	-	-	-	-
C7	26.54958	67.60366	EXISTING	SLAB	1	1	2.2	0	RETAINED / REPAIR	-	-	-	-	-
C8	26.54969	67.60403	EXISTING	SLAB	1	1.2	2.5	0	RETAINED / REPAIR	-	-	-	-	-
C9	26.54965	67.60163	EXISTING	SLAB	1	1.2	1.6	0	RETAINED / REPAIR	-	-	-	-	-
C10	26.54962	67.59689	EXISTING	SLAB	1	1.2	2	0	RETAINED / REPAIR	-	-	-	-	-
C11	26.54949	67.59552	PROPOSED	-	-	-	-	-	NEW	BOX	2	2	1	
C12	26.54953	67.54459	EXISTING	SLAB	1	1.2	2	0	RETAINED / REPAIR	-	-	-	-	-
C13	26.54956	67.58947	EXISTING	SLAB	1	1	1	0	REPLACE WITH NEW	BOX	1	2	1.5	0
C14	26.54944	67.58712	EXISTING	SLAB	1	1.2	1.6	0	RETAINED / REPAIR	-	-	-	-	-
C15	26.54956	67.58338	EXISTING	SLAB	1	1.2	1.5	0	REPLACE WITH NEW	BOX	1	2.5	2.5	0
C16	26.54940	67.57564	EXISTING	WASHED OUT					REPLACE WITH NEW	BOX	2	1.5	1.5	0
C17	26.54946	67.57251	EXISTING	SLAB	1	1.2	1.6	0	RETAINED / REPAIR	-	-	-	-	-
C18	26.54935	67.56924	EXISTING	WASHED OUT					REPLACE WITH NEW	BOX	3	3	2	0
C19	26.54941	67.56723	EXISTING	SLAB	1	1.2	1.6	0	RETAINED / REPAIR	-	-	-	-	-
C20	26.55028	67.56334	PROPOSED	-	-	-	-	-	NEW	BOX	1	2	1.5	
C21	26.55234	67.56186	EXISTING	SLAB	1	1	1	0	RETAINED / REPAIR	-	-	-	-	-
C22	26.56140	67.55511	EXISTING	SLAB	1	1	1.7	0	RETAINED / REPAIR	-	-	-	-	-

- NOTES:—
- 1—

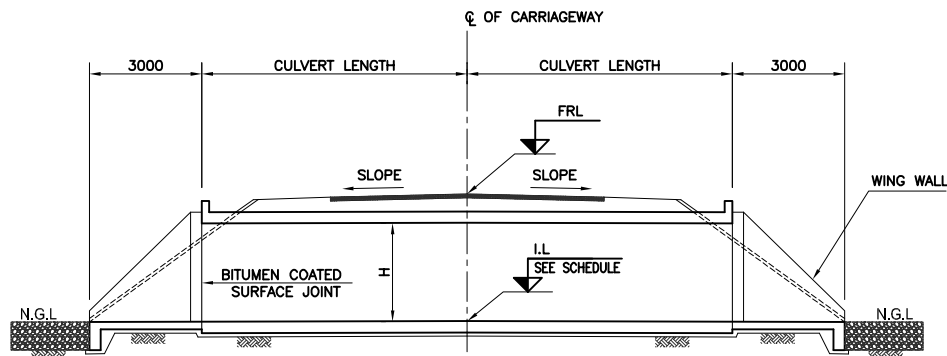
THIS DRAWING MUST BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS.
- 2—

ALL LEVELS SHALL BE VERIFIED AT SITE BEFORE EXECUTION.
- 3—

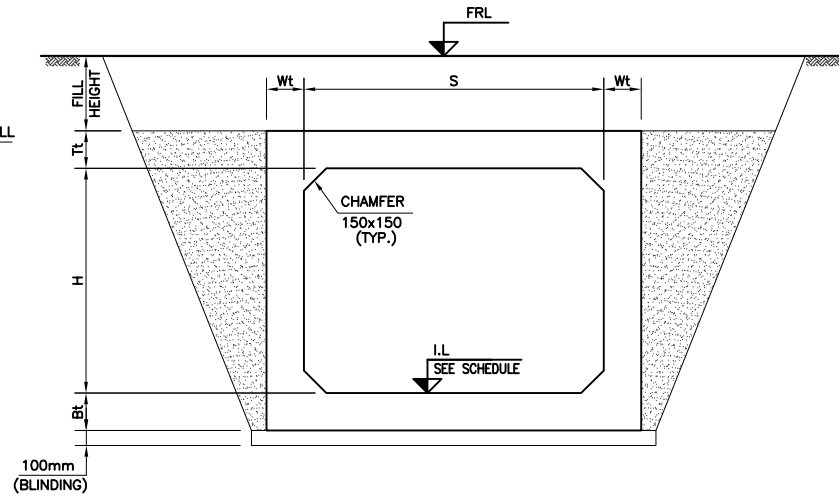
LEVELS, LENGTHS & SKEWS MAY BE ADJUSTED AS PER SITE CONDITIONS DURING LEVELS ADJUSTMENTS, IF FILL HEIGHT VARIES SIGNIFICANTLY FOR WHICH THE STRUCTURE IS DESIGNED, NOTIFY ENGINEER.

CLIENT:- <div>Asian Development Bank</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- DISTRICT : JAMSHORO - JM-03 REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI CHINNI ROAD	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-JM03-CU-SCH-01
			TITLE:- SCHEDULE OF CULVERTS				DESIGNED : R.I / M.A	Scale:- 1:100
						CHECKED : S.A	Edition.	
						DATE: JUNE 2023		
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>								

