

Northern Railway

Headquarters Office,
Baroda House,
New Delhi

No. 308-W/0/3/Genl./Br./S&D/Part-II

Dated: 30.07.2025

Sr. DEN/Cs
Northern Railway,
DLI, FZR, LKO, MB, UMB & JAT

CAO/Const., CAO/C-II, CAO/C/USBRL
Northern Railway,
Kashmere Gate, Delhi

CAO/C/RSP,
9th Floor, Connectous Tower, DMRC Building
Ajmeri Gate, Delhi

Subject:- Standard type plan (Revised) for General arrangement Drawing for construction of Road Under Bridge (RUB)/Limited Height Subway (LHS) for single & multiple track.

Ref: This office letter no. 308-W/0/3/Genl./Br. (S&D) dated 24.08.2021.

The Type Plan No. XEN/RC/1425/GAD/R2 of Limited Height Subway (LHS) currently in use was issued when segmental boxes were in use for LHS constructions. RUB/LHS work as per the latest guidelines of Railway Board is currently being done mostly by earth/ Air pushing method using plate protection/ Restricted Height (RH) girders. Hence, a revised Type Plan is being issued. It will supersede the NRHQE Plan No. XEN/RC/1425/GAD/R2. The main features of the revised Type Plan for RUB/LHS is as under:-

1. This Type Plan is divided in four parts:-

Part-I:- Plan and Sectional Elevation/ X-section of RUB/LHS.

Part-II:- Drainage and Rain Water Harvesting System.

Part-III:- Approach Road details and Key Plan.

Part-IV:- Notes and References.

Note: Parts I, II, III & IV in the proposed GAD should be strictly at the same location as shown in the type plan.

2. **Part-IV** has **four tables** from Table-A to Table-D.

Table-A contains the list of all RDSO Standard RCC Box references for Structural details.

Table-B contains Retaining wall references (without weep holes) for approach road.

Table-C contains method of calculation of Barrel Length for single and multiple lines based on construction methodology.

Table-D has the list of DFC Feeder routes in Northern Railway to minimize the error regarding the standard of loading.

All Table-A to D will not be the part of GAD. These tables are for reference only.

3. Notes are divided in two parts i.e. Important Notes (**not to be changed**) and Site Specific Notes which can be changed according to the site conditions.

