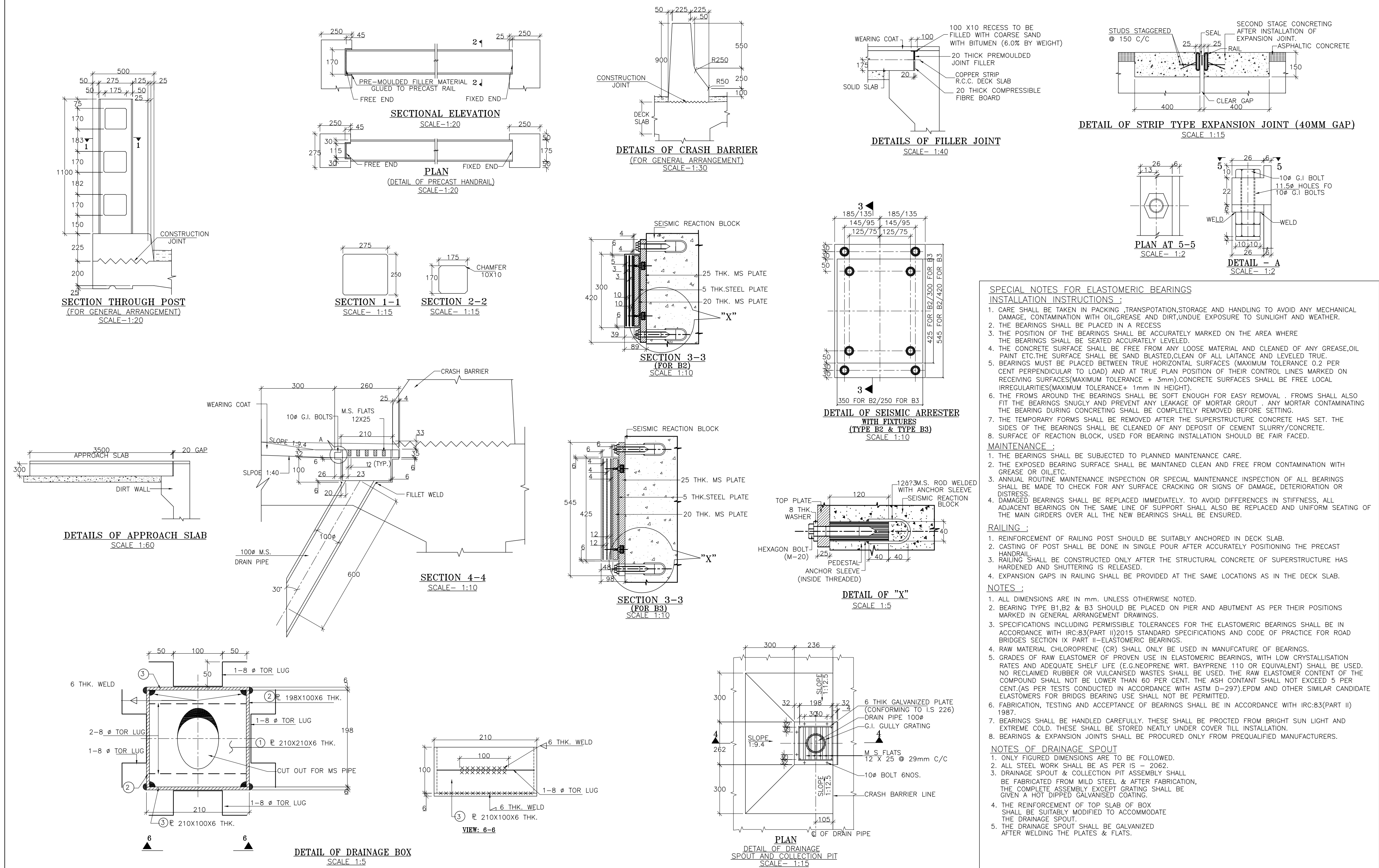




SPECIAL NOTES FOR ELASTOMERIC BEARINGS
INSTALLATION INSTRUCTIONS :

- CARE SHALL BE TAKEN IN PACKING ,TRANSPOTATION,STORAGE AND HANDLING TO AVOID ANY MECHANICAL DAMAGE, CONTAMINATION WITH OIL,GREASE AND DIRT,UNDUE EXPOSURE TO SUNLIGHT AND WEATHER.
- THE BEARINGS SHALL BE PLACED IN A RECESS
- THE POSITION OF THE BEARINGS SHALL BE ACCURATELY MARKED ON THE AREA WHERE THE BEARINGS SHALL BE SEATED ACCURATELY LEVELED.
- THE CONCRETE SURFACE SHALL BE FREE FROM ANY LOOSE MATERIAL AND CLEANED OF ANY GREASE,OIL PAINT ETC.THE SURFACE SHALL BE SAND BLASTED,CLEAN OF ALL LAITANCE AND LEVELED TRUE.
- BEARINGS MUST BE PLACED BETWEEN TRUE HORIZONTAL SURFACES (MAXIMUM TOLERANCE 0.2 PER CENT PERPENDICULAR TO LOAD) AND AT TRUE PLAN POSITION OF THEIR CONTROL LINES MARKED ON RECEIVING SURFACES(MAXIMUM TOLERANCE + 3mm).CONCRETE SURFACES SHALL BE FREE LOCAL IRREGULARITIES(MAXIMUM TOLERANCE+ 1mm IN HEIGHT).
- THE FROMS AROUND THE BEARINGS SHALL BE SOFT ENOUGH FOR EASY REMOVAL . FROMS SHALL ALSO FIT THE BEARINGS SNUGLY AND PREVENT ANY LEAKAGE OF MORTAR GROUT . ANY MORTAR CONTAMINATING THE BEARING DURING CONCRETING SHALL BE COMPLETELY REMOVED BEFORE SETTING.
- THE TEMPORARY FORMS SHALL BE REMOVED AFTER THE SUPERSTRUCTURE CONCRETE HAS SET. THE SIDES OF THE BEARINGS SHALL BE CLEANED OF ANY DEPOSIT OF CEMENT SLURRY/CONCRETE.
- SURFACE OF REACTION BLOCK, USED FOR BEARING INSTALLATION SHOULD BE FAIR FACED.

MAINTENANCE :

- THE BEARINGS SHALL BE SUBJECTED TO PLANNED MAINTENANCE CARE.
- THE EXPOSED BEARING SURFACE SHALL BE MAINTAINED CLEAN AND FREE FROM CONTAMINATION WITH GREASE OR OIL,ETC.
- ANNUAL ROUTINE MAINTENANCE INSPECTION OR SPECIAL MAINTENANCE INSPECTION OF ALL BEARINGS SHALL BE MADE TO CHECK FOR ANY SURFACE CRACKING OR SIGNS OF DAMAGE, DETERIORATION OR DISTRESS.
- DAMAGED BEARINGS SHALL BE REPLACED IMMEDIATELY. TO AVOID DIFFERENCES IN STIFFNESS, ALL ADJACENT BEARINGS ON THE SAME LINE OF SUPPORT SHALL ALSO BE REPLACED AND UNIFORM SEATING OF THE MAIN GIRDERS OVER ALL THE NEW BEARINGS SHALL BE ENSURED.

RAILING :

- REINFORCEMENT OF RAILING POST SHOULD BE SUITABLY ANCHORED IN DECK SLAB.
- CASTING OF POST SHALL BE DONE IN SINGLE POUR AFTER ACCURATELY POSITIONING THE PRECAST HANDRAIL.
- RAILING SHALL BE CONSTRUCTED ONLY AFTER THE STRUCTURAL CONCRETE OF SUPERSTRUCTURE HAS HARDENED AND SHUTTERING IS RELEASED.
- EXPANSION GAPS IN RAILING SHALL BE PROVIDED AT THE SAME LOCATIONS AS IN THE DECK SLAB.

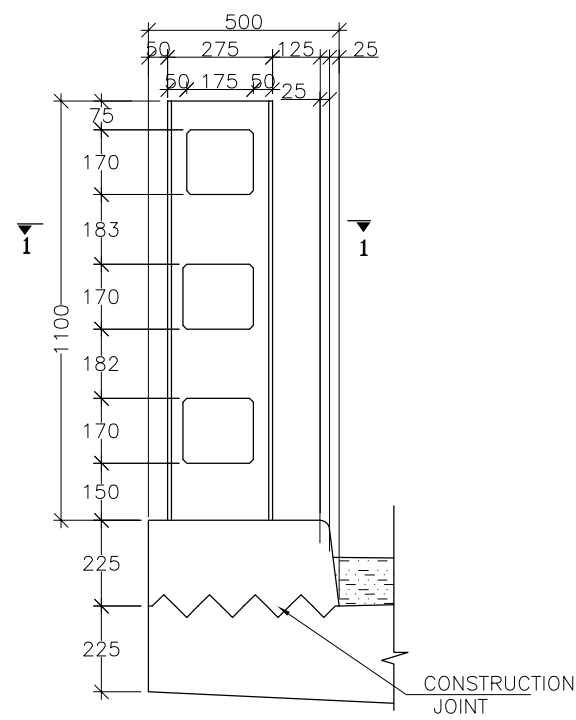
NOTES :

- ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE NOTED.
- BEARING TYPE B1,B2 & B3 SHOULD BE PLACED ON PIER AND ABUTMENT AS PER THEIR POSITIONS MARKED IN GENERAL ARRANGEMENT DRAWINGS.
- SPECIFICATIONS INCLUDING PERMISSIBLE TOLERANCES FOR THE ELASTOMERIC BEARINGS SHALL BE IN ACCORDANCE WITH IRC:83(PART II)2015 STANDARD SPECIFICATIONS AND CODE OF PRACTICE FOR ROAD BRIDGES SECTION IX PART II-ELASTOMERIC BEARINGS.
- RAW MATERIAL CHLOROPRENE (CR) SHALL ONLY BE USED IN MANUFACTURE OF BEARINGS.
- GRADES OF RAW ELASTOMER OF PROVEN USE IN ELASTOMERIC BEARINGS, WITH LOW CRYSTALLISATION RATES AND ADEQUATE SHELF LIFE (E.G.NEOPRENE WRT. BAYPRENE 110 OR EQUIVALENT) SHALL BE USED. NO RECLAIMED RUBBER OR VULCANISED WASTES SHALL BE USED. THE RAW ELASTOMER CONTENT OF THE COMPOUND SHALL NOT BE LOWER THAN 60 PER CENT. THE ASH CONTENT SHALL NOT EXCEED 5 PER CENT.(AS PER TESTS CONDUCTED IN ACCORDANCE WITH ASTM D-297).EPDM AND OTHER SIMILAR CANDIDATE ELASTOMERS FOR BRIDGS BEARING USE SHALL NOT BE PERMITTED.
- FABRICATION, TESTING AND ACCEPTANCE OF BEARINGS SHALL BE IN ACCORDANCE WITH IRC:83(PART II) 1987.
- BEARINGS SHALL BE HANDLED CAREFULLY. THESE SHALL BE PROCTED FROM BRIGHT SUN LIGHT AND EXTREME COLD. THESE SHALL BE STORED NEATLY UNDER COVER TILL INSTALLATION.
- BEARINGS & EXPANSION JOINTS SHALL BE PROCURED ONLY FROM PREQUALIFIED MANUFACTURERS.

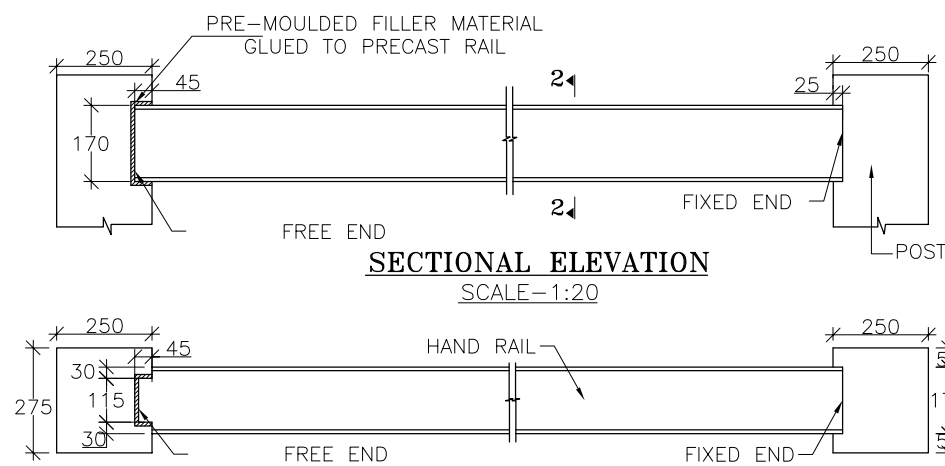
NOTES OF DRAINAGE SPOUT

- ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED.
- ALL STEEL WORK SHALL BE AS PER IS - 2062.
- DRAINAGE SPOUT & COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL & AFTER FABRICATION, THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
- THE REINFORCEMENT OF TOP SLAB OF BOX SHALL BE SUITABLY MODIFIED TO ACCOMMODATE THE DRAINAGE SPOUT.
- THE DRAINAGE SPOUT SHALL BE GALVANIZED AFTER WELDING THE PLATES & FLATS.

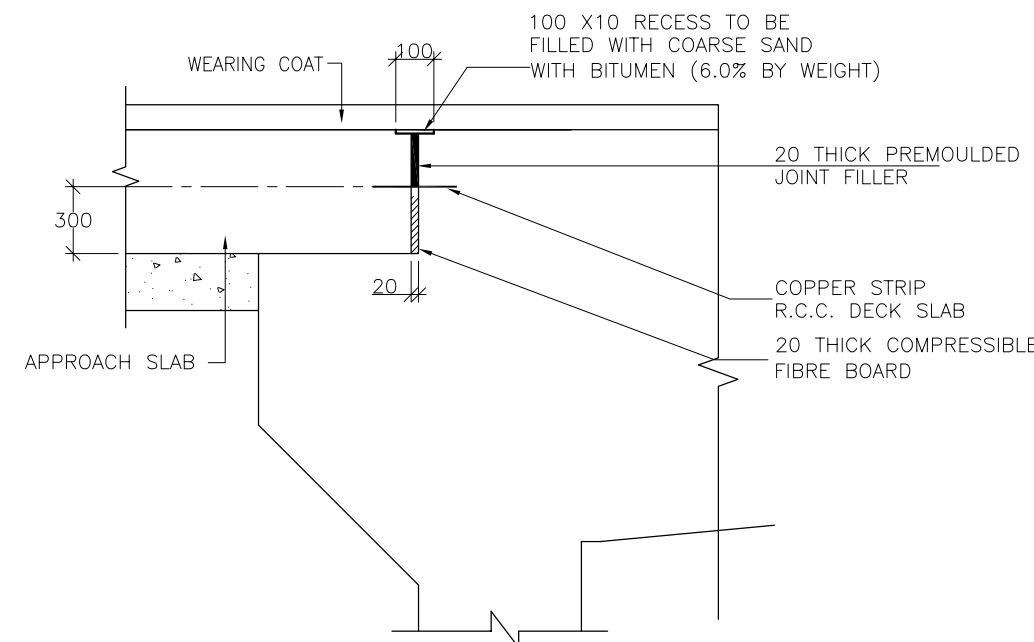
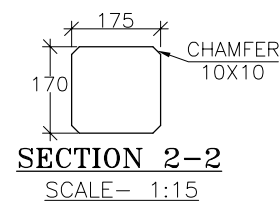
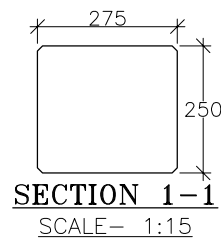
						SCALE: AS SHOWN	CLIENT:  NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001	TITLE: DETAILS OF RAILING,CRASH BARRIER,EXP. GAP,REACTION BLOCK,APPROACH SLAB & DRAINAGE SPOUT (PACKAGE-10)	CONSULTANT :  CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company  C.E. TESTING COMPANY PVT. LTD. 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.	DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/ MISC/RCC T BEAM			
										REVISION MKD. - R0	SHEET NO. - 01 OF 01		
R0							PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.	SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT		DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.		DATE: JANUARY, 2023				A. Manna A.M	-	 S.D	 S.BHADRA
REVISIONS								PACKAGE NO: (LOT-1) PACKAGE 1A					



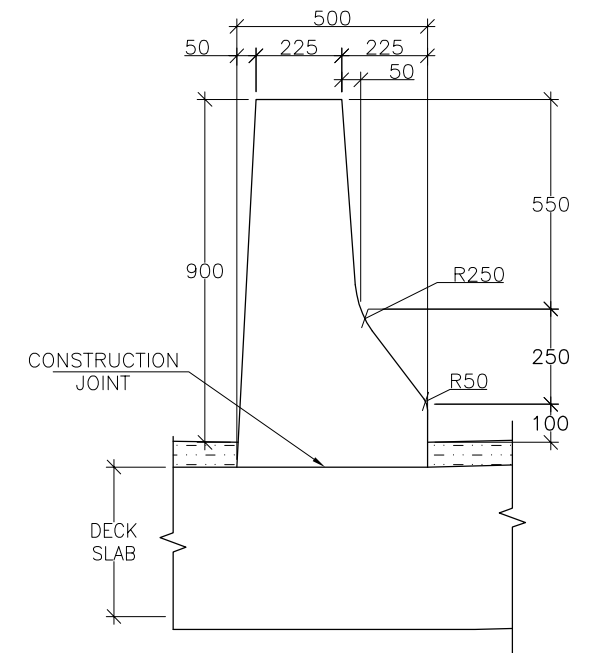
SECTION THROUGH POST
(FOR GENERAL ARRANGEMENT)
SCALE-1:20



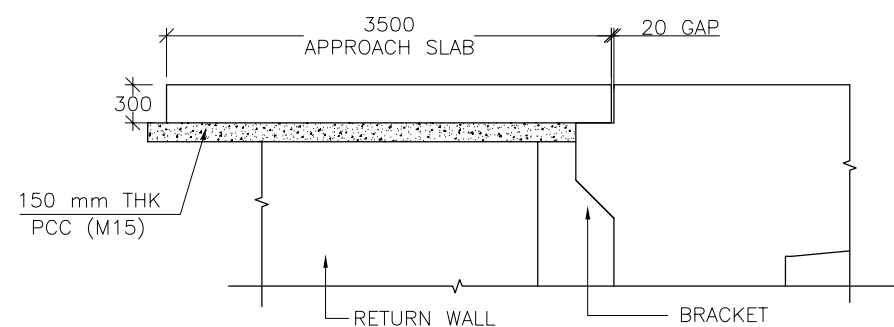
PLAN
(DETAIL OF PRECAST HANDRAIL)
SCALE-1:20



