

## **Section VII-8: Tender Drawings and Documents**

**A- Tender Drawings**

**B- Tender Documents**

## Section VII-8

### A: Tender Drawings

#### List of Drawings

S. No	TITLE	DRAWING NO.
<b>1 ALIGNMENT PLAN &amp; L-SECTION:</b>		
1.	Plan and longitudinal section (10.0KM to 15.0KM)	GC-HRIDC-ALL-DRW-ALN-P&P-10-15KM_A0
2.	Plan and longitudinal section (15.0KM to 20.0KM)	GC-HRIDC-ALL-DRW-ALN-P&P-15-20KM_A0
3.	Plan and longitudinal section (24.0KM to 30.0KM)	GC-HRIDC-ALL-DRW-ALN-P&P-24-30KM_A0
<b>2 TUNNEL</b>		
1.	Single track tunnel cross section (Rock)	GC-HRIDC-C4-DRW-TTL-CLT-01001_A0
2.	Single track tunnel cross section (Soil)	GC-HRIDC-C4-DRW-TTL-CLT-01002_A0
3.	Support class III (for Rock) from CH: 24940 to CH: 26000	GC-HRIDC-C4-DRW-TTL-CLT-01003_A0
4.	Support class IV (for Rock) from CH: 24880 to CH: 24940	GC-HRIDC-C4-DRW-TTL-CLT-01004_A0
5.	Support class VI (i) (for Soil) from CH: 26000 to CH: 28420	GC-HRIDC-C4-DRW-TTL-CLT-01005_A0
6.	Support class VI (ii) (for Soil) from CH: 28420 to CH: 28480	GC-HRIDC-C4-DRW-TTL-CLT-01006_A0
7.	Tunnel typical detail of lattice girder	GC-HRIDC-C4-DRW-TTL-CLT-01007_A0
8.	Cut & cover section of tunnel	GC-HRIDC-C4-DRW-TTL-CLT-01008_A0
9.	Cross passage junction with main tunnel	GC-HRIDC-C4-DRW-TTL-CLT-01009_A0
10.	Permanent Ventilation shaft junction with main tunnel	GC-HRIDC-C4-DRW-TTL-CLT-01010_A0
11.	Construction cum utility shaft at CH: 26950	GC-HRIDC-C4-DRW-TTL-CLT-01011_A0
12.	Portal 1 & Abutment A2 of viaduct with drainage excavation plan & sections	GC-HRIDC-C4-DRW-TTL-CLT-01012_A0
13.	Portal 2 & open cutting area with 100m ballastless track	GC-HRIDC-C4-DRW-TTL-CLT-01013_A0
<b>3 BRIDGES</b>		
<b>3.1 MINOR BRIDGES</b>		
1.	Conceptual general arrangement drawing for balancing culvert bridge	GC-HRIDC-C4-DRW-BRD-GAD-01047_A0

## Section VII-8: Employers' Requirements-Tender Drawings and Documents

S. No	TITLE	DRAWING NO.
	no. 047, span 1.0x2.0x2.0 RCC box at CH: 12208.018	
2.	Conceptual general arrangement drawing for road & drain bridge no. 048, span 1x5.0x5.0 + 4.0x5.0 RCC box at CH: 12298.962	GC-HRIDC-C4-DRW-BRD-GAD-01048_A0
3.	Conceptual general arrangement drawing for pipe culvert bridge no. 049, span 1.0x1.8 Ø Pipe Culvert at CH: 12341.836	GC-HRIDC-C4-DRW-BRD-GAD-01049_A0
4.	Conceptual general arrangement drawing for balancing culvert bridge no. 050, span 1.0x2.0x2.0 RCC box at CH: 12645.715	GC-HRIDC-C4-DRW-BRD-GAD-01050_A0
5.	Conceptual general arrangement drawing field canal bridge no. 051, span 1.0x3.0x3.0 RCC box at CH: 13114.998	GC-HRIDC-C4-DRW-BRD-GAD-01051_A0
6.	Conceptual general arrangement drawing for balancing culvert bridge no. 052, span 1.0x3.0x3.0 RCC box at CH: 13903.112	GC-HRIDC-C4-DRW-BRD-GAD-01052_A0
7.	Conceptual general arrangement drawing for canal bridge no. 054, span 1.0x3.0x3.0 RCC box at CH: 14601.627	GC-HRIDC-C4-DRW-BRD-GAD-01054_A0
8.	Conceptual general arrangement drawing for road under bridge no. 055, span 1x5.0x5.0 RCC box at CH: 14756.727	GC-HRIDC-C4-DRW-BRD-GAD-01055_A0
9.	Conceptual general arrangement drawing for balancing culvert bridge no. 056, span 1.0x2.0x2.0 RCC box at CH: 15100.163	GC-HRIDC-C4-DRW-BRD-GAD-01056_A0
10.	Conceptual general arrangement drawing for road under bridge no. 057, span 1x5.0x5.0 RCC box at CH: 15944	GC-HRIDC-C4-DRW-BRD-GAD-01057_A0

## Section VII-8 Employers' Requirements-Tender Drawings and Documents

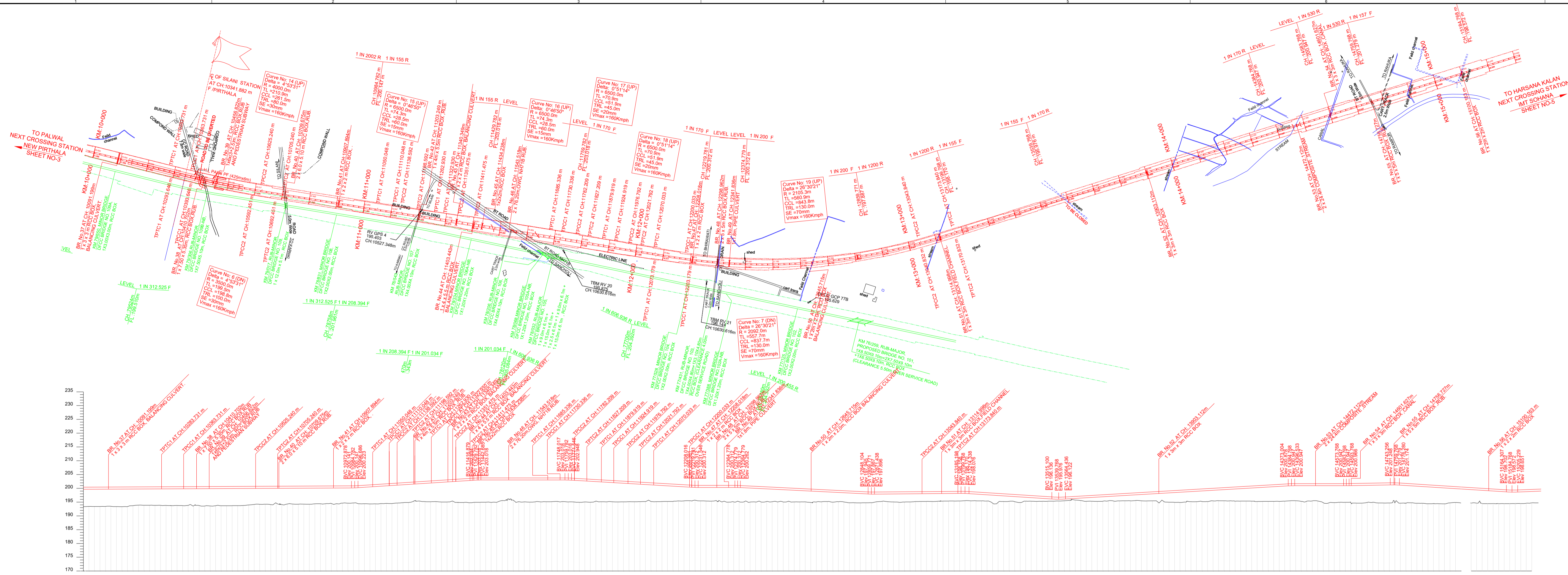
<b>S. No</b>	<b>TITLE</b>	<b>DRAWING NO.</b>
11.	Conceptual general arrangement drawing proposed RUB no. 060, span 2×7.0×5.6 RCC box at CH: 16827	GC-HRIDC-C4-DRW-BRD-GAD-01060_A0
<b>3.2 MAJOR BRIDGES</b>		
1.	Conceptual general arrangement drawing for proposed major ROR bridge no. 053, span 2 x 24.4m CG at CH: 14472.112m	GC-HRIDC-C4-DRW-BRD-GAD-01053_A0
2.	Conceptual general arrangement drawing for canal & RUB br.no. 058, span 1 x 12.2m PSC U slab CH: 16127	GC-HRIDC-C4-DRW-BRD-GAD-01058_A0
3.	Conceptual general arrangement drawing proposed RUB no. 059, span 2 x 12.2m PSC U slab CH: 16727	GC-HRIDC-C4-DRW-BRD-GAD-01059_A0
4.	Conceptual general arrangement drawing proposed canal bridge. no. 061, span 1 x 12.2m PSC U slab CH: 16917	GC-HRIDC-C4-DRW-BRD-GAD-01061_A0
5.	Conceptual general arrangement drawing proposed RUB no. 062, span 1 x 12.2m PSC U slab CH: 17500	GC-HRIDC-C4-DRW-BRD-GAD-01062_A0
<b>4 MISCELLANEOUS DRAWINGS (CONCEPTUAL PLAN)</b>		
1.	Jurisdictional sketch for civil works C-4 package	GC-HRIDC-C4-SK-CIVIL-001_A0
2.	Schematic diagram of HORC tunnel C4 package	GC-HRIDC-C4-SK-TUNNEL-001_A0
3.	Typical embankment/cutting profile	GC-HRIDC-SK-GEN-001
4.	Drains for formation	GC-HRIDC-SK-GEN-008
5.	Steel barricade	GC-HRIDC-SK-GEN-009
6.	Interfacing location bank benching	GC-HRIDC-SK-GEN-012
7.	Toe wall	GC-HRIDC-SK-GEN-014
8.	Typical details of protection work	GC-HRIDC-SK-GEN-015
9.	Barbed wire fencing	GC-HRIDC-SK-GEN-016



Section VII-8: Employers' Requirements-Tender Drawings and Documents

<b>S. No</b>	<b>TITLE</b>	<b>DRAWING NO.</b>
<b>5 OHE &amp; GENERAL ELECTRICAL DRAWINGS</b>		
1.	Indicative drawing of high-rise rocs for horc tunnel	GC-HRIDC-C4-DRW-ROCS-ELE-001_A0
2.	Indicative layout plan of portal sub-station 11/0.433kv (outside tunnel)	GC-HRIDC-C4-DRW-TTL-ELE-001_A0
3.	Indicative layout plan of sub-station 11/0.433kv (inside tunnel)	GC-HRIDC-C4-DRW-TTL-ELE-002_A0
4.	Power supply for lighting arrangement	GC-HRIDC-C4-DRW-TTL-ELE-003_A0
5.	Power supply arrangement for emergency and maintenance power socket diagram	GC-HRIDC-C4-DRW-TTL-ELE-004_A0

# **1.ALIGNMENT PLAN & L-SECTION**



**LEGEND:**

EXISTING RAILWAY TRACK	—
PROPOSED UP & DN LINE	—
DISMANTLING WORKS	---
DFCC WORKS	---
PROPOSED DIVERSIONS	---
EXISTING ROAD	---
PRO HORC BOUNDARY	---
EXPRESSWAY BOUNDARY	---
HT LINE	---
ELECTRICAL LINE(L)	---
STREAM / CANAL / DRAIN	---
WELL	---
POND	---
PRO TOE LINE	---

- NOTE:-**
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE STATED
  2. ALL THE LEVELS ARE WITH RESPECT TO MEAN SEA LEVEL
  3. TRACK CENTER BETWEEN MAIN LINES OF HORC HAS BEEN KEPT AS MIN 5.30m
  4. PUBLIC UTILITIES HT/LT LINES OFC CABLES WATER, SEWER LINES ETC INTERFERING WITH DFC TRACKS SHALL BE RELOCATED.
  5. ARRANGEMENT & SIZE OF THE BRIDGE SHOWN IN THE DRAWING IS TENTATIVE AND MAY CHANGE AS PER THE APPROVED GAD.
  6. VERTICAL CLEARANCE FROM LOWEST CONDUCTOR OF HT POWER LINE TO PROPOSED RAIL LEVEL ARE SHOWN

- PROPOSED TRACK STRUCTURE (TO SUIT FOR 25T AXLE LOAD)**
- 1. FOR RAIL CORRIDOR: 160KMPH Speed
  - 2. TRACK = 60KG RAILS
  - 3. SLEEPER DENSITY : PSC SLEEPERS = 1660 No.S PER KM
  - 4. BALLAST CUSHION : 350mm
  - 5. ALL TURNS ARE 1 IN 12 UNLESS OTHERWISE SPECIFIED.

- ABBREVIATIONS:-**
1. BVC - BEGIN OF VERTICAL CURVE
  2. PVI - POINT OF VERTICAL INTERSECTION
  3. EVC - END OF VERTICAL CURVE

- LEGEND FOR PROFILE:**
- PROPOSED RAIL PROFILE
  - PROPOSED FORMATION PROFILE
  - GROUND PROFILE

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATY RAM PD	<i>Chahaty Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGMC/CIVIL/SOUTH	<i>Raju</i>
KRISHAN CHAND SAINI CRE/CIVIL	<i>Krishan</i>		

HORIZONTAL ALIGNMENT	VERTICAL ALIGNMENT	DEPTH OF CUTTING (-) HEIGHT OF BANKING (+)	PROPOSED RAIL LEVEL	PROPOSED FORMATION LEVEL	GROUND LEVELS	CHANGES
L=1814.028m TRL=80m R=400m TRL=80m L=344.808m TRL=80m L=420.193m R=400.000m L=20.430m R=400.000m L=236.861m TRL=80m L=483.326m R=400.000m L=235.736m TRL=130m	L=1368.009m 1 IN 2002 R L=31.808m R=400.000m L=420.193m R=400.000m L=20.430m R=400.000m L=236.861m TRL=130m L=483.326m R=400.000m L=235.736m TRL=130m					

**LONGITUDINAL PROFILE**  
HORIZONTAL: 1:5000, VERTICAL: 1:500

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-AUSADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**GENERAL CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

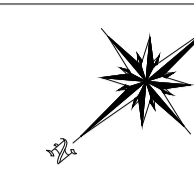
**GC DRG NO.:** GC-HRIDC-ALL-DRW-ALN-P&P-10-15KM\_A0

**TITLE:** DETAILED PLAN AND LONGITUDINAL SECTION FROM CHAINAGE 10.0KM TO CHAINAGE 15.185KM (TUNNEL)

**CONSULTANTS:**  
aarvee associates  
AARVEE ASSOCIATES

**DRG NO.:** AA/2245/AL/DR/P&P/R3  
**SHEET NO.:** 5 OF 24  
**ISSUED DT.:** 26.11.2019  
**REV DT.:** 06-08-2022





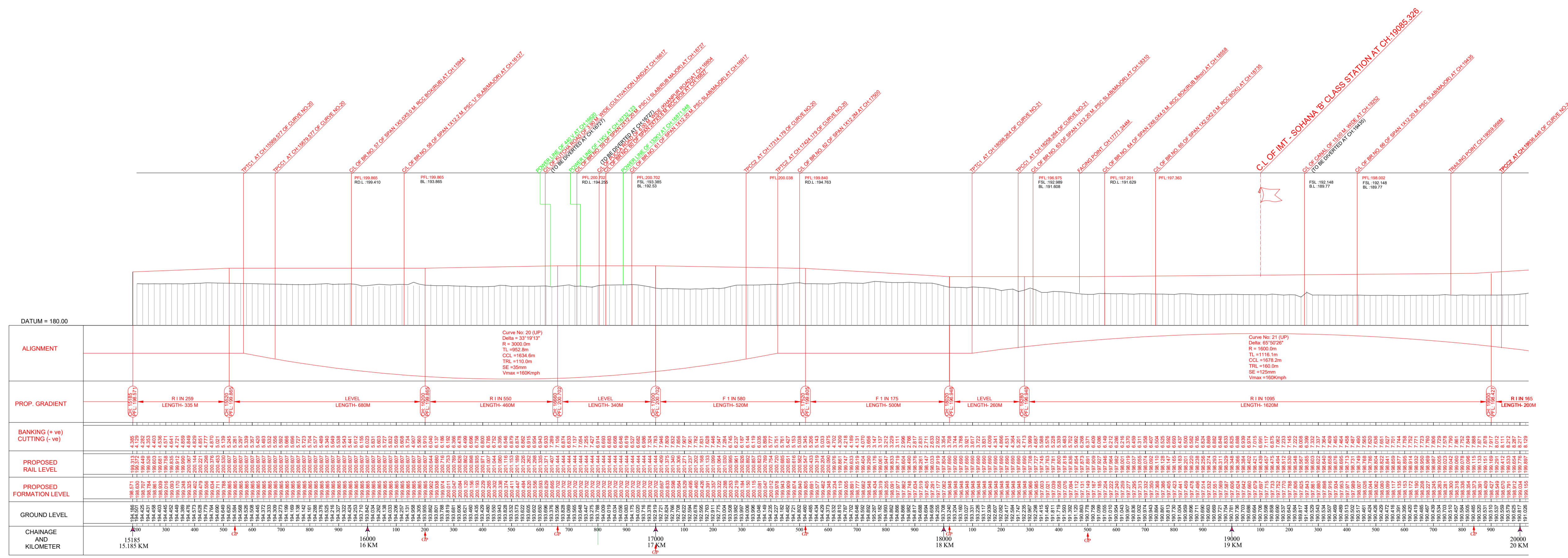
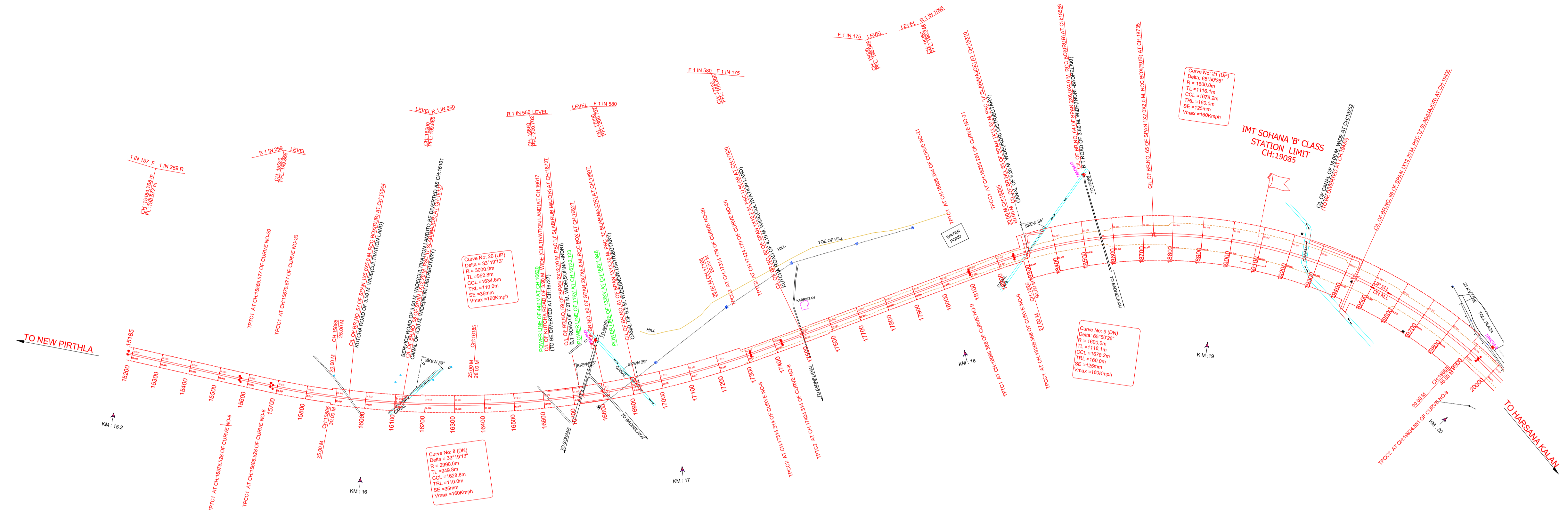
- NOTES :-**
- EXISTING WORK SHOWN IN BLACK.
  - PROPOSED WORK SHOWN IN RED.
  - ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
  - CHAINAGE IS RECKONED 0.00 FROM C.L. OF NEW PRITHLA STATION BUILDING.
  - RAIL LEVEL SHOULD BE 0.742m ABOVE FORMATION LEVEL FOR TRACK STRUCTURE 60KG NEW RAIL ON PSC SLEEPER (1660KM) WITH 350mm BALLAST CUSHION.
  - RULLING GRADIENT IS 1 IN 150 OF THIS SECTION (COMPENSATED).
  - VERTICAL CURVE WILL BE PROVIDED AS PER IRPVM PARA 419.
  - CROSS / LONGITUDINAL DRAINAGE ARRANGEMENT BET TRACK SHOULD BE PROVIDED WHEREVER REQUIRED.
  - TROLLEY RUDGE IN BANKING / CUTTING SHALL BE PROVIDED AS PER PROVISION OF IRPVM.
  - STANDARD OF IRPVM (FOR PROP. LINE)- 32.5 T LOADING-2008 & HIGH RISE ORIE.
  - TELEPHONE CABLE TO BE LAID FOR TELECOMMUNICATION.
  - ALL ELECTRICAL X-MARK WILL BE AS PER PARA II (I) OF CHAPTER I GENERAL OF SCHEDULE I OF SOD-2004.

**LIST OF TBM**

TBM No.	Easting	Northing	Elevation
SM-1	705588.878	3121113.675	194.387
SM-2	704954.348	3119500.444	193.724
SM-3	703625.564	3118824.368	193.601

**LEGEND**

EXISTING CENTRE LINE	—
PROPOSED CENTRE LINE	—
DFC CENTRE LINE	—
EXISTING TPTC	+
PROPOSED TPTC	+
TBM	+
KM-STONE	+
PROPOSED BOUNDARY	---
EXISTING BRIDGE	—
PROPOSED BRIDGE	—
NALA/CANAL DRAIN	—
PERMANENT STRUCTURE	—
TEMPORARY GATE STRUCTURE	—
PROPOSED GATE LODGE	—
TOE LINE	—
ROAD	—
POWER LINE WITH POLE	—
PYLON	+
EMBANKMENT / BUND	—
ROCKY AREA	—
COMPOUND WALL	—
DITCH / QUARRY	—
BARBED WIRE FENCING	—
GROUND LEVEL	—



**GC/HORC**

NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAPATEY RAM		SHYAM DIVEDI	
SUDHAR AGRAWAL		RAJU SOLANKI	
PRITIK		SGM/CIVIL/SOUTH	
KRISHAN CHAND SAINI			
CHECKER			

**NORTHERN RAILWAY**

**DELHI DIVISION**

**PROJECT:** HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASOOTH/TAJIK/TAJIK/TANUP/ASOOTH BY NEW ELECTRIFIED DOUBLE TRACK

**CLIENT:** HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**GENERAL CONSULTANT:** GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RTES Limited in consortium with S.M.E.C International Pvt. Ltd.

**SIGN:** [Signatures]

**GC/HORC DRG NO.:** GC/HORC/AL/CRV/AL/PR/15/320/AD

**DRAWING NAME:** DETAILED PLAN AND LONGITUDINAL SECTION  
FROM CHAINAGE 15185KM TO CHAINAGE 20000 KM

**R/R HQ/E PLAN NO.:**

**DIVISION PLAN NO.:**

**SCALE:**

**SMC DRG NO.:** SMC/HR/CRV/TUNNELS/IR-6

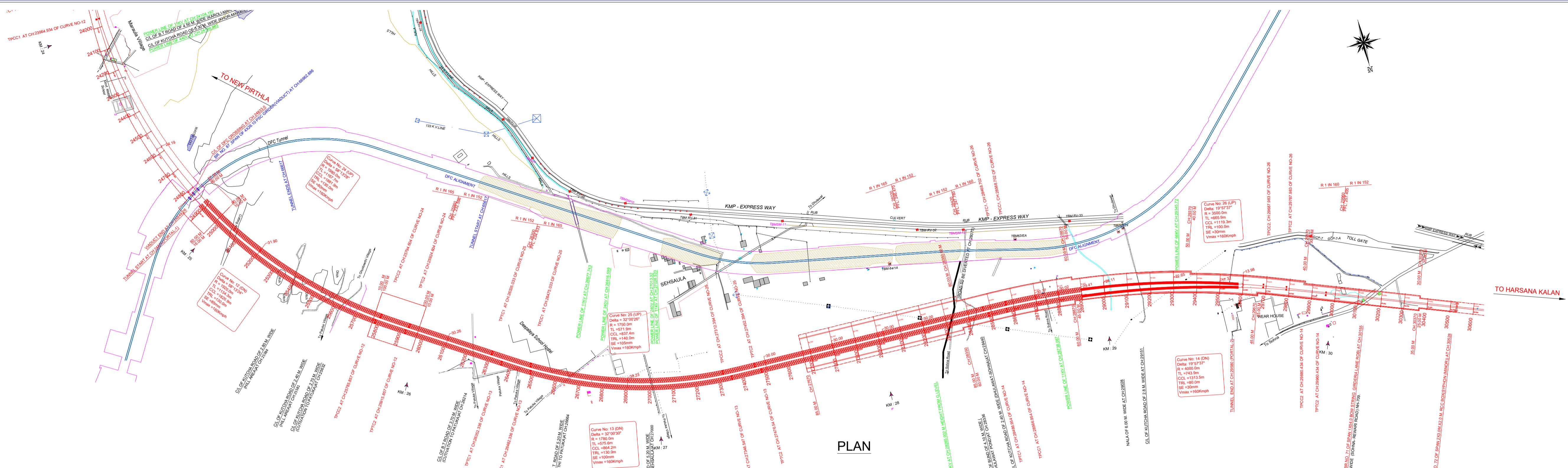
**CONSULTANT:** S.M. CONSULTANTS

**DRAWN BY:** L.MOHANTY

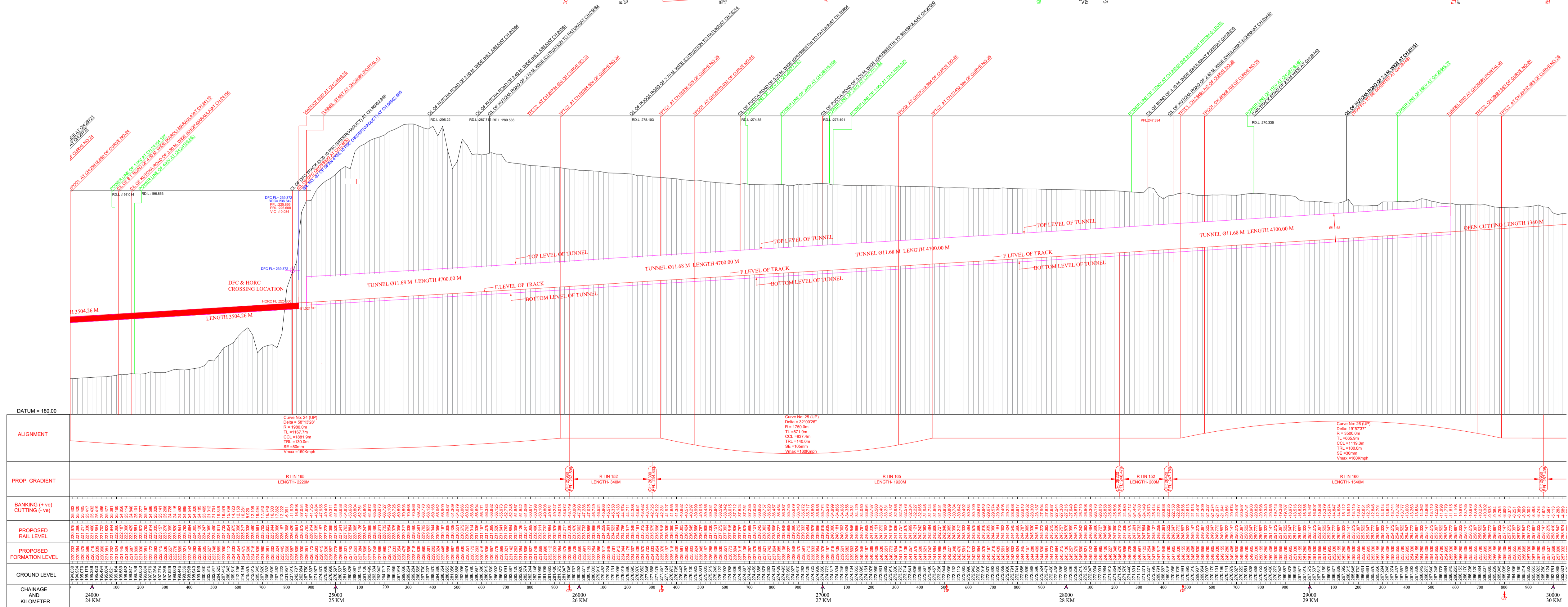
**CHECKED BY:** SVRANJ

**RELEASED FOR:** PRELIMINARY FOR APPROVAL [ ] TENDER [ ] CONSTRUCTION [ ]





**PLAN**



**SECTION**

- NOTES :-**
- EXISTING WORK SHOWN IN BLACK.
  - PROPOSED WORK SHOWN IN RED.
  - ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
  - CHANGE IS RECKONED 0.00 FROM C.L. OF NEW PRITHLA STATION BUILDING.
  - RAIL LEVEL SHOULD BE 0.74m ABOVE FORMATION LEVEL FOR TRACK STRUCTURE.
  - NEW RAIL ON PSC SLEEPER (1600MM) WITH 35mm BALLAST CUSHION.
  - RULLING GRADIENT IS 1 IN 30 OF THIS SECTION (COMPENSATED).
  - VERTICAL CURVE WILL BE PROVIDED AS PER BPNM PARA 4.19.
  - CROSS / LONGITUDINAL DRAINAGE ARRANGEMENT BET TRACK SHOULD BE PROVIDED WHEREVER REQUIRED.
  - TROLLEY REFUGE IN BANKING / CUTTING SHALL BE PROVIDED AS PER PROVISION OF BPNM.
  - CRS SANCTION WILL BE OBTAINED BEFORE EXECUTION OF WORK FALLING UNDER PARA 10.23 OF BPNM.
  - STANDARD OF LOADING FOR PROP. LINE - 22.5 T LOADING 2000 & HIGH RISE CR.
  - TELEPHONE CABLE TO BE LAID FOR THE COMMUNICATION.
  - ALL ELECTRICAL X-ING WILL BE AS PER PARA 11 (I) OF CHAPTER I GENERAL OF SCHEDULE I OF S.O. 2004.