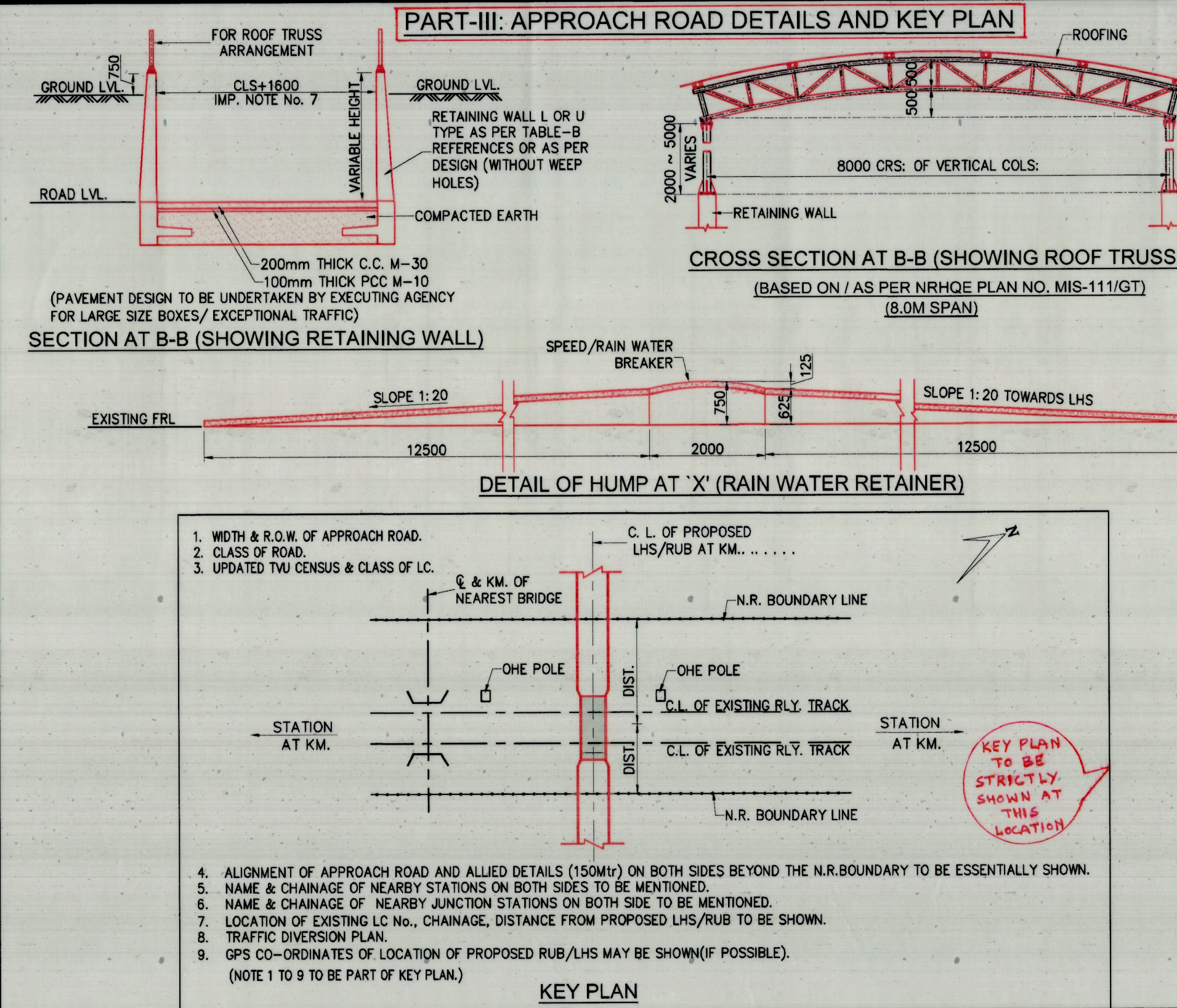
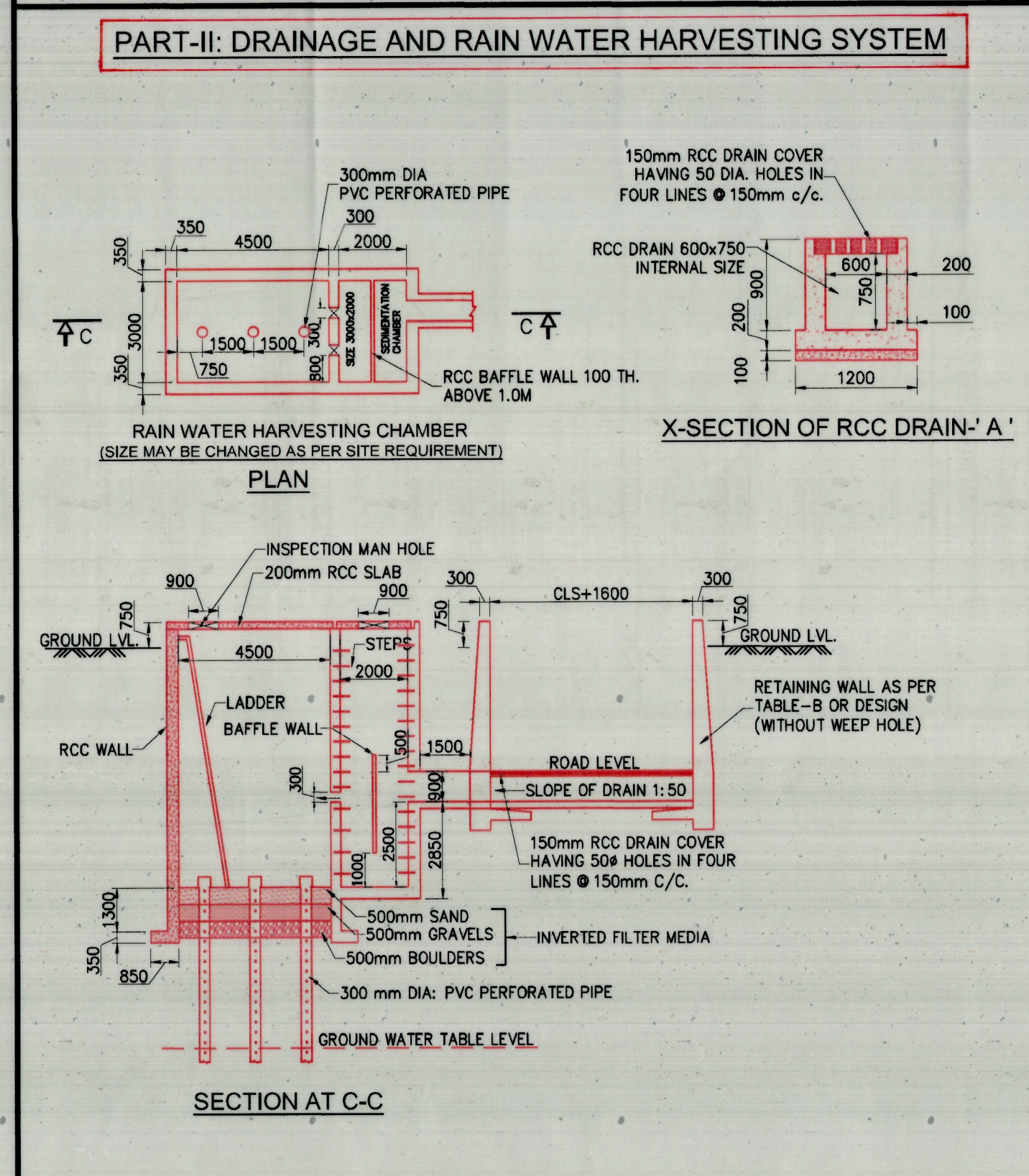
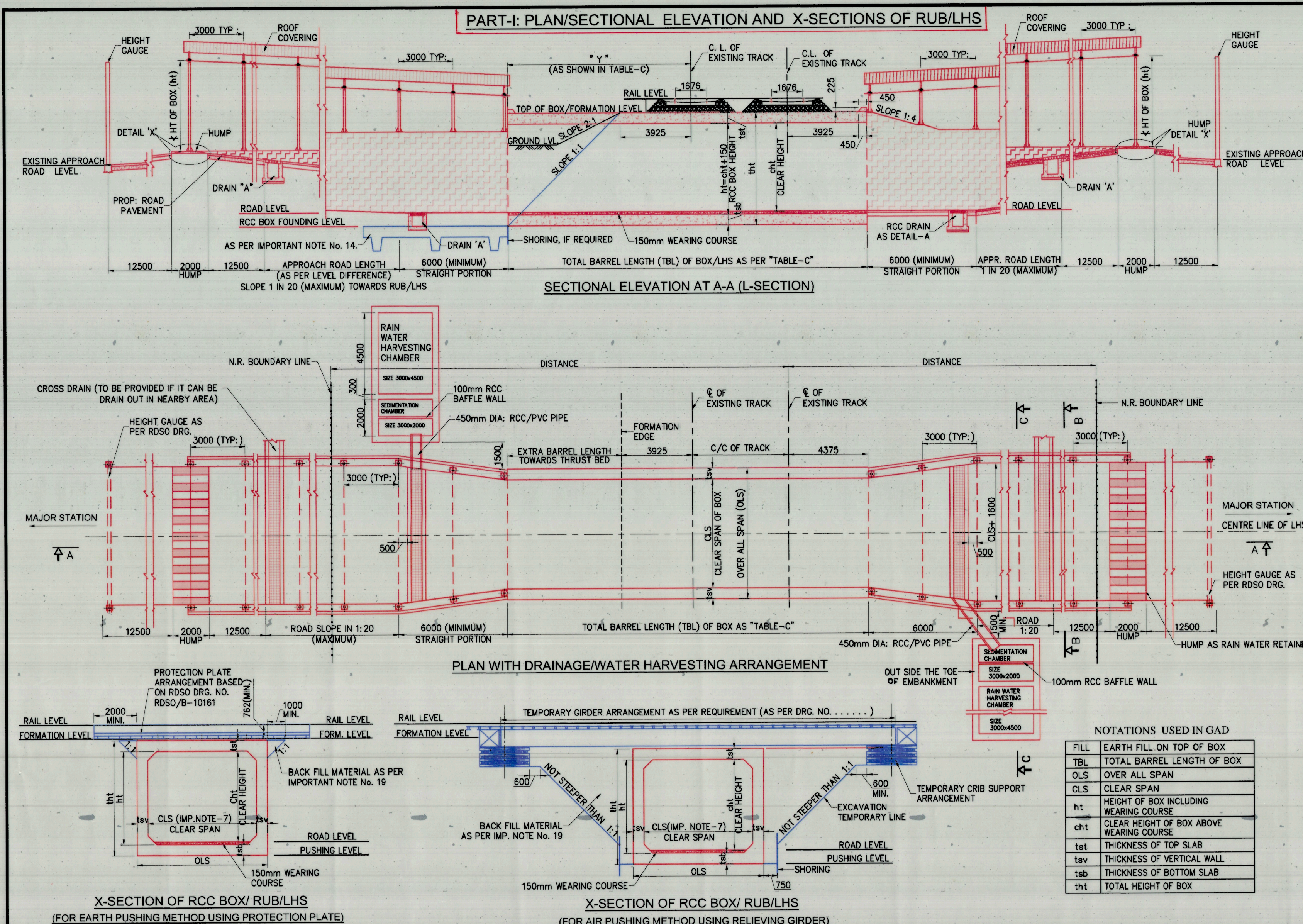
4. Drainage certificate from Divisional SAG Officer included in revised Type Plan, which will be part of GAD.
 5. **8.0m** cover shed drawing No. MIS-111/GT has been incorporated in this type plan.
 6. Already approved **Thrust Bed drawings** can be used as already directed vide CBE Letter dated 02.06.2025.
 7. The ACAD Soft Copy of this type plan is being shared with Divisions/ Construction Unit/ RSP unit for ease of preparation of GAD and to maintain similarity in all proposed GADs of LHS/RUB.
- It is advised to use this type plan for all future proposed works of LHS/RUB with immediate effect.**