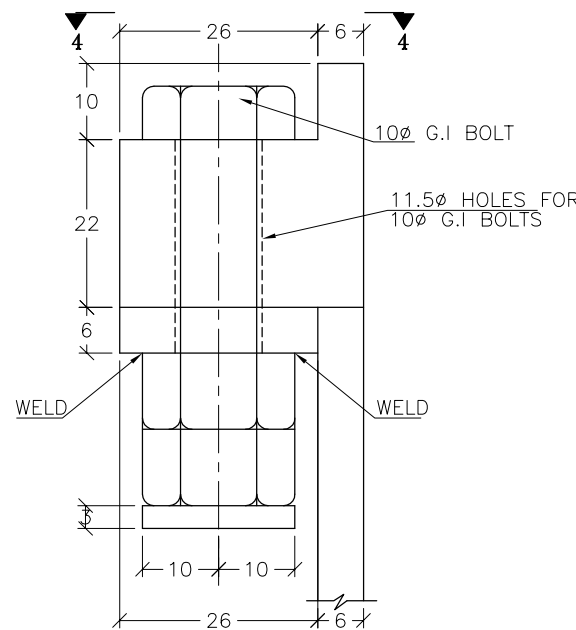
DETAILS OF FILLER JOINT
SCALE- 1:20



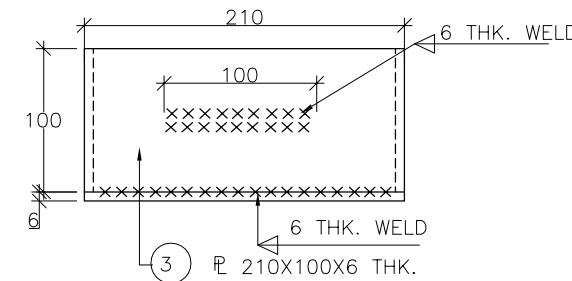
DETAILS OF CRASH BARRIER
(FOR GENERAL ARRANGEMENT)
SCALE-1:20



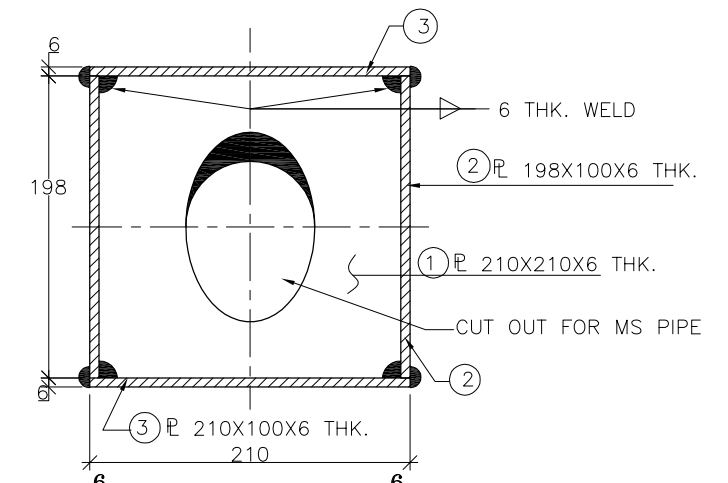
DETAILS OF APPROACH SLAB
SCALE 1:60



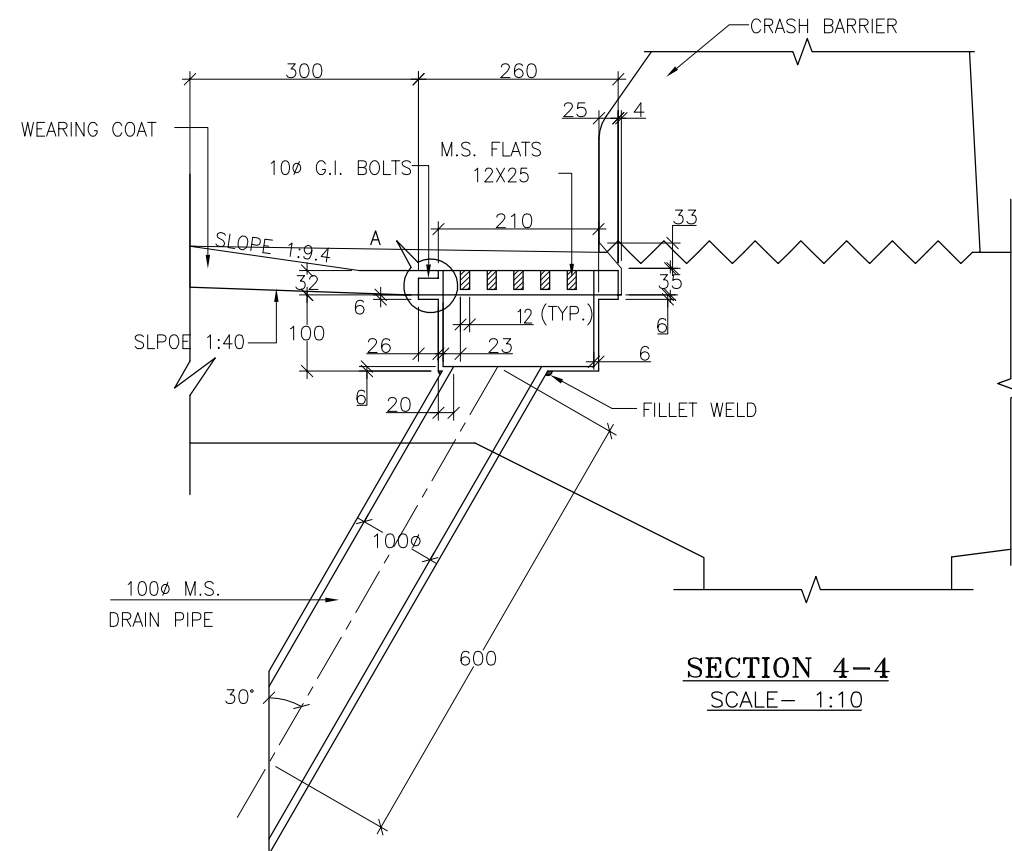
DETAIL - A
SCALE- 1:1



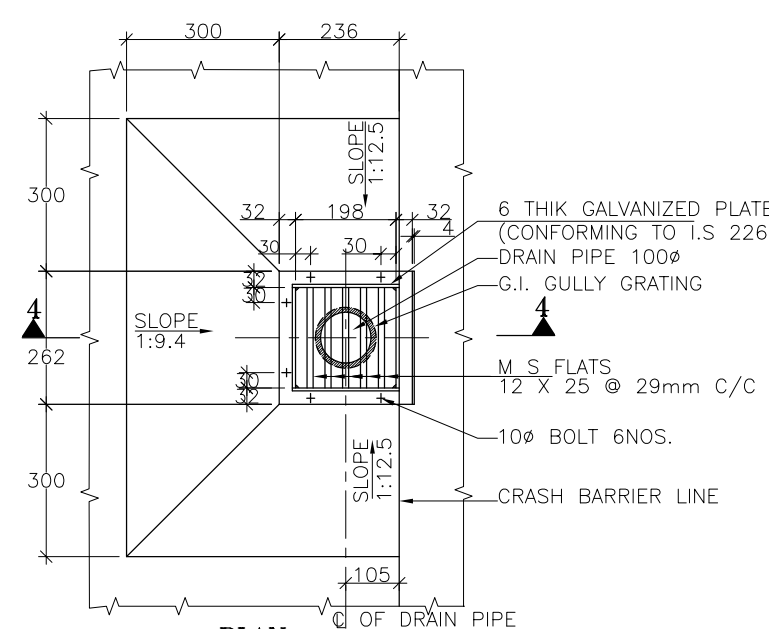
VIEW: 6-6
SCALE 1:5



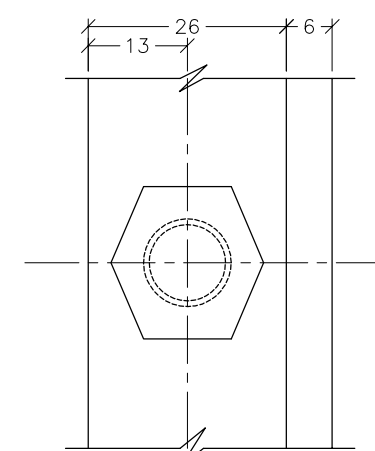
DETAIL OF DRAINAGE BOX
SCALE 1:5



SECTION 4-4
SCALE- 1:10



PLAN
DETAIL OF DRAINAGE
SPOUT AND COLLECTION PIT
SCALE- 1:15



PLAN AT 4-4
SCALE- 1:1

NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. EXPANSION JOINTS SHALL BE PROCURED ONLY FROM PREQUALIFIED MANUFACTURERS.

NOTES OF RCC RAILING :

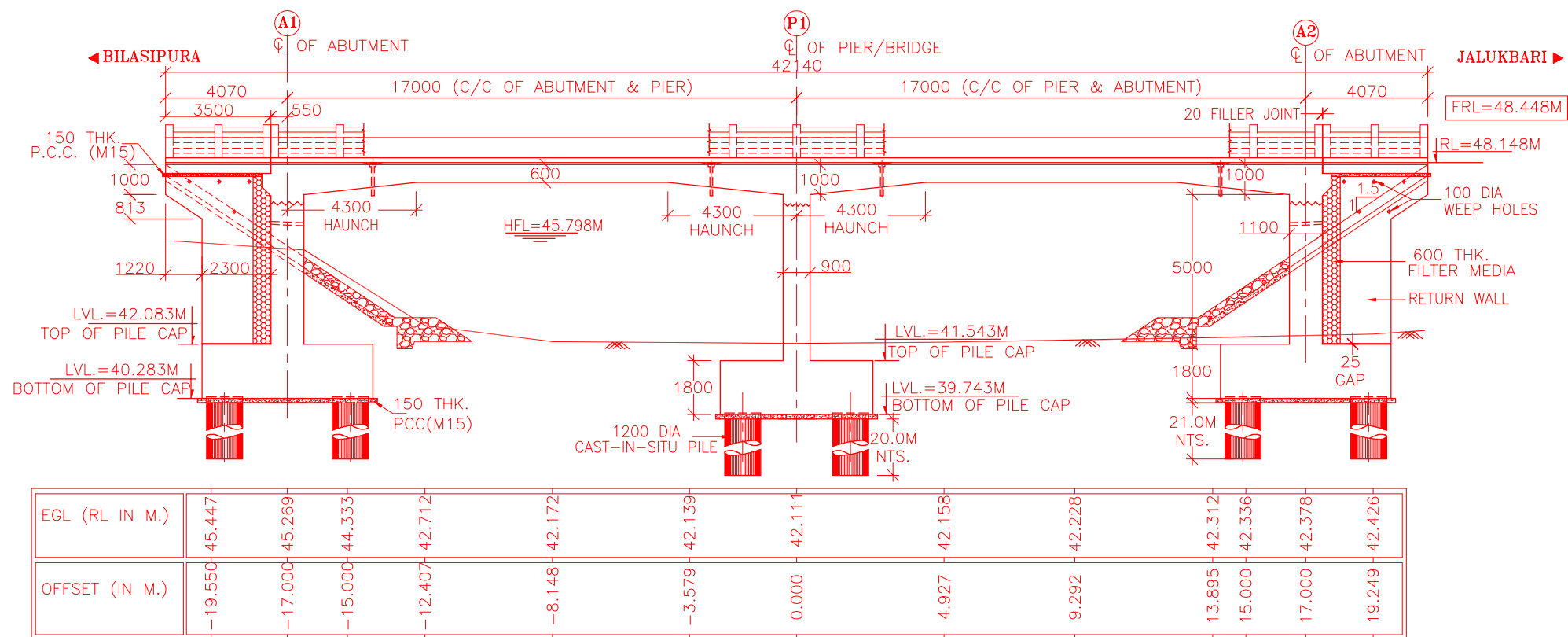
1. REINFORCEMENT OF RAILING POST SHOULD BE SUITABLY ANCHORED IN DECK SLAB.
2. CASTING OF POST SHALL BE DONE IN SINGLE POUR AFTER ACCURATELY POSITIONING THE PRECAST HANDRAIL.
3. RAILING SHALL BE CONSTRUCTED ONLY AFTER THE STRUCTURAL CONCRETE OF SUPERSTRUCTURE HAS HARDENED AND SHUTTERING IS RELEASED.
4. EXPANSION GAPS IN RAILING SHALL BE PROVIDED AT THE SAME LOCATIONS AS IN THE DECK SLAB.

NOTES OF DRAINAGE SPOUT

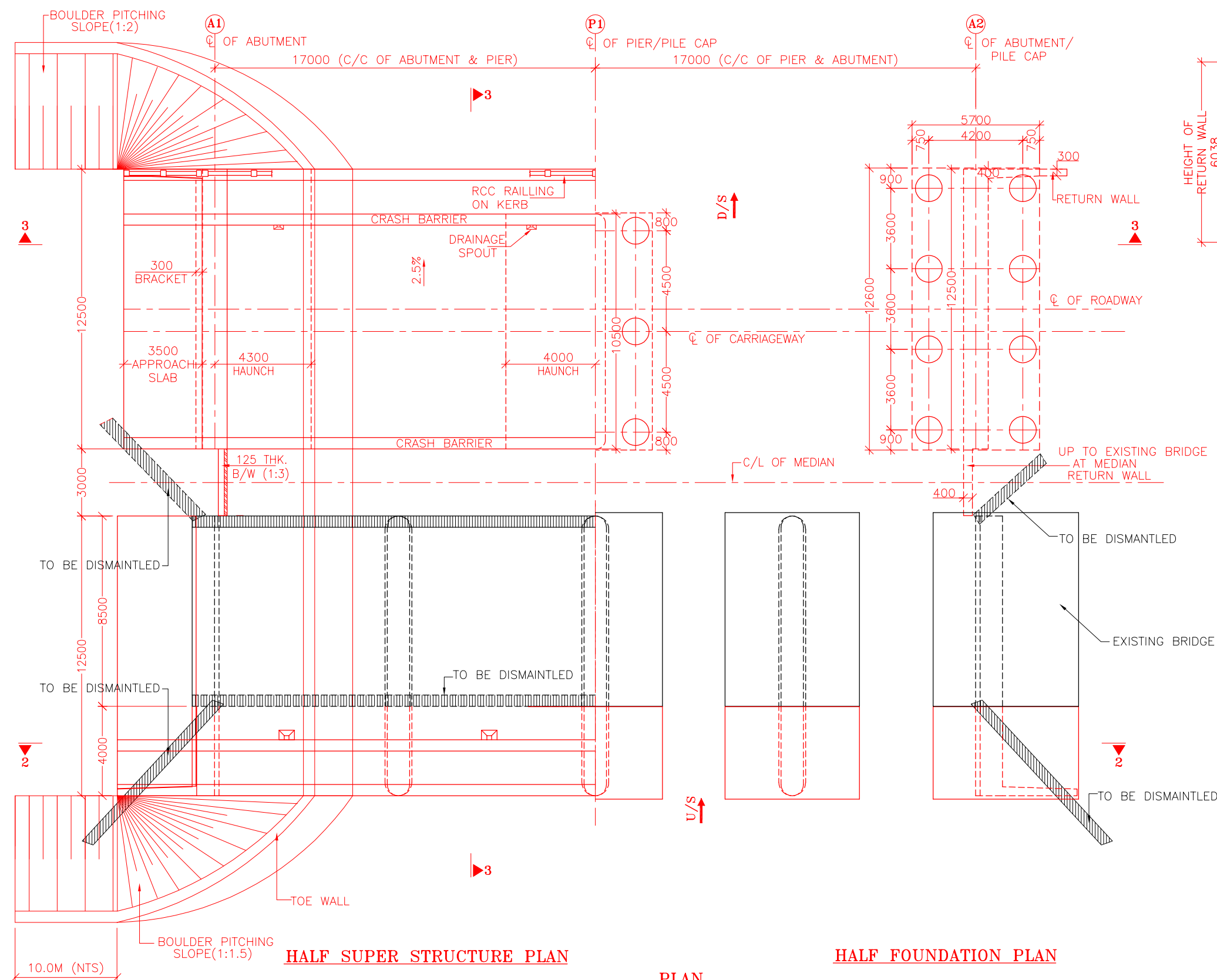
1. ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED.
2. ALL STEEL WORK SHALL BE AS PER IS - 2062.
3. DRAINAGE SPOUT & COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL & AFTER FABRICATION, THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANIZED COATING.
4. THE REINFORCEMENT OF TOP SLAB OF SHALL BE SUITABLY MODIFIED TO ACCOMMODATE THE DRAINAGE SPOUT.
5. THE DRAINAGE SPOUT SHALL BE GALVANIZED AFTER WELDING THE PLATES & FLATS.

						SCALE: AS SHOWN	CLIENT:  NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001	TITLE: DETAILS OF DRAINAGE SPOUT, FILLER JOINT, APPROACH SLAB, RCC RAILING & CRASH BARRIER (PACKAGE-10)	CONSULTANT :  C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.	DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/ MISC/VOIDED			
						DATE: JANUARY, 2023	PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.	SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT		REVISION MKD. - R0	SHEET NO.- 01 OF 01		
R0										DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.						 A.M	-	 S.D	 S.BHADRA
REVISIONS													

GENERAL ARRANGEMENT DRAWING



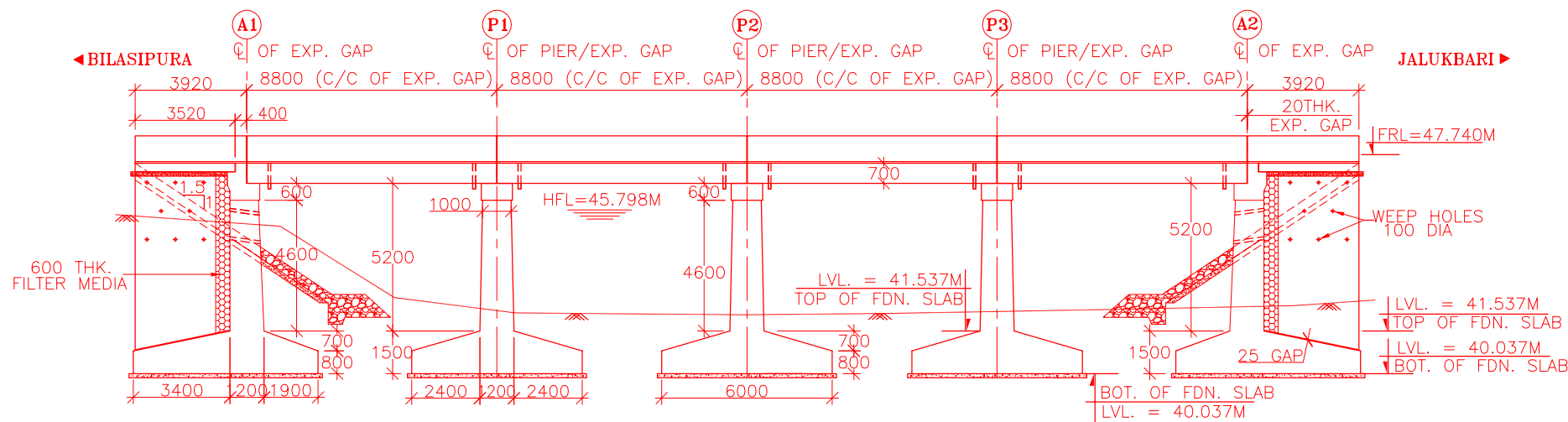
SECTIONAL ELEVATION
SCALE 1:200



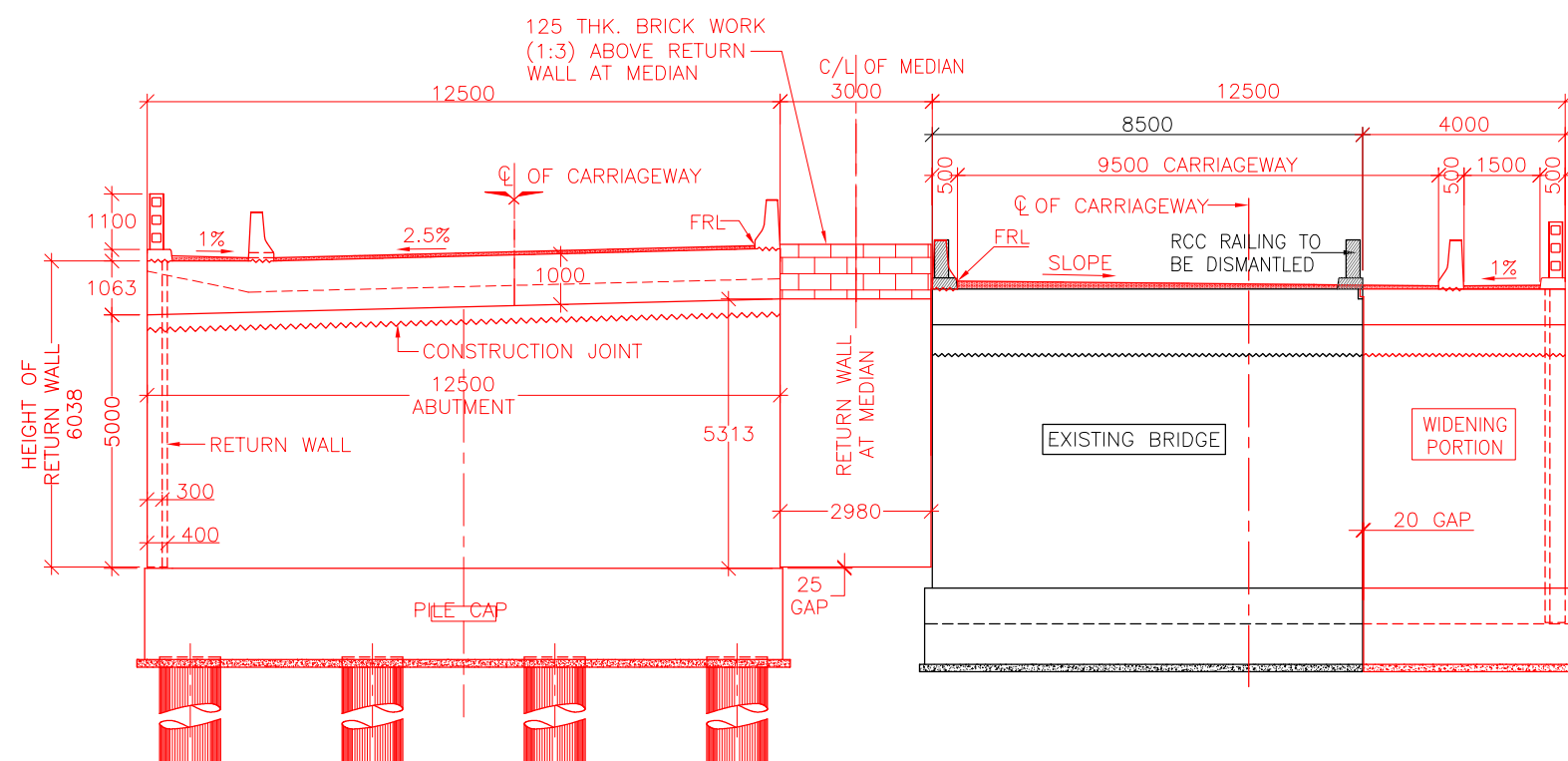
HALF SUPER STRUCTURE PLAN

HALF FOUNDATION PLAN

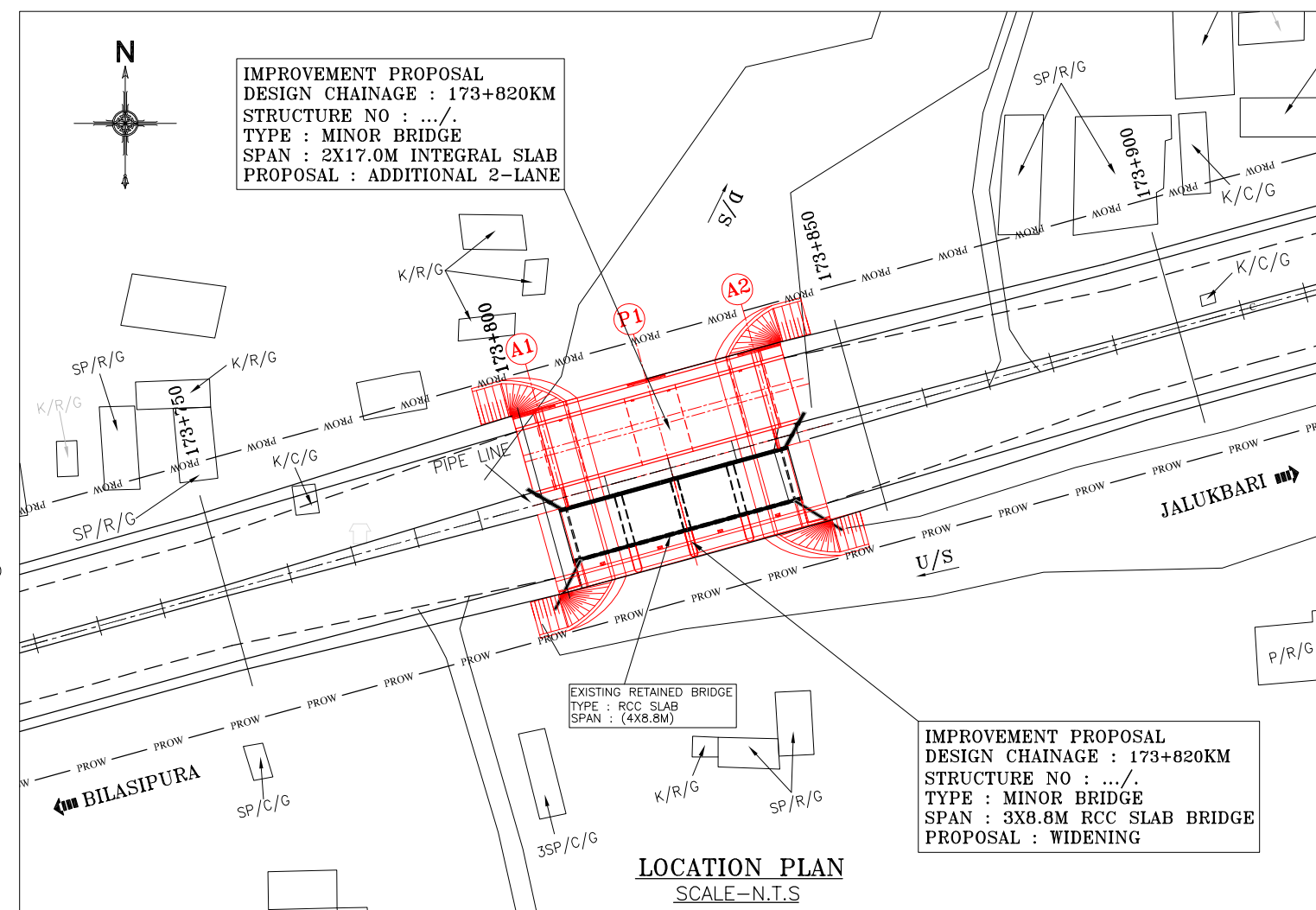
PLAN
SCALE 1:200



SECTIONAL ELEVATION AT 2-2
SCALE 1:225



CROSS SECTION AT 3-3
SCALE 1:150



LOCATION PLAN
SCALE-N.T.S

GENERAL NOTES :

A. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

B. MATERIALS SPECIFICATIONS :

(i) CONCRETE :

- GRADE OF CONCRETE USED :-
 - SUPERSTRUCTURE = M30,
 - SUB STRUCTURE = M30,
 - RETURN WALL = M30,
 - PILE CAP = M30,
 - PILE = M35,
 - APPROACH SLAB = M30,
 - P.C.C. BELOW APPROACH SLAB = M15,
 - R.C.C. RAILING & KERB = M30,
 - CRASH BARRIER = M40
- CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE TO ACHIEVE MINIMUM 28 DAYS CHARACTERISTICS STRENGTH ON 150MM CUBES FOR MODERATE EXPOSURE.
- 43/53 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 8112 OR 33 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 269 OR PORTLAND SLAG CEMENT CONFORMING TO IS : 455 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
- TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9103 MAY BE USED SUBJECT TO SATISFACTORY PROVEN USE.
- THE MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE AS PER TABLE 14.2, IRC -112-2011
- MAX. WATER CEMENT RATIO SHALL BE AS PER TABLE-14.2, IRC:112-2011.

(ii) REINFORCEMENT :

ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION Fe 500) CONFORMING TO IS : 1786 (EXCEPT FOR MESH REINFORCEMENT WHICH SHALL BE MS BARS GRADE, DESIGNATION Fe 250 CONFORMING TO IS:432 PART-I MILD STEEL)

(iii) WATER :

WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC : 112 - 2011.

(iv) FILTER MATERIAL BEHIND ABUTMENT AND RETURN WALL SHALL CONFORM TO CLAUSE 2904.2.2 OF MORTH SPECIFICATIONS TO A THICKNESS OF NOT LESS THAN 600mm. WITH SMALLER SIZE TOWARDS THE SOIL AND BIGGER SIZE TOWARDS THE WALL TO THE FULL HEIGHT.

(v) PROPERTIES OF BACKFILL SOIL $\gamma=2.0t/m^3$, $\phi=30^\circ$.

C. WORKMANSHIP/DETAILING :

- MINIMUM CLEAR COVER :
 - SUPERSTRUCTURE =50MM
 - SUBSTRUCTURE : ABUTMENT =75MM, PIER, DIRT WALL & RETURN WALL =50MM
 - FOUNDATION =75MM
- DESIGN LOAD :
 - CLASS A TWO LANES OR CLASS 70R TRACKED/WHEELED OR OR IRC CLASS SV LOADING WHICHEVER PRODUCES WORST EFFECT IS CONSIDERED FOR DESIGN.
 - THE BRIDGE IS IN SEISMIC ZONE-V.
 - SEISMIC LOADING :- AS PER CL NO. 219 OF IRC:6-2017
 - FOOTPATH LOADING :- AS PER CL.NO. 206.1 OF IRC:6-2017
- BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
- SUPPORTING CHAIRS OF 16 MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS : 2502.
- LAP LENGTH & DEVELOPMENT LENGTH (Ld) OF REINFORCING BARS SHALL BE DONE IN ACCORDANCE WITH RELEVANT CLAUSE 15.2.5.1 & 15.2.3.3 OF IRC : 112-2011
- PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM VIBRATOR OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED 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.
- THE WEEP HOLES SHALL BE WITH 100MM DIA AC PIPE IN 1:20 SLOPE @ 1M C/C STAGGERED HORIZONTALLY & VERTICALLY AT ABUTMENT & RETURN WALLS.
- CONSTRUCTION JOINT SHOULD BE PROVIDED AT LOCATION OF ZERO MOMENT AS FAR AS PRACTICABLE & SHOULD BE PRE-APPROVED BY ENGINEER IN CHARGE.
- MAXIMUM SCOUR LEVEL :-
 - AT ABUTMENT = 42.111M
 - AT PIER = 39.992M
- PILE LOAD :
 - AT ABUTMENT : HORIZONTAL = 12 TON
VERTICAL =315 TON
 - AT PIER : HORIZONTAL = 2 TON
VERTICAL =190 TON
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.: CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-.../)/GA (SHEET NO. 02 TO 04)
- CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/INTEGRAL (SHEET NO. 01 OF 01)

REVISIONS	DATE	DESCRIPTION	CHKD.	APPRD.
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MKD.				

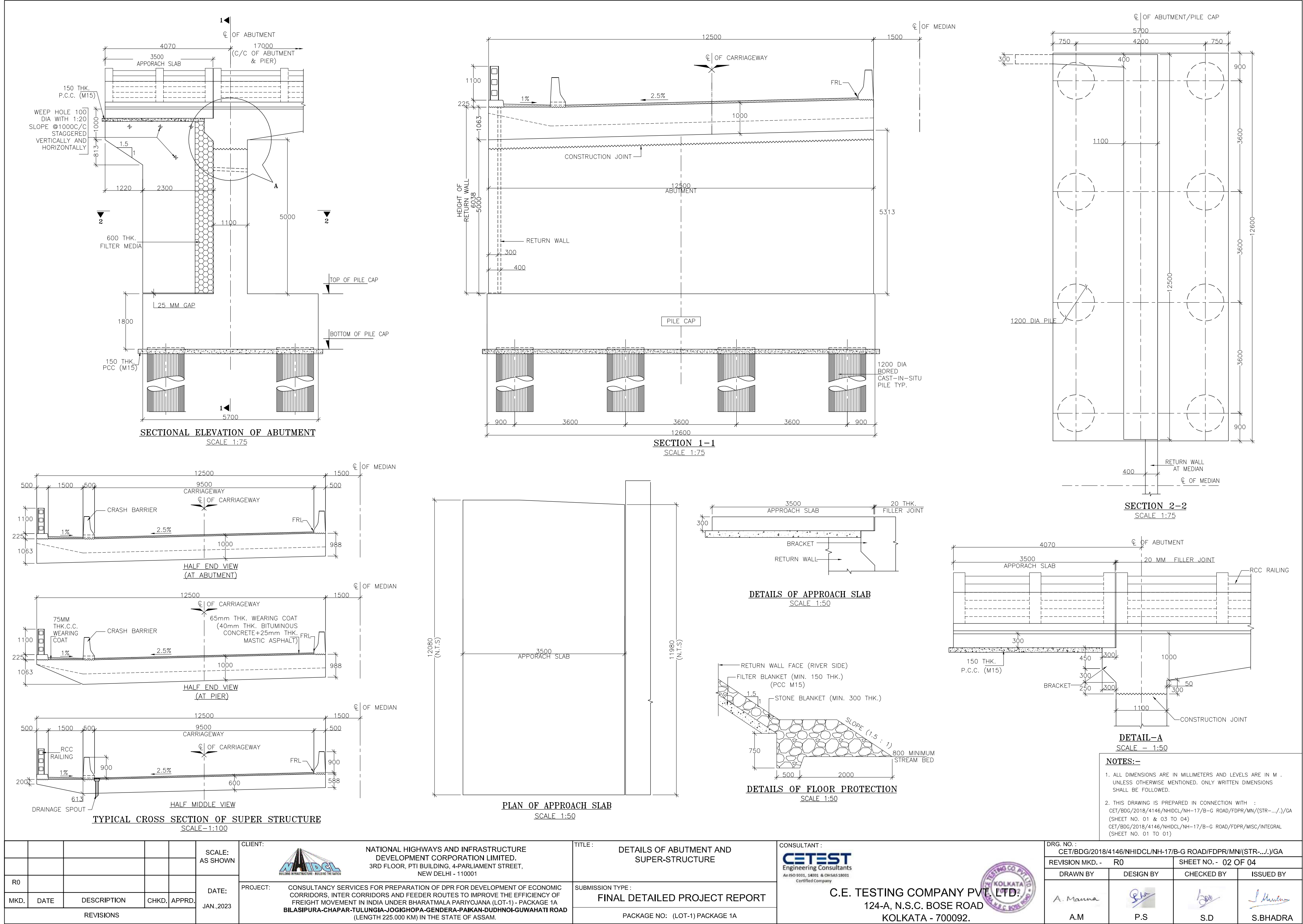
SCALE: AS SHOWN
DATE: JAN.,2023

CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001
PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.

TITLE: GENERAL ARRANGEMENT DRAWING OF 2 X 17.0M RCC INTEGRAL SLAB (AT CHAINAGE - 173.820KM) PACKAGE - 10
SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT
PACKAGE NO: (LOT-1) PACKAGE 1A

CONSULTANT : CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company
C.E. TESTING COMPANY PVT. LTD. 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.

DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-.../)/GA			
REVISION MKD. - R0		SHEET NO. - 01 OF 04	
DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
 A.M	 P.S	 S.D	 S.BHADRA



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MKD.	DATE	DESCRIPTION	CHKD.	APPRD.	
REVISIONS					

SCALE: AS SHOWN
DATE: JAN.,2023

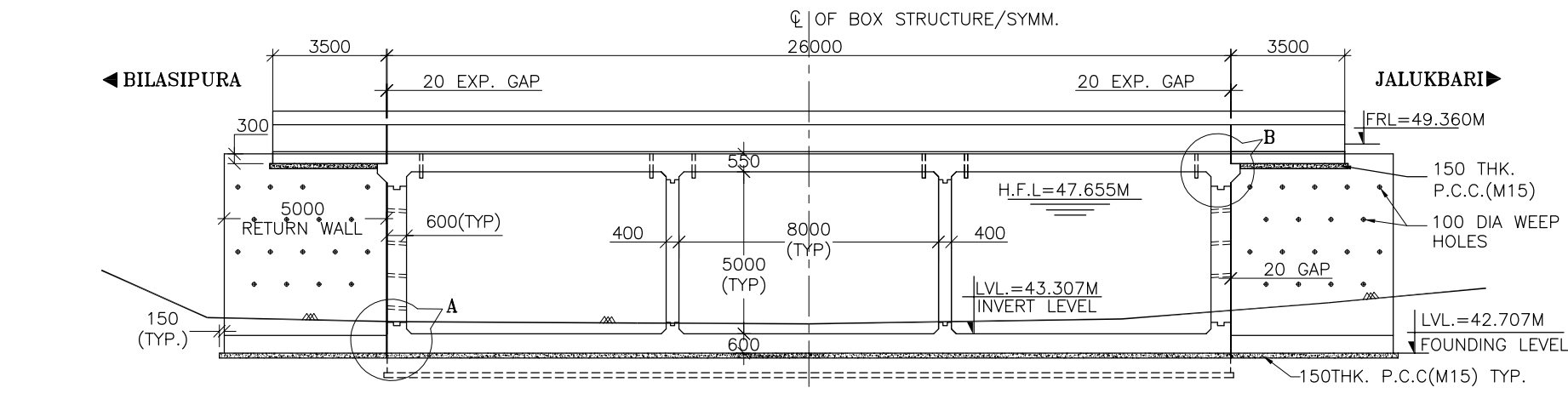
CLIENT:	 NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001
PROJECT:	CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.

TITLE:	DETAILS OF ABUTMENT AND SUPER-STRUCTURE
SUBMISSION TYPE :	FINAL DETAILED PROJECT REPORT
PACKAGE NO:	(LOT-1) PACKAGE 1A

CONSULTANT :	 C.E. TESTING COMPANY PVT. LTD. 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.
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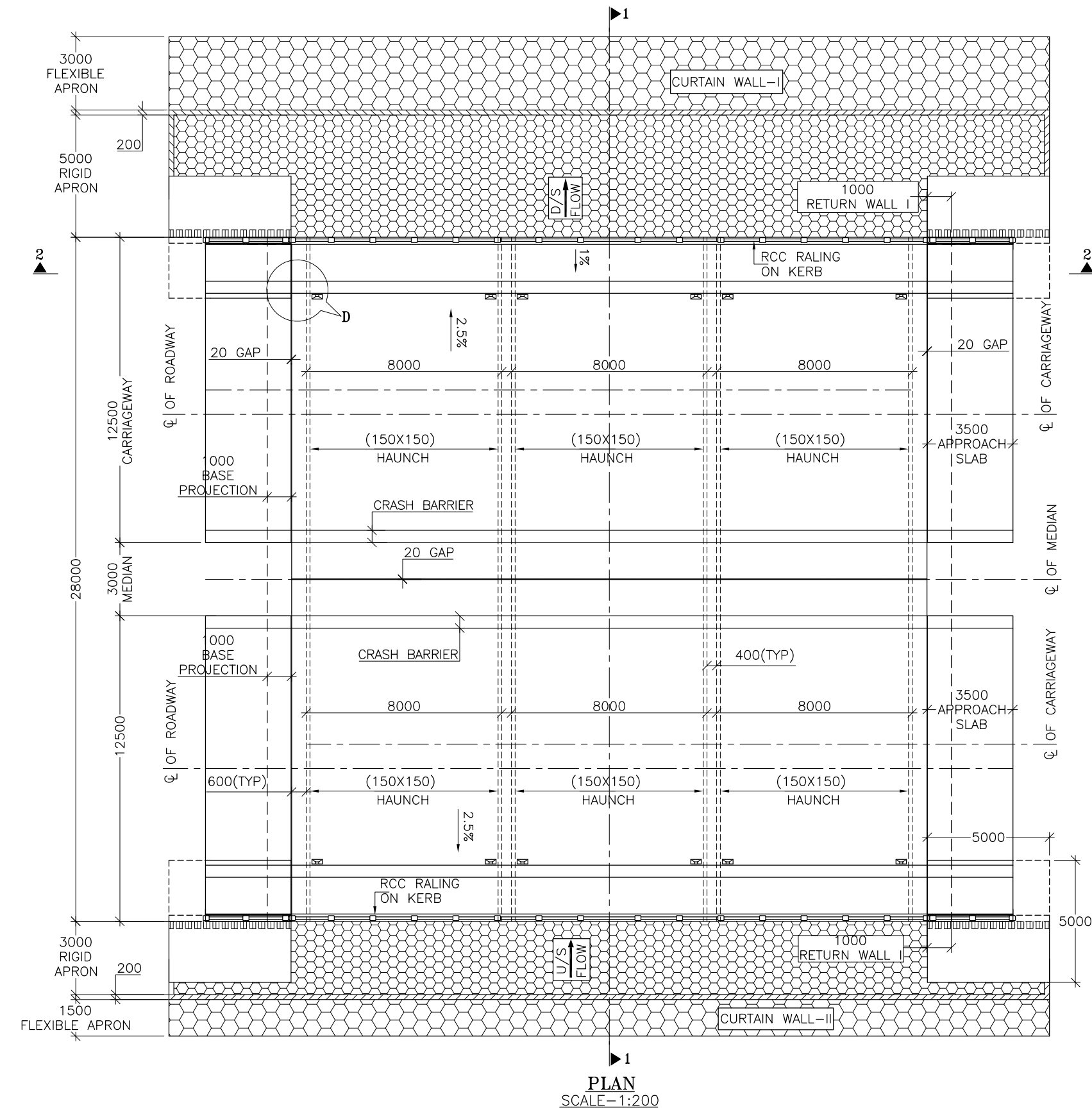
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REVISION MKD. - R0		SHEET NO. - 02 OF 04	
DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
 A.M	 P.S	 S.D	 S.BHADRA

					SCALE: AS SHOWN	CLIENT:  NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001	TITLE : DETAILS OF ABUTMENT & PIER (FOR WIDENING PORTION)	CONSULTANT :  CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company  C.E. TESTING COMPANY PVT. LTD. 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.	DRG. NO. : CET/BDG/2018/4146/NHIDCL-NH-17/B-G ROAD/FDPR/MN/(STR-...)/GA			
					DATE: JAN., 2023		PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOL-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.		SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT	REVISION MKD. - R0 SHEET NO. - 04 OF 04		
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MKD.	DATE	DESCRIPTION	CHKD.	APPRD.								
REVISIONS								PACKAGE NO: (LOT-1) PACKAGE 1A				

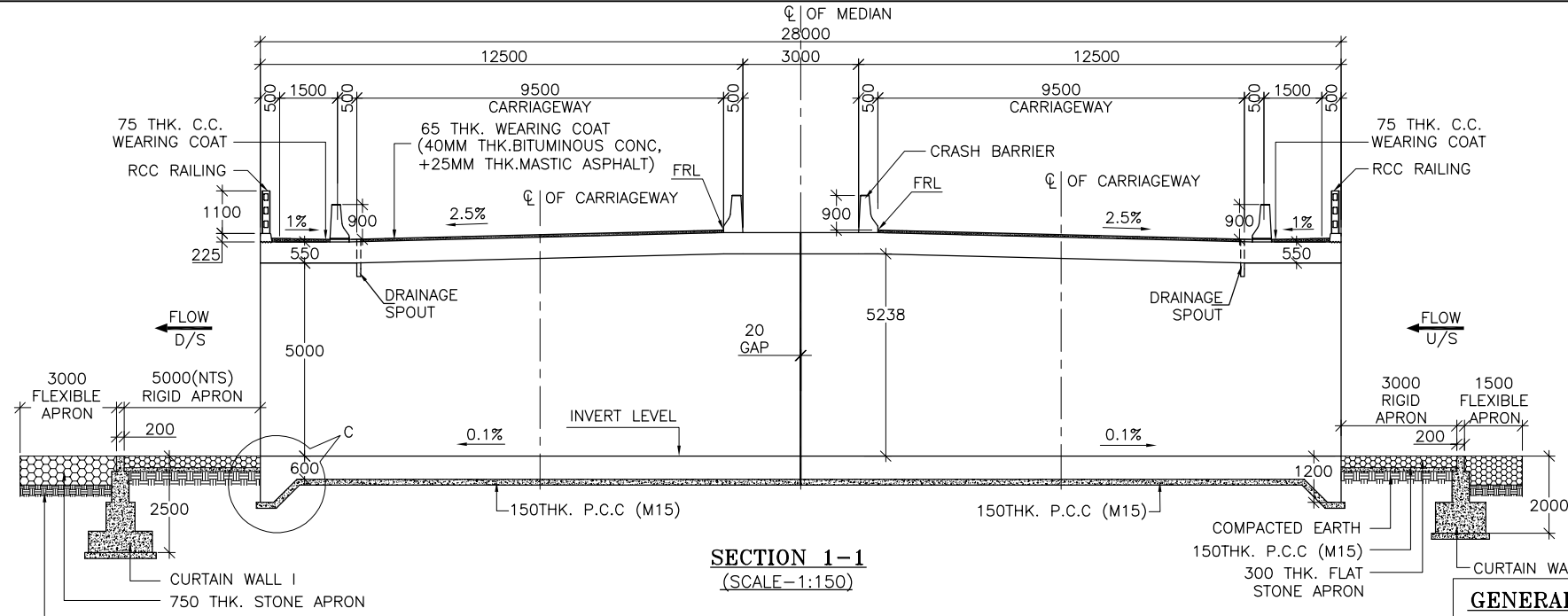


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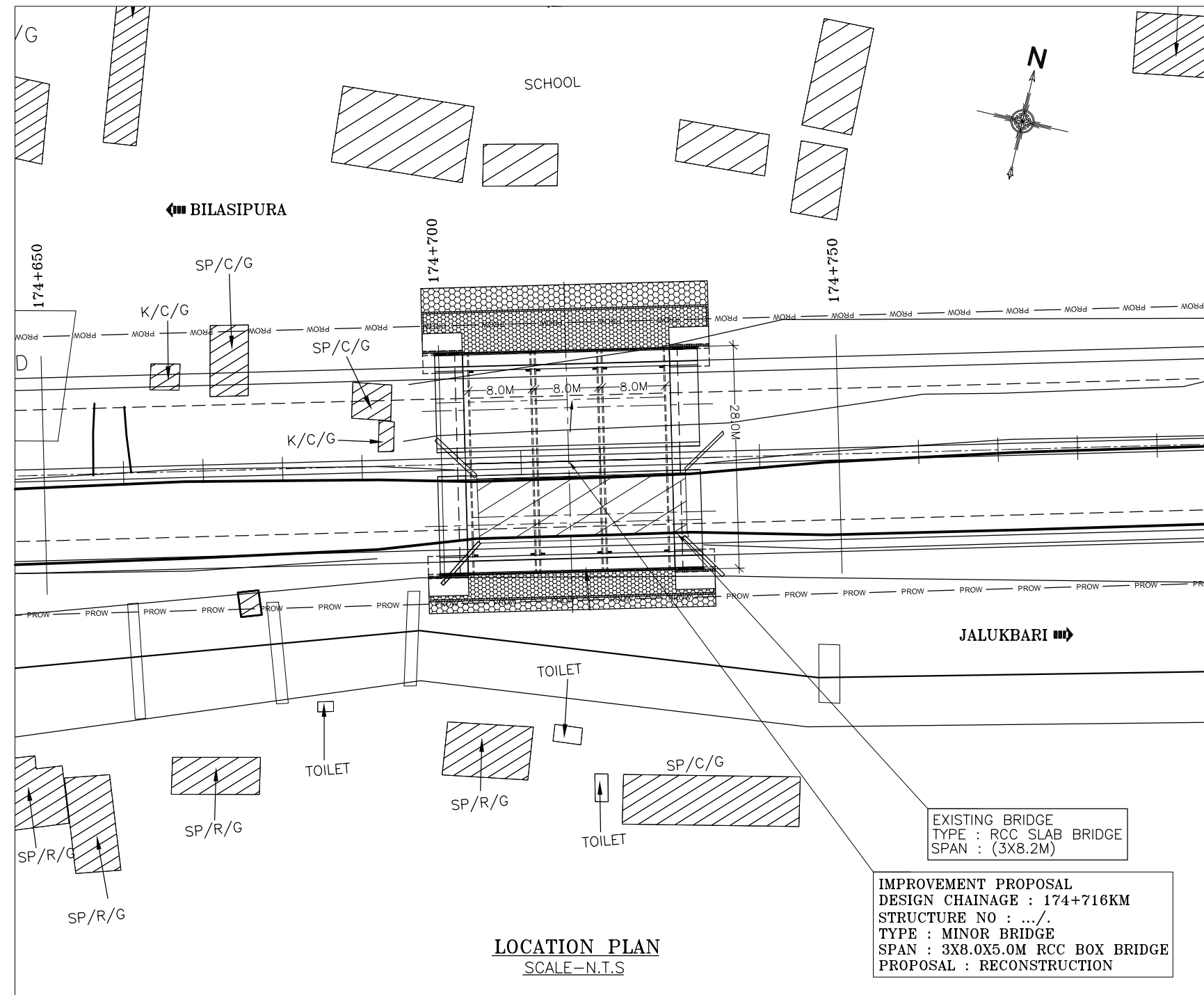
SECTION 2-2
(SCALE=1:200)



