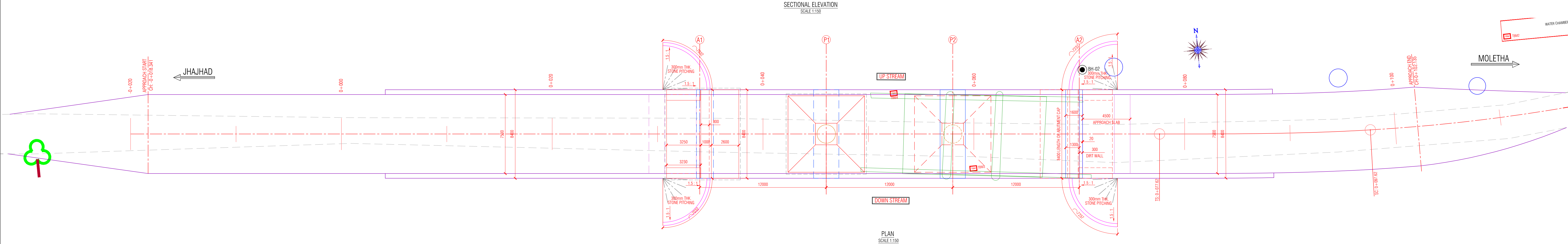
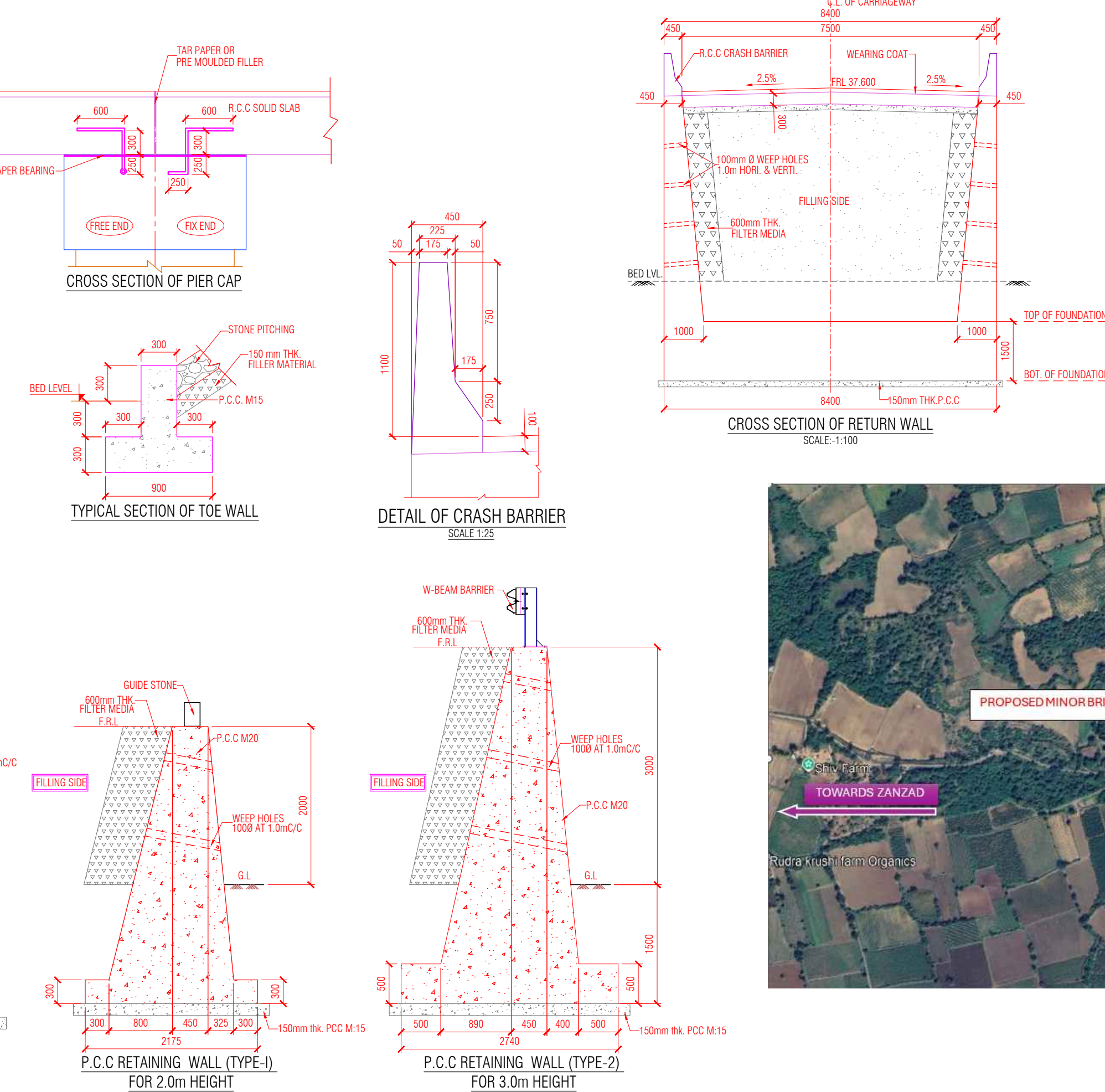
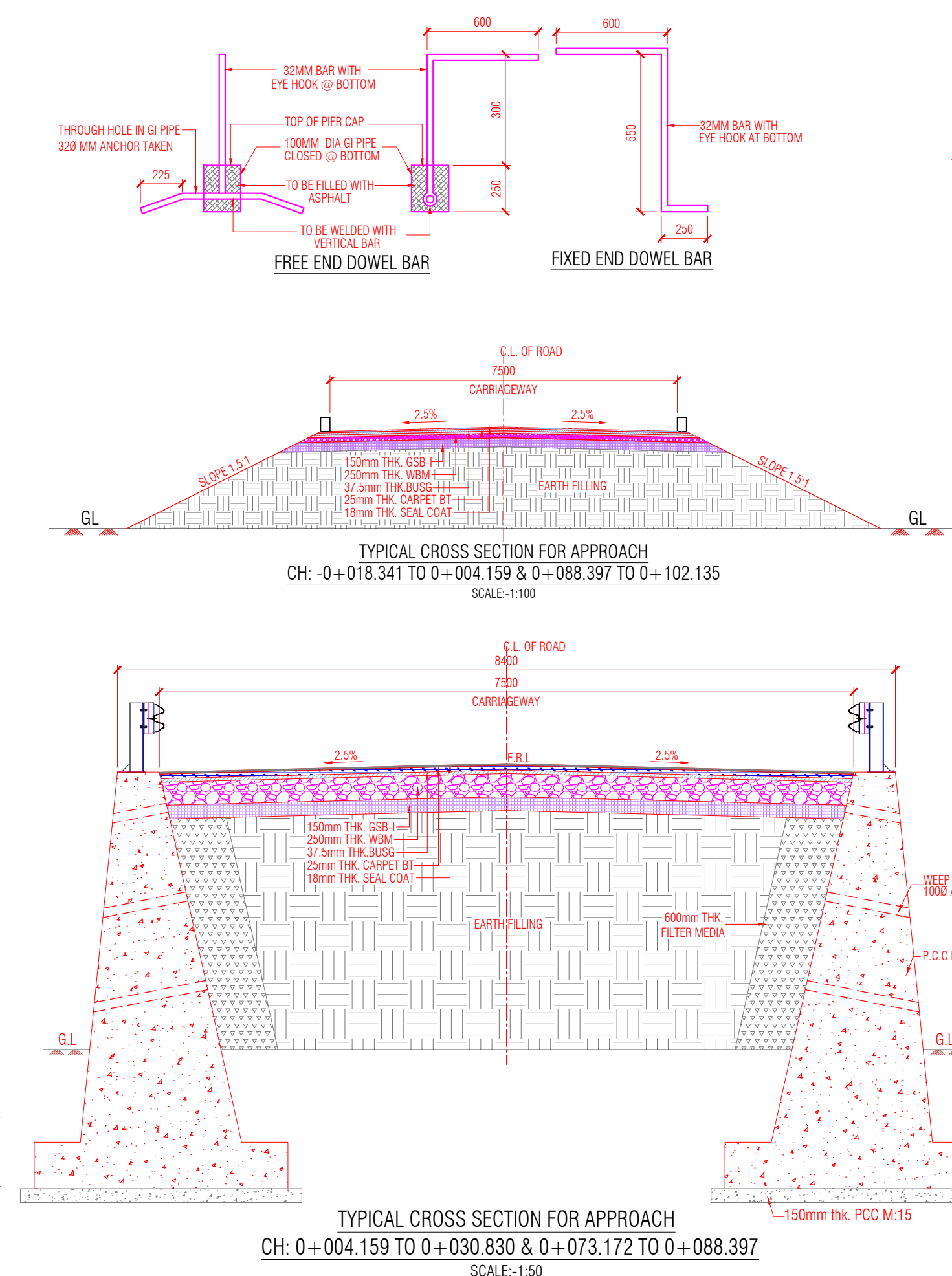
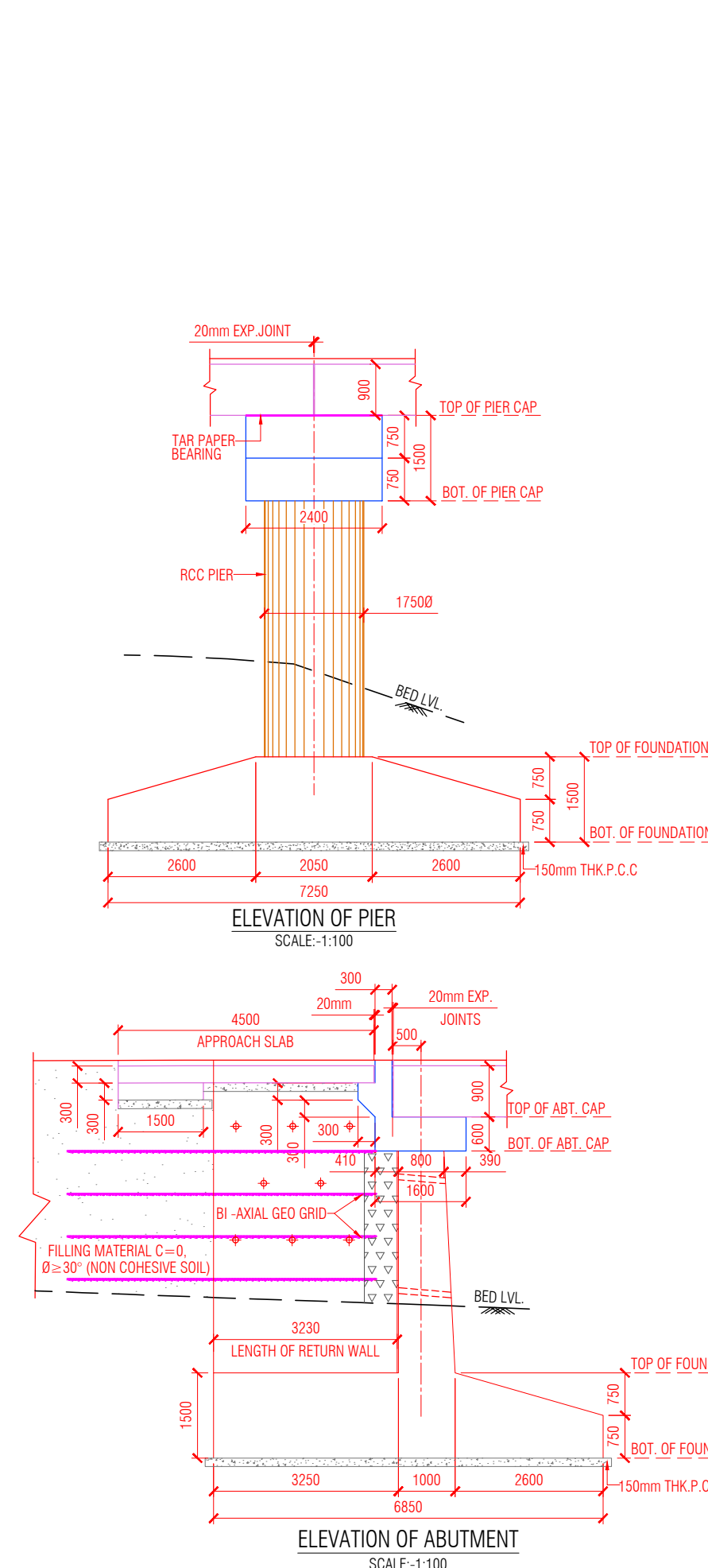
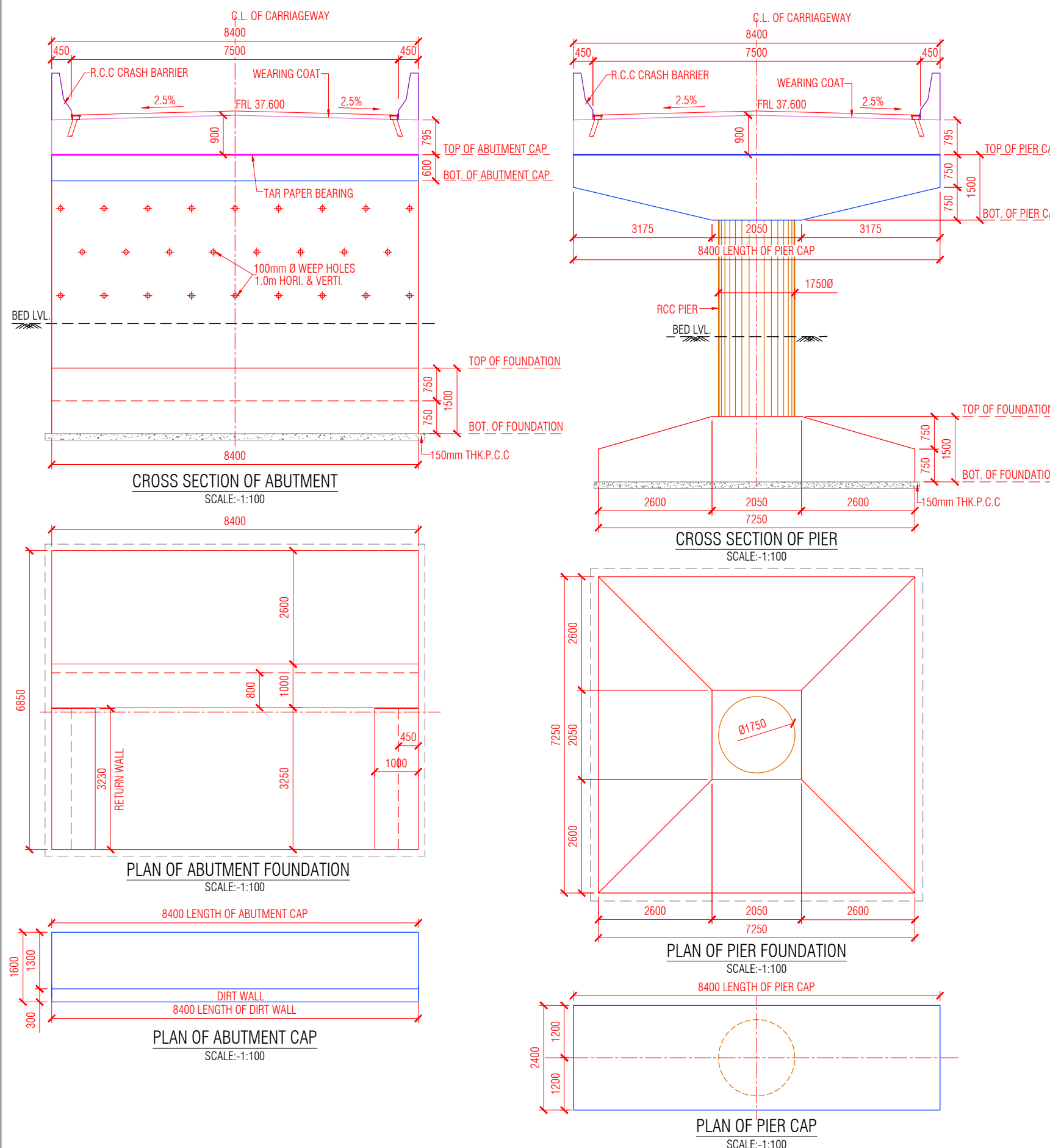


STRUCTURAL AND OTHER DATA	
A) SPAN ARRANGEMENT	3 SPAN OF 12.0m
B) SUB STRUCTURE	RCC ABUTMENT & PIER, RCC ABUTMENT CAP & PIER CAP
C) BEARINGS/SUPPORT	TAR PAPER BEARING
D) SUPER STRUCTURE	RCC SOLID SLAB
E) WEARING COAT	18mm SEAL COAT + 25mm CARPET BT + 37.5mm BUGG
F) EXPANSION JOINT	FILLER TYPE EXPANSION JOINT
G) WATER SPOUTS	AT 5m C/C
H) RAILINGS	RCC CRASH BARRIER

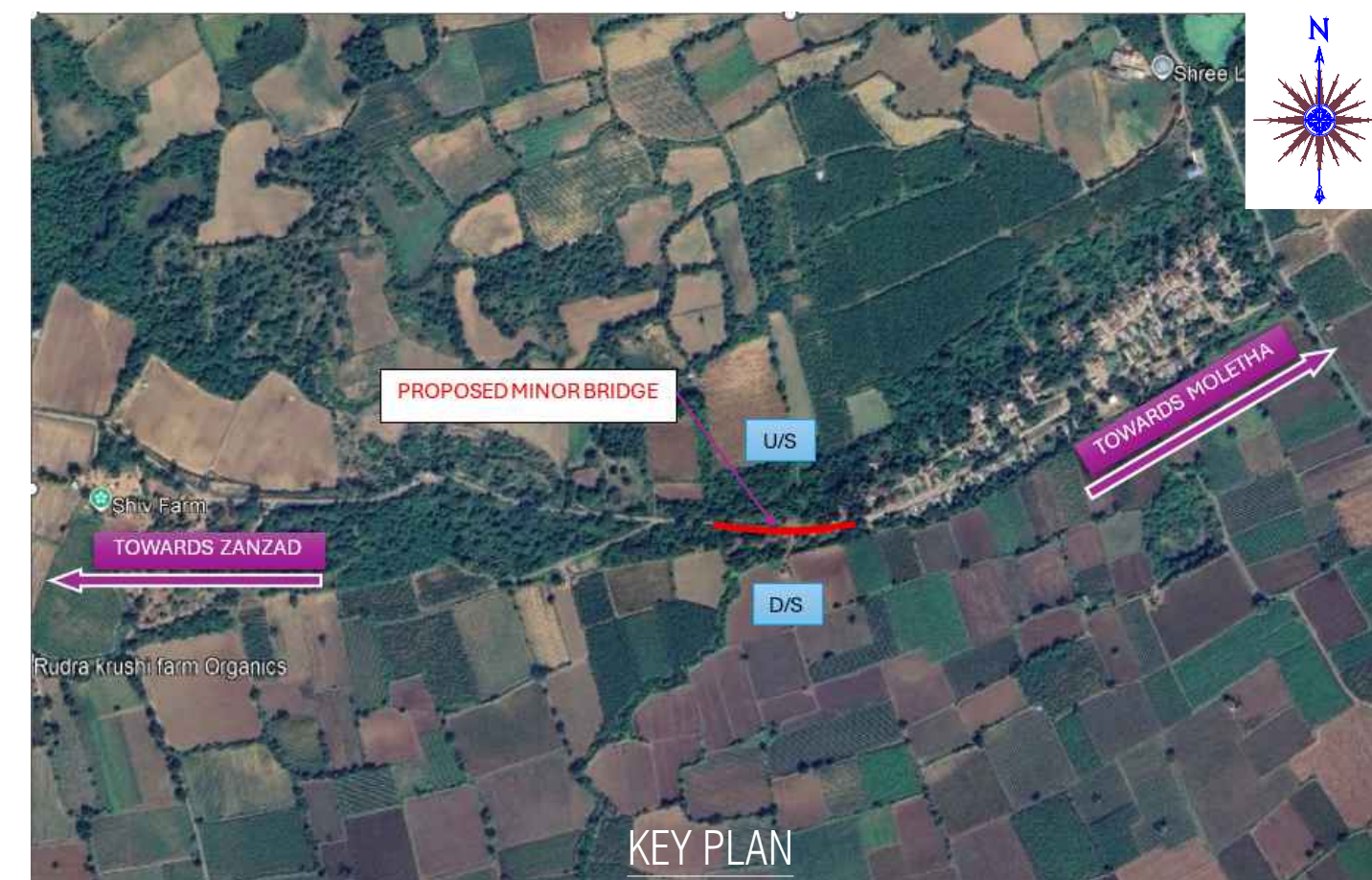
HYDRAULIC DATA	
A) CATCHMENT AREA	3,200 SQ.KM
B) DESIGN DISCHARGE	119.170 CUMEC/S
C) HFL	35.591m
D) AFFLUX	0.105m
E) AHFL	35.696m
F) RUDDISTY CO-EFFICIENT	0.053
G) OBSTRUCTED VELOCITY	2.65m/s



LEVEL TABLE							
ABUTMENT/PIER	F.R.L.	TOP OF ABUTMENT/PIER CAP	BOTTOM OF ABUTMENT/PIER CAP	HEIGHT OF ABUTMENT/PIER	G.L.	TOP OF FOUNDATION	BOTTOM OF FOUNDATION
A1	37.600	36.600	36.000	3.686	34.491	32.114	30.614
P1	37.600	36.600	35.100	3.369	34.372	31.731	30.231
P2	37.600	36.600	35.100	4.362	33.252	30.738	29.238
A2	37.600	36.600	36.000	3.966	34.794	32.032	30.532



BORE HOLE BH-02			
LAT : 21.9356921		LONG : 73.4113012	
R.L. 34.116			
DEPTH	NOTATION	SOIL DESCRIPTION	'N' VALUE
0.00		FILLED UP (0.0M TO 0.8M)	
1.00		BROWNISH SILTY CLAY OF LOW PLASTICITY (0.8M TO 3.5M)	18
2.00			
3.00		YELLOWISH BROWNISH SILTY CLAY OF INTERMEDIATE PLASTICITY (3.5M TO 5.0M)	26
4.00			
5.00		BROWNISH SILTY CLAY OF HIGH PLASTICITY (5.0M TO 8.0M)	41
6.00			
7.00			
8.00		YELLOWISH BROWNISH SILTY CLAY OF HIGH PLASTICITY (8.0M TO 10.0M)	35
9.00			
10.00			41
			48