This has the approval of Competent Authority.


(Mona Srivastava)

**Chief Engineer/ Road Crossing,
Northern Railway, Baroda House**

DA: As above



PART-IV: NOTES AND REFERENCES

SITE SPECIFIC NOTES CONTINUE - - - - -

14. PROPER METHODOLOGY INCLUDING CONSTRUCTION SEQUENCE, EXCAVATION AND DISPOSAL ARRANGEMENTS, SAFETY METHODS TO BE IMPLEMENTED SHALL BE DECIDED FOR EACH SITE AND APPROVED AT LEAST SR.DEN'S LEVEL BEFORE EXECUTION OF WORK. A COPY OF APPROVED DESIGN/DRAWING SHOULD ALSO BE SUBMITTED TO HQ FOR RECORDS BEFORE TAKING UP THE WORK AT SITE.

15. THE DRAWING SHOULD SHOW SLOPE OF EXCAVATED FACE OF SOIL, AND PROPOSED SHORING STRUTTING ARRANGEMENTS AS REQUIRED ACCESS/ACCESS DURING CONSTRUCTION, Dewatering ARRANGEMENTS.

16. IF REQUIRED, PROTECTION ARRANGEMENTS FOR EXISTING UTILITIES, IF ANY, BACKFILLING AND COMPACTION ARRANGEMENTS ETC. TO BE ENSURED.

17. THE SHORING AND STRUTTING ARRANGEMENTS SHALL BE CHECKED FOR LATERAL BENDING AND NORMAL VERTICAL LOADS AND BE CAPABLE TO PROVIDE SUFFICIENT RESISTANCE AGAINST LATERAL MOVEMENT OF SOIL.

18. SUFFICIENT EARTH FILLED GUNNY BAG, BALLAST ETC SHOULD BE KEPT AT SITE TO MEET ANY EMERGENCY, IF NEEDED, A STATIONARY WATCHMAN SHOULD ALSO BE POSTED.

19. REINFORCEMENT DETAILS, SLAB THICKNESS DETAILS AND FOUNDATION PRESSURE FOR VARIOUS FILL HEIGHTS SHALL BE AS GIVEN IN STRUCTURAL REFERENCE DRAWINGS.

(SITE SPECIFIC NOTES CAN BE CHANGED)

TABLE-A (RDSO STANDARD RCC BOX)

S.No.	TITLE OF DRAWING	RDSO DRG. NO.
1.	25T LOADING, SINGLE BOX, SINGLE LINE	RDSO/B-10152R
2.	25T LOADING, SINGLE BOX, DOUBLE LINE	RDSO/B-10155
3.	25T LOADING, TWIN BOX, DOUBLE LINE	RDSO/B-10158
4.	25T LOADING, SINGLE BOX, DOUBLE LINE (Slope angle Up to 30°)	RDSO/B-10162R
5.	32.5T LOADING, SINGLE BOX, SINGLE LINE	RDSO/B-10151R
6.	32.5T LOADING, SINGLE BOX, DOUBLE LINE, (UPTO 10° CURVE)	RDSO/B-10157
7.	32.5T LOADING, TWIN BOX, SINGLE LINE	RDSO/B-10154R
8.	25T LOADING, 6.0Mx4.50M LHS, SINGLE BOX, FOR MULTIPLE LINE (SEGMENTAL BOX)	RDSO/B-10159

NOTE: TABLE-A WILL NOT BE THE PART OF GAD. ONLY ONE DRAWING OF RCC BOX TO BE REFERRED IN GAD WHICH IS APPLICABLE AT IMPORTANT NOTE NO. 3 AND TO BE SHOWN.