PLAN
SCALE=1:200



SECTION 1-1
(SCALE=1:150)



LOCATION PLAN
SCALE=N.T.S

GENERAL NOTES :

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M . UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- MATERIALS SPECIFICATIONS :**
 - CONCRETE :**
 - GRADE OF CONCRETE USED :-
 - BOX STRUCTURE = M30,
 - RETURN WALL = M30,
 - APPROACH SLAB = M30,
 - LEVELING COURSE (P.C.C) = M15,
 - R.C.C. RAILING & KERB = M30,
 - CRASH BARRIER = M40,
 - CURTAIN WALL (P.C.C) = M20.
 - CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE TO ACHIEVE MINIMUM 28 DAYS CHARACTERISTICS STRENGTH ON 150MM CUBES FOR MODERATE EXPOSURE.
 - 43/53 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 8112 OR 35 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 269 OR PORTLAND SLAG CEMENT CONFORMING TO IS. 455 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9103 MAY BE USED SUBJECT TO SATISFACTORY PROVEN USE.
 - THE MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE AS PER TABLE 14.2, IRC -112-2011.
 - MAX. WATER CEMENT RATIO SHALL BE AS PER TABLE-14.2, IRC:112-2011.
- REINFORCEMENT :**
 - ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION Fe 500) CONFORMING TO IS : 1786 (EXCEPT FOR MESH REINFORCEMENT WHICH SHALL BE MS BARS GRADE, DESIGNATION Fe 250 CONFORMING TO IS:432 PART-I MILD STEEL)
- WATER :**
 - WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC : 112 - 2011.
- FILTER MATERIAL BEHIND SIDE WALL AND RETURN WALL SHALL CONFORM TO CLAUSE 2504.2.2 OF MORTH SPECIFICATIONS TO A THICKNESS OF NOT LESS THAN 600mm. WITH SMALLER SIZE TOWARDS THE SOIL AND BIGGER SIZE TOWARDS THE WALL TO THE FULL HEIGHT.**
- PROPERTIES OF BACKFILL SOIL $\gamma=2.0t/m^3$, $\phi=30^\circ$.**

C. WORKMANSHIP/DETAILING :

- MINIMUM CLEAR COVER : 50MM
- DESIGN LOAD :
 - CLASS A TWO LANES OR ONE LANE CLASS 70R TRACKED/WHEELED OR IRC CLASS SV LOADING WHICHEVER PRODUCES WORST EFFECT IS CONSIDERED FOR DESIGN.
 - THE BRIDGE IS IN SEISMIC ZONE-V.
 - FOOTPATH LOADING :- AS PER CL.NO. 206.1 OF IRC:6-2017
- BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
- LAP LENGTH & DEVELOPMENT LENGTH (Ld) OF REINFORCING BARS SHALL BE DONE IN ACCORDANCE WITH RELEVANT CLAUSE 15.2.5.1 & 15.2.3.3 OF IRC : 112-2011.
- PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM VIBRATOR OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN TOP SLAB SHALL BE ENSURED.
- SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO ENABLE COMPACTION BY FORM VIBRATORS.
- SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- THE WEEP HOLES SHALL BE WITH 100MM DIA AC PIPE IN 1:20 SLOPE @ 1M C/C STAGGERED HORIZONTALLY & VERTICALLY AT SIDE WALL & RETURN WALLS.
- CONSTRUCTION JOINT SHOULD BE PROVIDED AT LOCATION OF ZERO MOMENT AS FAR AS PRACTICABLE & SHOULD BE PRE-APPROVED BY ENGINEER IN CHARGE. CONCRETING NEAR CONSTRUCTION JOINT SHALL BE DONE AS SPECIFIED IN MORTH/MOST STANDARD DRAWING(SD/101).
- THE SOIL BELOW FOUNDATION LEVEL SHOULD BE WELL COMPACTED TO ACHIEVE MINIMUM BEARING CAPACITY OF 10t/SQM.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.: CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/GA (SHEET NO. 02)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/BOX/SR (SHEET NO. 01)

R0					
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.	
REVISIONS					

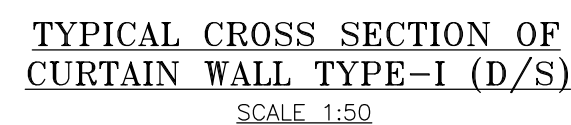
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DATE: JAN.,2023

CLIENT:	NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001
PROJECT:	CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.

TITLE:	GENERAL ARRANGEMENT DRAWING OF 3 X 8.0M X 5.0M RCC BOX BRIDGE (AT CHAINAGE - 174.716KM) PACKAGE - 10
SUBMISSION TYPE :	FINAL DETAILED PROJECT REPORT
PACKAGE NO:	(LOT-1) PACKAGE 1A

CONSULTANT :	 CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company
	C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092. 

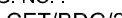
DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/GA			
REVISION MKD. - R0		SHEET NO. - 01 OF 02	
DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
 C.B	 T.T.A	 S.D	 S.BHADRA

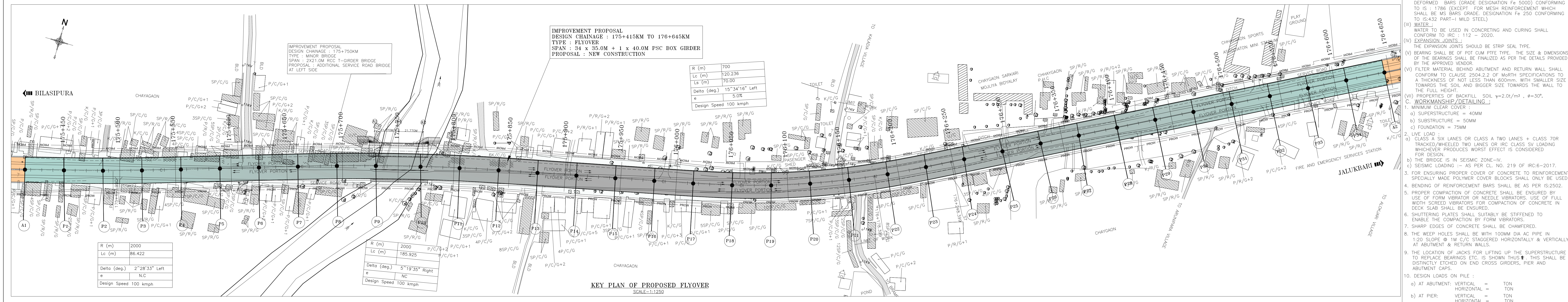
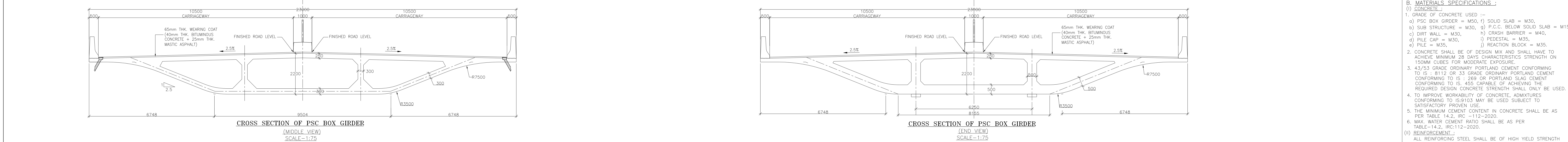
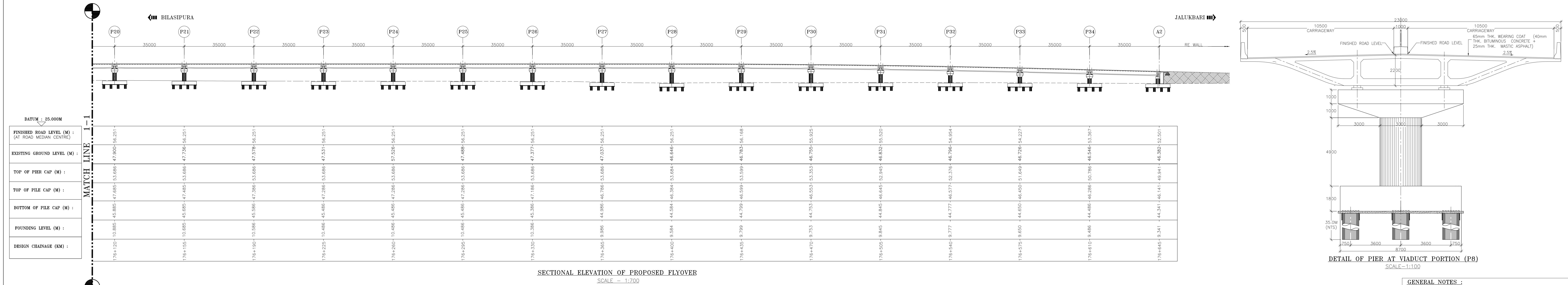
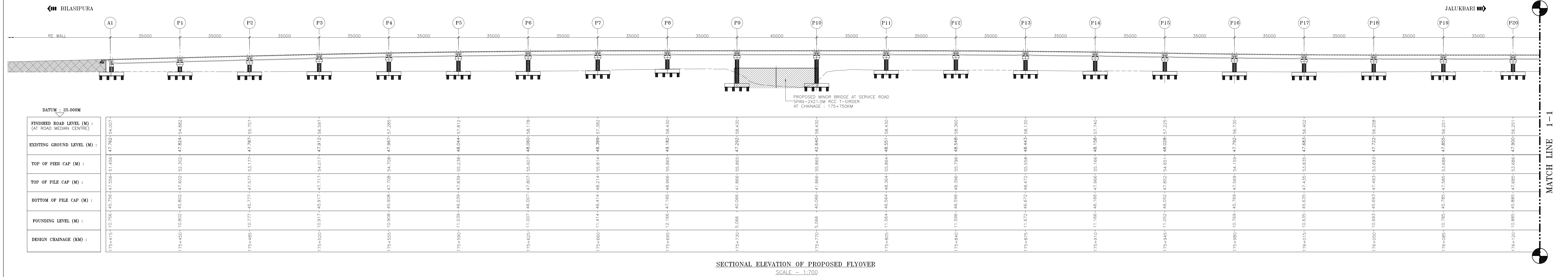


1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE MENTIONED.

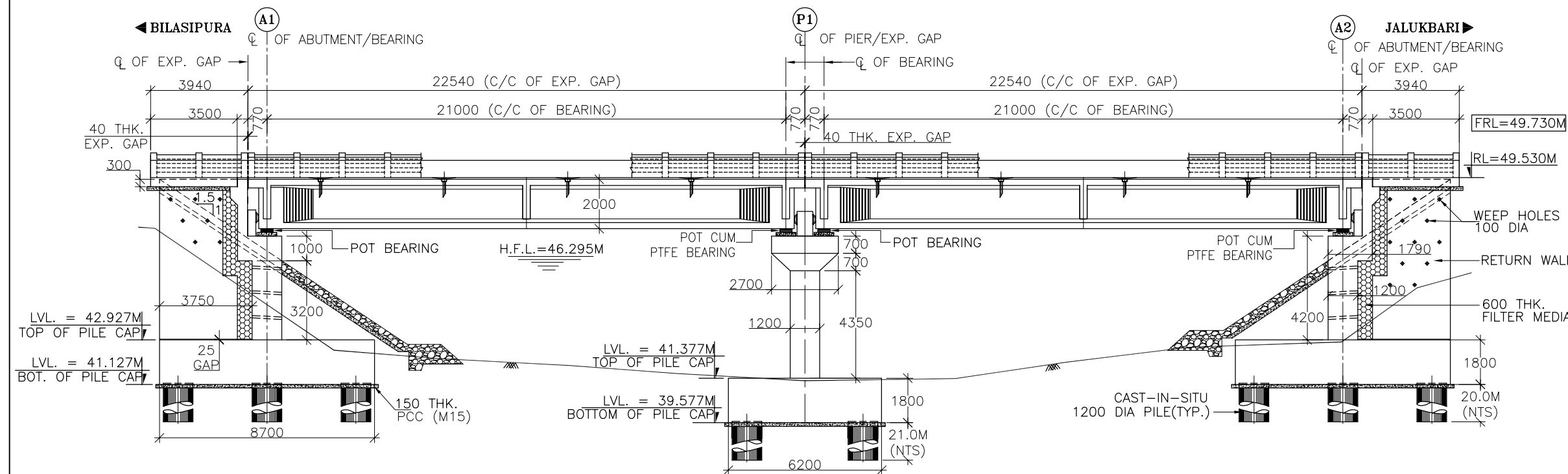
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. :-
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/GA
(SHEET NO. 01)

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/BOX/SR
(SHEET NO. 01)

						SCALE: AS SHOWN	CLIENT:  NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001	TITLE : GENERAL ARRANGEMENT DRAWING OF 3 X 8.0M X 5.0M RCC BOX BRIDGE	CONSULTANT :   C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAL KOLKATA - 700092.	DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/GA
R0										REVISION MKD. - R0 SHEET NO - 02 OF 02
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.		DATE: JAN., 2023	PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASPURA-CHAPAR-TULUNGA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOL-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.	SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT		DRAWN BY  C.B
REVISIONS								PACKAGE NO: (LOT-1) PACKAGE 1A		DESIGN BY  T.T.A
										CHECKED BY  S.D
										ISSUED BY  S.BHADRA

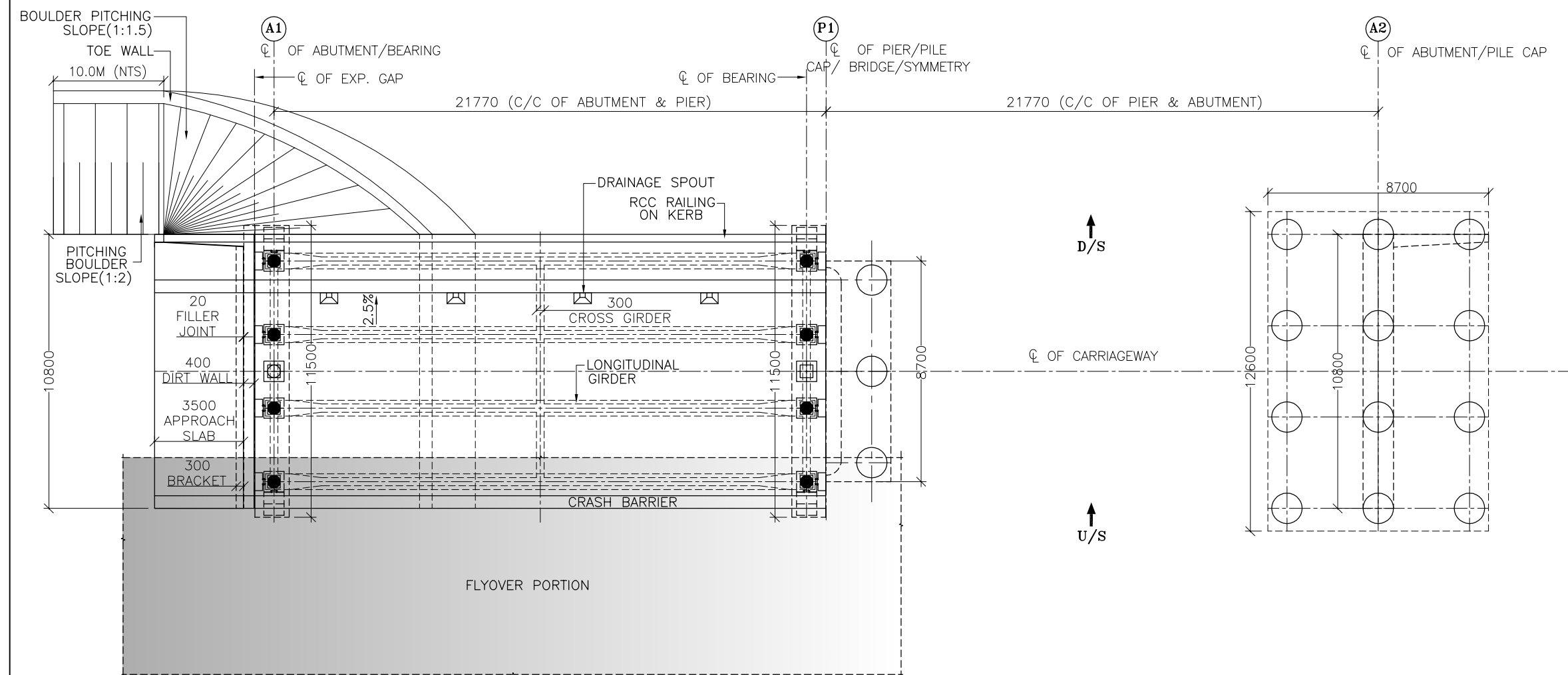


SCALE: AS SHOWN				CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001		TITLE: GENERAL ARRANGEMENT DRAWING OF PROPOSED FLYOVER SPAN : 34 x 35.0M + 1 x 40.0M PSC BOX GIRDER (AT CHAINAGE - 175.415KM TO 176.645KM) PACKAGE - 10		CONSULTANT: CETEST Engineering Consultants Pvt. Ltd. An ISO 9001, 14001 & OHSAS 18001 Certified Company		DRG. NO.: CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FPDR/ FO/GA	
DATE: JANUARY, 2023				PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGGHOPA-GENDERA-PAIKAN-DUOHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.		SUBMISSION TYPE: FINAL DETAILED PROJECT REPORT		C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.		SHEET NO. - 01 OF 01	
REVISIONS				PACKAGE NO: (LOT-1) PACKAGE 1A						DRAWN BY: A.M. DESIGN BY: P.S. CHECKED BY: S.D. ISSUED BY: S.BHADRA	

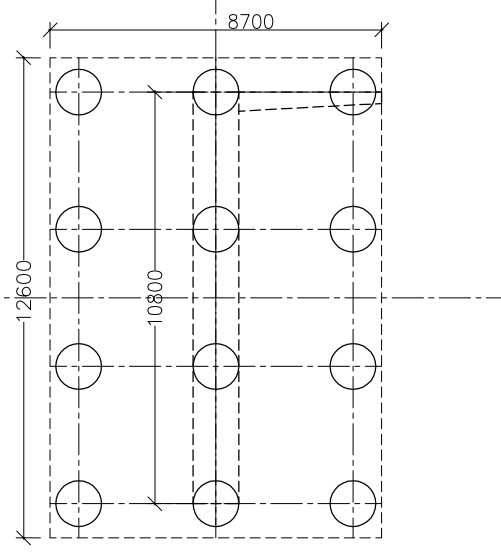


EGL (RL IN M)	44.344	42.499	42.160	41.883	41.554	41.264	41.354	42.009	42.621	42.867	45.022
OFFSET (IN M)	-21.770	-19.059	-14.787	-9.545	-5.160	0.000	6.086	10.529	15.548	21.770	24.770