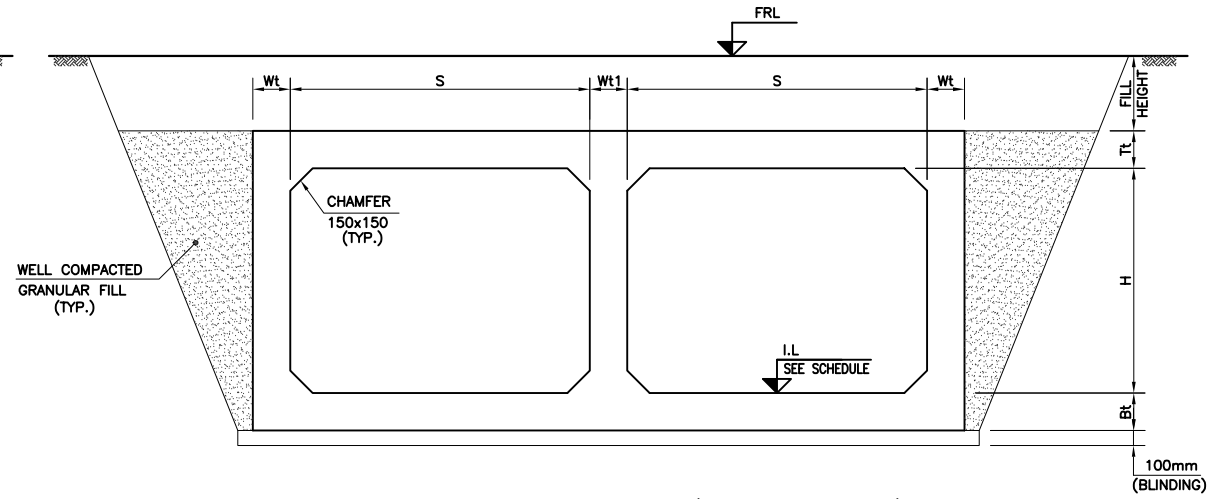
BOX CULVERTS



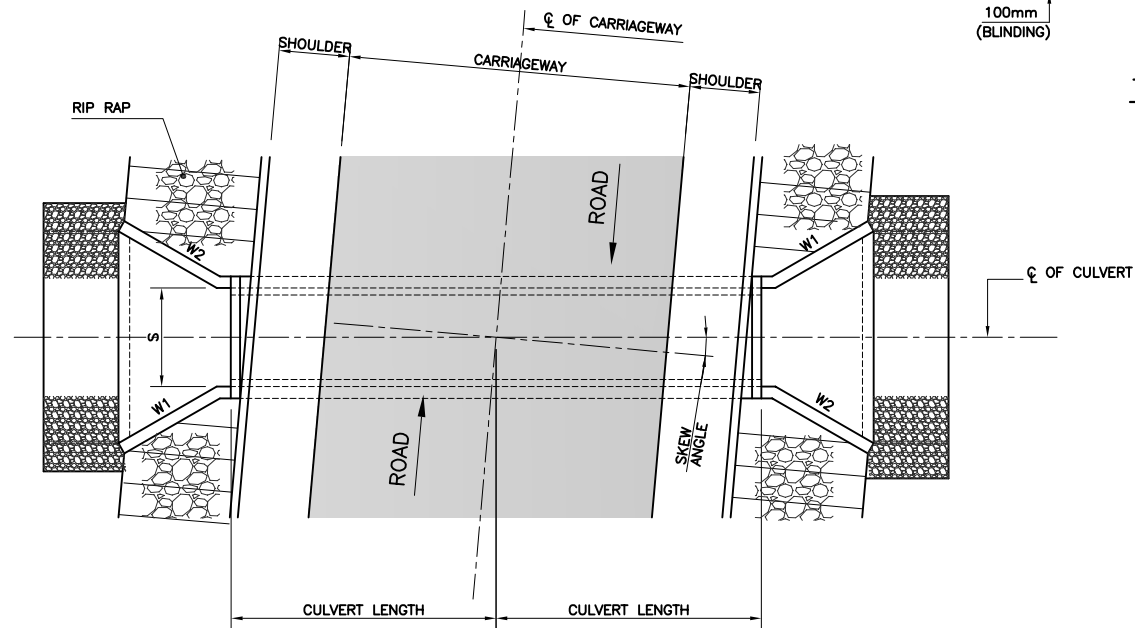
LONGITUDINAL SECTION AT C.L. OF CULVERT
(FOR ROAD X-SECTION REFER RELEVANT ROADWAY DRAWINGS)



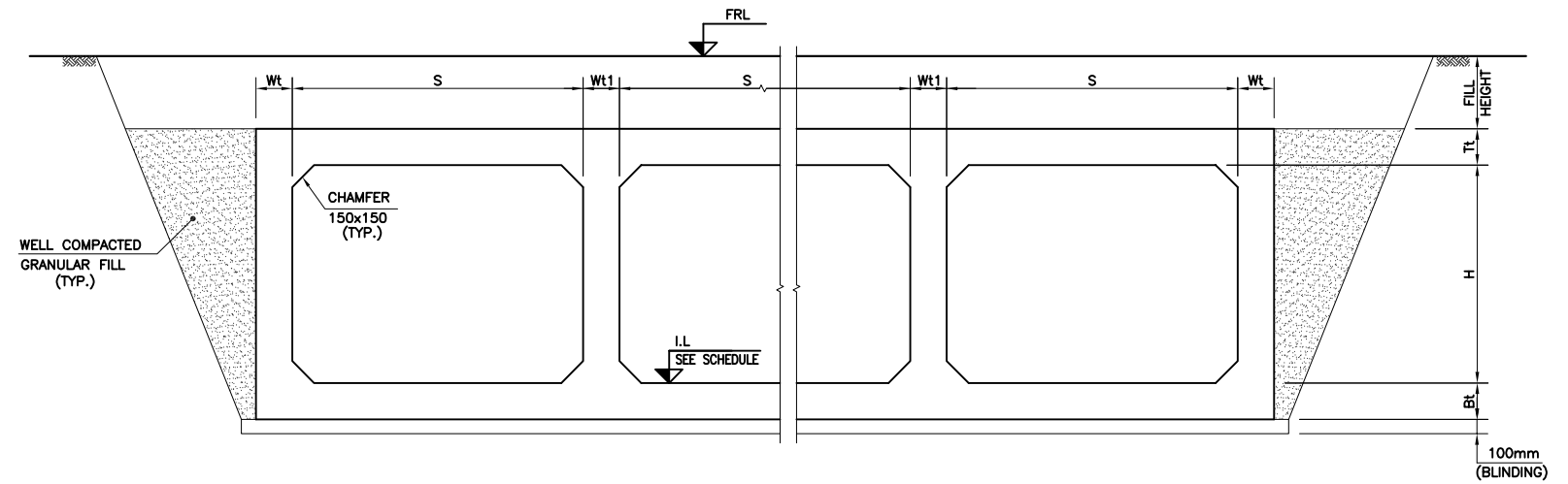
TYP. CROSS SECTION (SINGLE CELL)
SCALE 1:25



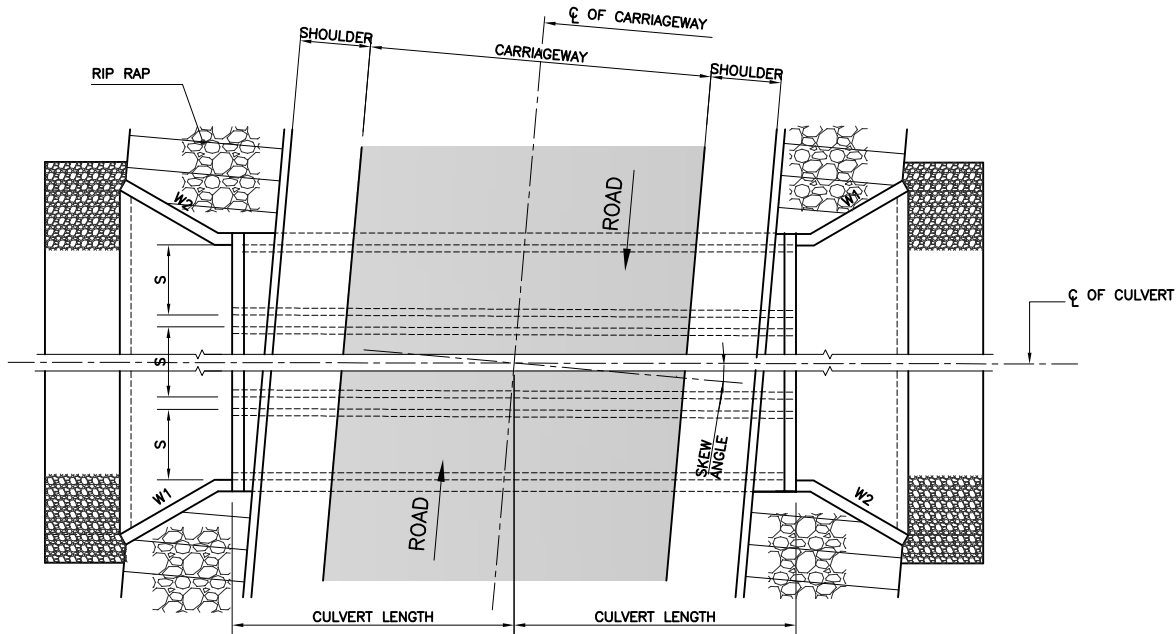
TYP. CROSS SECTION (DOUBLE CELL)
SCALE 1:25