TABLE-B (RETAINING WALL)

S.No.	DRAWING NO.	BRIEF REFERENCE
1.	NRHQE (P) PLAN No. P-1873-RB/2020 SH.No. 5	R. WALL WITHOUT WEEP HOLES
2.	NRHQE (P) PLAN No. P-1680-RB/2019 SH.No. 4	R. WALL WITHOUT WEEP HOLES
3.	NRHQE PLAN No. NCR/ENGG./TYPE PLAN/BR/05-2016	R. WALL WITHOUT WEEP HOLES

NOTE: TABLE-B WILL NOT BE THE PART OF GAD. RELEVANT DRAWINGS OF RETAINING WALL TO BE REFERRED IN GAD WHICH IS APPLICABLE.

TABLE-C (BARREL LENGTH)

MINIMUM BARREL LENGTH OF RCC BOX SHALL BE AS UNDER:-		
S.No.	METHODOLOGY	DESCRIPTION
1.	BARREL LENGTH FOR CAST-IN SITU	(a) FOR SINGLE LINE $1 \times X' = 7850 + 2 \times 450 + 4 \times \text{EARTH FILL BETWEEN FORMATION \& TOP OF BOX}$ (b) FOR DOUBLE LINE/MULTIPLE LINE $= X' + c/c \text{ DISTANCE BETWEEN TRACKS}$
2.	BARREL LENGTH IN CASE OF NORMAL PUSHING / AIR PUSHING	IN CASE OF NORMAL / AIR PUSHING – DISTANCE BETWEEN END OF RCC BOX (TOWARDS THRUST BED SIDE) AND CENTRE LINE OF NEAREST EXISTING TRACK SHALL BE 'Y' (WITH MAINTAINING A SLOPE OF 1:1 FROM FORMATION EDGE) AS UNDER:- $Y = 3925\text{mm} + \text{EARTH FILL} + \text{THICKNESS OF TOP SLAB} + \text{INTERNAL HEIGHT OF RCC BOX} + \text{TH. OF BOTTOM SLAB}$ (a) BARREL LENGTH OF RCC BOX FOR SINGLE LINE $= Y' + 4375 \text{ mm}$ (b) BARREL LENGTH OF RCC BOX FOR DOUBLE / MULTIPLE LINE $= Y' + c/c \text{ DISTANCE BETWEEN TRACKS} + 4375 \text{ mm}$ (FOR UNIMPORTANT / BRANCH LINES, PROVISION OF FUTURE LINES TO BE AVOIDED, INSTEAD FLAT PORTION TO BE PROVIDED BEYOND THE BARREL.)
3.	JOINTS LOCATION IN BARREL LENGTH OF RCC BOX:	(a) JOINTS SHOULD BE GENERALLY AVOIDED IN THE RCC BOX BARREL. HOWEVER, IF REQUIRED, THE JOINT CAN BE KEPT IN THE CENTRE OF TWO TRACKS.
4.	THRUST BED LOCATION:	THRUST BED SHALL BE PROVIDED TOWARDS THAT SIDE WHERE FUTURE TRACKS ARE SANCTIONED OR SCOPE OF FUTURE TRACK.

NOTE: TABLE-C WILL NOT BE PART OF GAD. IT IS FOR INFORMATION REGARDING HOW TO CALCULATE THE BARREL LENGTH OF BOX.

TABLE-D (DFC FEEDER ROUTES)

TABLE FOR ROUTE CLASSIFICATION FOR STANDARD OF LOADING:-	
1.	LOADING STANDARD OF 32.5 T LOADING -2008 SHALL BE USED ON DFC FEEDER ROUTES. DFC FEEDER ROUTES ON N. RLY ARE AS UNDER:- (NORTHERN RAILWAY IMPORTANT STATISTICS MAP AS ON 31.03.2024) (I) LUDHIANA - HAR (VA DHURI - JARNAH) (II) MUGHALSARA - UNCHAHAR (VA VARANASI - LOKHA - JARNAH - PHAPAMAU) (III) VARANASI - SULTANPUR - UTTERA - ROSA (VA ZAFARABAD - LUCKNOW - BALAMAU) (IV) ZAFARABAD - TANDA (VA SHAHGANJ - AKBARPUR) (V) LUDHIANA - BEAS - GONDWAL (VA PHILLAUR - PHAGWARA - JALANDHAR CANTT.) (VI) RAIPURA - DHURI - BATHINDA (VA LEHRA MUHAMMAD) (VII) SIRHIND - ROOPNAGAR - NANGAL DAM.
2.	LOADING STANDARD OF 25 T LOADING -2008 SHALL BE USED ON ALL ROUTES OTHER THAN DFC FEEDER ROUTES OVER N. RLY.