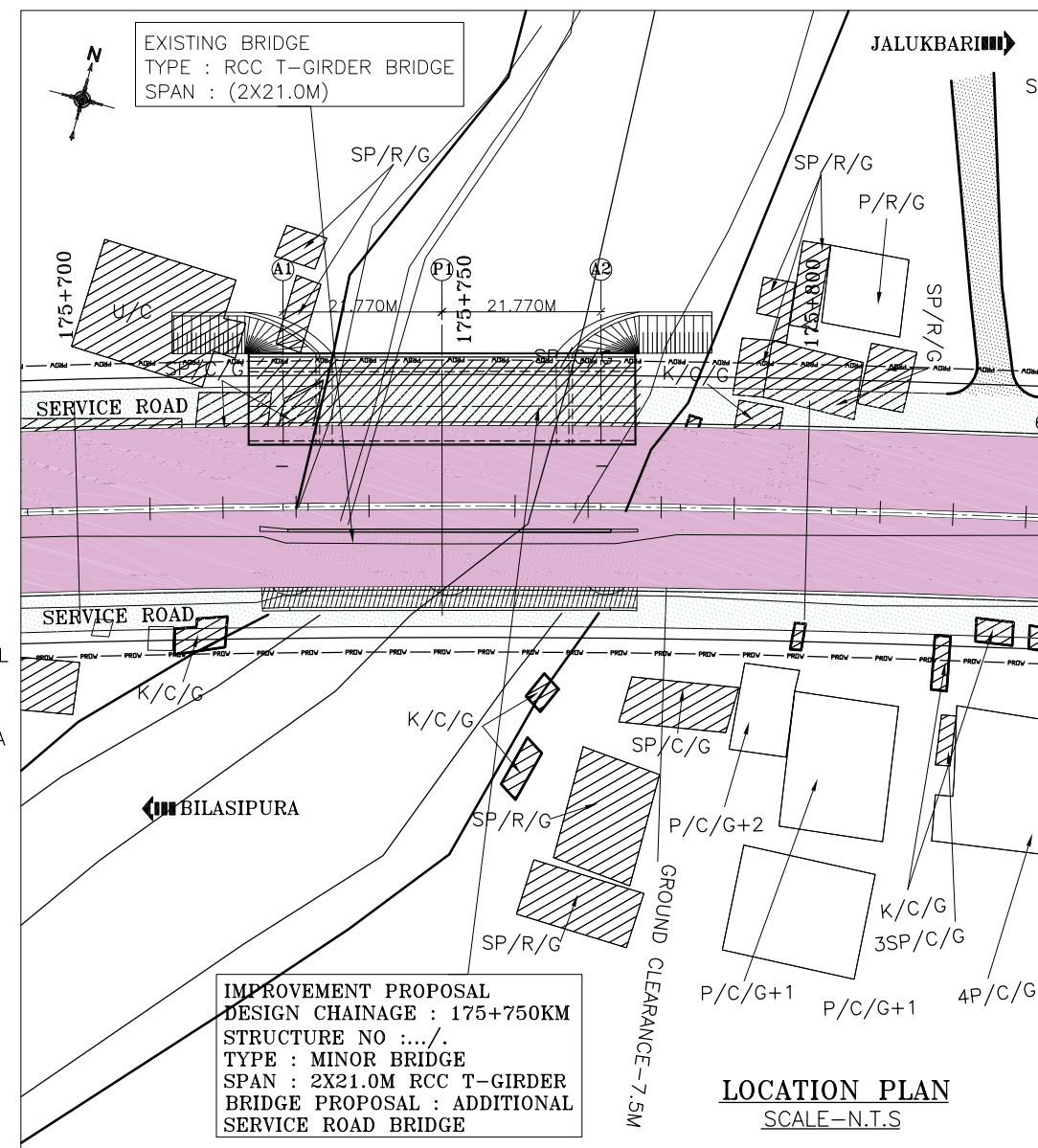
SECTIONAL ELEVATION
SCALE 1:200



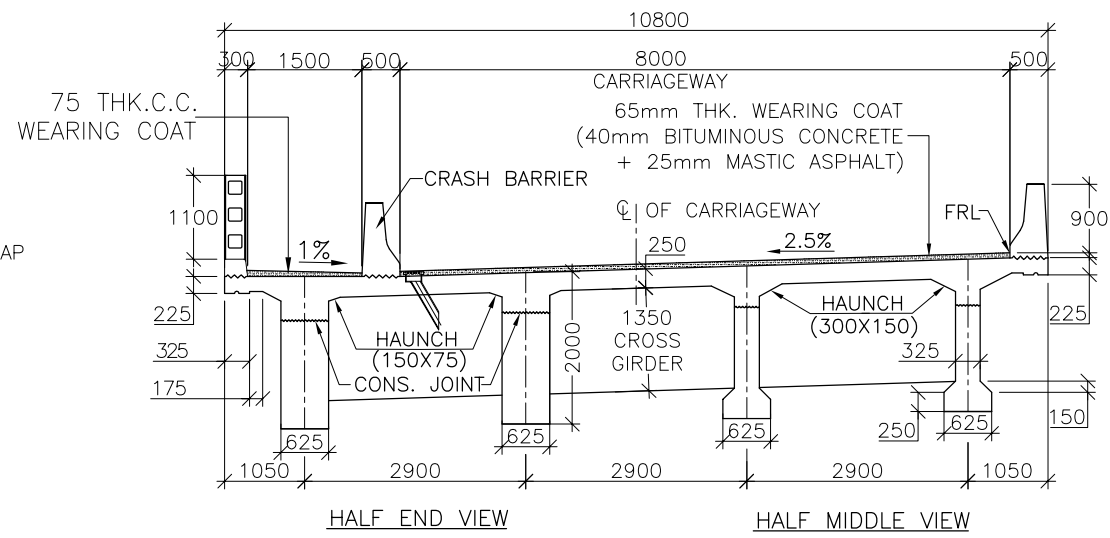
HALF SUPER-STRUCTURE PLAN
SCALE 1:200



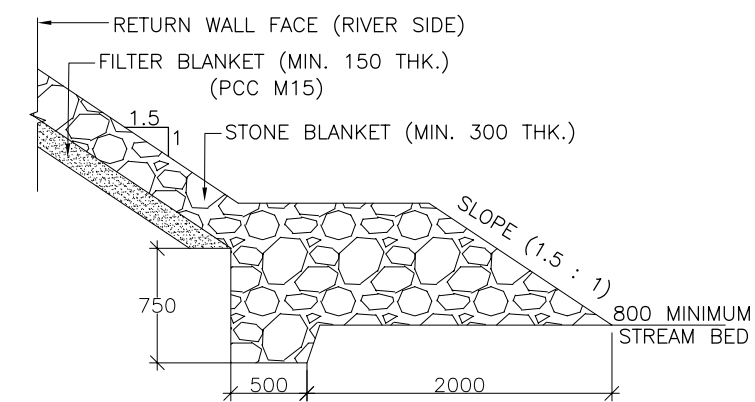
HALF FOUNDATION PLAN
SCALE 1:200



LOCATION PLAN
SCALE-N.T.S



TYPICAL CROSS SECTION OF SUPER STRUCTURE
SCALE 1:100



DETAILS OF FLOOR PROTECTION
SCALE 1:50

- GENERAL NOTES :**
- A. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M .
UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS
SHALL BE FOLLOWED.
- B. **MATERIALS SPECIFICATIONS :**
- (I) **CONCRETE :**
- GRADE OF CONCRETE USED :-
 - SUPERSTRUCTURE = M30,
 - SUB STRUCTURE = M30,
 - RETURN WALL = M30,
 - DIRT WALL = M30,
 - PILE CAP = M30,
 - PILE = M35,
 - APPROACH SLAB = M30,
 - P.C.C. BELOW APPROACH SLAB = M15,
 - R.C.C. RAILING & KERB = M30,
 - CRASH BARRIER = M40,
 - PEDESTAL = M35,
 - REACTION BLOCK = M35.
 - CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE TO
ACHIEVE MINIMUM 28 DAYS CHARACTERISTICS STRENGTH ON
150MM CUBES FOR MODERATE EXPOSURE.
 - 43/53 GRADE ORDINARY PORTLAND CEMENT CONFORMING
TO IS : 8112 OR 33 GRADE ORDINARY PORTLAND CEMENT
CONFORMING TO IS : 269 OR PORTLAND SLAG CEMENT
CONFORMING TO IS. 455 CAPABLE OF ACHIEVING THE
REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES
CONFORMING TO IS:9103 MAY BE USED SUBJECT TO
SATISFACTORY PROVEN USE.
 - THE MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE AS
PER TABLE 14.2, IRC -112-2011
 - MAX. WATER CEMENT RATIO SHALL BE AS PER
TABLE-14.2, IRC:112-2011.
- (II) **REINFORCEMENT :**
- ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH
DEFORMED BARS (GRADE DESIGNATION Fe 500) CONFORMING
TO IS : 1786 (EXCEPT FOR MESH REINFORCEMENT WHICH
SHALL BE MS BARS GRADE. DESIGNATION Fe 250 CONFORMING
TO IS:432 PART-I MILD STEEL)
- (III) **WATER :**
- WATER TO BE USED IN CONCRETING AND CURING SHALL
CONFORM TO IRC : 112 - 2011.
- (IV) **EXPANSION JOINTS :**
- THE EXPANSION JOINTS SHOULD BE STRIP SEAL TYPE.
- (V) **BEARING SHALL BE OF POT CUM PTFE TYPE.** THE SIZE & DIMENSIONS
OF THE BEARINGS SHALL BE FINALIZED AS PER THE DETAILS PROVIDED
BY THE APPROVED VENDOR.
- (VI) **FILTER MATERIAL BEHIND ABUTMENT AND RETURN WALL SHALL
CONFORM TO CLAUSE 2504.2.2 OF MORTH SPECIFICATIONS TO
A THICKNESS OF NOT LESS THAN 600mm. WITH SMALLER SIZE
TOWARDS THE SOIL AND BIGGER SIZE TOWARDS THE WALL TO
THE FULL HEIGHT.**
- (VII) **PROPERTIES OF BACKFILL SOIL $\gamma=2.0t/m^3$, $\phi=30^\circ$.**
- C. **WORKMANSHIP/DETAILING :**
- MINIMUM CLEAR COVER :
 - SUPERSTRUCTURE =40MM
 - SUBSTRUCTURE : ABUTMENT =75MM, PIER, DIRT WALL & RETURN WALL =50MM
 - FOUNDATION = 75MM
 - DESIGN LOAD :
 - CLASS A TWO LANES OR ONE LANE CLASS 70R
TRACKED/WHEELED OR IRC CLASS SV LOADING WHICHEVER
PRODUCES WORST EFFECT IS CONSIDERED FOR DESIGN.
 - THE BRIDGE IS IN SEISMIC ZONE-V.
 - SEISMIC LOADING :- AS PER CL. NO. 219 OF IRC:6-2017.
 - FOOTPATH LOADING :- AS PER CL.NO. 206.1 OF IRC:6-2017
 - FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT
SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
 - SUPPORTING CHAIRS OF 16 MM DIAMETER SHALL BE PROVIDED
AT SUITABLE INTERVALS AS PER IS : 2502.
 - LAP LENGTH & DEVELOPMENT LENGTH (L_d) OF REINFORCING
BARS SHALL BE DONE IN ACCORDANCE WITH RELEVANT CLAUSE
15.2.5.1 & 15.2.3.3 OF IRC : 112-2011.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY
USE OF FORM VIBRATOR OR NEEDLE VIBRATORS. USE OF FULL
WIDTH SCREED 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.
 - THE WEEP HOLES SHALL BE WITH 100MM DIA AC PIPE IN
1:20 SLOPE @ 1M C/C STAGGERED HORIZONTALLY & VERTICALLY
AT ABUTMENT & RETURN WALLS.
 - THE LOCATION OF JACKS FOR LIFTING UP THE SUPERSTRUCTURE
TO REPLACE BEARINGS ETC. IS SHOWN THUS $\uparrow$. THIS SHALL BE
DISTINCTLY ETCHED ON END CROSS GIRDERS
AND PIER/ABUTMENT CAPS.
 - MAXIMUM SCOUR LEVEL :-
 - AT ABUTMENT = 41.211 M
 - AT PIER = 38.289M
 - PILE LOAD :
 - AT ABUTMENT : HORIZONTAL = 30 TON
VERTICAL = 235 TON
 - AT PIER : HORIZONTAL = 5 TON
VERTICAL = 256 TON
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.:
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/GA
(SHEET NO. 02 TO 03)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/SUP/RCC/21.0M/GA
(SHEET NO. 01 OF 01)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/RCC T BEAM
(SHEET NO. 01 OF 01)

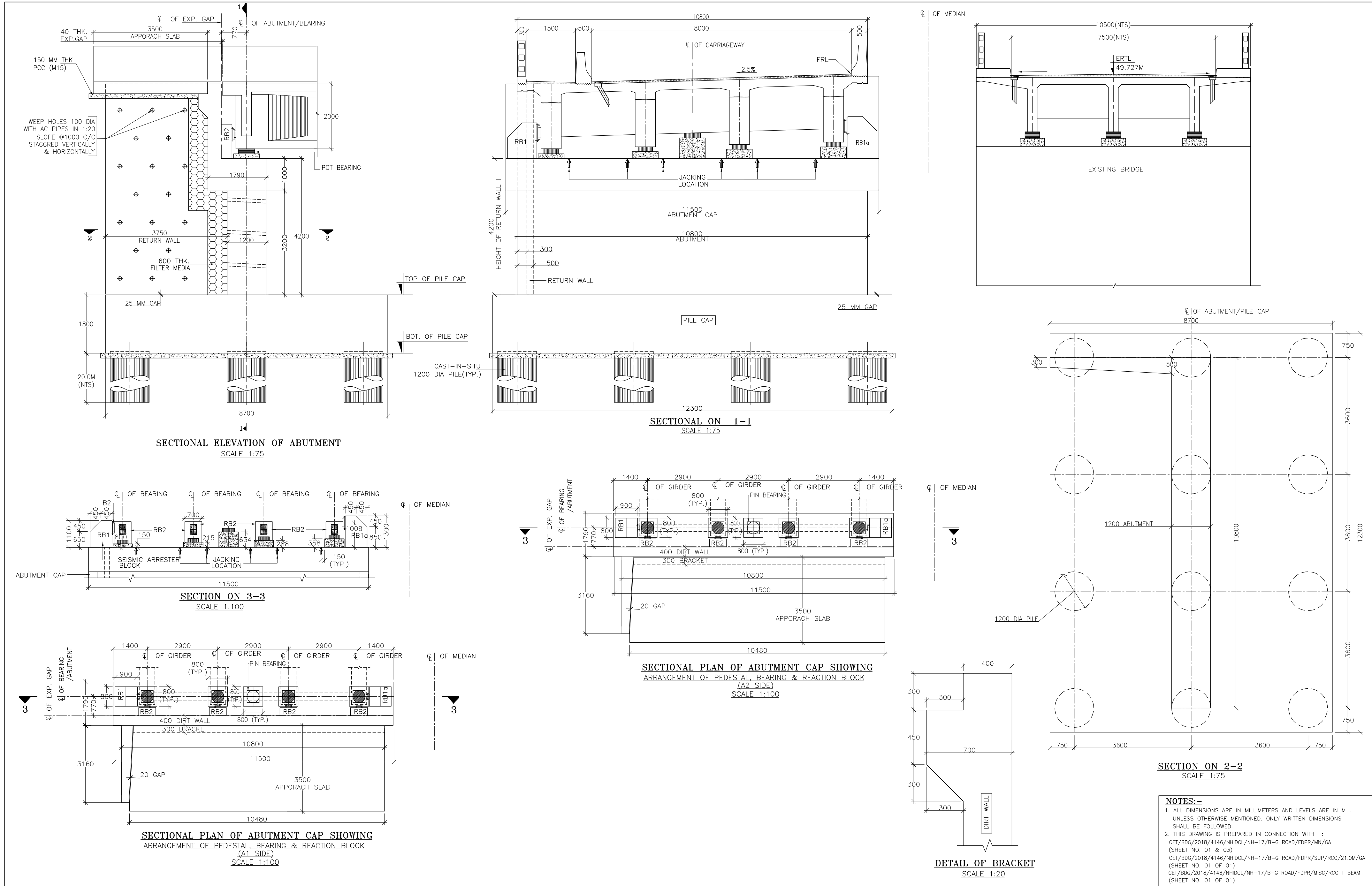
R0	MKD.	DATE	DESCRIPTION	CHKD.	APPRD.
			REVISIONS		

CLIENT:	NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001
PROJECT:	CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.

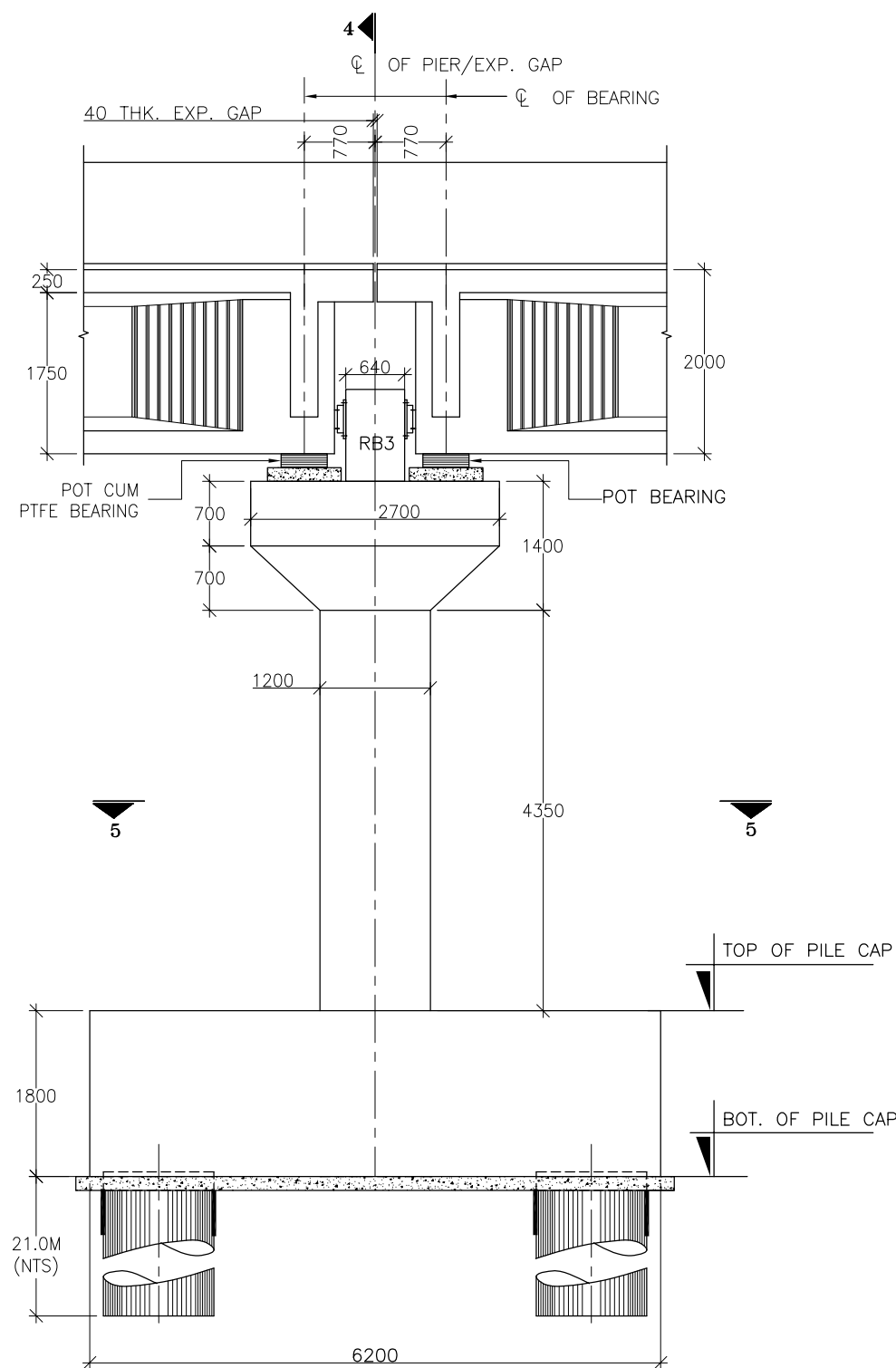
TITLE:	GENERAL ARRANGEMENT DRAWING OF 2 X 21.0M RCC T-GIRDER BRIDGE (AT CHAINAGE - 175.750KM) PACKAGE - 10
SUBMISSION TYPE :	FINAL DETAILED PROJECT REPORT
PACKAGE NO:	(LOT-1) PACKAGE 1A

CONSULTANT :	CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company
C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.	

