



**WORKS AND SERVICES DEPARTMENT
GOVERNMENT OF SINDH**



Asian Development Bank

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

PACKAGE No. 1

TH – 1

**RECONDITIONING OF ROAD FROM MAKLI TO
GHULAMULLAH**

(Length: 15.3 kms and Width: 5.5 m)



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

JULY - 2023

TENDER DRAWING

GENERAL DRAWINGS

L I S T O F D R A W I N G S





GENERAL DRAWINGS

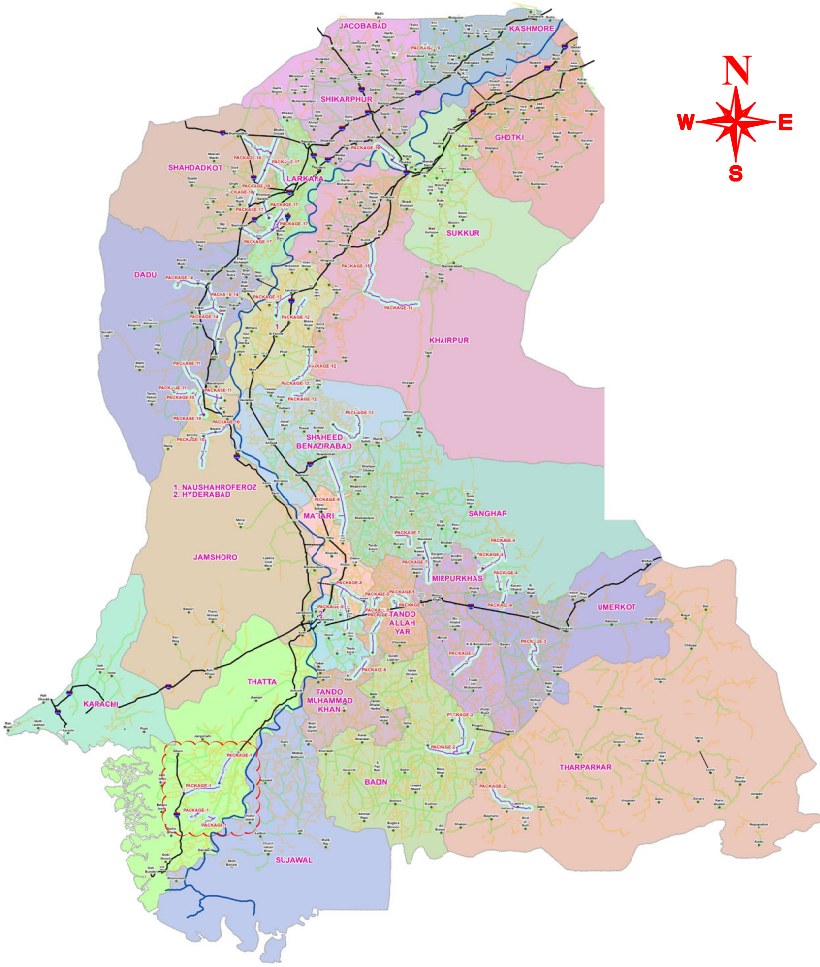
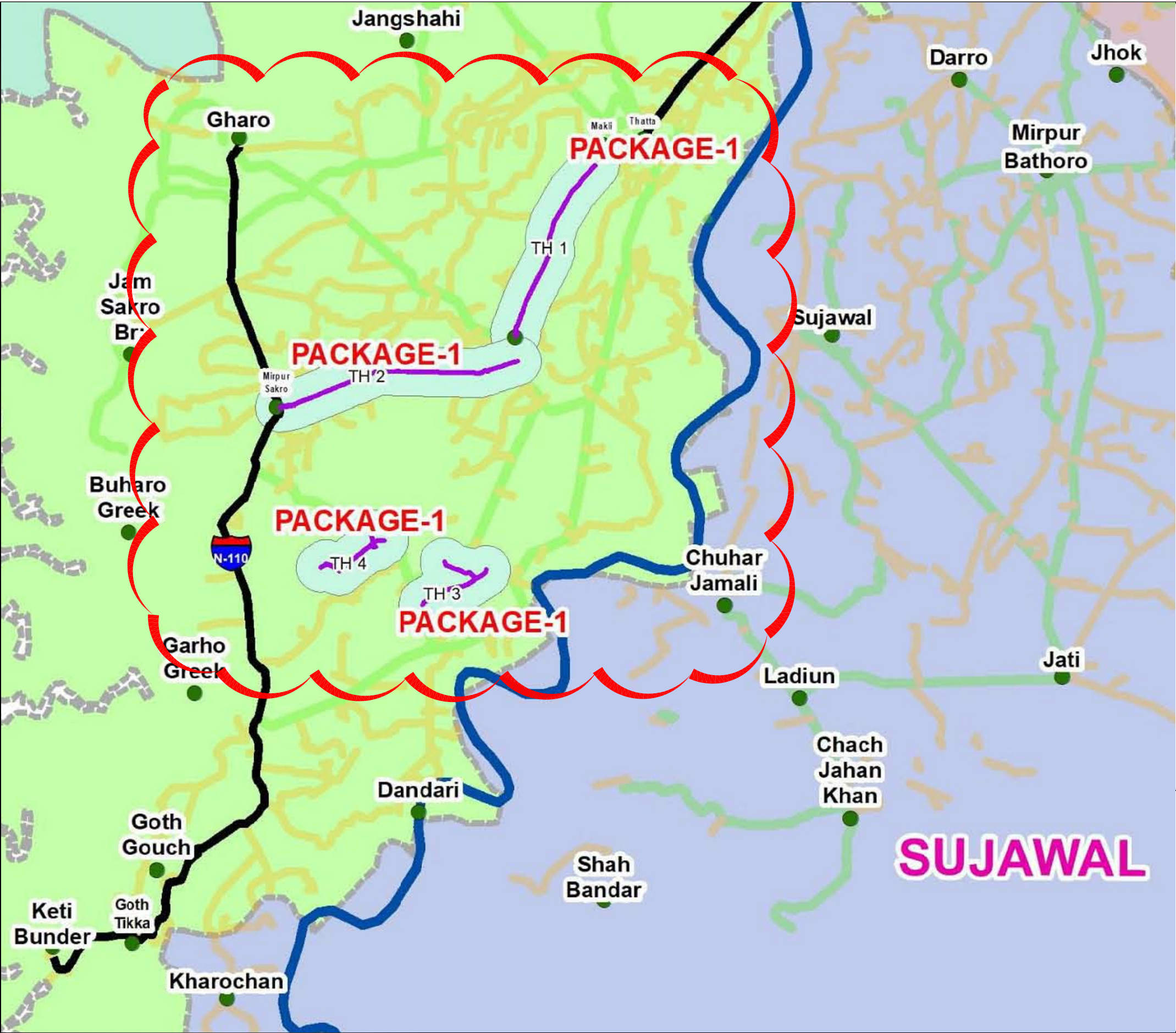
<u>DWG. NO.</u>	<u>TITLE</u>
TH-1-GEN-01	LIST OF DRAWINGS
TH-1-GEN-02	LOCATION PLAN
TH-1-GEN-03	GENERAL NOTES
TH-1-GEN-04	SYMBOLS AND ABBREVIATIONS
TH-1-GEN-05	TYPICAL ROAD SIGNS (SHEET 1 OF 3)
TH-1-GEN-05A	TYPICAL ROAD SIGNS (SHEET 2 OF 3)
TH-1-GEN-05B	TYPICAL ROAD SIGNS (SHEET 3 OF 3)
TH-1-GEN-06	TYPICAL SIGN PLACING AND FOUNDATION DETAILS
TH-1-GEN-07	TYPICAL PAVEMENT MARKING (SHEET 1 OF 3)
TH-1-GEN-07A	TYPICAL PAVEMENT MARKING (SHEET 2 OF 3)
TH-1-GEN-07B	DETAILS OF PAVEMNT MARKING (SHEET 3 OF 3)
TH-1-GEN-08	DETAIL OF MERGING/DIVERGING AND ROAD STUDS
TH-1	TYPICAL CROSS SECTION RD. 6+000 TO END REHABILITATION (5.5m)
TH-1A	TYPICAL CROSS SECTION RD. 0+000 TO 6+000 OVERLAY (5.5m)
TH-1B	TYPICAL CROSS SECTION NEW PAVEMENT SECTION (WHEREVER APPLICABLE)





PLAN AND PROFILE DRAWINGS

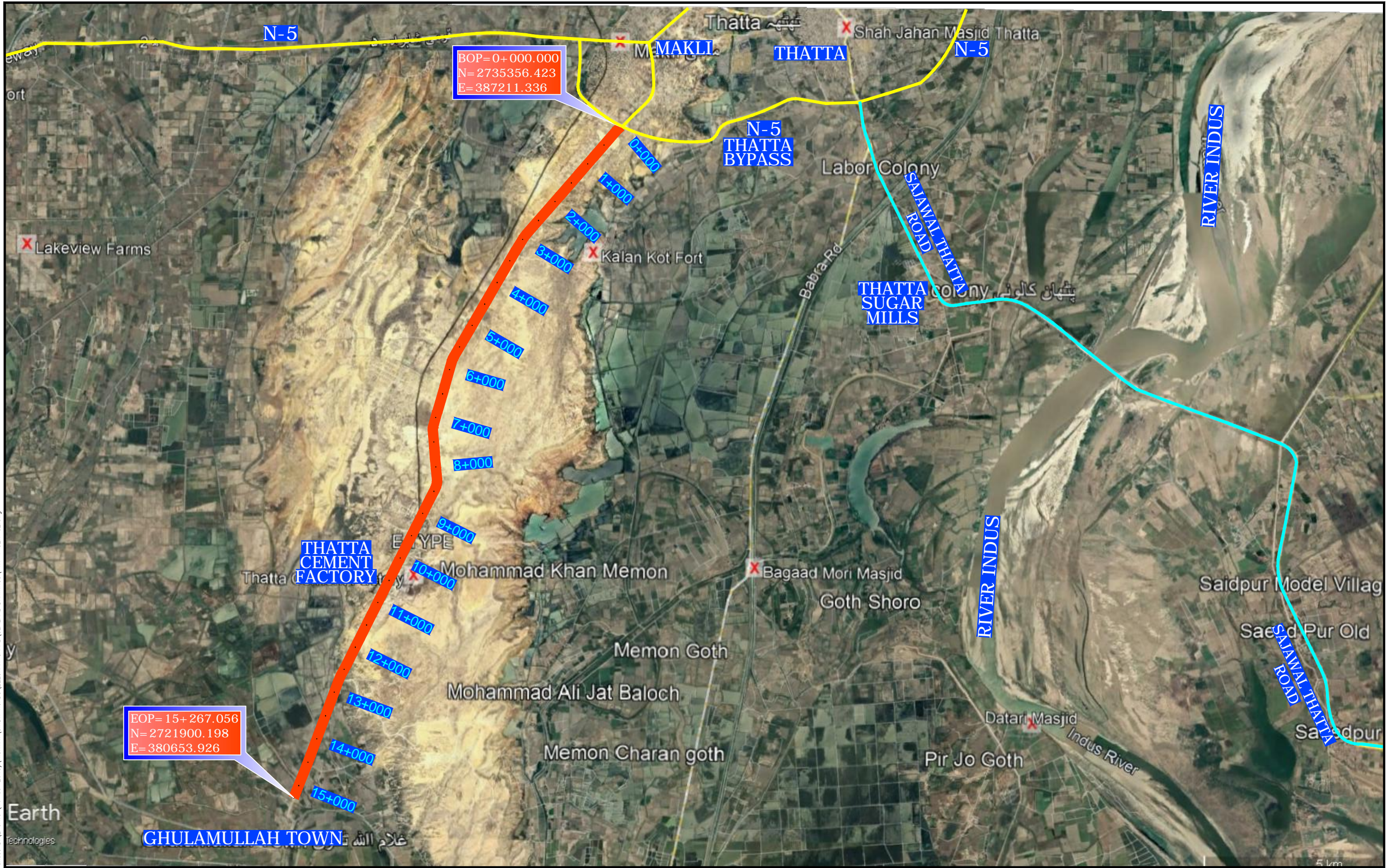
<u>DWG. NO.</u>	<u>TITLE</u>
TH-1-PP-01	PLAN AND PROFILE (RD. 0+000 TO RD. 1+000)
TH-1-PP-02	PLAN AND PROFILE (RD. 1+000 TO RD. 2+000)
TH-1-PP-03	PLAN AND PROFILE (RD. 2+000 TO RD. 3+000)
TH-1-PP-04	PLAN AND PROFILE (RD. 3+000 TO RD. 4+000)
TH-1-PP-05	PLAN AND PROFILE (RD. 4+000 TO RD. 5+000)
TH-1-PP-06	PLAN AND PROFILE (RD. 5+000 TO RD. 6+000)
TH-1-PP-07	PLAN AND PROFILE (RD. 6+000 TO RD. 7+000)
TH-1-PP-08	PLAN AND PROFILE (RD. 7+000 TO RD. 8+000)
TH-1-PP-09	PLAN AND PROFILE (RD. 8+000 TO RD. 9+000)
TH-1-PP-10	PLAN AND PROFILE (RD. 9+000 TO RD. 10+000)
TH-1-PP-11	PLAN AND PROFILE (RD. 10+000 TO RD. 11+000)
TH-1-PP-12	PLAN AND PROFILE (RD. 11+000 TO RD. 12+000)
TH-1-PP-13	PLAN AND PROFILE (RD. 12+000 TO RD. 13+000)
TH-1-PP-14	PLAN AND PROFILE (RD. 13+000 TO RD. 14+150)
TH-1-PP-15	PLAN AND PROFILE (RD. 14+1500 TO RD. 15+267.056)





NOTE:
GENERAL DRAWINGS ARE APPLICABLE FOR ALL ROADS INCLUDED IN THIS PACKAGE.

CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-01
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- LIST OF DRAWINGS				CHECKED: NAVEED HASSAN	Scale:- 1:25 (A1) 1:50 (A3)
							DATE: JUNE, 2023	Edition. 0



CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL); EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- PACKAGE - 1 (TH-1, TH-2, TH-3 & TH4)	ED.NO.	DATE	DESCRIPTION	DRAWN: M. NOMAN SIDDIQUI	DRAWING NO.
							DESIGNED: NAVEED HASAN	Scale:- N.T.S.
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- KEY PLAN				CHECKED: BUX ALI ABRO	Edition. 0
							DATE: JULY, 2023	







CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-02
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- LOCATION PLAN				CHECKED: NAVEED HASSAN	Scale:- 1:35000 (A1) 1:70000 (A3)
							DATE: JUNE, 2023	Edition. 0

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. GEOMETRIC DESIGN CRITERIA OF THE PROJECT IS BASED ON "CLIENT INSTRUCTIONS WHICH IS NOT MEETING CRITERIA MENTIONED IN REQUEST FOR PROPOSAL (RFP).
3. ROADWAY PLANS (SCALE 1:1000 FOR A1-SHEET/1:2000 APPROX. FOR A3 SHEET) HAVE BEEN PREPARED FROM THE FIELD SURVEY (CARRIED OUT IN YEAR NOVEMBER-2017) DATA BASED UPON COORDINATES AND LEVELS CONFORM TO SOP PATTERN.
4. CROSS SECTIONS OF THE EXISTING AND NEW ROAD HAVE BEEN TAKEN AT INTERVALS OF 25M. OR LESS IF REQUIRED.
5. PAVEMENT DESIGN HAS BEEN PREPARED BY CONSULTANTS FOR EXISTING ROAD AND NEW ROAD BASED ON CBR VALUES AND TRAFFIC LOADS AS PER RECOMMENDATIONS UNDER TRL & AASHTO.
6. TYPICAL CROSS SECTION HAS BEEN PREPARED FOR EACH PAVEMENT DESIGN/STRATEGY.
7. LOCATION OF ALL EXISTING STRUCTURES HAVE BEEN MARKED ON ROADWAY PLAN DRAWINGS.
8. QUANTITIES HAVE BEEN CALCULATED FOR EARTH WORK AND OTHER WORK'S ITEMS FOR ESTIMATION PURPOSES.
9. BASED ON ROAD SAFETY AUDITS IN FIELD, FOLLOWING DETAILS WITH TYPICAL DESIGNED DRAWINGS HAVE BEEN PROVIDED ACCORDING TO SITE REQUIREMENTS.
 - TRAFFIC SIGNS.
 - PAVEMENT MARKING DETAILS.
 - CROSS SECTION OF PLAIN AND MOUNTAINOUS AREA, DRAIN IN DETAIL.
10. ROADWAY PLAN DRAWINGS (1:2000) SHOULD BE READ IN CONJUNCTION WITH ROAD FURNITURE DRAWINGS (TYPICAL), STRUCTURES AND DRAINAGE DRAWINGS, ETC.
11. ACTUAL QUANTUM OF REHABILITATION WORK FOR EXISTING STRUCTURES SHALL BE DETERMINED BY THE RESIDENT ENGINEER AT THE TIME OF EXECUTION FOR EACH STRUCTURE.
12. EXISTING LEVELS, DIMENSIONS AND TOPOGRAPHY REPRESENT CONDITIONS AT THE TIME OF SURVEY DONE IN NOVEMBER-2017.
13. EACH DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, WHERE NECESSARY.
14. NOTES GIVEN ON DRAWINGS ADJACENT TO A SECTION PERTAIN TO THE PARTICULAR DETAIL.
15. THE SOAKED C.B.R OF EMBANKMENT MATERIAL SHALL NOT BE LESS THAN 10% AT MODIFIED AASHTO DENSITY IN ACCORDANCE WITH COMPACTION ZONE OF EMBANKMENT AS SPECIFIED.
16. THE SUBGRADE MATERIAL/WHERE USED, SHALL HAVE A MINIMUM C.B.R. (SOAKED) OF 20% AT 95% M.D.D. AASHTO T-180.
17. BEFORE STARTING PAVEMENT MARKING, CONTRACTOR SHALL SUBMIT WORKING DETAILS SHOWING EXACT LOCATION, TYPE AND SIZE OF MARKING FOR APPROVAL OF ENGINEER.
18. FOR AVOIDING ABRUPT CHANGE IN PROFILE AT BOP AND EOP OVERLAY IS TO BE REDUCED GRADUALLY BEFORE BOP AND AFTER EOP TO MATCH THE ADJOINING PROFILE IN TRANSITION WITHIN 30 TO 40 M. LENGTH WITHOUT FORMING ANY KINK AS SHOWN ON DRAWINGS OR AS DIRECTED BY THE RESIDENT ENGINEER. FOR ALL SECTIONS AND STRETCHES.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVISION OF DIVERSIONS FOR TRAFFIC AND ITS MAINTENANCE, SIGNS AND ALL SAFETY MEASURES DURING THE CONSTRUCTION AT NO ADDITIONAL COST TO THE CLIENT.
20. THE EMBANKMENT SLOPES SHALL BE TRIMMED AND DRESSED TO DESIGN LINE AS SHOWN ON DRAWINGS.
21. ANY DAMAGE DONE TO THE UTILITIES DURING EXCAVATION/EXECUTION OF WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST TO THE CLIENT.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIVERSIONS OF WATER AT STRUCTURES LOCATIONS INCLUDING DYKES AND TRENCHES ETC. WITHOUT ANY ADDITIONAL COST.
23. THE ROAD CONSTRUCTION SHALL BE PLANNED IN A MANNER THAT A MAXIMUM STRETCH OF 3-4 Km SHALL BE TAKEN IN HAND FOR CONSTRUCTION AT A TIME, AND TRAFFIC IS PROVIDED WITH A PROPER AND WELL MAINTAINED DIVERSION.
24. THE EXISTING LOCALIZED HUMPS SHALL REQUIRED REMOVAL AND TREATMENT AS PER THE SITE CONDITIONS FOR ACCOMMODATING FULL PAVEMENT THICKNESSES AS DIRECTED BY THE ENGINEER.
25. LOCATION OF UNDER GROUND CABLES/UTILITIES SHOWN ON PLANS ARE APPROXIMATE. EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AT NO EXTRA COST.
26. SUBGRADE IN CUT:
 - i) IN CUT AREAS (COMMON SOILS) SUBGRADE SOILS (TOP 300mm) MUST BE EXCAVATED, RELAID AND COMPACTED IN LAYERS (EACH 150mm THICK) TO THE SPECIFIED DENSITY AND MUST MEET THE MATERIAL REQUIREMENT FOR CLASSIFICATION, PLASTICITY INDEX (PI) AND SOAKED CBR 25%. THE UNSUITABLE SOILS IF OBTAINED FROM EXCAVATION SHALL BE DISPOSED OFF AND REPLACED WITH SUITABLE SOILS MEETING THE REQUIREMENT OF SUB GRADE/COMPACTED FILL MATERIAL CBR \geq 25%.
 - ii) IN ROCK CUT THE EXCAVATION LIMIT LINE SHALL BE AT THE BOTTOM LEVEL OF SUBBASE COURSE.
 - iii) IN ROCK CUT AREAS (UNSUITABLE MATERIALS LIKE SHALE) THE EXCAVATION LIMIT LINE SHALL BE 300mm BELOW THE BOTTOM LEVEL OF SUBBASE COURSE. THIS DEPTH OF 300mm SHALL BE REPLACED WITH SUITABLE SOILS MEETING THE REQUIREMENT OF SUB GRADE/COMPACTED FILL MATERIAL CBR \geq 25%.
27. PRECAST CONCRETE/METAL GUARD RAIL IS TO BE PROVIDED WHERE FILL HEIGHT EXCEED 3.00M OR AS DIRECTED BY THE ENGINEER.

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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:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-03
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- GENERAL NOTES				CHECKED: NAVEED HASSAN	Scale:- N.T.S.
							DATE: JUNE, 2023	Edition. 0

SYMBOLS

EXISTING ROAD	
TRACK / PATH	
PROPOSD ROAD	
PROPOSD ALIGNMENT	
PROPOSD CULVERTS	
RIGHT OF WAY	
HIGH TENSION LINE	
LOW TENSION LINE	
ELECTRIC POLE, ELECTRIC WIRE	
TELEPHONE POLE, TELEPHONE WIRE	
FIBRE OPTIC CABLE	
PIPE LINE	
WATER COURSE	
BUILDING AND OTHER STRUCTURES	
MASJID	
HAND PUMP / TUBE WELL	
GPS CONTROL POINTS	
BENCH MARK	
LIGHT POLE-LP	

SYMBOLS

EXISTING BUND	
CANAL / WAH	
TREES	
GRAVE YARD	
POND	
RAILWAY LINE	
P.I. STATION	

ABBREVIATIONS

GENERAL

B.O.P.	BEGENING OF PROJECT
BM	BENCH MARK
CL	CENTRE LINE
CM	CUBIC METER
Cm	CENTIMETER
D.S.T.	DOUBLE SURFACE TREATMENT
DRG.	DRAWING
D/S	DOWN STREAM
E	EAST, EASTING, EXTERNAL DISTANCE
E.O.P.	END OF PROJECT
F.R.L.	FINISHED ROAD LEVEL
H.F.L.	HIGH FLOOD LEVEL
KM	KILOMETRE
LT.	LEFT
RT.	RIGHT
I.L	INVERT LEVEL

ABBREVIATIONS

GENERAL

M	METRE
MH	MAN HOLE
mm	MILLIMETRE
N	NORTH, NORTHING
N.G.L.	NATURAL GROUND LEVEL / EXISTING LEVEL
N.T.S.	NOT TO SCALE
RD.	REDUCED DISTANCE
RH.	RIGHT HAND CURVE
R.O.W.	RIGHT OF WAY
STA.	STATION
TR	TRAVERSE STATION
U/S	UP SREAM
WC	WATER COURSE

HORIZONTAL CURVE

P.I.#.	POINT OF INTERSECTION NUMBER
I	DEFLECTION ANGLE
R	RADIUS
T	TANGENT LENGTH
E	EXTERNAL ORIDINATE
L	LENGTH OF CURVE / ARC LENGTH
C	CHORD LENGTH
M	MIDDLE ORIDINATE
PC	POINT OF CURVATURE
PT	POINT OF TANGECY





VERTICAL CURVE

STA.	RD. AT VERTICAL POINT OF INTERSECTION
VPC.	VERTICAL POINT OF CURVATURE
VPT.	VERTICAL POINT OF TANGENCY
EL	ELEVATION AT VERTICAL POINT OF INTERSECTION
CURVE LEN	LENGTH OF VERTICAL CURVE
E	EXTERNAL DISTANCE
K	RATE OF VERTICAL CURVATURE / K FACTOR
F.R.L.	FINISHED ROAD LEVEL AT PROFILE GRADE
RD.	REDUCED DISTANCE

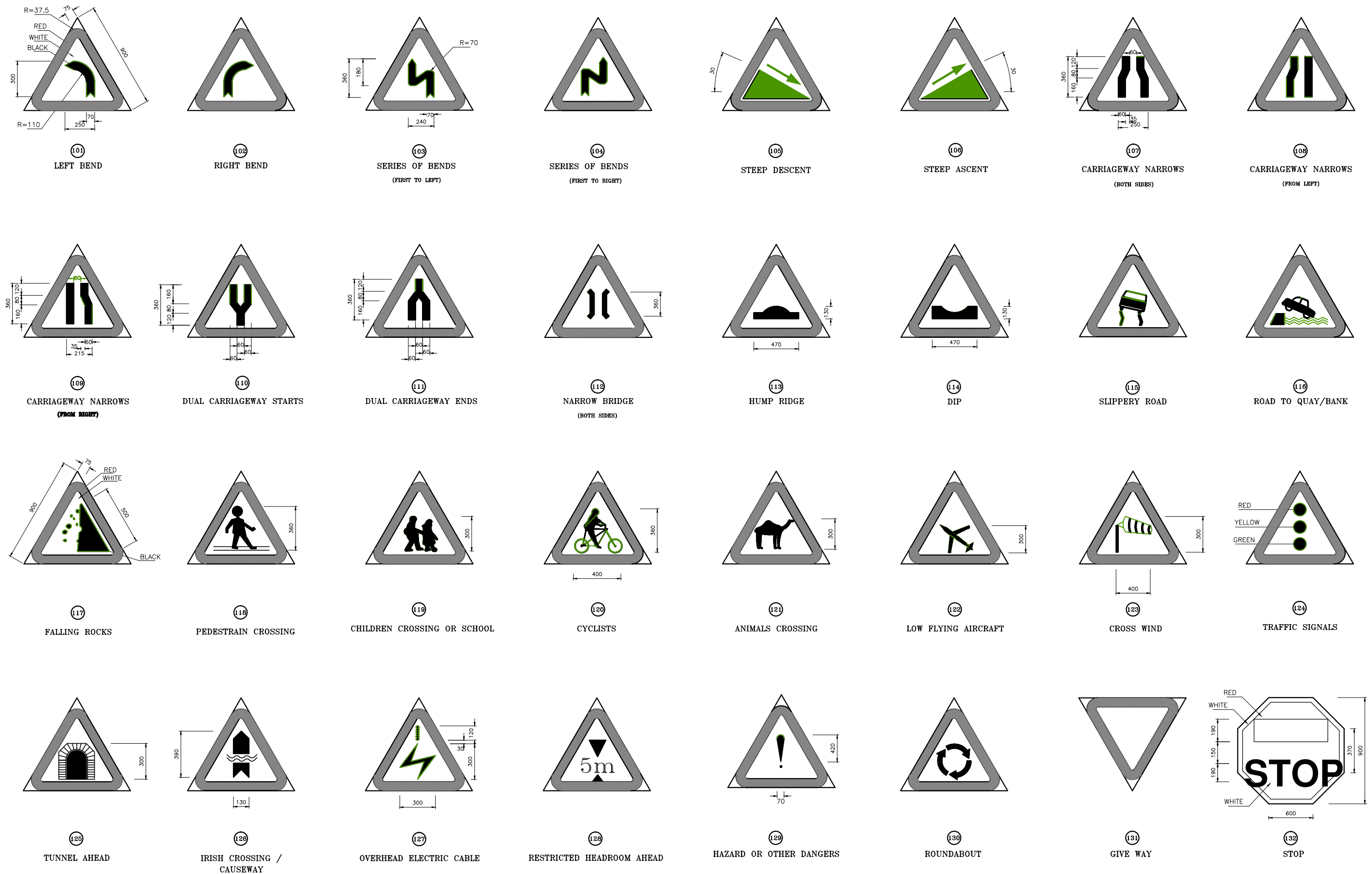
SUPERELEVATION





SUPERELEVATION.	%
SR	SUPERELEVATION RUN OFF LENGTH
TR	TANGENT RUNOUT LENGTH
TRAN.	TRANSITION
STRAIGHT.	NORMAL CROSS SLOPE