NOTE: DFC ROUTE TABLE-D WILL NOT BE PART OF GAD. IT IS FOR INFORMATION OF DFC FEEDER ROUTE.

DRAINAGE CERTIFICATE:-	
DRAINAGE ARRANGEMENT FOR RUB/LHS MENTIONED IN REFERENCE ABOVE HAS BEEN SCRUTINIZED IN REFERENCE TO SITE CONDITION INCLUDING TOPOGRAPHY OF SURROUNDING AREA AND OUTFALL LOCATION FOR FINAL DISPOSAL OF WATER AND THE FOLLOWING ARE CONFIRMED/ CERTIFIED.	
1.	NORMAL LEVEL OF WATER TABLE HAS BEEN FOUND BELOW THE BED LEVEL OF RUB/ LHS.
2.	ALL ARRANGEMENTS FOR PROVIDING DRAINAGE FROM RUB/LHS UPTO FINAL OUTFALL LOCATION AS REQUIRED AT SITE HAVE BEEN SHOWN IN GAD WITH LEVELS DULY FOLLOWING INSTRUCTIONS CONTAINED IN RLY. BOARD LETTER NO.2017/CE-IV/RUB/BB. DATED 04.10.17 AND 24.10.2019.
3.	NO DRAINAGE PROBLEM SHALL OCCUR AT RUB/LHS NORMALLY IN FUTURE AND IN CASE OF EXCEPTIONAL RAIN FALL, PROPOSED DRAINAGE ARRANGEMENTS W/Z. PUMPING ARRANGEMENTS ETC. SHALL BE PROVIDED ADEQUATELY TO MITIGATE THE DRAINAGE PROBLEM IN SHORT TIME.
SAG OFFICER	SR. DEN

CERTIFIED THAT EXISTING RLY. BOUNDARY/LAYOUT & FEASIBILITY OF RUB/LHS PROPOSAL HAS BEEN CHECKED AT SITE AND FOUND CORRECT & FEASIBLE.		S.No.	DATE	DESCRIPTIONS	INITIALS
ADDE/TRDI...	SSE/TRDI...	SSE/W...	SSE/WAY...	ADEN...	
REVISIONS					

N.R.H.Q.E. PLAN No. XEN/RC/2118/GAD

PROJ. ID:

LEGENDS:-

- 1. EXISTING WORK SHOWN IN BLACK.
- 2. PROPOSED WORK SHOWN IN RED.
- 3. WORK TO BE DISMANTLED SHOWN IN GREEN.
- 4. FUTURE WORK SHOWN IN YELLOW.
- 5. TEMPORARY WORK SHOWN IN BLUE.