- GENERAL
- 1.1. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- 1.2. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING.
- 1.3. DESIGN CRITERIA:
- 1.4. THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
 - IRC-78-2024
 - SP-13-2022
 - IRC-6-2017
 - IRC-112-2020
 - IRC-SP-114-2018
2. THE DESIGN ARE APPLICABLE FOR "SEVERE" EXPOSURE CONDITIONS & SEISMIC ZONE III.
3. THE STRUCTURE DESIGN FOR:
 - ONE LANE OF CLASS 70R
 - TWO LANE OF CLASS-A FOR EACH LANE.
 - ONE LANE OF IRC SV LOADING
4. WIND LOAD DETAILS CONSIDERED IN DESIGN:
 - BASIC WIND SPEED - 44 m/sec
 - TYPE OF TERRAIN - PLAIN TERRAIN
5. CONCRETE:
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE CONFORMING TO IS:8925 AND IS:9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
6. REINFORCEMENT:
 - GRADE: F65500 / 500D (TMT) CONFORMING TO IS:1786-2008.
7. WATER:
 - WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC 112-2020.
8. BEARING:
 - TAR PAPER BEARING SHALL BE PROVIDED.
9. EXPANSION JOINT:
 - FILLER TYPE EXPANSION JOINT SHALL BE USED. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING KERB AND FOOTPATH FOLLOWING THE PROFILE OF THE SAME. (WHERE RELEVANT) EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.
10. WORKMANSHIP/DETAILING:
 - FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - CONCRETE GRADE:

NO	DESCRIPTION	GRADE OF CONCRETE	GRADE OF STEEL
01	RCC SOLID SLAB	M35	F65500 / 500D (TMT) CONFORMING TO IS:1786-2008
02	ABUTMENT	M35	
03	ABUTMENT FOUNDATION	M35	
04	ABUTMENT CAP	M30	
05	PIER	M30	
06	PIER FOUNDATION	M30	
07	PIER CAP	M30	
08	LEVELLING COURSE	M15	
09	RCC CRASH BARRIER	M40	
10	APPROACH SLAB	M30	
11	RCC RETAINING WALL	M20	
 - 10.3. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
 - 10.4. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - 10.5. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - 10.6. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
 11. BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED SOIL HAVING PROPERTIES AS $C=0.6q\sqrt{q_0}$ cm, $\theta=30^\circ$; DENSITY OF EARTH FILL $\gamma=18kN/m^3$ TO 20kN/m³ SHALL BE CONFIRM WITH IRC-78-2024.
 12. SPECIFICATIONS:
 - THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV) SPECIFICATION FOR ROAD & BRIDGE WORKS.
 13. DRAINAGE SPOUT:
 - THE SPOUT SHALL OF 100mm DIA.@5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
 - DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD/303.
 14. IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA, OF SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
 15. ROCK LEVEL DURING CONSTRUCTION SHOULD BE VERIFY AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL IMMEDIATELY BE REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.
 16. BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT IT TO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 17. FRL & CHAINAGES WILL BE SUBJECTED TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.
 18. IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/ CLIENT SHALL MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.
 19. SIZE OF PIER ABUTMENT/PIER CAP BEARING SHOWN IN THIS DRG. ARE TENTATIVE, AND ARE SUBJECTED TO CHANGE IN FINAL DESIGN & DRAWING AS PER REQUIREMENT.
 20. 100mm DIA WEEP HOLES SHALL BE PROVIDED AT 1.0m C/C IN STAGGERED MANNER HORIZONTALLY AND VERTICALLY.
 21. GEO GRID SHALL BE PROVIDED BEHIND APPROACH SLAB AS PER OF NO. PRCH/102020/1293/C DATED 17-02-2021.
 22. SOIL ENGINEERING WAS CARRIED OUT BY GEO DESIGN AND RESEARCH PVT. LTD. AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO EXECUTIVE ENGINEER, VADODAR R&B DIVISION, VIDE REPORT NO. 6854/126001.
 22. ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GDS VIDE THEIR LETTER NO. SHB-10-2024-1009-C.

CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION, VADODARA

NAME OF WORK:- CONSTRUCTION OF SLAB DRAIN ACROSS LOCAL STREAM ON JHAJHAD MOLETHA ROAD AT ROAD KM. 1/200 TO 1/400 IN TA. SHINOR, DIST. VADODARA IN GUJARAT STATE.

TITLE:- GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE

LOCATION:- NAME OF ROAD : JHAJHAD MOLETHA ROAD

CONSULTANT :-

GEO DESIGNS & RESEARCH (P) LTD.

PREPARED BY JAVAN KARNATHI (CAD ENGINEER)

DESIGNED BY FARHUKUDIN DHAVALALA (S-ENGINEER)

CHECKED BY MEHUL PATEL (DESIGN DIRECTOR)

DRG NO. GDR/GAD/R&B/BR-201

DATE: 16-03-2026

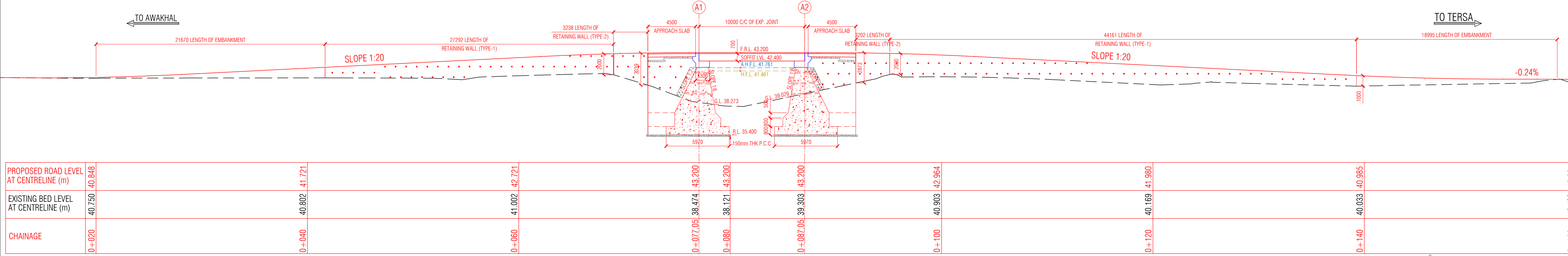
JOB NO. 2025_26_001

AUTHORITY :-

DEPUTY EXECUTIVE ENGINEER, PANCHAYAT (R&B) DIVISION, VADODARA.

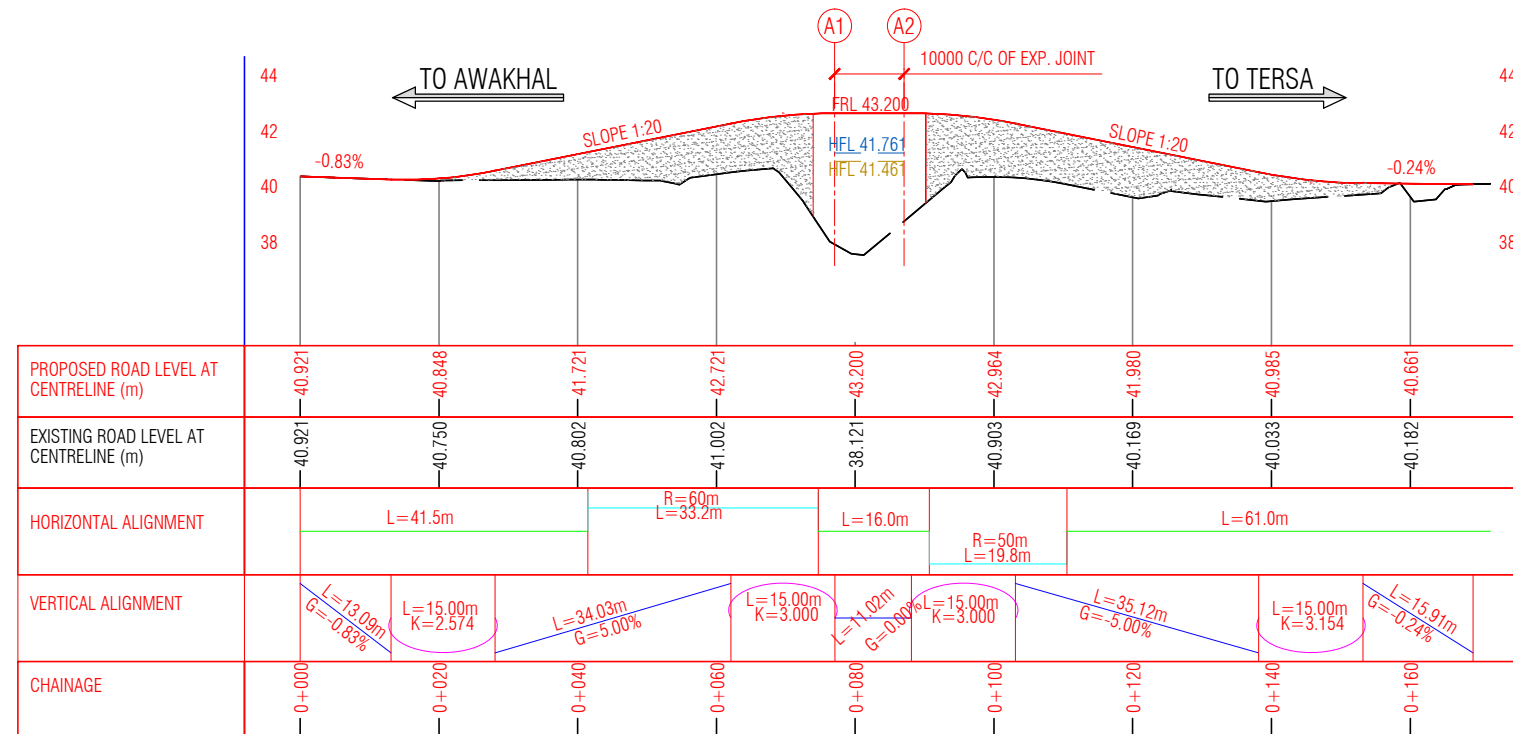
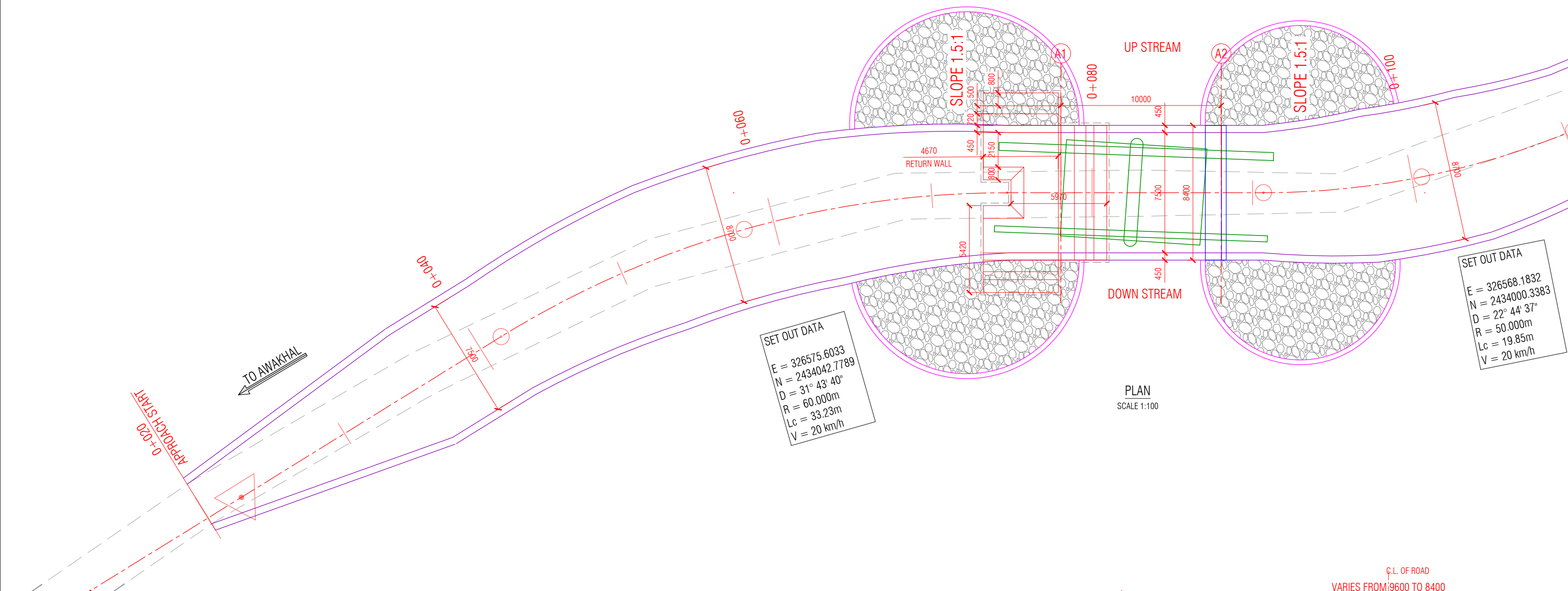
EXECUTIVE ENGINEER, PANCHAYAT (R&B) DIVISION, VADODARA.

NO. 1540

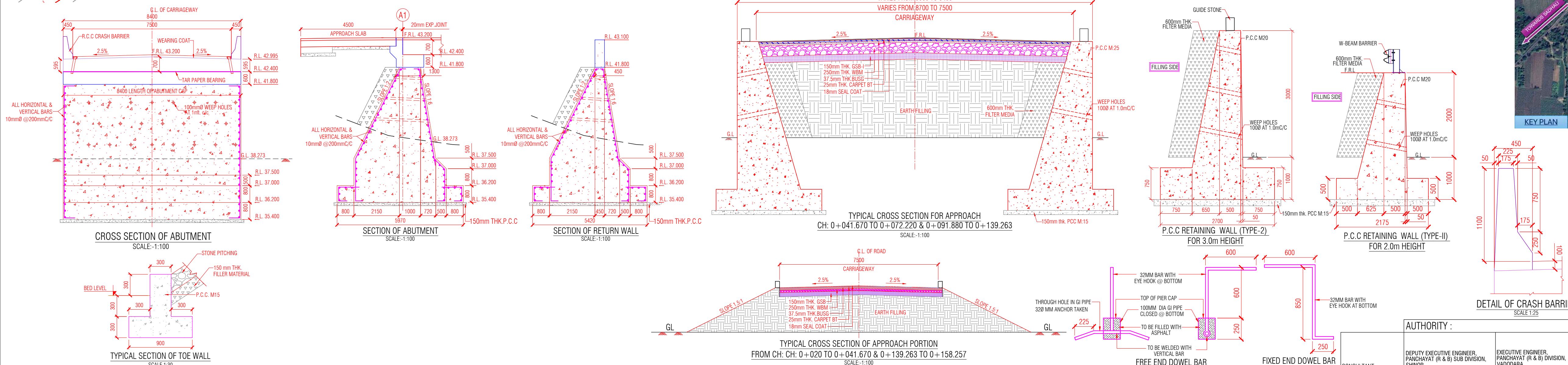


STRUCTURAL AND OTHER DATA	
A) LOCATION	E- 326571.311, N- 2434018.227
B) SPAN ARRANGEMENT	1 SPAN OF 10m
C) SUB STRUCTURE	FOUNDATION, PIERS, PCC ABUTMENT, RETAINING WALL
D) BEARING/SUPPORT	TAR PAPER BEARING
E) SUPER STRUCTURE	RCC SOLID SLAB
F) WEARING COAT	18mm SEAL COAT + 25mm CARPET BT + 37.5mm BUSG
G) EXPANSION JOINT	FILLER TYPE EXPANSION JOINT
H) WATER SPOUTS	AT 5m C/C
I) RAILINGS	RCC CRASH BARRIER
HYDRAULIC DATA	
A) CATCHMENT AREA	15.300 SQ.KM
B) DESIGN DISCHARGE	161.400 CUM/SEC
C) HFL	41.461m
D) AFFLUX	0.300m
E) A/HFL	41.761m
F) RUGOSITY CO-EFFICIENT	0.033
G) OBSTRUCTED VELOCITY	6.11m/s
H) SCOUR LEVEL FOR ABUTMENT	38.120

SECTIONAL ELEVATION
SCALE 1:100



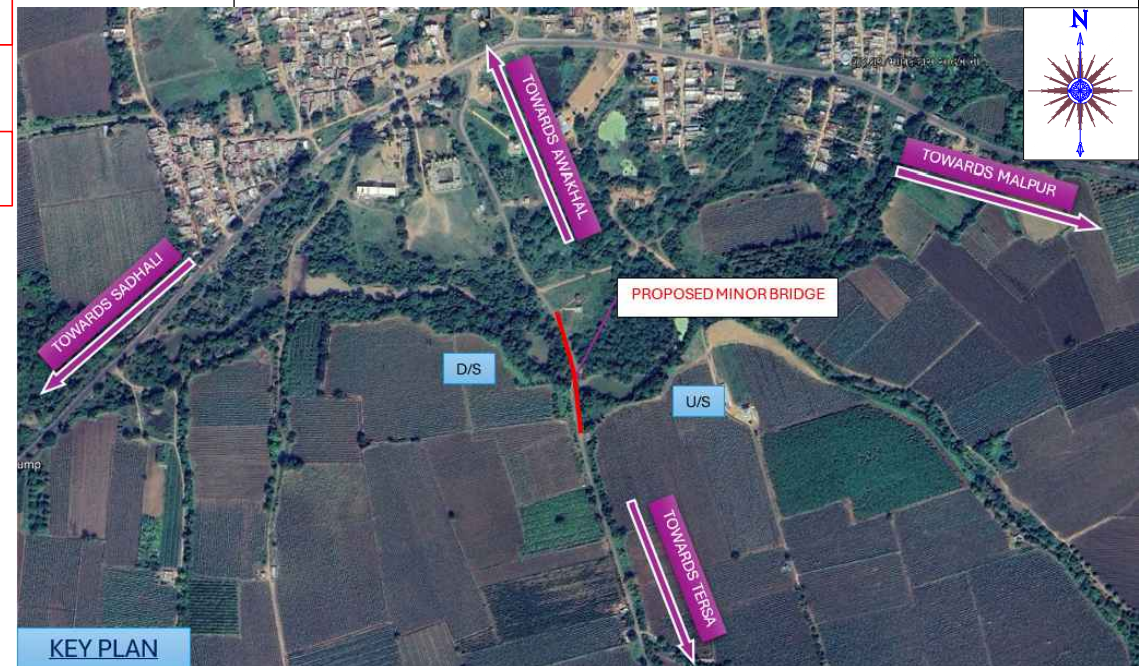
PROFILE (N.T.S.)



- GENERAL:
 - ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 - WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING.
 - DESIGN CRITERIA: THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
 - IRC 78-2024
 - IRC SP 13-2022
 - IRC 6-2017
 - IRC 112-2020
 - IRC SP 114-2018
 - THE DESIGN IS APPLICABLE FOR "SEVERE" EXPOSURE CONDITION.
 - THE STRUCTURE IS DESIGNED FOR:
 - ONE LANE OF CLASS 70R
 - TWO LANE OF CLASS-A FOR EACH LANE
 - ONE LANE OF IRC SV LOADING
 - WIND LOAD DETAILS CONSIDERED IN DESIGN:
 - BASIC WIND SPEED - 44 m/sec
 - TYPE OF TERRAIN - PLAIN TERRAIN
- CONCRETE:
 - HIGH STRENGTH OPC/PPC CONFORMING TO IS 8112 OR CONFORMING TO IS 12269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE CONFORMING TO IS 6825 AND IS 9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
- REINFORCEMENT:
 - GRADE: Fe550D / 500D (TMT) CONFORMING TO IS:1786-2008.
- WATER:
 - WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO CLAUSE 18 OF IRC 112-2020.
- BEARING:
 - TAR PAPER BEARING SHALL BE PROVIDED.
- EXPANSION JOINT:
 - THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING KERB AND FOOTPATH FOLLOWING THE PROFILE OF THE SAME. (WHERE RELEVANT) EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURERS AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.
- WORKMANSHIP/DETAILING:
 - FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - LAP LENGTH & ANCHORAGE LENGTH IN REINFORCEMENT:

GRADE OF CONCRETE	ANCHORAGE LENGTH	LAP LENGTH		
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 30	55 Ø	79 Ø	77 Ø	110 Ø
M 35	50 Ø	72 Ø	70 Ø	100 Ø
M 40	46 Ø	66 Ø	65 Ø	93 Ø
M 45	44 Ø	63 Ø	61 Ø	88 Ø
M 50	40 Ø	57 Ø	56 Ø	80 Ø

NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACCEDED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
 - BACKFILL MATERIAL BETWEEN TIES WALLS OF BOX RETURNS SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0kg/Sq. Ø ≥ 30°, DENSITY OF EARTH FILL γ = 18KN/M³ TO 20KN/M³. IT SHALL BE CONFIRM WITH IRC-78-2024.
- SPECIFICATIONS:
 - THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.
- CONCRETE GRADE:
 - PIER FOUNDATION, ABUTMENT - M:20
 - PIER CAP & ABUTMENT CAP - M:30
 - RCC SUPER STRUCTURE - SOLID SLAB - M:30
 - P.C.C LEVELING COURSE - M:15
 - APPROACH SLAB - M:30
 - RCC CRASH BARRIER - M:40
 - PCC RETAINING WALL - M:20
- DRAINAGE SPOUT:
 - THE SPOUT SHALL OF 100mm DIA. @ 5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
 - DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD/303.
- IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA OR SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
- ROCK LEVEL DURING CONSTRUCTION SHOULD BE VERIFY AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL IMMEDIATELY BE REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.
- BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
- BRIDGE IS LOCATED IN SEISMIC ZONE III.
- THE SPOUT SHALL BE PROVIDED BEHIND APPROACH SLAB AS PER GR. NO. PRCH/102020/1293/C DATED 17-02-2021.
- SOIL ENGINEERING WAS CARRIED OUT AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO VIDE REPORT NO. _____
- ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GOG VIDE THEIR LETTER NO. SHB-10-2024-1009-C.



CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION, VADODARA
NAME OF WORK:-

CONSTRUCTION OF MINOR BRIDGE AT AWAKHAL TO TERSA ROAD
GENERAL ARRANGEMENT DRAWING

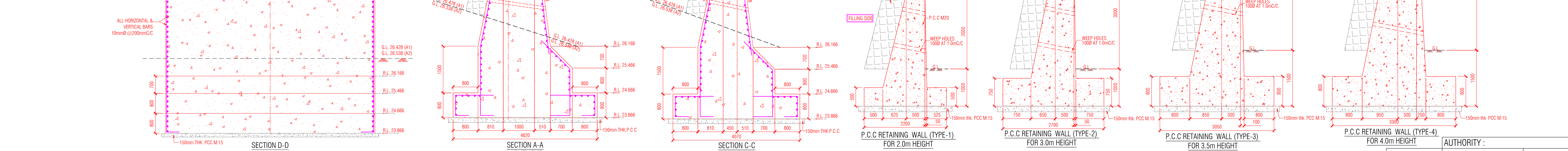
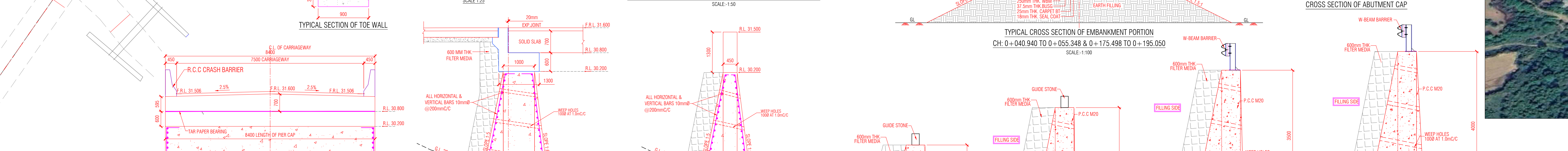
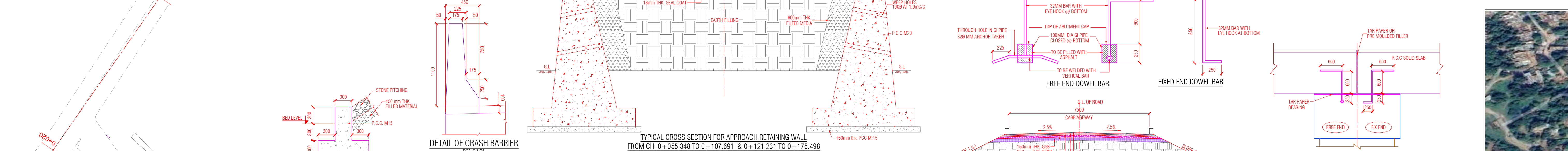
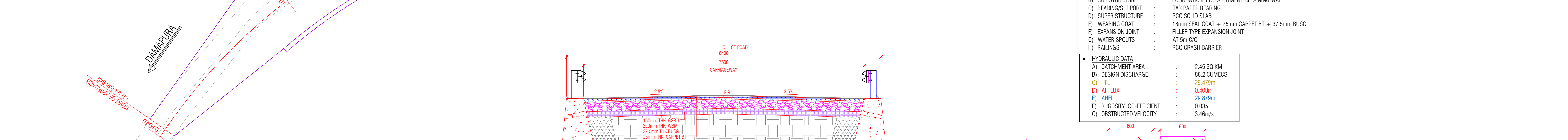
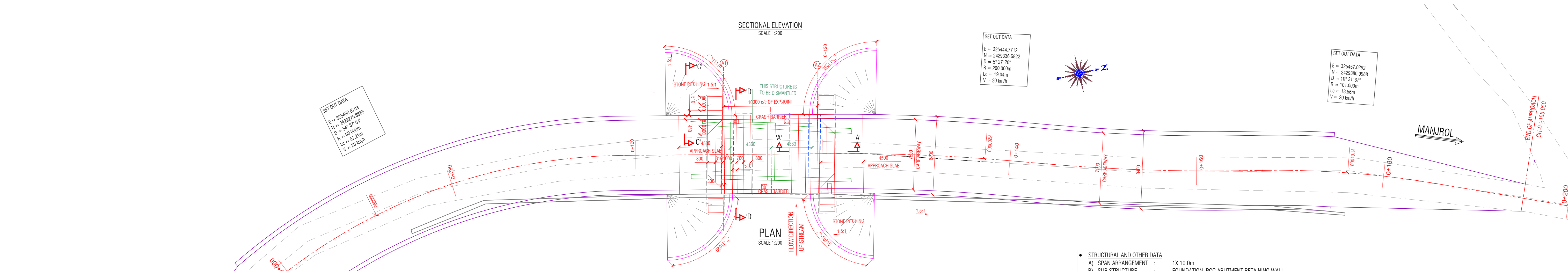
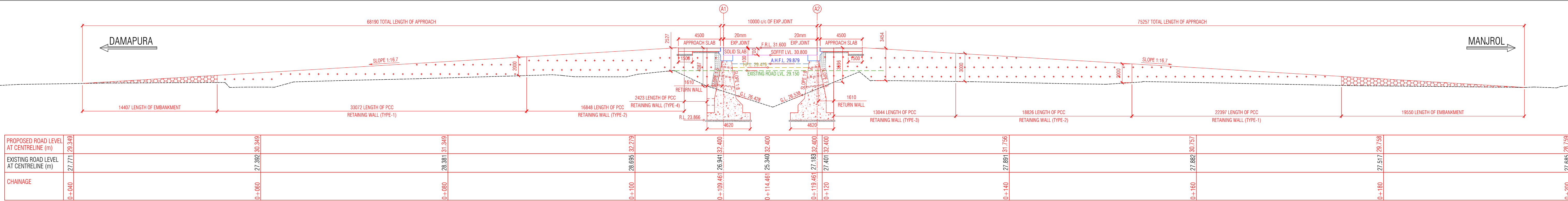
TITLE:- GENERAL ARRANGEMENT DRAWING MINOR BRIDGE (BRIDGE PORTION)
LOCATION:- NAME OF ROAD : AWAKHAL TO TERSA ROAD

CONSULTANT :-
GEO DESIGNS & RESEARCH (P) LTD.
B/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORWA ESTATE, VADODARA - 390 016
TELEFAX : 91-265-2290222/2283081
E-Mail : geo_group@yahoo.com
Web Site : www.geogroup.in

PREPARED BY: KHILAK MAFAT (CAD ENGINEER)
DESIGNED BY: FAKHRUDDIN DHILAWALA (Sr. ENGINEER)
CHECKED BY: MEHUL PATEL (DESIGN DIRECTOR)
DRG NO.: GDR/GAD/ALUB/BRIDGE/01
DATE: 21-08-2025
JOB NO.: 2025_26_01
Rev: 01

AUTHORITY :

DEPUTY EXECUTIVE ENGINEER, PANCHAYAT (R & B) SUB DIVISION, SHINOR
EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION, VADODARA



- GENERAL
- 1.1. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- 1.2. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING.
- 1.3. DESIGN CRITERIA: THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
 - 1.3.a. IRC: 8-2017
 - 1.3.b. IRC: SP-11-2022
 - 1.3.c. IRC: 8-2017
 - 1.3.d. IRC: 112-2020
 - 1.3.e. IRC: SP-118-2018
- 1.4. THE DESIGN IS APPLICABLE FOR "SEVERE" EXPOSURE CONDITION.
- 1.5. THE STRUCTURE IS DESIGNED FOR:
 - 1.5.a. ONE LANE OF CLASS IV
 - 1.5.b. TWO LANE OF CLASS-A FOR EACH LANE
 - 1.5.c. ONE LANE OF IRC SV LOADING
- 1.6. WIND LOAD DETAILS CONSIDERED IN DESIGN:
 - 1.6.a. BASIC WIND SPEED - 44 m/sec
 - 1.6.b. TYPE OF TERRAIN - PLAIN TERRAIN
2. CONCRETE:
 - 2.1. HIGH STRENGTH OPC/PPC CONFORMING TO IS 8112 OR CONFORMING TO IS 12269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
 - 2.2. TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE CONFORMING TO IS 8935 AND IS 9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
3. REINFORCEMENT:
 - 3.1. GRADE: F550D / 500D (T/M) CONFORMING TO IS-1786-2008.
4. WATER:
 - 4.1. WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO CLAUSE 18 OF IRC 112-2020.
5. BEARING:
 - 5.1. TAR PAPER BEARING SHALL BE PROVIDED.
6. EXPANSION JOINT:
 - 6.1. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING KERB AND FOOTPATH FOLLOWING THE PROFILE OF THE SAME. WHERE RELEVANT EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.
7. WORKMANSHIP/DETAILING:
 - 7.1. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - 7.1.a. LAP LENGTH & ANCHORAGE LENGTH IN REINFORCEMENT:

GRADE	ANCHORAGE LENGTH		LAP LENGTH	
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 30	55 Ø	79 Ø	77 Ø	110 Ø
M 35	50 Ø	72 Ø	70 Ø	100 Ø
M 40	45 Ø	65 Ø	65 Ø	95 Ø
M 45	44 Ø	63 Ø	61 Ø	88 Ø
M 50	40 Ø	57 Ø	56 Ø	80 Ø
 - 7.1.b. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS: 2502.
 - 7.1.c. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACCEDED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
 - 7.1.d. SLUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
 - 7.1.e. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
8. BACKFILL MATERIAL BETWEEN TIES WALLS OF RETAINERS SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0kg/Sq. Ø=30°, DENSITY OF EARTH FILL Y=18kN/M³ TO 20kN/M³. IT SHALL BE CONFORM WITH IRC-78-2024.
9. SPECIFICATIONS:
 - 9.1. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.
10. CONCRETE GRADE:
 - 10.1. PIER FOUNDATION ABUTMENT - M20
 - 10.2. PIER CAP & ABUTMENT CAP - M30
 - 10.3. RCC SUPER STRUCTURE - SOLID SLAB - M30
 - 10.4. P.C.C. LEVELING COURSE - M15
 - 10.5. APPROACH SLAB - M30
 - 10.6. PCC RETAINING WALL - M20
 - 10.7. RCC CRASH BARRIER - M40
11. DRAINAGE SPOUT:
 - 11.1. THE SPOUT SHALL OF 100mm DIA. @ 5m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
 - 11.2. DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD-093
12. IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA OF SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
13. ROCK LEVEL DURING CONSTRUCTION SHOULD BE VERY AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL IMMEDIATELY BE REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.
14. BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
15. FRL & CHAINAGES WILL BE SUBJECTED TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.
16. IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/CLIENT HAS MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.
17. SIZE OF PIER ABUTMENT/PIER CAP BEARING SHOWN IN THIS DRG. ARE TENTATIVE. ARE AND BE SUBJECTED TO CHANGE IN FINAL DESIGN & DRAWING AS PER REQUIREMENT.
18. 100mm DIA WEEP HOLES SHALL BE PROVIDED AT 1.0m C/C IN STAGGERED MANNER HORIZONTALLY AND VERTICALLY.
19. BRIDGE IS LOCATED IN SEISMIC ZONE III.
20. GEO GRID SHALL BE PROVIDED BEHIND APPROACH SLAB AS PER GR OF M. PRCH/102020/1293/C DATED 14-02-2021.
21. SOIL ENGINEERING WAS CARRIED OUT AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO VIDE REPORT NO. _____
22. ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GOG VIDE THEIR LETTER NO. SHB-10-2024-1009.



CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION, VADODARA

NAME OF WORK:-

CONSTRUCTION OF SLAB DRAIN WITH APPROACH PORTION ACROSS LOCAL STREAM ON MANJROL DAMAPURA ROAD AT KM. 0/600 TO 0/800 IN DIST. VADODARA.

GENERAL ARRANGEMENT DRAWING

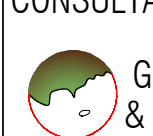
TITLE:-

GENERAL ARRANGEMENT DRAWING OF SLAB DRAIN

LOCATION:-

NAME OF ROAD : MANJROL DAMAPURA ROAD

CONSULTANT :-

GEO DESIGNS & RESEARCH (P) LTD.

B/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORNA ESTATE, VADODARA - 390 016
TELEFAX : 91-265-2290222, 2283081
E-Mail : geo_group@yahoo.com
Web Site : www.geogroup.in

AUTHORITY :

PREPARED BY : KHILAF MAFAT

DESIGNED BY : FARHUDDIN DILAWALA (Sr. ENGINEER)

CHECKED BY : MEHUL PATEL (DESIGN DIRECTOR)

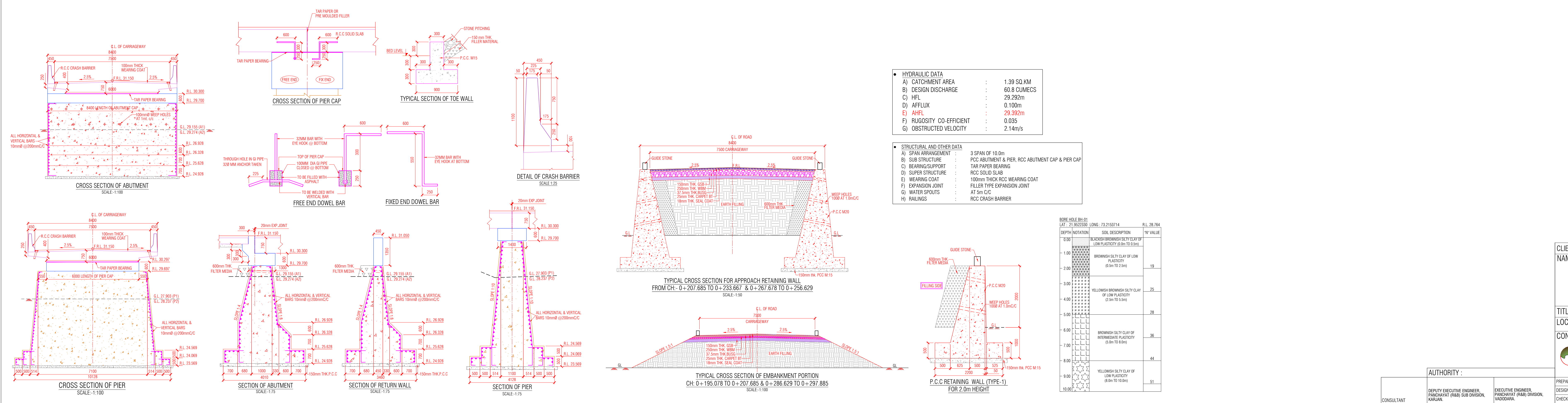
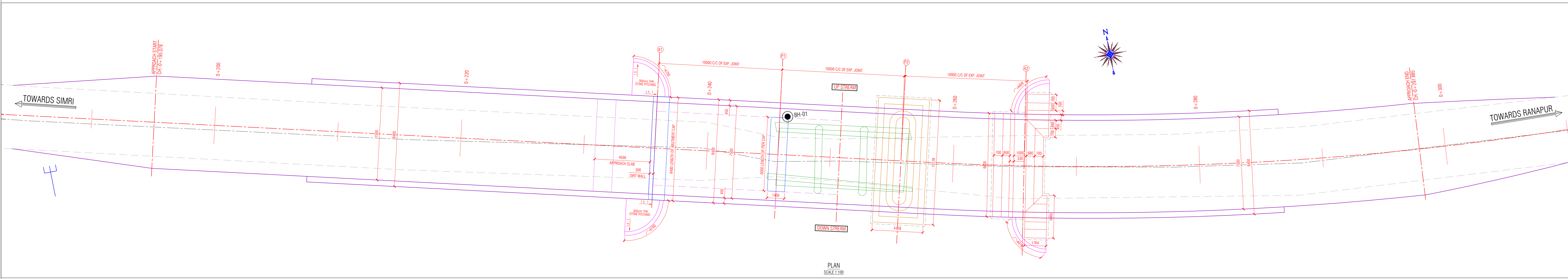
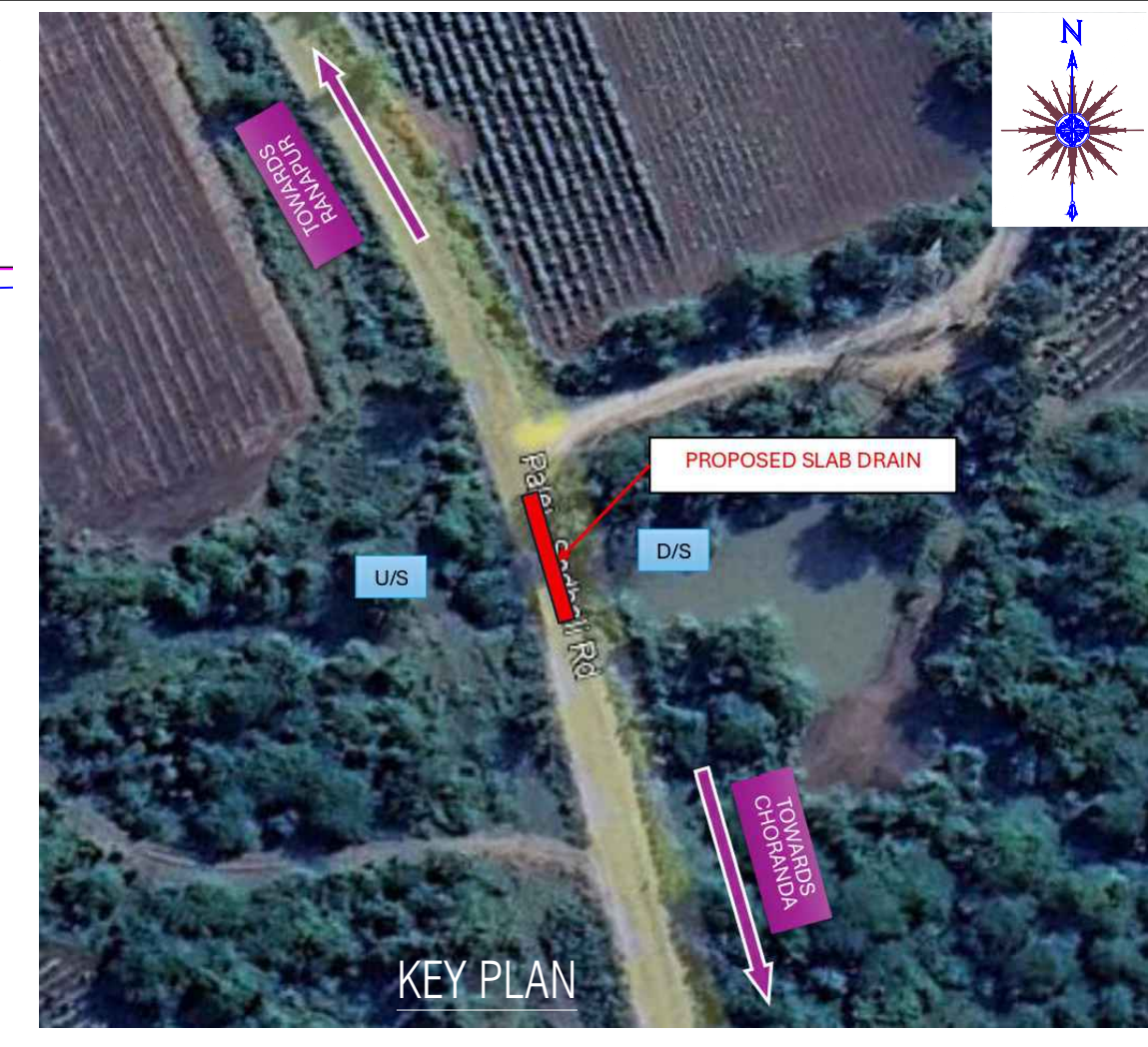
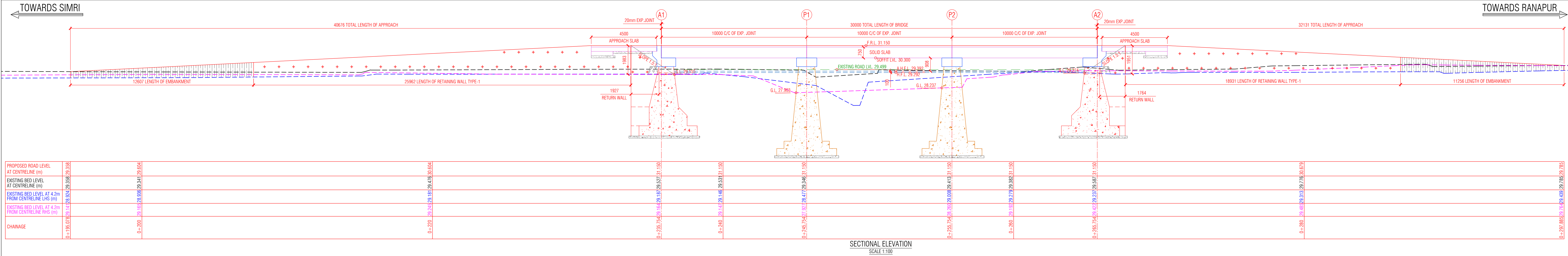
DRG NO. : GDR/GAD/SLAB DRAIN/BR-5/01

DATE : 13-11-2025

JOB NO. : 2025_26_001

Rev

RO



1. GENERAL

1.1. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.

1.2. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING.

1.3. DESIGN CRITERIA: THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:

1.3.a. IRC: 18-2024

1.3.b. IRC: SP: 13-2022

1.3.c. IRC: 6-2017

1.3.d. IRC: 112-2020

1.3.e. IRC: SP: 114-2018

1.4. THE DESIGN IS APPLICABLE FOR "SEVERE" EXPOSURE CONDITION.

1.5. THE STRUCTURE IS DESIGNED FOR:

1.5.a. ONE LANE OF CLASS IV

1.5.b. TWO LANE OF CLASS A FOR EACH LANE

1.5.c. ONE LANE OF IRC SV LOADING

1.6. WIND LOAD DETAILS CONSIDERED IN DESIGN:

1.6.a. BASIC WIND SPEED - 44 m/sec

1.6.b. TYPE OF TERRAIN - PLAIN TERRAIN

2. CONCRETE:

2.1. HIGH STRENGTH OPC/PPC CONFORMING TO IS:8112 OR CONFORMING TO IS:12699 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.

2.2. TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE CONFORMING TO IS:6925 AND IS:9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.