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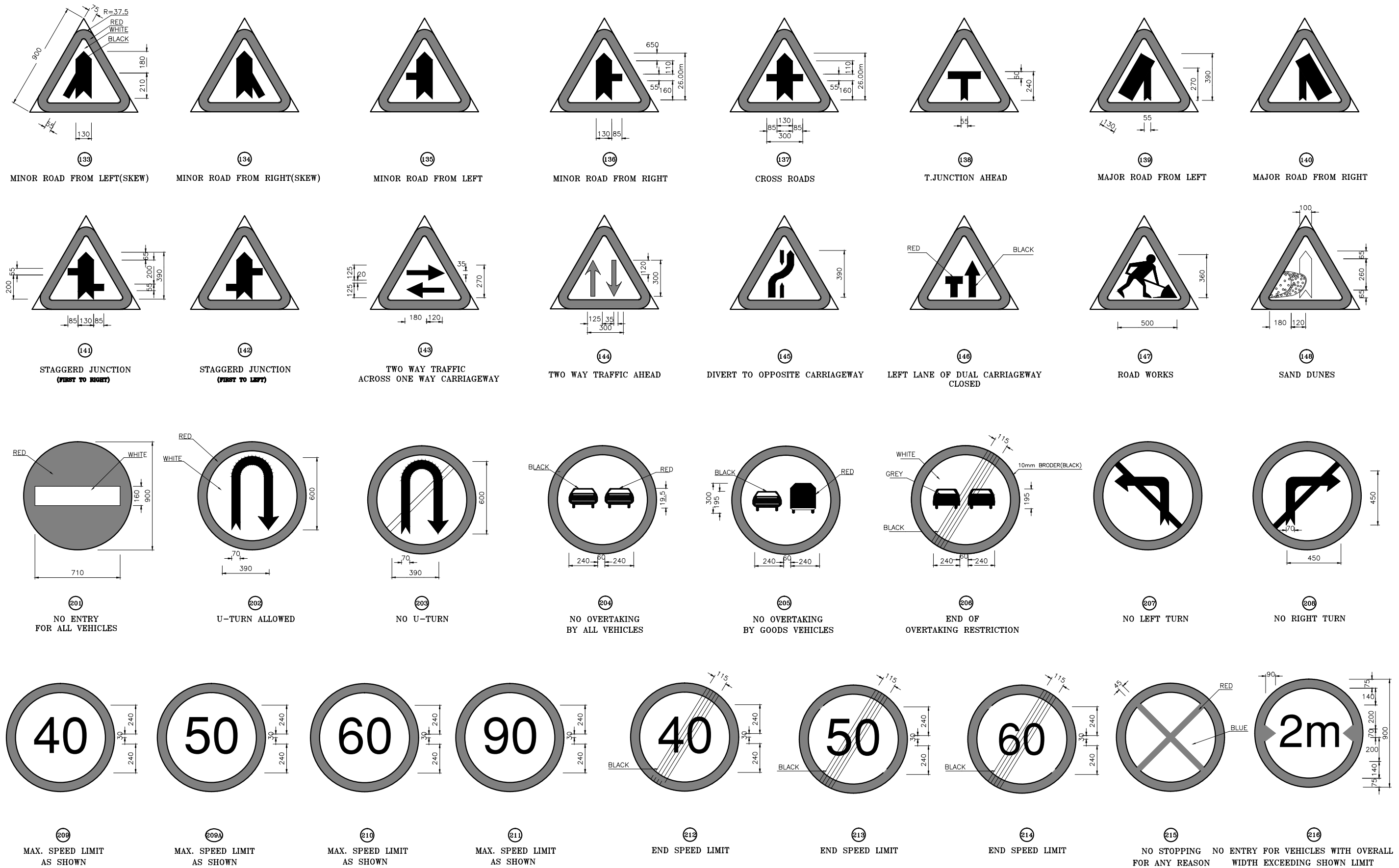
CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-04
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- SYMBOLS AND ABBREVIATIONS				DESIGNED: HINA ZEESHAN	Scale:- N.T.S.
							CHECKED: NAVEED HASSAN	Edition. 0
							DATE: JUNE, 2023	





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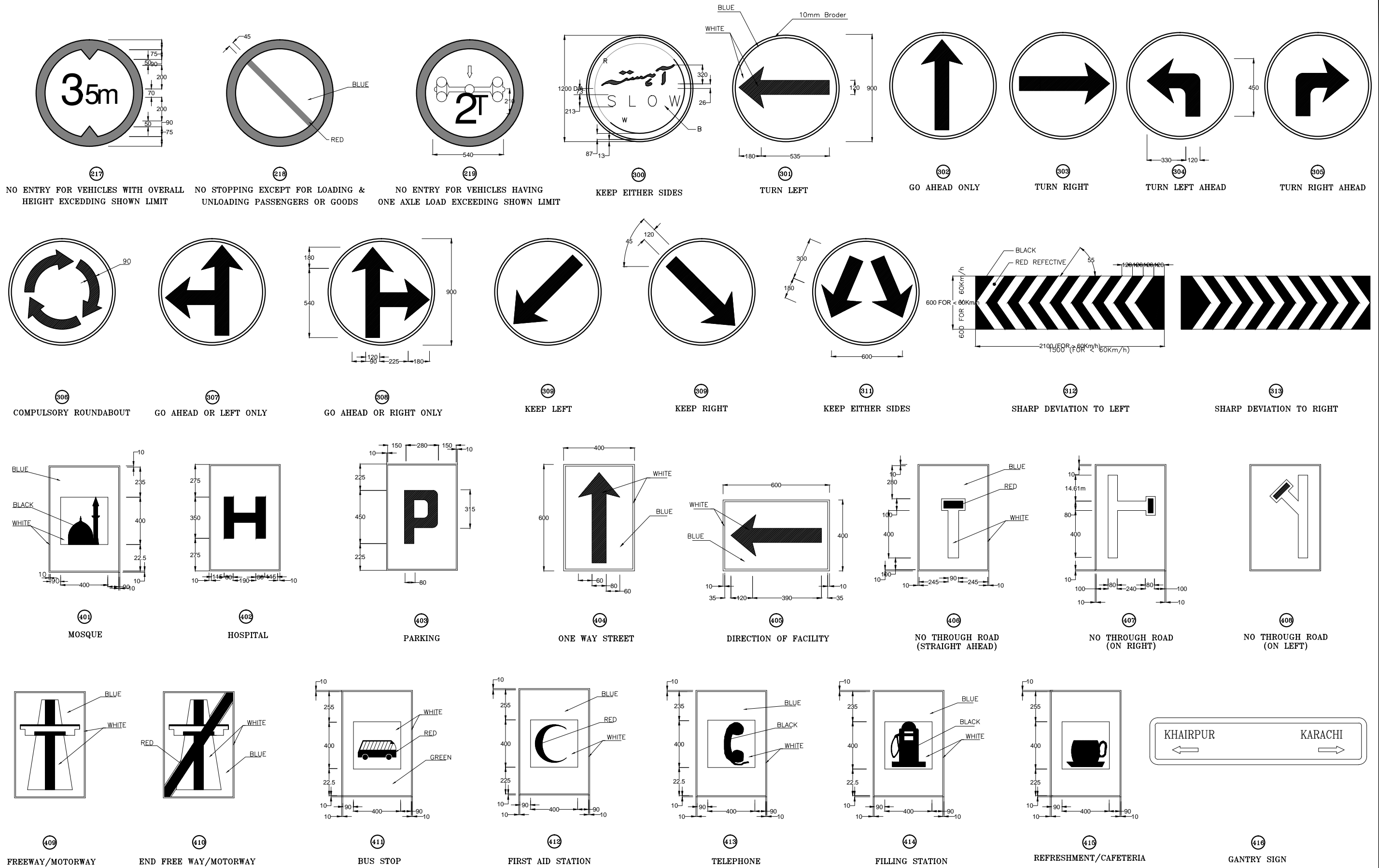
CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-05
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- TYPICAL ROAD SIGNS (SHEET 1 OF 3)				CHECKED: NAVEED HASSAN	Scale:- N.T.S.
							DATE: JUNE, 2023	Edition. 0





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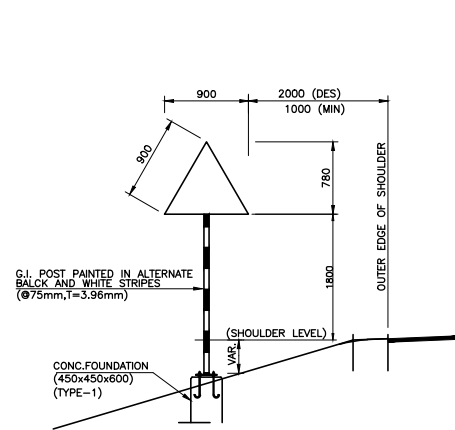
CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah TITLE:- TYPICAL ROAD SIGNS (SHEET 2 OF 3)	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-05A Scale:- N.T.S. Edition. 0
							DESIGNED: HINA ZEESHAN	
							CHECKED: NAVEED HASSAN	
							DATE: JUNE, 2023	

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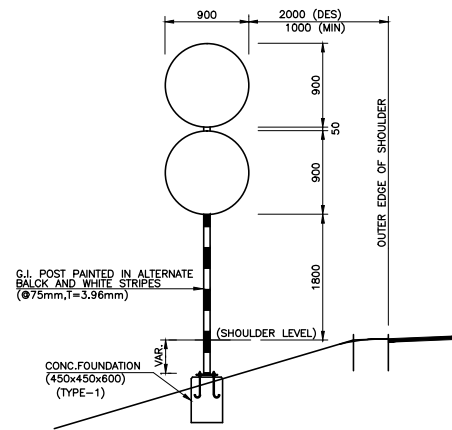


CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-05B
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- TYPICAL ROAD SIGNS (SHEET 3 OF 3)				CHECKED: NAVEED HASSAN	Scale:- N.T.S.
							DATE: JUNE, 2023	Edition. 0

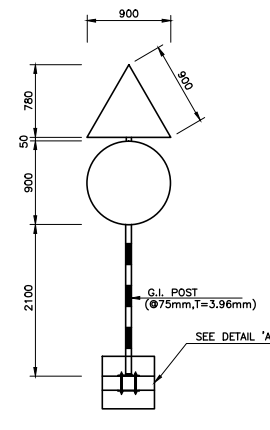
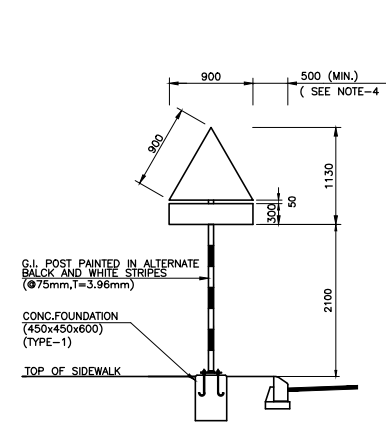
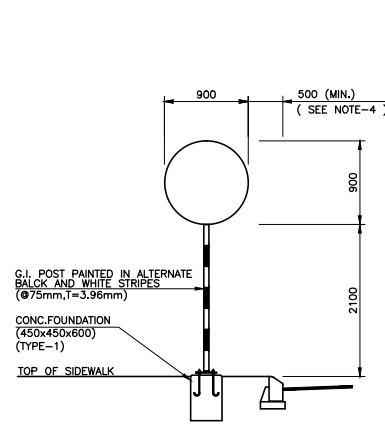
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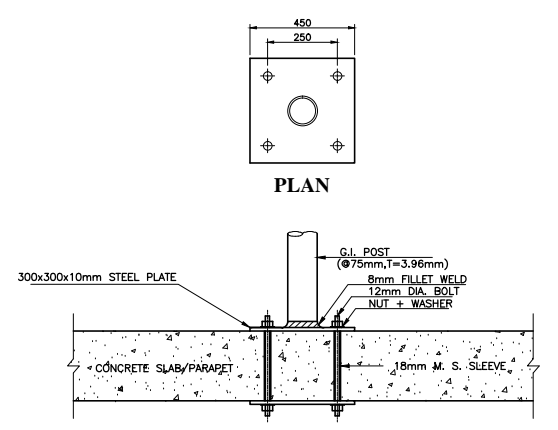
MOUNTED ALONG FILL SLOPE



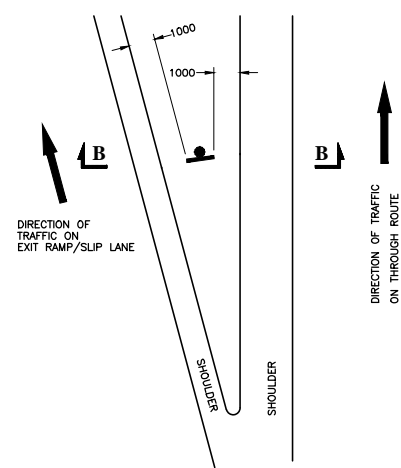
MOUNTED ALONG SIDEWALK OR ISLAND
TYPICAL PLACING DETAILS OF ROAD SIGNS



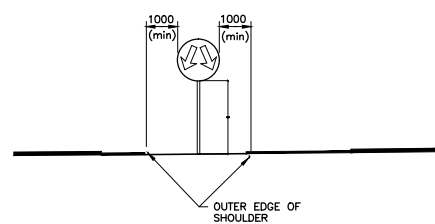
MOUNTED ON STRUCTURE



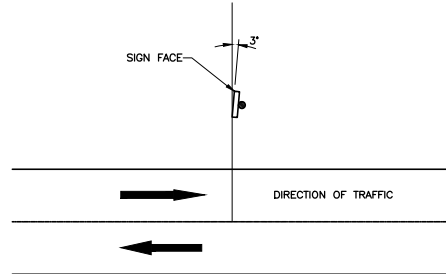
DETAIL 'A'



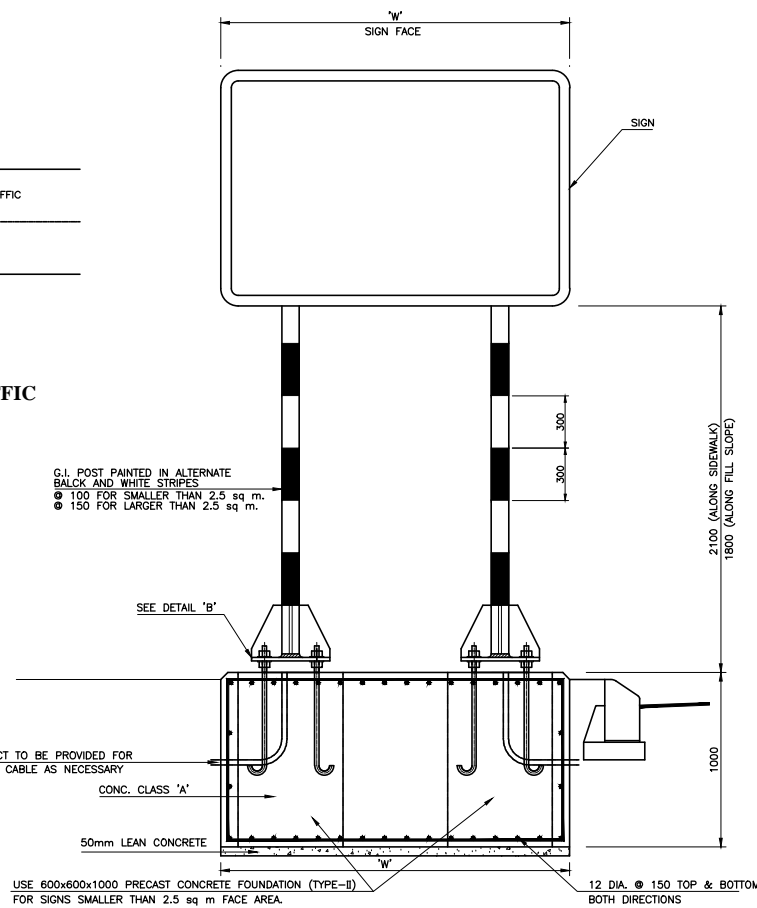
PLACING OF SIGN AT NOSE



SECTION B-B

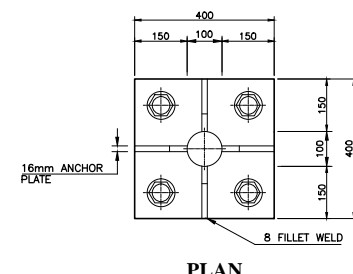


ORIENTATION OF SIGN IN PLAN
RELATED TO DIRECTION OF TRAFFIC

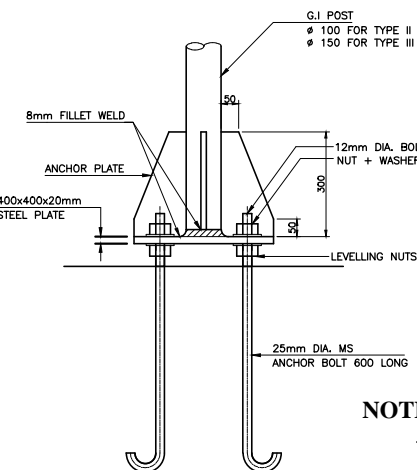


POST FOR LARGE SIGNS (> 1.5 Sq m FACE AREA)
(TYPE-II & III)

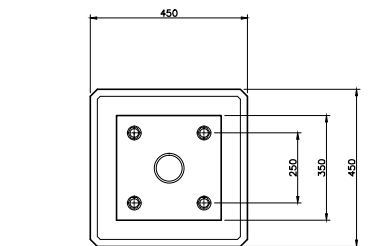
(SEE NOTE-2)



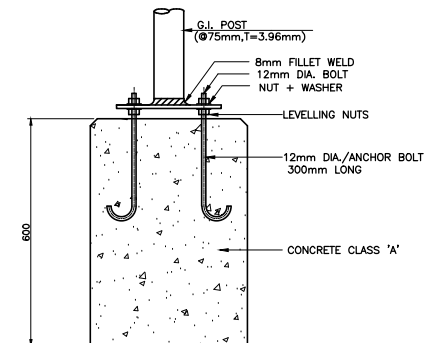
PLAN



DETAIL 'B'
(TYPE-II & III)







PLAN



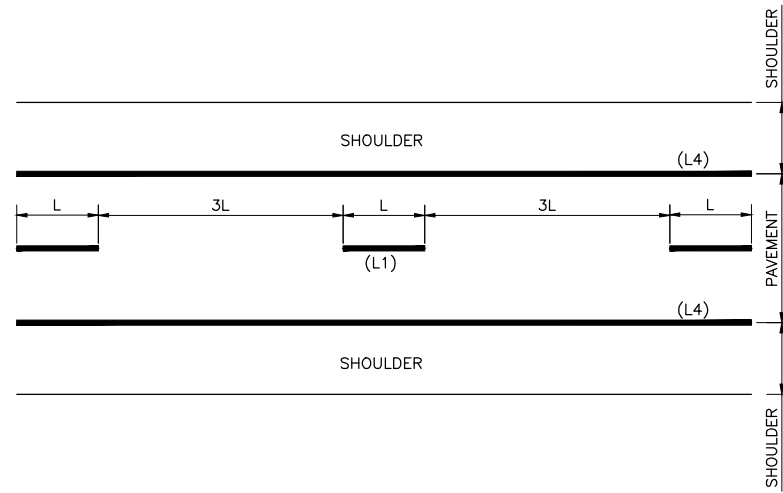
PRECAST FOUNDATION DETAIL
(TYPE-I)

NOTES :-

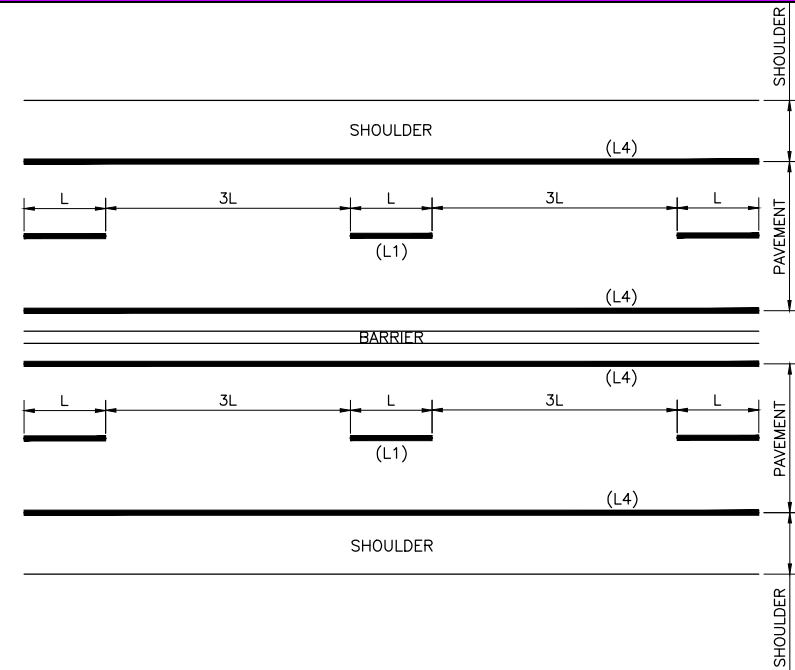
- 1-ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- 2-USE DIA. 75mm G. I. POST WITH 450x450x600 FOUNDATION (TYPE-I) FOR PROHIBITIVE, MANDATORY, WARNING AND SMALL INFORMATORY SIGNS. FOR LARGE SIGNS, USE 100mm DIA. POST WITH 600x600x1000mm CONCRETE POST FOUNDATION (TYPE-II) FOR SIGNS WITH FACE AREA LARGER THAN 2.5 Sq.M. USE 150mm DIA. POST WITH INSITU REINFORCED CONCRETE FOUNDATION (TYPE-III)
- 3-TWO SIGN PLATES MAX. JUL BE PLACED ON ONE POST ASSEMBLY.
- 4-A SIGN POST SHALL NOT BE MOUNTED IN THE MIDDLE OF SIDEWALK.
- 5-WIDTH OF CAST IN SITU CONCRETE FOUNDATION FOR LARGE SIGNS (TYPE-III) SHALL BE SAME AS THAT OF SIGN FACE, WHERE AS ITS BREADTH AND DEPTH SHALL BE 1.00m.
- 6-THE CONTRACTOR SHALL SUBMIT THE MOUNTING AND FASTENING DETAILS FOR THE ENGINEER'S APPROVAL.

CLIENT:-  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:- TH - 1 Reconditioning of road from Makli to Ghulamullah TITLE:- TYPICAL SIGN PLACING & FOUNDATION DETAILS	ED.NO. 	DATE 	DESCRIPTION 	DRAWN: N. SAQIB SIDDIQUI DESIGNED: HINA ZEESHAN CHECKED: NAVEED HASSAN DATE: JUNE, 2023	DRAWING NO. TH-1 GEN-06 Scale:- N.T.S. Edition. 0
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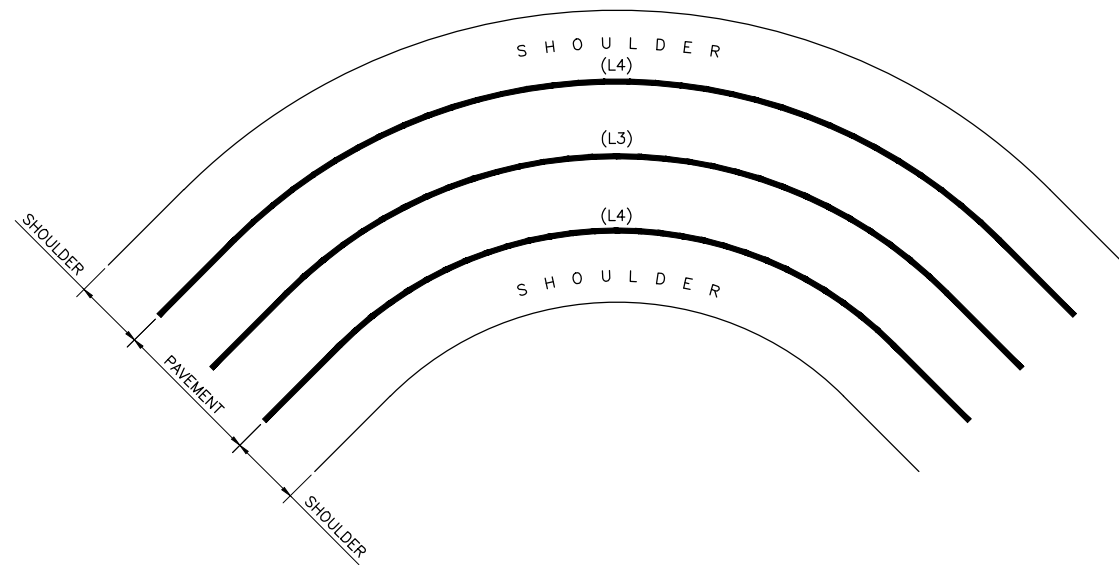
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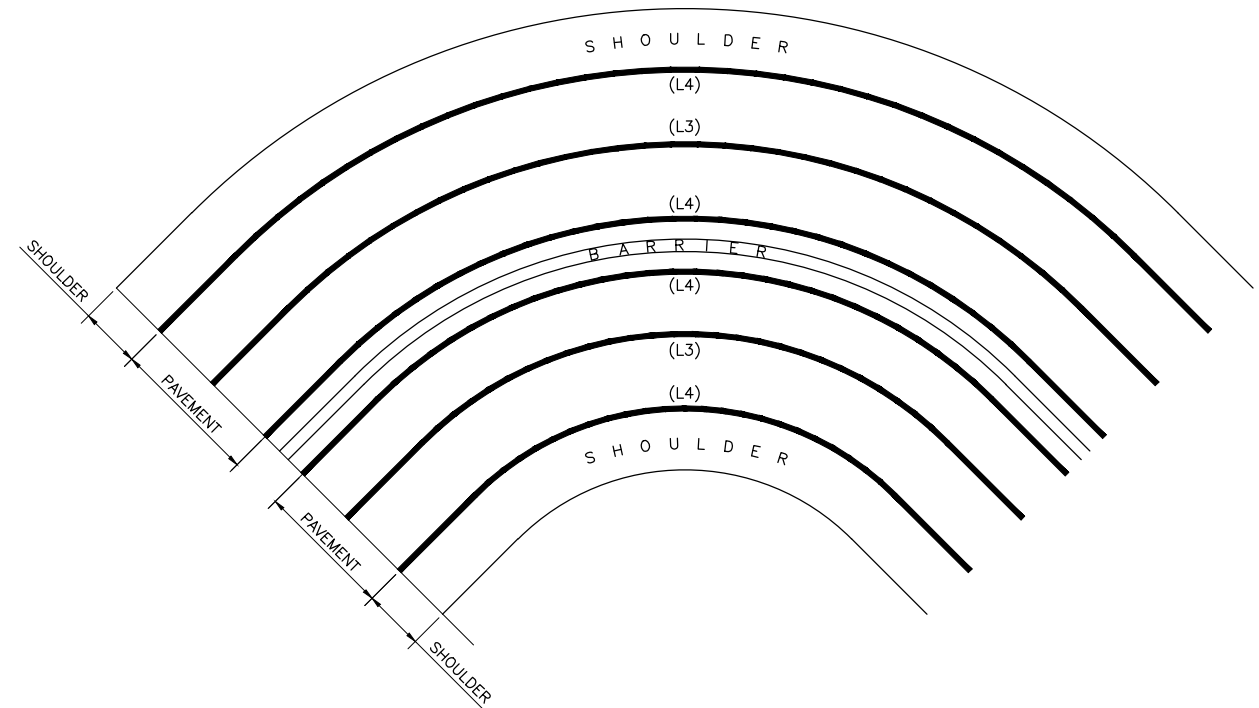
TYPICAL MARKING AT 2-LANE ROAD