IMPORTANT NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
2. STANDARD OF LOADING SHALL BE 25T LOADING-2008/32.5T LOADING-2008. (ONLY ONE LOADING SHALL BE MENTIONED AS PER ROUTE CLASSIFICATION GIVEN IN TABLE-D)
3. FOR STRUCTURAL DETAILS OF R.C.C. BOX REFER RDSO DRAWING NO. RDSO-.....
4. DESIGN CRITERIA IS BASED ON FOLLOWING IRS CODES: IRS BRIDGE RULES, IRS CONCRETE BRIDGE CODE, IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE ETC.
5. POE SANCTION SHALL BE OBTAINED BY THE EXECUTING AGENCY PRIOR TO EXECUTION.
6. CONSENT LETTER/UNDERSTANDING/NOI SHALL BE OBTAINED BEFORE STARTING CONSTRUCTION OF LHS AS PER RAILWAY BOARD LETTER NO. -2006/CE-IV/MISC-2 (RUBS) DATED 18.04.2012 FROM DISTRICT MAGISTRATE AND FOLLOWING SHALL BE ENSURED.
7. ENCUMBRANCE FREE LAND APPROACH ROAD SHALL BE PROVIDED BY STATE GOVERNMENT AS PER LATEST INSTRUCTION ISSUED BY RAILWAY BOARD.
8. DIVERSION OF TRAFFIC DURING CONSTRUCTION OF LHS WILL BE THE RESPONSIBILITY OF STATE GOVERNMENT.
9. L-XING SHALL BE CLOSED AT THE TIME OF COMMISSIONING THE LHS.
10. CLEAR SPAN (CLS) OF RCC BOX/RUB/LHS SHALL BE KEPT CONSIDERING TRAFFIC VEHICLE UNIT (TVU) OF LC/TRESSPASS. EXISTING APPROACH ROAD WIDTH & R.G.W AND SITE CONDITIONS.
11. 6.0 M LONG ROAD SURFACE MAY BE PROVIDED ON BOTH SIDE OF LHS, BEFORE PROVIDING THE GRADED ROAD.
12. NO WEEP HOLE WILL BE PROVIDED IN RETAINING WALL AND THUS RETAINING WALL WILL BE DESIGNED AS A WATER RETAINING STRUCTURE. NO WEEP HOLES SHOULD BE PROVIDED IN THE RCC BOX ALSO.
13. JOINT IN BOX UNITS TO BE AVOIDED TO THE EXTENT POSSIBLE, IF PROVIDED, BOX UNITS SHALL BE MADE WATER TIGHT BY GROUTING AS PER LATEST RAILWAY BOARD GUIDELINE.
14. BARREL LENGTH OF BOX SHALL BE DECIDED BASED ON FILL HEIGHT ON THE BOX AS PER TABLE-C.
15. IF BARREL LENGTH IS TO BE CURTAILED DUE TO SOME REASONS, THEN END OF BOX CAN BE PROJECTED UP AS BALLAST RETAINER, DESIGNED SUITABLY.
16. MINIMUM BALLAST CUSHION OF 350mm SHALL BE PROVIDED OVER TOP OF BOX.
17. FOR DETAILS OF THRUST BED, EARLIER APPROVED DRAWINGS BY CBE OFFICE FOR SIMILAR SIZE OF BOX AND SOIL DATA SHALL BE ADOPTED AS PER STIPULATION CONTAINED IN CBE LETTER NO. 33-W/O/ GEN.CORRESP. W.B. PH-IV DATED 02.06.2025. IN CASES WHERE NON-STANDARD DESIGNS/DRGS ARE UNAVAILABLE, THEN DESIGN/DRAWING TO BE GOT APPROVED FROM CBE'S OFFICE.
18. HEIGHT GAUGE SHALL BE PROVIDED ON EITHER SIDE AS PER CBE/IR LETTER NO. 196-S/CIRCULAR/ BR/HQ/PLI DATED 15.01.2025. CLEARANCE SHOULD BE KEPT 150M LOWER THAN VERTICAL CLEARANCE OF RUB/LHS.
19. RAIN WATER HARVESTING SYSTEM (RWH) SHOULD BE CLEANED/DESILTED PRIOR TO MONSOON IN EVERY YEAR.
20. IN CASE OF FLOODING, PUMPING SYSTEM SHOULD BE DEPLOYED.
21. ALL BOX SEGMENTS SHALL BE COVERED WITH CONCRETE CANVAS AT THE TOP AND SIDES WHERE REQUIRED.
22. BACK FILL MATERIALS SHALL BE AS PER CLAUSE 7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE. IN LIEU OF GRADED FILTER ON THE VERTICAL WALLS OF LHS, GEO-COMPOSITE DRAIN MAY BE USED FOR TRIAL PURPOSE AS PER RDSO LETTER NO. GE/GEN/COMMENTS/GAD/185/VERTICAL (Part-1) DATED 13.09.2019.
23. ALL R.C.C. SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COALTAR OF APPROVED QUALITY @ 1.454 KG./SQ.M.
24. HUMP SHALL BE PROVIDED ACROSS THE FULL WIDTH OF ROAD AS SHALL EXTEND UP TO THE INNER FACES OF RETAINING WALL TO PREVENT INGRESS OF SURFACE WATER INSIDE LHS.
25. AS FAR AS POSSIBLE, BOX OF RDSO STANDARD SIZE SHOULD BE USED.

(IMPORTANT NOTES:- NOT TO BE CHANGED)