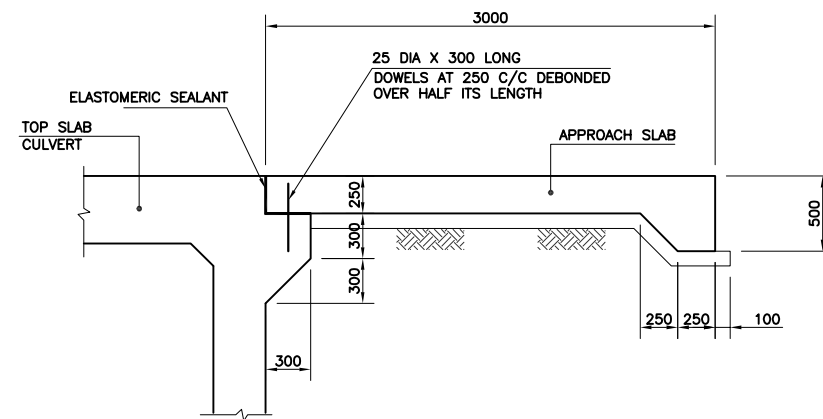
PLAN (SINGLE CELL)



TYP. CROSS SECTION (MULTI CELL)
SCALE 1:25







PLAN (MULTI CELL)

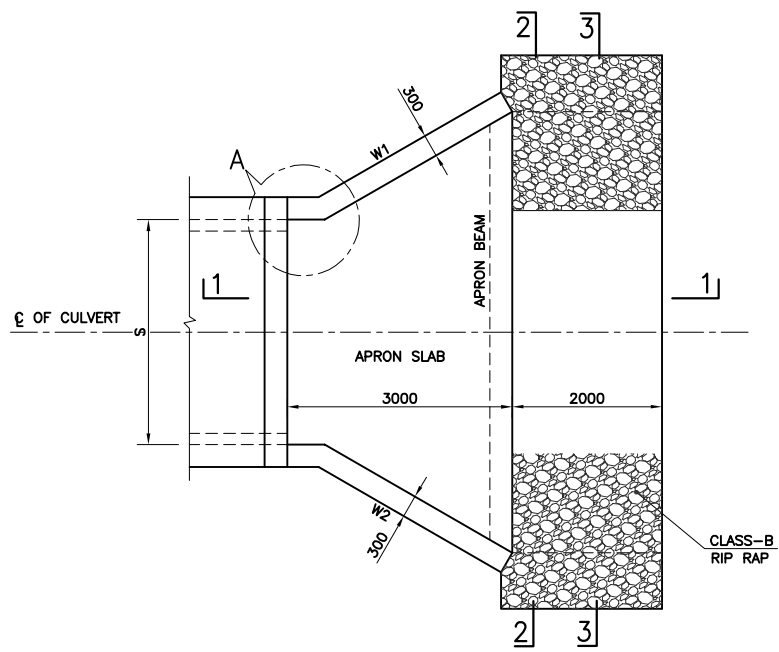


TYP. DETAIL OF APPROACH SLAB
FOR FILL HEIGHT ≤ 1000mm
SCALE 1:25

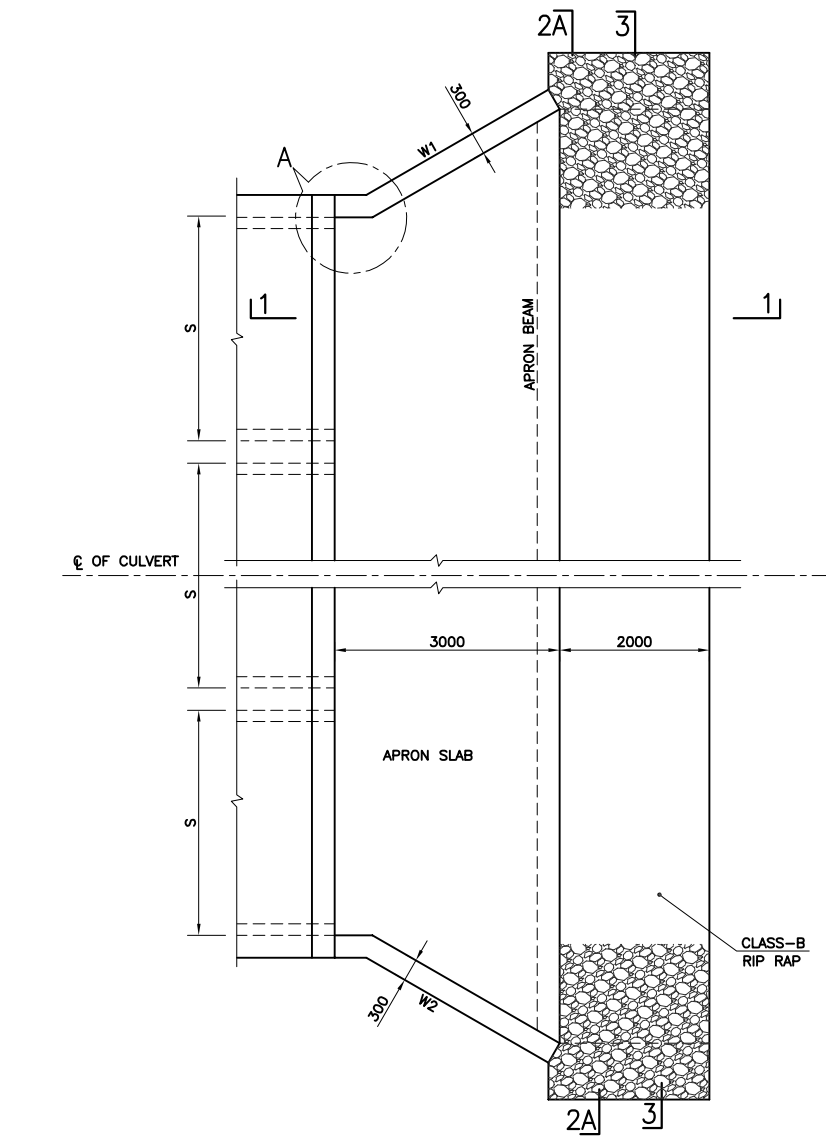
NOTES:-

- 1 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWING.
- 2 - FOR ROAD X-SECTION AND LOCATION REFER RELEVANT ROADWAY PLAN AND PROFILE DRAWINGS.
- 3 - LEVELS MAY BE ADJUSTED AS PER SITE CONDITIONS. DURING LEVEL ADJUSTMENTS, IF FILL HEIGHT VARIES SIGNIFICANTLY FOR WHICH THE STRUCTURE IS DESIGNED, NOTIFY ENGINEER.
- 4 - LENGTH OF CULVERT, WINGWALL AND WINGWALL INCLINATION SHALL BE ADJUSTED AS PER SITE REQUIREMENTS.