**LIST OF TBM**

TBM No.	Existing	Northing	Elevation
SM-9	699327.653	3121920.632	253.2
SM-10	699041.016	3122185.520	271.558
SM-11	698349.641	3122451.730	284.291
SM-12	697601.855	3122685.020	278.11

**LEGEND**

EXISTING CENTRE LINE	—
PROPOSED CENTRE LINE	—
DFC CENTRE LINE	—
EXISTING TPTC	—
PROPOSED TPTC	—
TBM	—
MASTONE	—
PROPOSED BOUNDARY	—
EXISTING BRIDGE	—
PROPOSED BRIDGE	—
NALA/CANAL DRAIN	—
PERMANENT STRUCTURE	—
TEMPORARY STRUCTURE	—
PROPOSED GATE LODGE	—
PIPE LINE	—
ROAD	—
POWER LINE WITH POLE	—
PYLON	—
EMBANKMENT / BUND	—
ROCKY AREA	—
COMPOUND WALL	—
DITCH / QUARRY	—
BARBED WIRE FENCING	—
GROUND LEVEL	—

NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHATEY RAM		SHY OM DWIVEDY	
SUDHIR AGRAWAL		RAJU SOLANKI	
KRISHAN CHAND SANBI		GURPREET SINGH	

**NORTHERN RAILWAY**

**DELHI DIVISION**

**PROJECT:** HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWA TO SONPAT BY PASSING DELHI AREA BY LINKING ASHOTI-PATHI-SULTANPUR-AGARWAL BY NEW ELECTRIFIED BO DOUBLE LINE.

**CLIENT:** HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**GENERAL CONSULTANT:** RITES Limited in consortium with SMEC International Pty. Ltd.

**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**

**DRIVING DATE:** 24/08/2024

**SCALE:** AS SHOWN

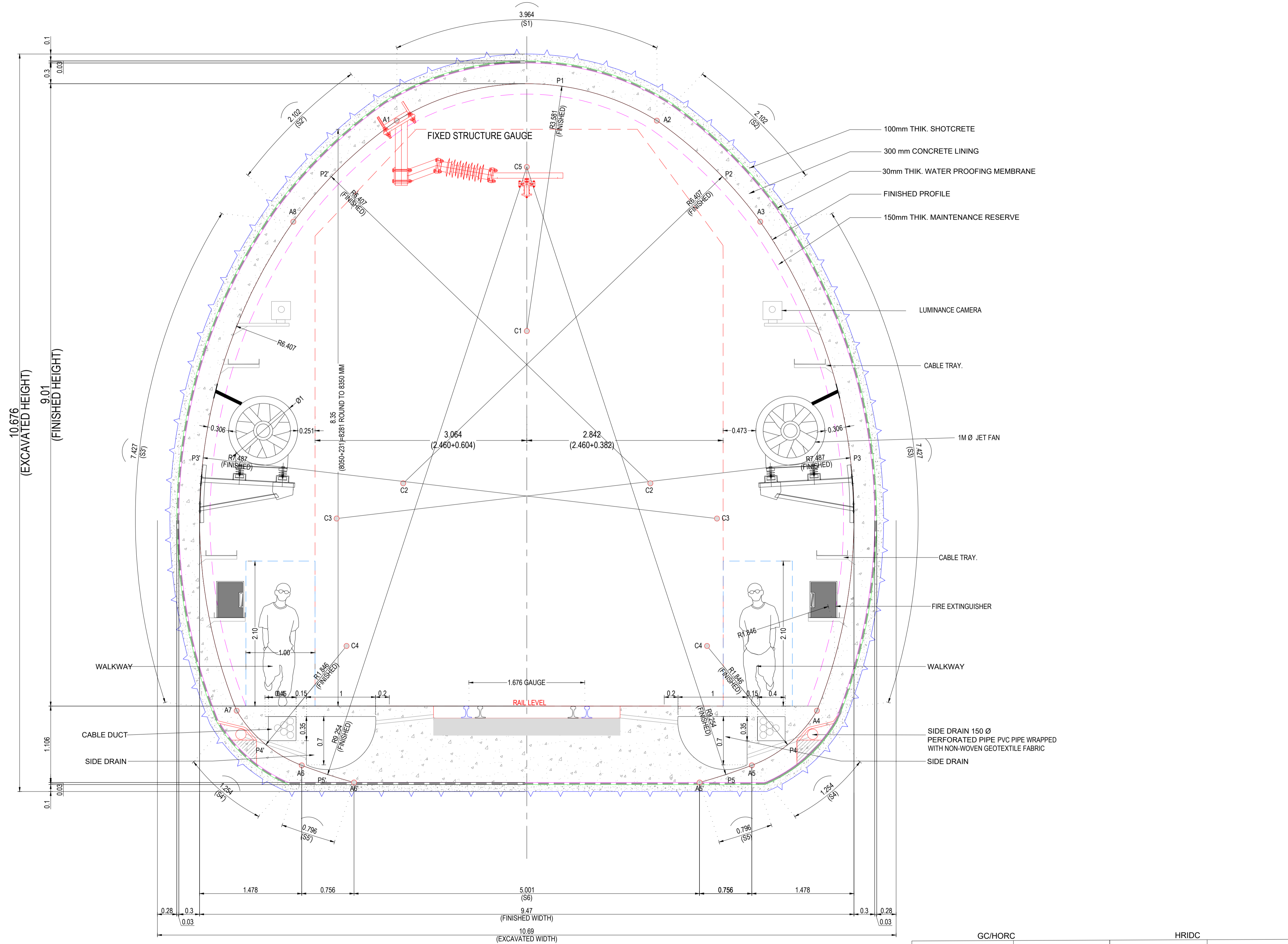
**CONSULTANT:** S.M. CONSULTANTS

**DRYING BY:** LAGHANTY / CHECKED BY: SWRAN J

**RELEASED FOR:** PRELIMINARY FOR APPROVAL / TENDER / CONTRACT

## **2.TUNNEL**





- NOTES:-**
- ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
  - NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
  - TUNNEL EXCAVATED BY HEADING AND BENCHING METHOD.
  - THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
  - NEAR PORTAL PULL LENGTH SHOULD BE LIMITED TO 500 MM, ONLY AFTER SUPPORTING EXCAVATED STRETCH (500 MM), THEN NEXT CYCLE OF EXCAVATION SHALL BE CARRIED OUT.
  - IT IS PROPOSED TO PROVIDE 50 MM THICK SFRS IMMEDIATELY AFTER EXCAVATION OF FACE.
  - IT IS PROPOSED TO PROVIDE 100 MM THICK SFRS ON SLOPE PROTECTION, ALTERNATIVELY, PLAIN SHOTCRETE WITH WIREMESH 150x150x5mm MAY ALSO BE USED.
  - PROPOSED ROCK BOLT SHALL BE WITH FOLLOWING SPECIFICATION CONFORMING TO IS 1786. DIAMETER OF ROCK BOLT = 25 MM, GRADE OF ROCK BOLT Fe415 FULLY GROUTED. SIZE OF ANCHOR PLATE = 150x150x8MM.
  - PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
  - THE NUT OF THE GROUTED ROCK BOLT SHALL BE TIGHTENED 12 HOURS AFTER INSTALLATION TO ACHIEVE A FORCE AT THE ANCHOR PLATE OF APPROX. 20KN. THIS FORCE SHALL BE APPLIED BY CALIBRATED TORQUE WRENCH.
  - THE LENGTH AND THE DIRECTION OF ROCK BOLTS MAY BE ALTERED IN CONSULTATION WITH SITE GEOLOGIST AND ENGINEER-IN-CHARGE. WHEREVER REQUIRED, ADDITIONAL SPOT BOLTING SHALL BE DONE IN LOCALIZED AREA OF POTENTIAL INSTABILITY OR WEAKNESS AS DETERMINED DURING EXCAVATION.
  - SLOPE SUPPORT SHALL BE INSTALLED AS EXCAVATION PROGRESSES SUCH THAT NOT MORE THAN 2.0m VERTICAL HEIGHT OF SLOPE IS LEFT UNSUPPORTED AT ANY TIME.
  - PULLOUT TEST SHALL BE CARRIED OUT ON ROCK BOLTS FOR 190KN.
  - DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4984.
  - EXCAVATION SEQUENCE WILL BE PROVIDED BASED ON GFC.
  - EXCAVATION AT EAST PORTAL LOCATION SHALL BE MATCHED WITH DEEP CUT EXCAVATION.
  - GUARD RAIL SHALL BE PROVIDED THROUGHOUT THE LENGTH OF BALLASTLESS TRACK.
  - BALLASTLESS TRACK TO BE DESIGN FOR 32.5 T AXLE LOADING.
  - DIMENSIONS OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.

S.N.	CURVE NAME	RADIUS (m.)	START	END	ARCH. LENGTH (m.)
1	S1	R3.581	A1	A2	3.964
2	S2	R6.407	A2	A3	2.102
3	S3	R7.487	A3	A4	7.427
4	S4	R1.846	A4	A5	1.254
5	S5	R9.254	A5	A5'	0.796
6	S6	R0	A5'	A6'	5.001
7	S5'	R9.254	A6'	A6	0.796
8	S4'	R1.846	A6	A7	1.254
9	S3'	R7.487	A7	A8	7.427
10	S2'	R6.407	A8	A1	2.102

EXCAVATED AREA	= 91.704 Sqm.
FINISHED AREA	= 71.063 Sqm.
EXCAVATED WIDTH	= 10.690m
EXCAVATED HEIGHT	= 10.676m
FINISHED WIDTH	= 9.470m
FINISHED HEIGHT	= 9.010m

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOJI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01001\_A0

DRAWING NAME: CONCEPTUAL DRAWING FOR SINGLE TRACK TUNNEL CROSS SECTION (ROCK)

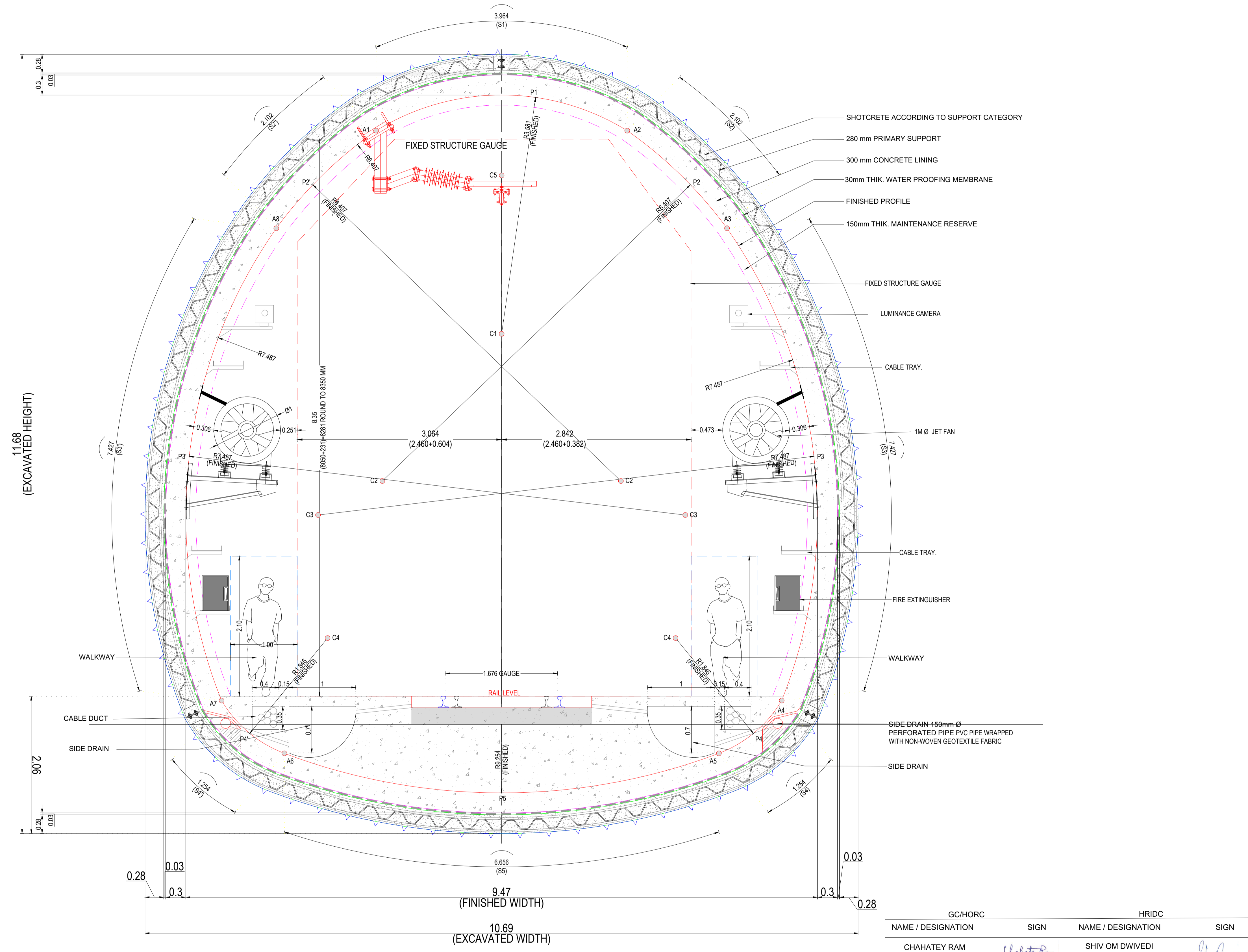
ISSUE DATE: 07.11.2022 REVISED DATE:  
SCALE: AS SHOWN  
SMC DRG. NO.: SMC/HRIDC/TUNICS-7

CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
Business: Railway, Transportation, Civil, Marine, Power, Water, etc.

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE/CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Pig.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>





- NOTES:-**
- ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
  - NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
  - TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
  - THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
  - PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
  - DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4989
  - EXCAVATION SEQUENCE WILL BE PROVIDED BASED ON GFC.
  - PIPE ROOFING/FOREPULPING OF 114 MM DIA SHALL BE PROVIDED WHERE EVER IT IS REQUIRED.
  - SELF DRILLING ANCHOR OF CAPACITY 190 KN SHALL BE PROVIDED FOR PRIMARY SUPPORT DURING EXCAVATION.
  - LATTICE GIRDER 25-25-32 OF DEPTH 187 MM/ ISMB 200 MM SHALL BE INCASD IN SFRS OF MINIMUM THICKNESS 250 MM.
  - GUARD RAIL SHALL BE PROVIDED THROUGHOUT THE LENGTH OF BALLASTLESS TRACK.
  - BALLASTLESS TRACK TO BE DESIGN FOR 32.5 T AXLE LOADING.
  - DIMENSION OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.

S.N.	CURVE NAME	RADIUS (m.)	START	END	ARCH. LENGTH (m.)
1	S1	R3.581	A1	A2	3.964
2	S2	R6.407	A2	A3	2.102
3	S3	R7.487	A3	A4	7.427
4	S4	R1.846	A4	A5	1.254
5	S5	R9.254	A5	A6	6.656
6	S4	R1.846	A6	A7	1.254
7	S3	R7.487	A7	A8	7.427
8	S2	R6.407	A8	A1	2.102

EXCAVATED AREA	= 101.090 Sqm.
FINISHED AREA	= 71.063 Sqm.
EXCAVATED WIDTH	= 10.690m
EXCAVATED HEIGHT	= 11.680m
FINISHED WIDTH	= 9.470m
FINISHED HEIGHT	= 9.010m

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



GC/HORC DRG. NO:- GC/HRIDC-C4-DRW-TTL-CLT-01002\_A0  
DRAWING NAME: CONCEPTUAL DRAWING FOR SINGLE TRACK TUNNEL CROSS SECTION (SOIL)

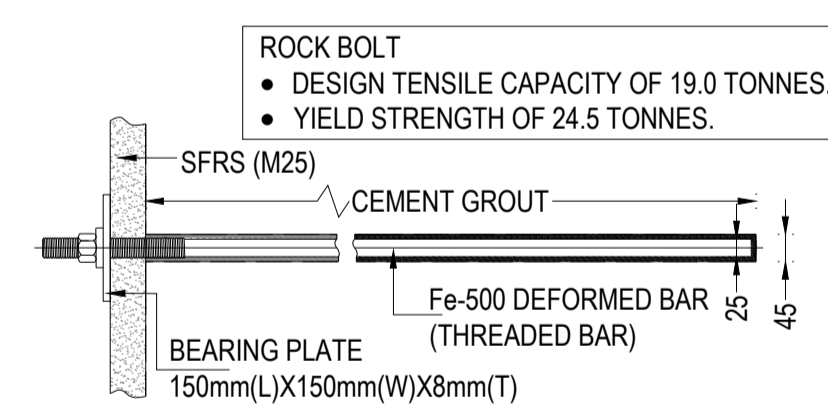
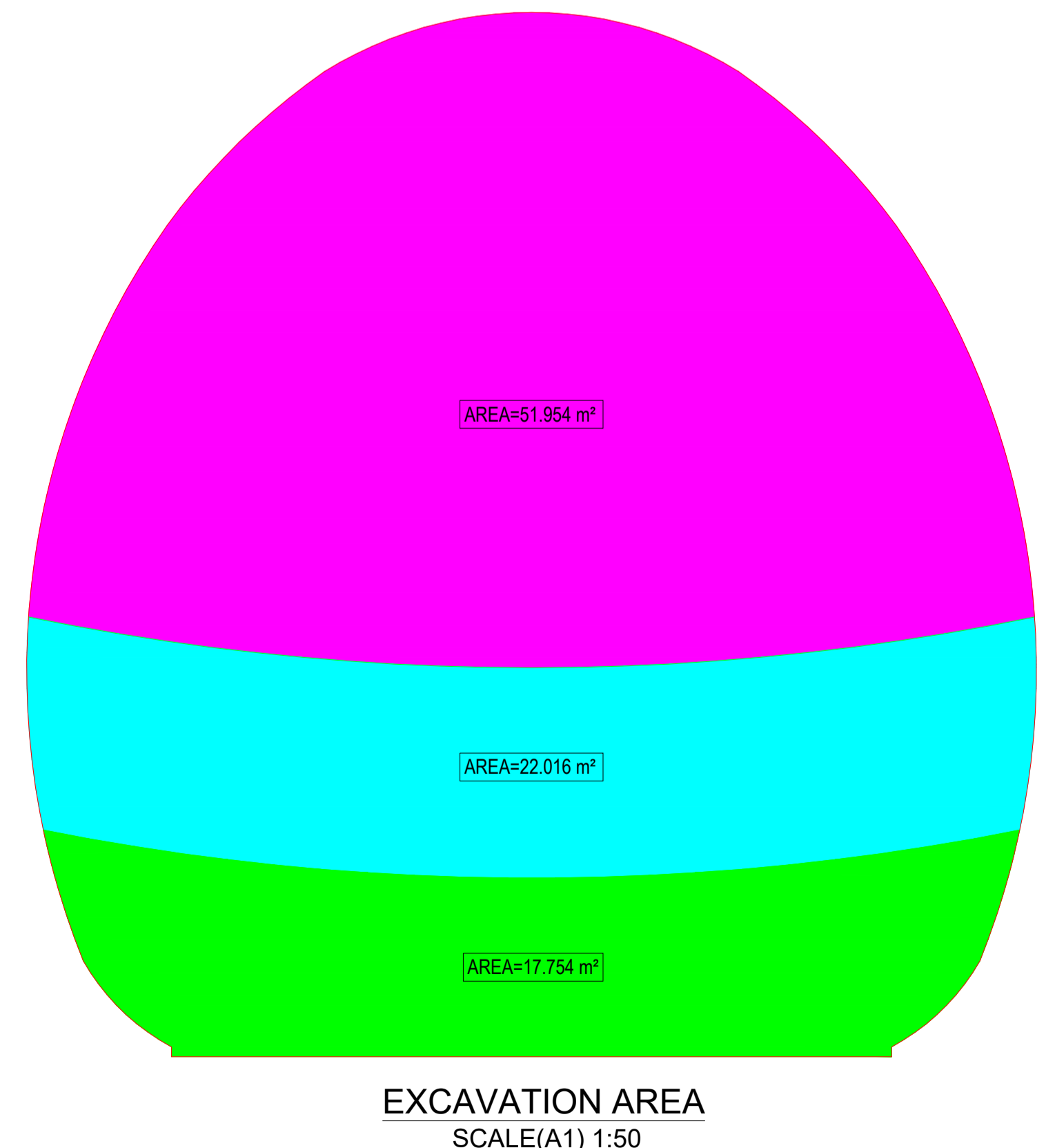
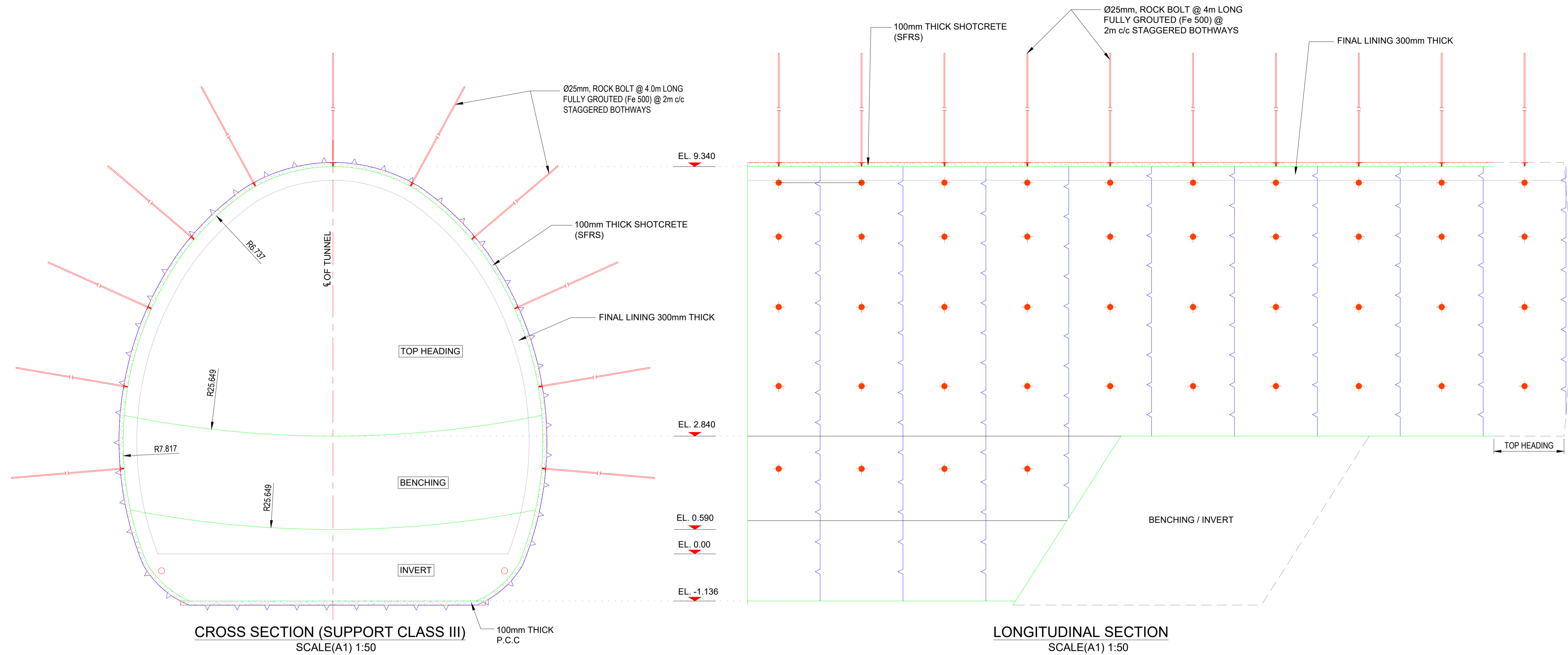
ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMEC DRG. NO.: SMC/HRIDC/TUNICS-7

CONSULTANT: S.M. CONSULTANTS  
S.M. CONSULTANTS  
An ISO 9001 Company  
B-10, Sector-10, Gurgaon, Haryana

RELEASED FOR: PRELIMINARY FOR APPROVAL, TENDER, CONSTRUCTION

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE /CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Pig.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>





GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOPTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