SITE SPECIFIC NOTES:-

1. ALL REINFORCEMENT STEEL SHALL BE OF HSD/TMT (GRADE DESIGNATION MINIMUM Fe-500) CONFORMING TO IS: 1786 -2008.
2. ALL GRADE OF CONCRETE SHALL BE DESIGN MIX AS PER SPECIFICATIONS LAID DOWN IN IRS CONCRETE BRIDGE CODE (REVISED-2014).
3. ALREADY APPROVED DRAWINGS FOR RETAINING WALL MAY BE USED IF SOIL PARAMETERS ARE SAME OTHERWISE RETAINING WALL SHALL BE DESIGNED AS PER SITE CONDITIONS WITH SPECIFIC SITE SOIL PARAMETERS.
4. DRAINAGE ARRANGEMENT AS SHOWN IN THE DRAWING SHALL BE PROVIDED TO SUIT THE SITE REQUIREMENTS.
5. GEO-TEXTILE AS PER RDSO SPECIFICATION MAY BE PROVIDED OUTSIDE THE BOX TO COVER THE JOINTS OF SEGMENTS WHEREVER POSSIBLE AND FILLING THE GAP BETWEEN BANK & BOX WALLS WITH GRAVEL & COURSE SAND ETC. FOR PREVENTION OF FLOW OF EARTH WITH WATER THROUGH JOINTS.
6. STEEL REINFORCEMENT OF ADEQUATE BOND LENGTH SHOULD BE KEPT PROJECTING OUT OF LAST AND FIRST SEGMENT ON BOTH SIDE 50'S AS TO MAKE JOINT OF LHS AND RETAINING WALL AS MONOLITHIC.
7. SHAPE OF RETAINING WALL MAY BE PROVIDED L-SHAPE / T-SHAPE KEEPING IN VIEW SITE CONDITION.
8. SUITABLE WATER PROOFING ARRANGEMENT TO MAINTAIN BOX & RETAINING WALL WATER TIGHT TO BE PLANNED & PROVIDED BY EXECUTING AGENCY, IF LHS LOCATED NEAR WATER BODY/ AS REQUIRED DUE TO ANY OTHER SITE CONDITIONS.
9. HEIGHT OF RETAINING WALL SHOULD BE KEPT IN SUCH A WAY TO ENSURE THAT WATER IS RESTRICTED FROM OVERFLOWING INTO LHS AREA.
10. THE DRAINAGE ARRANGEMENT AT THE LHS INCLUDING THE RAIN WATER HARVESTING (RWH) SYSTEM AND ALLIED DRAINS SHOULD BE PLANNED IN CONFORMANCE WITH THE ROAD LEVEL OF THE BOX TO ENSURE NATURAL WATER DRAINAGE BY GRAVITY.
11. EXECUTING AGENCY MAY DECIDE FOR THE PROVISION OF SHED IN APPROACHES AS PER REQUIREMENT AT SITE.
12. RELEVANT GEO-TECHNICAL INVESTIGATION OF EXISTING FORMATION SOIL TO BE DONE AT EACH RUB/LHS SITE TO OBTAIN SOIL PARAMETERS AND GROUND WATER LEVEL (GWL).
13. METHODOLOGY OF BOX INSERTION - ONE OPTION FROM (a) AND (b) IS RELEVANT TO BE SHOWN.
14. METHODOLOGY OF TRACK PROTECTION - BY PLATE PROTECTION/RELIEVING GIRDERS OR ANY OTHERS METHOD.
- (a) PUSHING METHOD - BY EARTH PUSHING/ AIR PUSHING OR ANY OTHERS METHOD.

NOTES CONTINUE - - - - -

CBE/IR	(R.P. SINGH)	DRM
CE/RC	(MONA SRIVASTAVA)	SR.DEN/Co
Dy.CE/BD	(S.K. GARG)	SR. DOM
Dy.CE/ROB	(ROHIT KUMAR)	SR. DEE/TRD
AEN/ROB	(R.K. SINGHAL)	SR.DEN

HEAD QUATER OFFICERS

DIVISIONAL OFFICERS

NORTHERN RAILWAY

REVISED TYPE PLAN FOR CONSTRUCTION OF ROAD UNDER BRIDGE/ LIMITED HEIGHT SUBWAY (RUB/LHS) FOR SINGLE & MULTIPLE TRACK

..... DIVISION

PROPOSED ROAD UNDER BRIDGE OR LIMITED HEIGHT SUBWAY (RCC BOX SIZE M) IN LIEU OF L-XING KM. (TRAFFIC OR ENGINEERING) AT RAILWAY KM. BETWEEN STATION ON SECTION.

(BY METHOD)

GENERAL ARRANGEMENT

SCALES 1:150, 1:75, 1:50 SHEET SIZE: A1

N.R.H.Q.E. CASE No: 308-W/O/3/GENL./BR./S&D/ PART-II

CALCULATION FILE NO.

CANCELS PLAN NO. N.R.H.Q.E. PLAN No. XEN/RC/1425/GAD/R2

N.R.DIVL: PLAN NO.

N.R.H.Q.E. PLAN NO. XEN/RC/2118/GAD