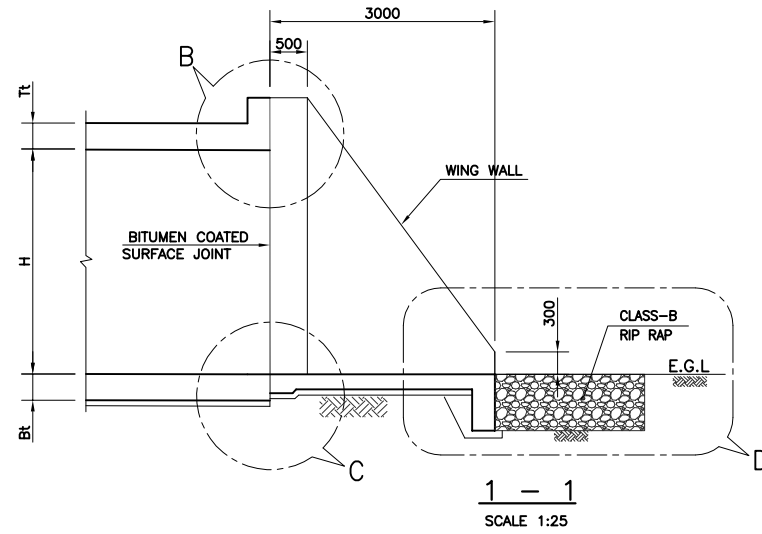
CLIENT:- <div>Asian Development Bank</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- DISTRICT : JAMSHORO - JM-03 REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI CHINNI ROAD	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-JM03-BC-01
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>			TITLE:- RCC BOX CULVERT GENERAL ARRANGEMENT				DESIGNED : R.I / M.A	Scale:- 1:100
							CHECKED : S.A	Edition.
							DATE: JUNE 2023	



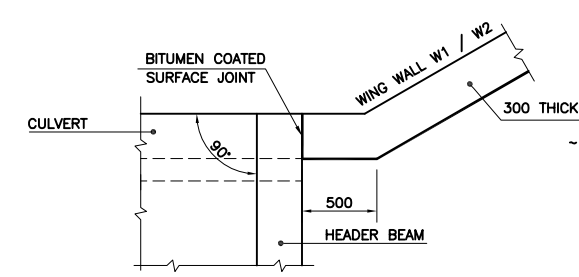
PLAN OF APRON SLAB (SINGLE CELL)
SCALE 1:50



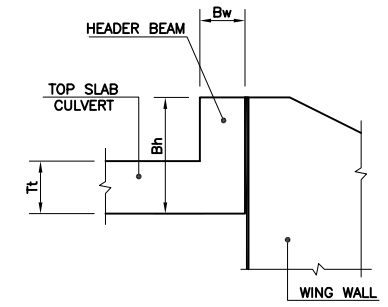
TYP. PLAN OF APRON SLAB (MULTI CELL)
SCALE 1:50