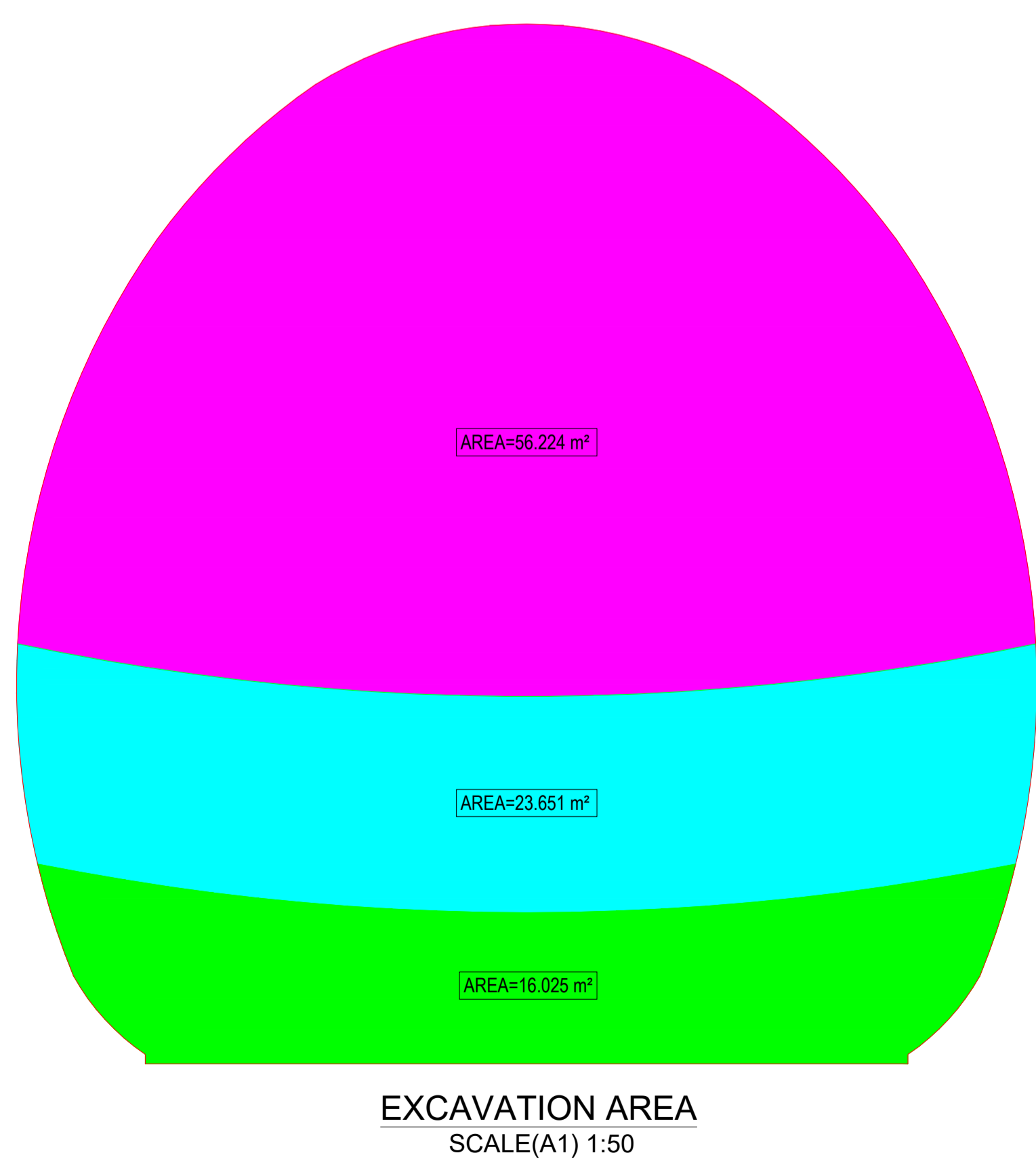
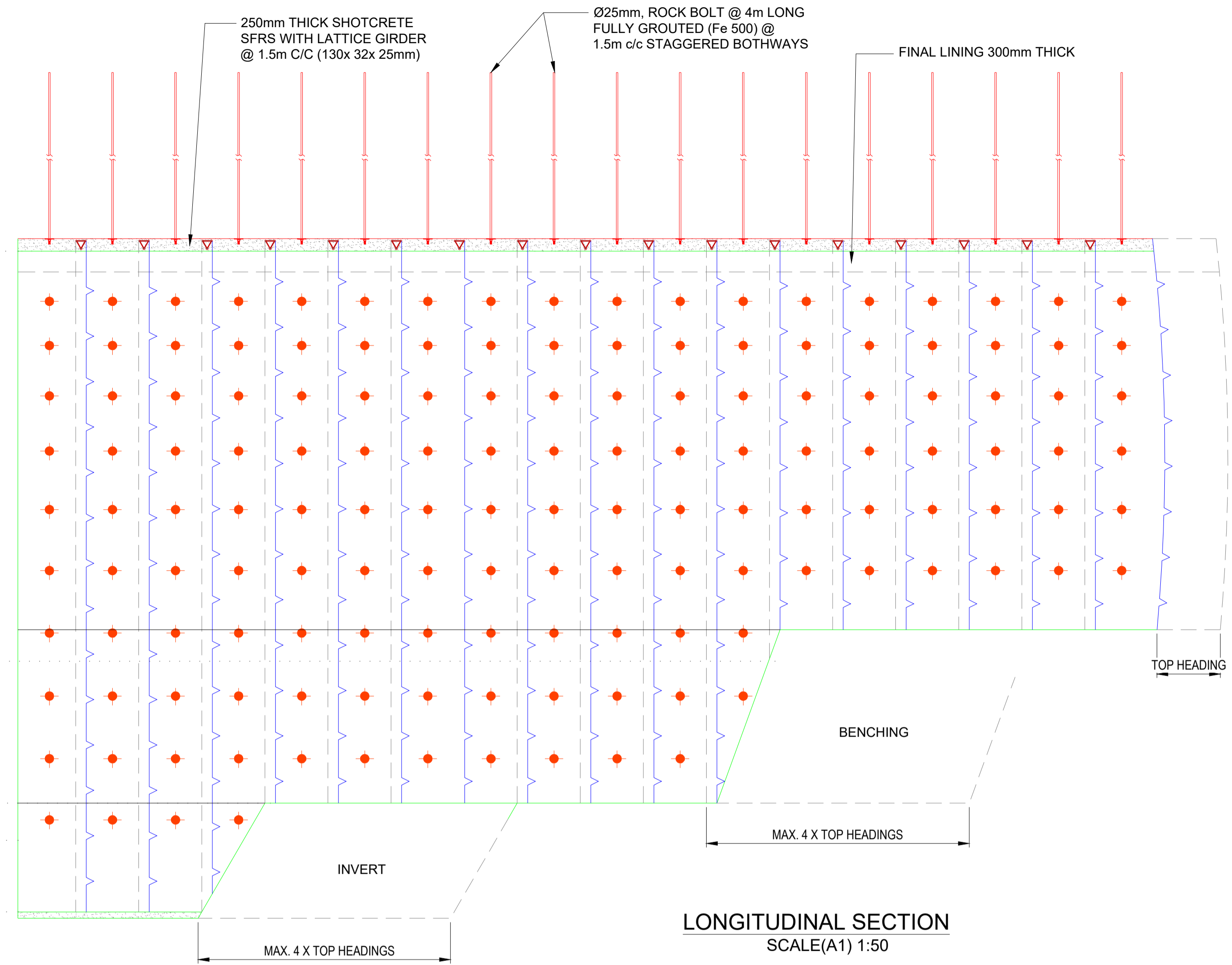
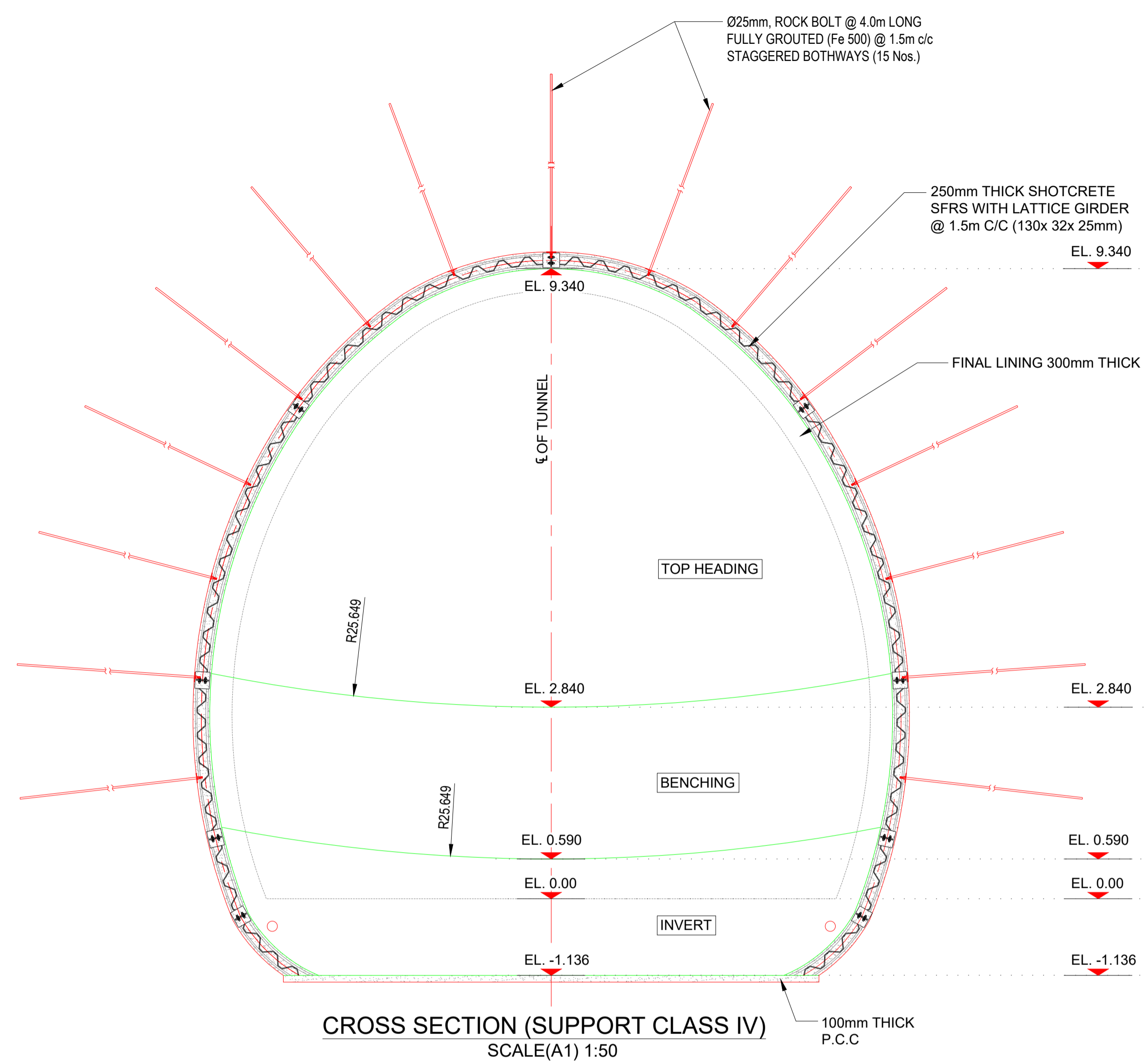
GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-G4-DRW-TTL-CLT-01003\_A0  
CONCEPTUAL DRAWING FOR SUPPORT CLASS III FROM CH:24940 TO CH:26000

ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMEC DRG. NO.: SMC/HRIDC/TUNCS-7

CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
Businesses: Railway, Transportation, Steel, Automobile, New Delhi  
Web: www.smcindia.com, Email: ssmc@smcindia.com

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION



GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOPTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

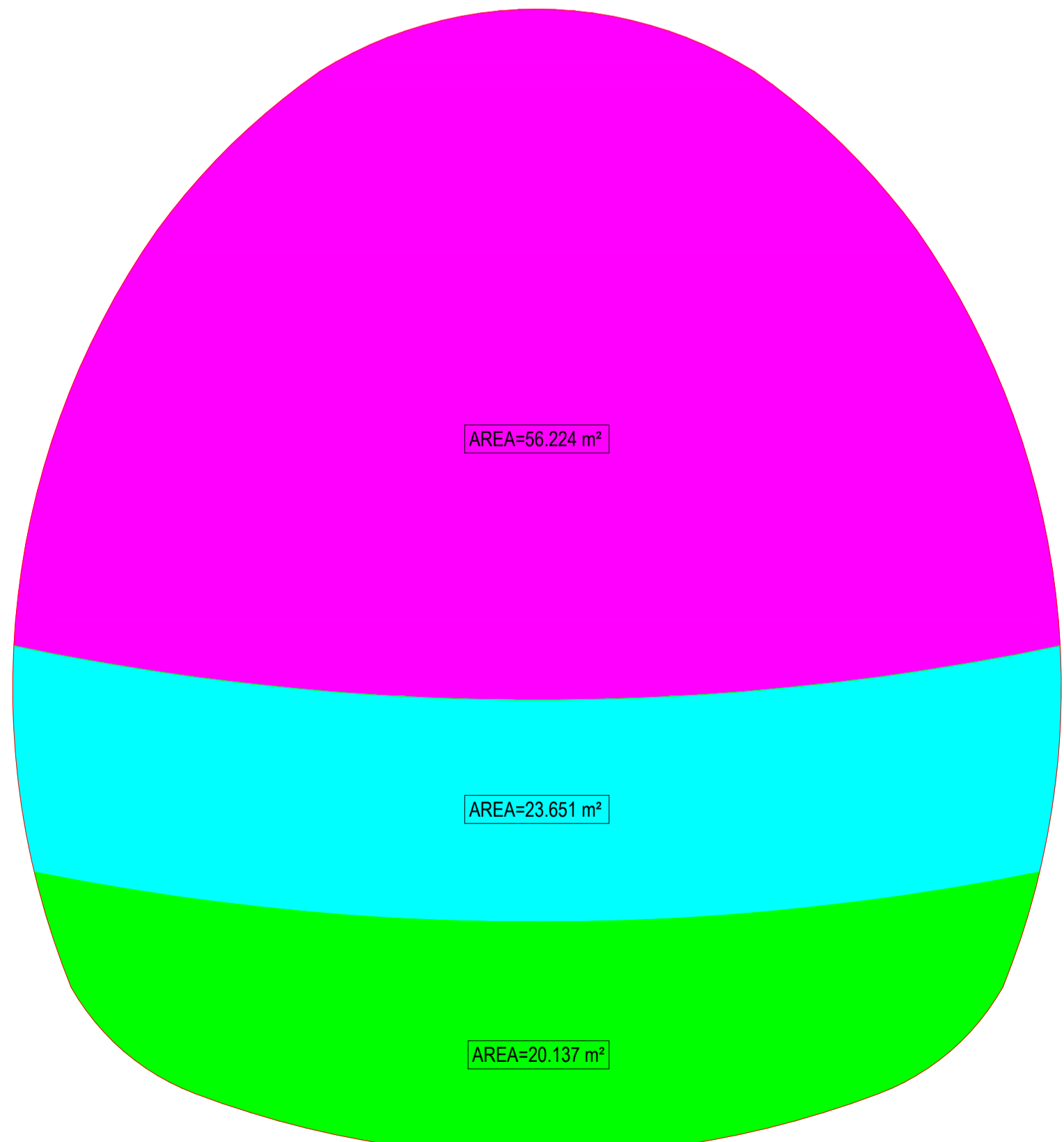
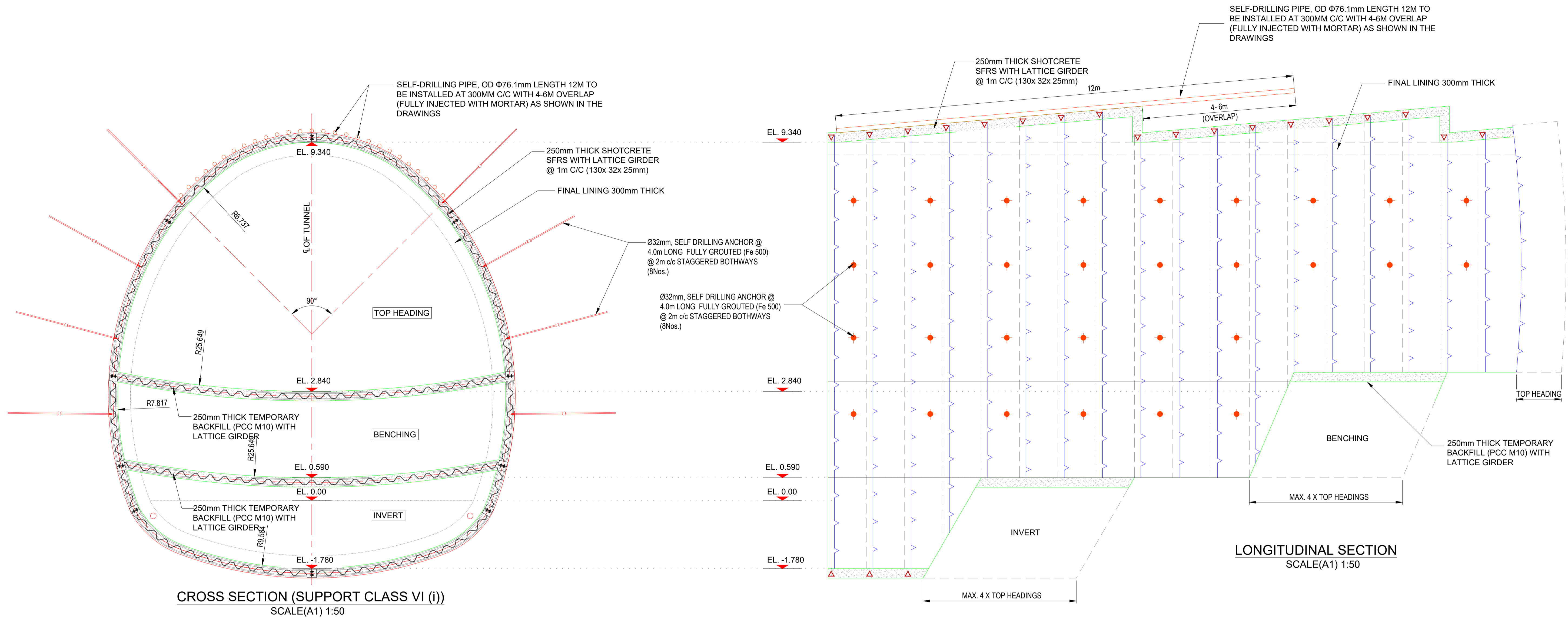
GC/HORC DRG. NO:- GC-HRIDC-G4-DRW-TTL-CLT-01004\_A0  
DRAWING NAME: CONCEPTUAL DRAWING FOR SUPPORT CLASS IV FROM CH:24880 TO 24940  
ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMC DRG. NO.: SMC/HRIDC/TUNCS-7

CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
Businesses: Railway, Transportation, Ship, Air-condition, New Delhi  
www.smcindia.com, 011-2610-2000

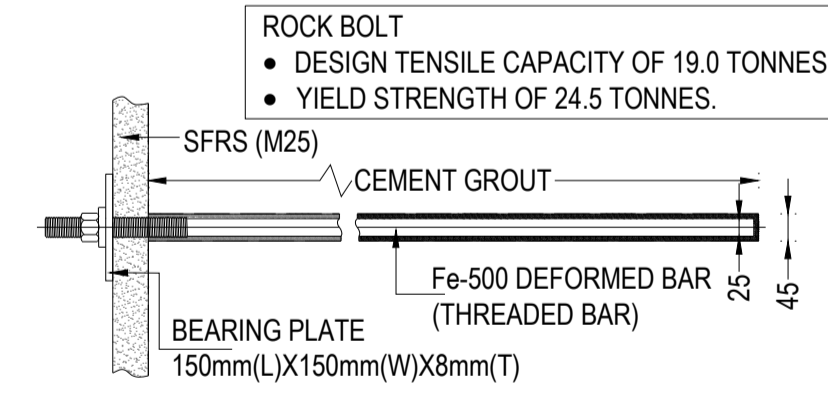
RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

Signature: S.K. KUMAR, S. DIVENDRA KUMAR, TUNNEL DESIGNER  
Signature: B. R. SHARMA, S. CONSULTANT / TUNNEL  
Signature: A. A. SAMANT, PROJECT INCHARGE





**EXCAVATION AREA**  
SCALE(A1) 1:50



**FULLY CEMENT GROUTED SPOT / ROCK BOLT**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOPTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

**IRITES** THE INFRASTRUCTURE PEOPLE  
**SMEC** Member of the Surtana Group

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01005\_A0  
DRAWING NAME: CONCEPTUAL DRAWING FOR SUPPORT CLASS VI(i) FROM CH:26000 TO 28420  
SCALE: AS SHOWN  
SMC DRG. NO.: SMC/HRIDC/TUNCS-7

ISSUE DATE: 07.11.2022  
REVISED DATE:

CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
Businesses: Railway, Transportation, Civil, Mechanical, Electrical, Instrumentation, Surveying, etc.  
www.smcindia.com, www.rites.com, www.smeconline.com

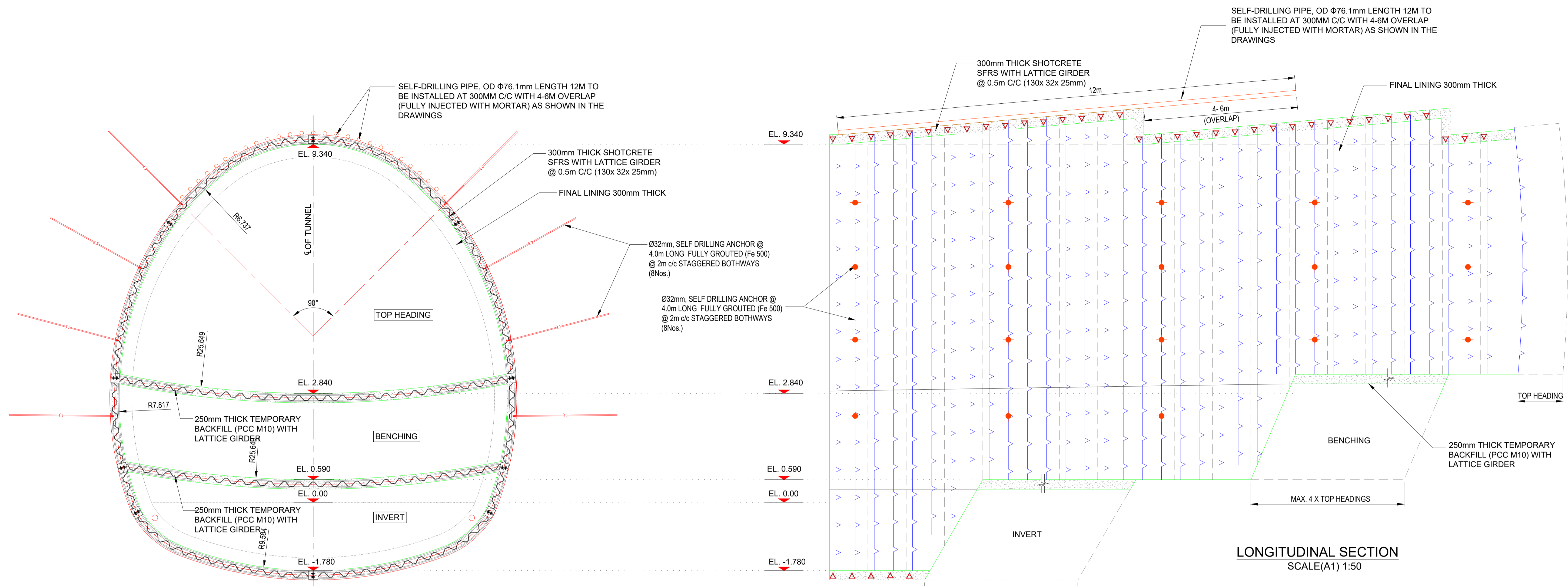
SKUMAR  
SIVENDRA KUMAR  
TUNNEL DESIGNER

B. R. SHARMA  
S. CONSULTANT / TUNNEL

A. A. SAMANT  
PROJECT INCHARGE

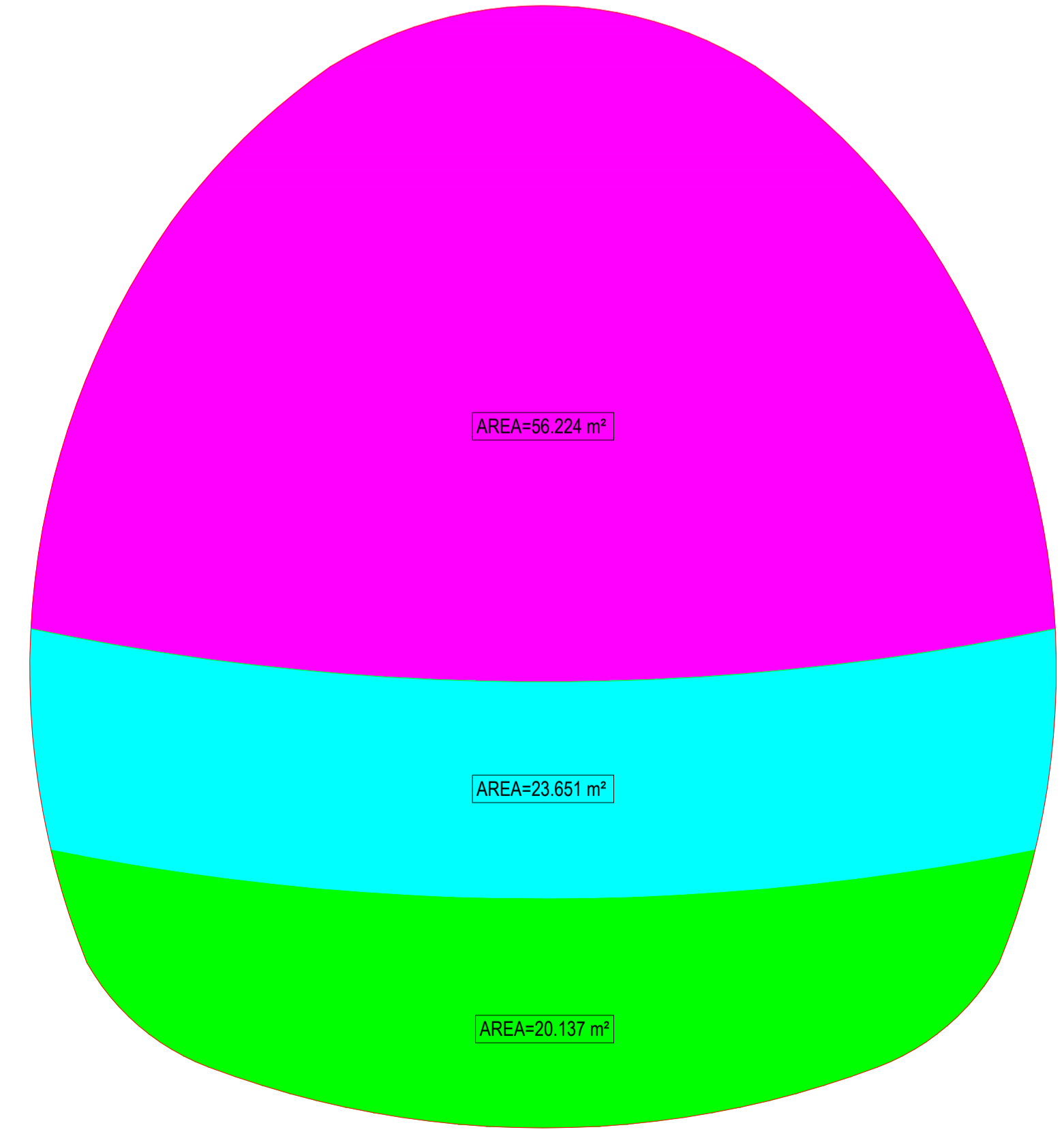
RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION



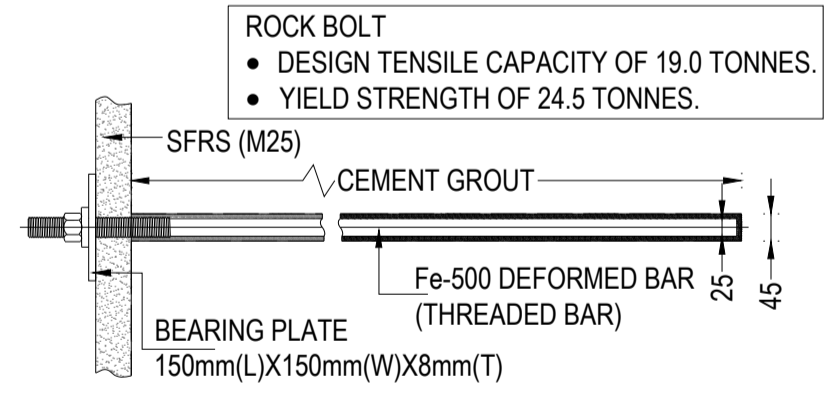


CROSS SECTION (SUPPORT CLASS VI (ii))  
SCALE(A1) 1:50

LONGITUDINAL SECTION  
SCALE(A1) 1:50



EXCAVATION AREA  
SCALE(A1) 1:50



FULLY CEMENT GROUTED SPOT / ROCK BOLT

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/PIg.	<i>Amarnath Singh</i>
STEPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOPTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01006\_A0  
DRAWING NAME: CONCEPTUAL DRAWING FOR SUPPORT CLASS VI(ii) FROM CH:28420 TO CH:28480  
ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMEC DRG. NO.: SMC/HRIDC/TUNCS-7

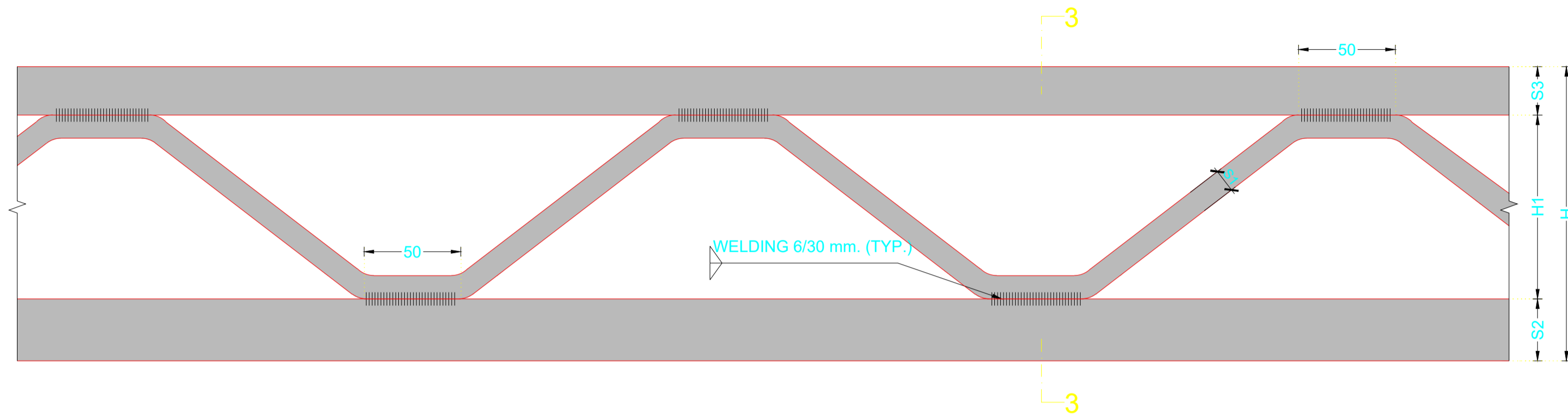
CONSULTANT: S.M. CONSULTANTS  
S.M. CONSULTANTS  
An ISO 9001 Company  
Business: Railway, Transportation, Civil, Mechanical, Electrical, Instrumentation, Survey, Architecture, New Delhi  
www.smcindia.com, 011-2610-2000, 011-2610-2001

RELEASER FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

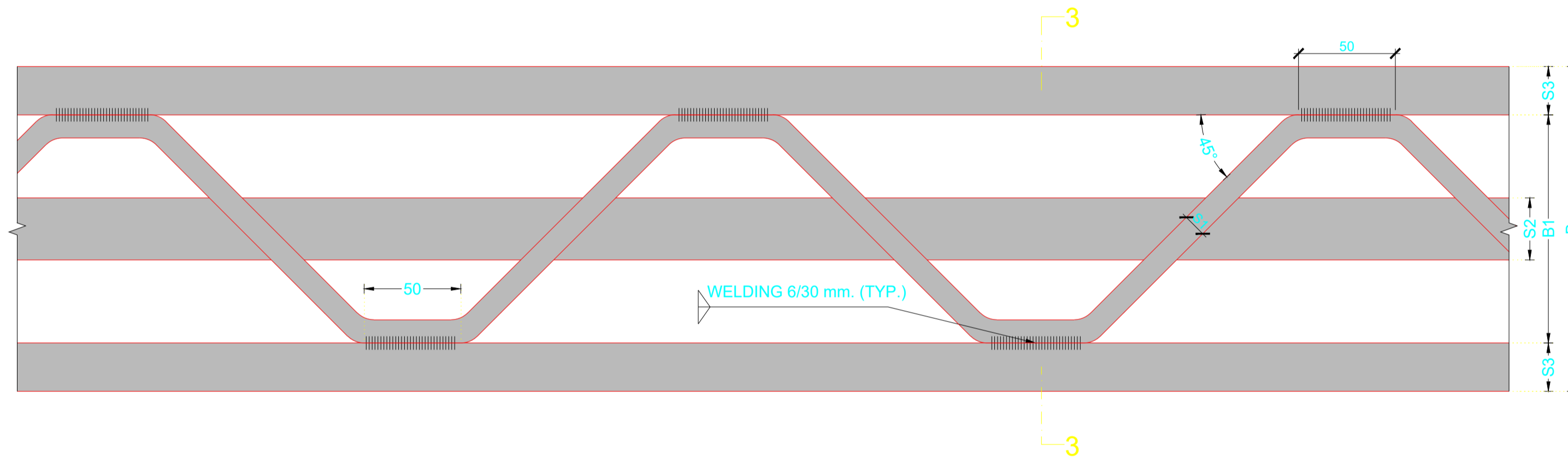
DETAILS OF LATTICE GIRDERS

TYPE	H (mm)	H1 (mm)	B (mm)	B1 (mm)	S1 (mm)	S2 (mm)	S3 (mm)	BXB (mm)	T (mm)
TYPE-1	187	130	208	158	Ø12	Ø32	Ø25	240X240	12

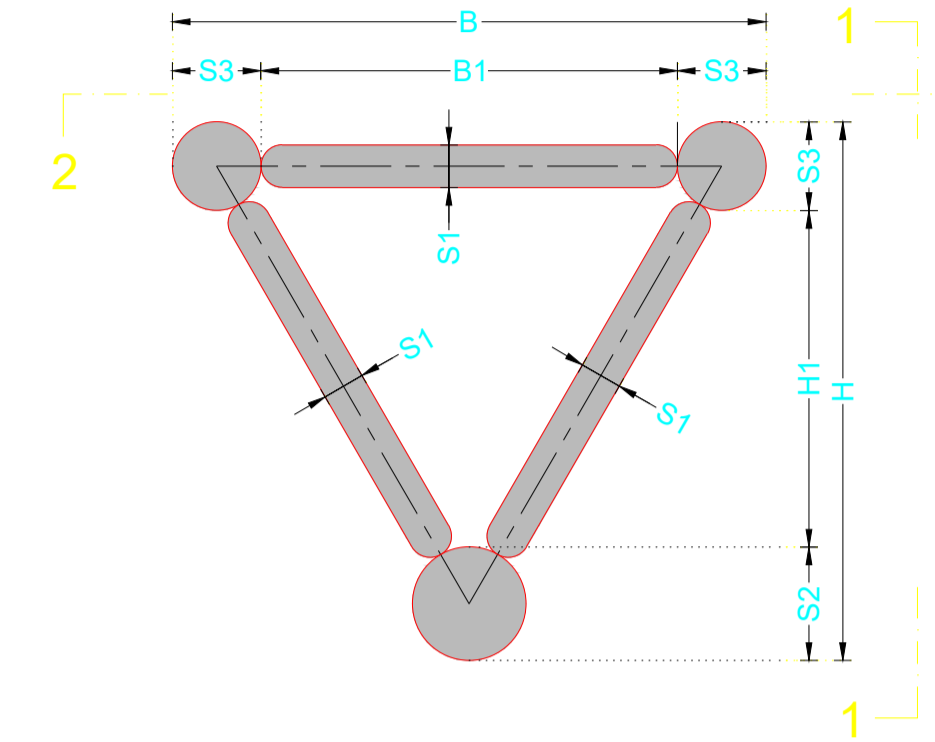
VIEW 1-1



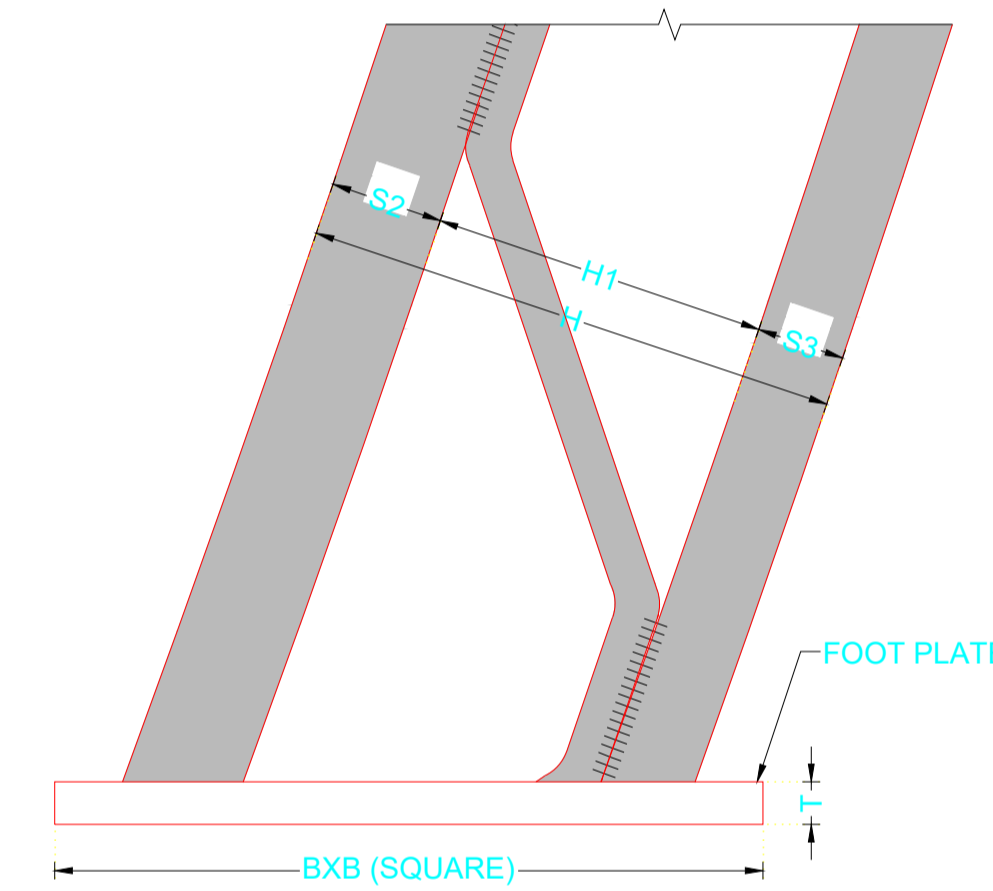
VIEW 2-2



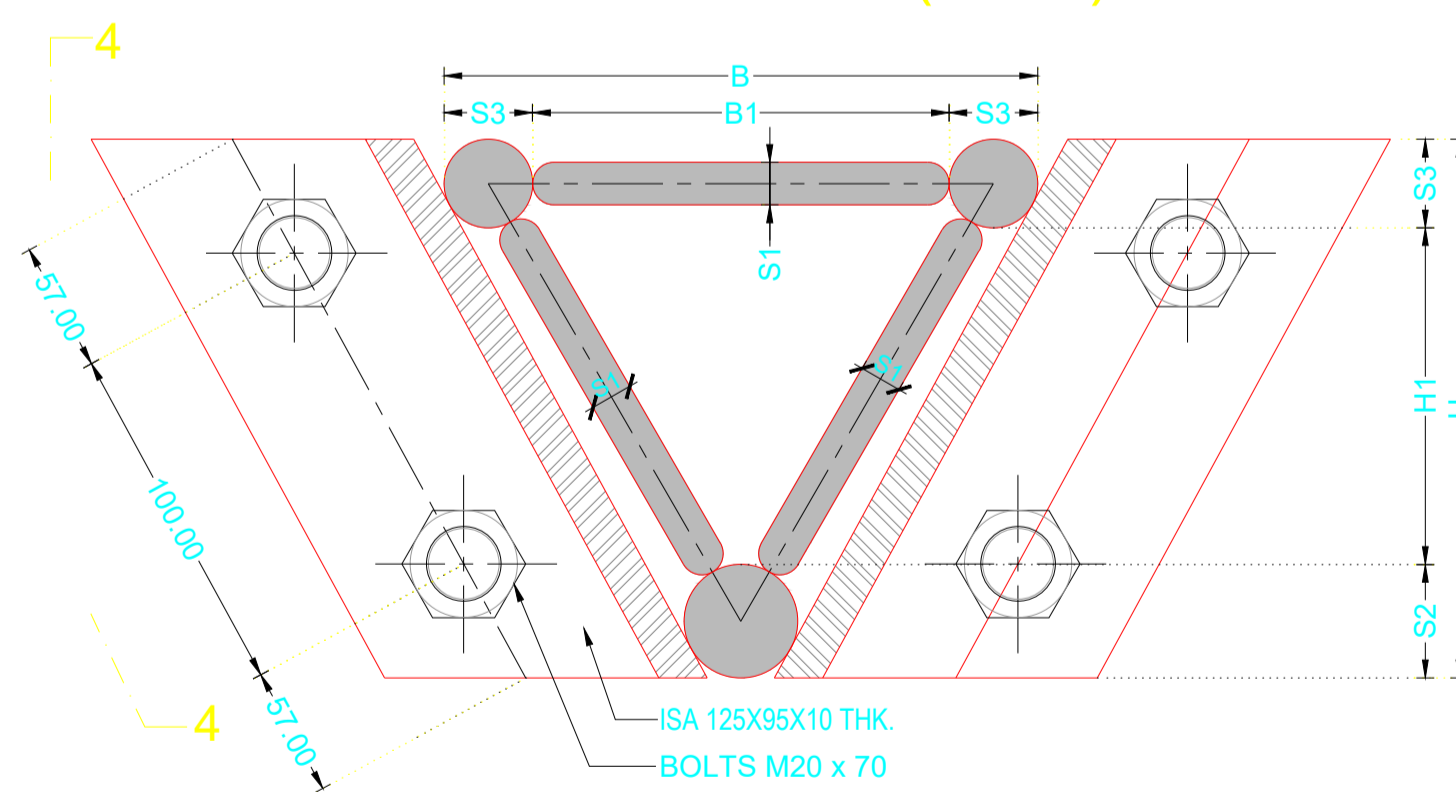
SECTION 3-3



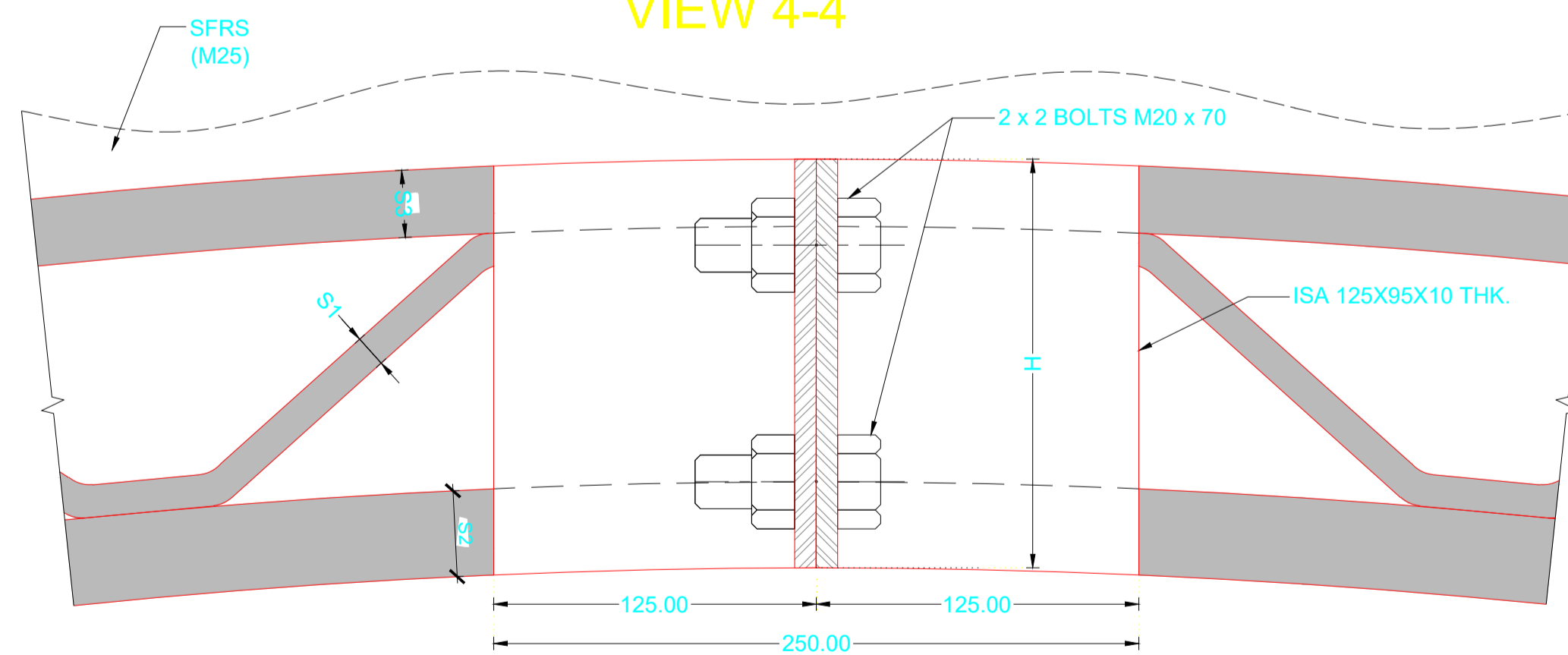
DETAIL OF FOOT PLATE  
(VALID FOR TEMPORARY STRUCTURE)



JOINT DETAIL (TYP.)



VIEW 4-4



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING.
3. STEEL BARS SHOWN AS S1, S2 & S3 SHALL BE OF GRADE Fe-500 CONFORMING TO IS:1786.
4. ALL STRUCTURAL STEELS SHALL CONFORM TO IS:2062.
5. ALL WELDING SHALL BE CARRIED OUT BY USING SHIELDED ARC METHOD AS DESCRIBED IN THE SP-12, ISI HANDBOOK FOR GAS WELDERS AND ISI HANDBOOK OF MANUAL METAL ARC WELDING FOR WELDERS.

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01007\_A0

DRAWING NAME: CONCEPTUAL DRAWING FOR TUNNEL TYPICAL DETAIL OF LATTICE GIRDER

ISSUE DATE: 07.11.2022 REVISID DATE:  
SCALE: AS SHOWN  
SMC DRG. NO.: SMC/HRIDC/TUNCS-7

CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
Businesses: Railway, Transportation, Ship, Aviation, New Delhi  
Web: www.smcindia.com, E-Mail: ssmc@smcindia.com

SKUMAR  
SIVENDRA KUMAR  
TUNNEL DESIGNER

B. R. SHARMA  
S. CONSULTANT / TUNNEL  
A. A. SAMANT  
PROJECT INCHARGE

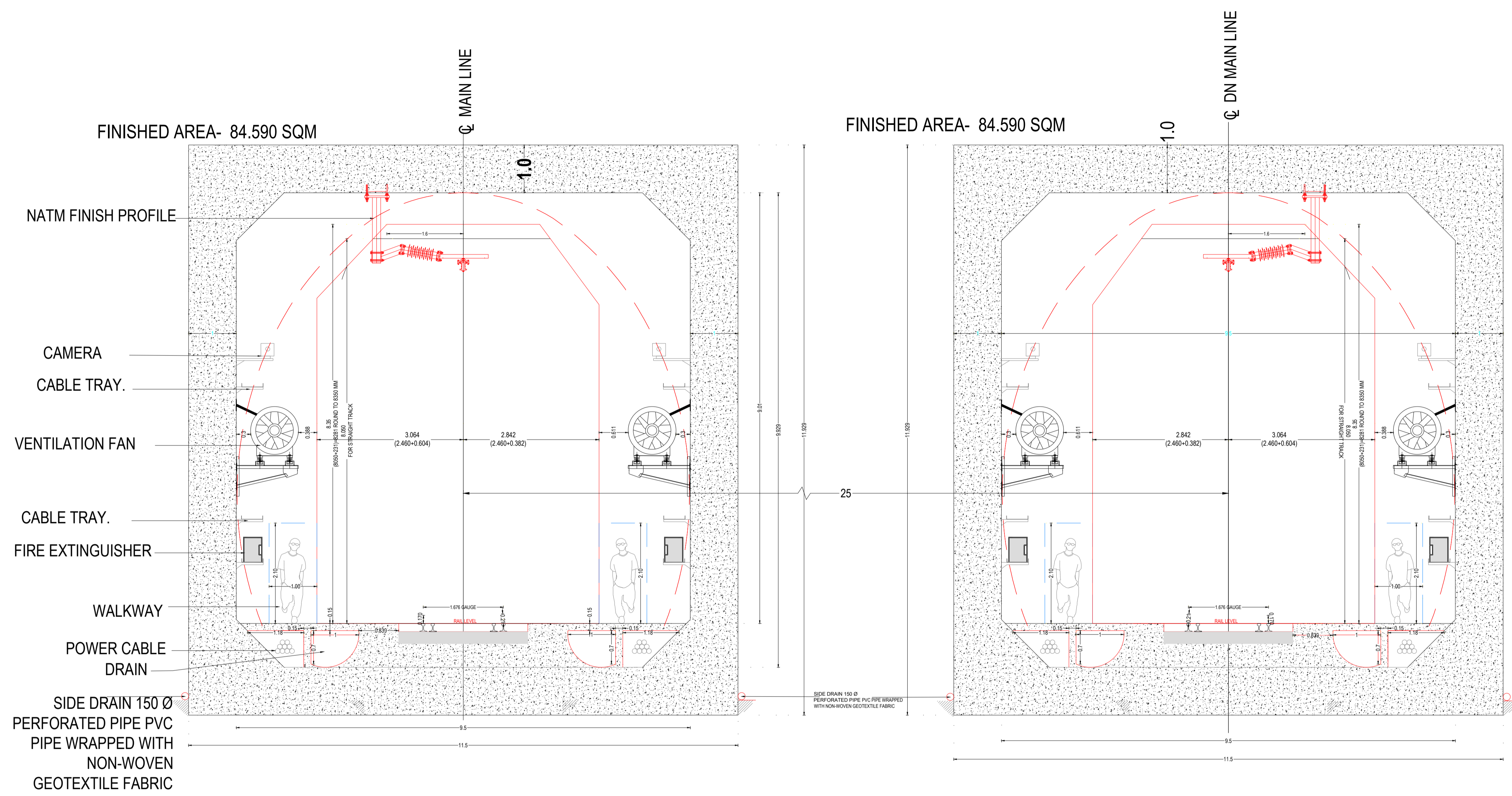
RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/PIg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>



**NOTES:~**

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING.
3. MINIMUM EXCAVATION LINE SHALL INCLUDE CONSTRUCTION & DEFORMATION TOLERANCE.
4. GUARD RAIL SHALL BE PROVIDED THROUGHOUT THE LENGTH OF BALLASTLESS TRACK
5. BALLASTLESS TRACK TO BE DESIGN FOR 32.5 T AXLE LOADING
6. DIMENSIONS OF SLAB THICKNESS ARE TENTATIVE.