TYPICAL MARKING AT 4-LANE ONE WAY ROAD





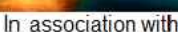

TYPICAL MARKING AT 2-LANE ROAD
ON HORIZONTAL CURVE

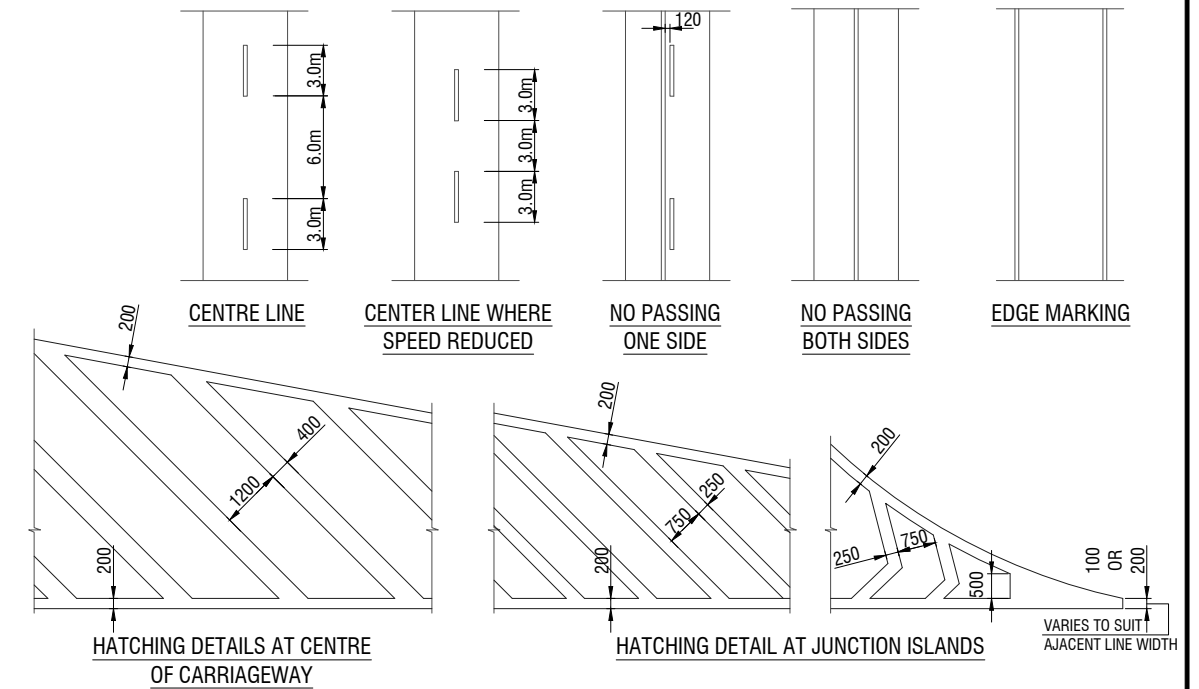
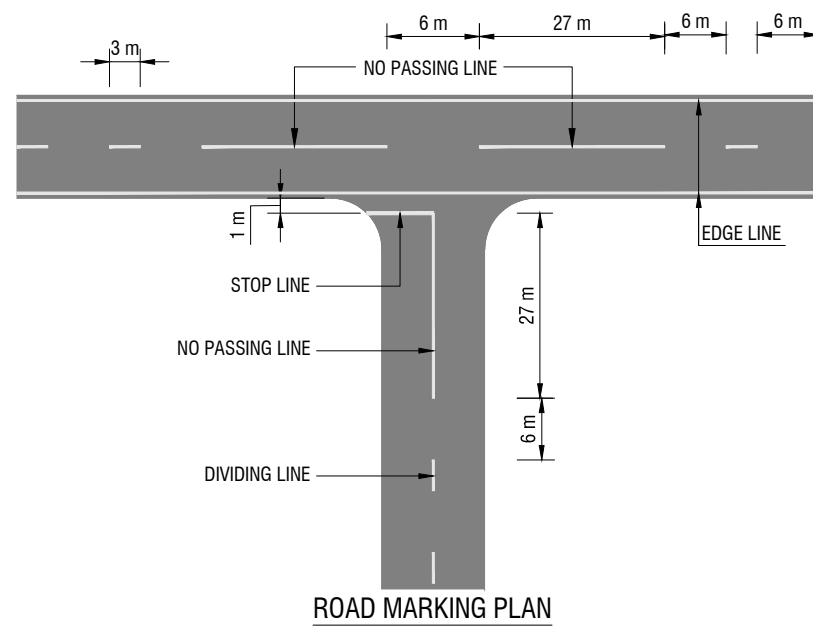
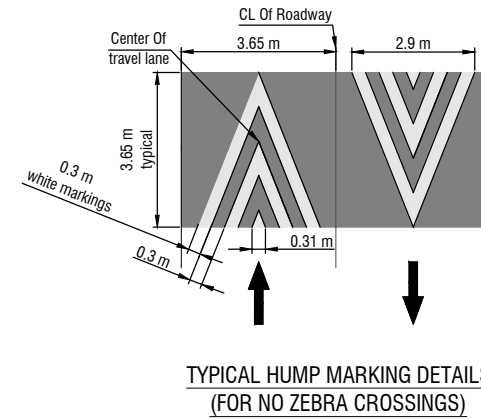
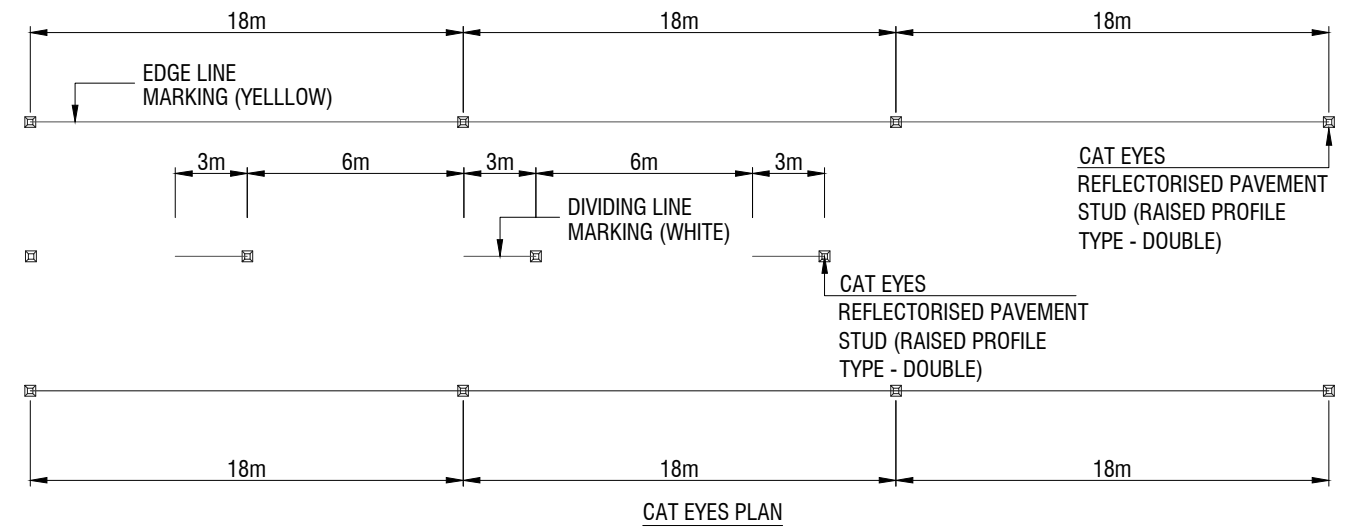


TYPICAL MARKING AT 4-LANE ONE WAY ROAD
ON HORIZONTAL CURVE





NOTES :-

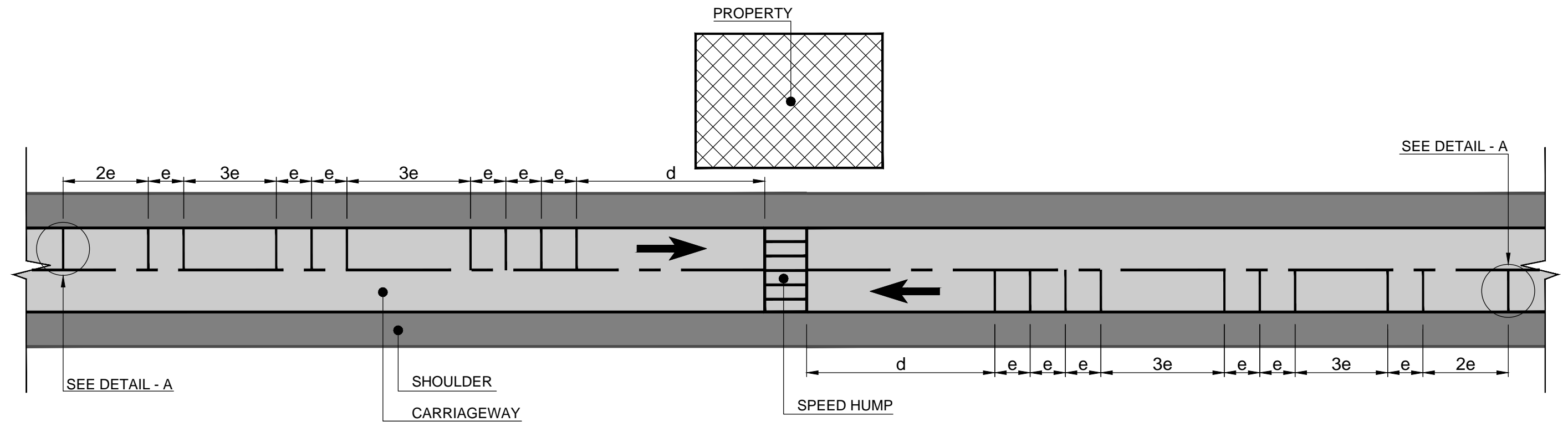
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. AT HORIZONTAL CURVES CENTER LINE OR LANE SEPARATION LINE (L1) BECOMES (L3) FROM START TO END OF CURVE.

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:- TH - 1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. TH-1 GEN-07
			TITLE:- TYPICAL PAVEMENT MARKING (SHEET 1 OF 3)					DESIGNED: HINA ZEESHAN
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>							CHECKED: NAVEED HASSAN	Edition. 0
							DATE: JUNE, 2023	

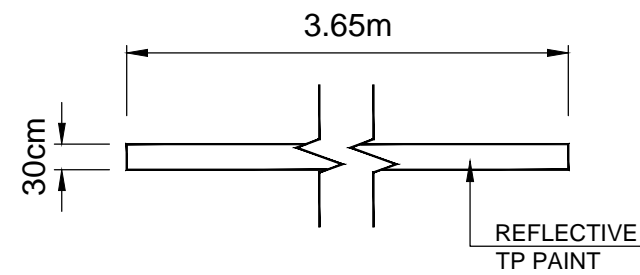


1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE MENTIONED.

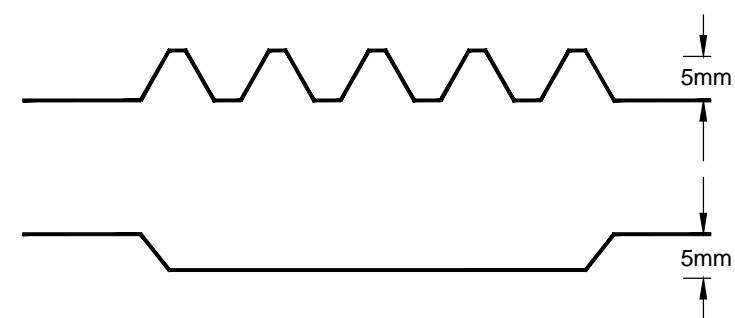
CLIENT:- <div>Asian Development Bank</div>		PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:-			ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO.
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>	TITLE:-						DESIGNED: HINA ZEESHAN	Scale:- N.T.S.			
							CHECKED: NAVEED HASSAN	Edition. 0			
							DATE: JUNE, 2023				
	PAVEMENT MARKING AND CAT EYES DETAILS										



PLAN OF TRANSVERSE RUMBLE STRIPS







PLAN OF RUMBLE STRIP



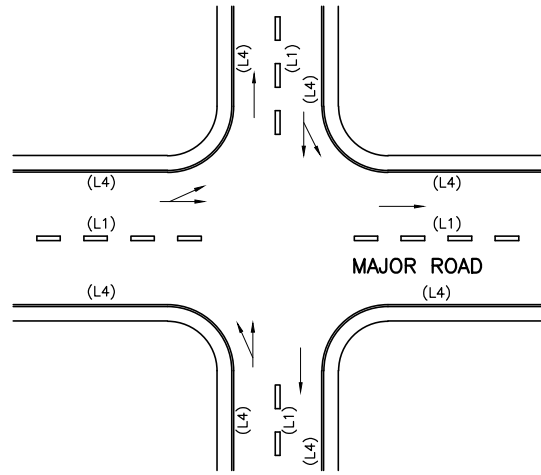
**RUMBLE STRIP CROSS SECTION
DETAIL - A**

NOTES:-

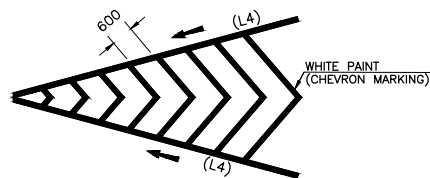
- 1 - ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT OTHERWISE MENTIONED.
- 2 - SPEED HUMPS/RUMBLE STRIPS WILL BE PROVIDED NEAR AMENITIES SUCH AS MOSQUES, PLAYGROUNDS, SCHOOLS, HOSPITALS, ETC, FOR TRAFFIC CALMING AS PER DECISION OF THE ENGINEER.

CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TITLE:- RUMBLE STRIP DETAILS	ED.NO.	DATE	DESCRIPTION	DRAWN:	DRAWING NO.
							N. SAQIB SIDDIQUI	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH							DESIGNED:	Scale:-
							HINA ZEESHAN	N.T.S.
							CHECKED:	Edition.
							NAVEED HASSAN	
							DATE: JUNE, 2023	0

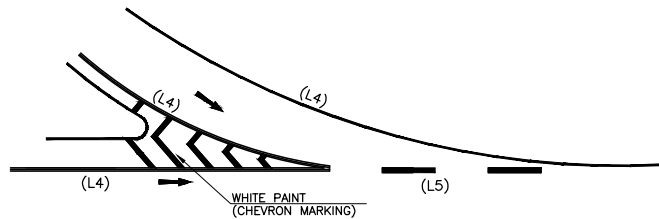
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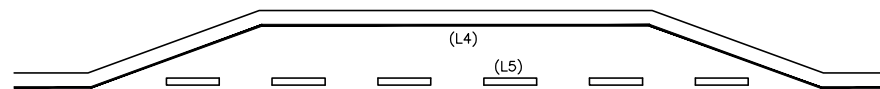
TYPICAL LANE MARKING FOR INTERSECTION



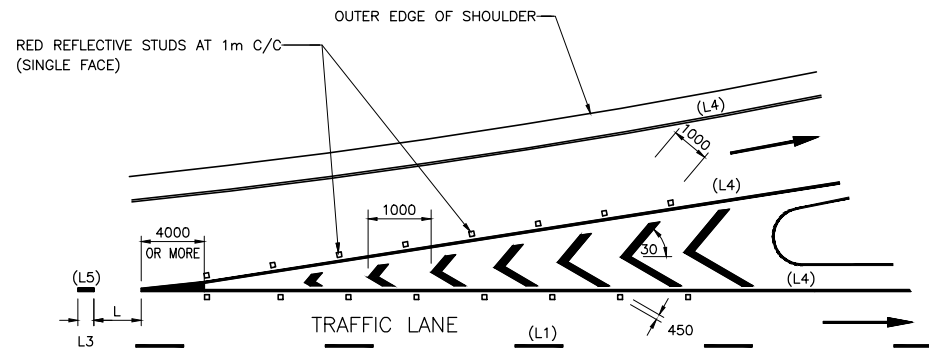
TYPICAL ISLAND APPROACH/EXIT DETAILS



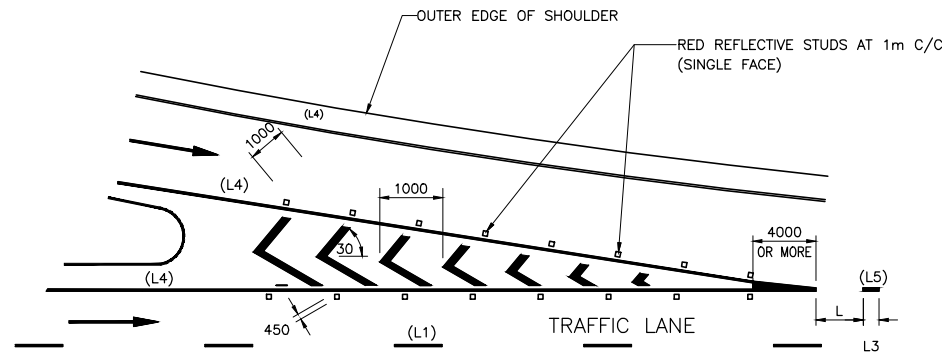
EXCLUSIVE TURN LANE



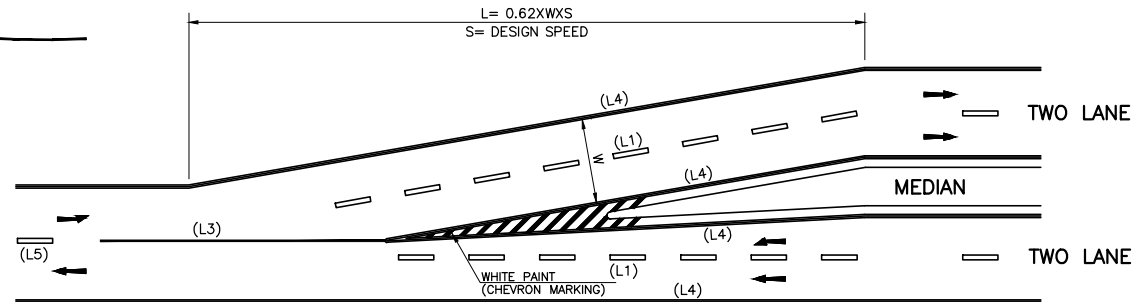
BUS - LANE



EXIT NOSE DETAIL

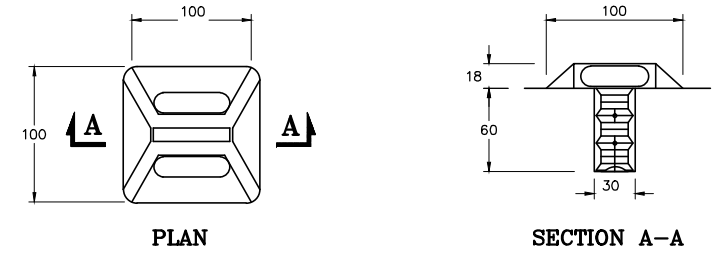


ENTRANCE NOSE DETAIL



REFER PAGE 3-134 OF AASHTO 2011

PAVEMENT REDUCTION MARKING







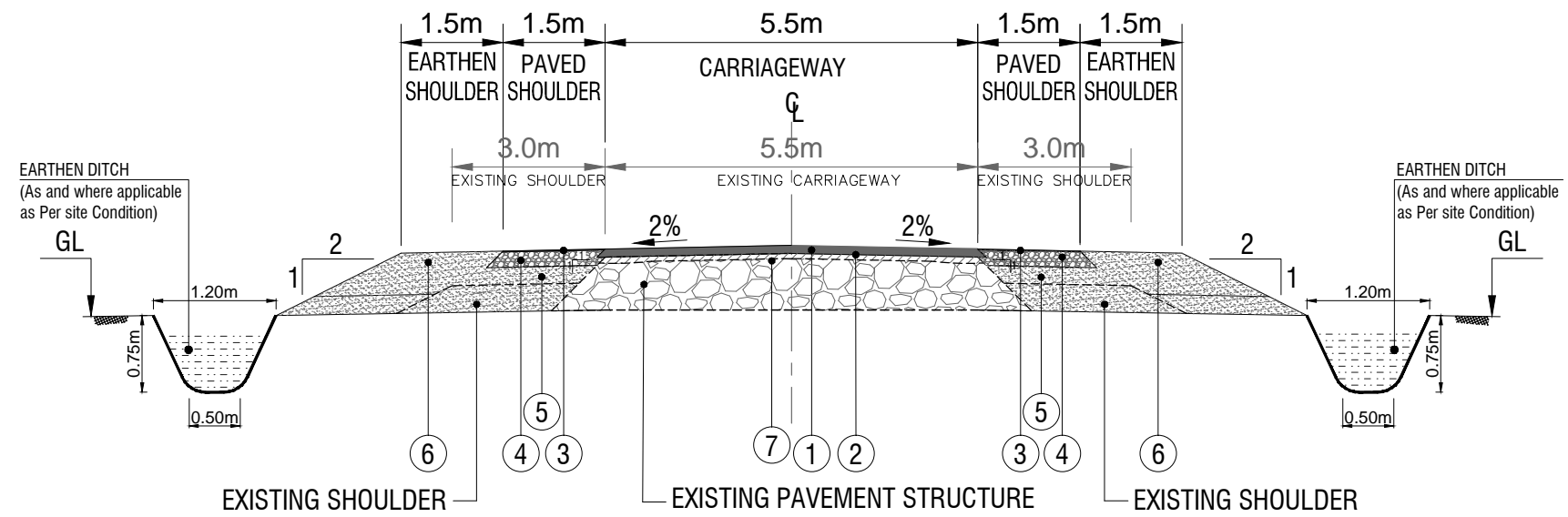
REFLECTORISED PAVEMENT STUD
(RAISED PROFILE TYPE)

SCALE NTS

NOTES:



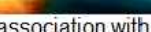

- 1) THE MATERIAL TO BE USED FOR CARRIAGEWAY MARKINGS SHALL BE OF APPROVED TYPE AND QUALITY.
- 2) PROPER VISIBILITY OF ALL SIGNS & MARKINGS AT ALL TIMES DURING THE DAY AND NIGHT SHALL BE ENSURED.
- 3) ROAD STUDS SHALL ALSO BE PROVIDED AT INTERSECTIONS AS SHOWN ON PLANS AND AS DIRECTED BY THE ENGINEER.

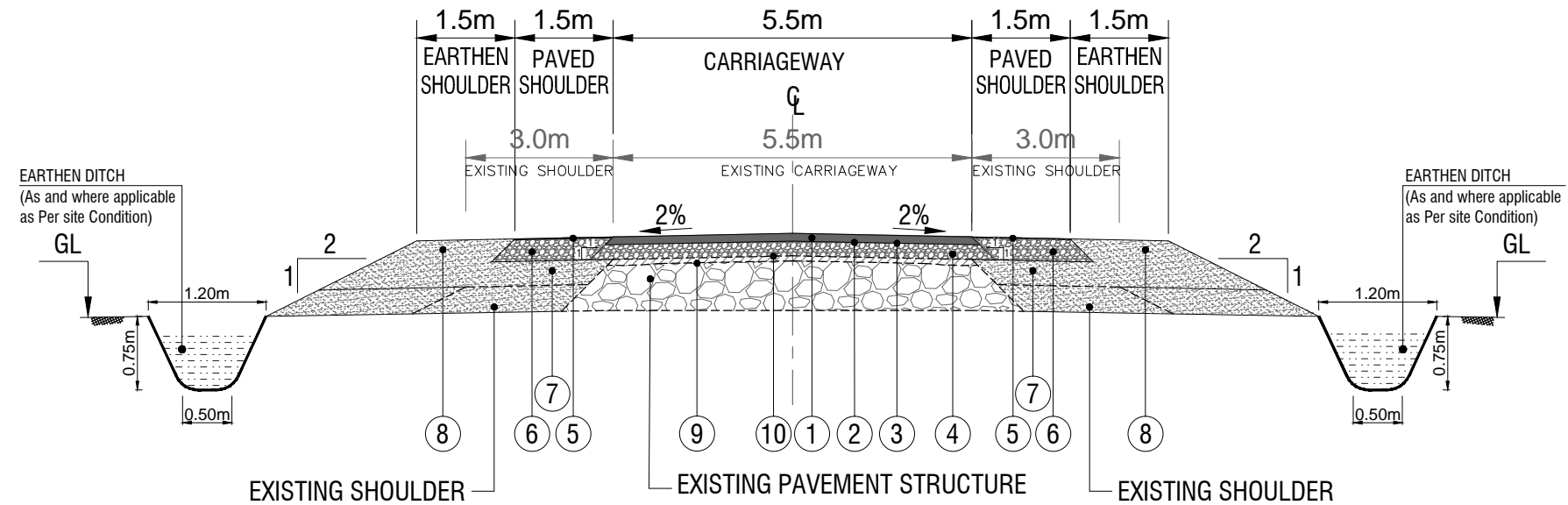
CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 Reconditioning of road from Makli to Ghulamullah TITLE:- DETAILS OF MERGING/DIVERGING	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI DESIGNED: HINA ZEESHAN CHECKED: NAVEED HASSAN DATE: JUNE, 2023	DRAWING NO. TH-1 GEN-08 Scale:- N.T.S. Edition. 0
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NOTES :-

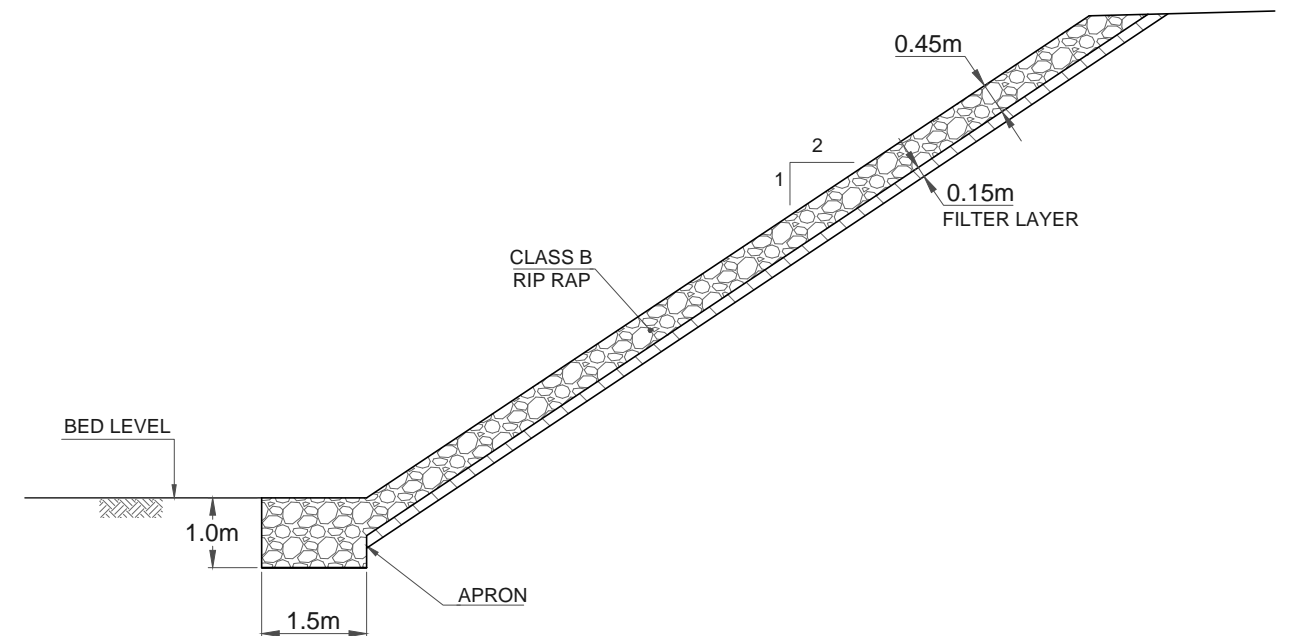
1. ASPHALT CONCRETE WEARING COURSE (CLASS A) 5cm
2. TACK COAT.
3. TRIPLE SURFACE TREATMENT.
4. WATER BOUND MACADAM 15cm.
5. BORROW SOIL HAVING SOAKED CBR 8% & PI NOT GREATER THAN 6% 30cm
6. EARTHEN SHOULDER.
7. EXISTING ROAD BITUMINOUS SURFACING IS TO BE MILLED (1-2cm) BEFORE LAYING NEW ASPHALT CONCRETE WEARING COURSE.
8. ALL DIMENSIONS ARE IN METER EXCEPT OTHER WISE MENTIONED.
- * REMOVAL OF BRICK EDGING SHALL BE CARRIED OUT AND PAID IN SHOULDER EXCAVATION