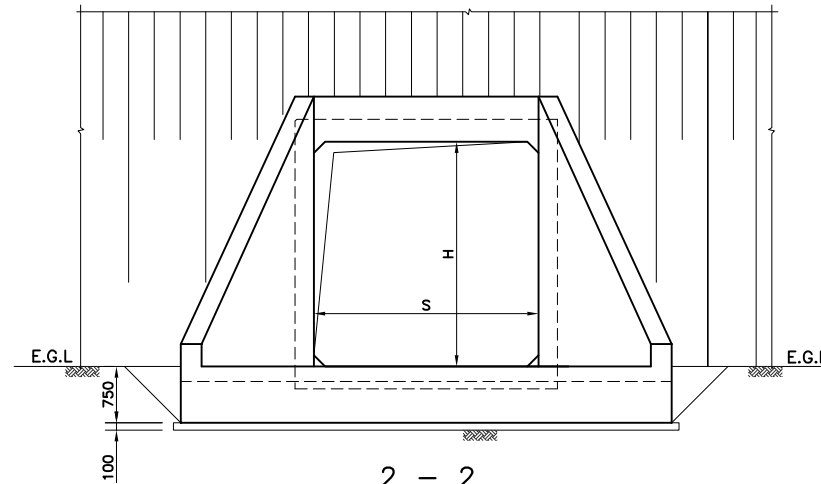
1 - 1
SCALE 1:25



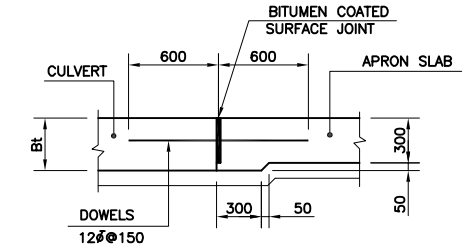
DETAIL A
SCALE 1:25



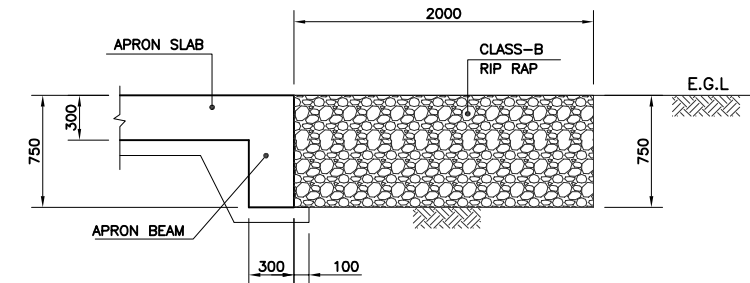
DETAIL B
SCALE 1:25



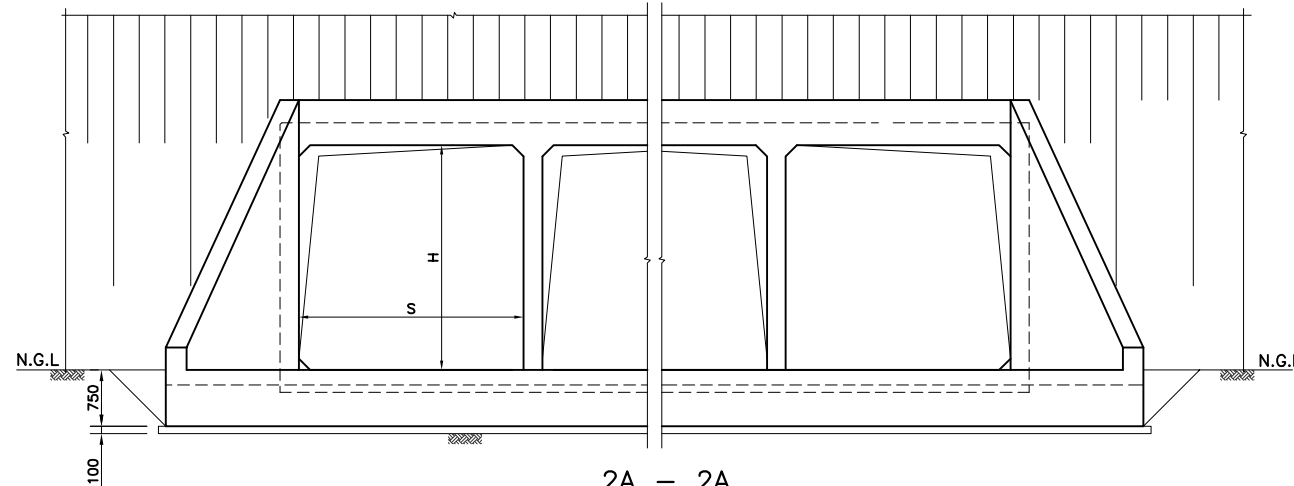
2 - 2
SCALE 1:50



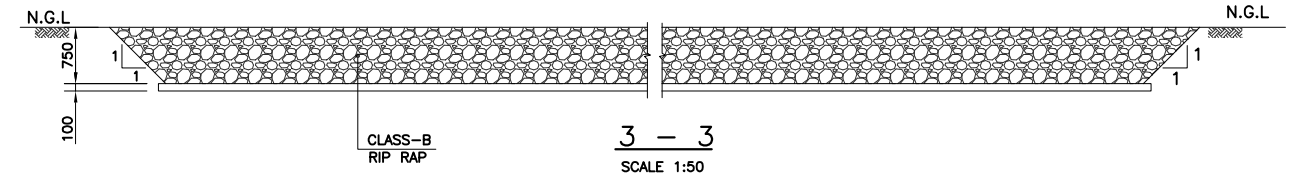
DETAIL C
SCALE 1:25



DETAIL D
SCALE 1:25





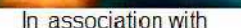

2A - 2A
SCALE 1:50



3 - 3
SCALE 1:50

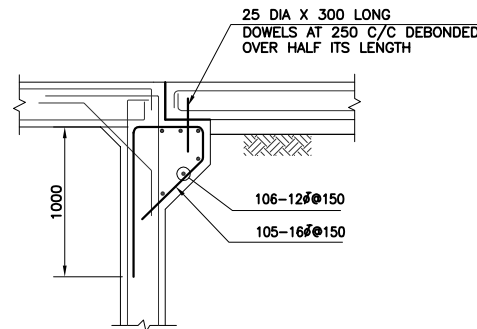
NOTES:-

- 1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH
DWG. NO. 2053-STR-JM03-01-BC-01.












CLIENT:- <div>Asian Development Bank</div>		PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- DISTRICT : JAMSHORO - JM-03 REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI CHINNI ROAD	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-JM03-BC-02
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>				TITLE:- RCC BOX CULVERT DETAILS OF APRON SLAB & WING WALLS				DESIGNED : R.I / M.A	
								CHECKED : S.A	Edition.
								DATE: JUNE 2023	

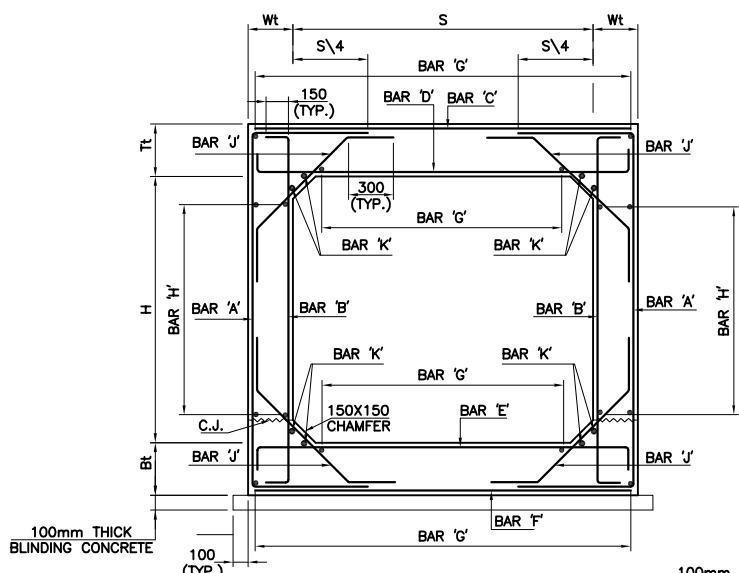
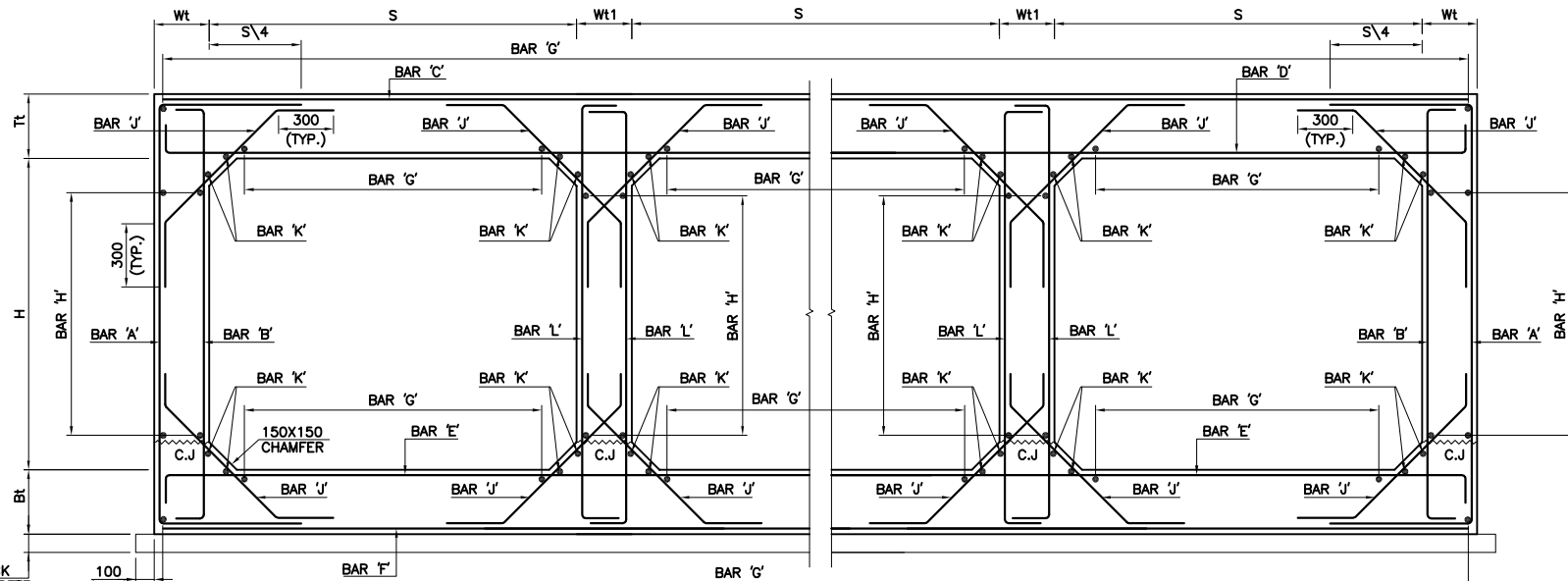
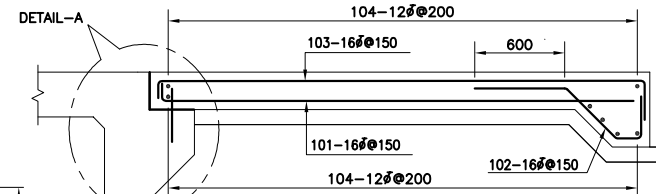
SINGLE CELL CULVERTS