FINISHED AREA- 84.590 SQM

FINISHED AREA- 84.590 SQM

NATM FINISH PROFILE

CAMERA

CABLE TRAY

VENTILATION FAN

CABLE TRAY

FIRE EXTINGUISHER

WALKWAY

POWER CABLE DRAIN

SIDE DRAIN 150 Ø PERFORATED PIPE PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAO-TI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01008\_A0

DRAWING NAME: CONCEPTUAL DRAWING FOR CUT & COVER SECTION OF TUNNEL

ISSUE DATE: 07.11.2022 REVISD DATE:

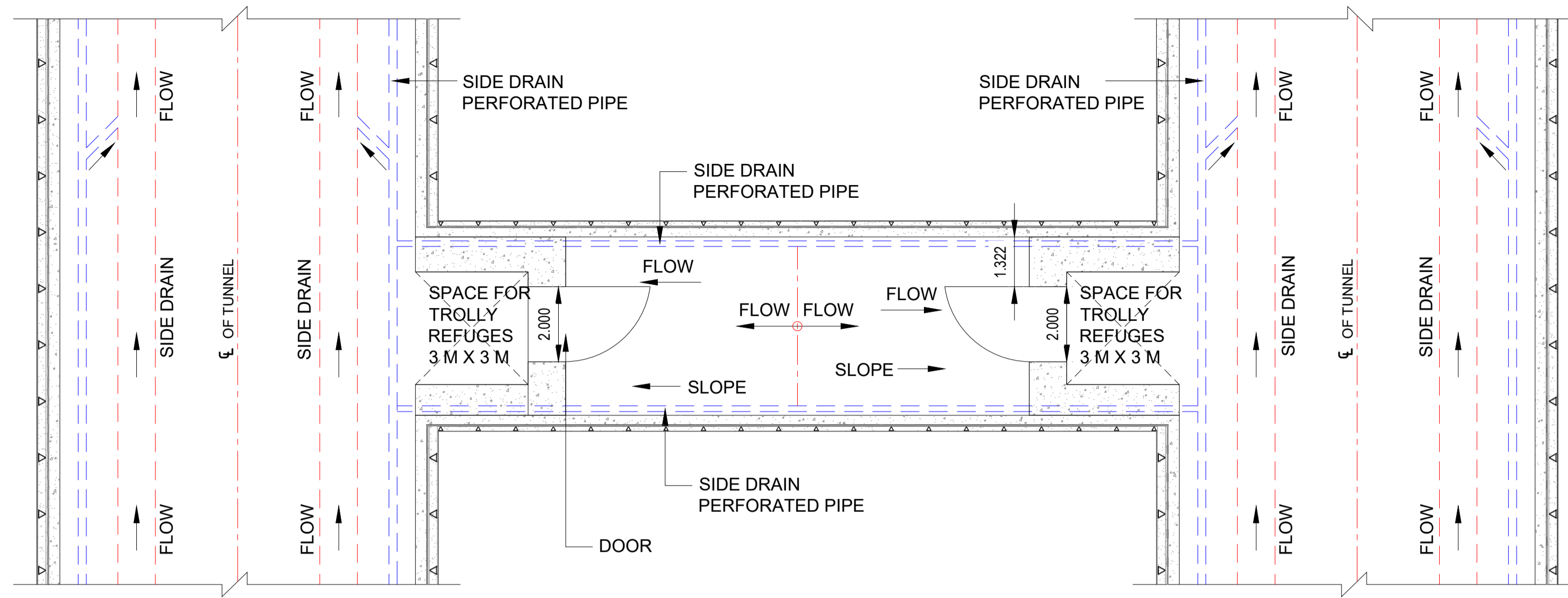
SCALE: AS SHOWN

SMC DRG. NO: SMC/HRIDC/TUNICS-7

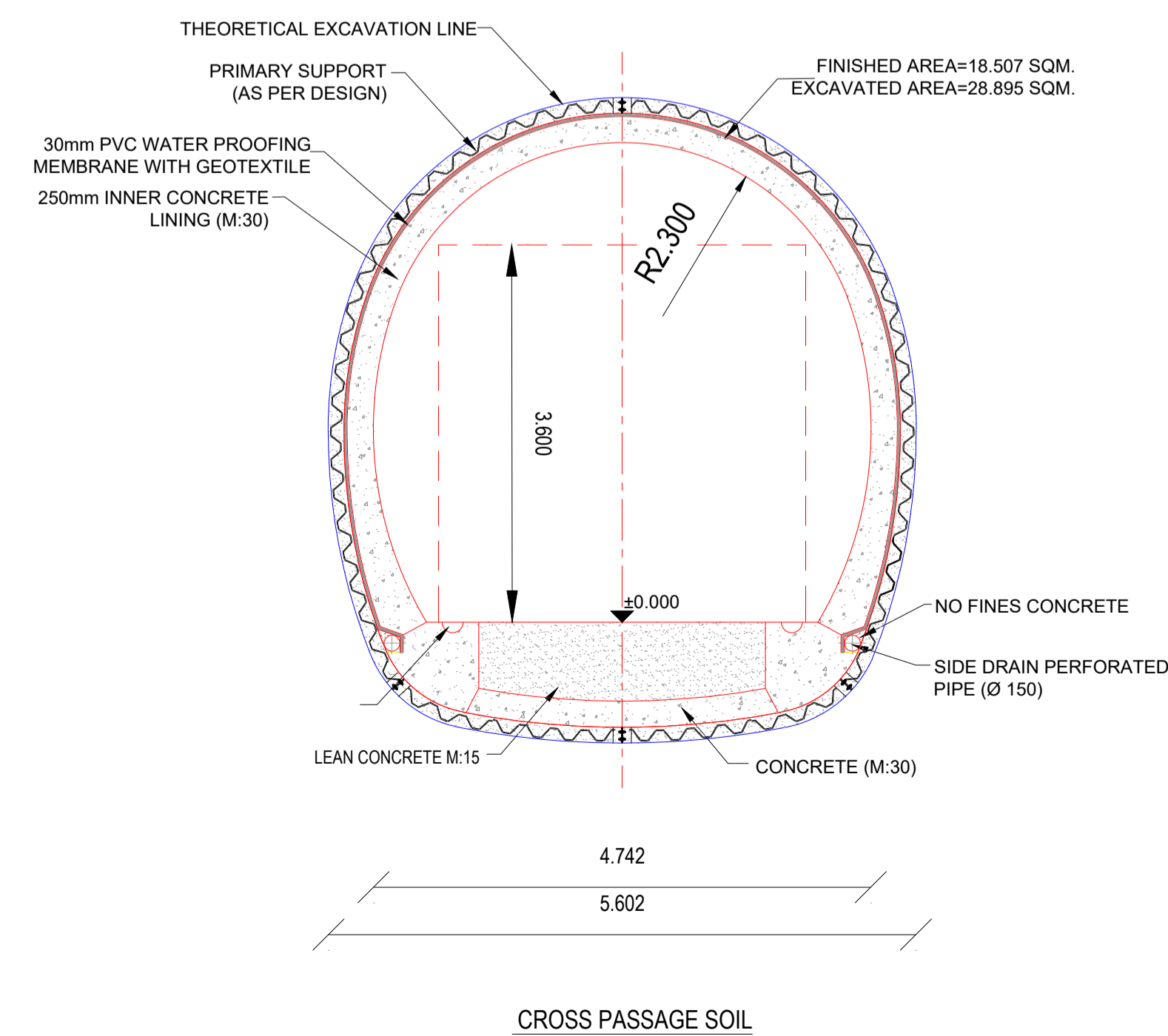
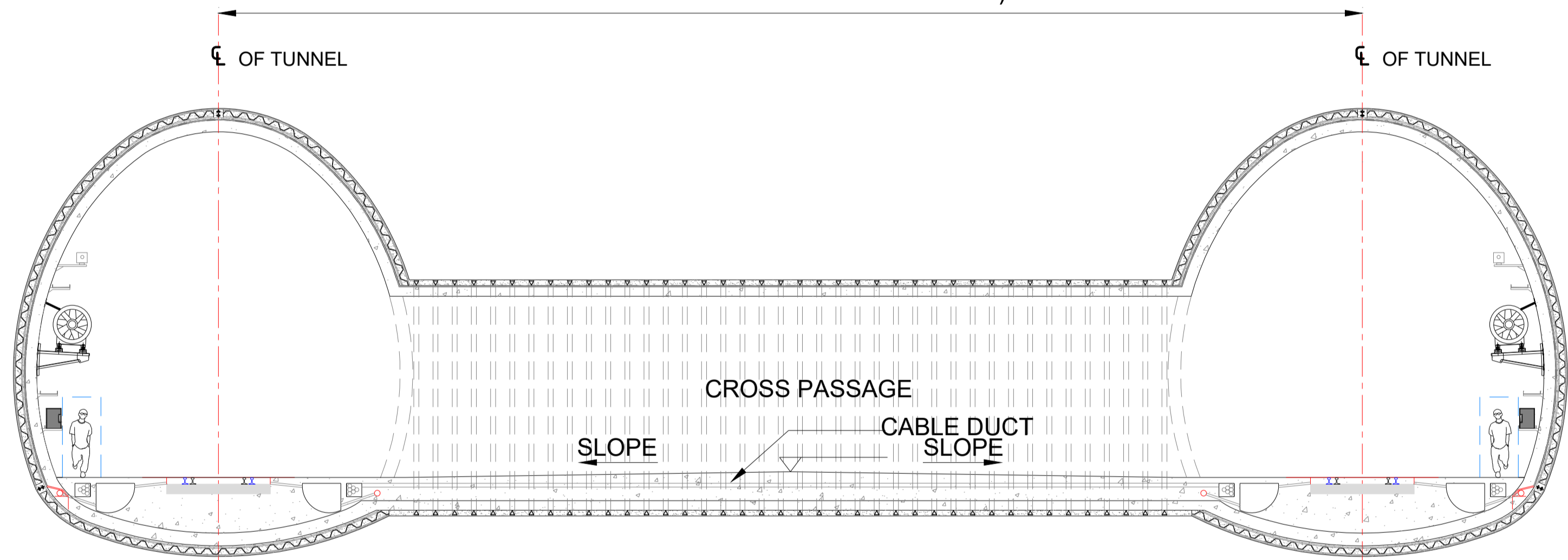
CONSULTANT: S.M. CONSULTANTS

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

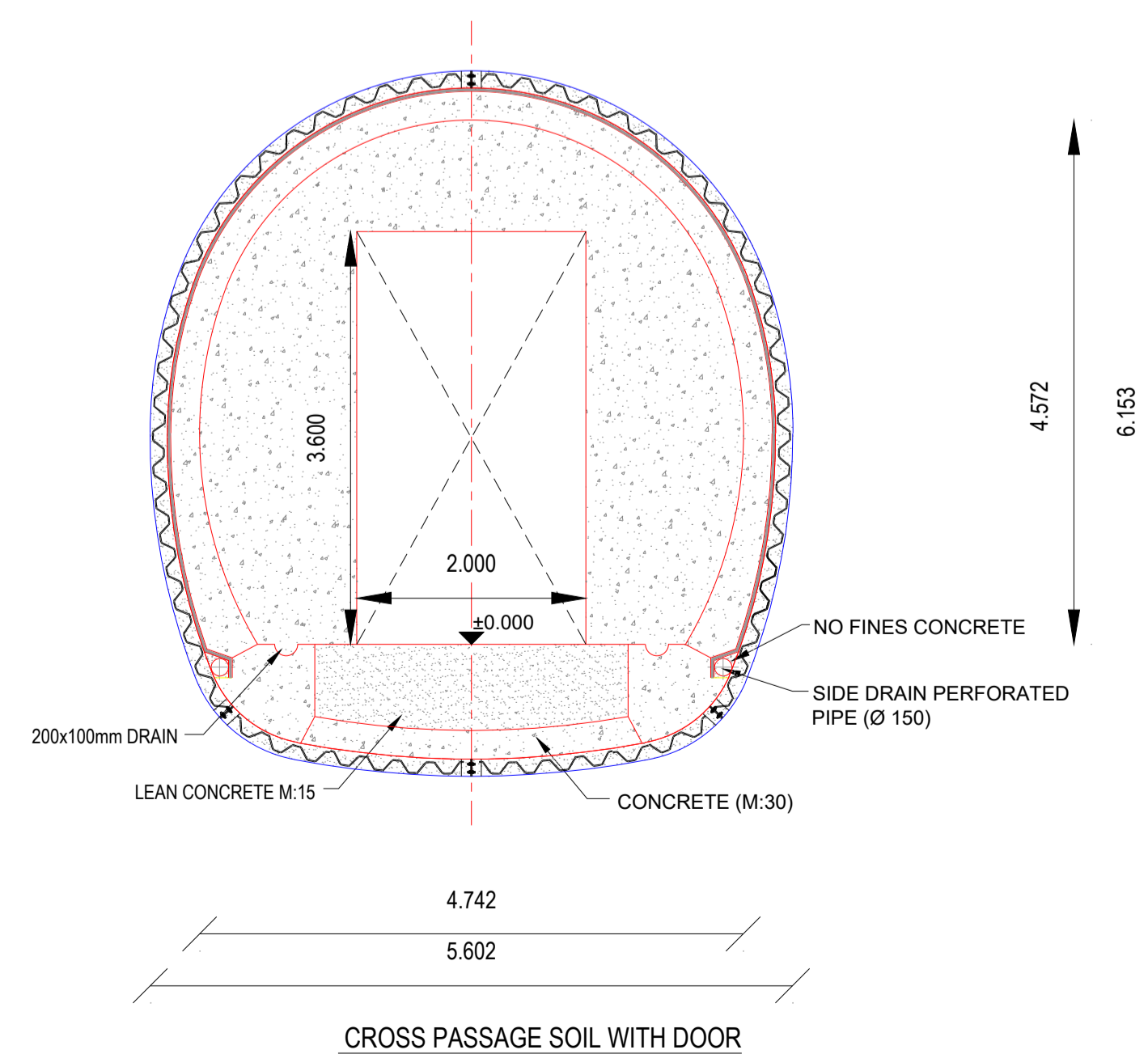




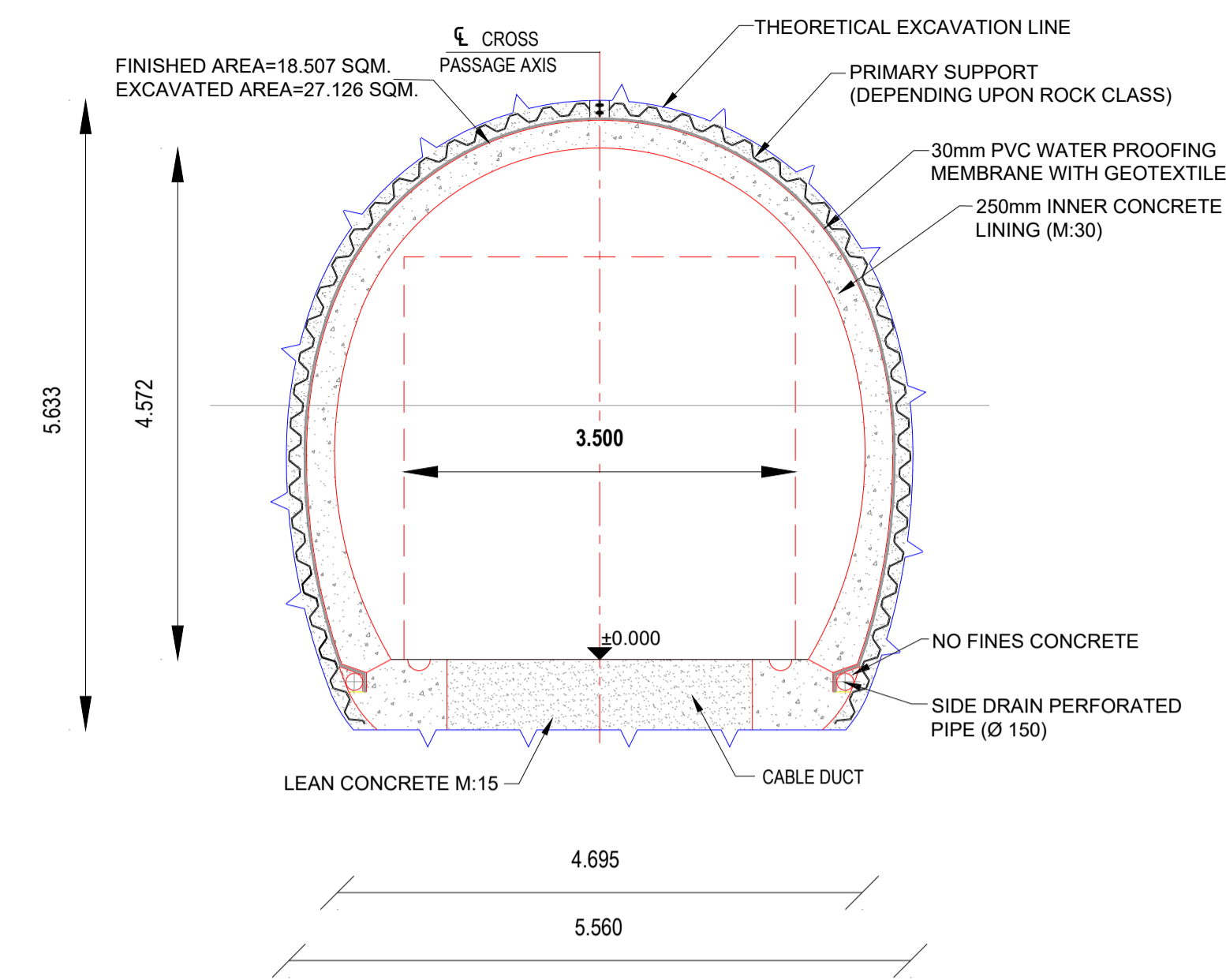
29.815(C/C DISTANCE BETWEEN TWO TUBES CAN VARY AS PER CP LOCATION)



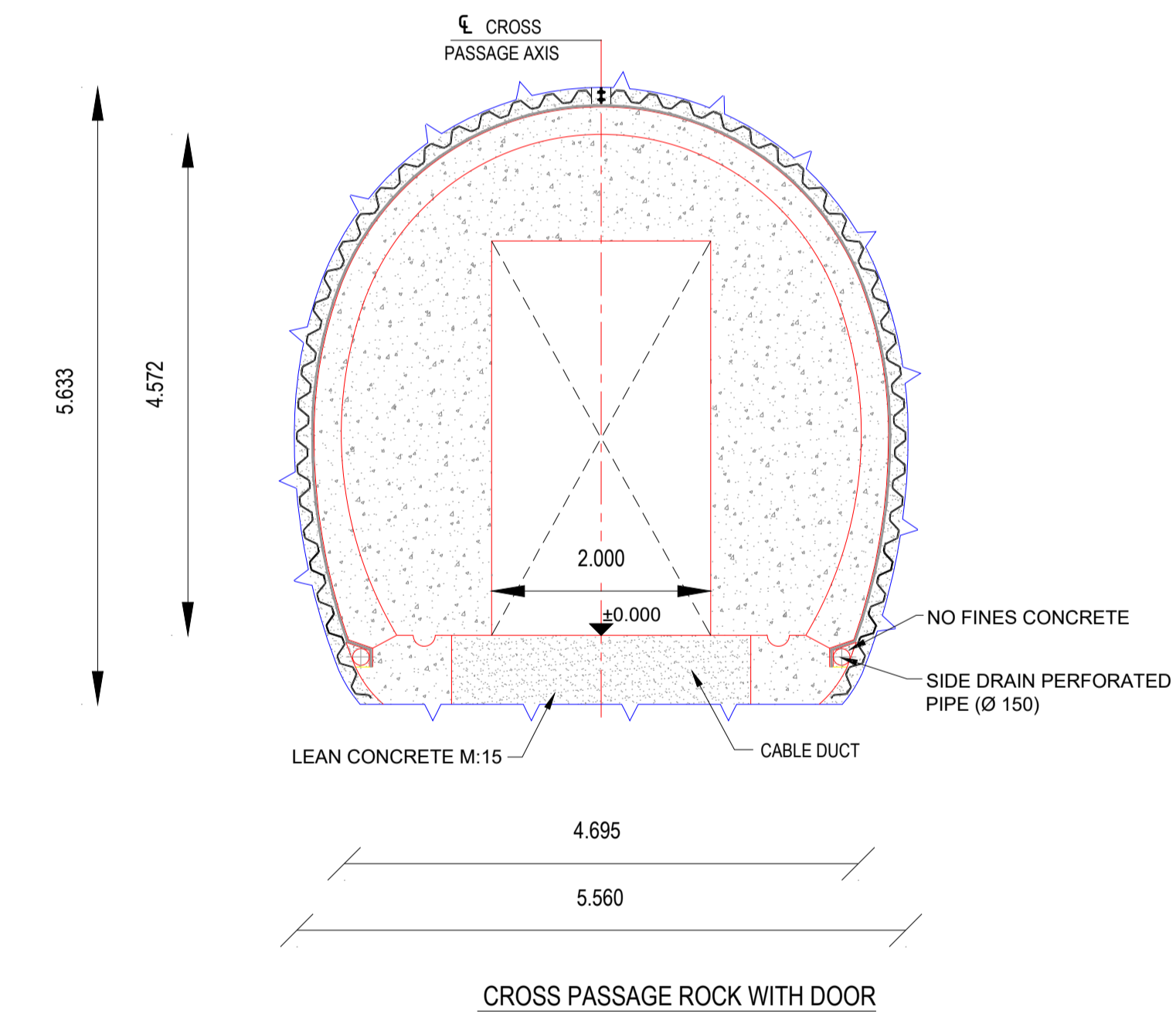
CROSS PASSAGE SOIL



CROSS PASSAGE SOIL WITH DOOR



CROSS PASSAGE ROCK



CROSS PASSAGE ROCK WITH DOOR

**NOTES:-**

1. ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METRE, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
3. TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
4. CROSS PASSAGE SHALL BE PROVIDED AT 400 M INTERVAL.
5. THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
6. PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
7. DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4989
8. EXCAVATION SEQUENCE WILL BE PROVIDED BASED ON GFC.
9. PIPE ROOFING/FOREPULPING OF 114 MM DIA SHALL BE PROVIDED WHERE EVER IT IS REQUIRED.
10. SELF DRILLING ANCHOR OF CAPACITY 190 KN SHALL BE PROVIDED FOR PRIMARY SUPPORT DURING EXCAVATION.
11. LATTICE GIRDER 25-25-32 OF DEPTH 187 MM / ISMB 200 MM SHALL BE INCASSED IN SFRS OF MINIMUM THICKNESS 250 MM.
12. DIMENSION OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOJI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC: CHAHATEY RAM PD, SUDHIR AGRAWAL DPD/CIVIL, DPD/EST, REETU PATIAL CDE/CIVIL, AMARNATH SINGH CRE/S&T, STIPHEN SAHOO SRE/Elect.

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>AS</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE/CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Pig.	<i>Amarnath</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

DRAWING NAME: CONCEPTUAL DRAWING FOR CROSS PASSAGE JUNCTION WITH MAIN TUNNEL

ISSUE DATE: 07.11.2022 REVISID DATE:

SCALE: AS SHOWN

SMC DRG. NO.: SMC/HRIDC/TUNICS-7

CONSULTANT: S.M. CONSULTANTS (An ISO 9001 Company)

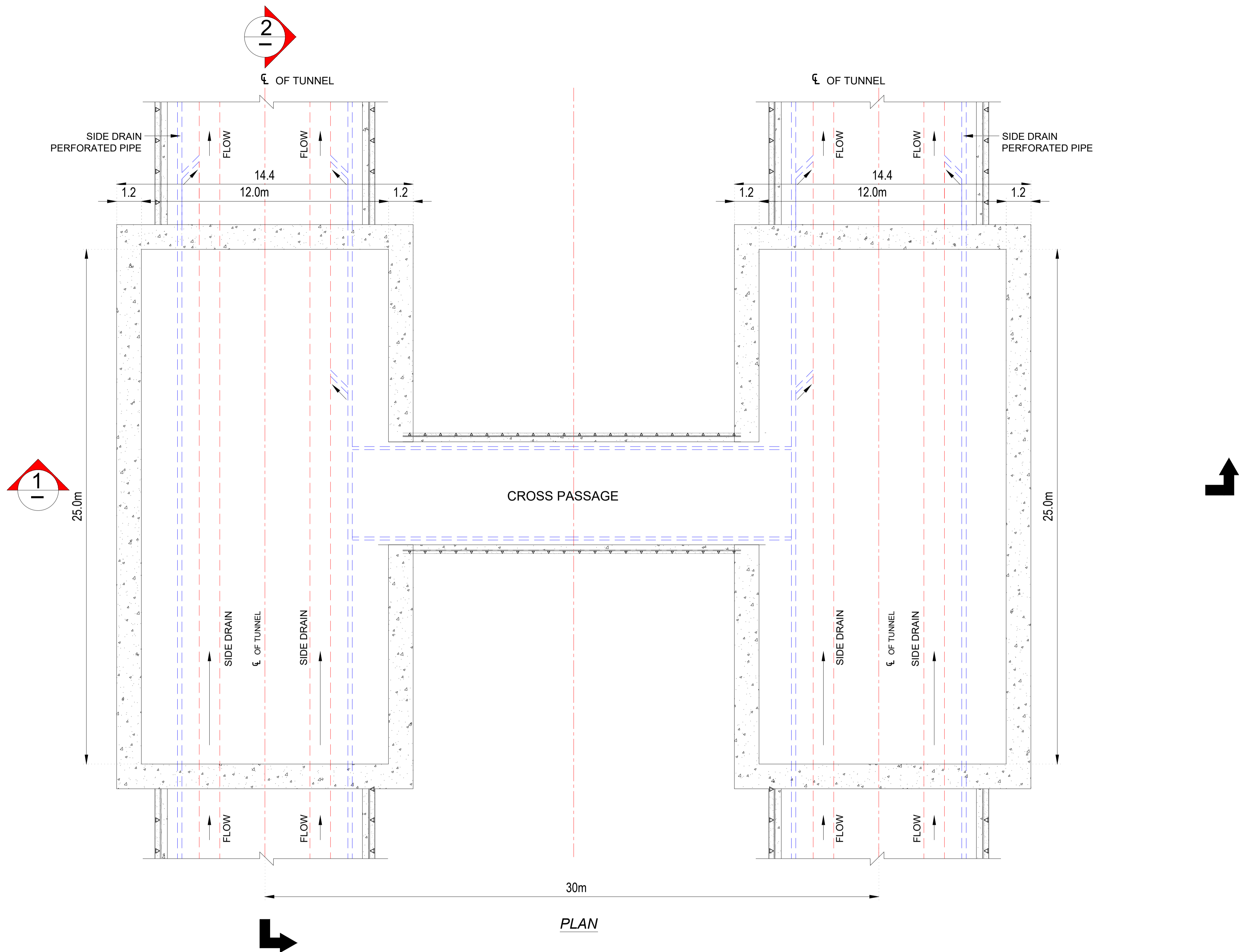
RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION



**NOTES:-**

1. ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
3. TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
4. THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
5. PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
6. DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4989
7. EXCAVATION SEQUENCE WILL BE PROVIDED BASED ON GFC.
8. PIPE ROOFING/FOREPULING OF 114 MM DIA SHALL BE PROVIDED WHERE EVER IT IS REQUIRED.
9. SELF DRILLING ANCHOR OF CAPACITY 190 KN SHALL BE PROVIDED FOR PRIMARY SUPPORT DURING EXCAVATION.
10. LATTICE GIRDER 25-25-32 OF DEPTH 187 MM/ ISMB 200 MM SHALL BE INCASED IN SFRS OF MINIMUM THICKNESS 250 MM.
11. DIMENSION OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.
12. INSERT PLATES SHALL BE PROVIDED IN THE WALL FOR PROVISION OF MS LADDER .
13. THICKNESS OF TRUSS MEMBER ARE AS PER DETAIL DESIGN.
14. PROVISION FOR EXERT FAN SHALL KEPT.

LOCATION	
SHAFT-1	CH:26080
SHAFT-2	
SHAFT-3	CH:27680
SHAFT-4	



GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE /CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01010\_A0

DRAWING NAME: CONCEPTUAL DRAWING FOR PERMANENT VENTILATION SHAFT JUNCTION WITH MAIN TUNNEL

ISSUE DATE: 07.11.2022 REVISD DATE:

SCALE: AS SHOWN

SMEC DRG. NO: SMC/HRIDC/TUNCS-7

CONSULTANT: S.M. CONSULTANTS (An ISO 9001 Company)

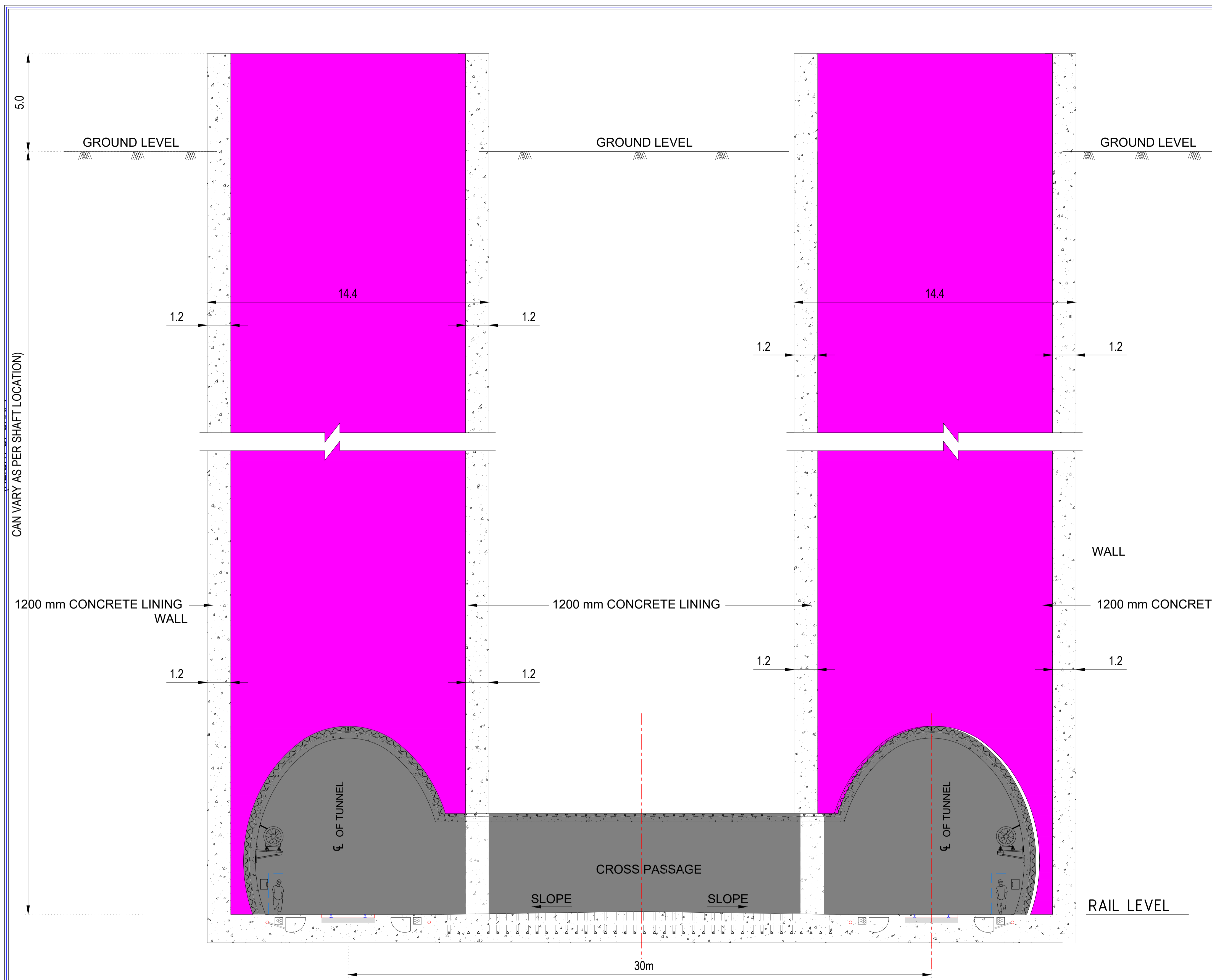
DESIGNER: SIVENDRA KUMAR (S.M. CONSULTANTS / TUNNEL)

PROJECT ENGINEER: B. R. SHARMA (S.M. CONSULTANTS / TUNNEL)

PROJECT INCHARGE: A. A. SAMANT (S.M. CONSULTANTS / TUNNEL)

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION





SECTIONAL ELEVATION 1-1

- NOTES:-**
1. ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
  2. NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
  3. TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
  4. THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
  5. PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
  6. DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4989
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  8. PIPE ROOFING/FOREPILING OF 114 MM DIA SHALL BE PROVIDED WHERE EVER IT IS REQUIRED.
  9. SELF DRILLING ANCHOR OF CAPACITY 190 KN SHALL BE PROVIDED FOR PRIMARY SUPPORT DURING EXCAVATION.
  10. LATTICE GIRDER 25-25-32 OF DEPTH 187 MM/ ISMB 200 MM SHALL BE INCASED IN SFRS OF MINIMUM THICKNESS 250 MM.
  11. DIMENSION OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.
  12. INSERT PLATES SHALL BE PROVIDED IN THE WALL FOR PROVISION OF MS LADDER.
  13. THICKNESS OF TRUSS MEMBER ARE AS PER DETAIL DESIGN.
  14. PROVISION FOR EXERT FAN SHALL KEPT.