<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>TH - 1</div> <div>Reconditioning of road from Makli to Ghulamullah</div>	<div>ED.NO.</div>	<div>DATE</div>	<div>DESCRIPTION</div>	<div>DRAWN:</div> <div>M. NOMAN SIDDIQUI</div>	<div>DRAWING NO.</div> <div>TH-1</div>
<div>EXECUTING AGENCY:-</div> <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>			<div>TITLE:-</div> <div>TYPICAL CROSS SECTION 0+000 TO 6+000 OVERLAY (5.5m)</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>AUG, 2023</div>	







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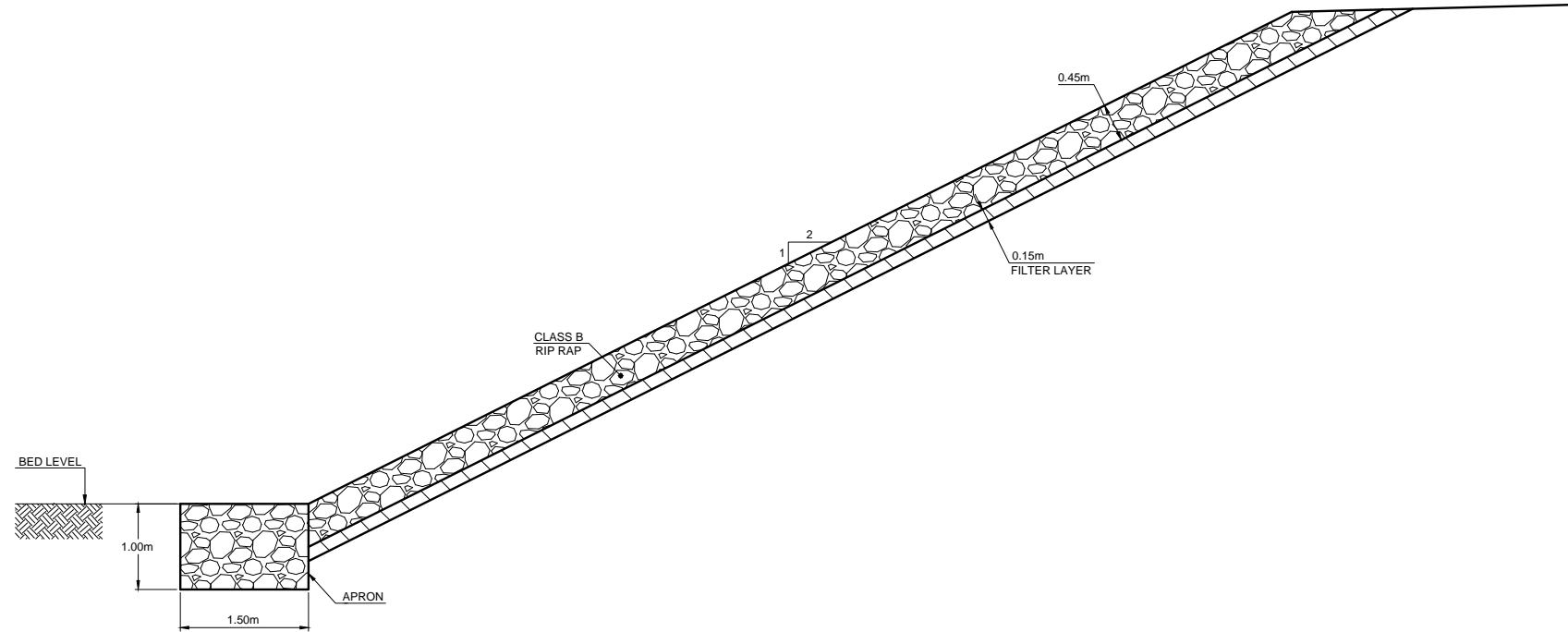
1. ASPHALT CONCRETE WEARING COURSE (CLASS A) 5cm
 2. TACK COAT.
 3. SINGLE SURFACE TREATMENT.
 4. WATER BOUND MACADAM 15cm
 5. TRIPLE SURFACE TREATMENT.
 6. WATER BOUND MACADAM 15cm.
 7. BORROW SOIL HAVING SOAKED CBR 8% & PI NOT GREATER THAN 6% 30cm
 8. EARTHEN SHOULDER.
 9. EXISTING ROAD BITUMINOUS 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>TH - 1</div> <div>Reconditioning of road from Makli to Ghulamullah</div>	<div>ED.NO.</div>	<div>DATE</div>	<div>DESCRIPTION</div>	<div>DRAWN:</div> <div>M. NOMAN SIDDIQUI</div>	<div>DRAWING NO.</div> <div>TH-1A</div>
<div>EXECUTING AGENCY:-</div> <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>			<div>TITLE:-</div> <div>TYPICAL CROSS SECTION 6+000 TO END REHABILITATION (5.5m)</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>AUG. 2023</div>	

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TYPICAL SECTION OF PROTECTION WORKS
RD. 11+000 TO RD. 14+500

NOTES :-

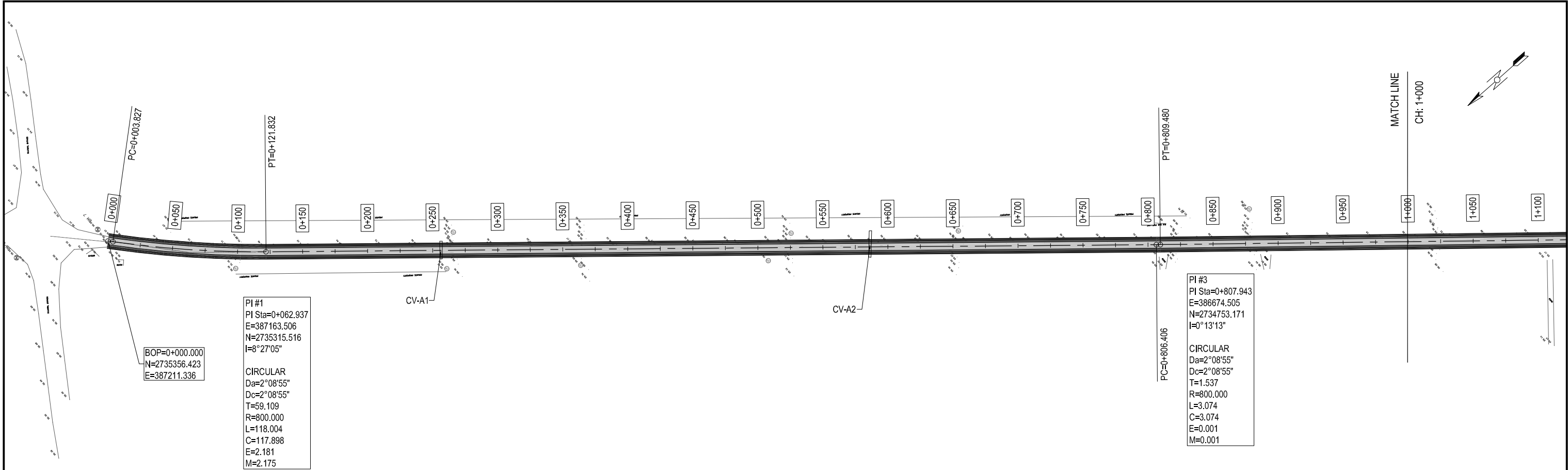
1. PROTECTION WORK SHALL BE APPLICABLE ON REACHES WHICH WILL BE IDENTIFIED IN THE HYDROLOGY REPORT AND AROUND ENTRY AND EXIT OF CULVERT/BRIDGES.
2. ALL DIMENSIONS ARE IN METERS EXCEPT OTHERWISE MENTIONED.

TENTATIVE SCHEDULE

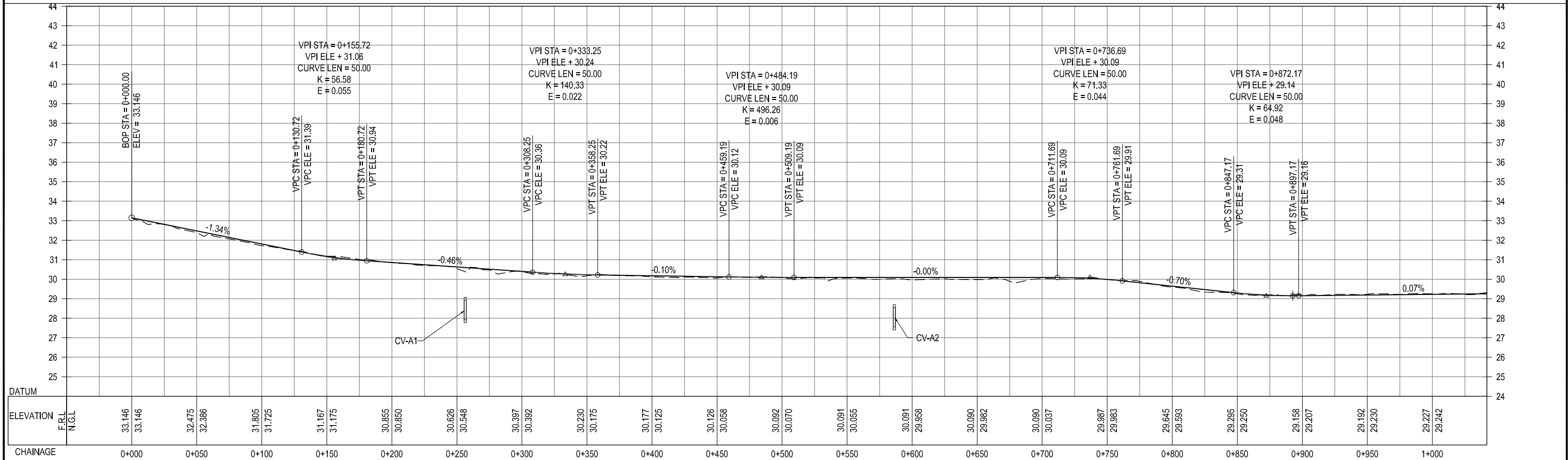
FROM	TO	SIDE	REMARKS
11+000	14+500	BOTH SIDES	-

CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH-1 Reconditioning of road from Makli to Ghulamullah	ED.NO.	DATE	DESCRIPTION	DRAWN: N. SAQIB SIDDIQUI	DRAWING NO. PW-TH-1
							DESIGNED: HINA ZEESHAN	
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- PROTECTION WORK SCHEDULE				CHECKED: NAVEED HASSAN	Scale:- N.T.S.
							DATE: JULY, 2023	Edition. 0





Fri, 02 Jun 2023 - 10:12am
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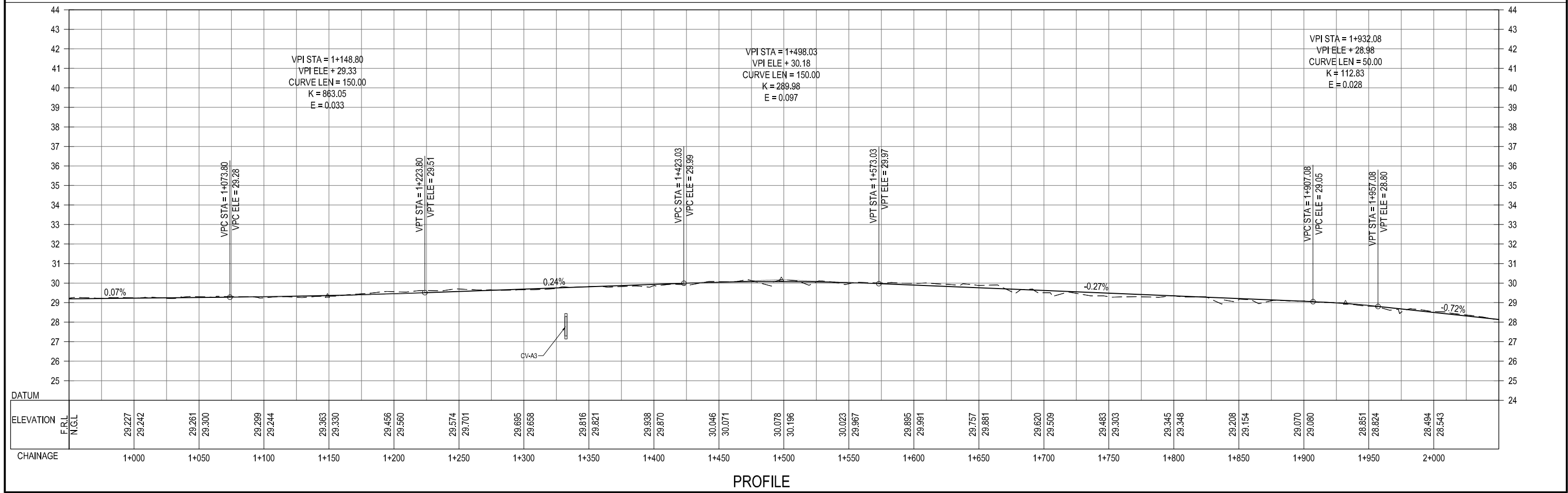
PLAN







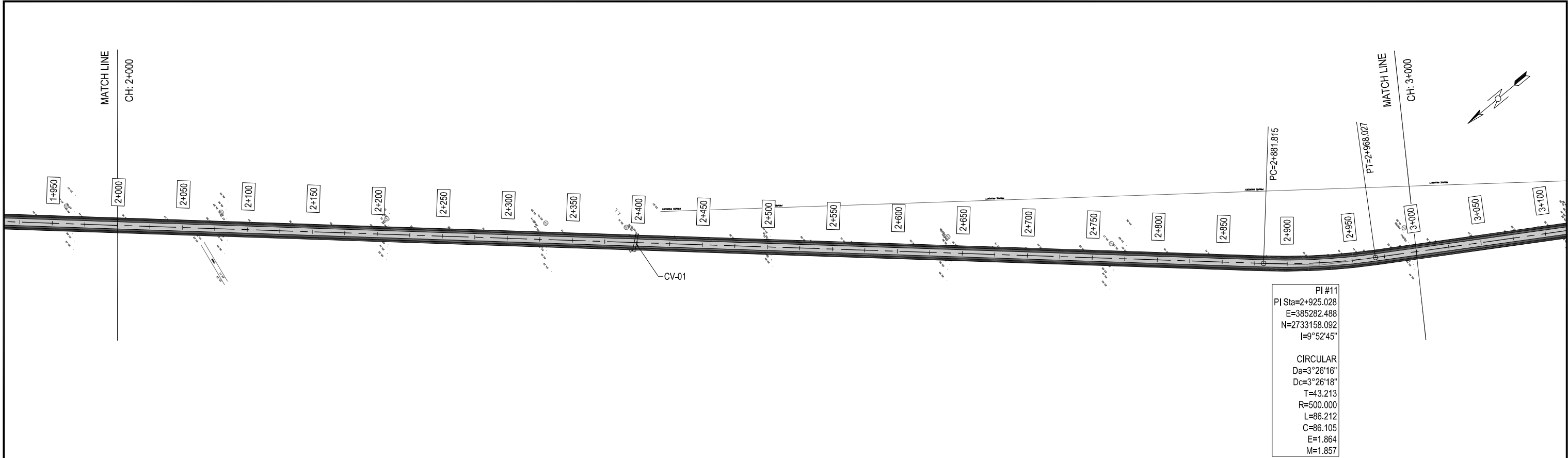
PROFILE

CLIENT:-  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:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 0+000 TO 1+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-01
							DESIGNED: HINA ZEESHAN	
							CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:20
				0	MAY, 2023	ISSUED FOR APPROVAL	DATE: MAY, 2023	Edition. 0

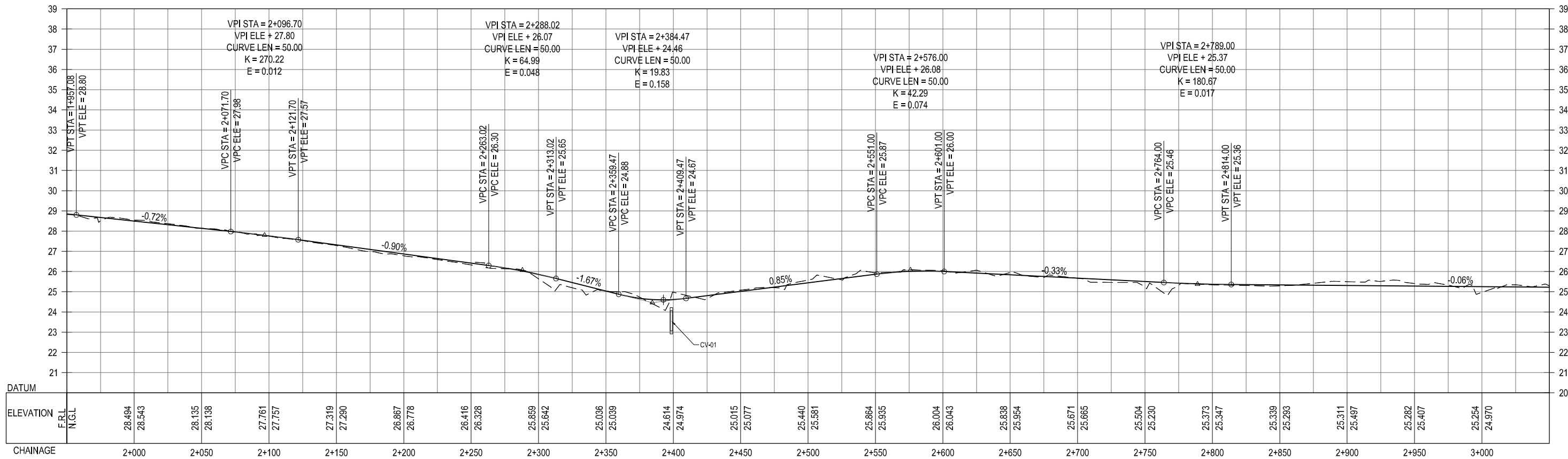
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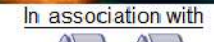

CLIENT:-  EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 1+000 TO 2+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-02 Scale:- H=1:3000 V=1:20 Edition. 0
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							CHECKED: NAVEED HASSAN	
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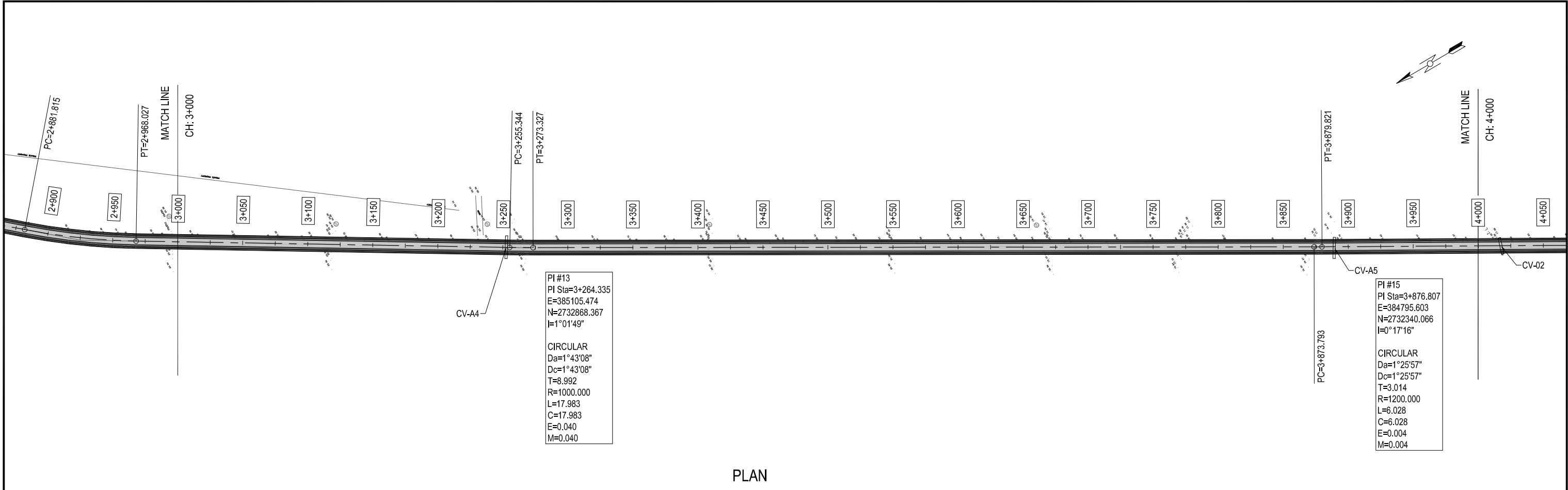


PLAN

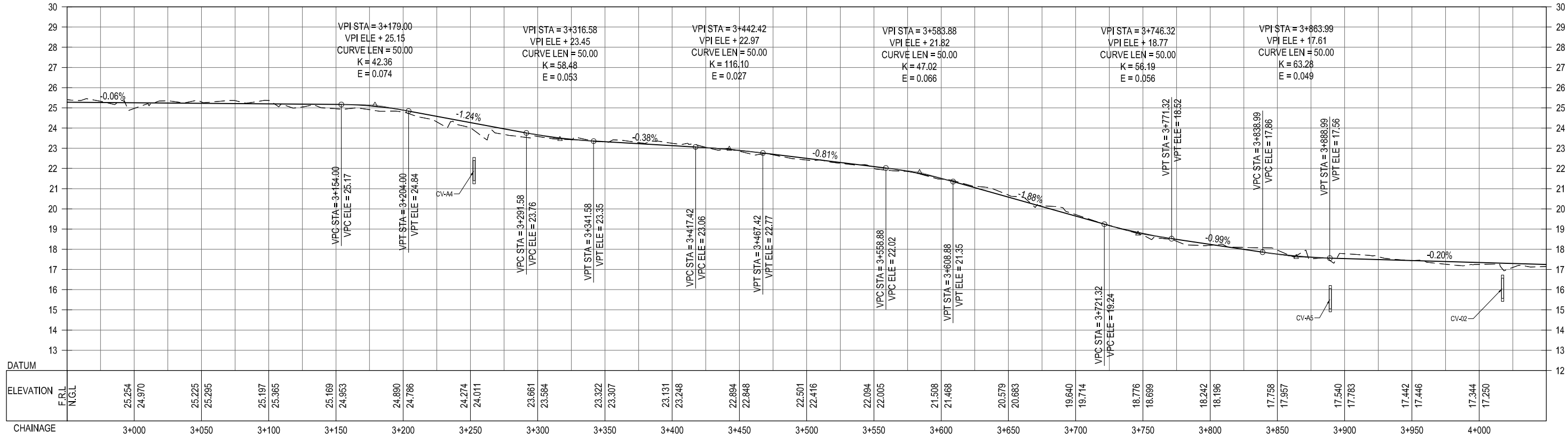


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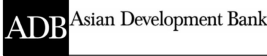



CLIENT:- <div>Asian Development Bank</div>		PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH		ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-03		
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>				TITLE:- PLAN & PROFILE OF TH-1 CH: 2+000 TO 3+000					DESIGNED: HINA ZEESHAN	Scale:- H=1:3000 V=1:20		
							CHECKED: NAVEED HASSAN	Edition. 0				
				0	MAY, 2023	ISSUED FOR APPROVAL	DATE: MAY, 2023					



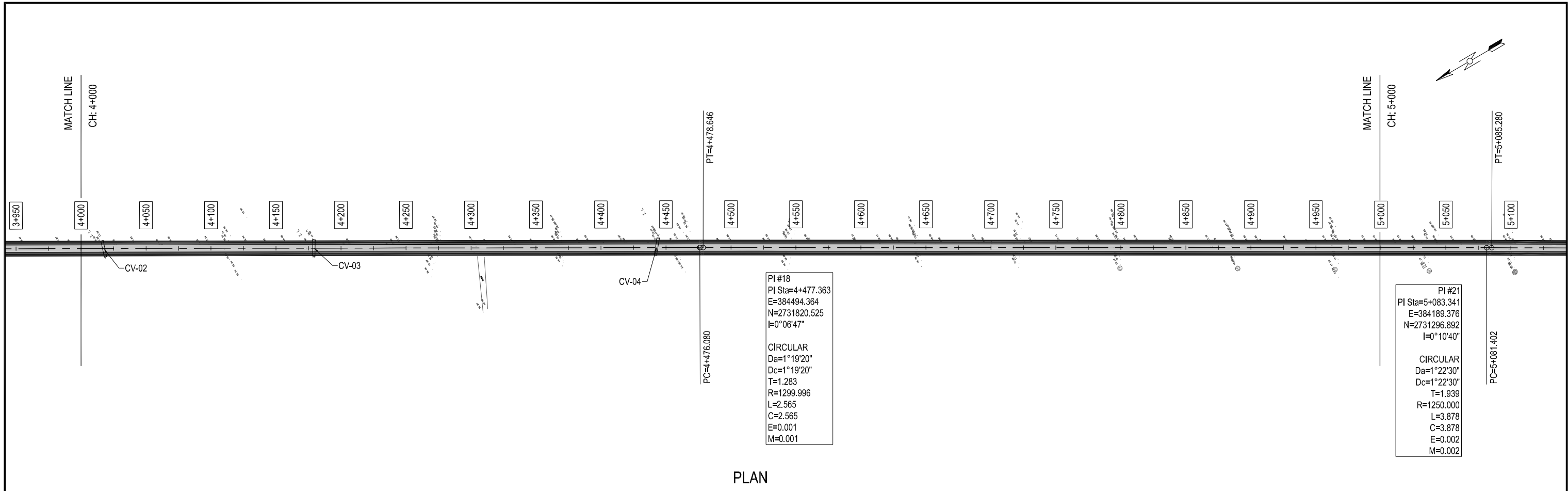
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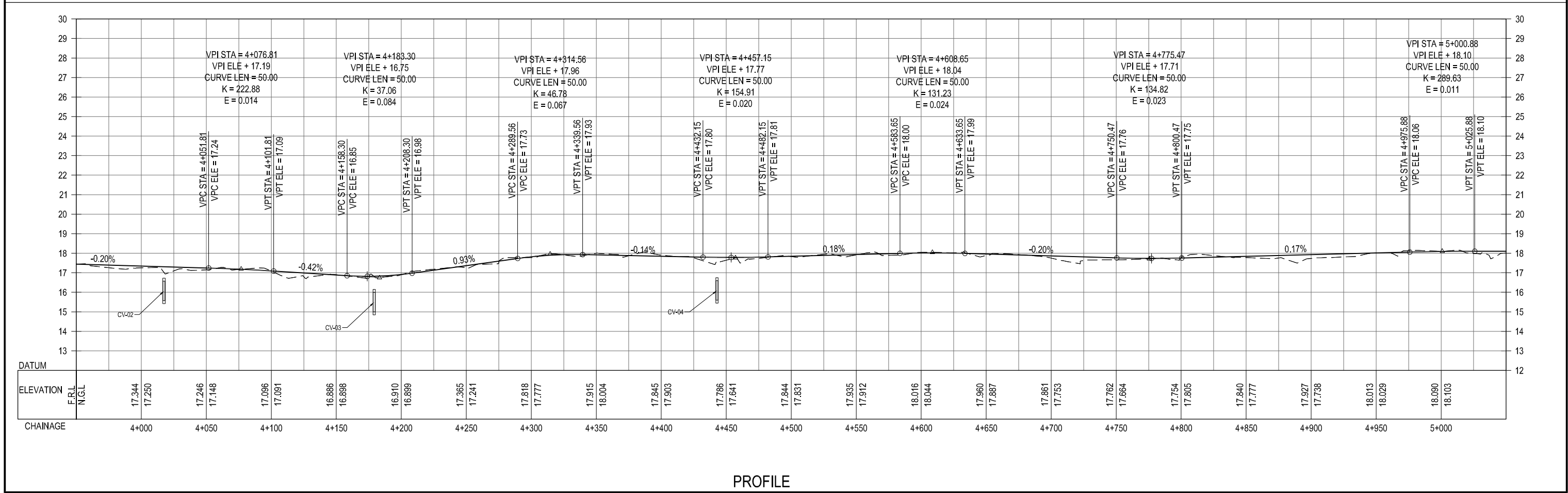
PROFILE