DIMENSIONS							BAR A		BAR B		Straight BAR C		BAR D		BAR E		Straight BAR F		Straight BAR G		Straight BAR H		Straight BAR J		Straight BAR K	
NO. OF CELLS	S mm	H mm	FILL mm	Wt mm	Bt mm	Tt mm	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	NO.OF BAR
1	1000	1000	300-1000	250	250	250	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	150	10 ϕ	125	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	1000	1500	300-1000	250	250	250	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	125	10 ϕ	125	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	1500	1000	300-1000	250	250	250	10 ϕ	100	10 ϕ	200	10 ϕ	150	12 ϕ	125	12 ϕ	125	10 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	1500	1500	300-1000	250	250	250	10 ϕ	100	10 ϕ	200	10 ϕ	150	12 ϕ	125	12 ϕ	125	10 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	1500	2000	300-1000	250	250	250	10 ϕ	100	10 ϕ	200	10 ϕ	150	12 ϕ	125	12 ϕ	125	10 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2000	1000	300-1000	300	300	300	12 ϕ	125	10 ϕ	150	12 ϕ	150	12 ϕ	100	12 ϕ	100	12 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2000	1500	300-1000	300	300	300	12 ϕ	125	10 ϕ	150	12 ϕ	150	12 ϕ	100	12 ϕ	100	12 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2000	2000	300-1000	300	300	300	12 ϕ	125	10 ϕ	150	12 ϕ	150	12 ϕ	100	12 ϕ	100	12 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2500	1000	300-1000	300	325	325	12 ϕ	100	12 ϕ	200	12 ϕ	100	16 ϕ	125	16 ϕ	125	12 ϕ	100	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2500	2000	300-1000	300	325	325	12 ϕ	100	12 ϕ	200	12 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	100	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	2500	2500	300-1000	300	325	325	12 ϕ	100	12 ϕ	200	12 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	100	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	3000	1000	300-1000	350	400	400	16 ϕ	150	16 ϕ	200	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	3000	1500	300-1000	350	400	400	16 ϕ	150	16 ϕ	200	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	3000	2000	300-1000	350	400	400	16 ϕ	150	16 ϕ	200	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8
1	3000	3000	300-1000	350	400	400	16 ϕ	150	16 ϕ	200	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	8

DETAIL-A
SCALE 1:25

MULTI CELL CULVERT

DIMENSIONS																													
								BAR A		BAR B		BAR C		BAR D		BAR E		BAR F		BAR G		BAR H		BAR J		BAR K		BAR L	
NO. OF CELLS	S mm	H mm	FILL mm	Wt mm	Wt 1 mm	Bt mm	Tt mm	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	NO.OF BAR	DIA	SPACING		
2	1000	1000	300—1000	250	250	250	250	10 ϕ	150	10 ϕ	200	12 ϕ	150	12 ϕ	150	12 ϕ	150	12 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	10 ϕ	200
2	1500	1000	300—1000	250	250	250	250	12 ϕ	150	10 ϕ	200	12 ϕ	125	12 ϕ	150	12 ϕ	150	12 ϕ	125	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	10 ϕ	200
2	1500	1500	300—1000	250	250	250	250	12 ϕ	150	10 ϕ	200	12 ϕ	125	12 ϕ	150	12 ϕ	150	12 ϕ	125	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	10 ϕ	200
2	2000	1000	300—1000	300	300	300	300	12 ϕ	125	10 ϕ	200	12 ϕ	100	12 ϕ	100	12 ϕ	100	16 ϕ	150	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	10 ϕ	200
2	2500	1000	300—1000	300	300	325	325	16 ϕ	150	16 ϕ	200	16 ϕ	150	16 ϕ	150	16 ϕ	150	16 ϕ	100	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	16 ϕ	200
2	2500	2500	300—1000	300	300	325	325	16 ϕ	150	16 ϕ	200	16 ϕ	125	16 ϕ	125	16 ϕ	125	16 ϕ	100	10 ϕ	200	10 ϕ	200	10 ϕ	200	10 ϕ	16	16 ϕ	200
2	3000	2500	300—1000	350	350	400	400	16 ϕ	150	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	200	12 ϕ	200	12 ϕ	200	12 ϕ	16	16 ϕ	150
2	3000	3000	300—1000	400	400	450	450	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	200	12 ϕ	200	12 ϕ	200	12 ϕ	16	16 ϕ	100
3	3000	2000	300—1000	350	350	400	400	16 ϕ	150	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	200	12 ϕ	200	12 ϕ	200	12 ϕ	24	16 ϕ	150
3	3000	2500	300—1000	350	350	400	400	16 ϕ	150	16 ϕ	150	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	200	12 ϕ	200	12 ϕ	200	12 ϕ	24	16 ϕ	150
3	3000	3000	300—1000	400	400	450	450	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	16 ϕ	100	12 ϕ	200	12 ϕ	200	12 ϕ	200	12 ϕ	24	16 ϕ	100

TYPICAL SECTION OF SINGLE CELL
SCALE 1:25TYPICAL SECTION OF MULTI CELL CULVERT
SCALE 1:20TYP. REINFORCEMENT DETAIL OF
APPROACH SLAB

NOTES:-

- 1- BAR CUT LENGTH SHALL BE IN ACCORDANCE WITH LENGTH OF CULVERT.
- 2- ALL STURCTURAL CONCRETE SHALL BE CLASS 'A3' CONCRETE.
- 3- ALL STURCTURAL REINFORCEMENT SHALL BE GRADE 60 STEEL.
- 4- MINIMUM COVER TO THE REINFORCEMENT SHALL BE 50mm.
- 5- OVERLAP LENGTH OF REBAR SHALL BE 48 x DIA OF BARS.
- 6- FOR CULVERTS WITH SPAN LESS THAN ANY OF THOSE SHOWN IN TABLE, USE REINFORCEMENT AND SPACING FOR NEXT GREATER SIZE SPAN.MARK NECESSARY CHANGES IN BAR LENGTH AND QUANTITIES.
- 7- EXPANSION JOINTS SHALL BE PROVIDED AT MAX.15m LENGTH IF NECESSARY.
- 8- ELASTIC ASPHALT BOARD WITH 10mm. THICKNESS AT THE JOINT OF CONCRETE SHALL BE PROVIDED.
- 9- DO NOT LAP BAR C & F AT SUPPORT OR WALLS & DO NOT LAP BAR D & E AT MID SPAN
- 10- C.J MEANS CONSTRUCTION JOINT
- 11- MAXIMUM DESIGN BEARING PRESSURE IS 200 Kpa. WHICH SHELL BE VARIFIED AT SITE BEFORE EXECUTION.

CLIENT:-



EXECUTING AGENCY:-

WORKS AND SERVICES DEPARTMENT
GOVERNMENT OF SINDH

PROJECT:-

LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD
ASSISTANCE PROJECT (EFAP)

DESIGN CONSULTANT



PROJECT ROAD:-

DISTRICT : JAMSHORO - JM-03
REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI
CHINNI ROAD

TITLE:-

RCC BOX CULVERT
REINFORCEMENT DETAILS OF BOX CULVERT

ED.NO.

DATE

DESCRIPTION

DRAWN:

F.A.S

DESIGNED:

R.I / M.A

CHECKED:

S.A

DATE:

JUNE 2023

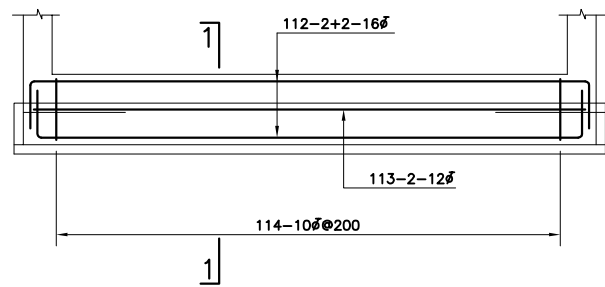
DRAWING NO.