LOCATION	
SHAFT-1	CH:26080
SHAFT-2	
SHAFT-3	CH:27680
SHAFT-4	

CAN VARY AS PER SHAFT LOCATION)

WALL

RAIL LEVEL

GC/HORC		HRDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
		DGM/S&T	
REETU PATIAL CDE/CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01010\_A0

DRAWING NAME:- CONCEPTUAL DRAWING FOR PERMANENT VENTILATION SHAFT JUNCTION WITH MAIN TUNNEL

ISSUE DATE:- 07.11.2022 REVISID DATE:-

SCALE:- AS SHOWN

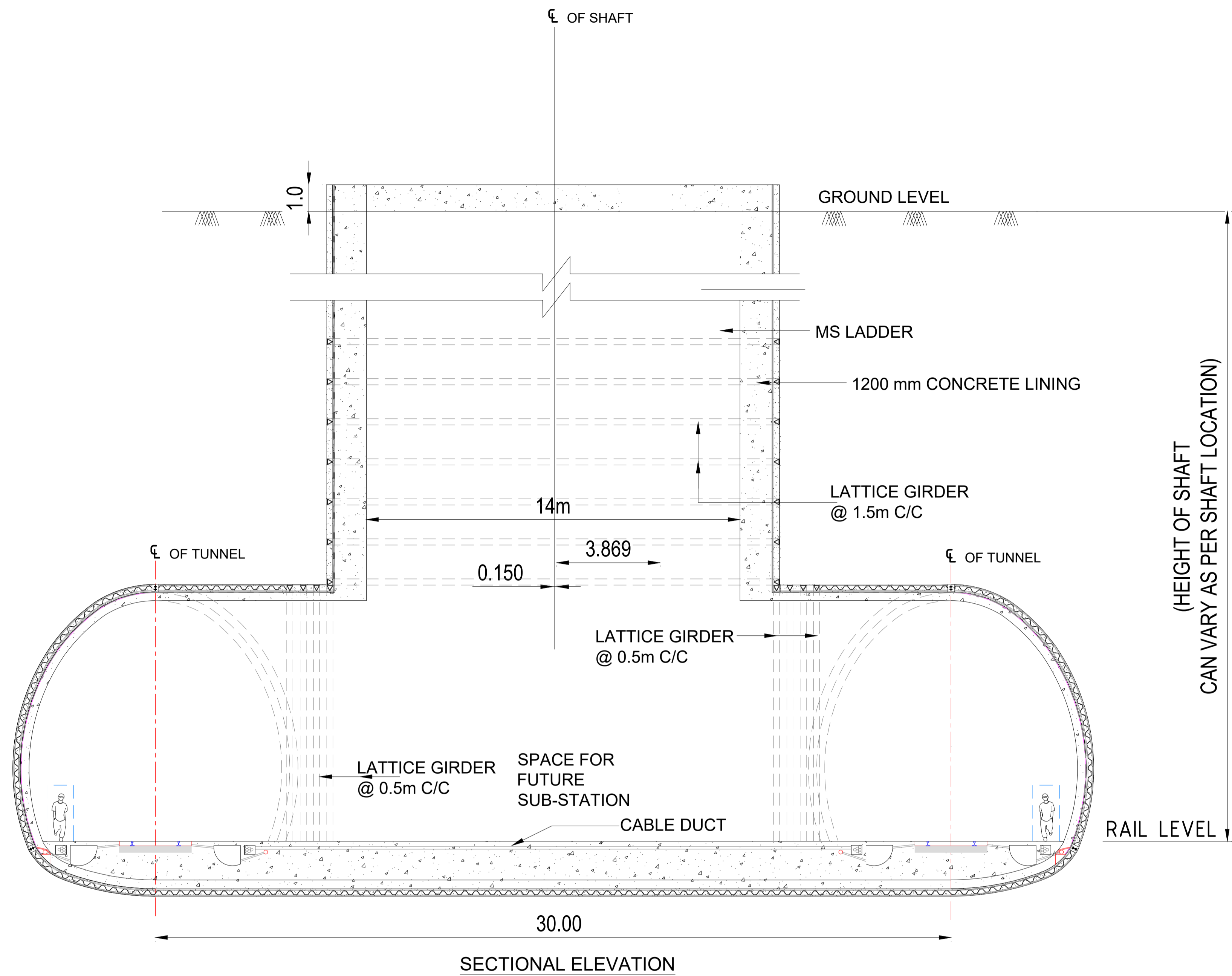
SMEC DRG. NO:- SMC/HRDC/TUNCS-7

CONSULTANT:- S.M. CONSULTANTS (An ISO 9001 Company)

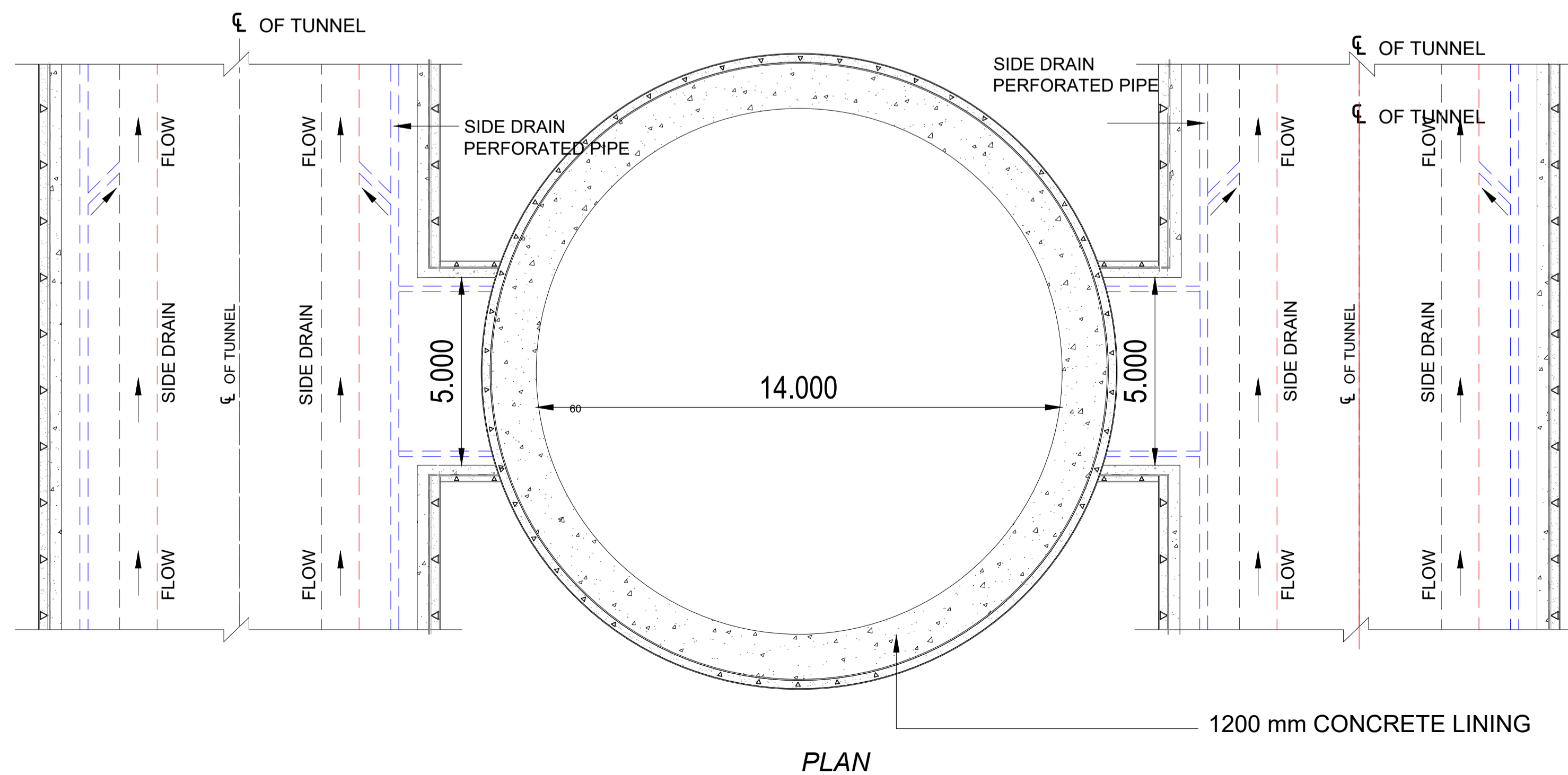
RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION







(HEIGHT OF SHAFT  
CAN VARY AS PER SHAFT LOCATION)



- NOTES:-**
1. ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
  2. NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
  3. TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
  4. THE GRADE OF SHOTCRETE WITH SFRS AS PER DETAIL DESIGN.
  5. PROPOSED SUPPORT SYSTEM IS BASED ON GIR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
  6. DRAINAGE PIPE SHALL BE 150mmØ, PERFORATED PVC PIPE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC AS PER IS-4989
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  8. PIPE ROOFING/FOREPULING OF 114 MM DIA SHALL BE PROVIDED WHERE EVER IT IS REQUIRED.
  9. SELF DRILLING ANCHOR OF CAPACITY 190 KN SHALL BE PROVIDED FOR PRIMARY SUPPORT DURING EXCAVATION.
  10. LATTICE GIRDER 25-25-32 OF DEPTH 187 MM / ISMB 200 MM SHALL BE INCASED IN SFRS OF MINIMUM THICKNESS 250 MM.
  11. DIMENSION OF PRIMARY SUPPORT & CONCRETE ARE TENTATIVE.
  12. AFTER CONSTRUCTION OF TUNNEL SHAFT WILL BE FILL WITH SAND FROM TOP OF MAIN TUNNEL TO GROUND LEVEL.

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE/CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STEPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

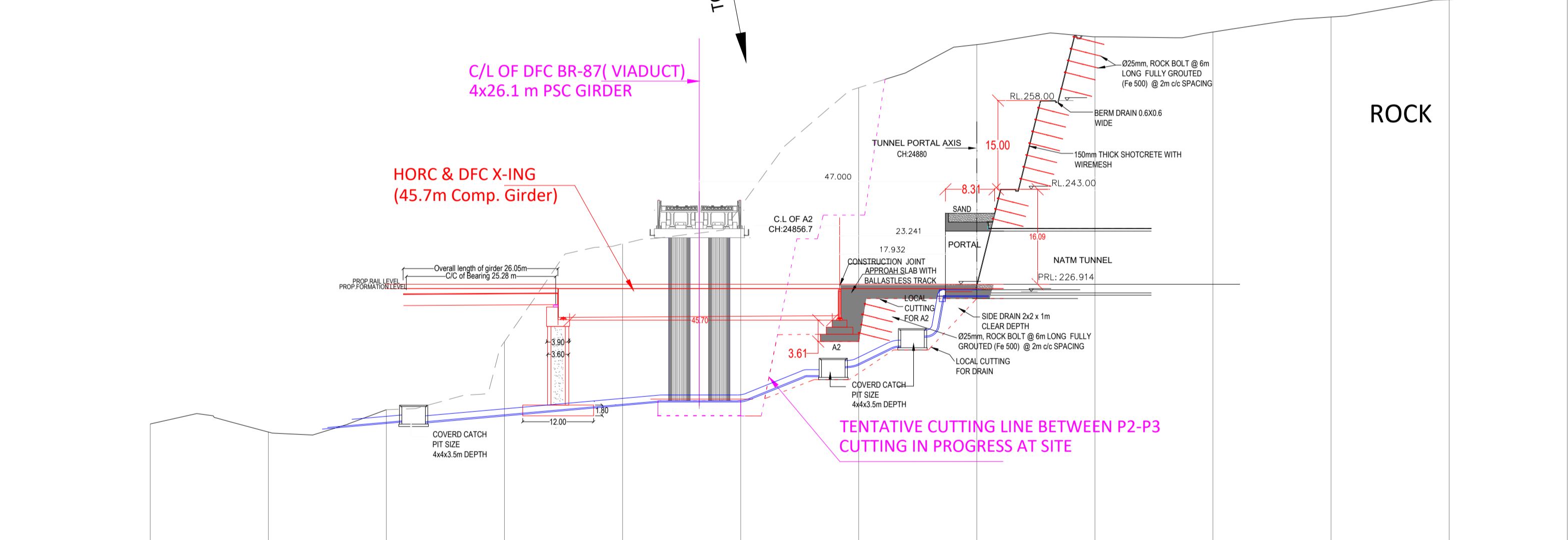
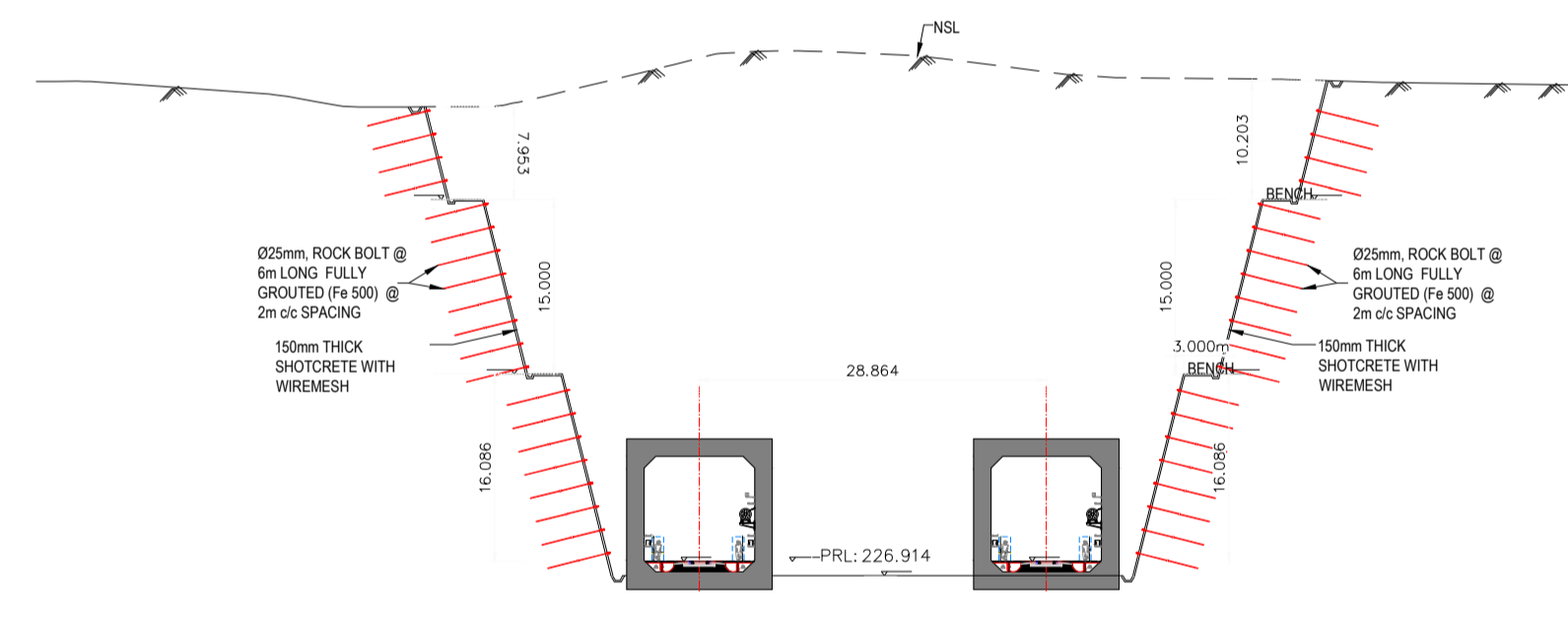
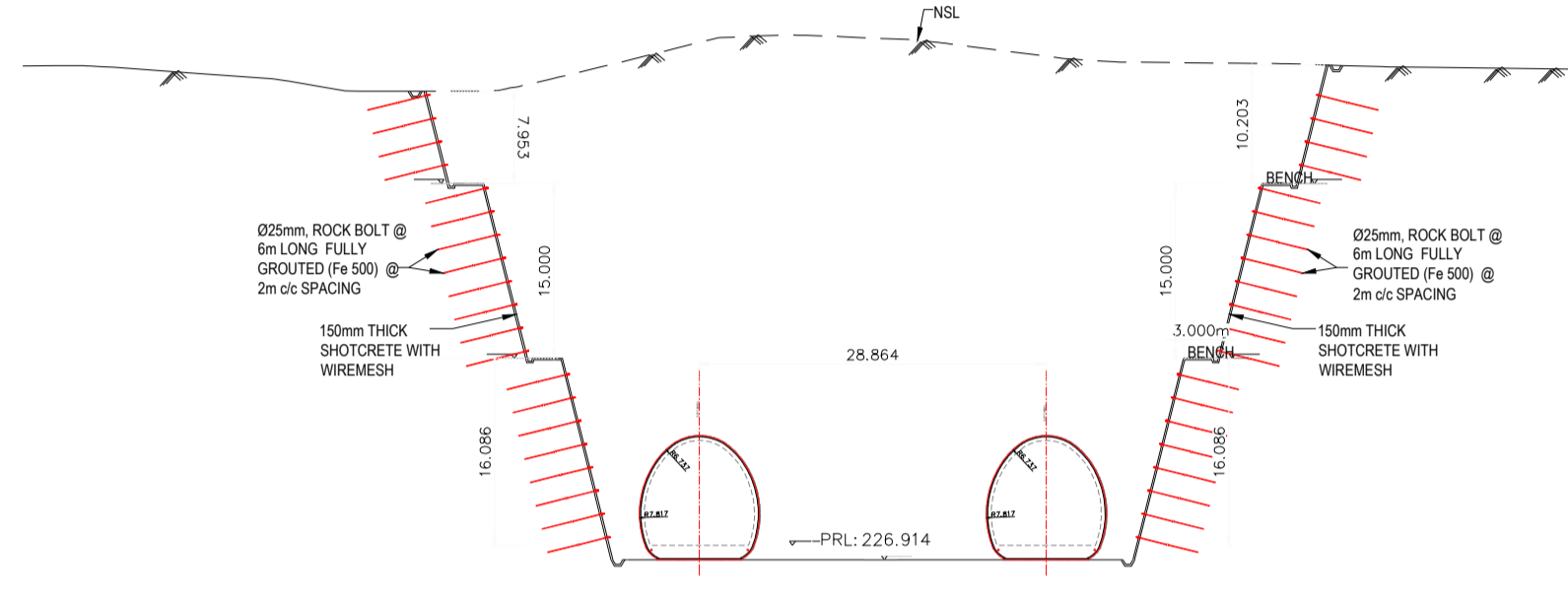
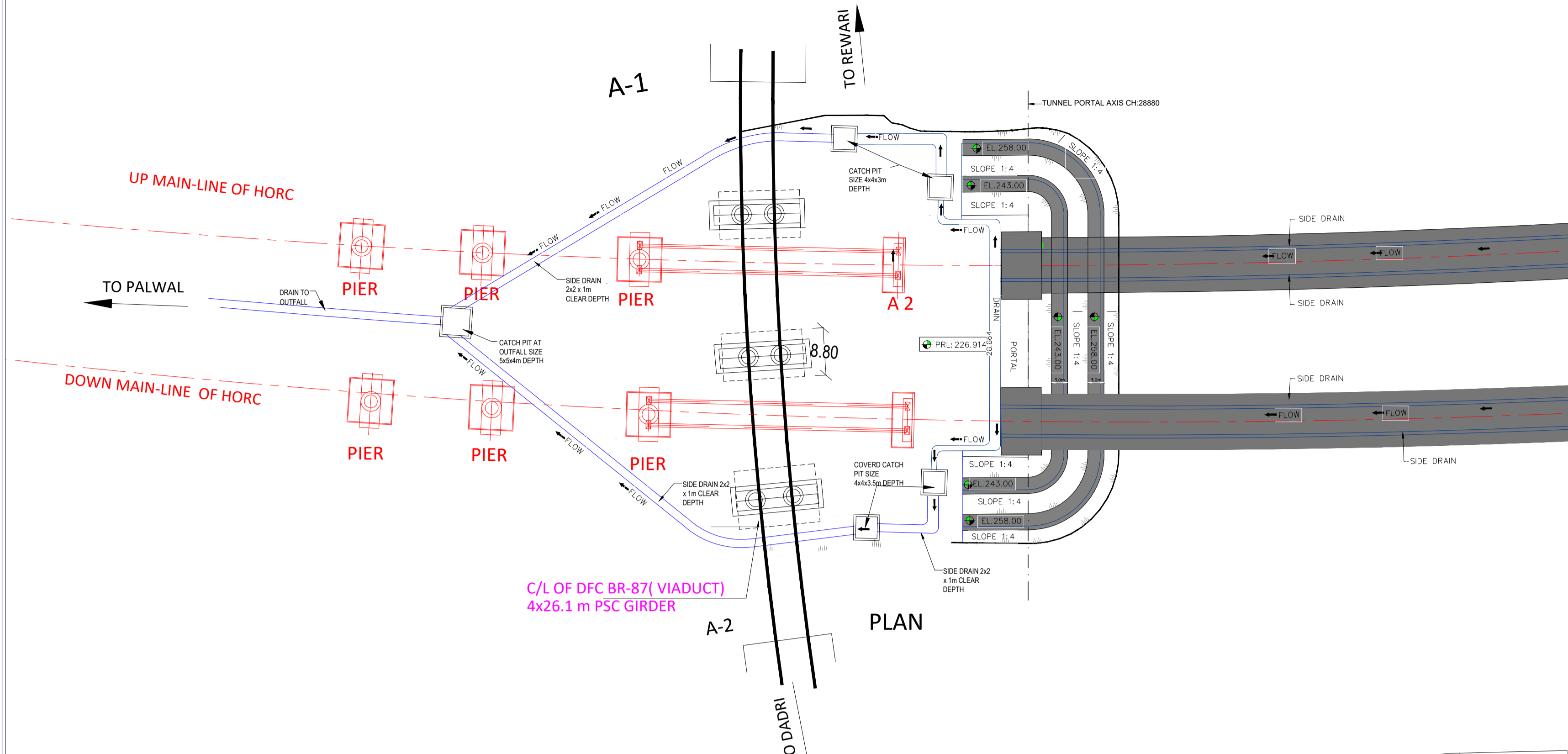
CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- RITES Limited in consortium with SMEC International Pty. Ltd.

CONCEPTUAL DRAWING FOR CONSTRUCTION CUM UTILITY SHAFT

ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMEC DRG NO: SMC/HRIDC/TUNNCS-7

CONSTRUCTION STATUS:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION



DATUM 180	24740	24760	24780	24800	24820	24840	24860	24880	24900	24920	24940	24960	24980
HARC FORMATION LEVEL	225.202	225.324	225.445	225.566	225.687	225.808	225.930	226.051	226.172	226.293	226.415	226.536	226.657
GROUND LEVEL	208.699	207.462	213.223	231.957	237.616	242.707	262.984	267.750	267.897	271.977	274.370	275.936	276.968
CHAINAGE OF HARC	24740	24760	24780	24800	24820	24840	24860	24880	24900	24920	24940	24960	24980

SECTION

- NOTES:-
1. ALL DIMENSIONS, NORTHING & EASTING AND LEVELS ARE IN METER, UNLESS OTHERWISE SPECIFIED.
  2. NO DIMENSIONS SHALL BE MEASURED FROM DRAWING.
  3. TUNNEL EXCAVATED BY HEADING, BENCHING / MULTI DRIFT METHOD.
  4. THE GRADE OF SHOTCRETE WITH SFERS AS PER DETAIL DESIGN.
  5. PROPOSED SUPPORT SYSTEM IS BASED ON GPR PROVIDED BY GEOLOGIST. ACTUAL SUPPORT SYSTEM MAY BE REVISED BASED ON ACTUAL RESPONSE OF STRATA DURING EXCAVATION.
  6. FORCES DUE TO CONTINUATION OF LWRICR SHALL BE CONSIDERED AS PER CORRECTION SLIP NO. 45 OF IRS BRIDGE RULES.
  7. HYSD BARS OF F# 500/550 STRENGTH GRADE SHOULD BE PROVIDED AS PER IS 1786-2008.
  8. STANDARD OF LOADING FOR SUB-STRUCTURE IS 32.5 T LOADING-2008 FOR SUPER-STRUCTURE 2ST LOADING & HIGH RISE O.H.E.
  9. O.H.E. MAST AND INSPECTION LADDERS PROVISION SHALL BE KEPT AS PER RAILWAY DESIGN DIRECTLY SUPPORTING THEM ON PIER/ABUTMENT FOR MAJOR IMPORTANT BRIDGES AS PER REQUIREMENT R.D.S.O. REFERENCE.
  10. HOLES SHALL BE PROVIDED IN THE PROPOSED BED BLOCK AT THE TIME OF CASTING OF R.C.C. BED FOR THE FIXING / ERECTION OF BEARINGS, AT REQUIRED POSITION.
  11. ENGINEER IN CHARGE SHOULD BE ENSURE THAT ALL DIMENSIONS & LEVEL ARE CHECKED BEFORE EXECUTION OF WORK.
  12. CUTTING PROFILE SHOWN AT A-2 AS PER THE D.F.C CROSS SECTIONAL DRAWING. THE WORK FOR WHICH IS IN PROGRESS. FOUNDING LEVEL OF A2 WILL BE DECIDED AFTER THE COMPLETION OF CUTTING BY DFCIL GROUND LEVEL ARE SHOWN AS PER SURVEY IN YEAR 2021.