CLIENT:-  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:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 3+000 TO 4+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-04
							DESIGNED: HINA ZEESHAN	
							CHECKED: NAVEED HASSAN	Scale:- H=1:3000 V=1:20
				0	MAY, 2023	ISSUED FOR APPROVAL	DATE: MAY, 2023	Edition. 0





Fri, 02 Jun 2023 - 11:41am
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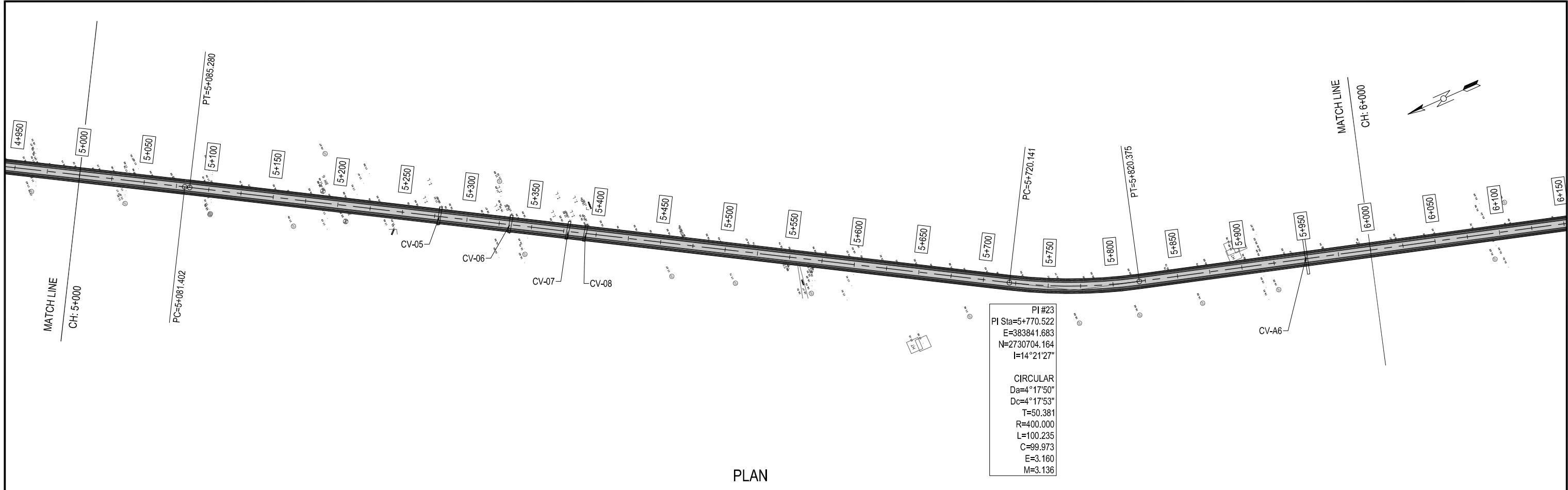
PLAN



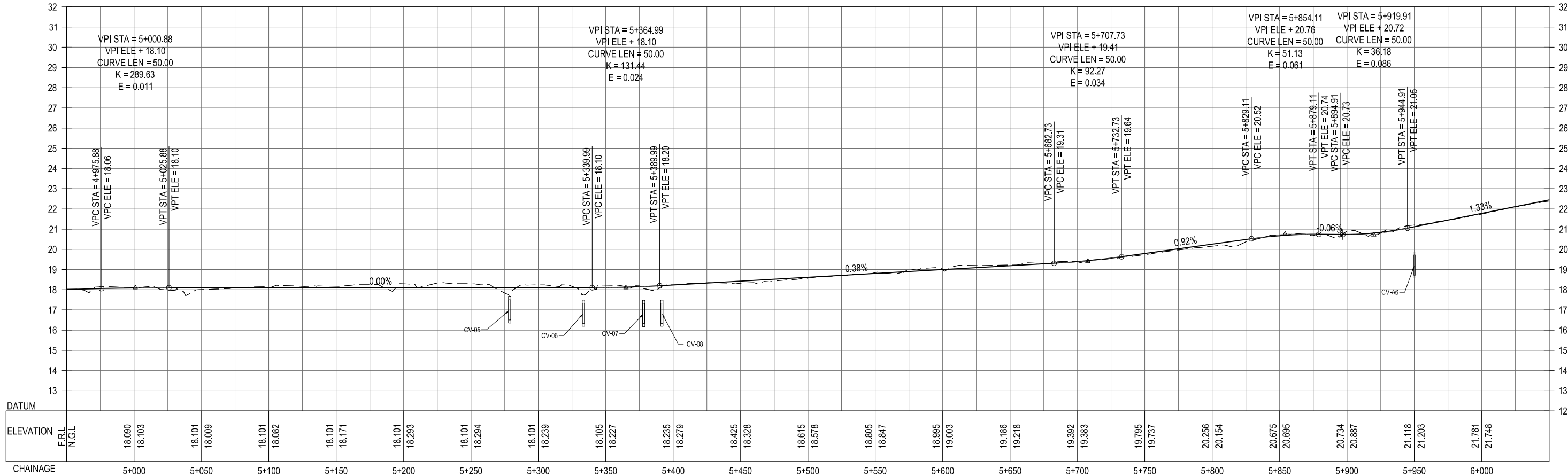
PROFILE

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:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 4+000 TO 5+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-05 Scale:- H=1:3000 V=1:20 Edition. 0
							DESIGNED: HINA ZEESHAN	
							CHECKED: NAVEED HASSAN	
				0	MAY, 2023	ISSUED FOR APPROVAL	DATE: MAY, 2023	

Fri, 02 Jun 2023 - 12:01pm
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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)

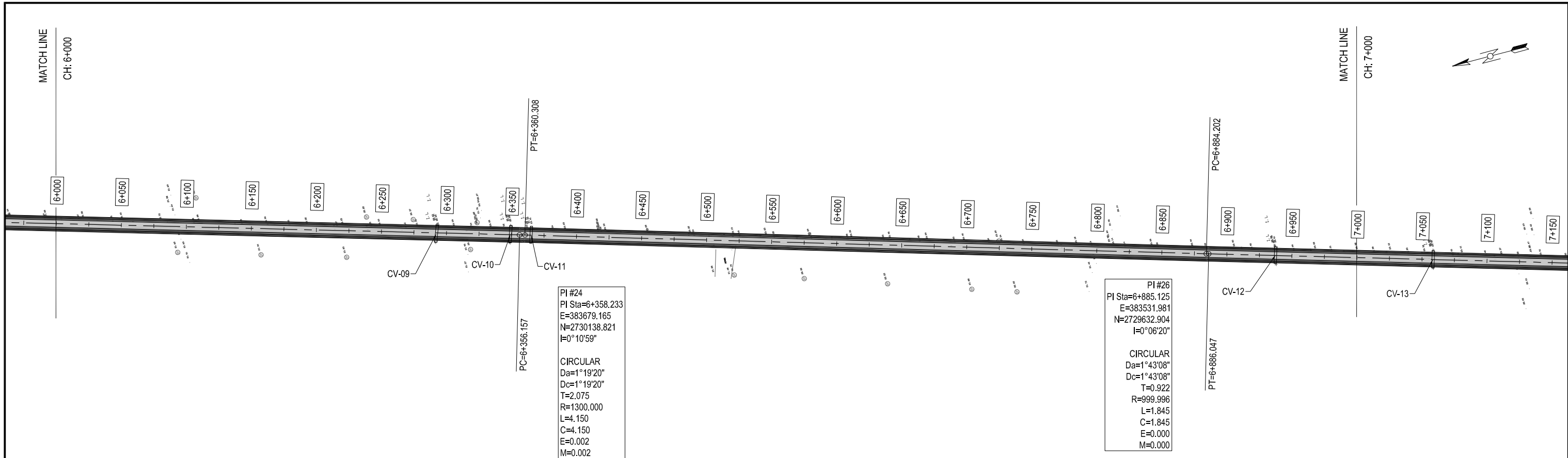
DESIGN CONSULTANT

In association with

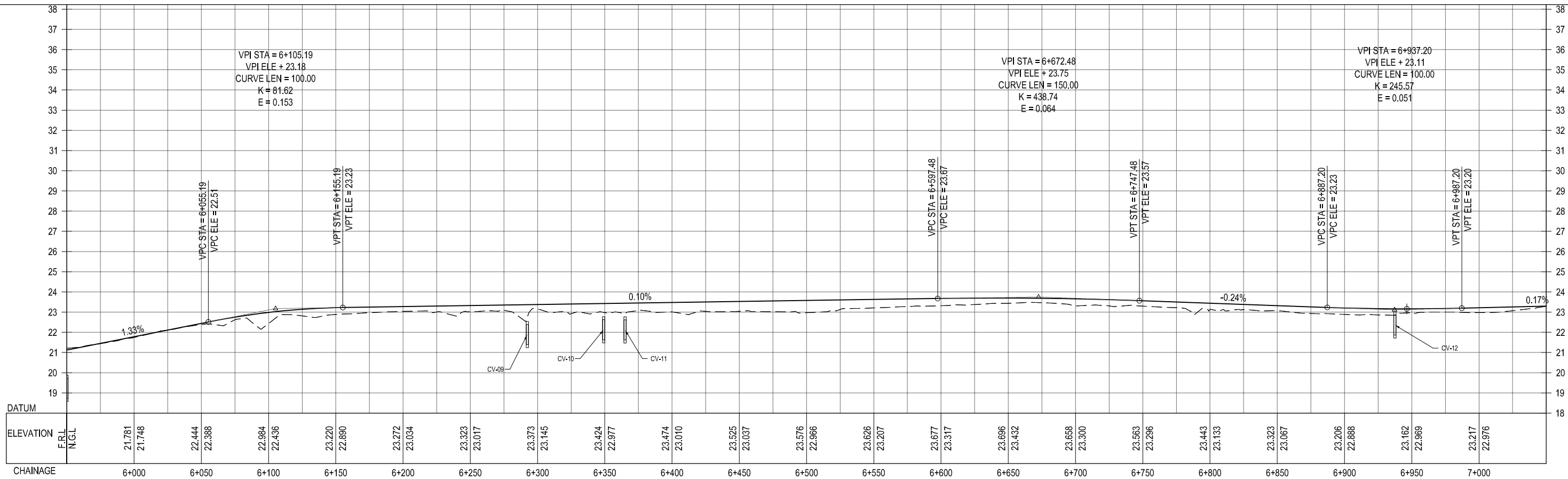

PROJECT ROAD:-
TH - 1
RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH
TITLE:-
**PLAN & PROFILE OF
TH-1
CH: 5+000 TO 6+000**

ED.NO.	DATE	DESCRIPTION	DRAWN:	DRAWING NO.
			JUNAID	TH-1-PP-06
			DESIGNED:	Scale:-
			HINA ZEESHAN	H=1:3000 V=1:20
			CHECKED:	Edition.
			NAVEED HASSAN	0
0	MAY, 2023	ISSUED FOR APPROVAL	DATE: MAY, 2023	





Fri, 02 Jun 2023 - 12:14pm
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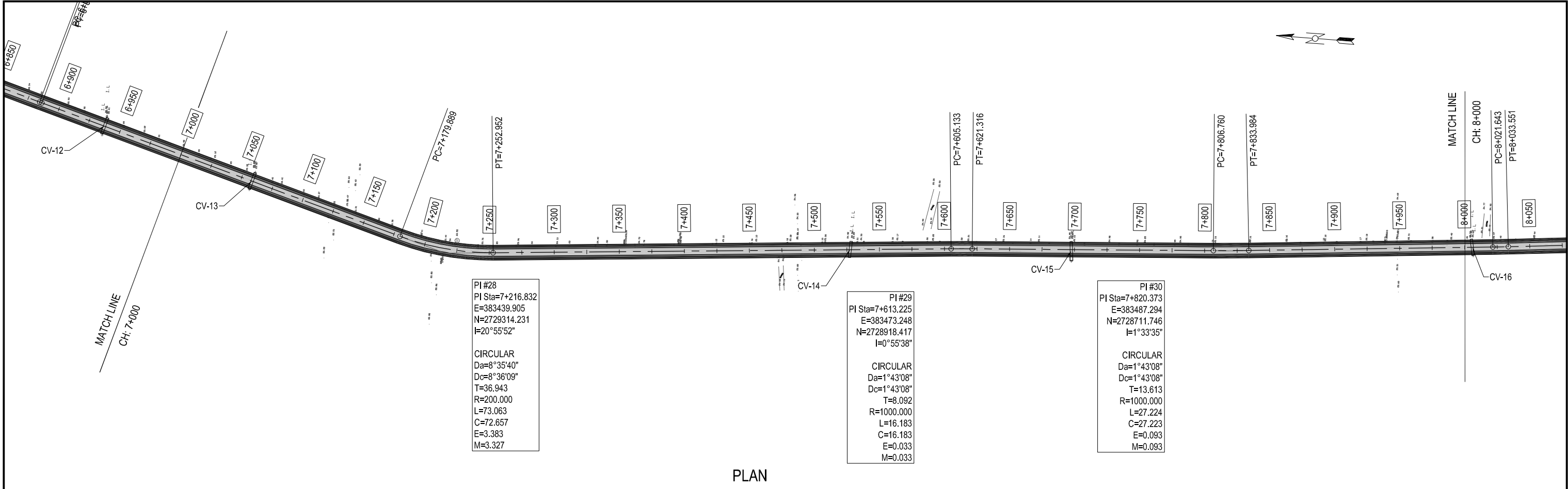


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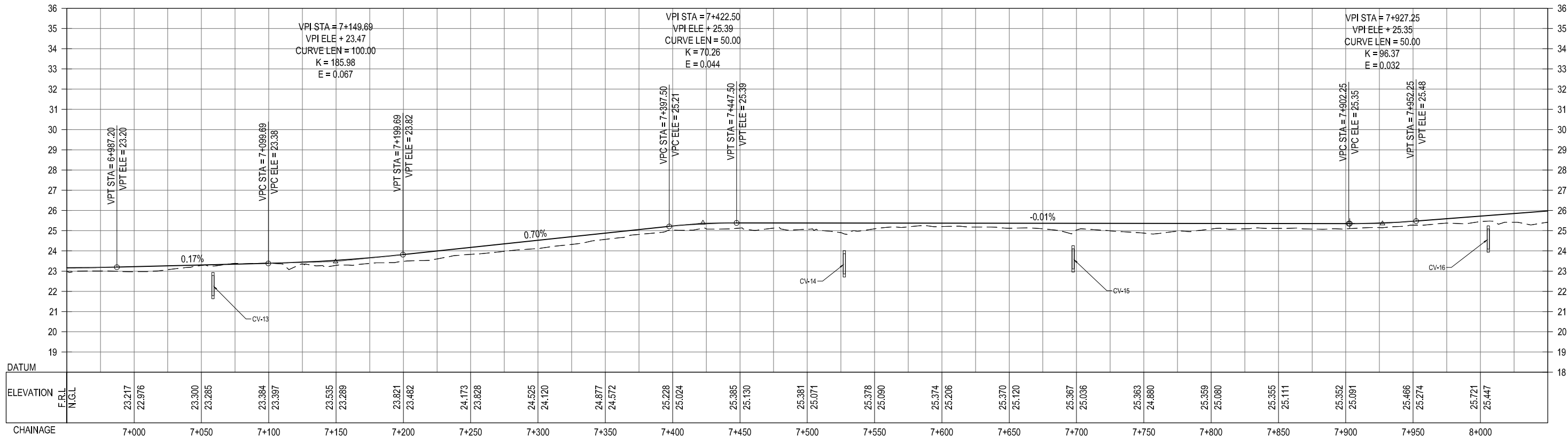


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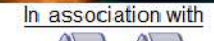

CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 6+000 TO 7+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-07
							DESIGNED: HINA ZEESHAN	
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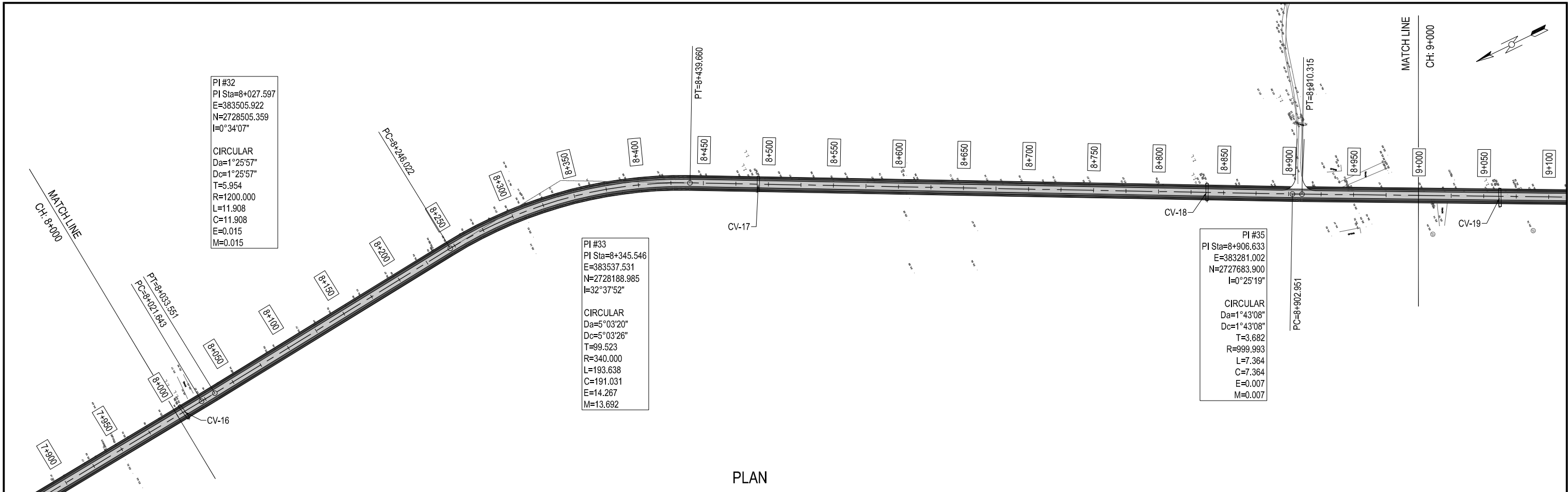
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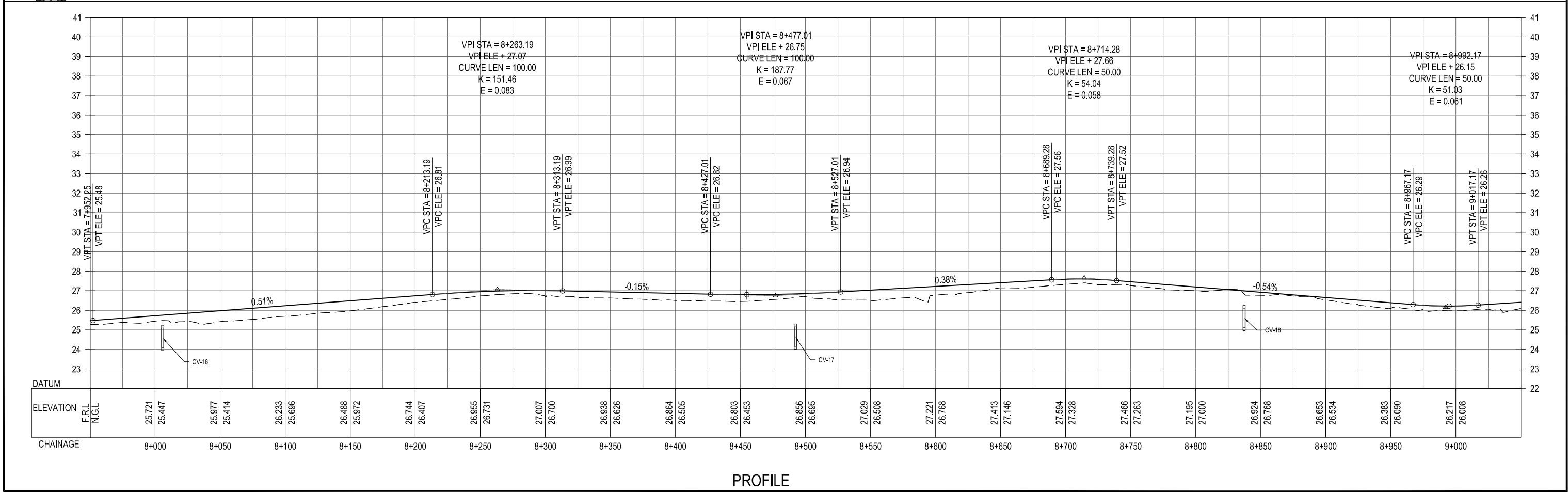
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CLIENT:- <div>Asian Development Bank</div>		PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH		ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-08		
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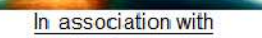