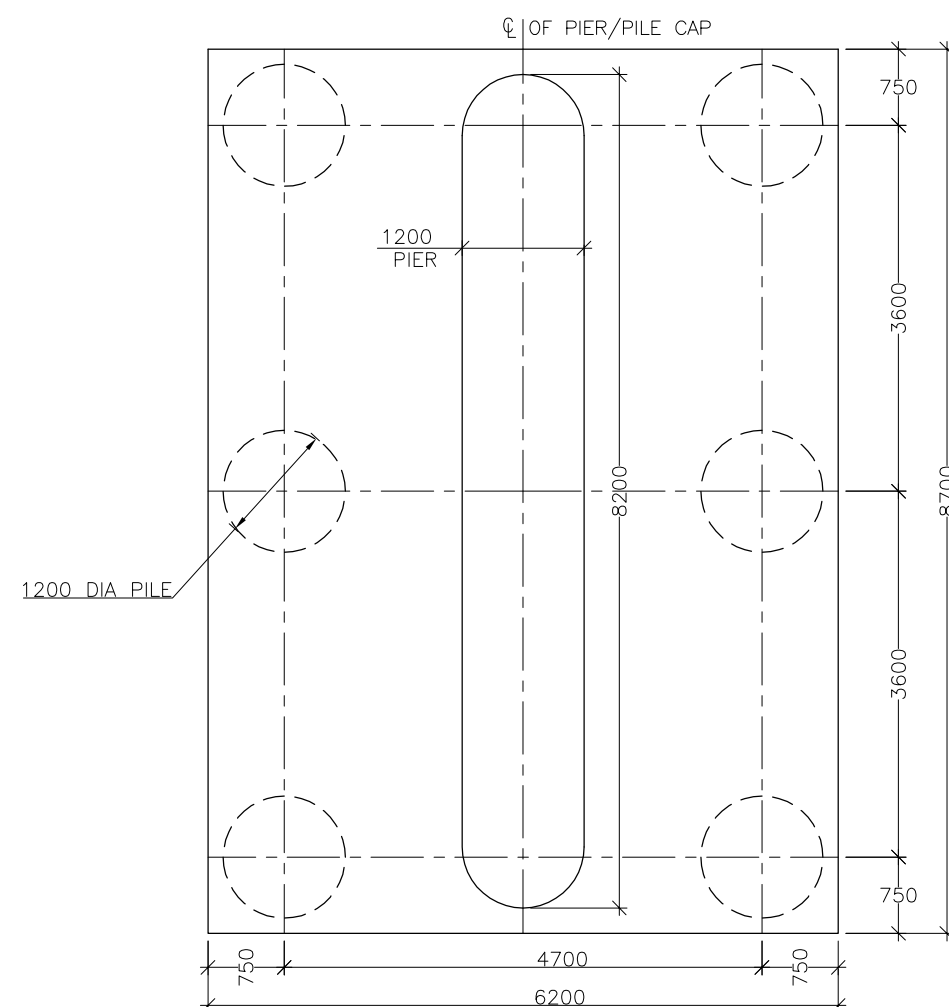
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REVISION MKD. - R0		SHEET NO. - 01 OF 03	
DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
A. Manna A.M	 TTA	 S.D	 S.BHADRA



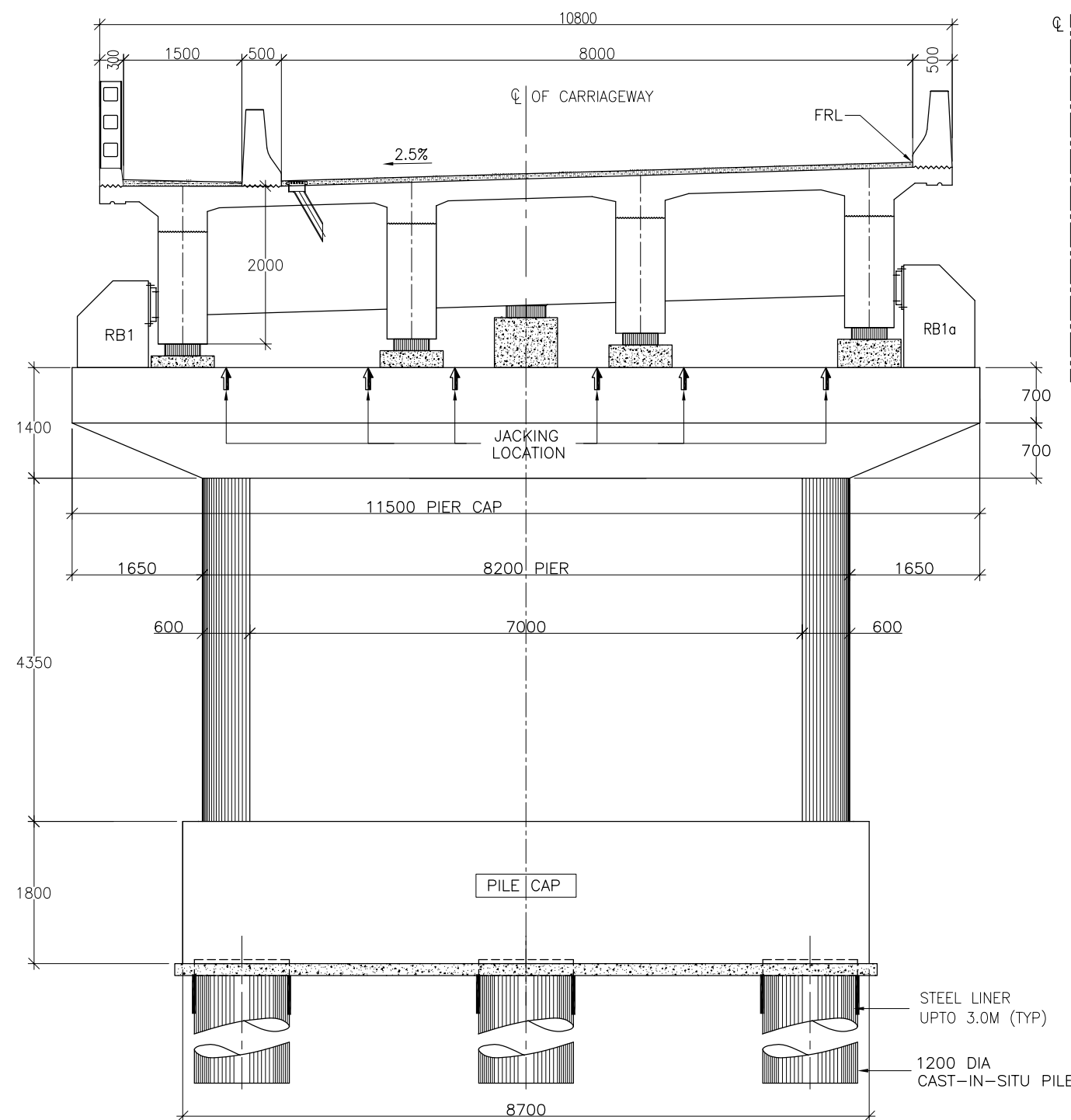
SCALE: AS SHOWN					CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001		TITLE: DETAILS OF ABUTMENT		CONSULTANT: CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company		DRG. NO.: CET/BDG/2018/4146/NHDCL/NH-17/B-G ROAD/FDPR/MN/GA	
R0					PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.		SUBMISSION TYPE: FINAL DETAILED PROJECT REPORT		C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.		REVISION MKD. - R0 SHEET NO.- 02 OF 03	
DATE: JAN.,2023					PACKAGE NO: (LOT-1) PACKAGE 1A						DRAWN BY: A.Manna	DESIGN BY: TTA
REVISIONS											CHECKED BY: S.D	ISSUED BY: S.BHADRA



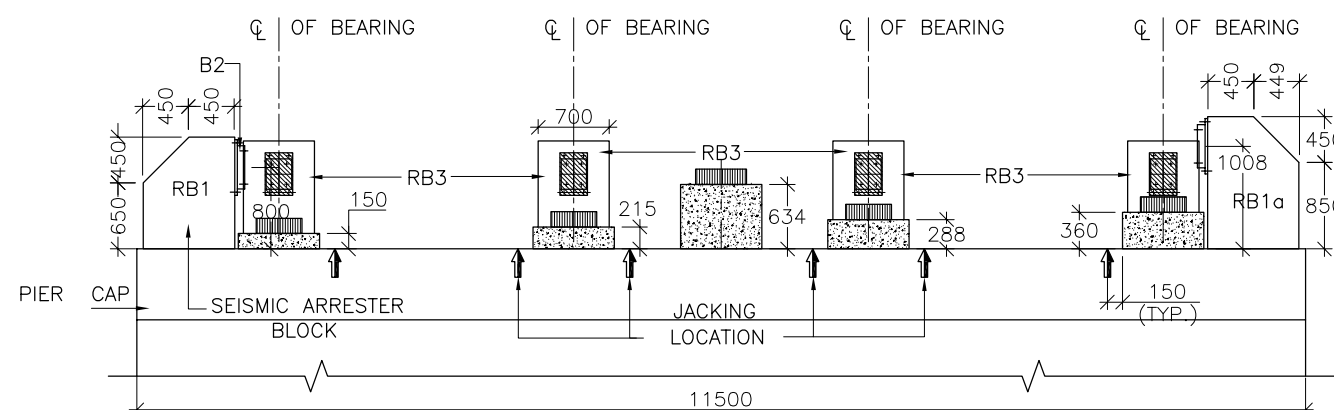
SECTIONAL ELEVATION OF PIER
SCALE 1:75



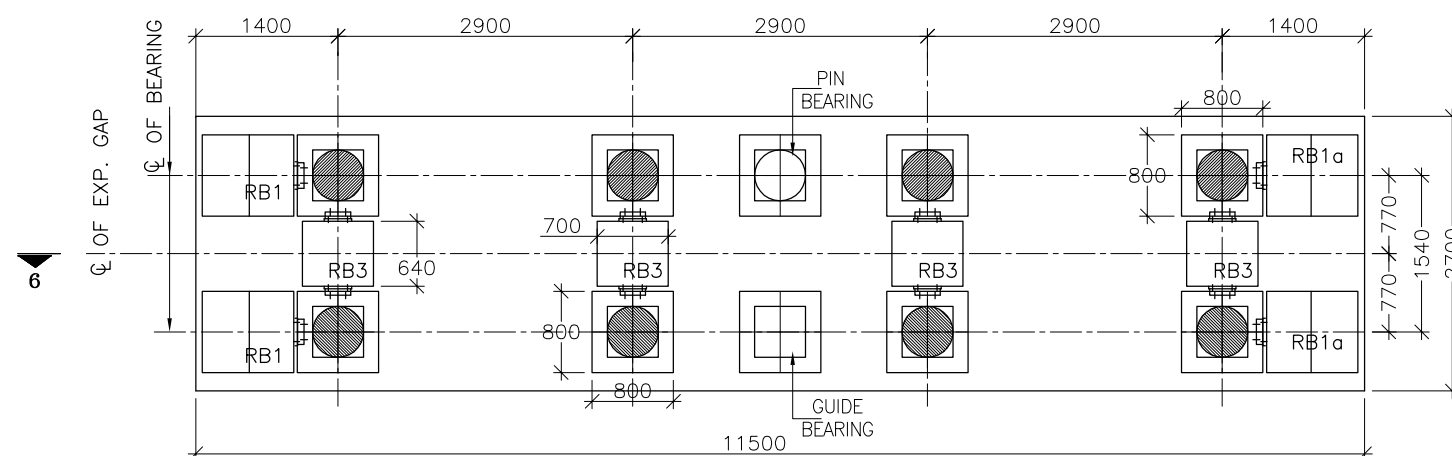
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SCALE 1:75



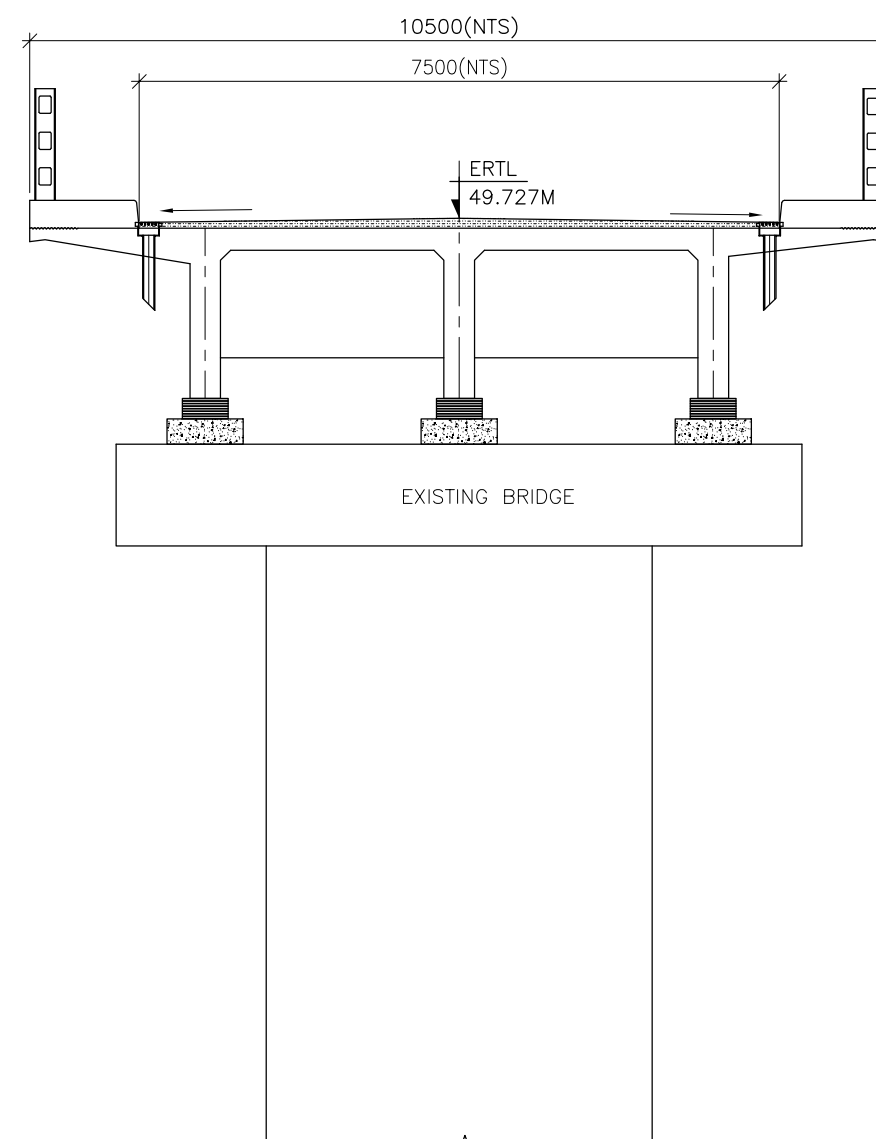
SECTIONAL ON 4-4
SCALE 1:75



SECTION ON 6-6
SCALE 1:75



SECTIONAL PLAN OF PIER CAP
SHOWING ARRANGEMENT OF PADESTAL & BEARING
SCALE 1:75



NOTES:-

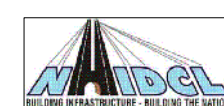
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M .
UNLESS OTHERWISE MENTIONED, ONLY WRITTEN DIMENSIONS
SHALL BE FOLLOWED.
- THIS DRAWING IS PREPARED IN CONNECTION WITH :
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-179/1)/GA
(SHEET NO. 01 TO 02)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/SUP/RCC/21.0M/GA
(SHEET NO. 01 OF 01)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/RCC T BEAM
(SHEET NO. 01 OF 01)

R0					
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.	
REVISIONS					

SCALE:
AS SHOWN

DATE:
JAN.,2023

CLIENT:



NATIONAL HIGHWAYS AND INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED.
3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET,
NEW DELHI - 110001

PROJECT:

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC
CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF
FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A
BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD
(LENGTH 225.000 KM) IN THE STATE OF ASSAM.

TITLE:

DETAILS OF PIER

SUBMISSION TYPE :

FINAL DETAILED PROJECT REPORT

PACKAGE NO: (LOT-1) PACKAGE 1A

CONSULTANT :



C.E. TESTING COMPANY PVT
124-A, N.S.C. BOSE ROAD
KOLKATA - 700092.

DRG. NO. :

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-179/1)/GA

REVISION MKD. - R0

SHEET NO. - 03 OF 03

DRAWN BY

DESIGN BY

CHECKED BY

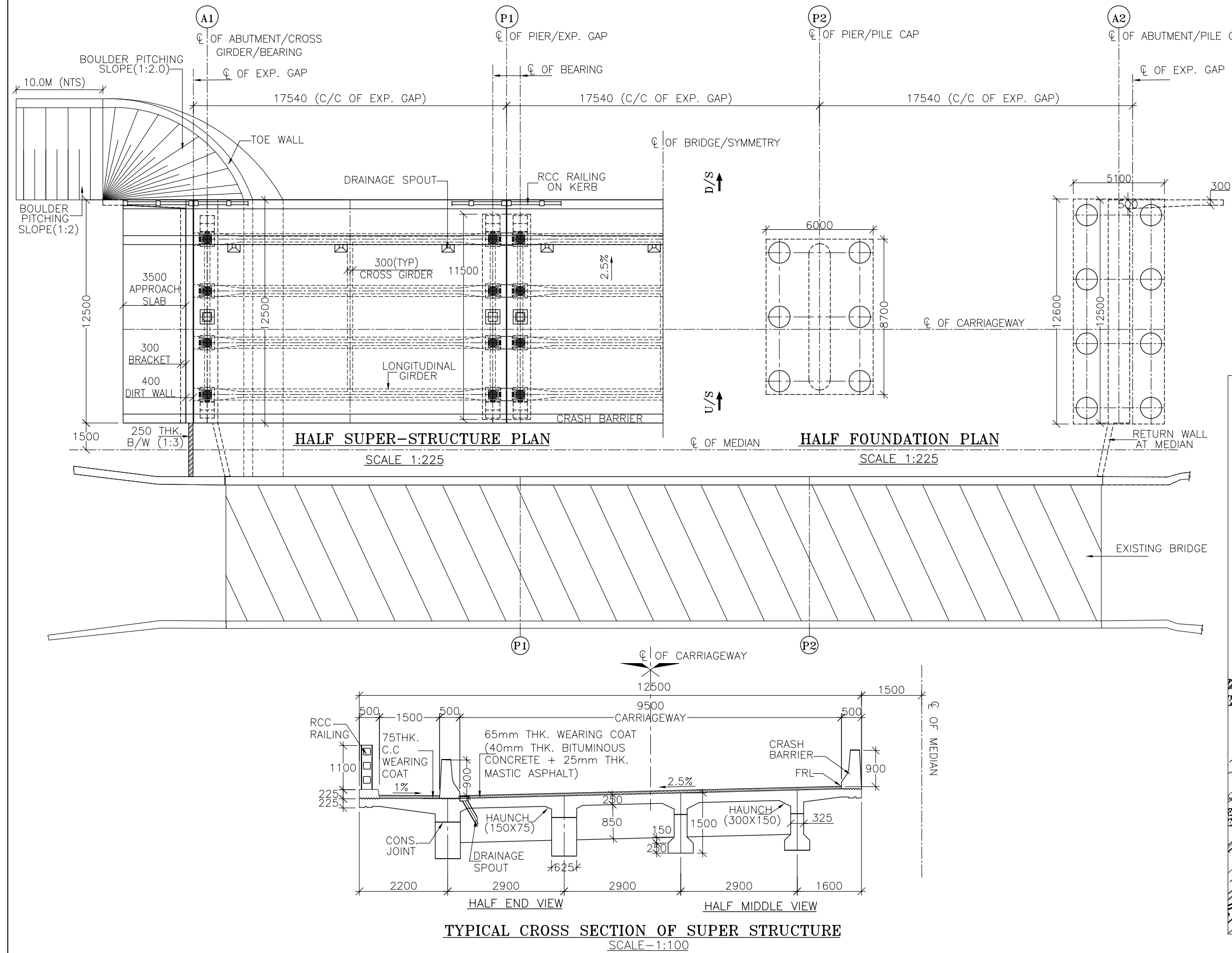
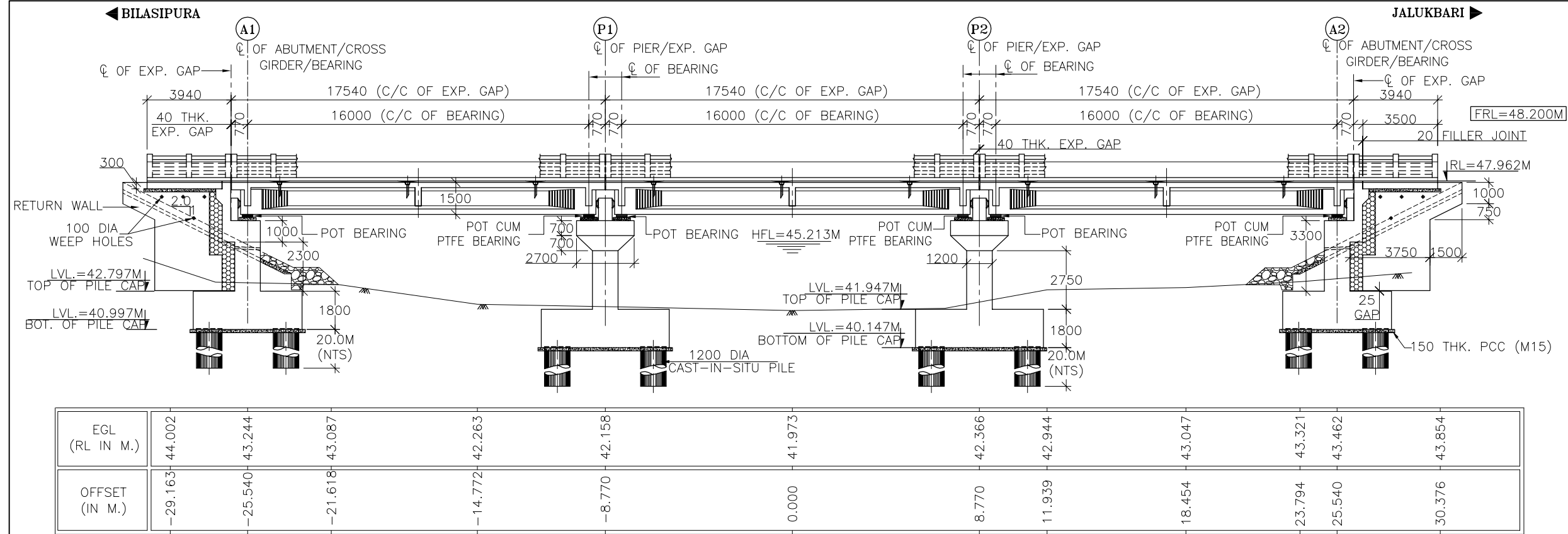
ISSUED BY

A. Manu

TTA

S.D

S.BHADRA



GENERAL NOTES :

A. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M .
UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS
SHALL BE FOLLOWED.