2053-STR-JM03-BC-03

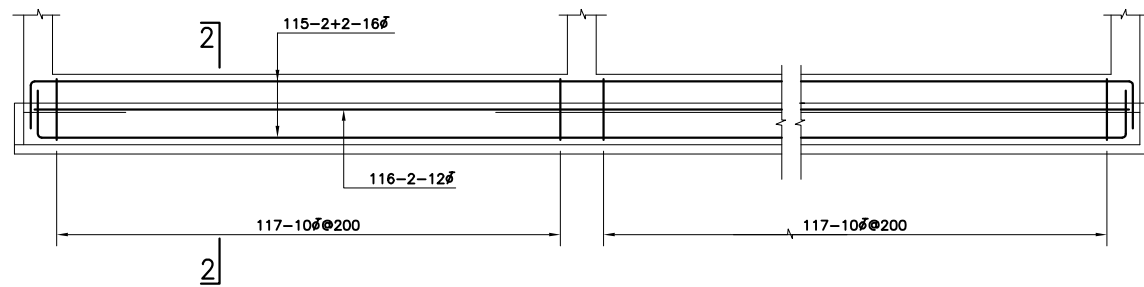
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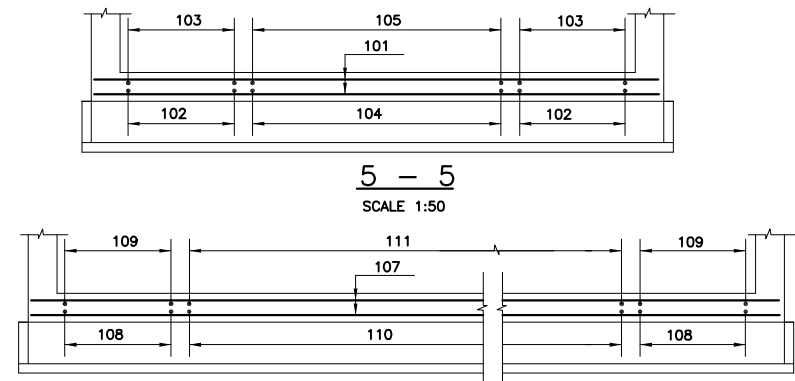
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ELEV. OF APRON BEAM (SINGLE CELL)
SCALE 1:50

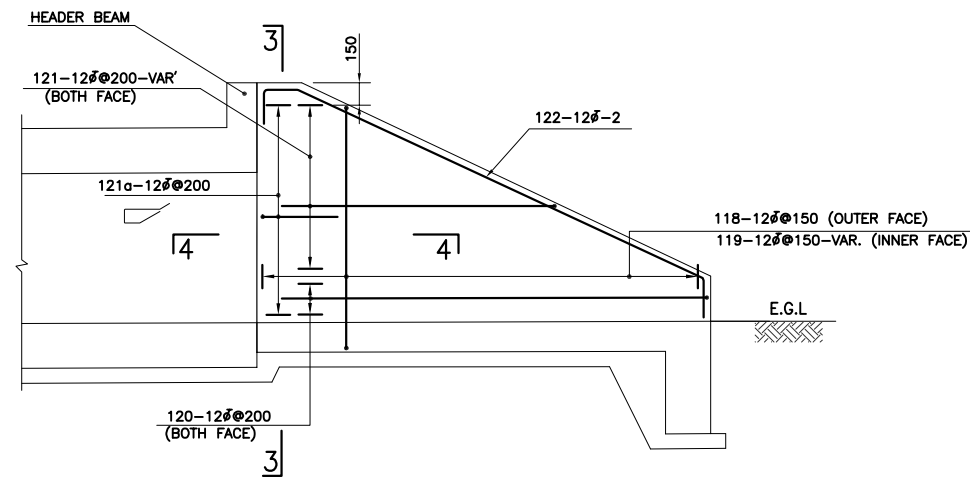


ELEV. OF APRON BEAM (MULTI CELL)
SCALE 1:50

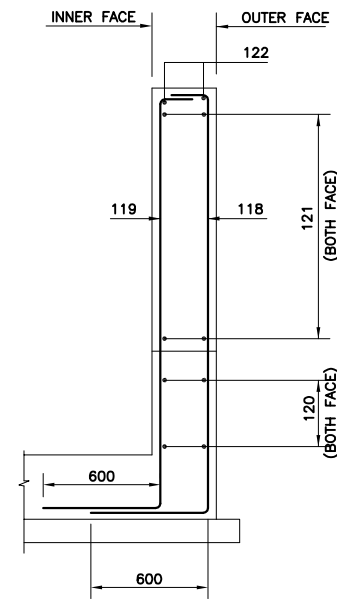


5 - 5
SCALE 1:50

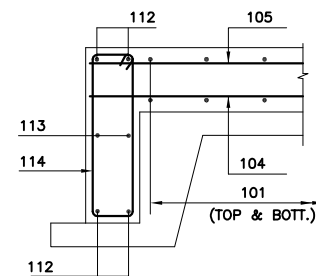
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SCALE 1:50



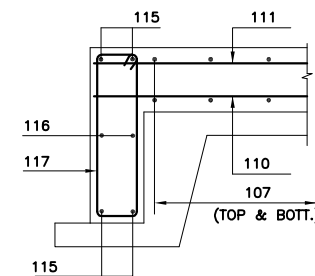
ELEVATION OF WING WALL
SCALE 1:25 (4NOS.)