Fri, 02 Jun 2023 - 2:44pm
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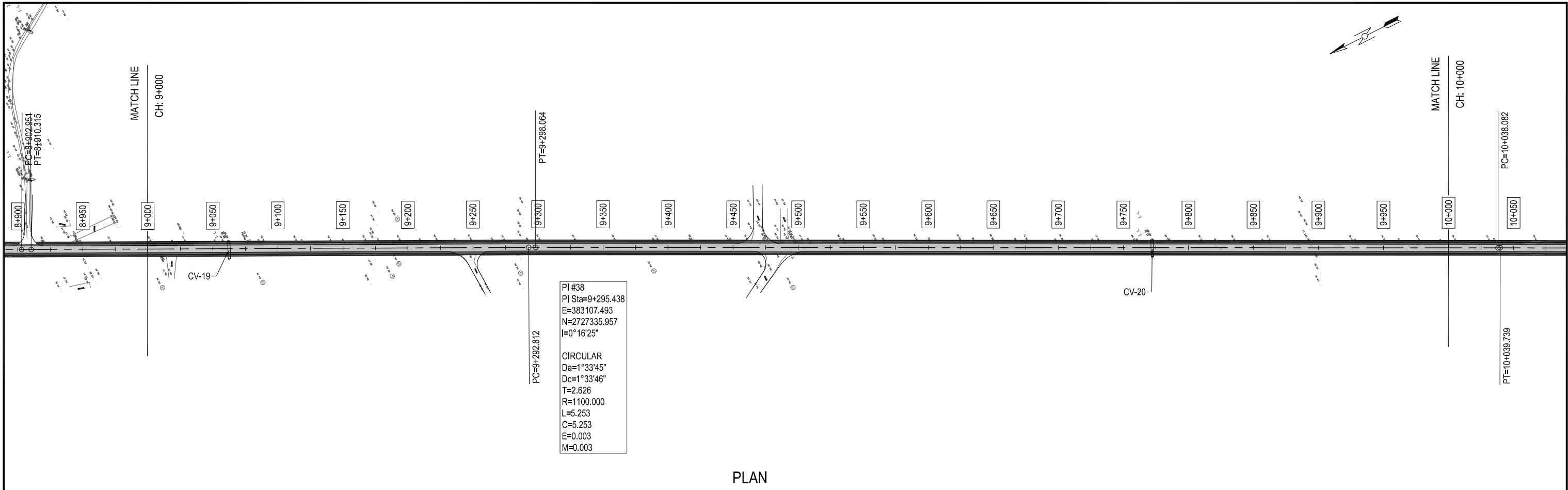
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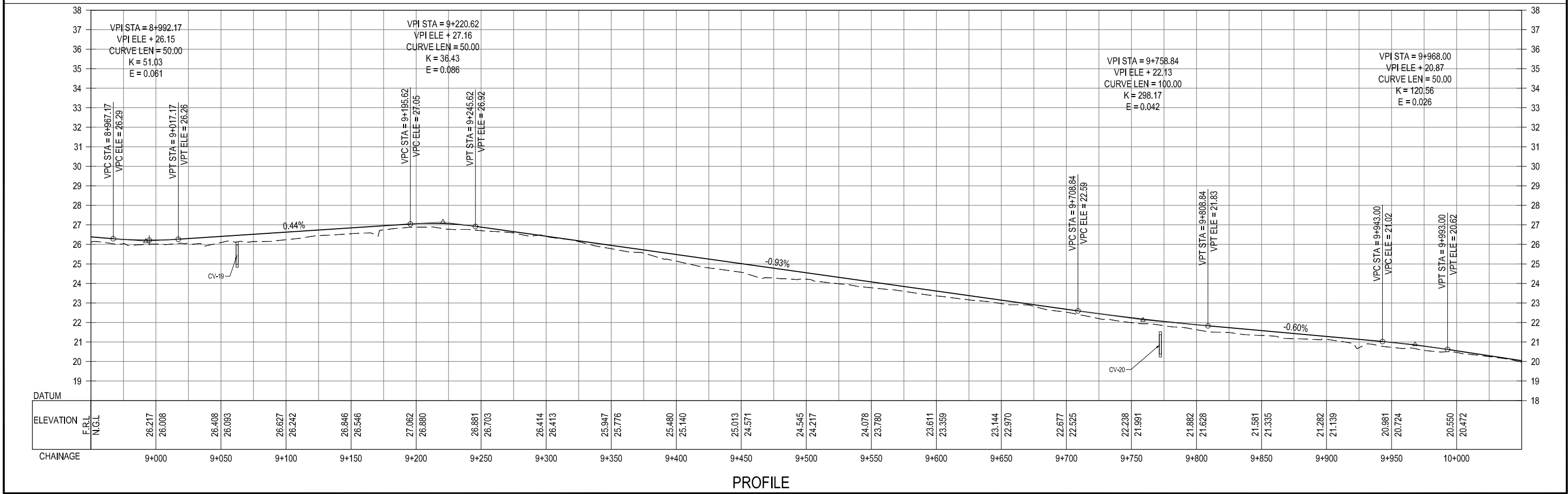
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CLIENT:- <div>Asian Development Bank</div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-09
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>			TITLE:- PLAN & PROFILE OF TH-1 CH: 8+000 TO 9+000				DESIGNED: HINA ZEESHAN	Scale:- H=1:3000 V=1:20
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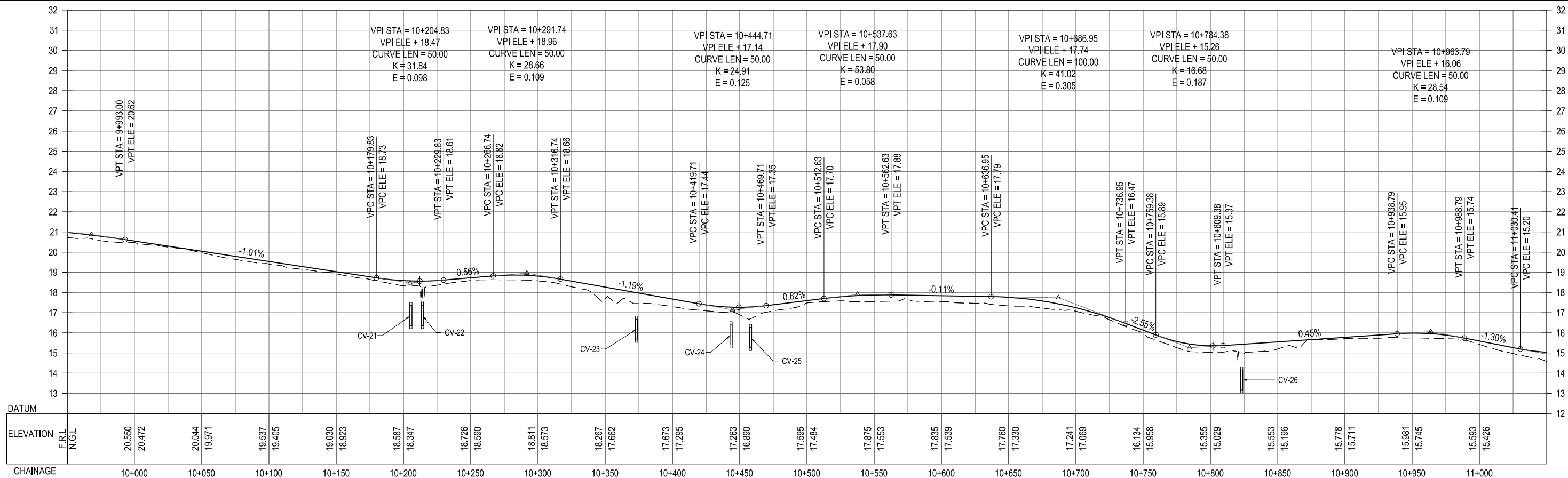
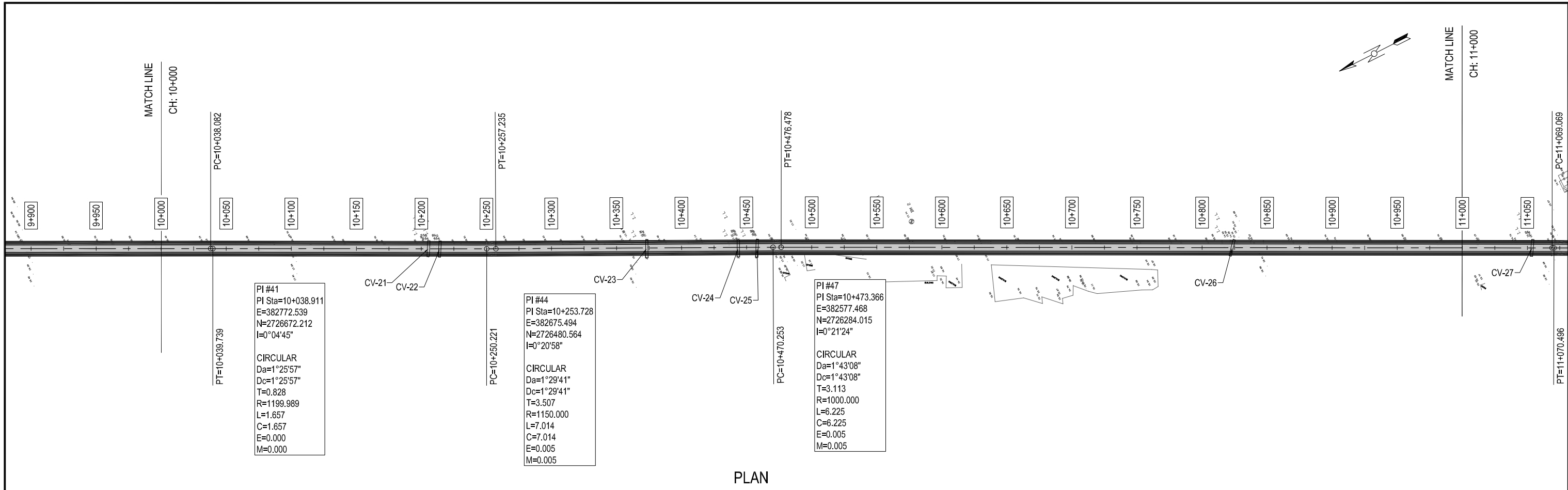
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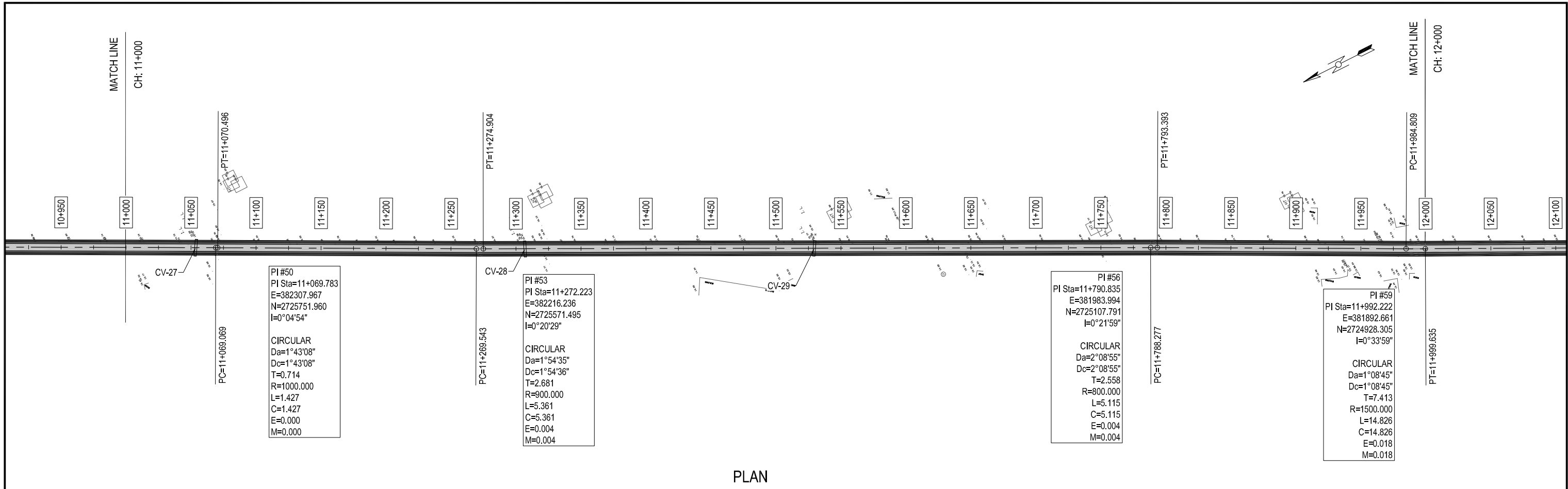
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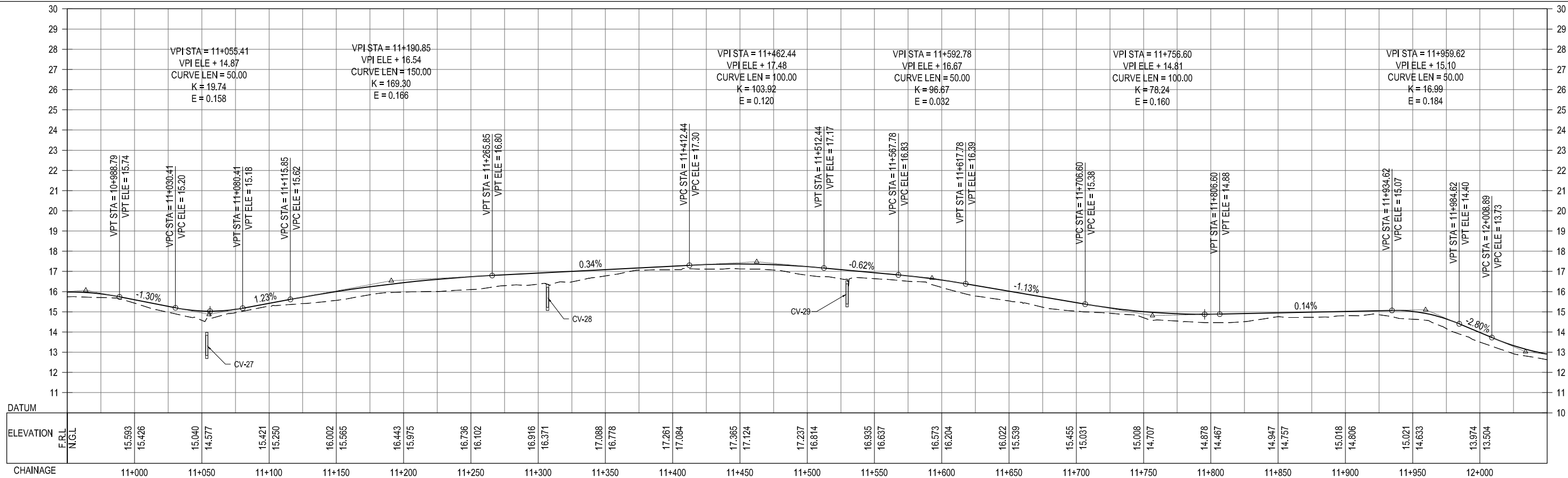


CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 10+000 TO 11+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-11 Scale:- H=1:3000 V=1:20 Edition. 0
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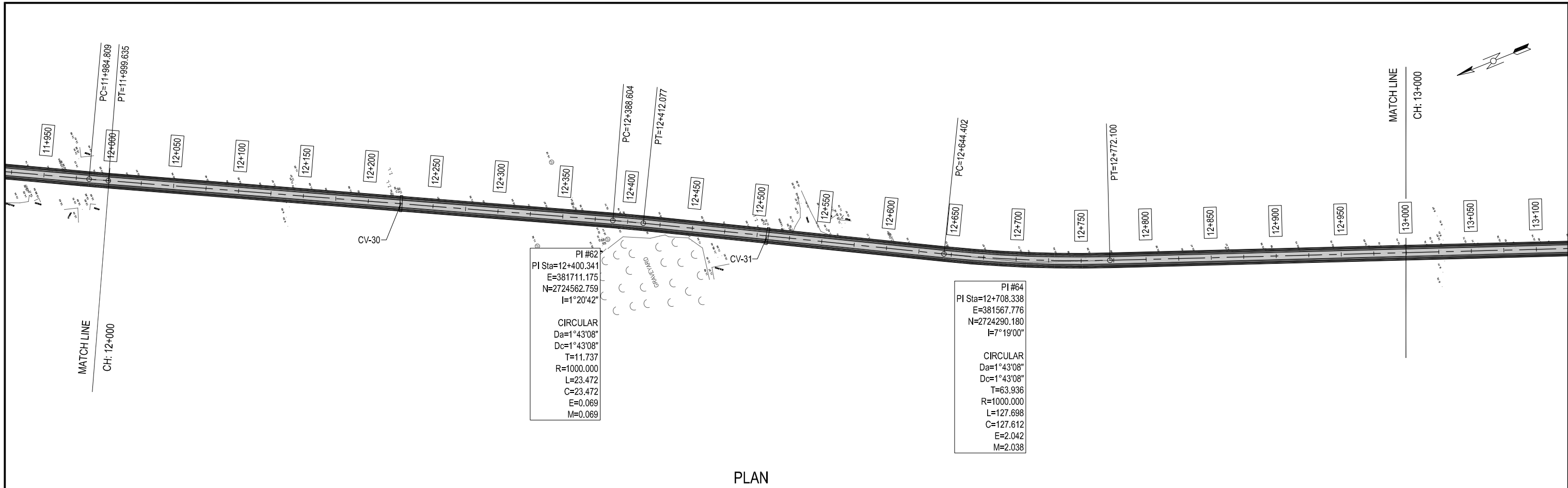
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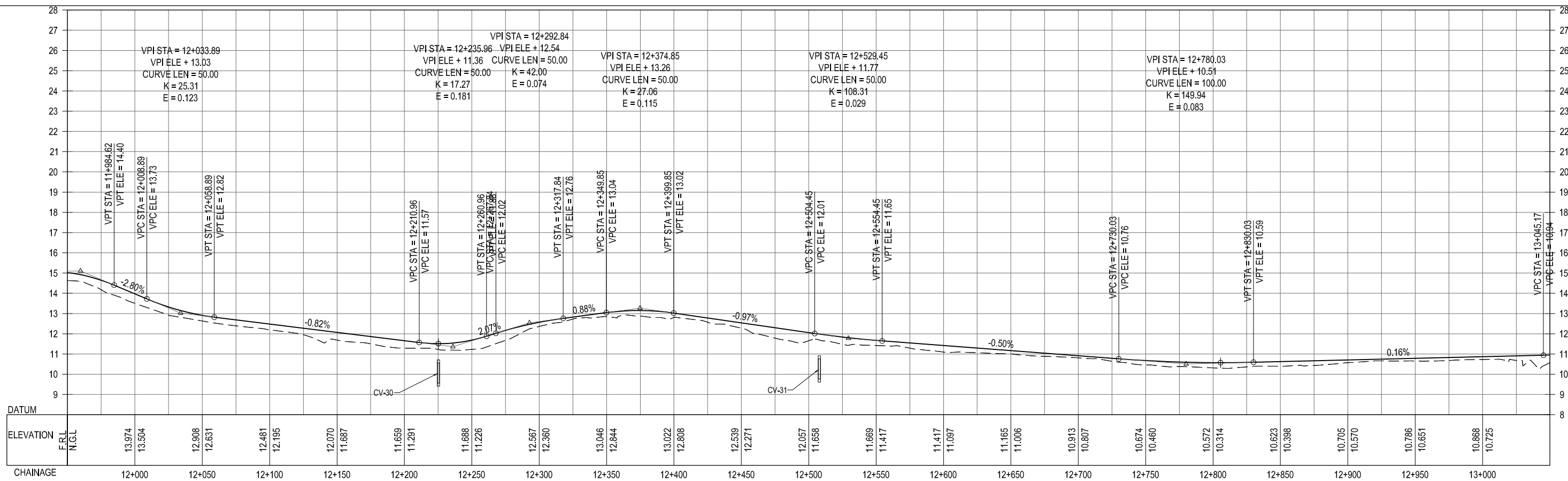
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CLIENT:-  Asian Development Bank EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH TITLE:- PLAN & PROFILE OF TH-1 CH: 11+000 TO 12+000	ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-12 Scale:- H=1:3000 V=1:20 Edition. 0
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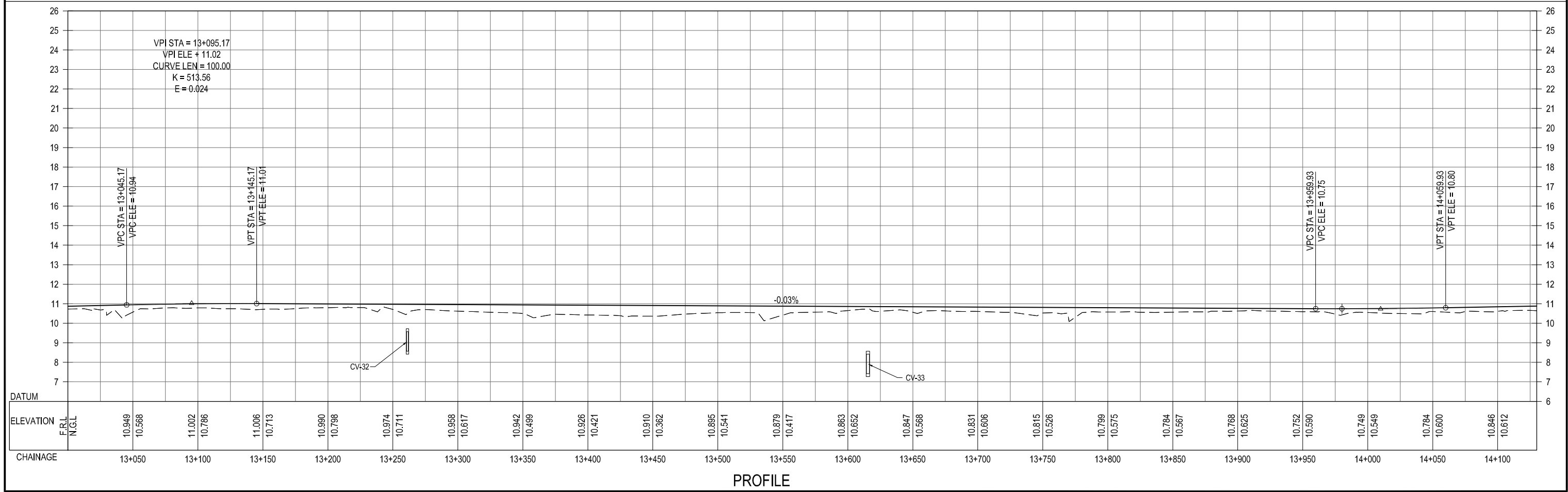
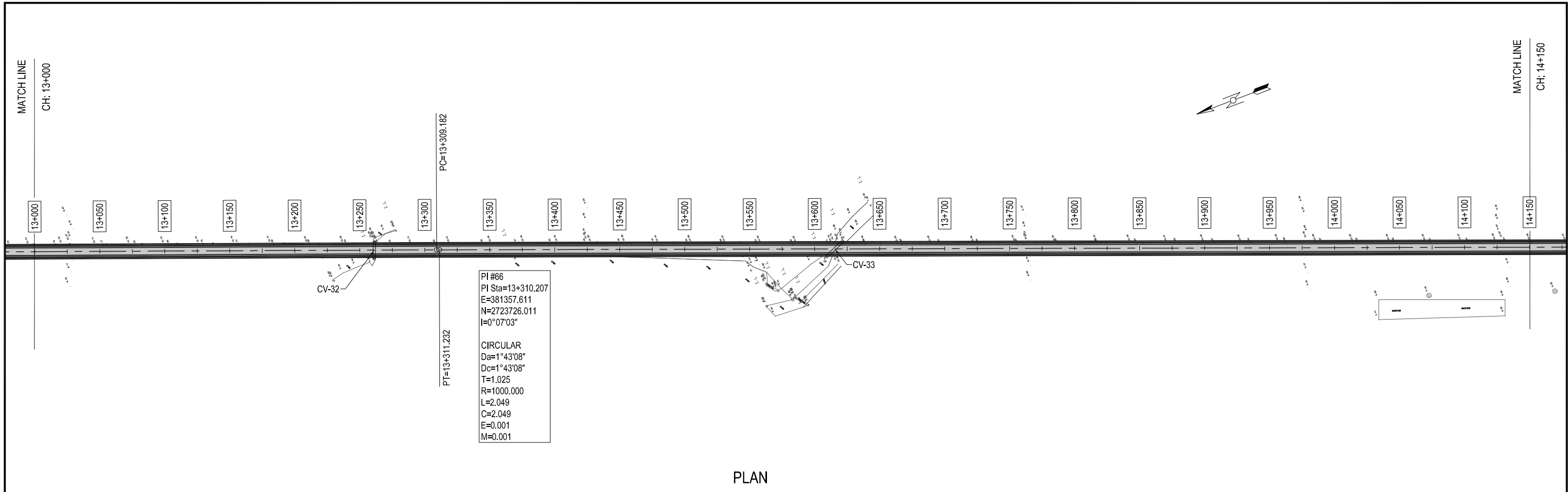
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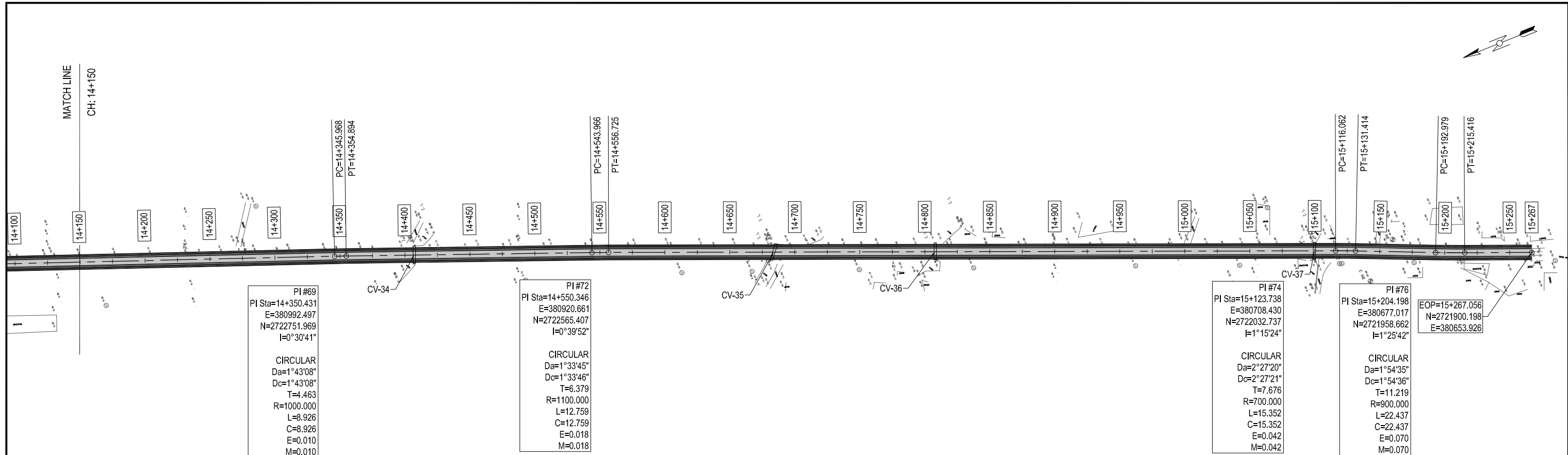
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			TITLE:- <div>PLAN & PROFILE OF TH-1</div> <div>CH: 12+000 TO 13+000</div>				DESIGNED: <div>HINA ZEESHAN</div>	Scale:- <div>H=1:3000</div> <div>V=1:20</div>
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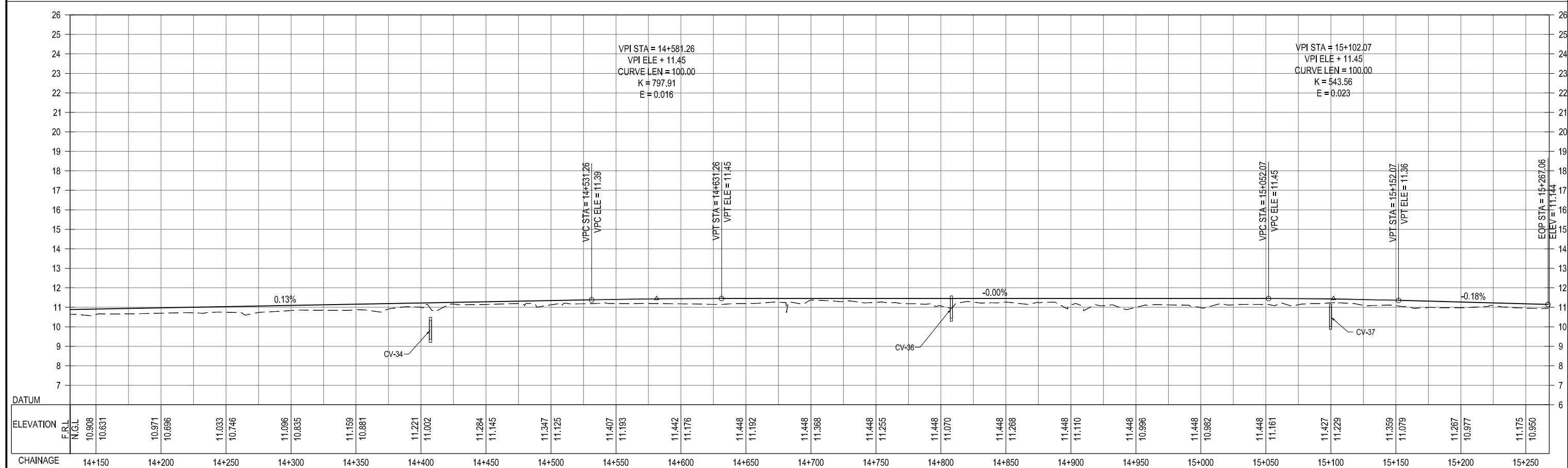


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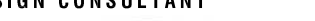


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PROFILE

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:- TH - 1 RECONDITIONING OF ROAD FROM MAKLI TO GHULAMULLAH		ED.NO.	DATE	DESCRIPTION	DRAWN: JUNAID	DRAWING NO. TH-1-PP-15
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LIST OF DRAWINGS

S. NO.	DESCRIPTION	DRAWING NO.
1	LIST OF DRAWING	2053-STR-TH01-LD-01
2	GENERAL NOTES	2053-STR-TH01-GN-01
CULVERTS		
1	SCHEDULE OF CULVERTS	2053-STR-TH01-CU-SCH-01
	BOX CULVERTS	
1	RCC BOX CULVERT - GENERAL ARRANGEMENT	2053-STR-TH01-BC-01
2	RCC BOX CULVERT - DETAILS OF APRON SLAB & WING WALLS	2053-STR-TH01-BC-02
3	RCC BOX CULVERT - REINFORCEMENT DETAILS OF BOX CULVERT	2053-STR-TH01-BC-03
4	RCC BOX CULVERT - REINFORCEMENT DETAILS OF APRON SLAB & WING WALLS (FOR CULVERT HEIGHT ≤ 2m)	2053-STR-TH01-BC-04
5	REINFORCEMENT DETAILS OF APRON SLAB & WIMG WALLS FOR CULVERT HEIGHT > 2M	2053-STR-TH01-BC-05

CLIENT:-  Asian Development Bank	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT  In association with 	PROJECT ROAD:- DISTRICT : THATTA - TH-01 RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-TH01-LD-01
							DESIGNED : R.I / M.A	Scale:- 1:20
EXECUTING AGENCY:-  WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH			TITLE:- LIST OF DRAWING				CHECKED : S.A	Edition.
							DATE: JUNE 2023	

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 Ø 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><div>Asian Development Bank</div></div>	PROJECT:- LOAN NO. 4279-PAK (COL): EMERGENCY FLOOD ASSISTANCE PROJECT (EFAP)	DESIGN CONSULTANT <div> In association with </div>	PROJECT ROAD:- DISTRICT : THATTA - TH-01 RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-TH01-GN-01	
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						CHECKED : S.A	Edition.		
						DATE: JUNE 2023			
EXECUTING AGENCY:- <div><div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div></div>									