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAO TI-PATI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO.- GC/HRDC-C4-DRW-TTL-CLT-01012\_A0

DRAWING NAME:- CONCEPTUAL DRAWING FOR PORTAL-1 & ABUTMENT A2 OF VIADUCT WITH DRAINAGE EXCAVATION PLAN & SECTIONS

ISSUE DATE:- 07.11.2022  
SCALE:- AS SHOWN  
SMEC DRG. NO.- SMC/HRDC/TUNCS-7

CONSULTANT:- S.M. CONSULTANTS  
S.M. CONSULTANTS  
An ISO 9001 Company  
Bhawanipuri, Bahadurgarh (Sector-20), Sonapat, Haryana - 151001  
www.smcconsultants.com, 011-2601-20000

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

GC/HORC		HRDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE / CIVIL	<i>Reetu Patial</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen Sahoo</i>	JGM/L&U	<i>Stephen Sahoo</i>

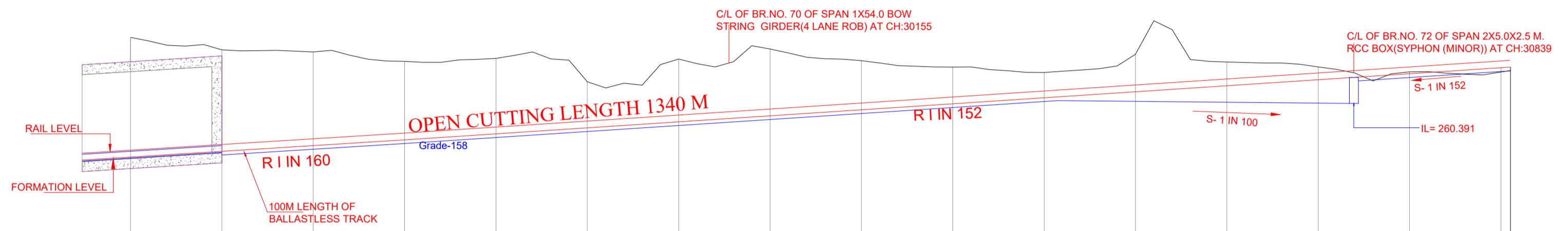
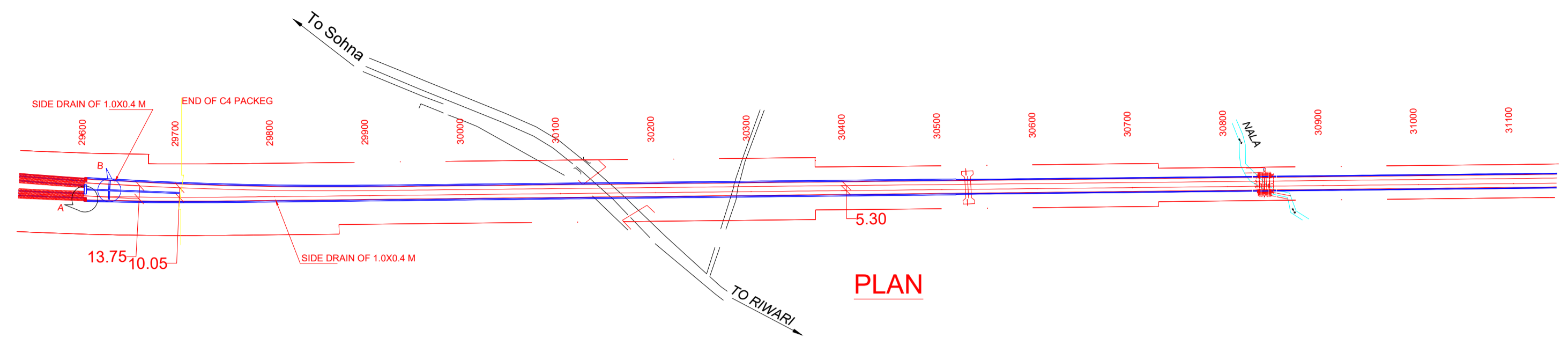
SIVENDRA KUMAR  
TUNNEL DESIGNER

B. R. SHARMA  
S. CONSULTANT / TUNNEL

A. A. SAMANT  
PROJECT ENGINEER



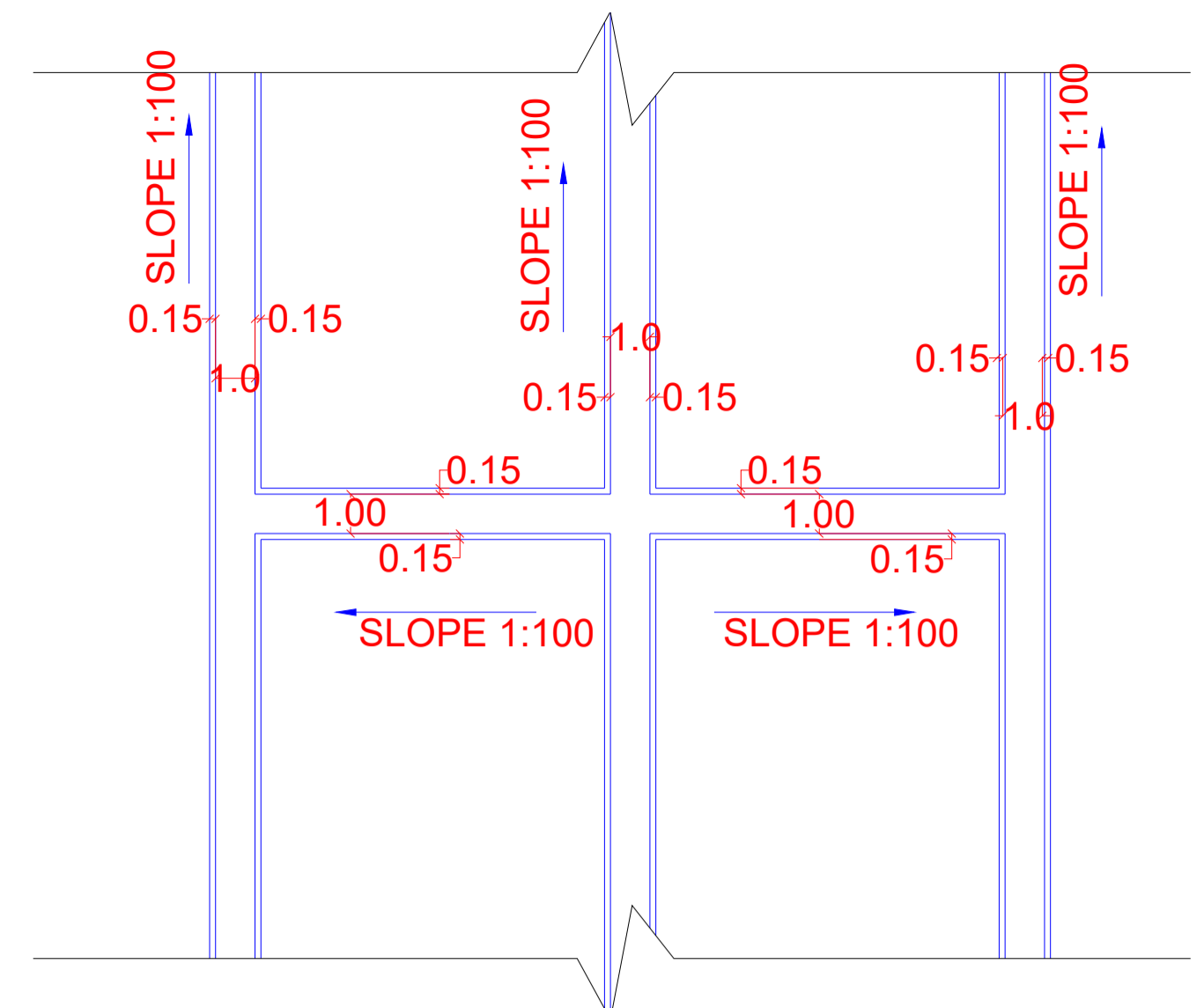
# DETAILS OF SIDE DRAIN & PORTAL 2



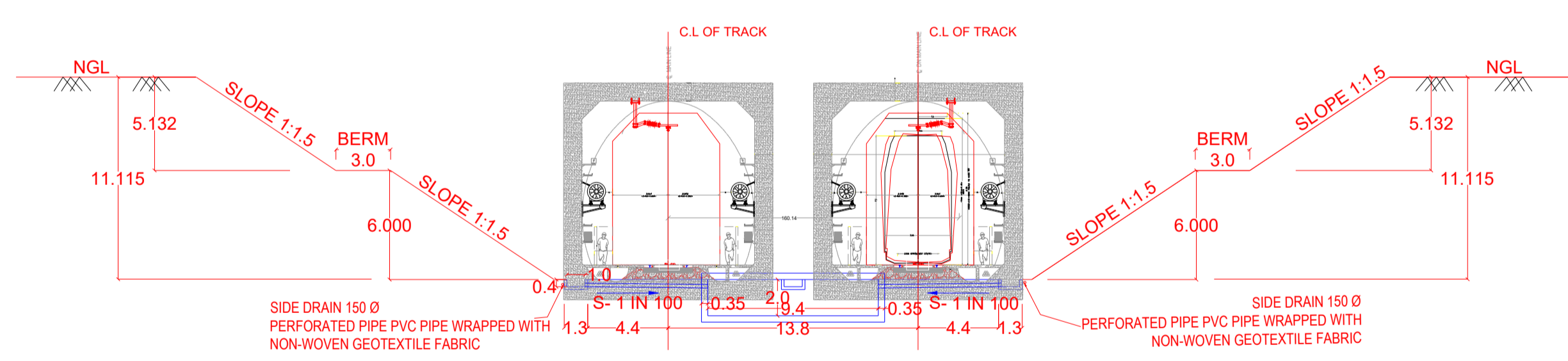
DATUM = 240.00

BANKING (+ ve) CUTTING (- ve)	-13.110	-11.108	-10.254	-8.600	-8.269	-5.060	-6.878	-7.315	-5.376	-4.025	-2.777	-4.112	-2.612	-1.418	-0.218	0.468
PROPOSED FORMATION LEVEL	254.530	255.155	255.790	256.405	257.063	257.721	258.379	259.037	259.695	260.353	261.010	261.668	262.326	262.984	263.642	264.300
GROUND LEVEL	267.640	266.263	266.034	265.005	265.332	262.781	265.257	266.352	265.071	264.378	263.787	265.780	264.938	264.402	263.860	263.832
CHAINAGE	29500	29600	29700	29800	29900	30000	30100	30200	30300	30400	30500	30600	30700	30800	30900	31000

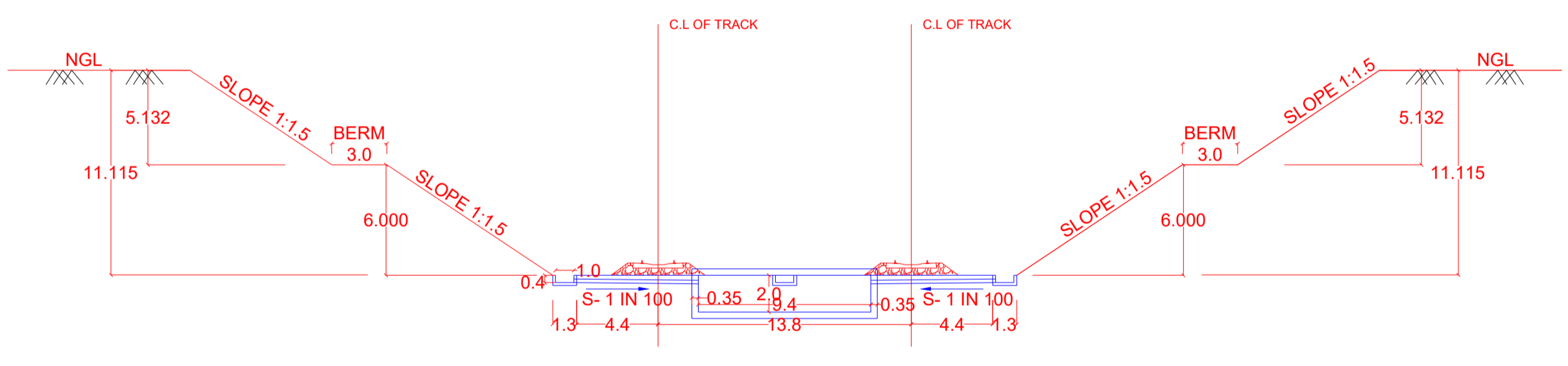
LONGITUDINAL SECTION



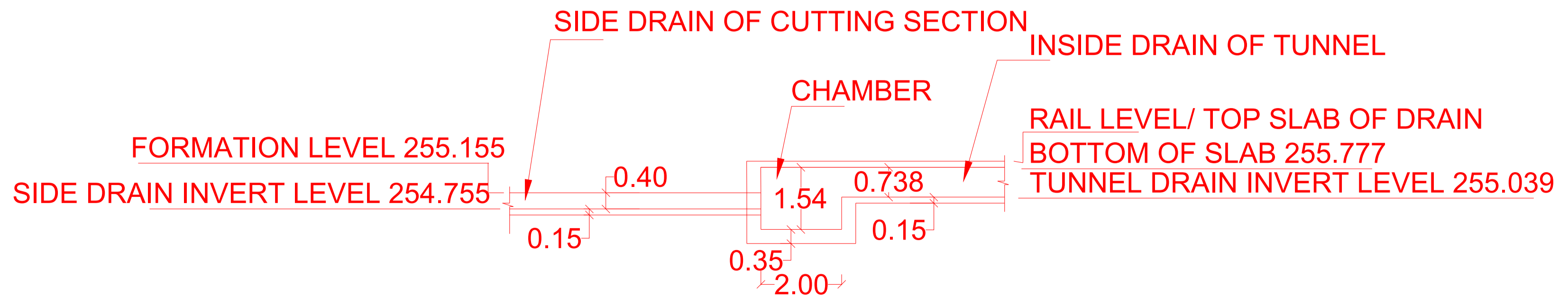
DETAILS OF B



CROSS SECTION AT CUTTING AT PORTAL



CROSS SECTION AT CUTTING BEFORE PORTAL



DETAILS OF 'A'  
DRAIN SLOPE AS PER FORMATION

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/S	<i>Raju Solanki</i>
DPD/EST		DGM/S&T	
REETU PATIAL CDE/CIVIL	<i>Reetu</i>	DGM/Elect.	
AMARNATH SINGH CRE/S&T	<i>Amarnath Singh</i>	AM/Civil/Plg.	<i>Amarnath Singh</i>
STIPHEN SAHOO SRE/Elect.	<i>Stephen</i>	JGM/L&U	<i>Stephen</i>

PROJECT:- HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOJI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:- HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

GENERAL CONSULTANT:- GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

GC/HORC DRG. NO:- GC-HRIDC-C4-DRW-TTL-CLT-01013\_A0

DRAWING NAME: CONCEPTUAL DRAWING FOR PORTAL 2 & OPEN CUTTING AREA WITH 100M BALLASTLESS TRACK

ISSUE DATE: 07.11.2022  
SCALE: AS SHOWN  
SMEC DRG. NO.: SMC/HRIDC/TUNCS-7

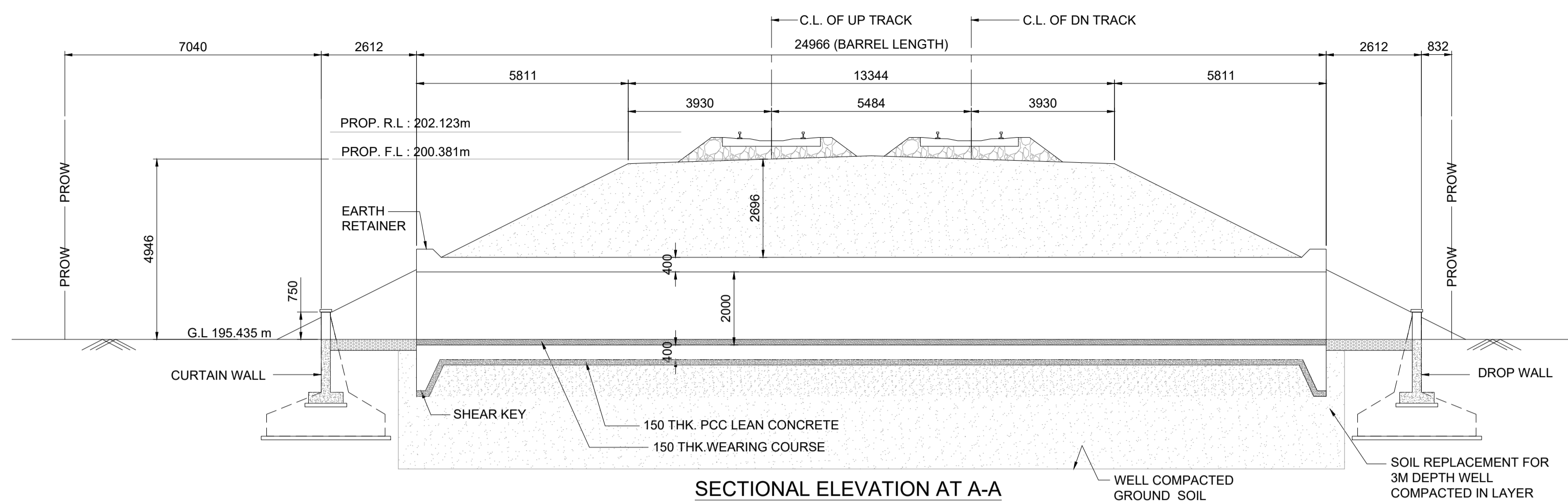
CONSULTANT: S.M. CONSULTANTS  
An ISO 9001 Company  
SIVENDRA KUMAR TUNNEL DESIGNER  
B.R. SHARMA S.CONSULTANT/TUNNEL  
A.A. SAMANT PROJECT INCHARGE

RELEASED FOR:  PRELIMINARY FOR APPROVAL  TENDER  CONSTRUCTION

## **3.BRIDGES**

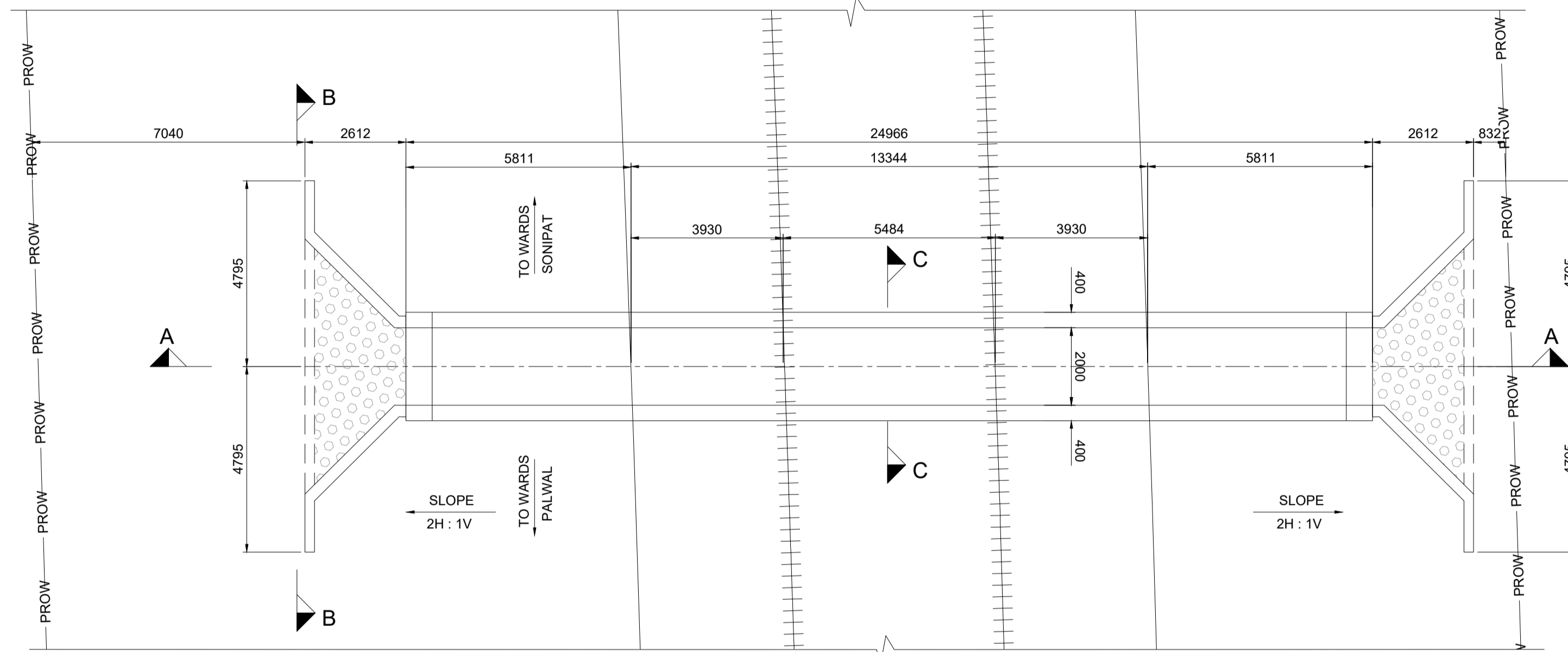
### **3.1 MINOR BRIDGES**





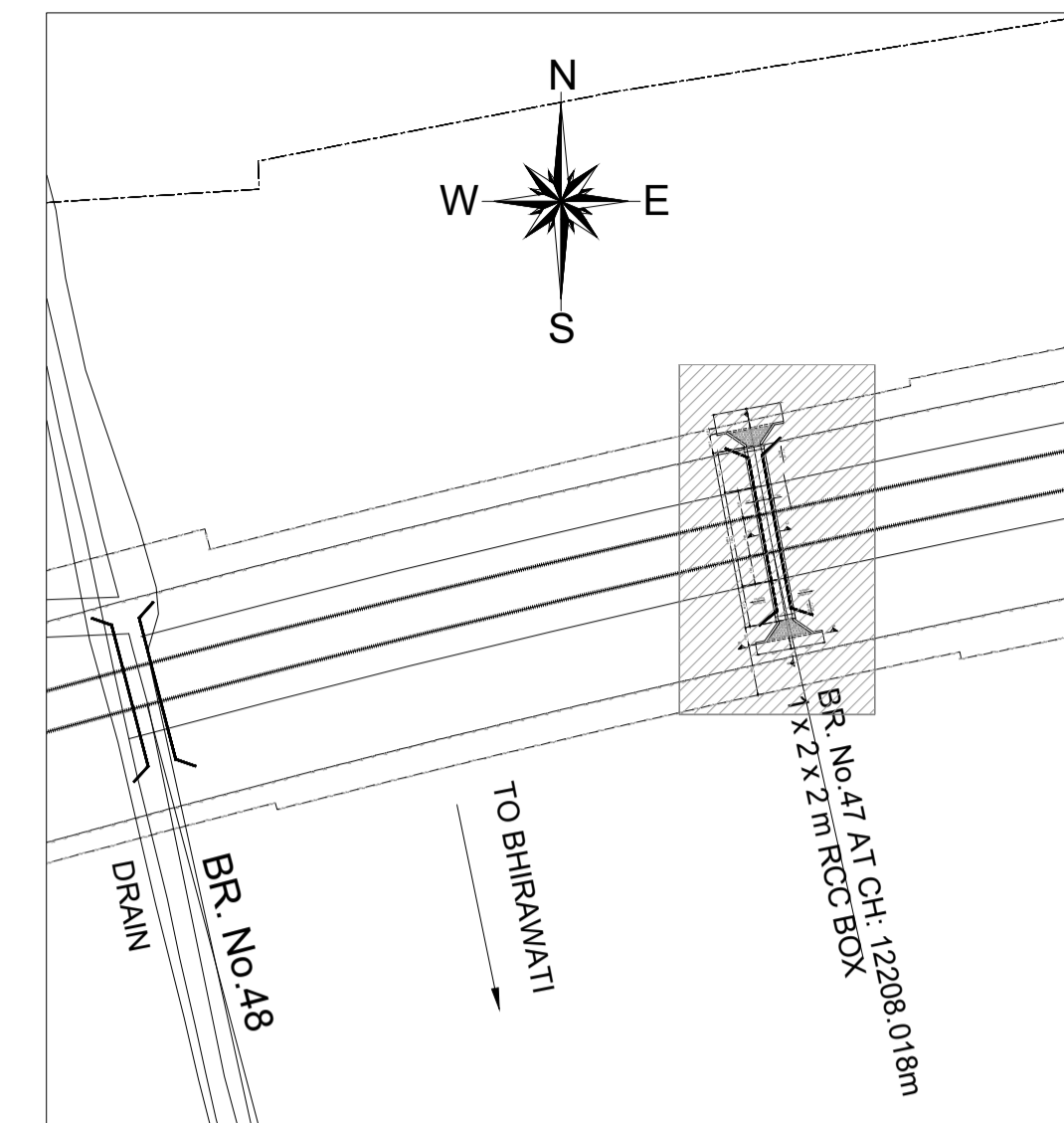
SECTIONAL ELEVATION AT A-A

SCALE 1:100



PLAN AT TOP

SCALE 1:100



KEY PLAN

(NOT TO SCALE)

LEGEND

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL

NOTES :

A) GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
2. THE CHAINAGES SHOWN ARE RECKONED FROM C/L OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
3. FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
4. BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
9. THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HRIDC.
10. DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
11. THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.

B) TECHNICAL NOTES :

1. PROTECTION WORK ON SLOPES OF BANK UP TO 15M,BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
2. INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
4. ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE ANATURAL GROUND PROFILE.
6. DIMENSION OF THE BOX MAY BE SUITABLY MODIFIED AS PER SITE REQUIREMENT. HEIGHT OF BOX SHOWN INCLUDES MINIMUM REQUIRED CLEAR OPENING HEIGHT AND WEARING COARSE. OVERALL HEIGHT OF BOX OPENING MAY VARY AS PER SITE REQUIREMENT AND ACTUAL ROAD/GROUND PROFILE.
7. DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
  - (i) IRS BRIDGE RULE
  - (ii) IRS CONCRETE BRIDGE CODE
  - (iii) IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
8. SEISMIC ZONE- IV
9. EXPOSURE CONDITION- MODERATE.
10. DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST
11. THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
12. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G./SQM.CONFIRMING TO IS-3117.
13. REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786
14. FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
  - (i) ALL RCC /WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
  - (ii) LEVELING CONCRETE =M:20/DETAILED DESIGN DRG.
15. BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
16. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
17. ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.