B. MATERIALS SPECIFICATIONS :

(I) CONCRETE :

1. GRADE OF CONCRETE USED :-

- SUPERSTRUCTURE = M30,
- SUB STRUCTURE = M30,
- RETURN WALL = M30,
- DIRT WALL = M30,
- PILE CAP = M30,
- PILE = M35,
- APPROACH SLAB = M30,
- P.C.C. BELOW APPROACH SLAB = M15,
- R.C.C. RAILING & KERB = M30,
- CRASH BARRIER = M40,
- PEDESTAL = M35,
- REACTION BLOCK = M35.

2. CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE TO
ACHIEVE MINIMUM 28 DAYS CHARACTERISTICS STRENGTH ON
150MM CUBES FOR MODERATE EXPOSURE.

3. 43/53 GRADE ORDINARY PORTLAND CEMENT CONFORMING
TO IS : 8112 OR 33 GRADE ORDINARY PORTLAND CEMENT
CONFORMING TO IS : 269 OR PORTLAND SLAG CEMENT
CONFORMING TO IS. 455 CAPABLE OF ACHIEVING THE
REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.

4. TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES
CONFORMING TO IS:9103 MAY BE USED SUBJECT TO
SATISFACTORY PROVEN USE.

5. THE MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE AS
PER TABLE 14.2, IRC -112-2011

6. MAX. WATER CEMENT RATIO SHALL BE AS PER
TABLE-14.2, IRC:112-2011.

(II) REINFORCEMENT :

ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH
DEFORMED BARS (GRADE DESIGNATION Fe 500) CONFORMING
TO IS : 1786 (EXCEPT FOR MESH REINFORCEMENT WHICH
SHALL BE MS BARS GRADE. DESIGNATION Fe 250 CONFORMING
TO IS:432 PART-I MILD STEEL)

(III) WATER :

WATER TO BE USED IN CONCRETING AND CURING SHALL
CONFORM TO IRC : 112 - 2011.

(IV) EXPANSION JOINTS :

THE EXPANSION JOINTS SHOULD BE STRIP SEAL TYPE.

(V) BEARING SHALL BE OF POT CUM PTFE TYPE. THE SIZE & DIMENSIONS
OF THE BEARINGS SHALL BE FINALIZED AS PER THE DETAILS PROVIDED
BY THE APPROVED VENDOR.

(VI) FILTER MATERIAL BEHIND ABUTMENT AND RETURN WALL SHALL
CONFORM TO CLAUSE 2504.2.2 OF MORTH SPECIFICATIONS TO
A THICKNESS OF NOT LESS THAN 600mm. WITH SMALLER SIZE
TOWARDS THE SOIL AND BIGGER SIZE TOWARDS THE WALL TO
THE FULL HEIGHT.

(VII) PROPERTIES OF BACKFILL SOIL $\gamma=2.0t/m^3$, $\phi=30^\circ$.

C. WORKMANSHIP/DETAILING :

1. MINIMUM CLEAR COVER :

- SUPERSTRUCTURE = 40MM
- SUBSTRUCTURE : ABUTMENT =75MM, PIER, DIRT WALL & RETURN WALL =50MM
- FOUNDATION = 75MM

2. DESIGN LOAD :

- CLASS A TWO LANES OR ONE LANE CLASS 70R
TRACKED/WHEELED OR IRC CLASS SV LOADING WHICHEVER
PRODUCES WORST EFFECT IS CONSIDERED FOR DESIGN.
- THE BRIDGE IS IN SEISMIC ZONE-V.
- SEISMIC LOADING :- AS PER CL. NO. 219 OF IRC:6-2017.
- FOOTPATH LOADING :- AS PER CL.NO. 206.1 OF IRC:6-2017

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

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

5. SUPPORTING CHAIRS OF 16 MM DIAMETER SHALL BE PROVIDED
AT SUITABLE INTERVALS AS PER IS : 2502.

6. LAP LENGTH & DEVELOPMENT LENGTH (Ld) OF REINFORCING
BARS SHALL BE DONE IN ACCORDANCE WITH RELEVANT CLAUSE
15.2.5.1 & 15.2.3.3 OF IRC : 112-2011.

7. PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY
USE OF FORM VIBRATOR OR NEEDLE VIBRATORS. USE OF FULL
WIDTH SCREED VIBRATORS FOR COMPACTION OF CONCRETE IN
DECK SLAB SHALL BE ENSURED.

8. SHUTTERING PLATES SHALL SUITABLY BE STIFFENED TO
ENABLE THE COMPACTION BY FORM VIBRATORS.

9. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.

10. THE WEEP HOLES SHALL BE WITH 100MM DIA AC PIPE IN
1:20 SLOPE @ 1M C/C STAGGERED HORIZONTALLY & VERTICALLY
AT ABUTMENT & RETURN WALLS.

11. THE LOCATION OF JACKS FOR LIFTING UP THE SUPERSTRUCTURE
TO REPLACE BEARINGS ETC. IS SHOWN THUS ↑. THIS SHALL BE
DISTINCTLY ETCHED ON END CROSS GIRDERS
AND PIER/ABUTMENT CAPS.

12. MAXIMUM SCOUR LEVEL :-

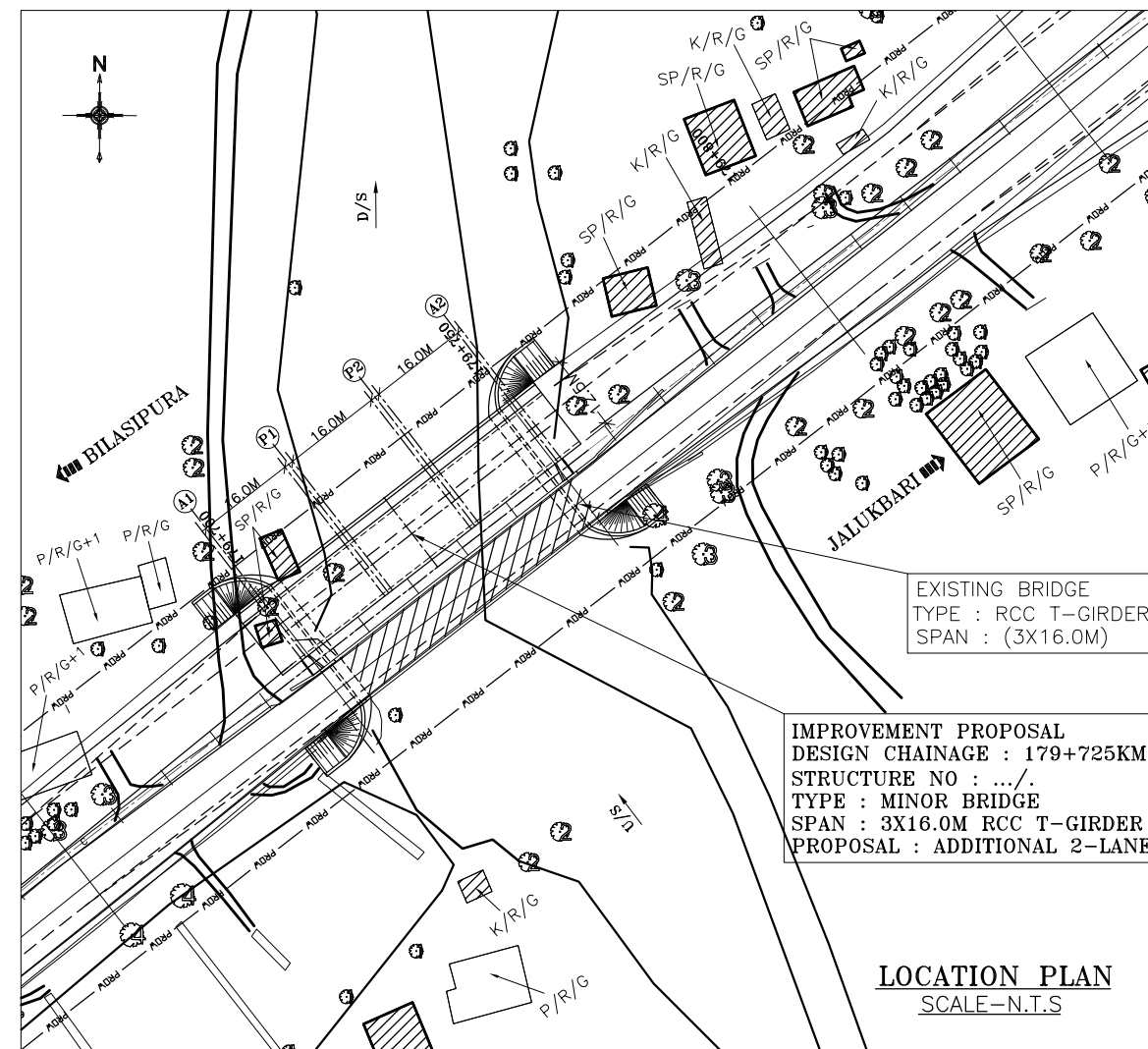
- AT ABUTMENT = 41.543M
- AT PIER = 39.433M

- AT ABUTMENT : HORIZONTAL = 32 TON
VERTICAL =205 TON
- AT PIER : HORIZONTAL = 5 TON
VERTICAL = 207 TON

14. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.:
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-.../)/GA
(SHEET NO. 02 TO 03)

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/SUP/RCC/16.0M/GA
(SHEET NO. 01 OF 01)

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/RCC T BEAM
(SHEET NO. 01 OF 01)



MKD.	DATE	DESCRIPTION	CHKD.	APPRD.
		REVISIONS		

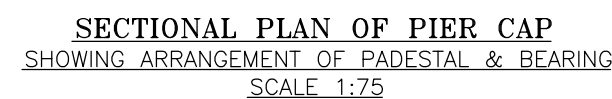
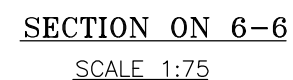
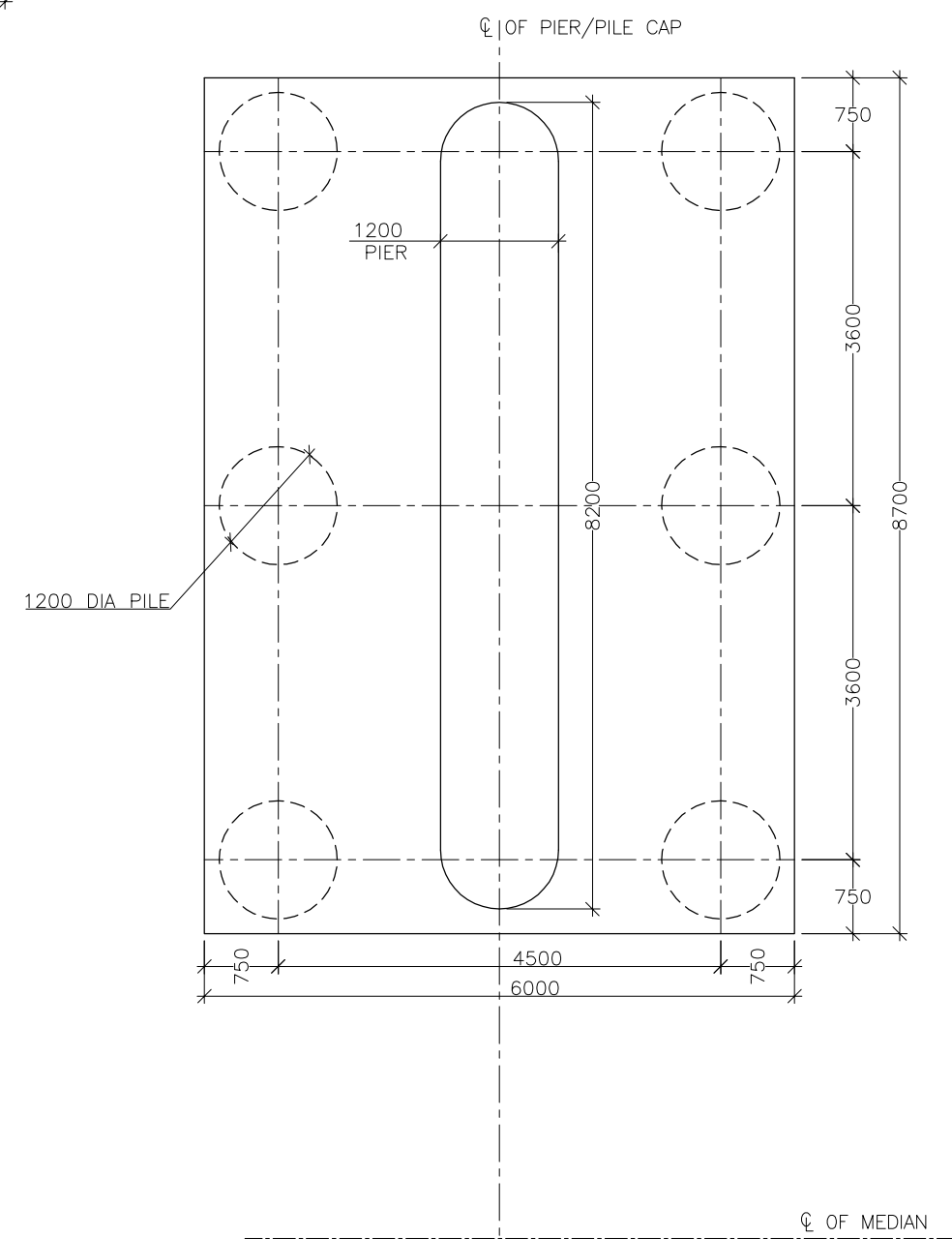
SCALE: AS SHOWN
DATE: JAN.,2023

CLIENT:  NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001	PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A BILASIPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.
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TITLE: GENERAL ARRANGEMENT DRAWING OF 3 X 16.0M RCC T-GIRDER (AT CHAINAGE - 179.725KM) PACKAGE - 10	SUBMISSION TYPE : FINAL DETAILED PROJECT REPORT
PACKAGE NO: (LOT-1) PACKAGE 1A	

CONSULTANT :  An ISO 9001, 14001 & OHSAS 18001 Certified Company	C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAD KOLKATA - 700092.
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DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MN/(STR-.../)/GA	REVISION MKD. - R0	SHEET NO. - 01 OF 03	
DRAWN BY A.Manna	DESIGN BY TTA	CHECKED BY S.D	ISSUED BY S.BHADRA



SCALE: AS SHOWN
DATE: JAN., 2023

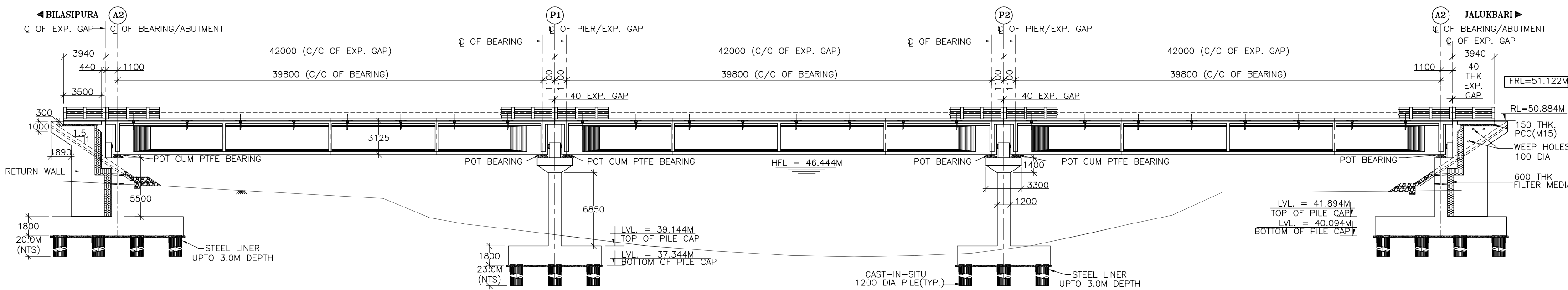
CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC
CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF
FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-1) - PACKAGE 1A
BILASIPURA-CHAPAR-TULUNGA-JOGIGHO-GANDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD
(LENGTH 225.00 KM) IN THE STATE OF ASSAM.

PACKAGE NO: (LOT-1) PACKAGE 1A

CETEST
Engineering Consultants
An ISO 9001, 14001 & OHSAS 18001
Certified Company

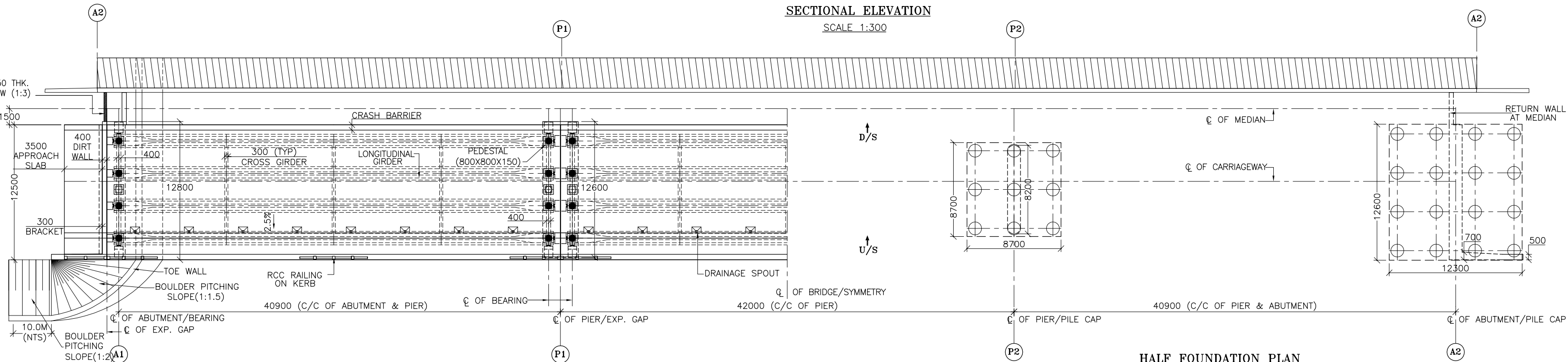
C.E. TESTING COMPANY PV
124-A, N.S.C. BOSE ROAD
KOLKATA - 700092.