CULVERTS

SCHEDULE OF CULVERTS

CULVERT NO.	CHAINAGE	LATITUDE	LONGITUDE	EXISTING/ PROPOSED	EXISTING CULVERT					DESIGN STRATEGY	PROPOSED DESIGN						
					TYPE	NO. OF CELLS	WIDTH/ DIA	HEIGHT	SKEW		TYPE	NO. OF CELLS	WIDTH/ DIA	HEIGHT	SKEW	FRL (m)	INVERT LEVEL (m)
C1		24.72689	67.88308	PROPOSED	-	-	-	-	-	NEW	BOX	1	1.5	1.0	0		
C2		24.72457	67.88102	PROPOSED	-	-	-	-	-	NEW	BOX	1	2	1.0	0		
C3		24.71215	67.87620	PROPOSED	-	-	-	-	-	NEW	BOX	1	1.5	1.0	0		
C4		24.71215	67.86936	EXISTING	SLAB	1	1.5	1.8	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C5		24.70607	67.86422	PROPOSED	-	-	-	-	-	NEW	BOX	1	2.5	2.0	0		
C6		24.70107	67.86112	PROPOSED	-	-	-	-	-	NEW	BOX	1	1.5	1.5	0		
C7		24.70000	67.86057	EXISTING	SLAB	1	1.5	1.7	0	REPAIR	-	-	-	-	-	-	-
C8		24.69873	67.85976	EXISTING	SLAB	1	1.5	1.7	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C9		24.69674	67.85825	EXISTING	SLAB	1	1.5	1.8	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C10		24.69001	67.85416	EXISTING	SLAB	1	1.5	1.7	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C11		24.68978	67.85392	EXISTING	SLAB	1	1.5	1.7	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C12		24.68936	67.85387	EXISTING	SLAB	1	1.5	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C13		24.68924	67.85379	EXISTING	SLAB	1	1.5	1.7	0	REPAIR	-	-	-	-	-	-	-
C14		24.68818	67.85036	EXISTING	SLAB	1	1.5	1.6	0	REPLACE WITH NEW	BOX	1	2	1.5	0		
C15		24.68126	67.67850	EXISTING	SLAB	1	1.5	1.6	0	REPLACE WITH NEW	BOX	1	2	1.5	0		
C16		24.68479	67.85132	PROPOSED	-	-	-	-	-	NEW	BOX	1	1.5	1	0		
C17		24.68112	67.85034	EXISTING	SLAB	1	1.5	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C18		24.68115	67.85028	EXISTING	SLAB	1	1.5	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C19		24.67513	67.84830	EXISTING	SLAB	1	1.5	1.6	0	REPLACE WITH NEW	BOX	1	2.5	1.5	0		
C20		24.67093	67.84840	EXISTING	SLAB	1	3	1.8	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C21		24.66940	67.84827	EXISTING	SLAB	1	1.5	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C22		24.66668	67.84877	EXISTING	SLAB	1	1.4	1.4	0	REPLACE WITH NEW	BOX	1	2	1.5	0		
C23		24.66236	67.84828	EXISTING	SLAB	1	3	2.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C24		24.65965	67.84678	EXISTING	SLAB	1	1.3	1.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C25		24.65775	67.84581	EXISTING	SLAB	1	1.5	1.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C26		24.65204	67.84269	EXISTING	SLAB	1	1.5	1.5	0	REPAIR	-	-	-	-	-	-	-
C27		24.64862	67.84099	EXISTING	SLAB	1	1	1	0	REPLACE WITH NEW	BOX	1	1.5	1	0		
C28		24.64866	67.84088	EXISTING	SLAB	1	1.5	1.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C29		24.64847	67.84081	EXISTING	SLAB	1	1.5	1.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C30		24.64713	67.84009	EXISTING	SLAB	1	1.5	1.5	0	REPAIR	-	-	-	-	-	-	-
C31		24.64658	67.83976	EXISTING	SLAB	1	1.2	1.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C32		24.64648	67.83968	EXISTING	SLAB	1	1.3	1.4	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C33		24.64349	67.83814	EXISTING	SLAB	1	3.1	2.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C34		24.64670	67.83714	EXISTING	SLAB	1	1.3	1.2	0	REPLACE WITH NEW	BOX	1	2.5	2.5	0		
C35		24.63936	67.83601	EXISTING	SLAB	1	2.2	1.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C36		24.63776	67.83502	EXISTING	SLAB	1	1.3	1.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C37		24.63553	67.83381	EXISTING	SLAB	1	1.5	1.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C38		24.63216	67.83204	EXISTING	SLAB	1	1.5	1.3	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C39		24.62199	67.83881	EXISTING	SLAB	1	3	3	0	REPAIR	-	-	-	-	-	-	-
C40		24.62357	67.82794	EXISTING	SLAB	1	1.2	1.2	0	REPAIR	-	-	-	-	-	-	-
C41		24.62043	67.82679	EXISTING	SLAB	2	6.5	3.5	0	REPLACE WITH NEW	BOX	6	3	3	0		
C42		24.13820	67.82408	EXISTING	SLAB	2	1.5	1.5	0	REPLACE WITH NEW	BOX	1	2	1.5	0		
C43		24.61158	67.82309	EXISTING	SLAB	1	1.5	1.5	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C44		24.61049	67.82264	EXISTING	SLAB	1	1.2	1.2	0	REPLACE WITH NEW	BOX	1	2	1	0		
C45		24.60804	67.82611	EXISTING	SLAB	1	1.6	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C46		24.60486	67.82145	EXISTING	SLAB	1	1.2	1.6	0	RETAINED / REPAIR	-	-	-	-	-	-	-
C47		24.60473	67.82193	EXISTING	SLAB	1	1.5	2	60	RETAINED / REPAIR	-	-	-	-	-	-	-
C48		24.60174	67.82086	EXISTING	SLAB	1	1.2	1.5	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:-



EXECUTING AGENCY:-



PROJECT:-

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

DESIGN CONSULTANT



PROJECT ROAD:-

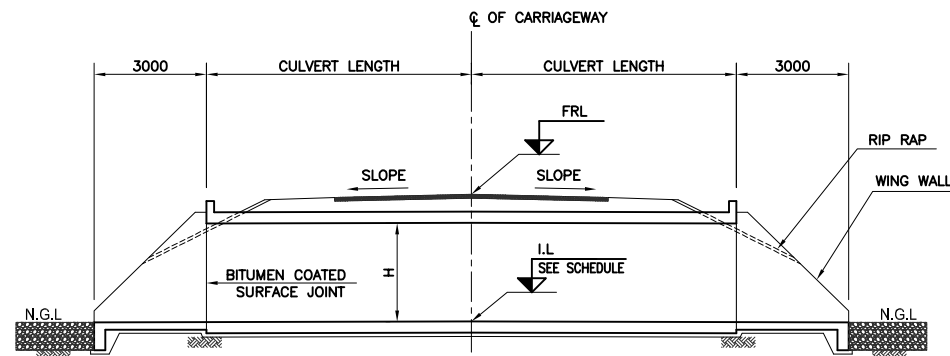
DISTRICT : THATTA - TH-01
RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH

TITLE:-

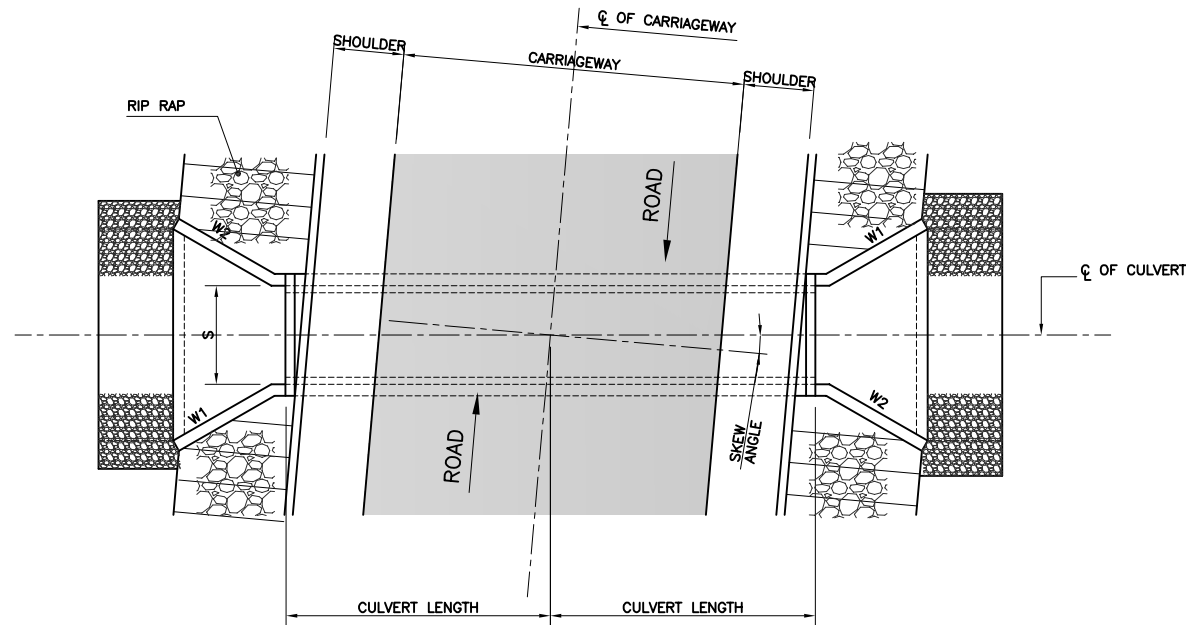
SCHEDULE OF CULVERTS

ED.NO.	DATE	DESCRIPTION	DRAWN:	DRAWING NO.
			F.A.S	2053-STR-TH01-CU-SCH-01
			DESIGNED : R.I / M.A	Scale:- 1:100
			CHECKED : S.A	Edition.
			DATE: JUNE 2023	

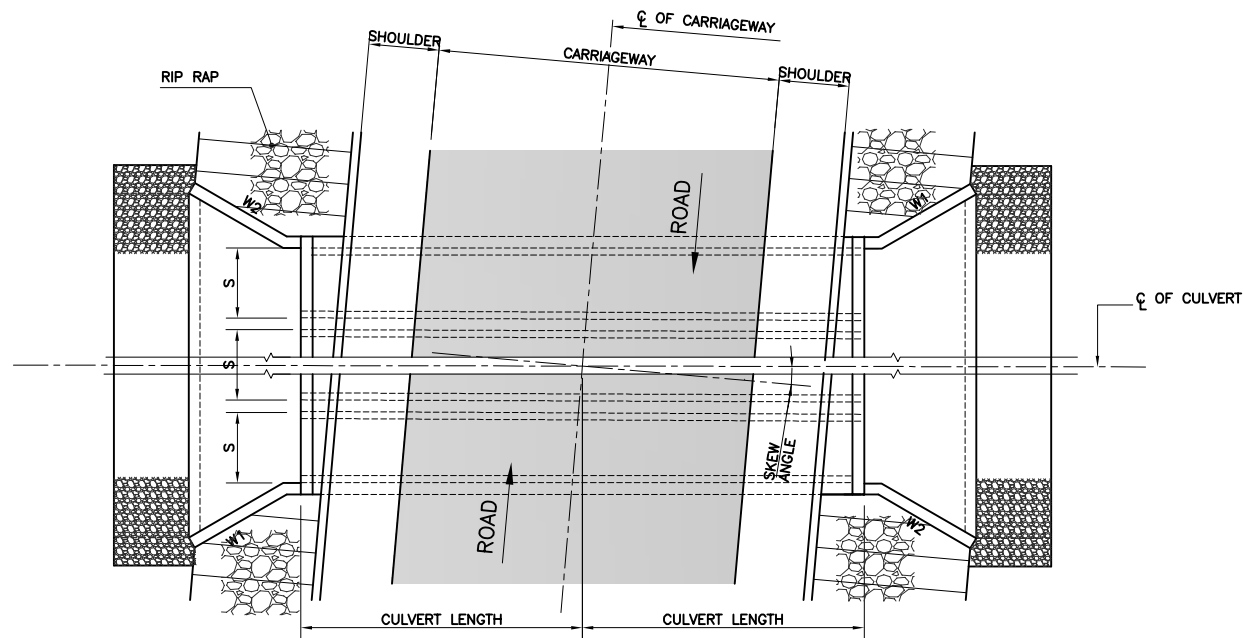
BOX CULVERTS



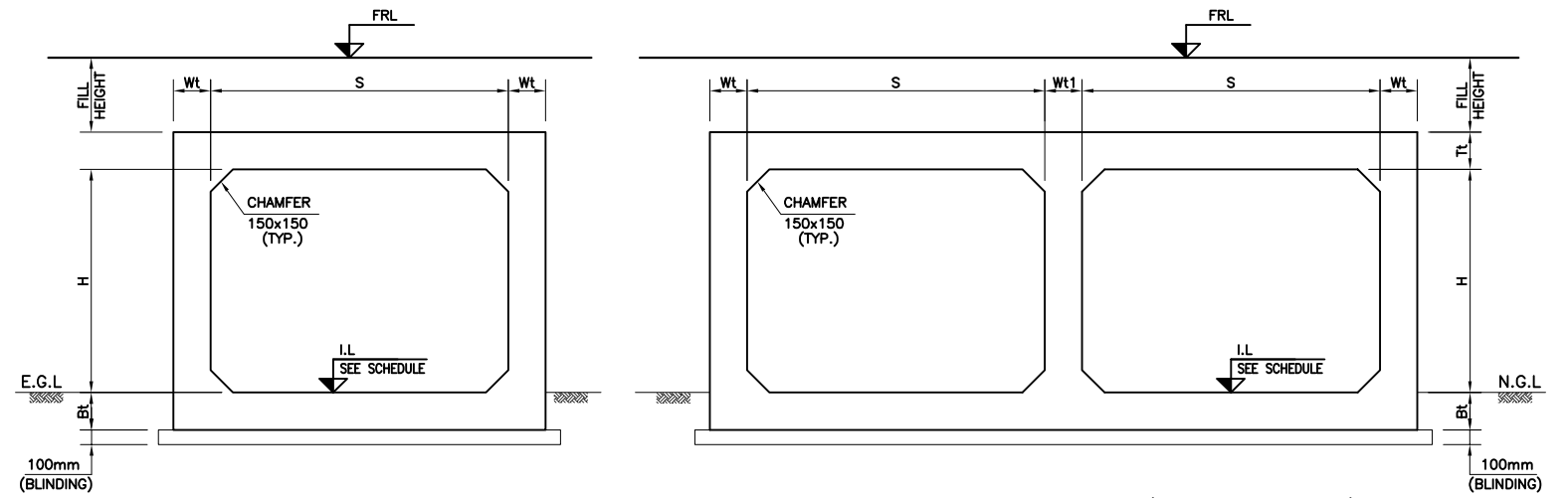
LONGITUDINAL SECTION AT C.L. OF CULVERT
(FOR ROAD X-SECTION REFER RELEVANT ROADWAY DRAWINGS)



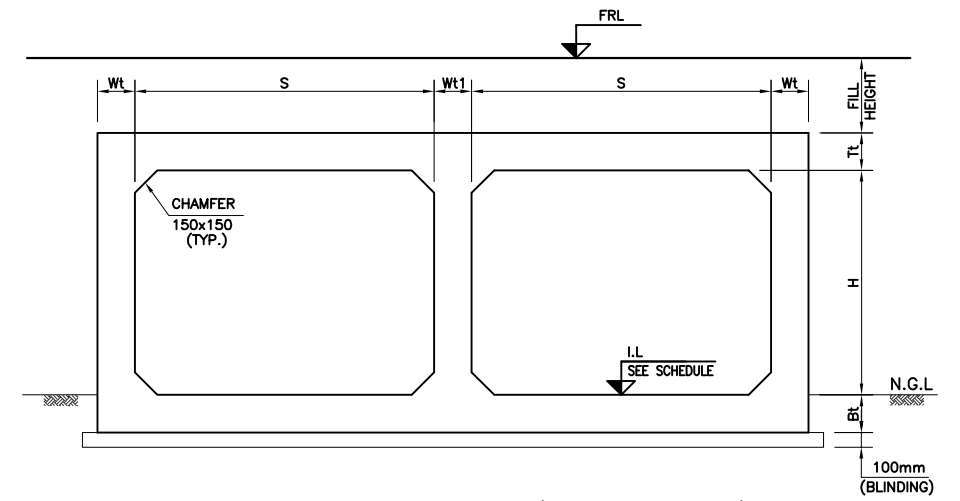
PLAN (SINGLE CELL)



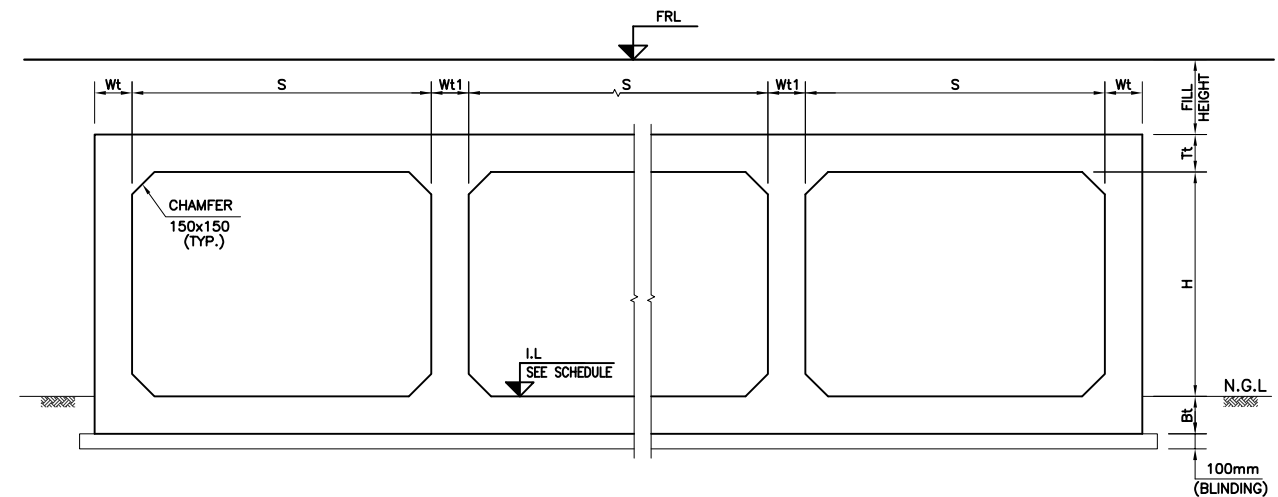
PLAN (MULTI CELL)



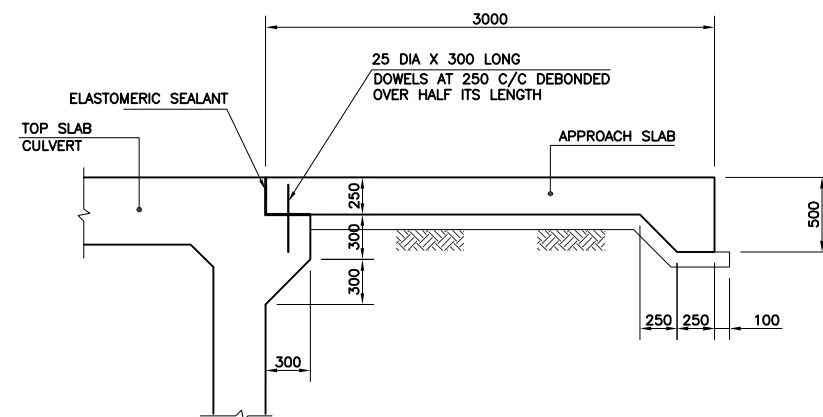
TYP. CROSS SECTION (SINGLE CELL)
SCALE 1:25



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






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




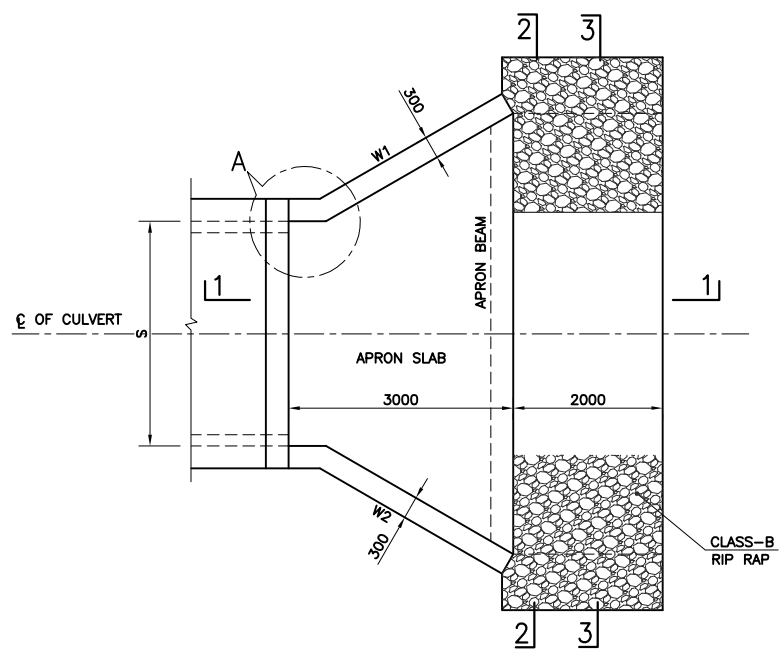
TYP. DETAIL OF APPROACH SLAB
FOR FILL HEIGHT $\leq 1000\text{mm}$
SCALE 1:25

NOTES:-

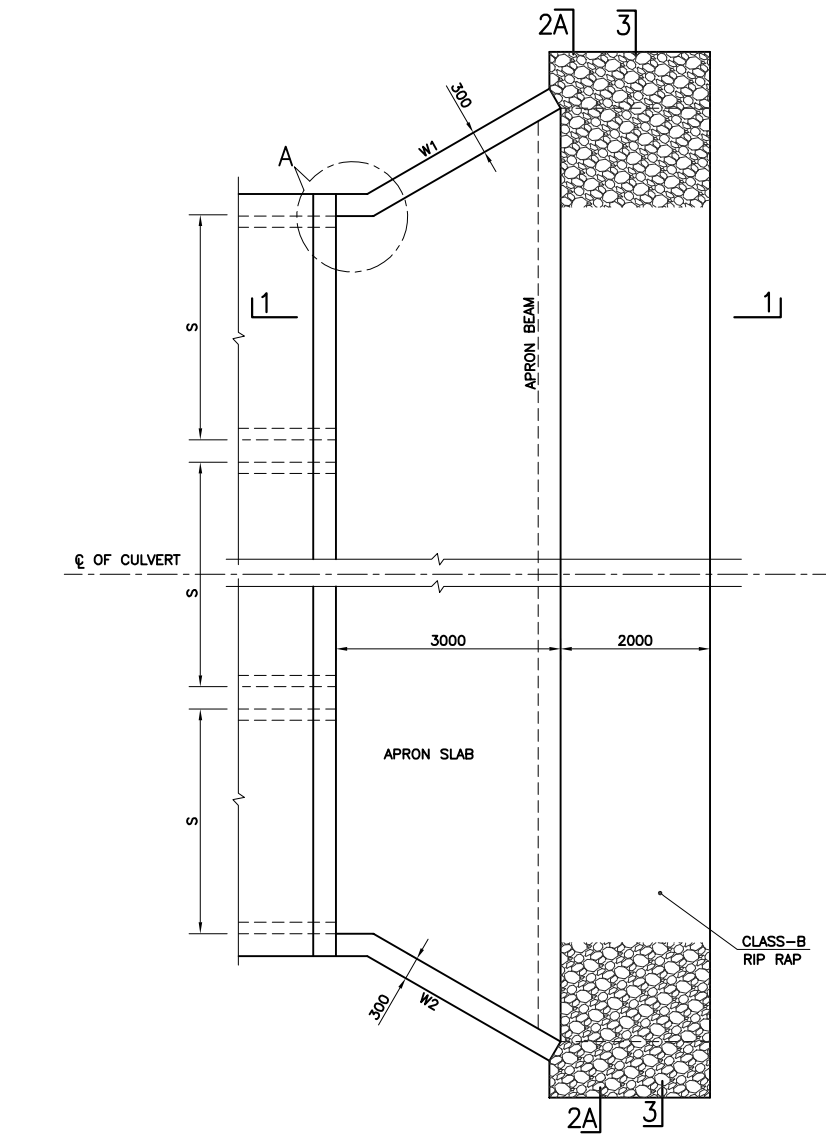
- 1 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWING.
- 2 - FOR ROAD X-SECTION AND LOCATION REFER RELEVANT ROADWAY PLAN AND PROFILE DRAWINGS.
- 3 - LEVELS MAY BE ADJUSTED AS PER SITE CONDITIONS. DURING LEVEL ADJUSTMENTS, IF FILL HEIGHT VARIES SIGNIFICANTLY FOR WHICH THE STRUCTURE 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 : THATTA - TH-01 RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH	ED.NO.	DATE	DESCRIPTION	DRAWN: F.A.S	DRAWING NO. 2053-STR-TH01-BC-01
			TITLE:- RCC BOX CULVERT GENERAL ARRANGEMENT				DESIGNED : R.I / M.A	
							CHECKED : S.A	Edition.
							DATE: JUNE 2023	

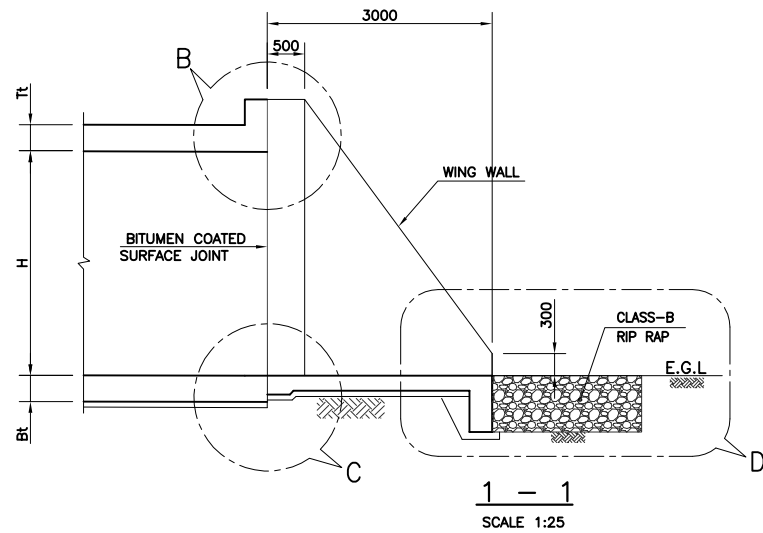
EXECUTING AGENCY:- <div>WORKS AND SERVICES DEPARTMENT GOVERNMENT OF SINDH</div>
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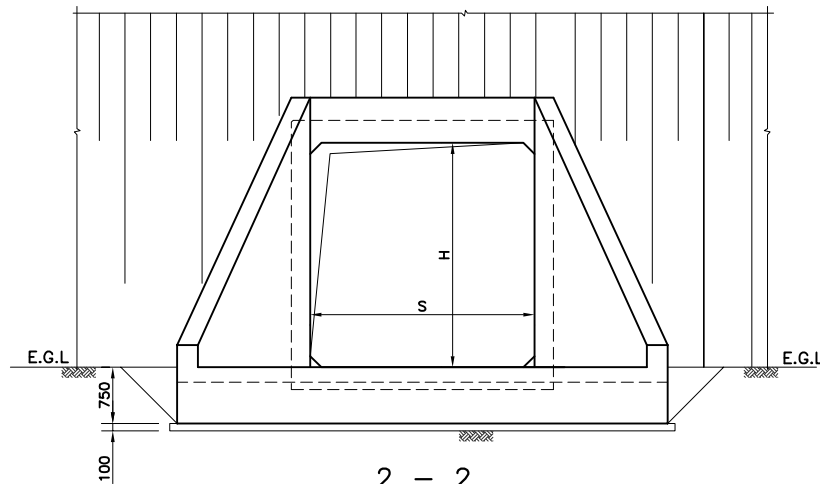
PLAN OF APRON SLAB (SINGLE CELL)
SCALE 1:50