3. REINFORCEMENT:

3.1. GRADE: Fe550 / 5000 (TMT) CONFORMING TO IS:1786-2008.

4. WATER:

4.1. WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO CLAUSE 18 OF IRC 112-2020.

5. BEARING:

5.1. TAR PAPER BEARING SHALL BE PROVIDED.

6. EXPANSION JOINT:

6.1. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE. IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING KERB AND FOOTPATH FOLLOWING THE PROFILE OF THE SAME. (WHERE RELEVANT) EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.

7. WORKMANSHIP/DETAILING:

7.1. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.

7.1.a. LAP LENGTH & ANCHORAGE LENGTH IN REINFORCEMENT:

GRADE OF CONCRETE	ANCHORAGE LENGTH		LAP LENGTH	
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 30	55 Ø	75 Ø	77 Ø	115 Ø
M 35	55 Ø	72 Ø	70 Ø	100 Ø
M 40	45 Ø	66 Ø	65 Ø	93 Ø
M 45	44 Ø	63 Ø	61 Ø	88 Ø
M 50	40 Ø	57 Ø	56 Ø	80 Ø

NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.

7.1.b. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2622.

7.1.c. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACREED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.

7.1.d. SHUTTLING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.

7.1.e. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.

8. BACKFILL MATERIAL BETWEEN TIES WALLS OF BOX RETURNS SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0.04 kg/Sq. (0.2-30°; DENSITY OF EARTH FILL γ=18 KN/M³ TO 20 KN/M³. IT SHALL BE CONFIRM WITH IRC: 78-2024.

9. SPECIFICATIONS:

9.1. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.

10. CONCRETE GRADE:

10.1. PIER FOUNDATION, ABUTMENT -M-20

10.2. PIER CAP & ABUTMENT CAP -M-30

10.3. RCC SUPER STRUCTURE: SOLID SLAB -M-30

10.4. P.C.C LEVELING COURSE -M-15

10.5. APPROACH SLAB -M-30

10.6. CRASH BARRIER -M-40

10.7. WEARING COAT -M-40

11. DRAINAGE SLOUT

11.1. THE SLOUT SHALL OF 100mm DIA (Ø) 5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.

11.2. DRAINAGE SLOUTS AS PER MORTH STANDARD DRG NO. SD-303.

12. IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA, OF SOIL INVESTIGATION REPORT AND SITE SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.

13. ROCK LEVEL DURING CONSTRUCTION SHOULD BE VERIFY AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL IMMEDIATELY BE REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.

14. BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.

15. FIR & CHANGES WILL BE SUBJECTED TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.

16. IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/CLIENT HAS MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.

17. SIZE OF PIER, ABUTMENT PIER CAP, BEARING SHOWN IN THIS DRG. ARE TENTATIVE AND ARE SUBJECTED TO CHANGE IN FINAL DESIGN & DRAWING AS PER REQUIREMENT.

18. 100mm DIA WEEP HOLES SHALL BE PROVIDED AT 1.0m C/C IN STAGGERED MANNER HORIZONTALLY AND VERTICALLY.

19. BRIDGE IS LOCATED IN SEISMIC ZONE III.

20. GEO GRID SHALL BE PROVIDED BEHIND APPROACH SLAB AS PER GR OF NO. PRCH/102020/1293/C DATED 17-02-2021.

21. SOIL ENGINEERING WAS CARRIED OUT AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO EXECUTIVE ENGINEER, VADODARA (R&B) PANCHAYAT VIDE REPORT NO. 6934/126001.

22. ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GSO VIDE THEIR LETTER NO.: SHB-10-2024-1009.

CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION, VADODARA

NAME OF WORK:-

CONSTRUCTION OF SLAB DRAIN ACROSS LOCAL STREAM ON CHORANDA-RANAPUR ROAD AT ROAD KM. 6/2 TO 6/4 IN TA. KARJAN, DIST. VADODARA IN GUJARAT STATE.

TITLE:- GENERAL ARRANGEMENT DRAWING OF SLAB DRAIN

LOCATION:- NAME OF ROAD : CHORANDA-RANAPUR ROAD

CONSULTANT:-

GEO DESIGNS & RESEARCH (P) LTD.

8/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORWA ESTATE, VADODARA - 390 016

TELEFAX: 91-265-2290222, 2283081

E-Mail: geo_group@yahoo.com

Web Site: www.geogroup.in

PREPARED BY: JAMNI NAGARSHETH (CAD ENGINEER)

DESIGNED BY: FAKHRIUDIN OHLAWALA (S. ENGINEER)

CHECKED BY: MEHUL PATEL (DESIGN DIRECTOR)

DRG NO.: GDR/GAD/R/MB/BR-06/01

DATE: 20-11-2025

JOB NO.: 2025_26_001

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Rev. No. 631

Rev. No. 632

Rev. No. 633

Rev. No. 634

Rev. No. 635

Rev. No. 636

Rev. No. 637

Rev. No. 638

Rev. No. 639

Rev. No. 640

Rev. No. 641

Rev. No. 642

Rev. No. 643

Rev. No. 644

Rev. No. 645

Rev. No. 646

Rev. No. 647

Rev. No. 648

Rev. No. 649

Rev. No. 650

Rev. No. 651

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Rev. No. 666

Rev. No. 667

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Rev. No. 669

Rev. No. 670

Rev. No. 671

Rev. No. 672

Rev. No. 673

Rev. No. 674

Rev. No. 675

Rev. No. 676

Rev. No. 677

Rev. No. 678

Rev. No. 679

Rev. No. 680

Rev. No. 681

Rev. No. 682

Rev. No. 683

Rev. No. 684

Rev. No. 685

Rev. No. 686

Rev. No. 687

Rev. No. 688

Rev. No. 689

Rev. No. 690

Rev. No. 691

Rev. No. 692

Rev. No. 693

Rev. No. 694

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Rev. No. 696

Rev. No. 697

Rev. No. 698

Rev. No. 699

Rev. No. 700

Rev. No. 701

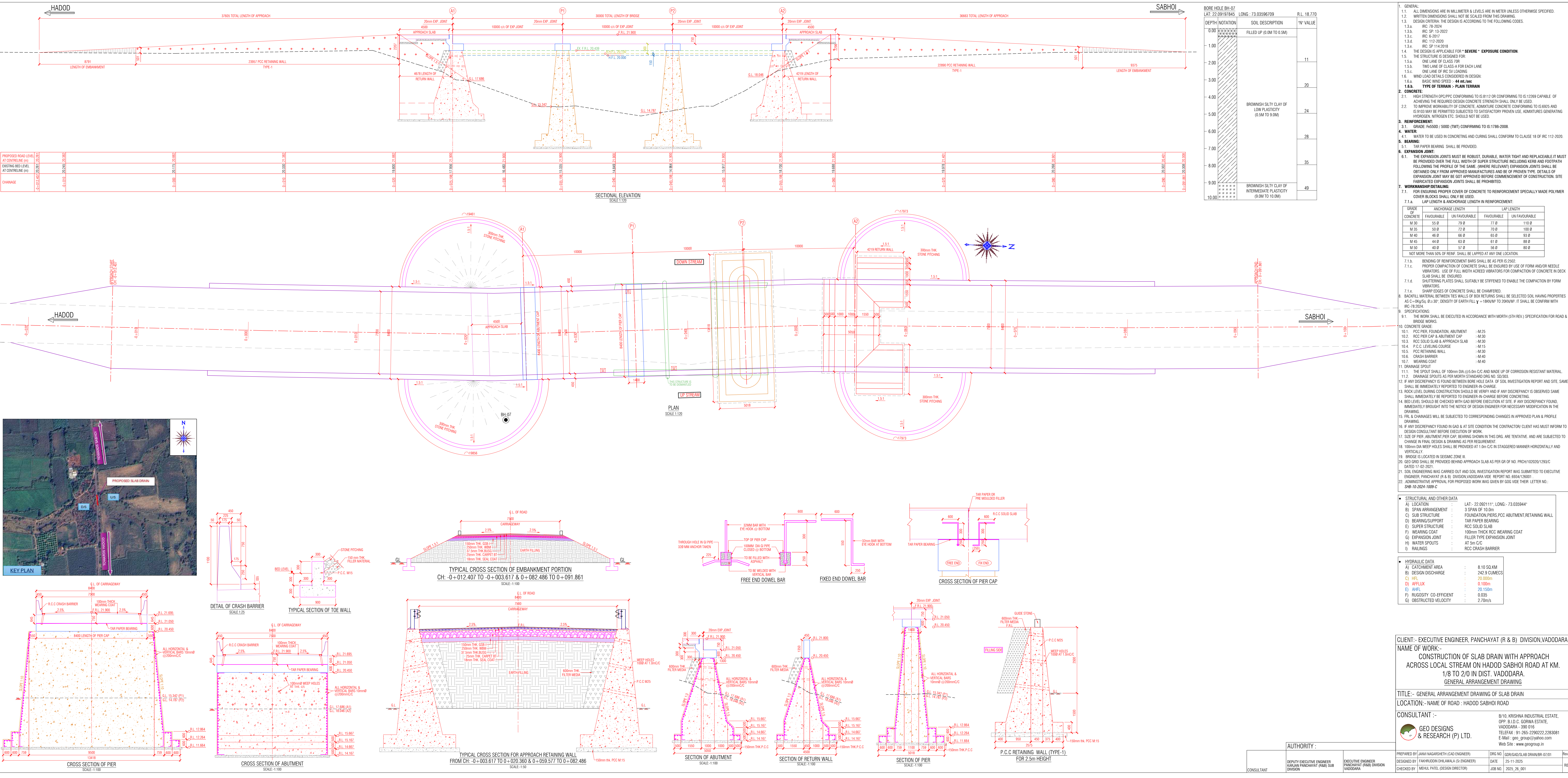
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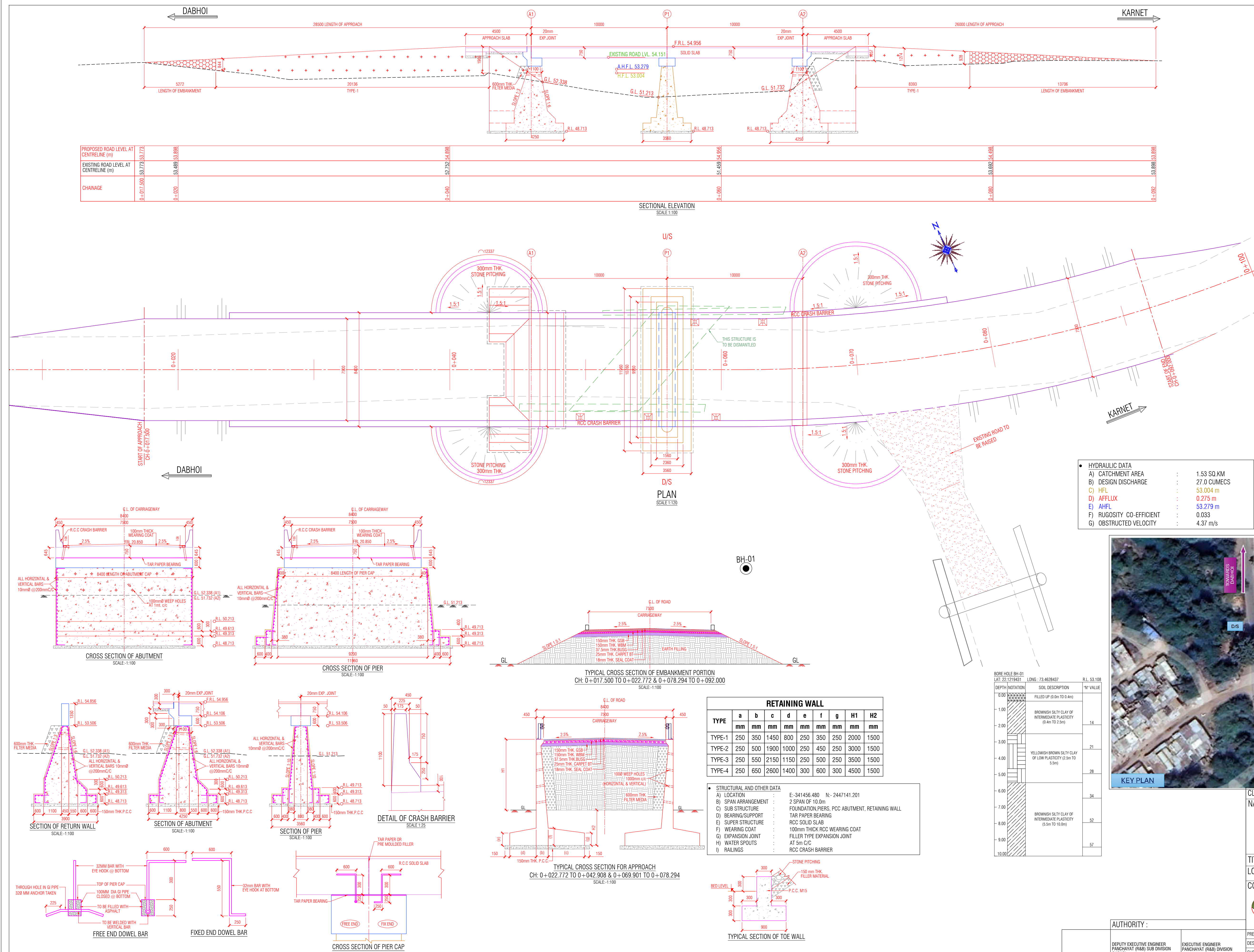
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Rev. No. 705

Rev. No. 706



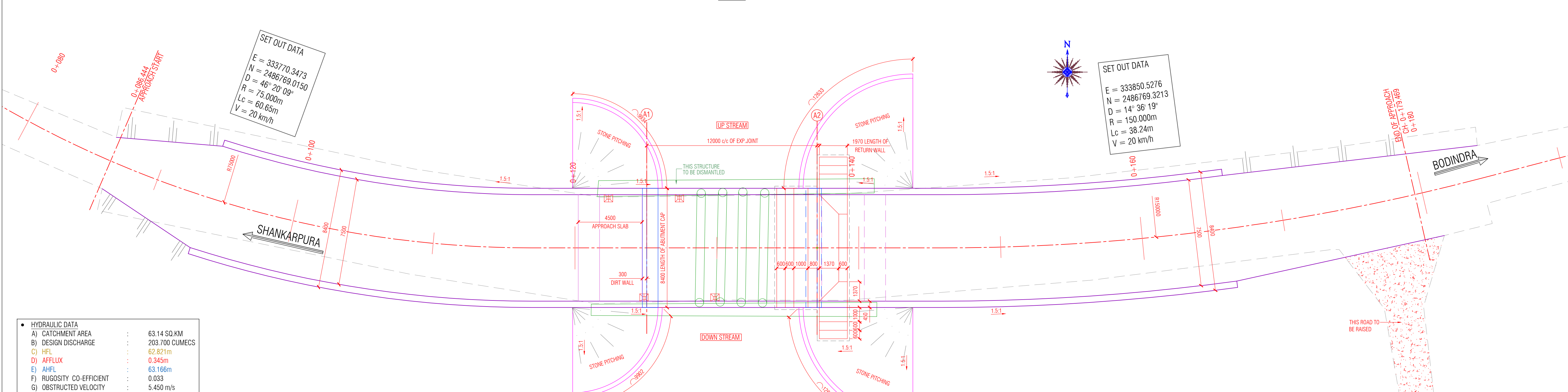


1. GENERAL:
1.1. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
1.2. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING.
1.3. DESIGN CRITERIA: THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
1.3.a. IRC 78-2024
1.3.b. IRC SP: 13-2022
1.3.c. IRC 6-2017
1.3.d. IRC 112-2020
1.3.e. IRC SP 118-2018
1.4. THE DESIGN IS APPLICABLE FOR "SEVERE" EXPOSURE CONDITION.
1.5. THE STRUCTURE IS DESIGNED FOR:
1.5.a. ONE LANE OF GLASS TOP
1.5.b. TWO LANE OF CLASS-A FOR EACH LANE
1.5.c. ONE LANE OF IRC SV LOADING
1.6. WIND LOAD DETAILS CONSIDERED IN DESIGN:
1.6.a. BASIC WIND SPEED - 44 M/S
1.6.b. TYPE OF TERRAIN - PLAIN TERRAIN
2. CONCRETE:
2.1. HIGH STRENGTH OPC/PPC CONFORMING TO IS 8112 OR CONFORMING TO IS 12269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
2.2. TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE CONFORMING TO IS 6925 AND IS 9103 MAY BE FURNISHED SUBJECT TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
3. REINFORCEMENT:
3.1. GRADE: H5500 / 500D (TMT) CONFORMING TO IS 1786-2008
4. WATER:
4.1. WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO CLAUSE 18 OF IRC 112-2020.
5. BEARING:
5.1. TARI PAPER BEARING SHALL BE PROVIDED.
6. EXPANSION JOINT:
6.1. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE IT MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING KERB AND FOOTPATH.
6.2. FOLLOWING THE PROFILE OF THE SAME, (WHERE RELEVANT) EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURES AND BE OF PROVEN TYPE. DETAILS OF EXPANSION JOINT MAY BE GOT APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.
7. WORKMANSHIP/DETAILING:
7.1. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
7.1.a. LAP LENGTH & ANCHORAGE LENGTH IN REINFORCEMENT:

GRADE OF CONCRETE	ANCHORAGE LENGTH FAVOURABLE	ANCHORAGE LENGTH UNFAVOURABLE	LAP LENGTH FAVOURABLE	LAP LENGTH UNFAVOURABLE
M 20	75 Ø	107 Ø	105 Ø	150 Ø
M 30	55 Ø	79 Ø	77 Ø	110 Ø
M 35	50 Ø	72 Ø	70 Ø	100 Ø
M 40	45 Ø	66 Ø	65 Ø	93 Ø
M 45	44 Ø	63 Ø	61 Ø	88 Ø

NOT MORE THAN 50% OF REINFORCEMENT SHALL BE LAPPED AT ANY ONE LOCATION.
7.1.b. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS 2502.
7.1.c. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACROD VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
7.1.d. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION BY FORM VIBRATORS.
7.1.e. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
8. BACKFILL MATERIAL BETWEEN TIES WALLS OF RETURNS SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=80kN/m², Ø=30°, DENSITY OF EARTH FILL = 18kN/m³ TO 20kN/m³. IT SHALL BE CONFORM WITH IRC 78-2024.
9. SPECIFICATIONS:
9.1. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.
10. CONCRETE GRADE:
10.1. PCC PIER FOUNDATION, ABUTMENT - M20
10.2. RCC PIER CAP & ABUTMENT CAP - M30
10.3. RCC SUPER STRUCTURE, SOLID SLAB - M30
10.4. P.C.C. LEVELING COURSE - M15
10.5. APPROACH SLAB, RCC RETAINING WALL - M30
10.6. CRASH BARRIER - M40
10.7. WEARING COAT - M40
10.8. RCC CRASH BARRIER - M40
11. DRAINAGE SPOUT
11.1. THE SPOUT SHALL OF 100mm DIA @ 9.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
11.2. DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD/303.
12. IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA, OF SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
13. ROCK LEVEL, DURING CONSTRUCTION SHOULD BE VERIFIED AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL IMMEDIATELY BE REPORTED TO ENGINEER-IN-CHARGE BEFORE CONCRETING.
14. BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
15. FB & CHANGES WILL BE SUBJECTED TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.
16. IF ANY DISCREPANCY FOUND IN GAD & AT SITE THE CONDITION THE CONTRACTOR/CIENT HAS MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.
17. SIZE OF PIER, ABUTMENT PER CAP, BEARING SHOWN IN THIS DRG. ARE TENTATIVE, AND ARE SUBJECTED TO CHANGE IN FINAL DESIGN & DRAWING AS PER REQUIREMENT.
18. 100mm DIA WEEP HOLES SHALL BE PROVIDED AT 1.0m C/C IN STAGGERED MANNER HORIZONTAL AND VERTICALLY.
19. BRIDGE IS LOCATED IN SEISMIC ZONE III.
20. GEO GRID SHALL BE PROVIDED BEHIND APPROACH SLAB AS PER GR OF NO. PRCH/102020/1293/C DATED 11-02-2021.
21. SOIL ENGINEERING WAS CARRIED OUT AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO VIDE REPORT NO. SHB-10-2024-1009.
22. ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GDS WIDE THEIR LETTER NO. SHB-10-2024-1009.


CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION,VADODARA
NAME OF WORK:-
CONSTRUCTION OF BOX CULVERT WITH APPROACH PORTION ACROSS LOCAL STREAM ON DABHOI KARNET ROAD AT KM.4/600 TO 4/800 IN DIST. VADODARA.
GENERAL ARRANGEMENT DRAWING
TITLE:- GENERAL ARRANGEMENT DRAWING OF SLAB DRAIN
LOCATION:- NAME OF ROAD : DABHOI KARNET ROAD
CONSULTANT :-
GEO DESIGNS & RESEARCH (P) LTD.
B/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORWA ESTATE, VADODARA - 390 016.
TELEFAX : 91-265-2290222,2283081
E-Mail : geo_group@yahoo.com
Web Site : www.geogroup.in
AUTHORITY :
DEPUTY EXECUTIVE ENGINEER, PANCHAYAT (R&B) SUB DIVISION DABHOI
EXECUTIVE ENGINEER, PANCHAYAT (R&B) DIVISION VADODARA
PREPARED BY: JAYI NAGARSHETH(CAD ENGINEER)
DESIGNED BY: FAKHRODIN DHALWALA (S: ENGINEER)
CHECKED BY: MEHUL PATEL (DESIGN DIRECTOR)
DRG NO: GDR/GAD/SLAB DRAIN/BR-9/01
DATE: 07-01-2026
JOB NO: 2025_26_001
Rev: RD

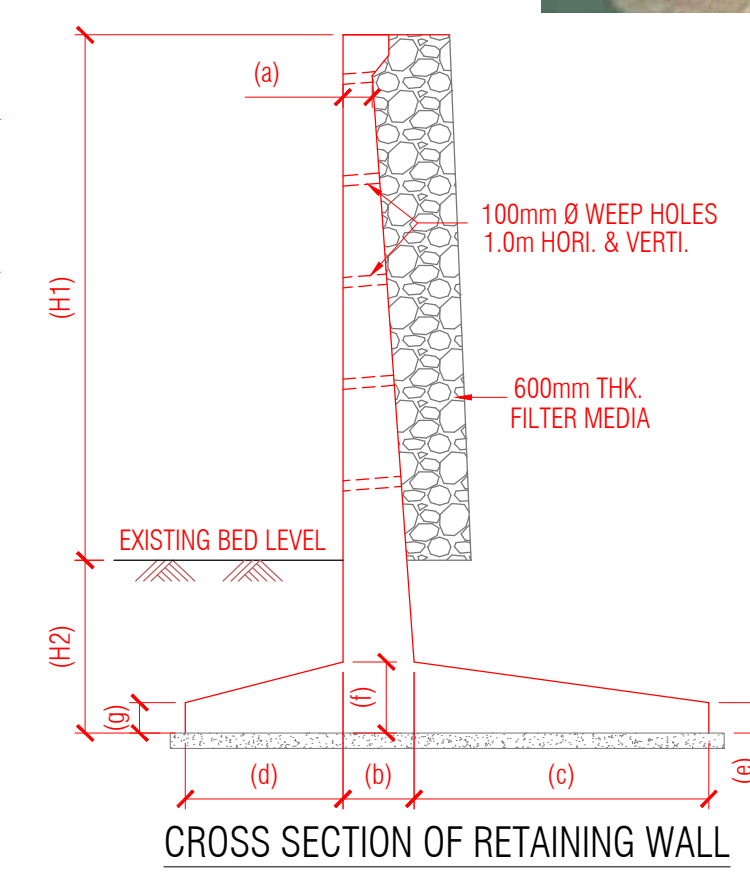
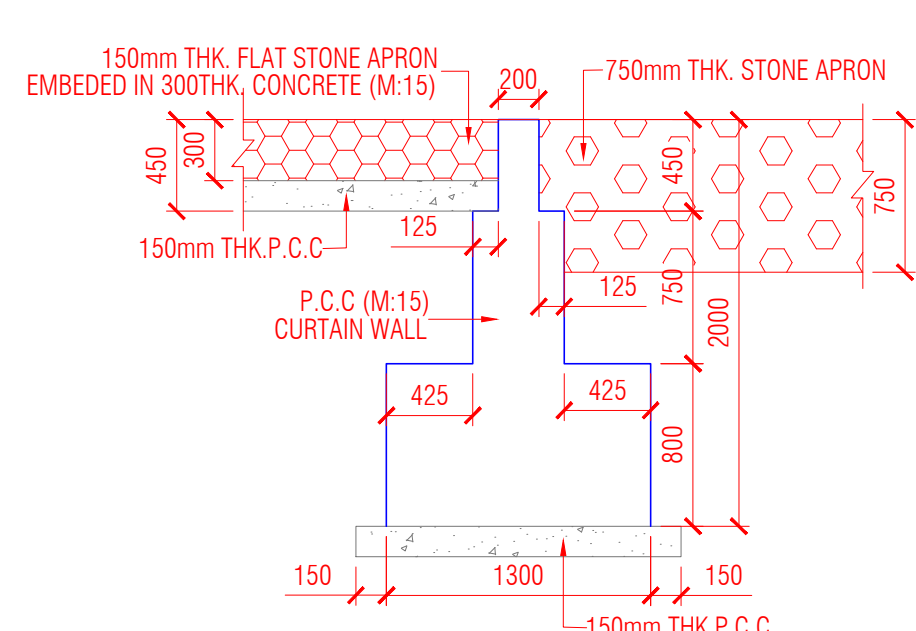
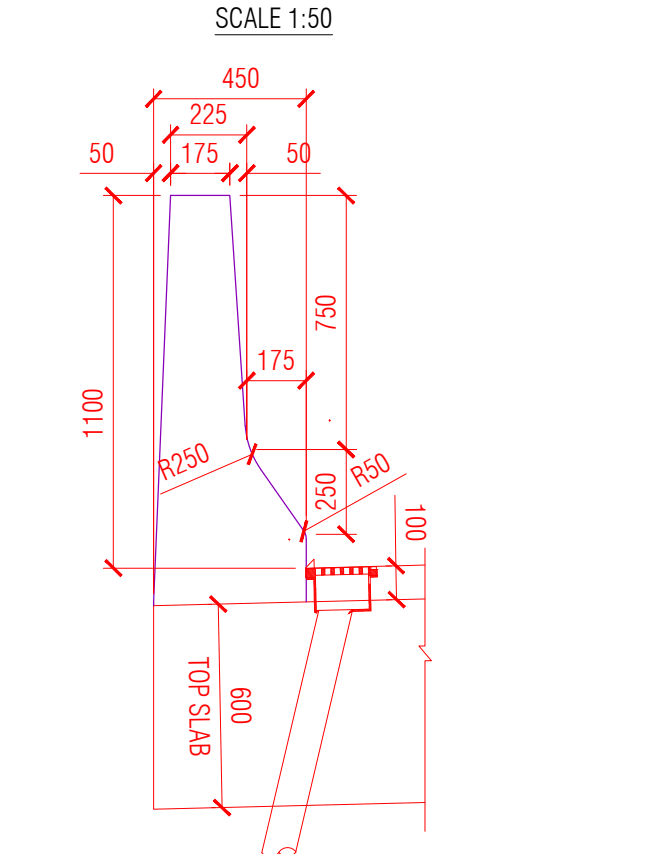
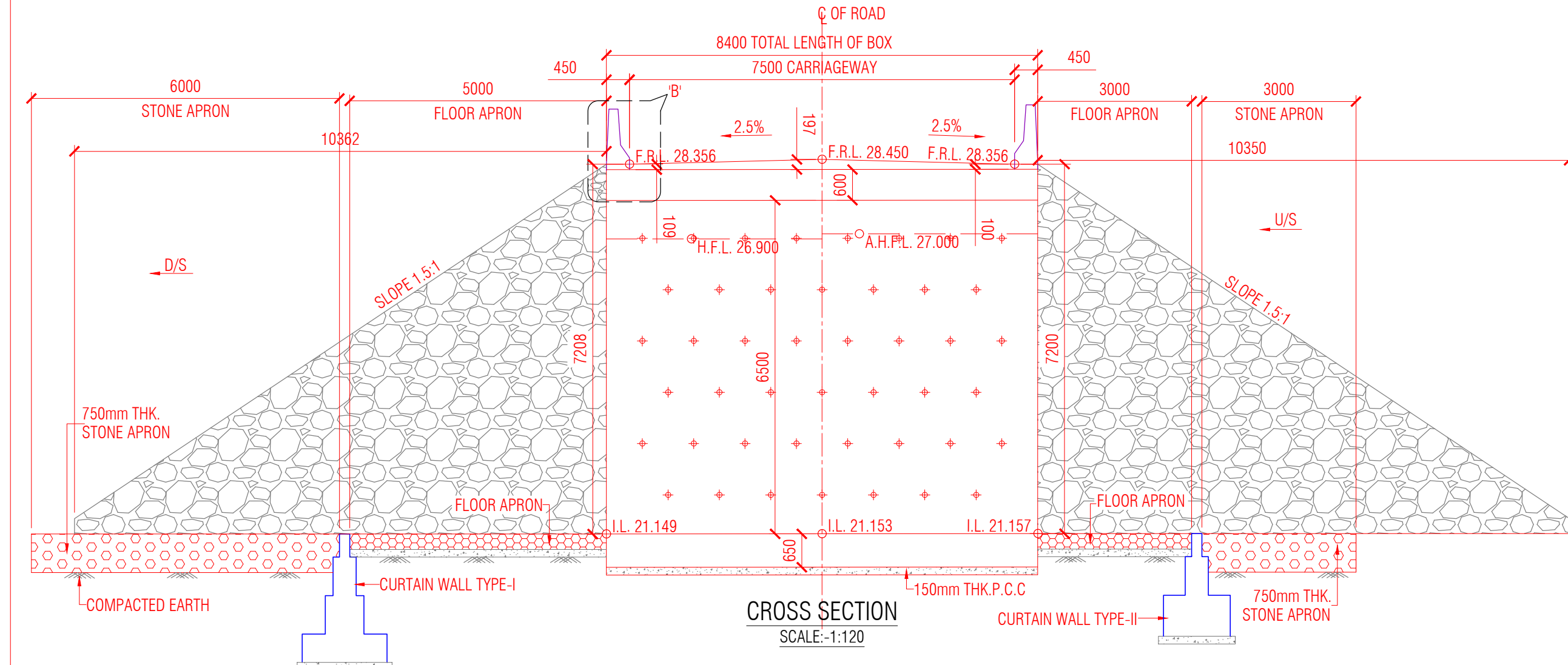


CROSS SECTION OF ABUTMENT
SCALE: 1:100

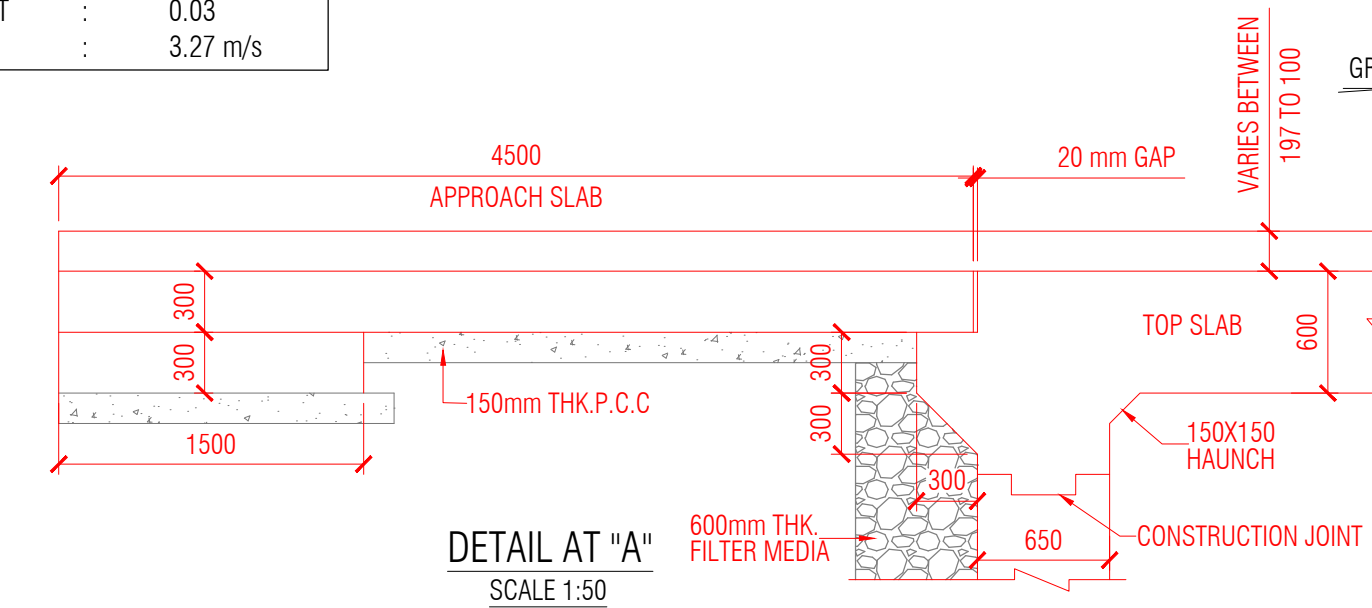
TYPICAL SECTION OF TOE WALL



CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION,VADODARA				
NAME OF WORK:-				
<p style="text-align: center;">CONSTRUCTION OF SLAB DRAIN WITH APPROACH PORTION ACROSS LOCAL STREAM ON SHANKARPURA BODINDRA ROAD AT KM.0/6 TO 0/8 IN DIST. VADODARA.</p> <p style="text-align: center;">GENERAL ARRANGEMENT DRAWING</p>				
TITLE:-		GENERAL ARRANGEMENT DRAWING OF SLAB DRAIN		
LOCATION:-		NAME OF ROAD : SHANKARPURA BODINDRA ROAD		
CONSULTANT :-		B/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORWA ESTATE, VADODARA - 390 016. TELEFAX : 91-265-2290222,2283081 E-Mail : geo_group@yahoo.com Web Site : www.geogroup.in		
 GEO DESIGNS & RESEARCH (P) LTD.				
PREPARED BY	JAGNI NAVANSHETHI(CAD ENGINEER)	DRG NO	GORWA/SLAB DRAIN/RB-1/01	Rev
DESIGNED BY	FAKHRIUDIN DHILAWALA (Sr.ENGINEER)	DATE	10_04_2026	
CHECKED BY	MEHUL PATEL, (DESIGN DIRECTOR)	JOB NO	2025_26_0005	RD



RETAINING WALL									
TYPE	a	b	c	d	e	f	g	H1	H2
	mm	mm	mm	mm	mm	mm	mm	mm	mm
7	250	1000	3800	1900	500	1000	500	7000	20500



1) GENERAL:

A. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.

B. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING.

C. DESIGN CRITERIA:

- THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
 - a. IRC: 78-2024
 - b. SP: 13-2022
 - c. IRC: 6-2017
 - d. IRC: 112-2020

D. THE DESIGN ARE APPLICABLE FOR * **SEVERE** * EXPOSURE CONDITIONS & **SEISMIC ZONE III**.

E. THE STRUCTURE DESIGN FOR:

- a. ONE LANE OF CLASS 70R
- b. TWO LANE OF CLASS-A FOR EACH LANE
- c. ONE LANE OF IRC SV LOADING

F. WIND LOAD DETAILS CONSIDERED IN DESIGN:

- a. BASIC WIND SPEED :- **44 m/sec**
- b. TYPE OF TERRAIN :- **PLAIN TERRAIN**

2) **CONCRETE:**

- IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE FORMING TO IS:8625 AND IS:9103 MA BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN. NITROGEN ETC. SHOULD NOT BE USED.

3) **REINFORCEMENT:**

- GRADE: Fe500/Fe550D(TMT) CONFIRMING TO IS:1786-2008.

4) **WATER:**

- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC 112-2020.

5) **EXPANSION JOINT:**

- EXPANSION JOINT SHALL BE USED IN ACCORDANCE WITH SECTION 2600 OF MORTH LATEST REVISION.

6) **WORKMANSHIP/DETAILING:**

- FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.

B. CONCRETE GRADE:

NO	DESCRIPTION	GRADE OF CONCRETE	GRADE OF STEEL
01	RCC BOX	M30	Fe550D CONFIRMING TO IS:1786-2008
02	RCC RETAINING WALL	M30	
03	PCC RETAINING WALL	M25	
04	LEVELLING COURSE	M15	
05	RCC CRASH BARRIER	M40	
06	APPROACH SLAB	M30	
07	WEARING COURSE	M40	

GRADE OF CONCRETE	ANCHORAGE LENGTH		LAP LENGTH	
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 25	65 Ø	93 Ø	91 Ø	130 Ø
M 30	55 Ø	79 Ø	77 Ø	110 Ø
M 40	46 Ø	66 Ø	65 Ø	93 Ø

NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.

D. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.

E. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS.

USE OF FULL WIDTH ACREE VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.

F. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.

G. CLEAR COVER:

- G.1. CLEAR COVER FOR EARTH FACE STRUCTURAL COMPONENT = 75mm
- G.2. INSIDE FACE STRUCTURAL COMPONENT = 50mm
- G.3. BOTTOM RAFT = 75mm

G. BACKFILL MATERIAL BEHIND END FACE SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0kg/Sq.cm, Ø=30 DEGREE DENSITY OF EARTH FILL $\gamma = 18\text{KN/m}^3$ TO 20KN/m^3 IT SHALL BE CONFIRM WITH IRC 78/2024.

8) ANY LOOSE ROCKETS/VOIDS AT FOUNDING LEVEL WILL BE REMOVED. COMPACTED AND FILLED WITH GRANULAR MATERIAL/PC/M:15 AS DECIDED BY ENGINEER.

9) MAXIMUM BASE PRESSURE 10.0 T/m^2 .

10) FRL IS CONSIDERED AS PER PLAN & PROFILE. KINDLY VERIFY THE SAME BEFORE STARTING EXECUTION OF WORK.

11) IF ANY DISCREPANCY OCCURS KINDLY INFORM TO ENGINEER FIRST.

12) IN ANY LEVEL OF TOP SURFACE OF BOTTOM SLAB SHALL BE 300mm (MIN.) BELOW LOWEST BED LEVEL.

13) FILTER MEDIA SHOULD BE PROVIDED IN ACCORDANCE TO CLAUSE 2504.2.2 OF MOST SPECIFICATIONS.

14) SPECIFICATIONS:

- A. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.

14) DRAINAGE SPOUT

- A. THE SPOUT SHALL OF 100mm DIA. @5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
- B. DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. 30/303.

15) IF ANY DISCREPANCY IS FOUND BETWEEN THE HOLE DATA OF SOIL INVESTIGATION REPORT AND SITE SAMPLE, SHALL BE IMMEDIATELY REPORTED TO ENGINEER IN-CHARGE.

16) BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT IT TO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.

17) IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/ CLIENT SHALL MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.

18) WEEP HOLES SHALL BE 100mm Ø PVC @1000mm C/C IN STAGGERED FASHION.

19) SOIL INVESTIGATION ARE CARRIED OUT AND SUBMITTED TO

20) ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GOG VIDE THEIR LETTER NO.: SHB-10-224-1009-C

** IN CASE OF STRUCTURE FOUND ON ERODIBLE SOIL, IS ONLY REQUIRED TO BE PROTECTED AGAINST SCOUR BY FLOOR PROTECTION WORKS COMPRISING OF FLOOR FLOORING WITH CURTAIN WALLS AND FLEXIBLE APRON. IF STRUCTURE IS FOUND ON NON ERODIBLE STRATA DOES NOT REQUIRED PROTECTION AGAINST SCOUR.


- **STRUCTURAL AND OTHER DATA**
 - A) SPAN ARRANGEMENT : 2 X 6.5 X 6.5m
 - B) TYPE OF STRUCTURE : BOX CULVERT
 - C) WEARING COAT : 100mm THICK RCC WEARING COAT
 - D) WATER SPOUTS : AT 5m C/C
 - E) RAILINGS : RCC CRASH BARRIER

CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION,VADODRA
NAME OF WORK:-

CONSTRUCTION OF BOX CULVERT ACROSS LOCAL STREAM OF
PATODTO ZAVERIPURA ROAD DIST. VADODRA.
GENERAL ARRANGEMENT DRAWING

TITLE:-	GENERAL ARRANGEMENT DRAWING OF BOX CULVERT
LOCATION:-	NAME OF ROAD : PATOD TO ZAVERIPURA ROAD

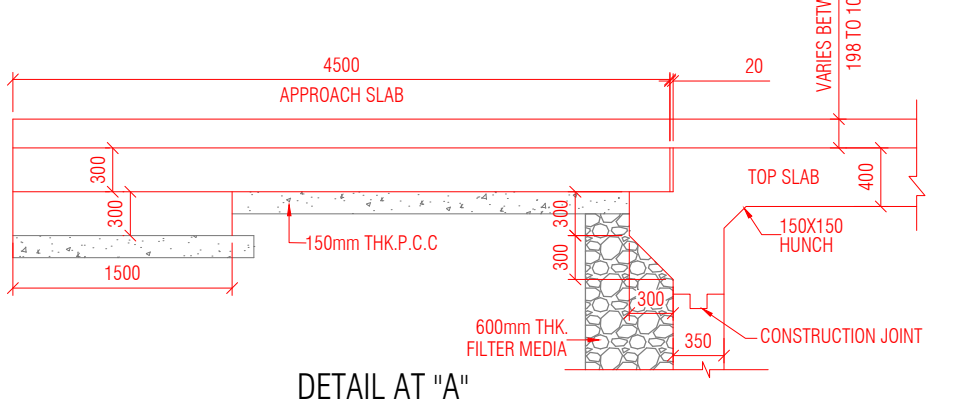
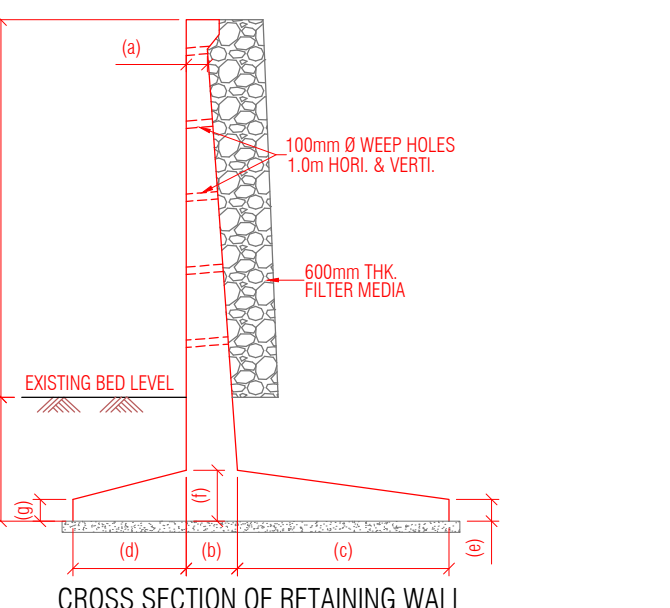
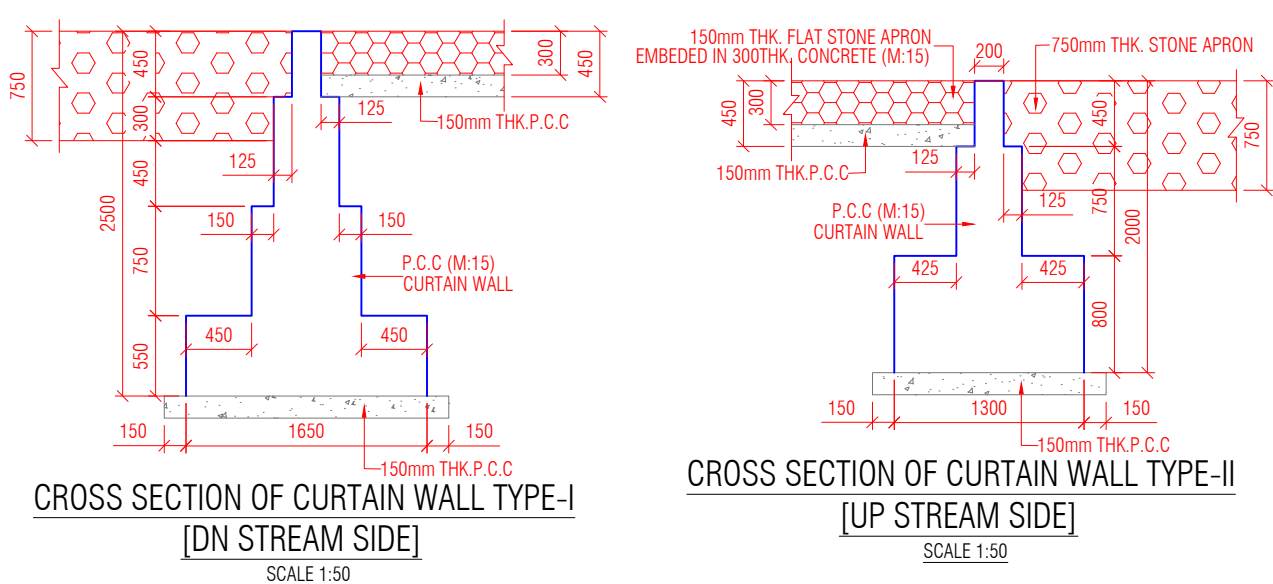
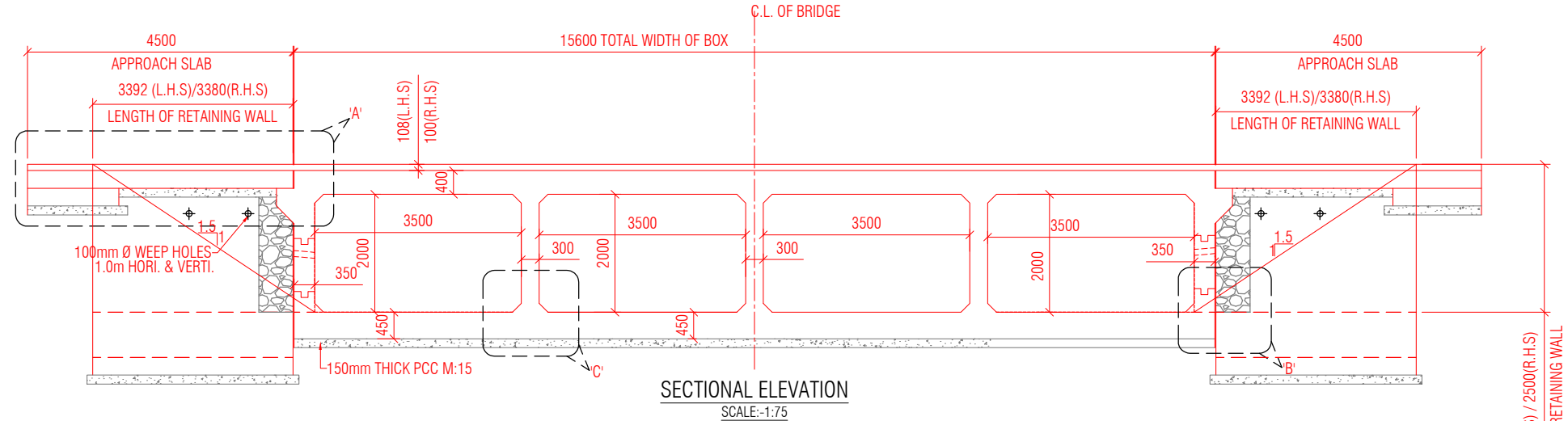
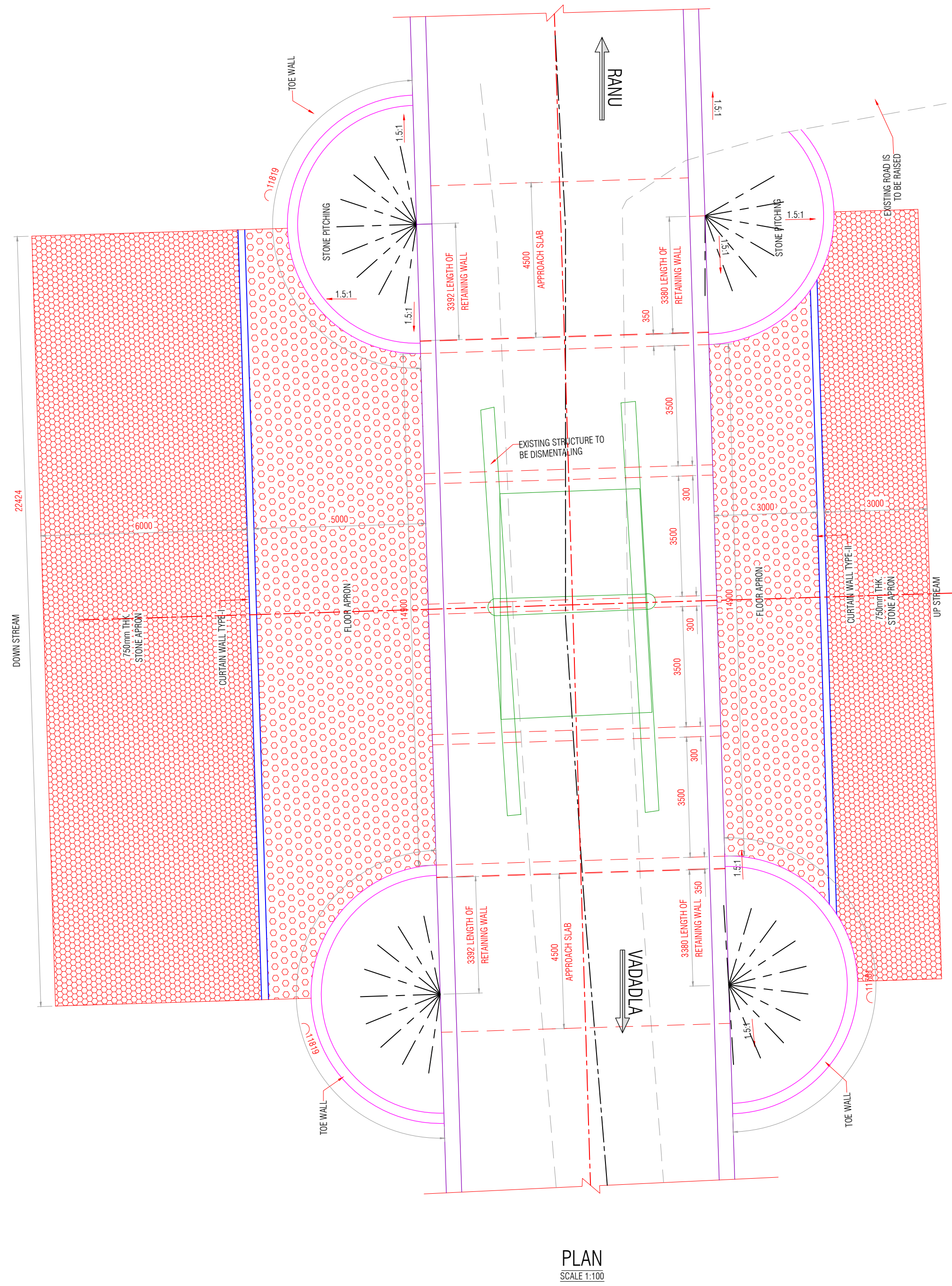
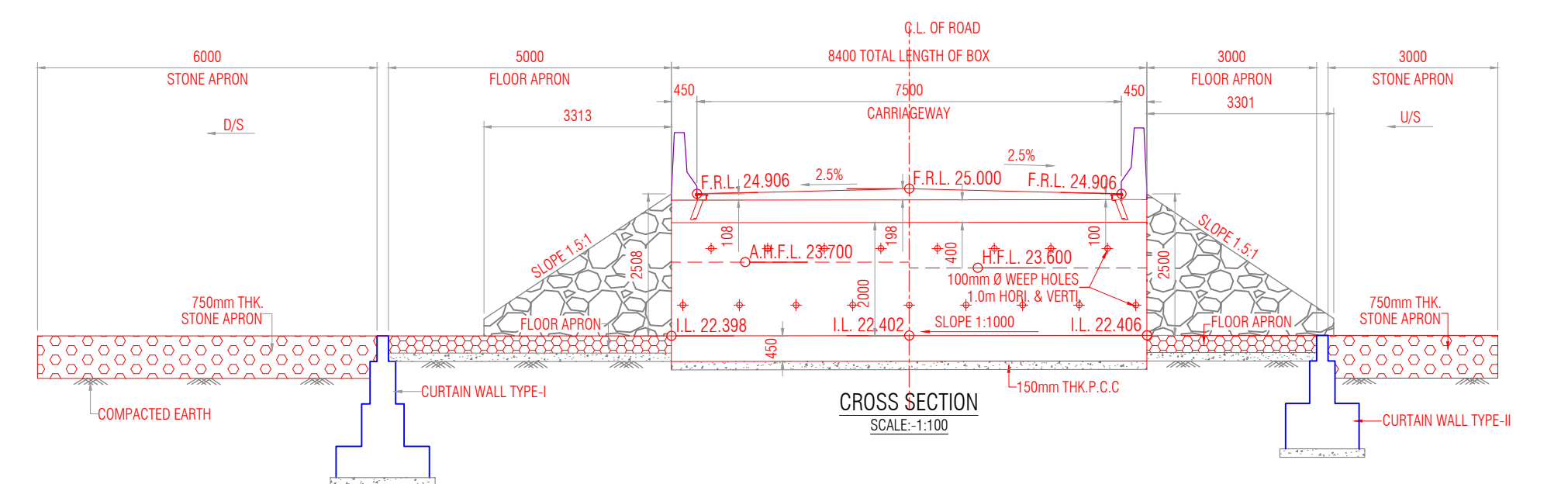
CONSULTANT :-

 **GEO DESIGNS
& RESEARCH (P) LTD.**

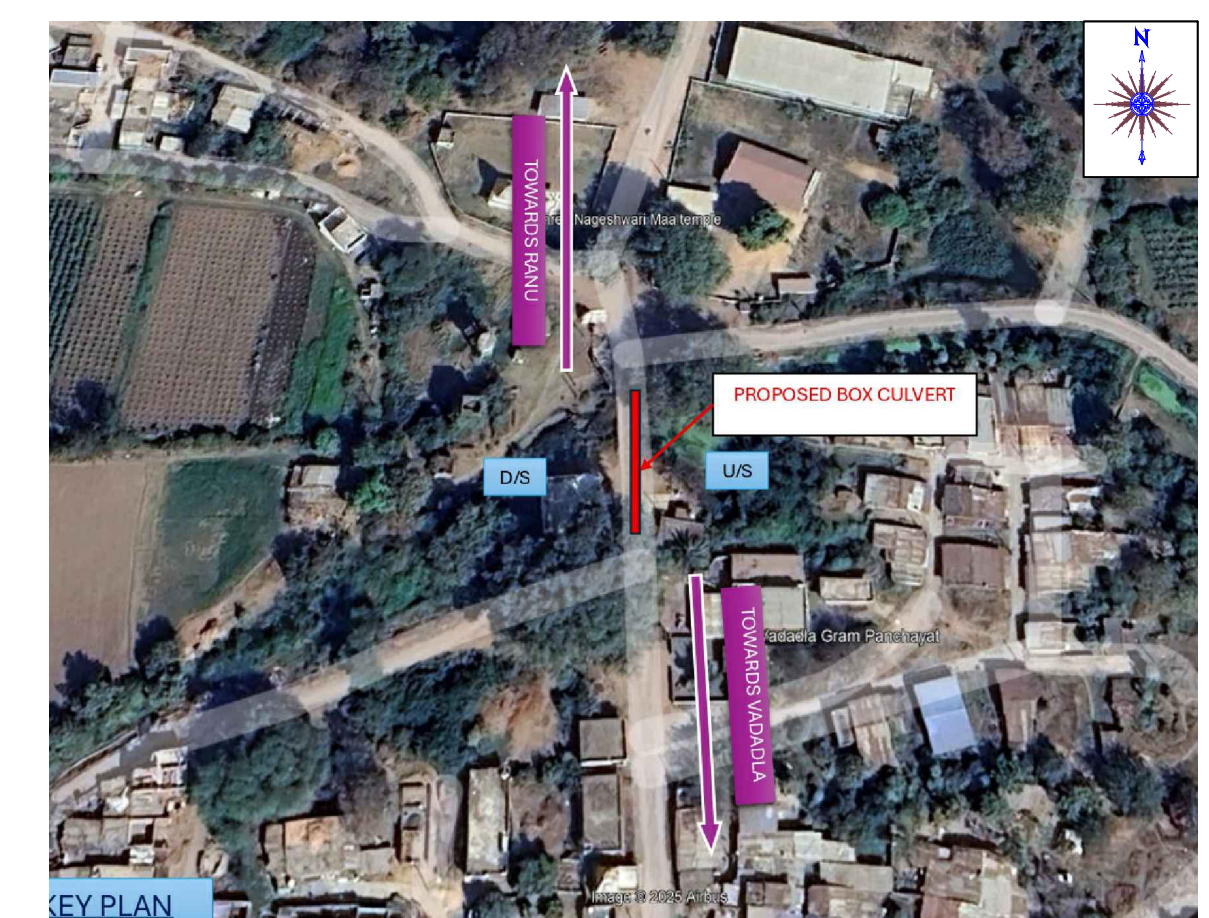
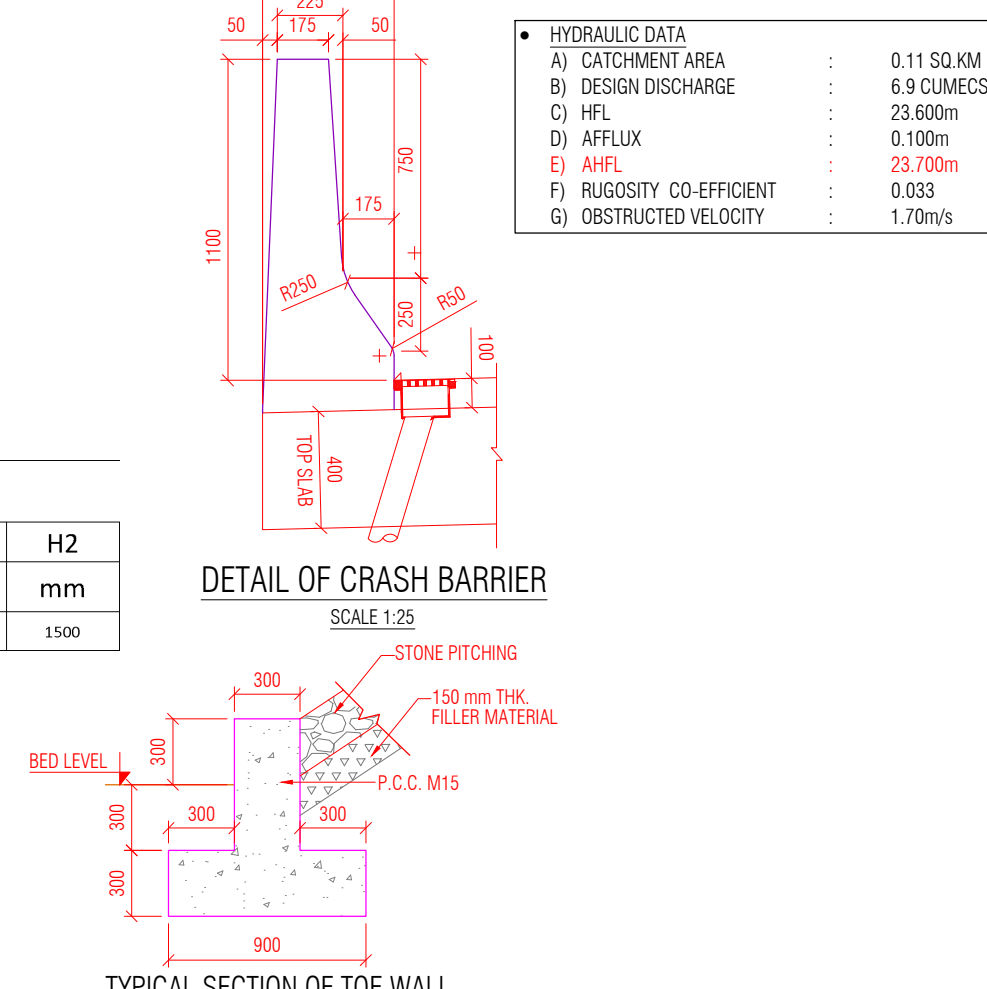
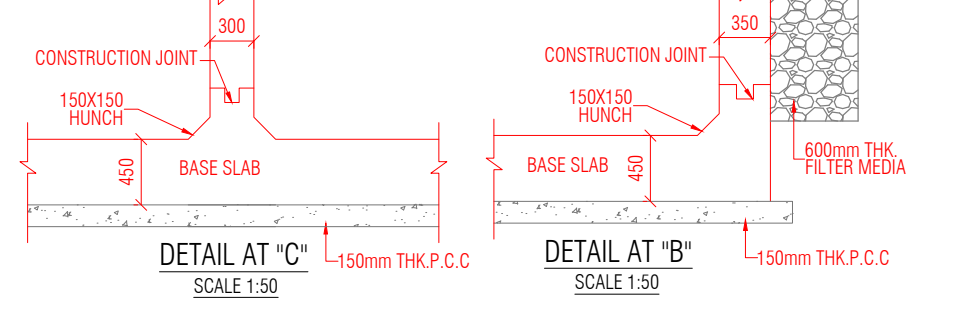
B/10, KRISHNA INDUSTRIAL ESTATE,
OPP. B.I.D.C. GORWA ESTATE,
VADODARA - 390 016
TELEFAX : 91-265-2290222,2283081
E-Mail : geo_group@yahoo.com
Web Site : www.geogroup.in

PREPARED BY	IKHLAF MAFAT (CAD ENGINEER)	DRG NO.	GDR/GAD/BOX CULVERT/BR-24
DESIGNED BY	FAKHRUDDIN DHILAWALA (Sr. ENGINEER)	DATE	13-10-2025
CHECKED BY	MEHUL PATEL (DESIGN DIRECTOR)	JOB NO.	2025_26_001

CONSULTANT	DEPUTY EXECUTIVE ENGINEER PADRA PANCHAYAT (R&B) SUB DIVISION	EXECUTIVE ENGINEER PANCHAYAT (R&B) DIVISION VADODARA
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RETAINING WALL									
a	b	c	d	e	f	g	h	H1	H2
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
250	450	1600	900	250	400	250	900	2500	1500



- 1) GENERAL:
- A. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- B. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING.
- C. DESIGN CRITERIA:
- THE DESIGN IS ACCORDING TO THE FOLLOWING CODES.
 - IRC: 78-2024
 - SP: 13-2022
 - IRC: 6-2017
 - IRC: 112-2020
- D. THE DESIGN ARE APPLICABLE FOR "SEVERE" EXPOSURE CONDITIONS & SEISMIC ZONE III.
- E. THE STRUCTURE DESIGN FOR:
- ONE LANE OF CLASS 70R
 - TWO LANE OF CLASS-A FOR EACH LANE
 - ONE LANE OF IRC SV LOADING
- F. WIND LOAD DETAILS CONSIDERED IN DESIGN:
- BASIC WIND SPEED - 44 m/sec
 - TYPE OF TERRAIN - PLAIN TERRAIN
- 2) CONCRETE:
- TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE FORMING TO IS:6925 AND IS:9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
- 3) REINFORCEMENT:
- GRADE: Fe550D(TMT) CONFIRMING TO IS:1786-2008. (FUSION BONDED EPOXY COATED STEEL SHALL BE USED)
- 4) WATER:
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC 112-2020.
- 5) EXPANSION JOINT:
- EXPANSION JOINT SHALL BE USED IN ACCORDANCE WITH SECTION 2600 OF MORTH LATEST REVISION.
- 6) WORKMANSHIP/DETAILING:
- FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
- B. CONCRETE GRADE:
- | NO | DESCRIPTION | GRADE OF CONCRETE | GRADE OF STEEL |
|----|--------------------|-------------------|---|
| 01 | RCC BOX | M30 | Fe550D(FEBC) CONFIRMING TO IS:1786-2008 |
| 02 | RCC RETAINING WALL | M30 | |
| 03 | LEVELLING COURSE | M15 | |
| 04 | RCC CRASH BARRIER | M40 | |
| 05 | APPROACH SLAB | M30 | |
| 06 | WEARING COURSE | M40 | |
- C. LAPS IN REINFORCEMENT:
- FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL SERVICES.
- | GRADE OF CONCRETE | ANCHORAGE LENGTH | | LAP LENGTH | |
|-------------------|------------------|---------------|------------|---------------|
| | FAVOURABLE | UN FAVOURABLE | FAVOURABLE | UN FAVOURABLE |
| M 30 | 55 Ø | 79 Ø | 77 Ø | 110 Ø |
| M 40 | 46 Ø | 66 Ø | 65 Ø | 93 Ø |
- NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.
- D. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
- E. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACRED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
- F. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- G. CLEAR COVER:
- G.1. CLEAR COVER FOR EARTH FACE STRUCTURAL COMPONENT = 75mm
 - G.2. INSIDE FACE STRUCTURAL COMPONENT = 50mm
 - G.3. BOTTOM RAFT = 75mm
- 7) BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0Kg/Sq.cm. Ø≥30°, DENSITY OF EARTH FILL γ=18KN/M³ TO 20KN/M³ IT SHALL BE CONFIRM WITH IRC-78:2014.
- 8) ANY LOOSE POCKETS/VOIDS AT FOUNDING LEVEL WILL BE REMOVED. COMPACTED AND FILLED WITH GRANULAR MATERIAL/PCC M:15 AS DECIDED BY ENGINEER.
- 9) MAXIMUM BASE PRESSURE 10.0 T/m².
- 10) FRL IS CONSIDERED AS PER PLAN & PROFILE. KINDLY VERIFY THE SAME BEFORE STARTING EXECUTION OF WORK. IF ANY DISCREPANCY OCCURS KINDLY INFORM TO ENGINEER FIRST.
- 11) INVERT LEVEL OF TOP SURFACE OF BOTTOM SLAB SHALL BE 300mm (MIN.) BELOW LOWEST BED LEVEL.
- 12) FILTER MEDIA SHOULD BE PROVIDED IN ACCORDANCE TO CLAUSE 2504.2.2 OF MOST SPECIFICATIONS.
- 13) SPECIFICATIONS:
- A. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.
- 14) DRAINAGE SPOUT
- A. THE SPOUT SHALL OF 100mm DIA @5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
 - B. DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD/303.
- 15) IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA OF SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
- 16) BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT IT TO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
- 17) IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/CLIENT SHALL MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.
- 18) WEEP HOLES SHALL BE 100mm Ø PVC @1000mm C/C IN STAGGERED FASHION.
- 19) SOIL INVESTIGATION ARE CARRIED OUT AND SUBMITTED TO -----
- 20) ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GOG VIDE THEIR LETTER NO.: SHB-10-2024-1009-C
- ** IN CASE OF STRUCTURE FOUNDED ON ERODIBLE SOIL IS ONLY REQUIRED TO BE PROTECTED AGAINST SCOUR BY FLOOR PROTECTION WORKS COMPRISING OF RIGID FLOORING WITH CURTAIN WALLS AND FLEXIBLE APRON. IF STRUCTURE IS FOUNDED ON NON ERODIBLE STRATA DOES NOT REQUIRED PROTECTION AGAINST SCOUR.