S BHADRA



SECTIONAL ELEVATION

SCALE 1:300

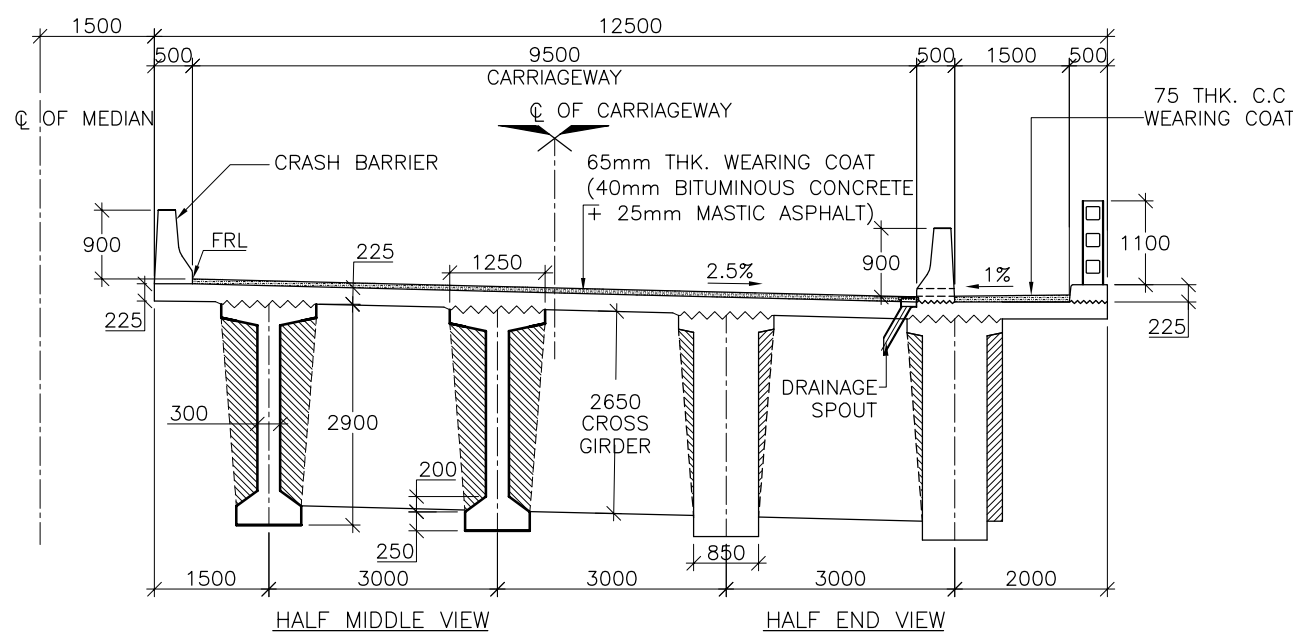


HALF FOUNDATION PLAN

SCALE 1:300

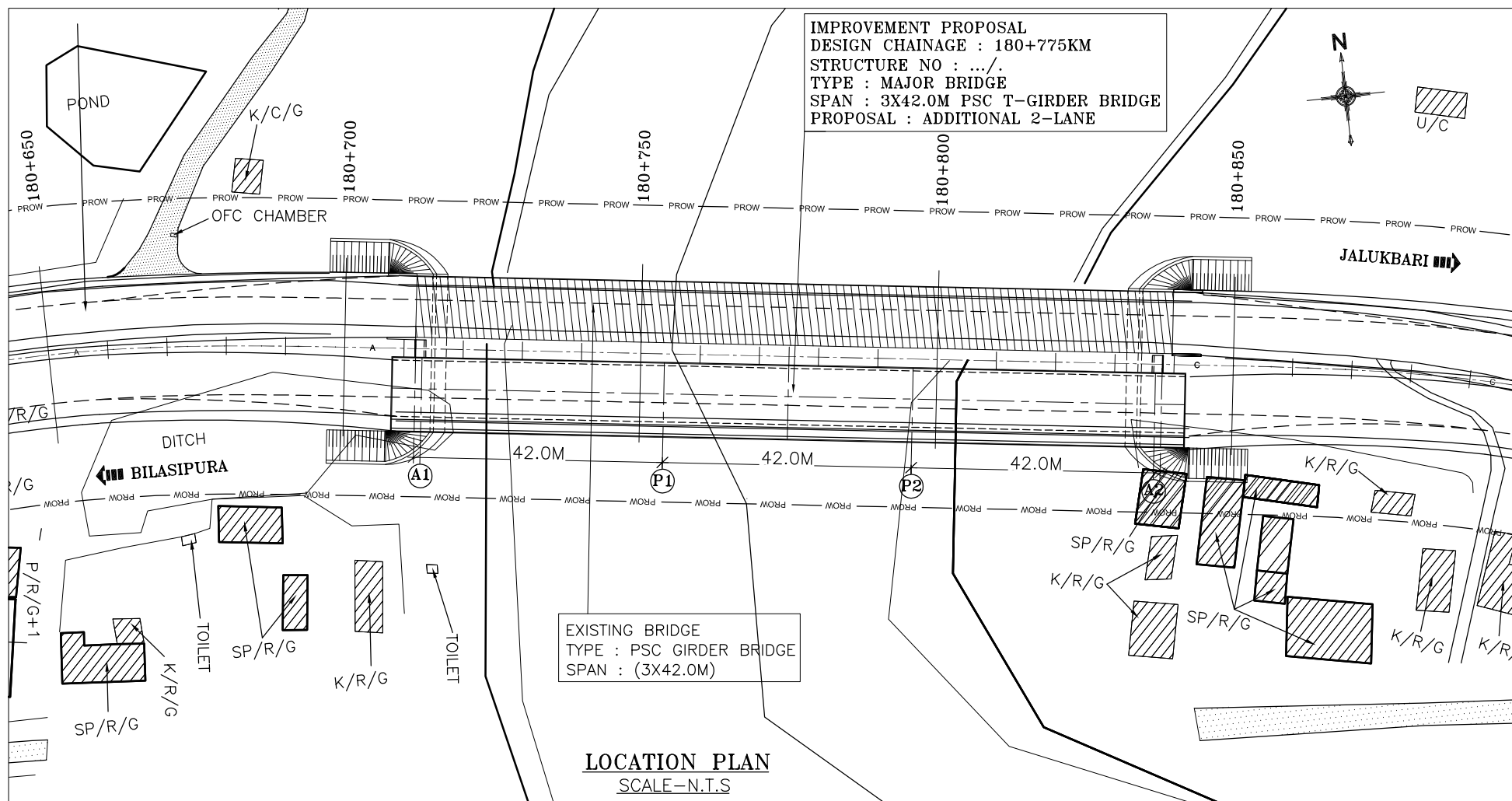
HALF SUPER-STRUCTURE PLAN

SCALE 1:300



TYPICAL CROSS SECTION OF SUPER STRUCTURE

SCALE-1:100



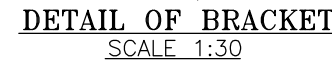
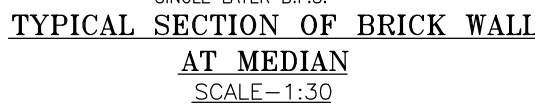
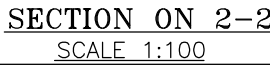
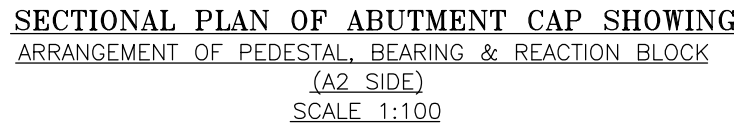
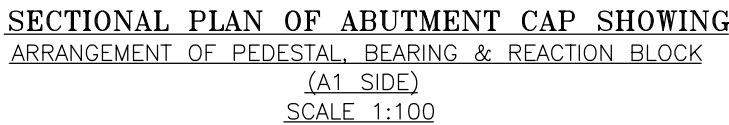
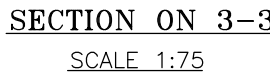
LOCATION PLAN

SCALE-N.T.S

GENERAL NOTES :

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- MATERIALS SPECIFICATIONS :
 - CONCRETE :
 - GRADE OF CONCRETE USED :-
 - DECK SLAB = M45,
 - GIRDER = M45,
 - SUB STRUCTURE = M30,
 - RETURN WALL = M30,
 - DIRT WALL = M30,
 - PILE CAP = M30,
 - PILE = M35,
 - APPROACH SLAB = M30,
 - P.C.C. BELOW APPROACH SLAB = M15,
 - R.C.C. RAILING & KERB = M30,
 - CRASH BARRIER = M40,
 - PEDESTAL = M35,
 - REACTION BLOCK = M35.
 - CONCRETE SHALL BE OF DESIGN MIX AND SHALL HAVE TO ACHIEVE MINIMUM 28 DAYS CHARACTERISTICS STRENGTH ON 150MM CUBES FOR MODERATE EXPOSURE.
 - 43/53 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 8112 OR 33 GRADE ORDINARY PORTLAND CEMENT CONFORMING TO IS : 269 OR PORTLAND SLAG CEMENT CONFORMING TO IS. 455 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
 - TO IMPROVE WORKABILITY OF CONCRETE, ADMIXTURES CONFORMING TO IS:9103 MAY BE USED SUBJECT TO SATISFACTORY PROVEN USE.
 - THE MINIMUM CEMENT CONTENT IN CONCRETE SHALL BE AS PER TABLE 14.2, IRC -112-2011
 - MAX. WATER CEMENT RATIO SHALL BE AS PER TABLE-14.2, IRC:112-2011.
 - REINFORCEMENT :
ALL REINFORCING STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION Fe 500) CONFORMING TO IS : 1786 (EXCEPT FOR MESH REINFORCEMENT WHICH SHALL BE MS BARS GRADE. DESIGNATION Fe 250 CONFORMING TO IS:432 PART-I MILD STEEL)
 - WATER :
WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO IRC : 112 - 2011.
 - EXPANSION JOINTS :
THE EXPANSION JOINTS SHOULD BE STRIP SEAL TYPE.
 - BEARING SHALL BE OF POT PTFE TYPE. THE SIZE & DIMENSIONS OF THE BEARINGS SHALL BE FINALIZED AS PER THE DETAILS PROVIDED BY THE APPROVED VENDOR.
 - FILTER MATERIAL BEHIND ABUTMENT AND RETURN WALL SHALL CONFORM TO CLAUSE 2504.2.2 OF MORTH SPECIFICATIONS TO A THICKNESS OF NOT LESS THAN 600mm. WITH SMALLER SIZE TOWARDS THE SOIL AND BIGGER SIZE TOWARDS THE WALL TO THE FULL HEIGHT.
 - PROPERTIES OF BACKFILL SOIL $\gamma = 2.0 \text{ t/m}^3$, $\phi = 30^\circ$.
- WORKMANSHIP/DETAILING :
 - MINIMUM CLEAR COVER :
 - SUPERSTRUCTURE = 40MM
 - SUBSTRUCTURE : ABUTMENT = 75MM, PIER, DIRT WALL & RETURN WALL = 50MM
 - FOUNDATION = 75MM
 - DESIGN LOAD :
 - CLASS A TWO LANES OR ONE LANE CLASS 70R TRACKED/WHEELED OR IRC CLASS SV LOADING WHICHEVER PRODUCES WORST EFFECT IS CONSIDERED FOR DESIGN.
 - THE BRIDGE IS IN SEISMIC ZONE-V.
 - FOOTPATH LOADING :- AS PER CL.NO. 206.1 OF IRC:6-2017
 - FOR ENSURING PROPER COVER OF CONCRETE TO REINFORCEMENT SPECIALLY MADE POLYMER COVER BLOCKS SHALL ONLY BE USED.
 - BENDING OF REINFORCEMENT BARS SHALL BE AS PER IS:2502.
 - SUPPORTING CHAIRS OF 16 MM DIAMETER SHALL BE PROVIDED AT SUITABLE INTERVALS AS PER IS : 2502.
 - LAP LENGTH & DEVELOPMENT LENGTH (Ld) OF REINFORCING BARS SHALL BE DONE IN ACCORDANCE WITH RELEVANT CLAUSE 15.2.5.1 & 15.2.3.3 OF IRC : 112-2011.
 - PROPER COMPACTION OF CONCRETE SHALL BE ENSURED BY USE OF FORM VIBRATOR OR NEEDLE VIBRATORS. USE OF FULL WIDTH SCREED 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.
 - THE WEEP HOLES SHALL BE WITH 100MM DIA AC PIPE IN 1:20 SLOPE @ 1M C/C STAGGERED HORIZONTALLY & VERTICALLY AT ABUTMENT & RETURN WALLS.
 - THE LOCATION OF JACKS FOR LIFTING UP THE SUPERSTRUCTURE TO REPLACE BEARINGS ETC. IS SHOWN THUS $\uparrow$. THIS SHALL BE DISTINCTLY ETCHED ON END CROSS GIRDERS, ABUTMENT & PIER CAPS.
 - MAXIMUM SCOUR LEVEL :-
 - AT ABUTMENT = 39.227M
 - AT PIER = 35.078M
 - PILE LOAD :
 - AT ABUTMENT : HORIZONTAL = 34 TON
VERTICAL = 295 TON
 - AT PIER : HORIZONTAL = 3 TON
VERTICAL = 365 TON
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.: CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MJ/(STR-.../)/GA (SHEET NO. 02 TO 03)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/SUP/PSC/41.0M/GA (SHEET NO. 01 TO 02)
CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/PSC T GIRDER (SHEET NO. 01 OF 01)

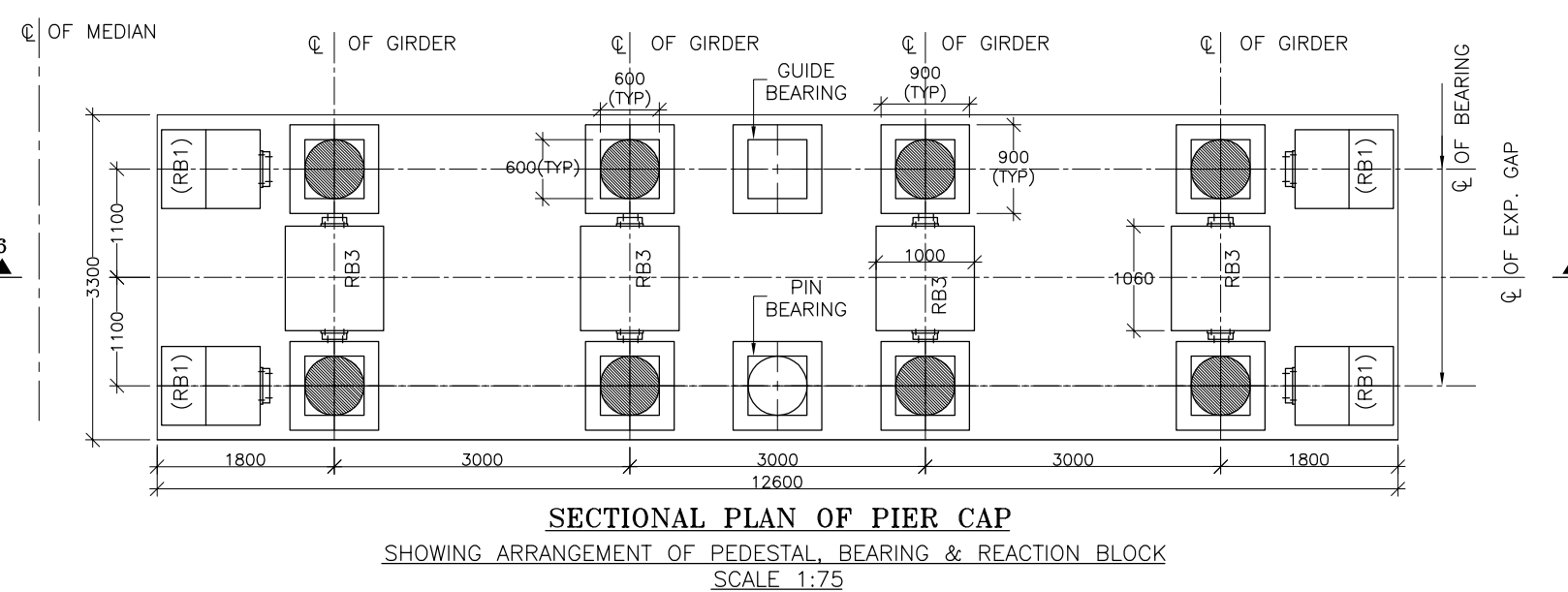
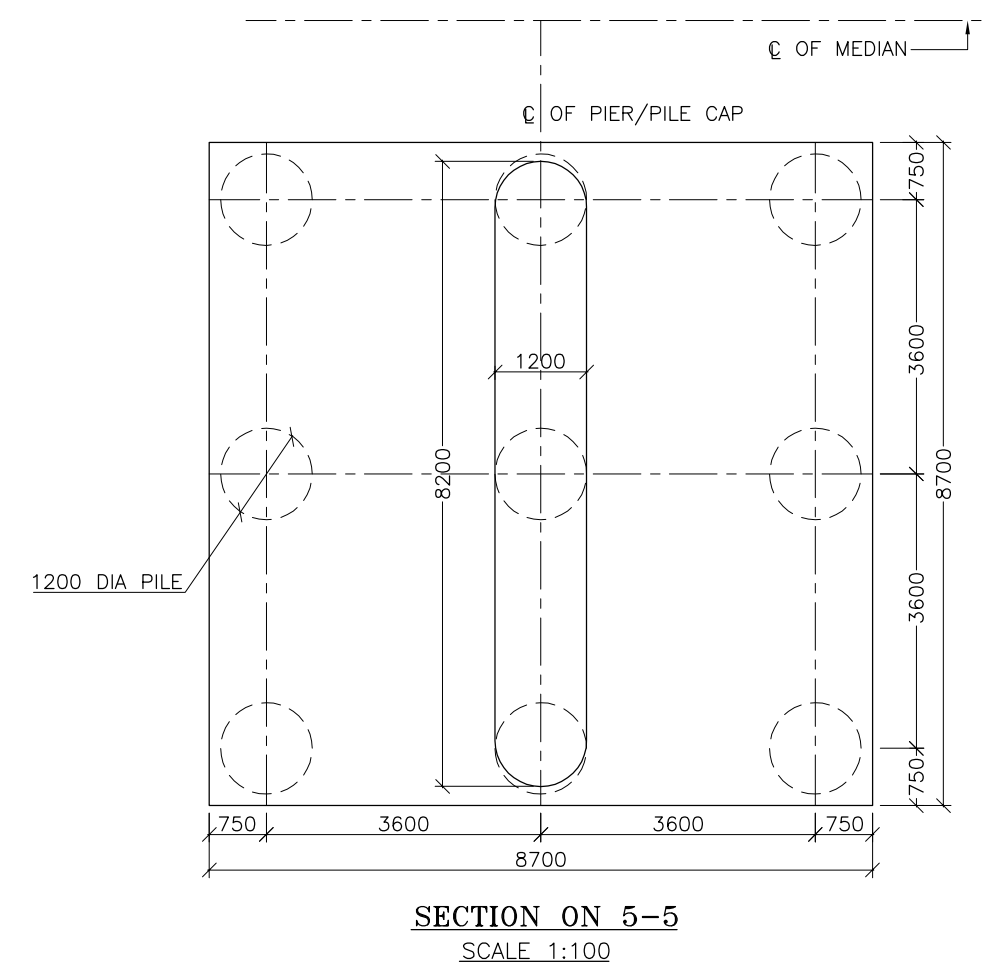
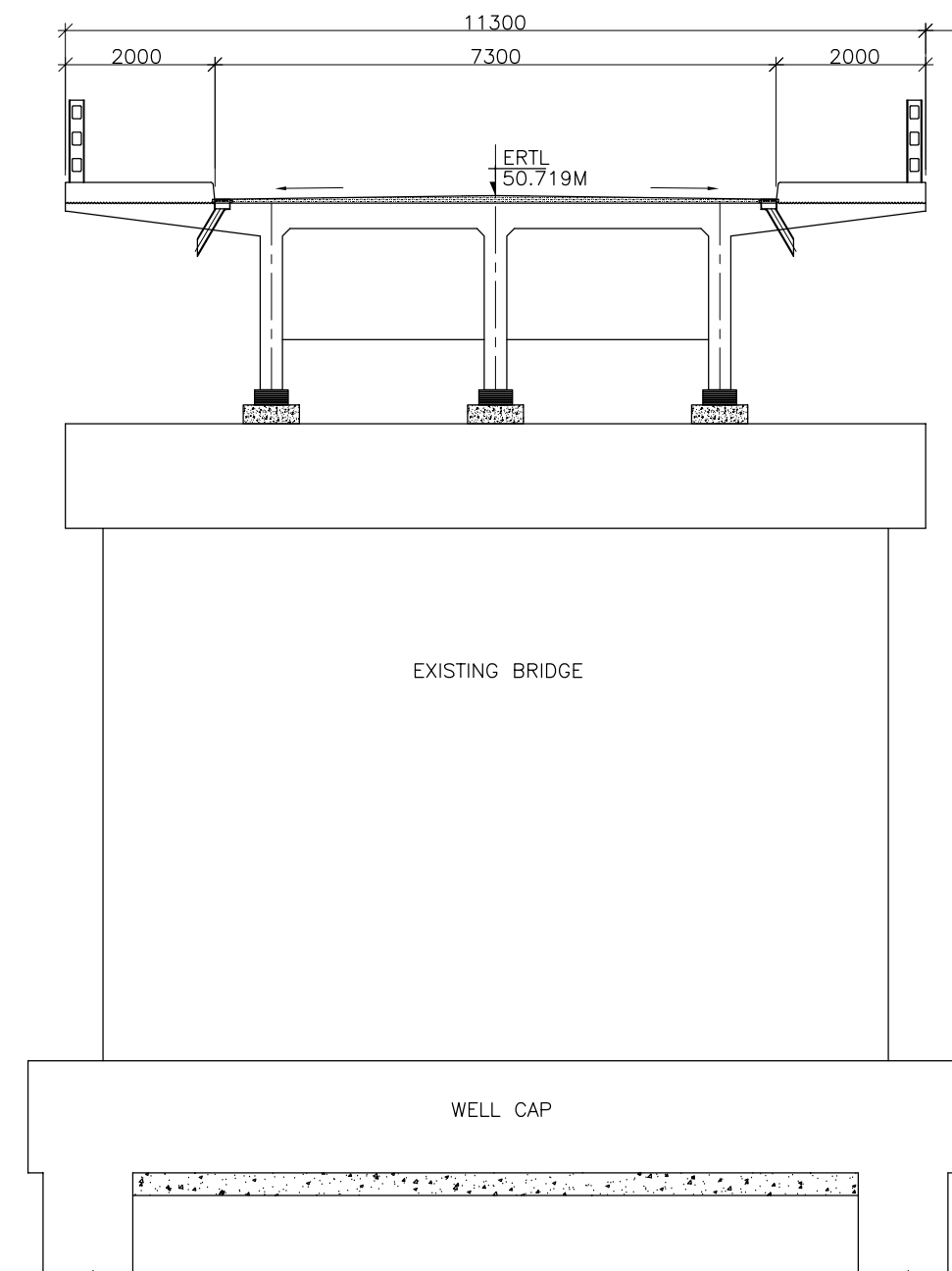
SCALE: AS SHOWN					CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED. 3RD FLOOR, PTI BUILDING, 4-PARLIAMENT STREET, NEW DELHI - 110001		TITLE: GENERAL ARRANGEMENT DRAWING OF 3 X 42.0M PSC T-GIRDER BRIDGE (AT CHAINAGE - 180.775KM) PACKAGE - 10		CONSULTANT: CETEST Engineering Consultants An ISO 9001, 14001 & OHSAS 18001 Certified Company		DRG. NO.: CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MJ/(STR-.../)/GA (SHEET NO. 02 TO 03)	
DATE: JAN.,2023					PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJANA (LOT-I) - PACKAGE 1A BILASPURA-CHAPAR-TULUNGIA-JOGIGHOPA-GENDERA-PAIKAN-DUDHNOI-GUWAHATI ROAD (LENGTH 225.000 KM) IN THE STATE OF ASSAM.		SUBMISSION TYPE: FINAL DETAILED PROJECT REPORT		C.E. TESTING COMPANY PV 124-A, N.S.C. BOSE ROAL KOLKATA - 700092.		REVISION MKD. - R0 SHEET NO. - 01 OF 03	
REVISIONS					PACKAGE NO: (LOT-I) PACKAGE 1A						DRAWN BY: A.M. DESIGN BY: TTA CHECKED BY: S.D. ISSUED BY: S.BHADRA	



SCALE: AS SHOWN
DATE: JAN.,2023

TITLE:	DETAILS OF ABUTMENT
SUBMISSION TYPE:	FINAL DETAILED PROJECT REPORT
	PACKAGE NO: (LOT-1) PACKAGE 1A

DRG. NO. : CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MJ/(STR-...)/GA			
REVISION MKD. - R0		SHEET NO. - 02 OF 03	
DRAWN BY	DESIGN BY	CHECKED BY	ISSUED BY
 A.M	 TTA	 S.D	 S.BHADRA



1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN M. UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH :

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MJ/(STR-.../)/GA (SHEET NO. 01 TO 02)

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/SUP/PSC/41.0M/GA (SHEET NO. 01 TO 02)

CET/BDG/2018/4146/NHIDCL/NH-17/B-G ROAD/FDPR/MISC/PSC T GIRDER (SHEET NO. 01 OF 01)

[illegible]