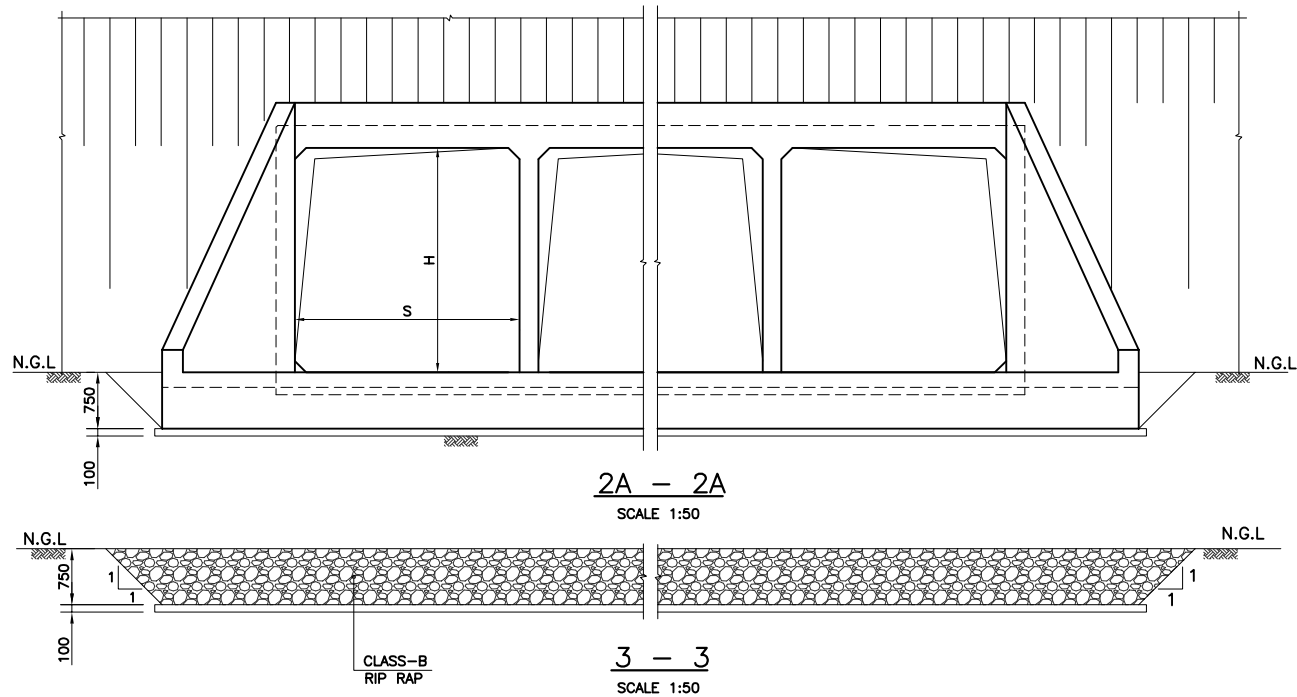
TYP. PLAN OF APRON SLAB (MULTI CELL)
SCALE 1:50



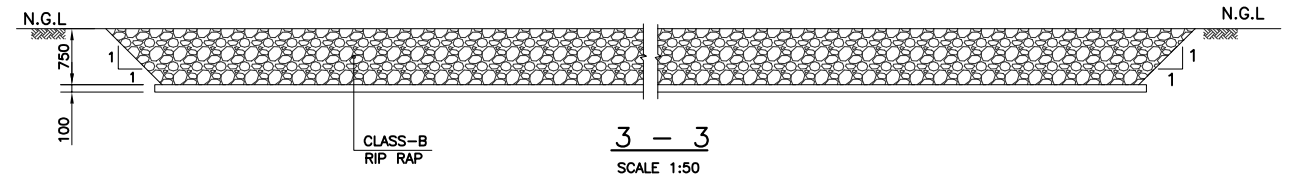
1 - 1
SCALE 1:25



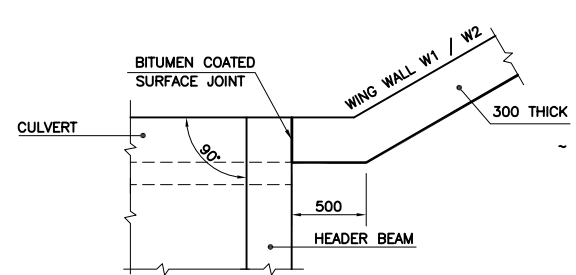
2 - 2
SCALE 1:50



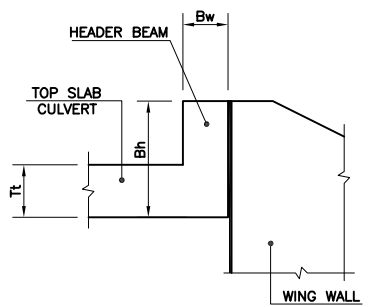
2A - 2A
SCALE 1:50



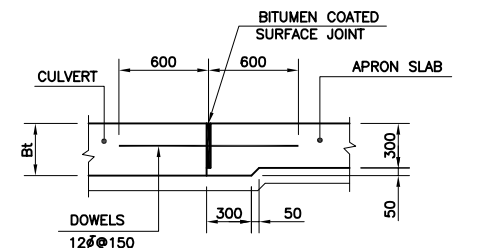
3 - 3
SCALE 1:50



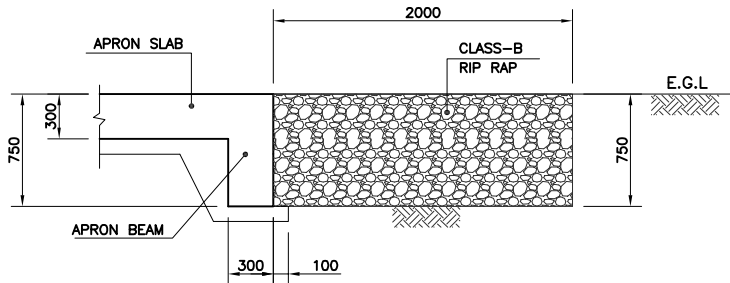
DETAIL A
SCALE 1:25



DETAIL B
SCALE 1:25



DETAIL C
SCALE 1:25



DETAIL D
SCALE 1:25

NOTES:-

- 1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH
DWG. NO. 2053-STR-TH01-01-BC-01.

CLIENT:-



EXECUTING AGENCY:-



PROJECT:-

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

DESIGN CONSULTANT



PROJECT ROAD:-

DISTRICT : THATTA - TH-01
RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH

TITLE:-

RCC BOX CULVERT
DETAILS OF APRON SLAB & WING WALLS

ED.NO.

DATE

DESCRIPTION

DRAWN:

F.A.S

DESIGNED:

R.I / M.A

CHECKED:

S.A

DATE:

JUNE 2023

DRAWING NO.








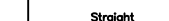


2053-STR-TH01-BC-02

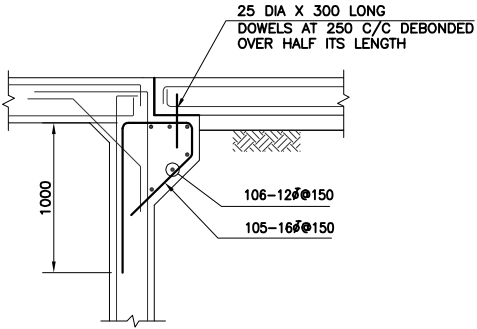
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Edition.












SINGLE CELL CULVERTS

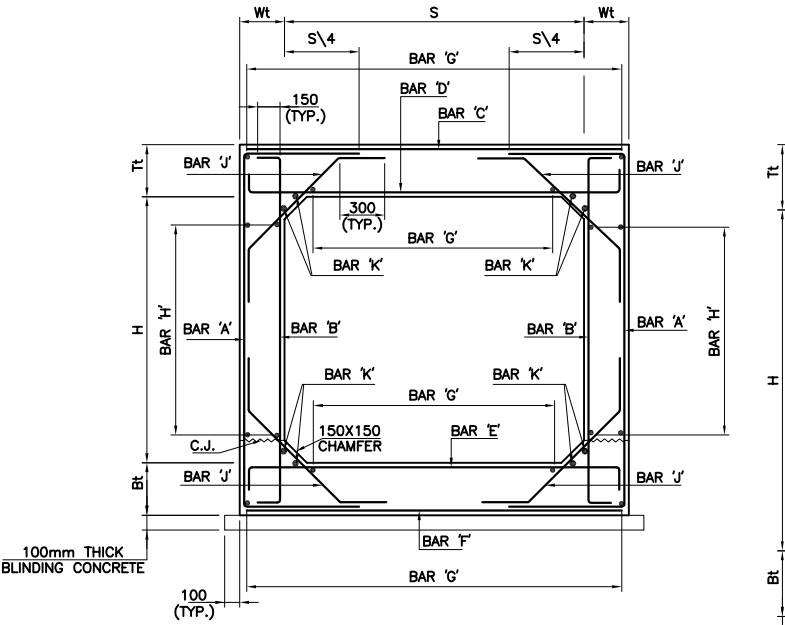
DIMENSIONS																										
							BAR A		BAR B		BAR C		BAR D		BAR E		BAR F		BAR G		BAR H		BAR J		BAR K	
NO. OF CELLS	S mm	H mm	FILL mm	Wt mm	Bt mm	Tt mm	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	NO.OF BAR		
1	1000	1000	300—1000	250	250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



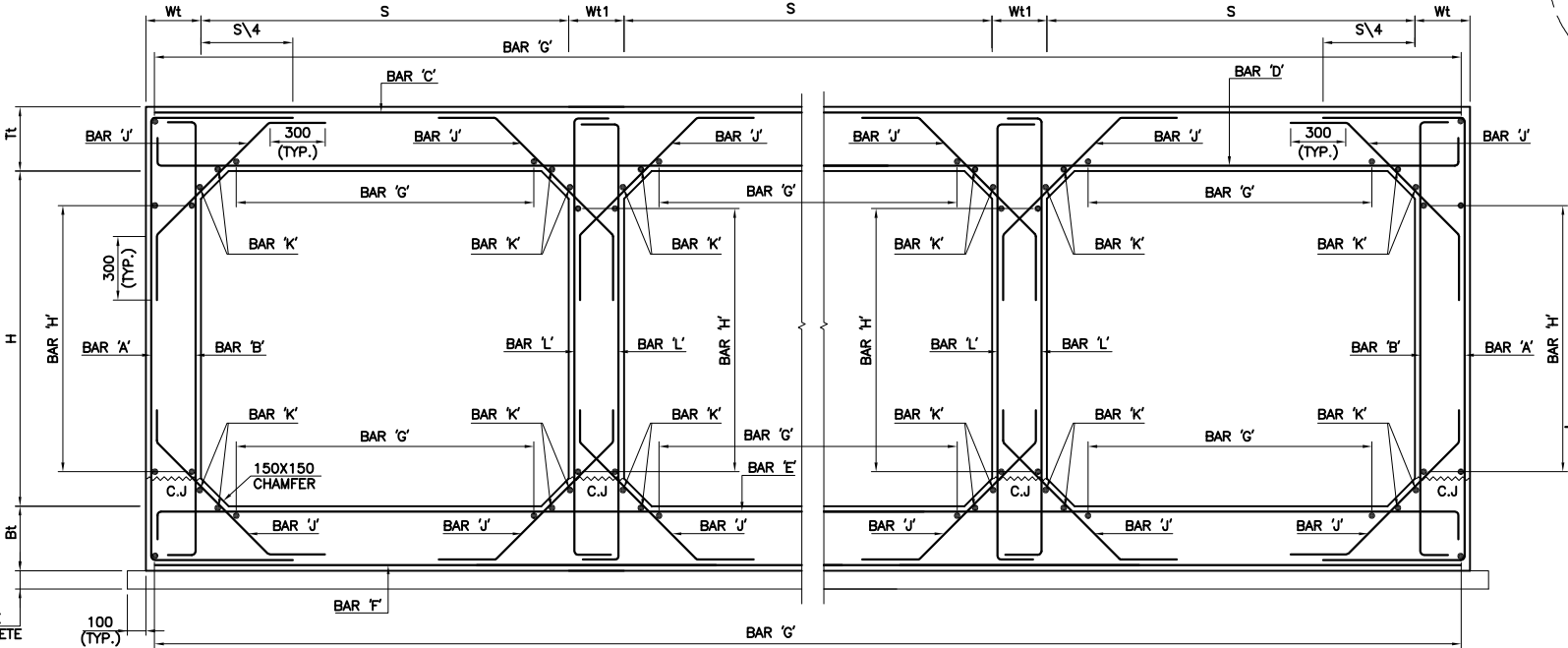
DETAIL-A
SCALE 1:25

MULTI CELL CULVERT

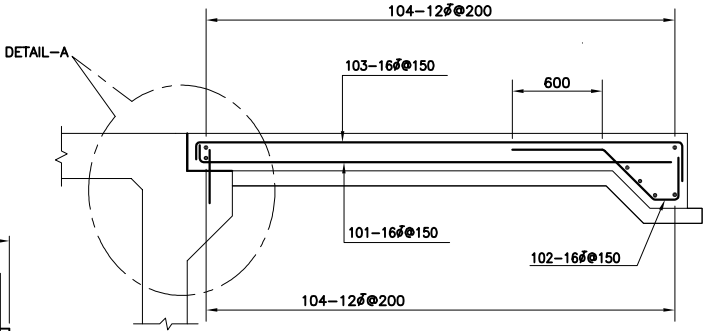
DIMENSIONS																											
								BAR A		BAR B		BAR C		BAR D		BAR E		BAR F		BAR G		BAR H		BAR J		BAR K	
NO. OF CELLS	S mm	H mm	FILL mm	Wt mm	Wt1 mm	Bt mm	Tt mm	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	NO.OF BAR	DIA	SPACING		
6	3000	3000	300—1000	400	400	450	450	16ϕ	100	16ϕ	100	16ϕ	100	16ϕ	100	16ϕ	100	12ϕ	200	12ϕ	200	12ϕ	200	12ϕ	48	16ϕ	100



TYPICAL SECTION OF SINGLE CELL
SCALE 1:25



TYPICAL SECTION OF MULTI CELL CULVERT
SCALE 1:20



TYP. 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 : THATTA - TH-01
RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH

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

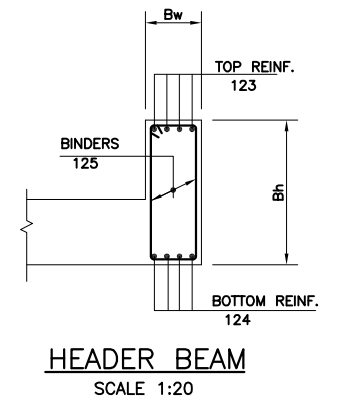
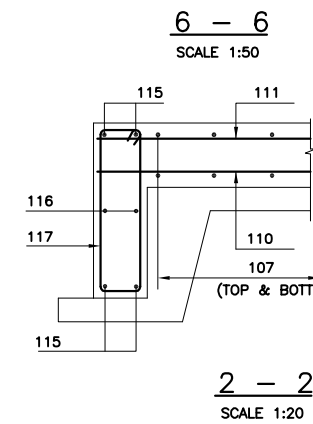
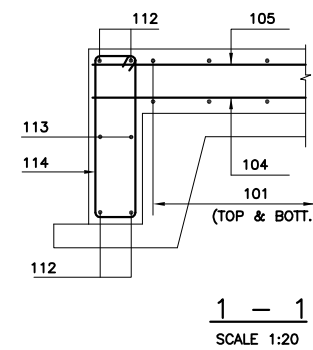
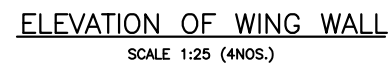
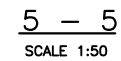
DRAWING NO.

2053-STR-TH01-BC-03

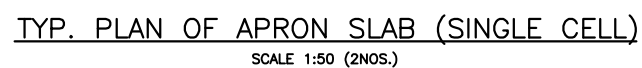
Scale:-

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Edition.



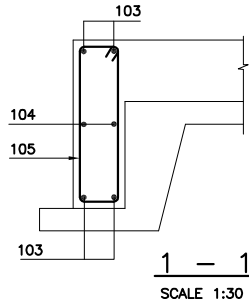
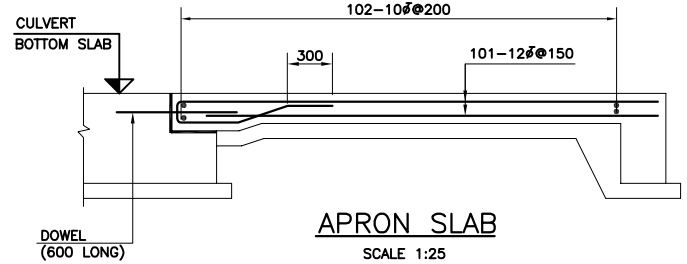
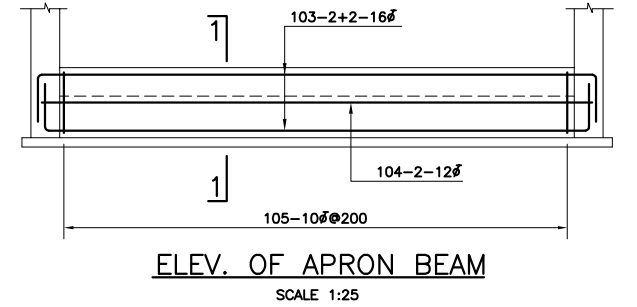
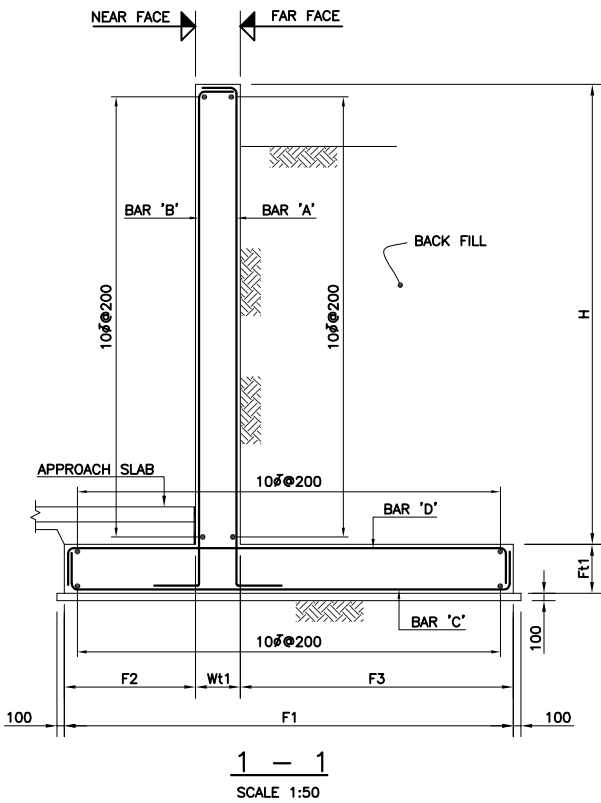
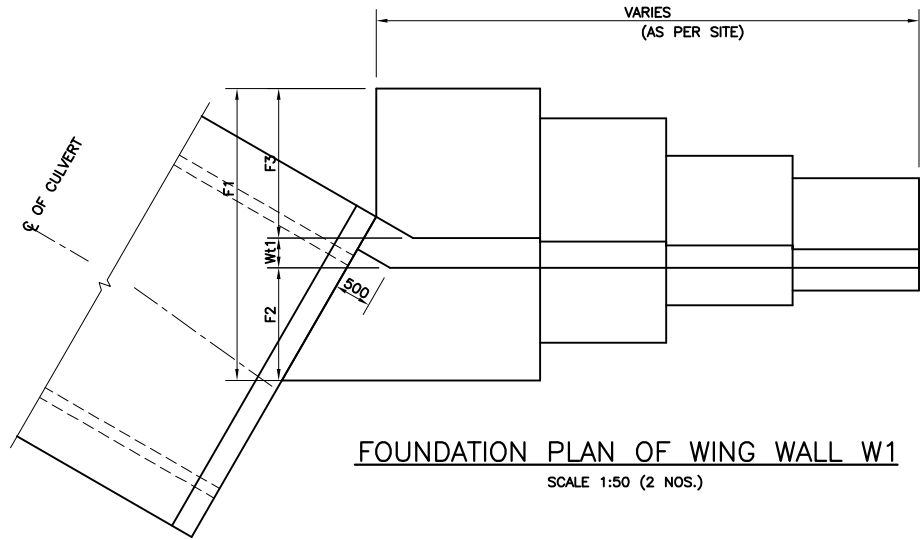
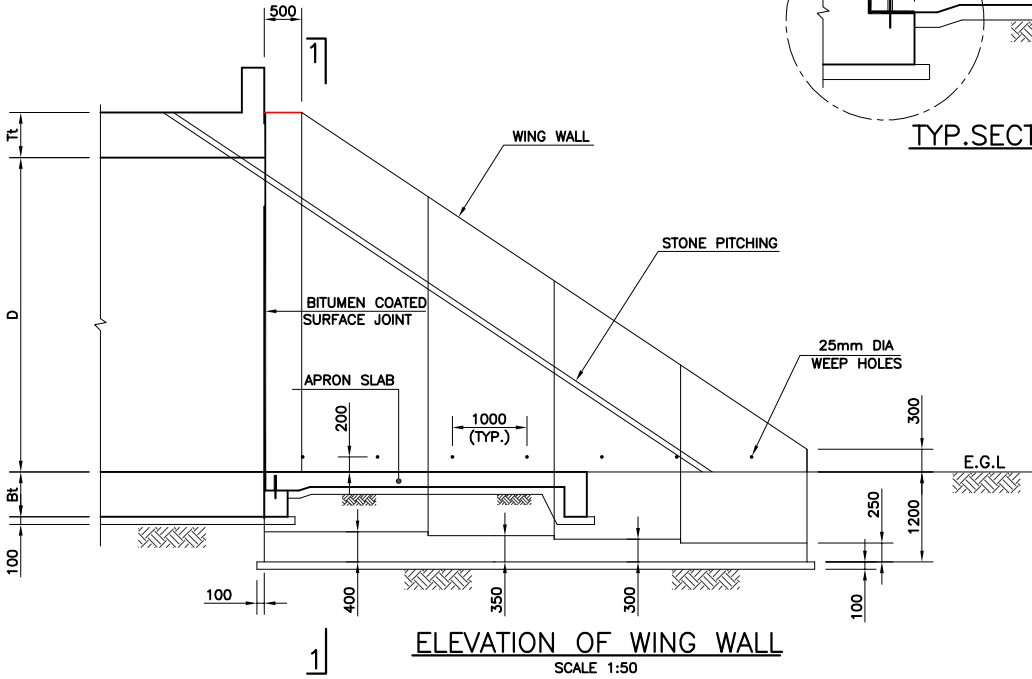
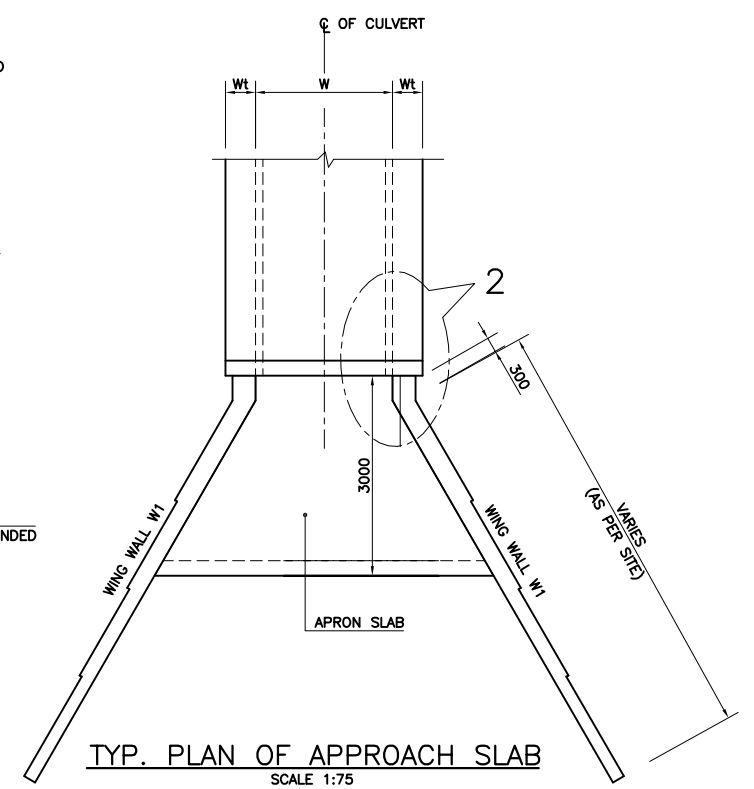
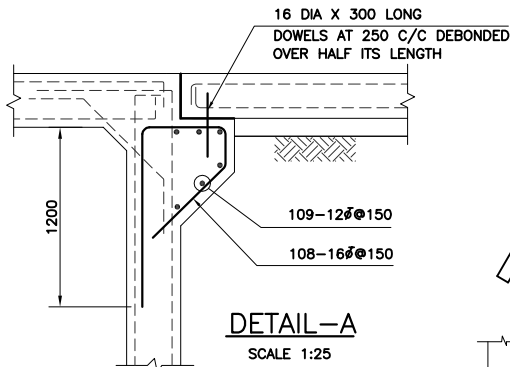
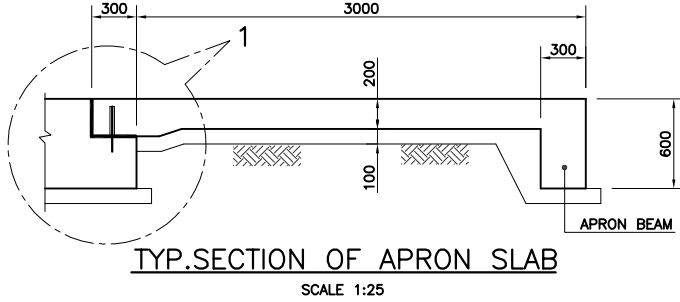
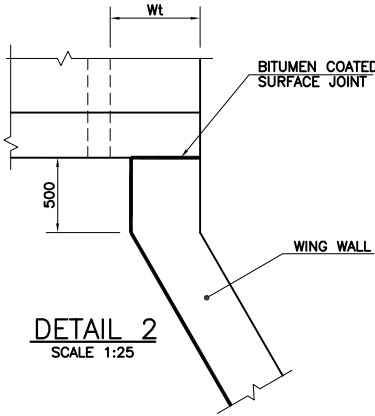
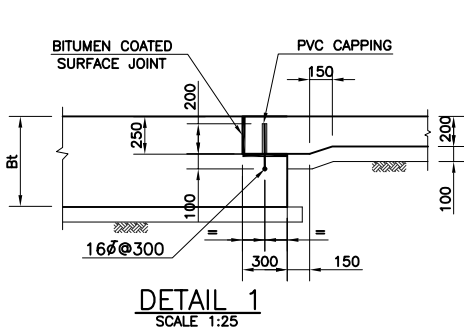
BEAM ID	MAX. BEAM LENGTH 'L'	BEAM SIZE		REINFORCEMENT		
		B _w	B _h	TOP (123)	BOTTOM (124)	BINDERS (125)
B1	2000	250	600	3-16 ϕ	3-16 ϕ	10 ϕ @150
B2	3000	300	600	4-16 ϕ	4-16 ϕ	10 ϕ @150
B3	4000	300	900	6-16 ϕ	6-16 ϕ	10 ϕ @150



1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH
DWG. NO. 2053-STR-TH01-BC-01, 02 & 03.

TABLE-01: SCHEDULE OF RCC WING WALL

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



NOTES

1- THIS DRAWING MUST BE READ IN CONJUNCTION WITH DWG. NO. 2053-STR-TH01-BC-01.

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 : THATTA - TH-01
RECONDITIONING OF ROAD FROM MAKLI TO GHULAM ULLAH

TITLE:-

REINFORCEMENT DETAILS OF APRON SLAB & WING WALLS
FOR CULVERT HEIGHT > 2m

ED.NO.

DATE

DESCRIPTION

DRAWN:

F.A.S

DESIGNED:

R.I / M.A

CHECKED:

S.A

DATE:

JUNE 2023

DRAWING NO.

2053-STR-TH01-BC-05

Scale:-

1:100

Edition.