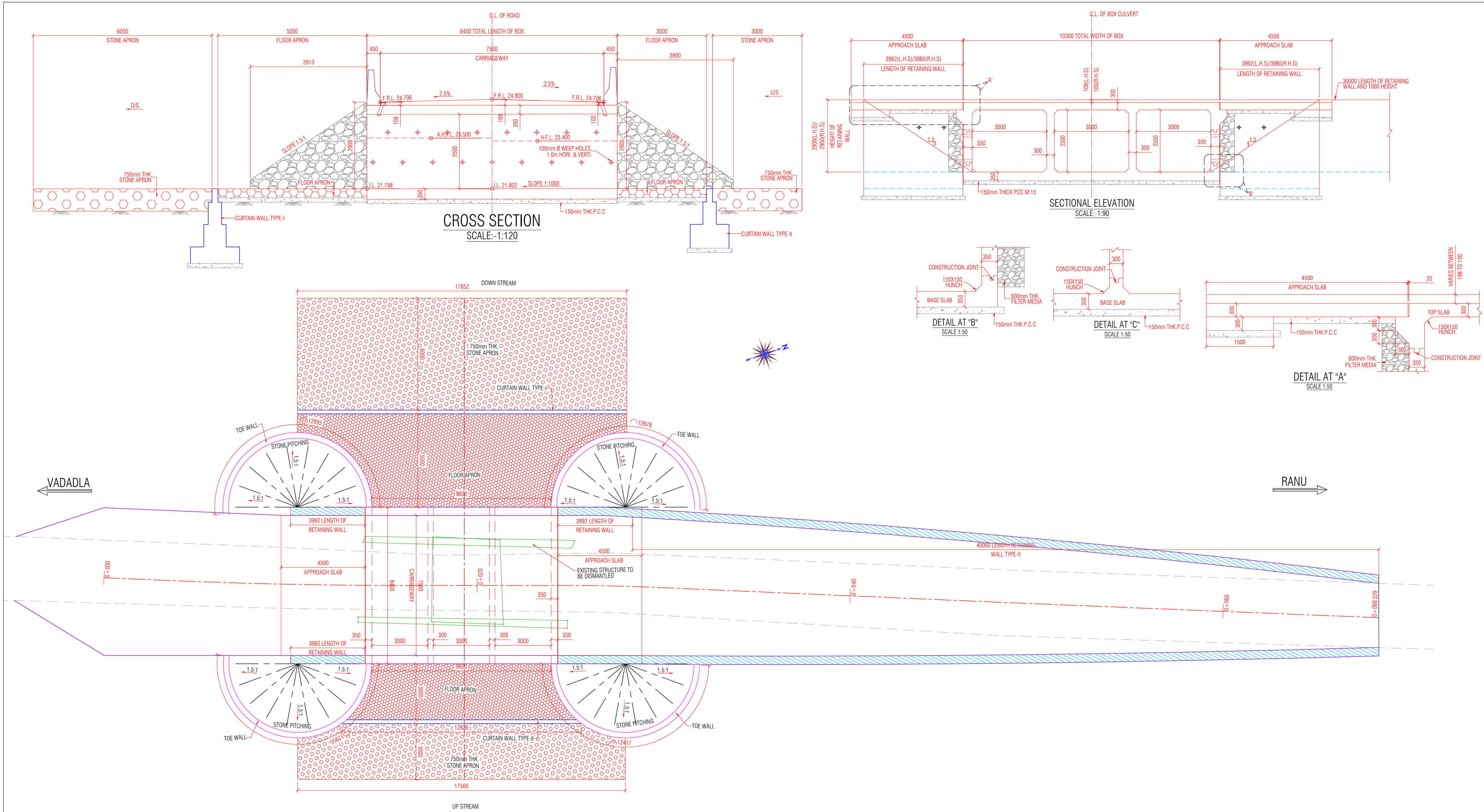
CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION,VADODARA
NAME OF WORK:-

CONSTRUCTION OF BOX CULVERT ACROSS LOCAL STREAM ON
RANU TO VADADLA ROAD AT 1/400 TO 1/600 DIST. VADODARA.
GENERAL ARRANGEMENT DRAWING

TITLE:- GENERAL ARRANGEMENT DRAWING OF BOX CULVERT
LOCATION:- NAME OF ROAD : RANU TO VADADLA

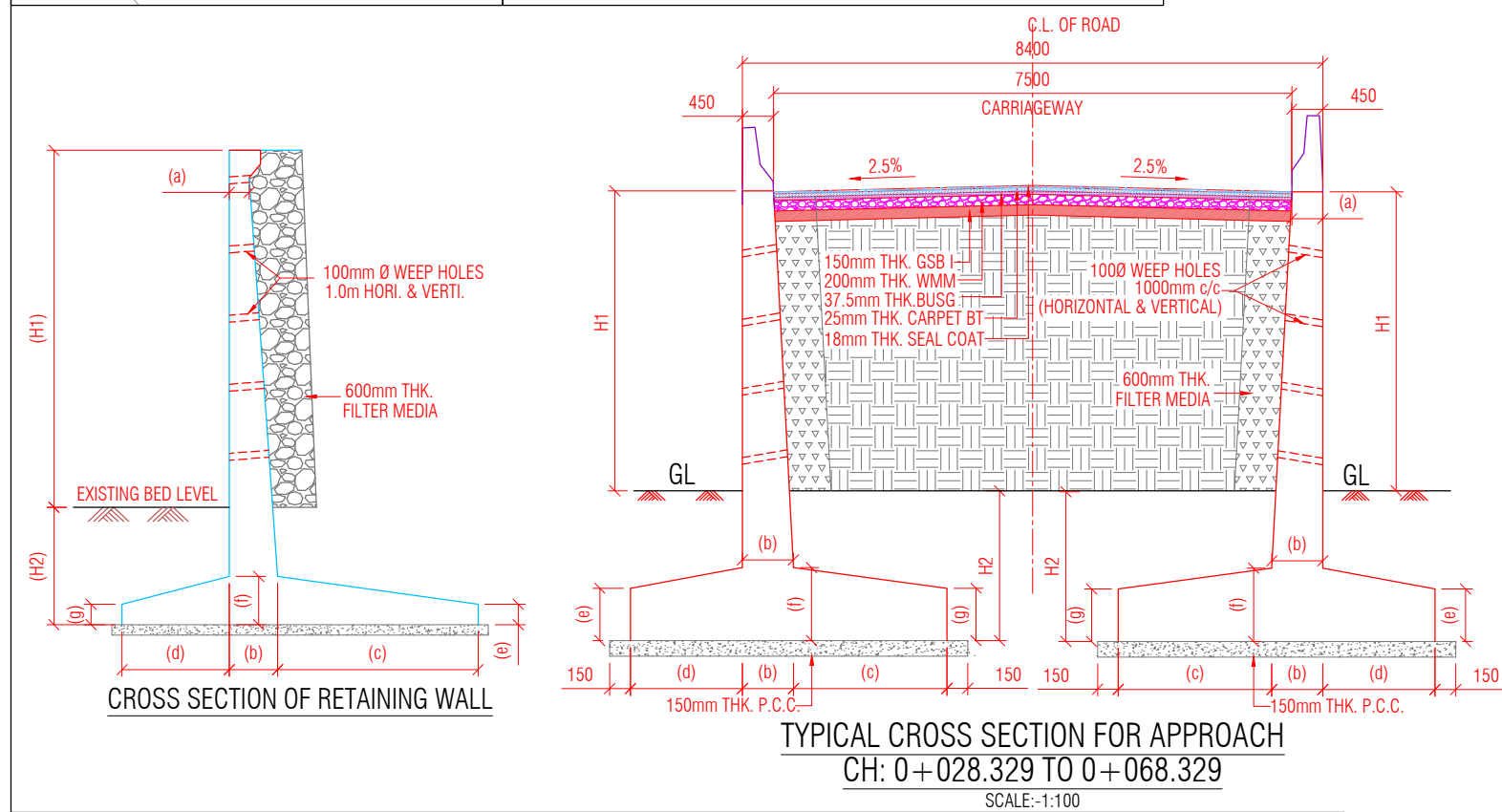
CONSULTANT :-
GEO DESIGNS
& RESEARCH (P) LTD.
B/10, KRISHNA INDUSTRIAL ESTATE,
OPP. B.I.D.C. GORWA ESTATE,
VADODARA - 390 016
TELEFAX : 91-265-2290222,2283081
E-Mail : geo_group@yahoo.com
Web Site : www.geogroup.in

AUTHORITY :			
CONSULTANT	DEPUTY EXECUTIVE ENGINEER PADRA PANCHAYAT (R&B) SUB DIVISION	EXECUTIVE ENGINEER PANCHAYAT (R&B) DIVISION VADODARA	
PREPARED BY	BHAGYASHREE MISTRI (CAD ENGINEER)	DRG NO.	GDR/GAD/BOX CULVERT/BR-25/01(B)
DESIGNED BY	FAKHRUDDIN DHILAWALA (S. ENGINEER)	DATE	25-08-2025
CHECKED BY	MEHUL PATEL (DESIGN DIRECTOR)	JOB NO.	2025_26_001
		Rev	
		RD	

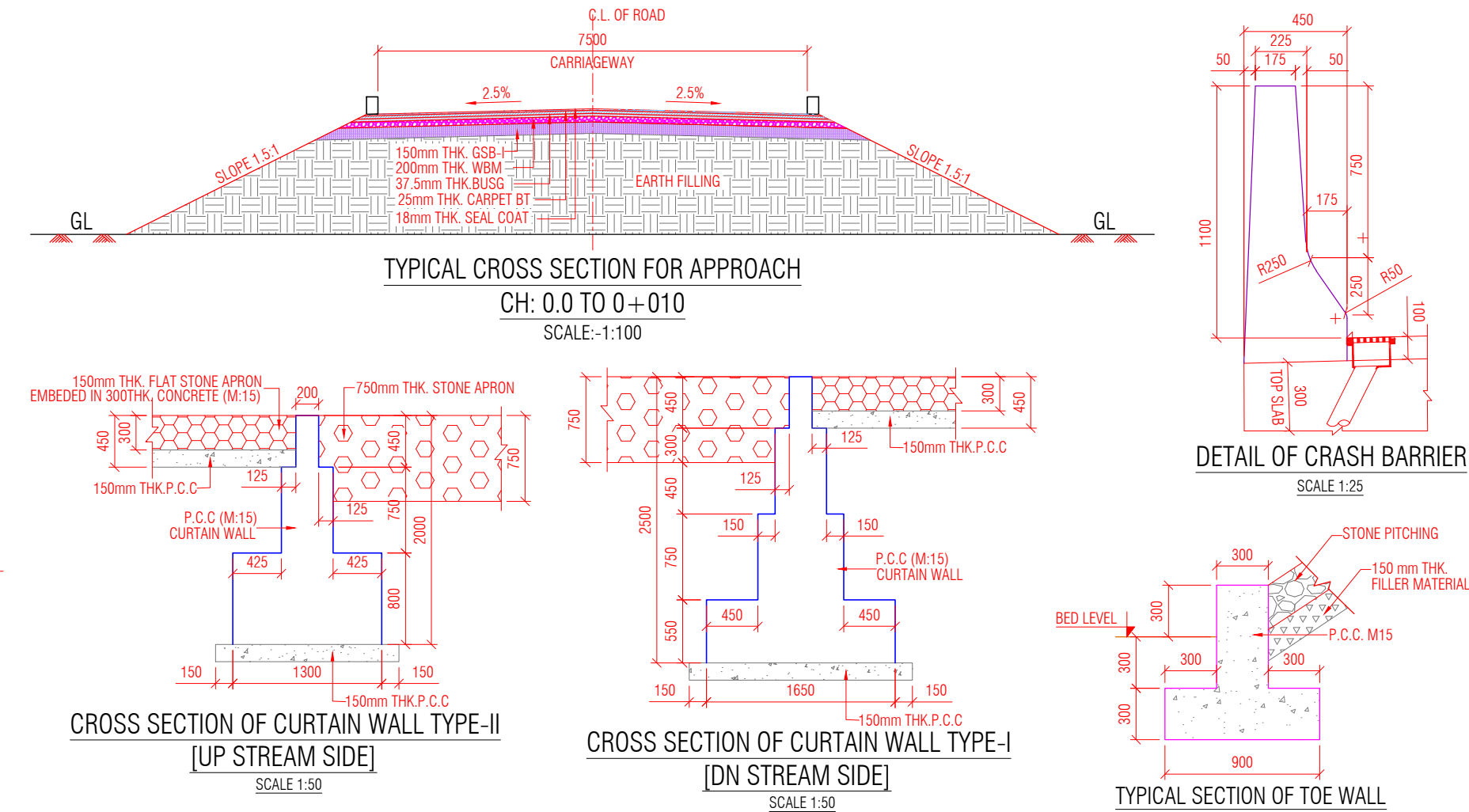


HYDRAULIC DATA	
A) CATCHMENT AREA	0.10 SQ.KM
B) DESIGN DISCHARGE	7.6 CUM/SEC
C) HFL	23.400m
D) AFFLUX	0.200m
E) AHFL	23.500m
F) RUGOSITY CO-EFFICIENT	0.045
G) OBSTRUCTED VELOCITY	2.15m/s

STRUCTURAL AND OTHER DATA	
A) SPAN ARRANGEMENT	3 X 3.0 X 2.5m
B) TYPE OF STRUCTURE	BOX CULVERT
C) WEARING COAT	100mm THICK RCC WEARING COAT
D) WATER SPOUTS	AT 5m C/C
E) RAILINGS	RCC CRASH BARRIER



RETAINING WALL										
TYPE	a	b	c	d	e	f	g	h	H1	H2
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
TYPE-I	250	250	700	400	250	250	250	600	1000	450
TYPE-II	250	350	1450	800	250	350	250	750	2000	1500
TYPE-III	250	500	1900	1000	250	450	250	1100	3000	1500



- 1) GENERAL:
A. ALL DIMENSIONS ARE IN MILLIMETER & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
B. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING.
C. DESIGN CRITERIA:
• THE DESIGN IS ACCORDING TO THE FOLLOWING CODES:
a. IRC: 78-2024
b. SP: 13-2022
c. IRC: 6-2017
d. IRC: 112-2020
D. THE DESIGN ARE APPLICABLE FOR "SEVERE" EXPOSURE CONDITIONS & SEISMIC ZONE III.
E. THE STRUCTURE DESIGN FOR:
a. ONE LANE OF CLASS 70R
b. TWO LANE OF CLASS-A FOR EACH LANE
c. ONE LANE OF IRC SV LOADING
F. WIND LOAD DETAILS CONSIDERED IN DESIGN:
a. BASIC WIND SPEED :- 44 m/sec
b. TYPE OF TERRAIN :- PLAIN TERRAIN
2) CONCRETE:
• TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURE CONCRETE FORMING TO IS:6925 AND IS:9103 MAY BE PERMITTED SUBJECTED TO SATISFACTORY PROVEN USE, ADMIXTURES GENERATING HYDROGEN, NITROGEN ETC. SHOULD NOT BE USED.
3) REINFORCEMENT:
• GRADE: Fe550D(TMT) CONFIRMING TO IS:1786-2008. (FUSION BONDED EPOXY COATED STEEL SHALL BE USED)
4) WATER:
• WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC 112-2020.
5) EXPANSION JOINT:
• EXPANSION JOINT SHALL BE USED IN ACCORDANCE WITH SECTION 2600 OF MORTH LATEST REVISION.
6) WORKMANSHIP/DETAILING:
A. FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
B. CONCRETE GRADE:

NO	DESCRIPTION	GRADE OF CONCRETE	GRADE OF STEEL
01	RCC BOX	M30	Fe550D CONFIRMING TO IS:1786-2008
02	RCC RETAINING WALL	M30	
03	LEVELLING COURSE	M15	
04	RCC CRASH BARRIER	M40	
05	APPROACH SLAB	M30	
06	WEARING COURSE	M40	