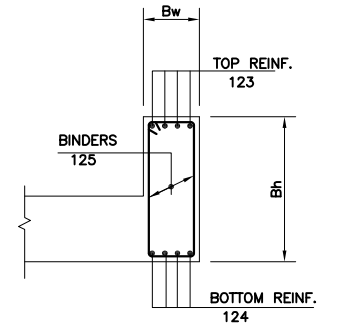
3 - 3
SCALE 1:20



1 - 1
SCALE 1:20



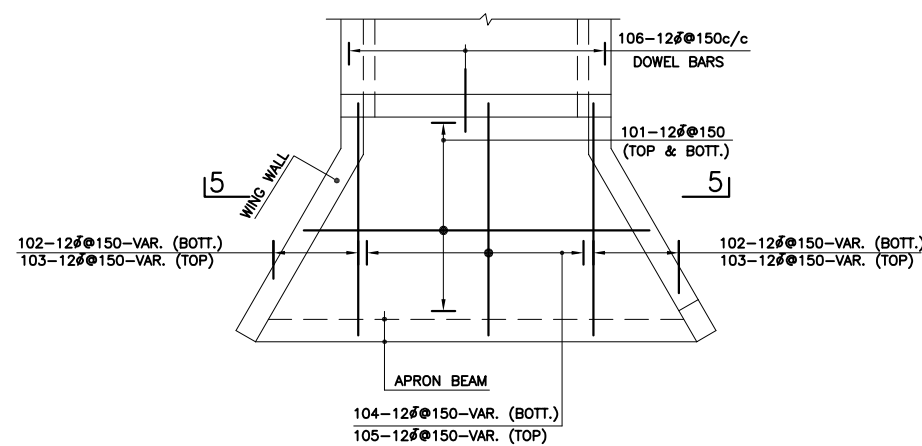
2 - 2
SCALE 1:20



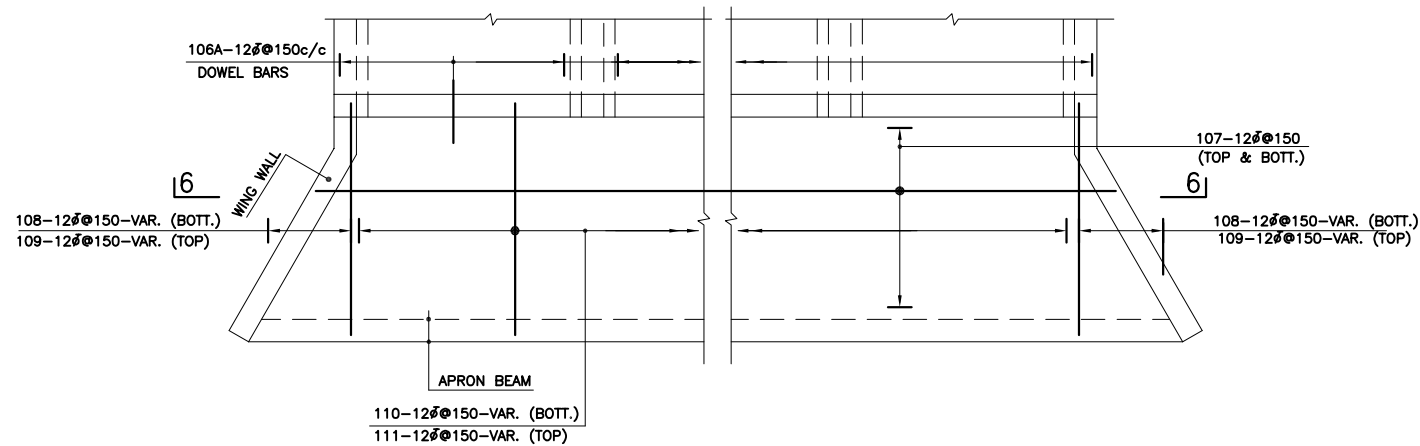
HEADER BEAM
SCALE 1:20

SCHEDULE OF HEADER BEAM

BEAM ID	MAX. BEAM LENGTH 'L'	BEAM SIZE		REINFORCEMENT		
		Bw	Bh	TOP (123)	BOTTOM (124)	BINDERS (125)
B1	2000	250	600	3-16φ	3-16φ	10φ@150
B2	3000	300	600	4-16φ	4-16φ	10φ@150
B3	4000	300	900	6-16φ	6-16φ	10φ@150







TYP. PLAN OF APRON SLAB (SINGLE CELL)
SCALE 1:50 (2NOS.)



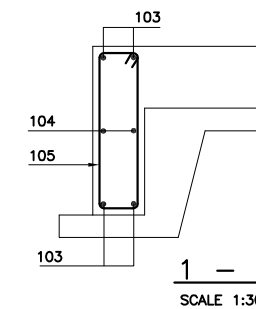
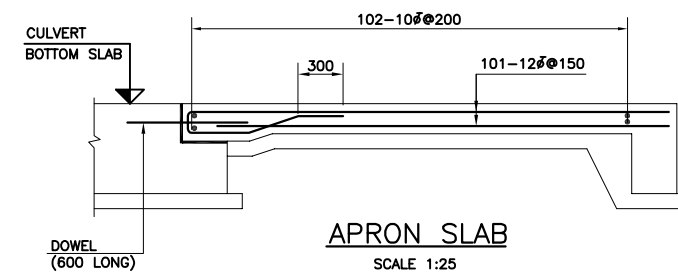
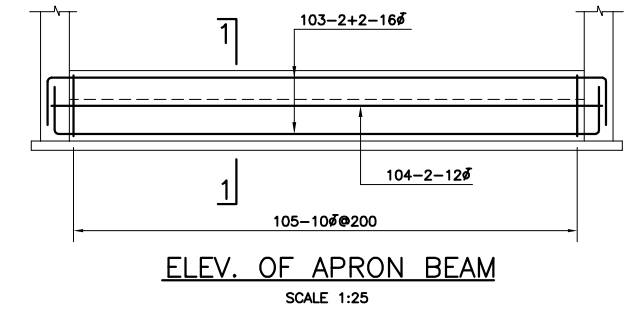
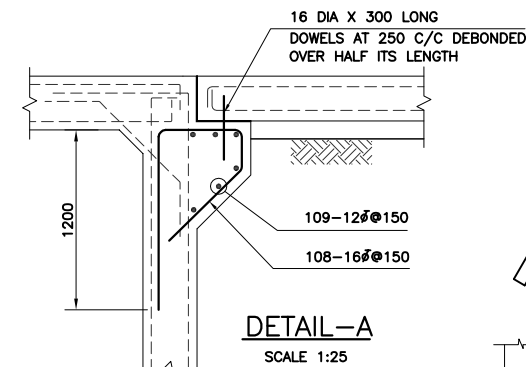
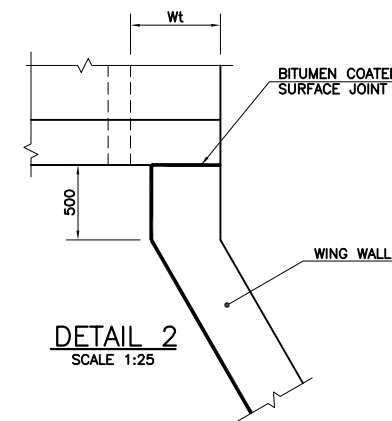
TYP. PLAN OF APRON SLAB (MULTI CELL)
SCALE 1:50 (2NOS.)

NOTES:-

- 1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH
DWG. NO. 2053-STR-JM03-BC-01, 02 & 03.

CLIENT:- <div>Asian Development Bank</div> EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- DISTRICT : JAMSHORO - JM-03 REHABILITATION OF ROAD FROM MNV DRAIN TO FP BUND JOHI CHINNI ROAD	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-JM03-BC-04
			TITLE:- RCC BOX CULVERT REINFORCEMENT DETAILS OF APRON SLAB & WING WALLS (FOR CULVERT HEIGHT ≤ 2m)				DESIGNED : R.I / M.A	Scale:- 1:100
							CHECKED : S.A	Edition.
							DATE: JUNE 2023	

S.NO.	H	F1	F2	F3	Wt1	Ft1	BAR 'A'	BAR 'B'	BAR 'C'	BAR 'D'
1	1500	1200	200	750	250	250	12 ϕ 200	12 ϕ 200	12 ϕ 200	12 ϕ 200
2	2500	1800	300	1250	250	250	16 ϕ 200	12 ϕ 200	12 ϕ 200	16 ϕ 200
3	3000	2000	300	1400	300	300	16 ϕ 200	12 ϕ 200	12 ϕ 200	16 ϕ 200
4	4000	3000	700	1950	350	350	16 ϕ 125	12 ϕ 200	16 ϕ 200	16 ϕ 125
5	4500	3200	850	2000	350	350	16 ϕ 100	12 ϕ 200	16 ϕ 200	16 ϕ 100



1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH
DWG. NO. 2053-STR-JM03-BC-01.