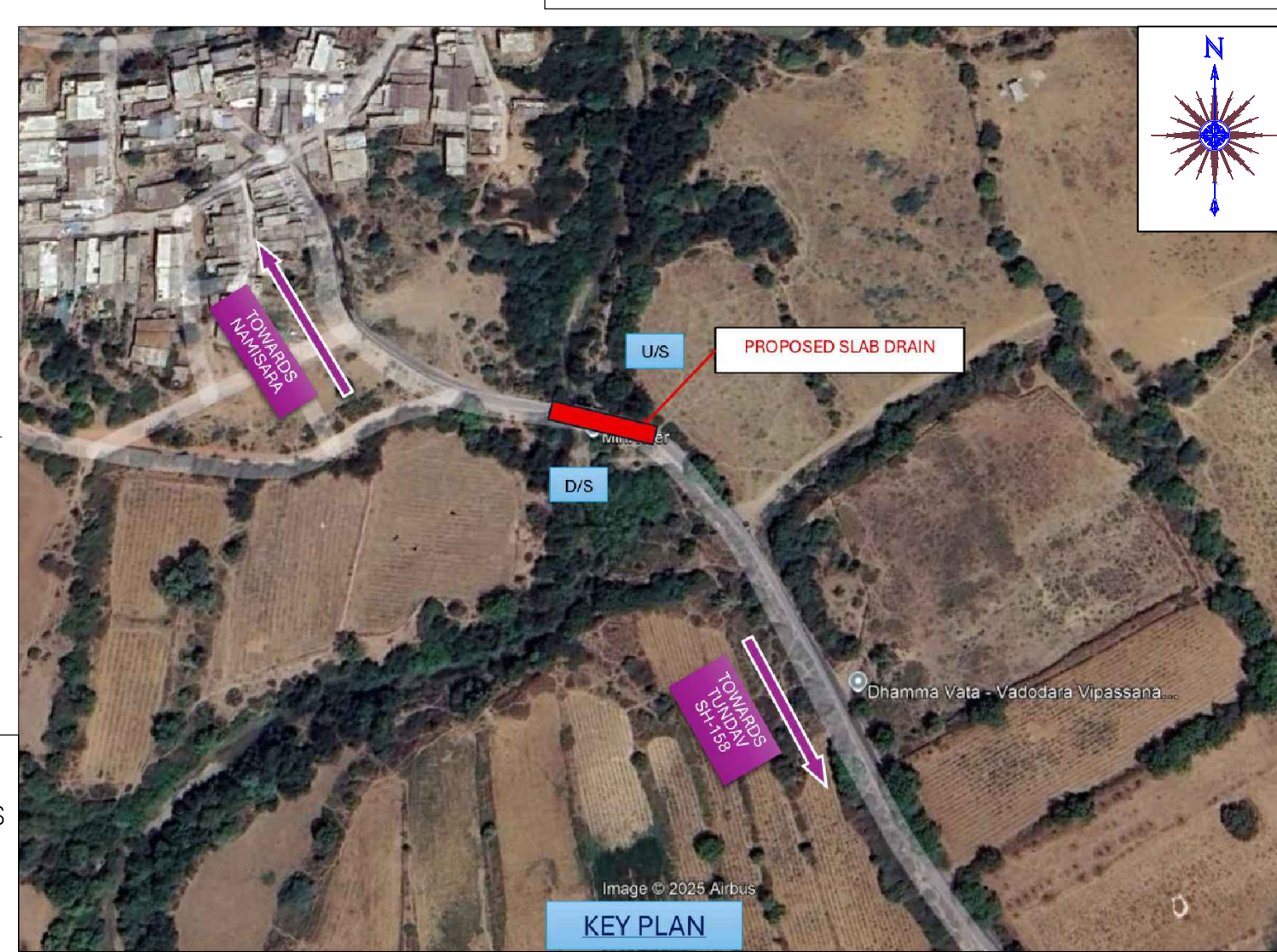
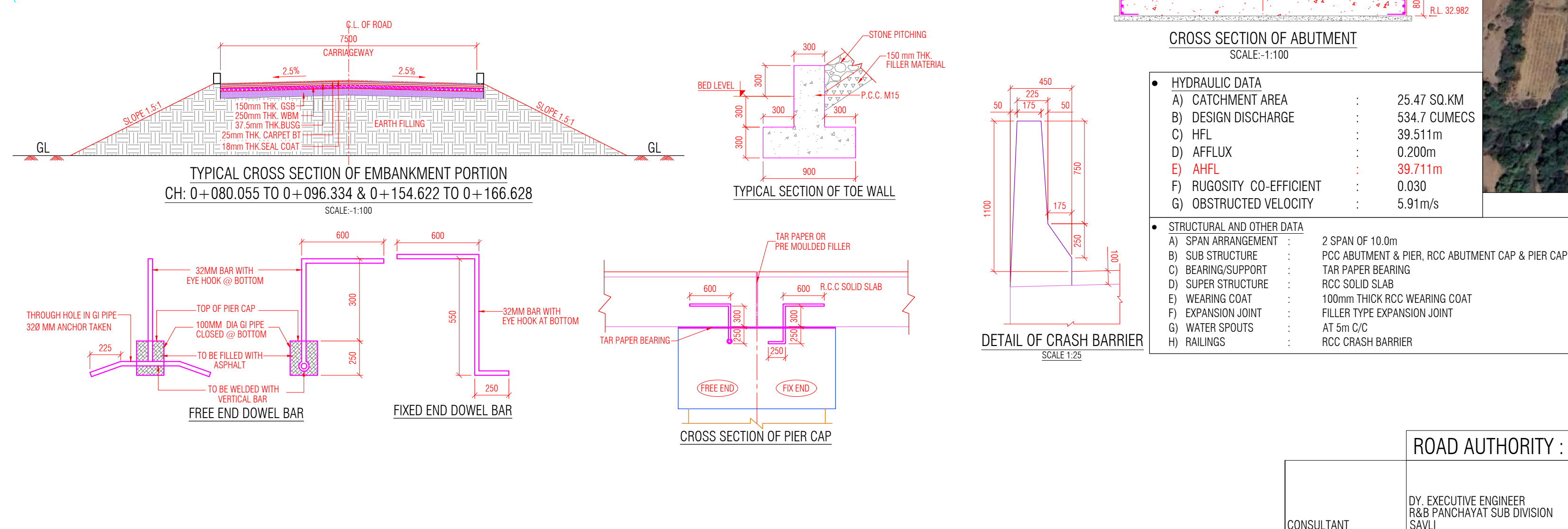
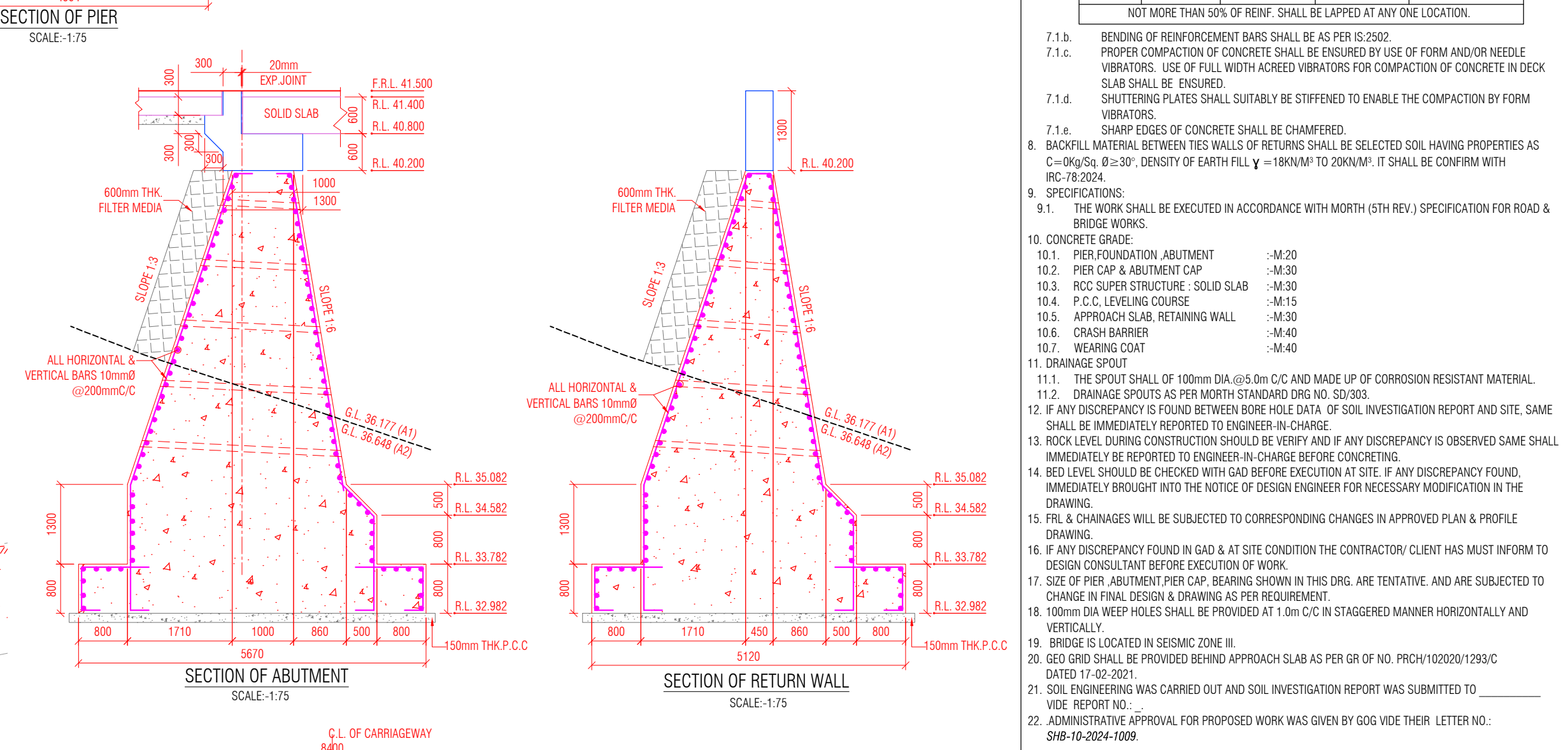
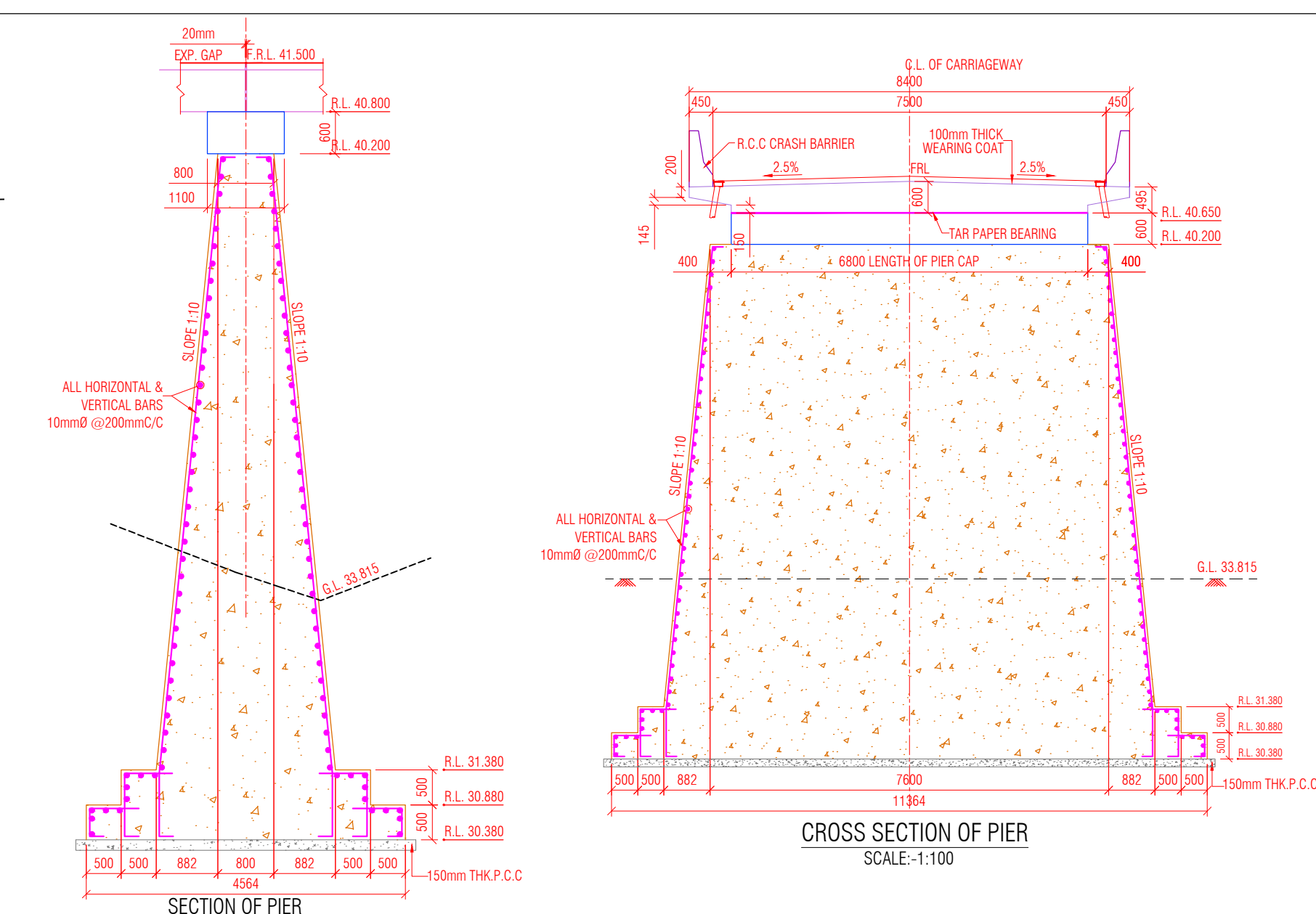
C. LAPS IN REINFORCEMENT:
• FOR CLOSELY SPACED BARS LAPPING MAY BE AVOIDED BY PROVIDING SUITABLE TYPE OF MECHANICAL SERVICES.

GRADE OF CONCRETE	ANCHORAGE LENGTH	LAP LENGTH		
	FAVOURABLE	UN FAVOURABLE	FAVOURABLE	UN FAVOURABLE
M 30	55 Ø	79 Ø	77 Ø	110 Ø
M 40	46 Ø	66 Ø	65 Ø	93 Ø

NOT MORE THAN 50% OF REINF. SHALL BE LAPPED AT ANY ONE LOCATION.
D. BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
E. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND/OR NEEDLE VIBRATORS. USE OF FULL WIDTH ACCEDED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLAB SHALL BE ENSURED.
F. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
G. CLEAR COVER:
G.1. CLEAR COVER FOR EARTH FACE STRUCTURAL COMPONENT = 75mm
G.2. INSIDE FACE STRUCTURAL COMPONENT = 50mm
G.3. BOTTOM RAFT = 75mm
7) BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED SOIL HAVING PROPERTIES AS C=0kg/Sq.cm. Ø≥30°. DENSITY OF EARTH FILL γ=18kN/m³ TO 20kN/m³. IT SHALL BE CONFIRM WITH IRC-78:2014.
8) ANY LOOSE POCKETS/VOIDS AT FOUNDING LEVEL WILL BE REMOVED. COMPACTIONED AND FILLED WITH GRANULAR MATERIAL/PCC M:15 AS DECIDED BY ENGINEER.
9) MAXIMUM BASE PRESSURE 10.0 T/m².
10) FRL IS CONSIDERED AS PER PLAN & PROFILE. KINDLY VERIFY THE SAME BEFORE STARTING EXECUTION OF WORK. IF ANY DISCREPANCY OCCURS KINDLY INFORM TO ENGINEER FIRST.
11) INVERT LEVEL OF TOP SURFACE OF BOTTOM SLAB SHALL BE 300mm (MIN.) BELOW LOWEST BED LEVEL.
12) FILTER MEDIA SHOULD BE PROVIDED IN ACCORDANCE TO CLAUSE 2504.2.2 OF MOST SPECIFICATIONS.
13) SPECIFICATIONS:
A. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH MORTH (5TH REV.) SPECIFICATION FOR ROAD & BRIDGE WORKS.
14) DRAINAGE SPOUT
A. THE SPOUT SHALL OF 100mm DIA. @ 5.0m C/C AND MADE UP OF CORROSION RESISTANT MATERIAL.
B. DRAINAGE SPOUTS AS PER MORTH STANDARD DRG NO. SD/303.
15) IF ANY DISCREPANCY IS FOUND BETWEEN BORE HOLE DATA OF SOIL INVESTIGATION REPORT AND SITE. SAME SHALL BE IMMEDIATELY REPORTED TO ENGINEER-IN-CHARGE.
16) BED LEVEL SHOULD BE CHECKED WITH GAD BEFORE EXECUTION AT SITE. IF ANY DISCREPANCY FOUND, IMMEDIATELY BROUGHT IT TO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
17) IF ANY DISCREPANCY FOUND IN GAD & AT SITE CONDITION THE CONTRACTOR/ CLIENT SHALL MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.
18) WEEP HOLES SHALL BE 100mm Ø PVC @ 1000mm C/C IN STAGGERED FASHION.
19) SOIL INVESTIGATION ARE CARRIED OUT AND SUBMITTED TO
20) ADMINISTRATIVE APPROVAL FOR PROPOSED WORK WAS GIVEN BY GOG VIDE THEIR LETTER NO.: SHB-10-2024-1009-C
** IN CASE OF STRUCTURE FOUNDED ON ERODIBLE SOIL, IS ONLY REQUIRED TO BE PROTECTED AGAINST SCOUR BY FLOOR PROTECTION WORKS COMPRISING OF RIGID FLOORING WITH CURTAIN WALLS AND FLEXIBLE APRON. IF STRUCTURE IS FOUNDED ON NON ERODIBLE STRATA DOES NOT REQUIRED PROTECTION AGAINST SCOUR.



CLIENT:- EXECUTIVE ENGINEER, PANCHAYAT (R & B) DIVISION,VADODARA	
NAME OF WORK:-	
CONSTRUCTION OF BOX CULVERT ACROSS LOCAL STREAM ON RANU TO VADADLA ROAD AT 0/800 TO 1/000 DIST. VADODARA.	
GENERAL ARRANGEMENT DRAWING	
TITLE:- GENERAL ARRANGEMENT DRAWING OF BOX CULVERT	
LOCATION:- NAME OF ROAD : RANU TO VADADLA	
CONSULTANT :-	
GEO DESIGNS & RESEARCH (P) LTD.	
8/10, KRISHNA INDUSTRIAL ESTATE, OPP. S.I.D.C. GODNA ESTATE, VADODARA - 390 016 TELEPHONE: 91-265-229022-2283081 E-Mail: gdc_group@yahoo.com Web Site: www.geodesigns.in	
AUTHORITY :	
DEPUTY EXECUTIVE ENGINEER PANCHAYAT (R&B) SUB DIVISION VADODARA	
EXECUTIVE ENGINEER PANCHAYAT (R&B) SUB DIVISION VADODARA	
PREPARED BY: BHADRAKSHEE MESTRI (CAD ENGINEER)	
DESIGNED BY: FARRUKHUN DHALWALA (Sd ENGINEER)	
CHECKED BY: MEHUL PATEL (DESIGN DIRECTOR)	
DRG NO.: GDRVADOD/BOX CULVERT/08-25/01(A)	
DATE: 25-08-2025	
JOB NO: 2025_26_001	



1. ALL DIMENSIONS ARE IN MILLIMETERS & LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.

1.2. WRITTEN DIMENSIONS SHALL NOT BE SCALED FROM THIS DRAWING.

1.3. DESIGN ORIENTATION: THE DESIGN IS ACCORDING TO THE FOLLOWING COORDINATES:

1.3.a. PC: 7+13.200

1.3.b. IC: 8+207

1.3.c. PC: 11+2.200

1.3.d. PC: SP1+118.20

1.4. THE DESIGN IS APPLICABLE FOR "SEVERE" EXPOSURE CONDITION.

1.5. THE STRUCTURE IS DESIGNED FOR:

1.5.a. ONE LANE OF CLASS TR

1.5.b. ONE LANE OF CLASS II/III TRAILER TRAILER

1.5.c. ONE LANE OF CLASS II/III TRAILER TRAILER

1.6. WIND LOAD DATA IS CONSIDERED IN DESIGN.

1.6.a. BASIC WIND SPEED: 44 M/S (100 MPH)

1.6.b. TYPE OF TERRAIN: PLAIN / TERRAIN

2. CONCRETE

2.1. HIGH STRENGTH PORTLAND CEMENT CONFORMING TO IS 8112 OR CONFORMING TO IS 12569 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.

2.2. TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO GB 8030 AND IS 9103 SHOULD BE USED TO SATISFACTORY PROVEN USE. ADMIXTURES GENERATING HYDRATION HEAT, SHOULD NOT BE USED.

3. REINFORCEMENT

3.1. GRADE: F450D F600 STEEL COLD ROLLED CONFORMING TO IS 1786-2008.

4. WATER

4.1. WATER TO BE USED IN CONCRETE AND CURING SHALL CONFORM TO CLAUSE 18 OF IRC 112-2000

5. BEARING:

5.1. FILL PAVED SURFACE SHALL BE PROVIDED.

6. EXPANSION JOINT

6.1. THE EXPANSION JOINTS MUST BE ROBUST, DURABLE, WATER TIGHT AND REPLACEABLE IF MUST BE PROVIDED OVER THE FULL WIDTH OF SUPER STRUCTURE INCLUDING K&RB AND FOOTPATH FOR THE ENTIRE LENGTH OF THE SAME. HOWEVER, RELIANTLY EXPANSION JOINTS SHALL BE OBTAINED ONLY FROM APPROVED MANUFACTURERS AND BE OF PROVED TYPE. DETAILS OF EXPANSION JOINTS MAY NOT BE APPROVED BEFORE COMMENCEMENT OF CONSTRUCTION. SITE FABRICATED EXPANSION JOINTS SHALL BE PROHIBITED.

7. WORKMANSHIP DETAILING:

7.1. FOR BRIDGING, PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.

7.1.a. LAP LENGTH & ANCHORAGE LENGTH IN REINFORCEMENT:

CONCRETE CLASS	ANCHORAGE LENGTH		LAP LENGTH	
	FAVOURABLE	UNFAVOURABLE	FAVOURABLE	UNFAVOURABLE
M 20	75.0	107.0	105.0	150.0
M 30	55.0	79.0	77.0	110.0
M 35	50.0	72.0	70.0	100.0
M 40	45.0	66.0	65.0	93.0
M 45	44.0	62.0	64.0	88.0

NOTE: MAXIMUM ALLOWED COVER: SHALL BE LAPPED AT ANY ONE LOCATION.

7.1.b. BONDING OF REINFORCEMENT SHALL BE AS PER IS 2502.

7.1.c. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM AND UNIFORM NEEDLE VIBRATOR. THE USE OF HIGH AERATED VIBRATORS FOR COMPACTION OF CONCRETE IN DECK SLABS SHALL BE ENSURED.

7.1.d. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE THE COMPACTION OF FORM WORK.

7.1.e. SHARP EDGES SHALL BE CHAMFERED.

8. BACKFILL MATERIAL: BETWEEN THE WALLS OF RETAINING SHALL BE SELECTED SOIL, HAVING PROPERTIES AS C-19% & I-35%, DENSITY OF EARTH FILL = 18KN/M³ TO 20KN/M³. IT SHALL BE CONFORM WITH IS-7814/2024.

9. SPECIFICATIONS

9.1. CONCRETE SHALL BE DESIGNED IN ACCORDANCE WITH MORTH (SI-REV) SPECIFICATION FOR ROAD & BRIDGE WORKS.

10. CONCRETE PROTECTION

10.1. PIER FOUNDATION ABUTMENT - M-20

10.2. PIER CAP & ABUTMENT CAP - M-20

10.3. R/C SUPERSTRUCTURE - SOLID SLAB - M-30

10.4. P.C. CURB/LEVER CURB - M-15

10.5. APPROACH SLAB RETAINING WALL - M-30

10.6. CRASH BARRIER - M-30

10.7. WEARING COAT - M-40

11. DRAINAGE SLOPE

11.1. THE DRAINAGE SLOPE OF 100mm DIA. G/S IN C&G AND P&G OF C&G FOR CORROSION RESISTANT MATERIAL.

11.2. DRAINAGE SLOUTS ARE PER AS PER MORTH STANDARD CODE NO. 50/303.

12. IF ANY DISCREPANCY IS FOUND IN DRAWING OR DATA OF SOIL INVESTIGATION REPORT AND SITE, SAME SHALL BE IMMEDIATELY REPORTED TO DESIGNER IN WRITING.

13. ROCK LEVEL DURING CONSTRUCTION SHOULD BE VERY RY AND IF ANY DISCREPANCY IS OBSERVED SAME SHALL BE IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.

14. BE LEVELS SHOULD BE CHECKED WITH CARE BEFORE EXECUTION AT ANY SITE. IF ANY DISCREPANCY FOUND IMMEDIATELY BROUGHT INTO THE NOTICE OF DESIGN ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.

15. FILL & CHANGES WILL BE SUBJECT TO CORRESPONDING CHANGES IN APPROVED PLAN & PROFILE DRAWING.

16. IF ANY DISCREPANCY IS FOUND IN G&T SITE INFORMATION THE CONTRACTOR/CLIENT HAS MUST INFORM TO DESIGN CONSULTANT BEFORE EXECUTION OF WORK.

17. SIZES OF PIER, ABUTMENT PIER CAP, BEARING SLOUT & P&G ARE TENTATIVE AND ARE SUBJECT TO C&G AND S&G AND DRAWING AS PER REQUIREMENT.

18. 100mm DIA REEF HOLES SHALL BE PROVIDED AT 1 M C/C IN STAGGERED MANNER HORIZONTALLY AND VERTICALLY.

19. BRIDGE IS LOCATED IN SECTION: ZONE III.

20. GEO SPT SHALL BE PROVIDED BEFORE APPROACH SLAB PER G&G PER OF PROJ 11/2020/2193/C DATED 11/01/2020.


21. SOIL INVESTIGATION WAS CARRIED OUT AND SOIL INVESTIGATION REPORT WAS SUBMITTED TO V&V REPORT NO. 11/2020/2193/C.

22. ADDITIONAL APPROVAL FOR PROPOSED WORK WAS GIVEN BY G&G V&V LETTER NO. 11/2020/2193/C.

CLIENT:- EXECUTIVE ENGINEER, R&B PANCHAYAT DIVISION,VADODARA

NAME OF WORK:-

CONSTRUCTION OF SLAB DRAIN ACROSS LOCAL STREAM AT CH. 1 /60 TO 1 / 80 ON TUNDVA TO NAMISARA ROAD, DIST: VADODARA IN THE STATE OF GUJARAT.

TITLE:- GENERAL ARRANGEMENT DRAWING OF SLAB DRAIN (2 SPAN OF 10.0m)	
CONSULTANT :-  GEO DESIGNS & RESEARCH (P) LTD.	B/10, KRISHNA INDUSTRIAL ESTATE, OPP. B.I.D.C. GORWA ESTATE, VADDODARA - 390 016 TELEFAX : 91-265-2290222,2283081 E-Mail : geo_group@yahoo.com Web Site : www.geogroup.in

PREPARED BY	JANVI NAGARSHETH (CAD ENGINEER)	DRG NO.	GDR/16/001/GAD/ BRIDGE/ BR-26 / 01
DESIGNED BY	FAKHRUDDIN DHILAWALA (Sr. ENGINEER)	DATE	25-12-2025
CHECKED BY	MEHUL PATEL (DESIGN DIRECTOR)	JOB NO.	2026 25 001

	ROAD AUTHORITY :
CONSULTANT	DY. EXECUTIVE ENGINEER R&B PANCHAYAT SUB DIVISION SAVLI