PROJECT:

HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:

HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:

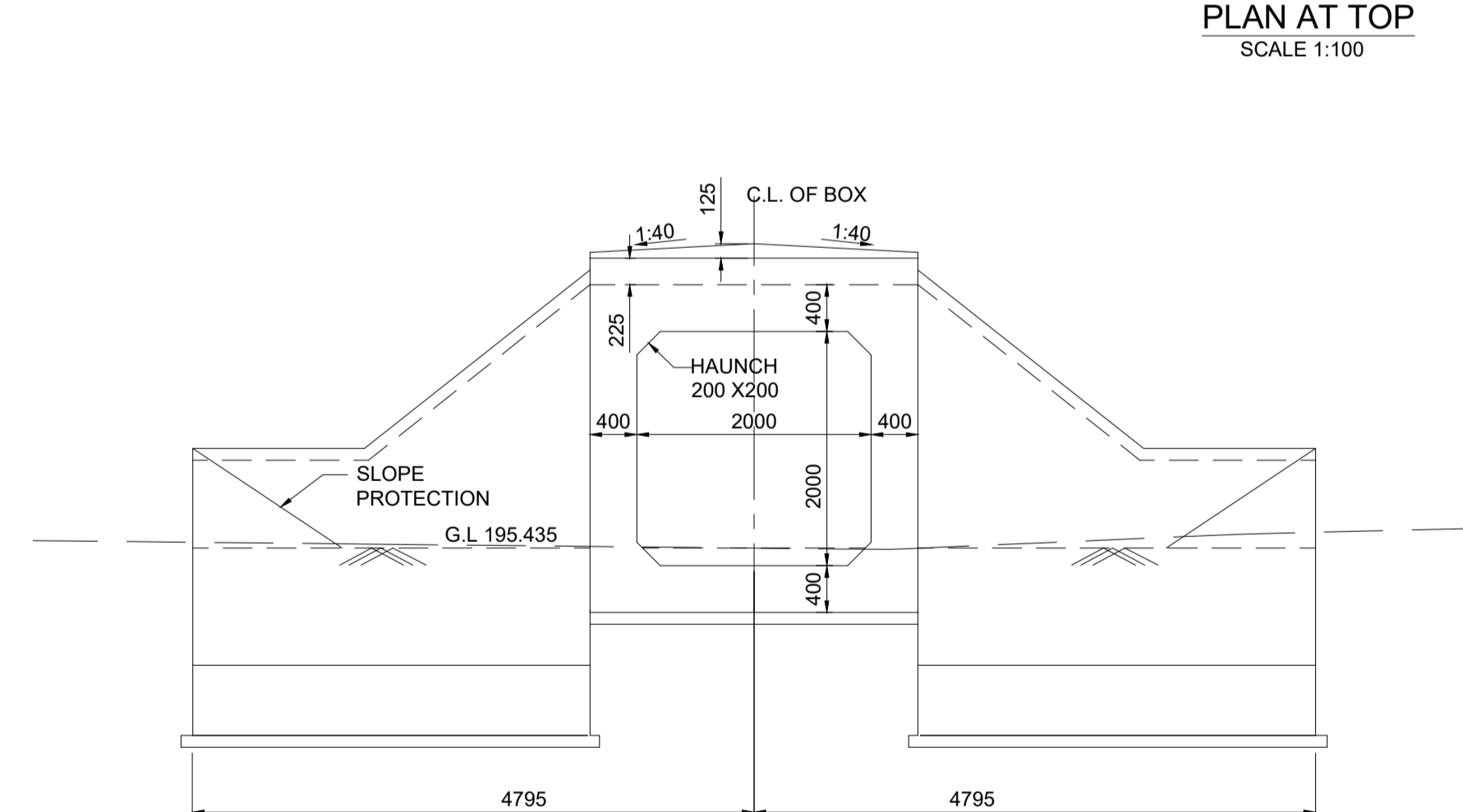
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



TITLE:- CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR BALANCING CULVERT BRIDGE NO. 047 SPAN 1.0X2.0X2.0 RCC BOX AT CH. 12208.018

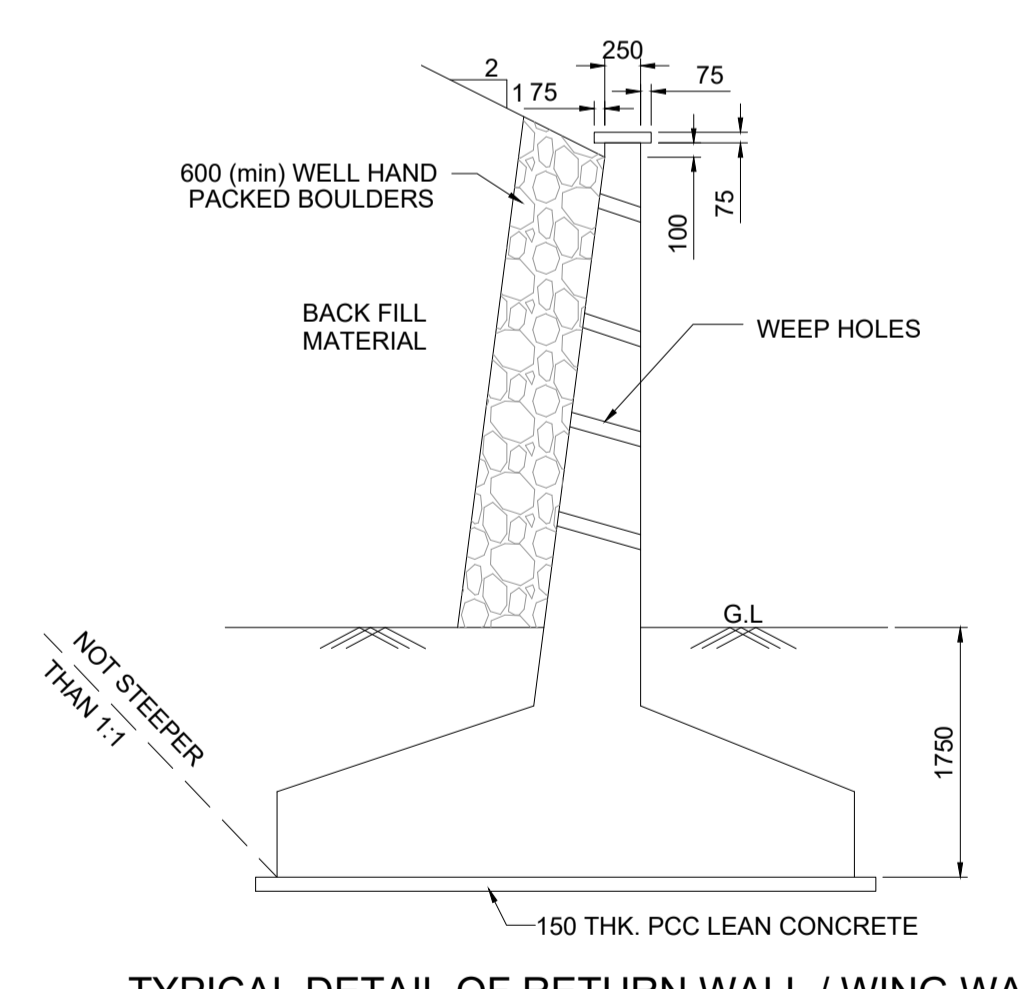
DRG. NO. GC-HRIDC-C4-DRW-BRD-GAD-01047\_A0 SHEET NO. 1 OF 1

SCALE : AS SHOWN ISSUE DATE 07-11-2022 REVISED DATE



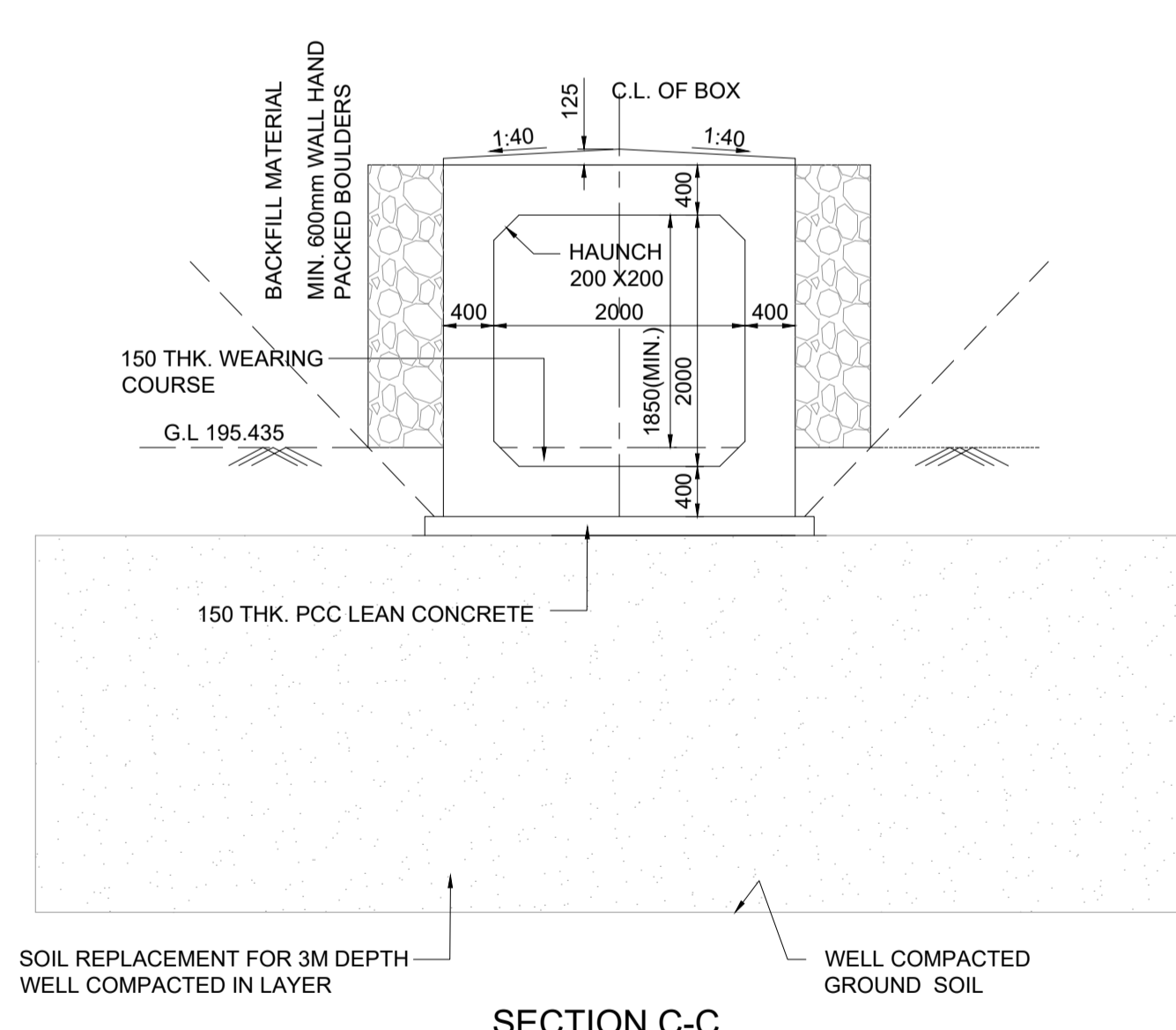
VIEW AT B-B

SCALE 1:50



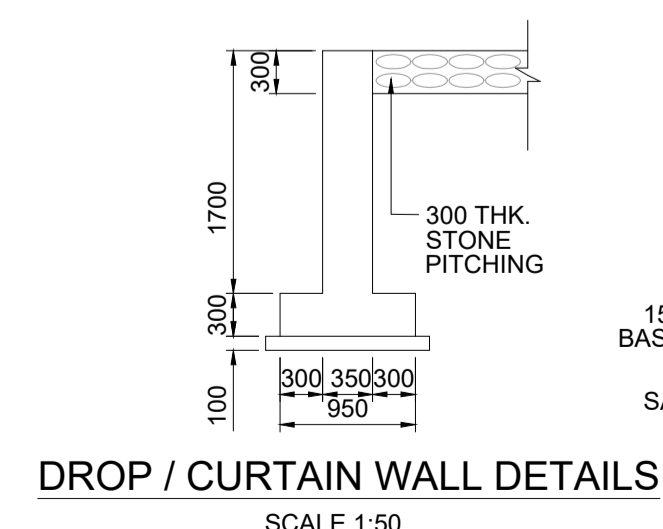
TYPICAL DETAIL OF RETURN WALL / WING WALL

SCALE 1:50



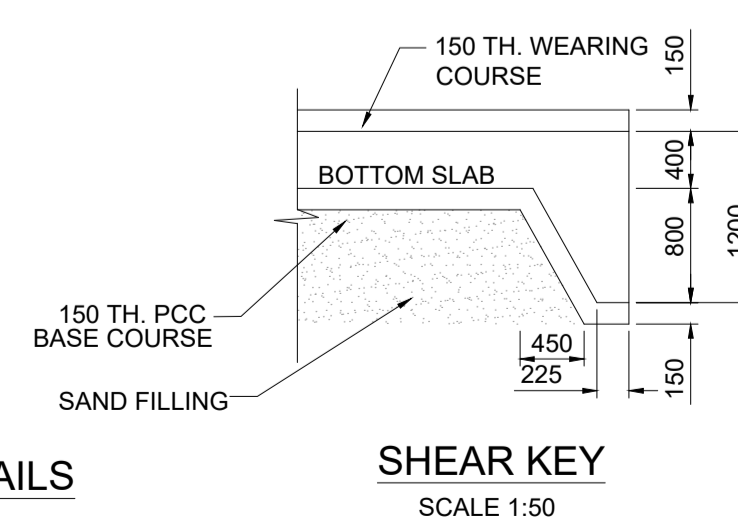
SECTION C-C

SCALE 1:50



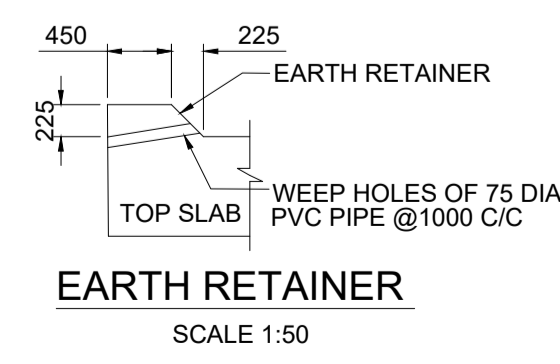
DROP / CURTAIN WALL DETAILS

SCALE 1:50



SHEAR KEY

SCALE 1:50

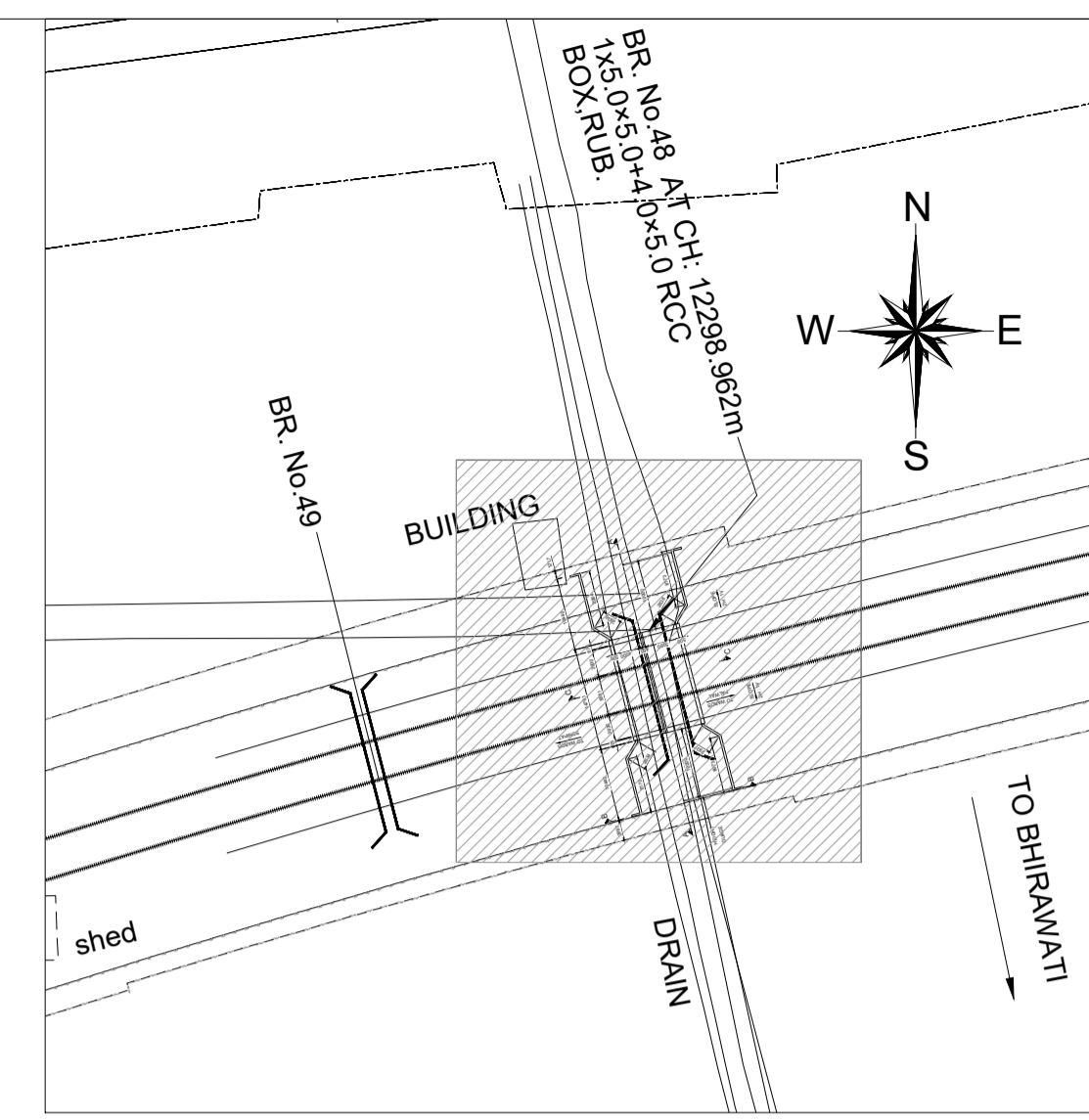
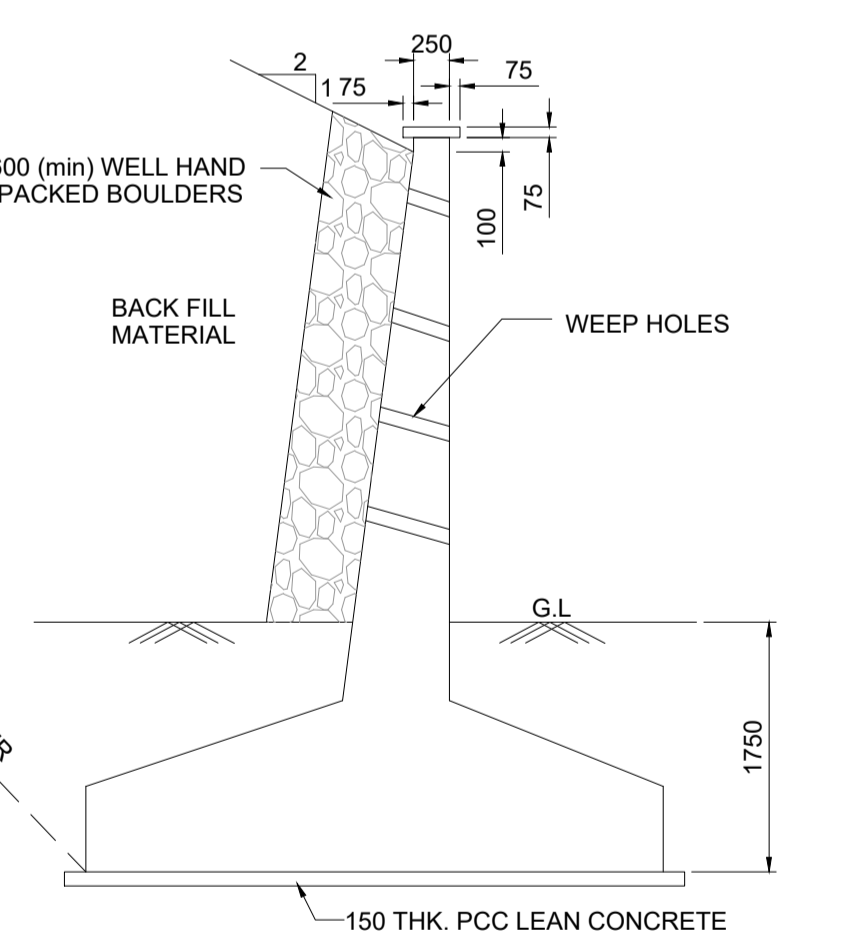
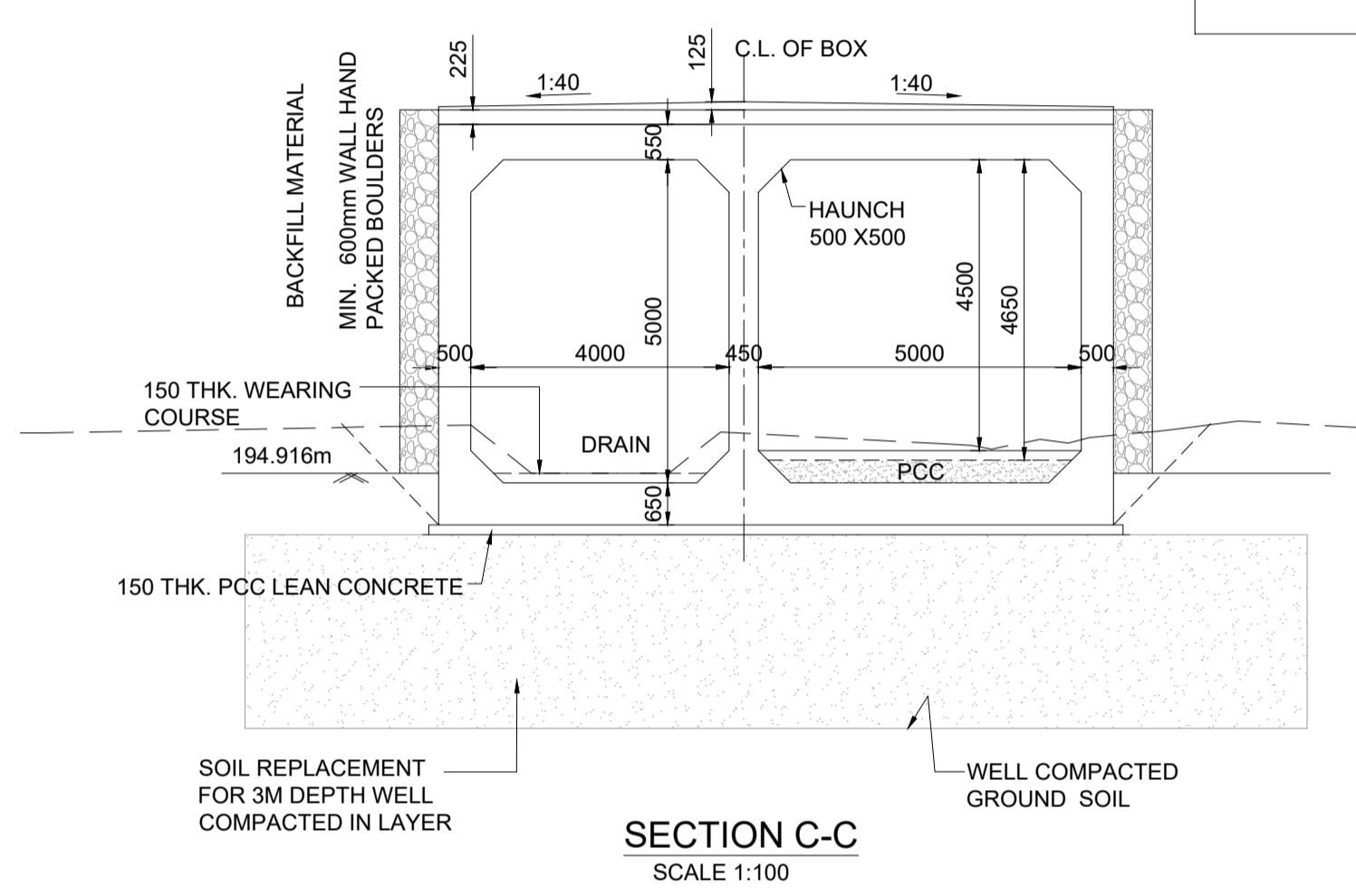
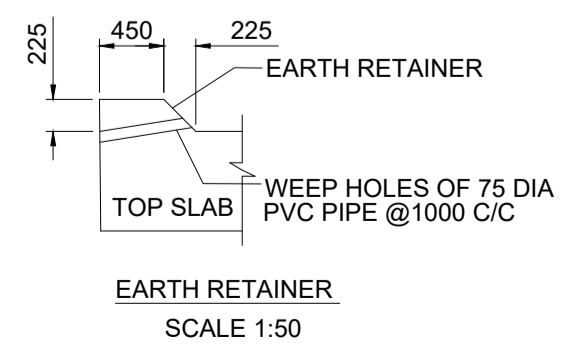
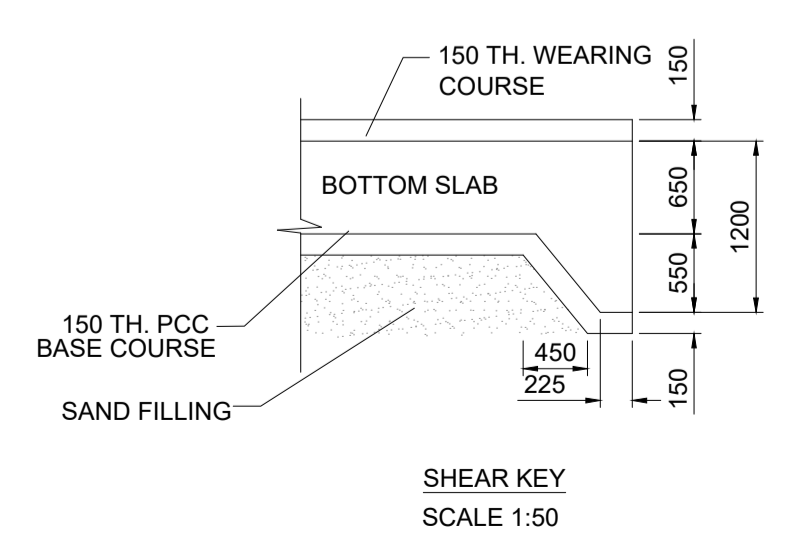
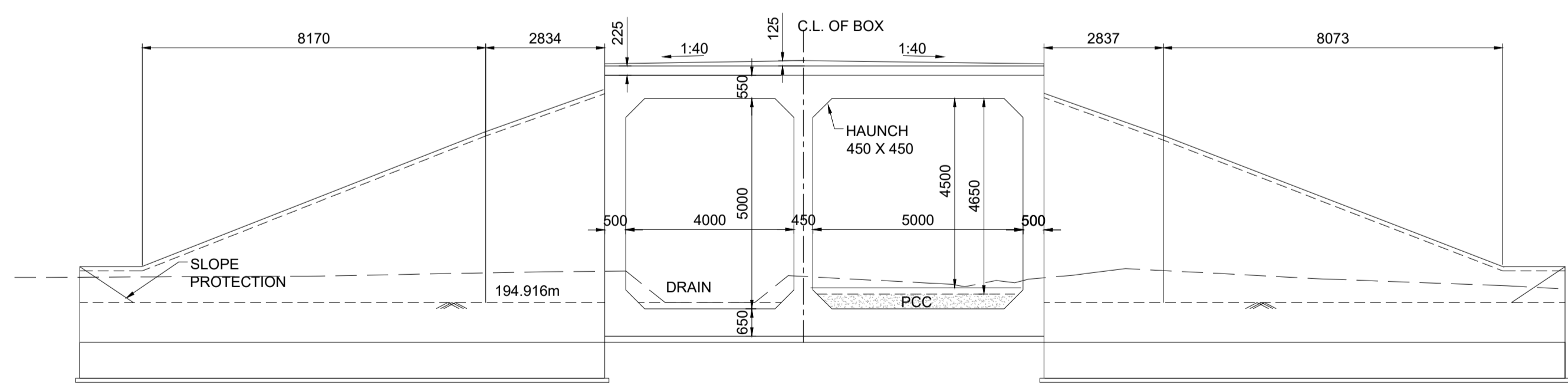
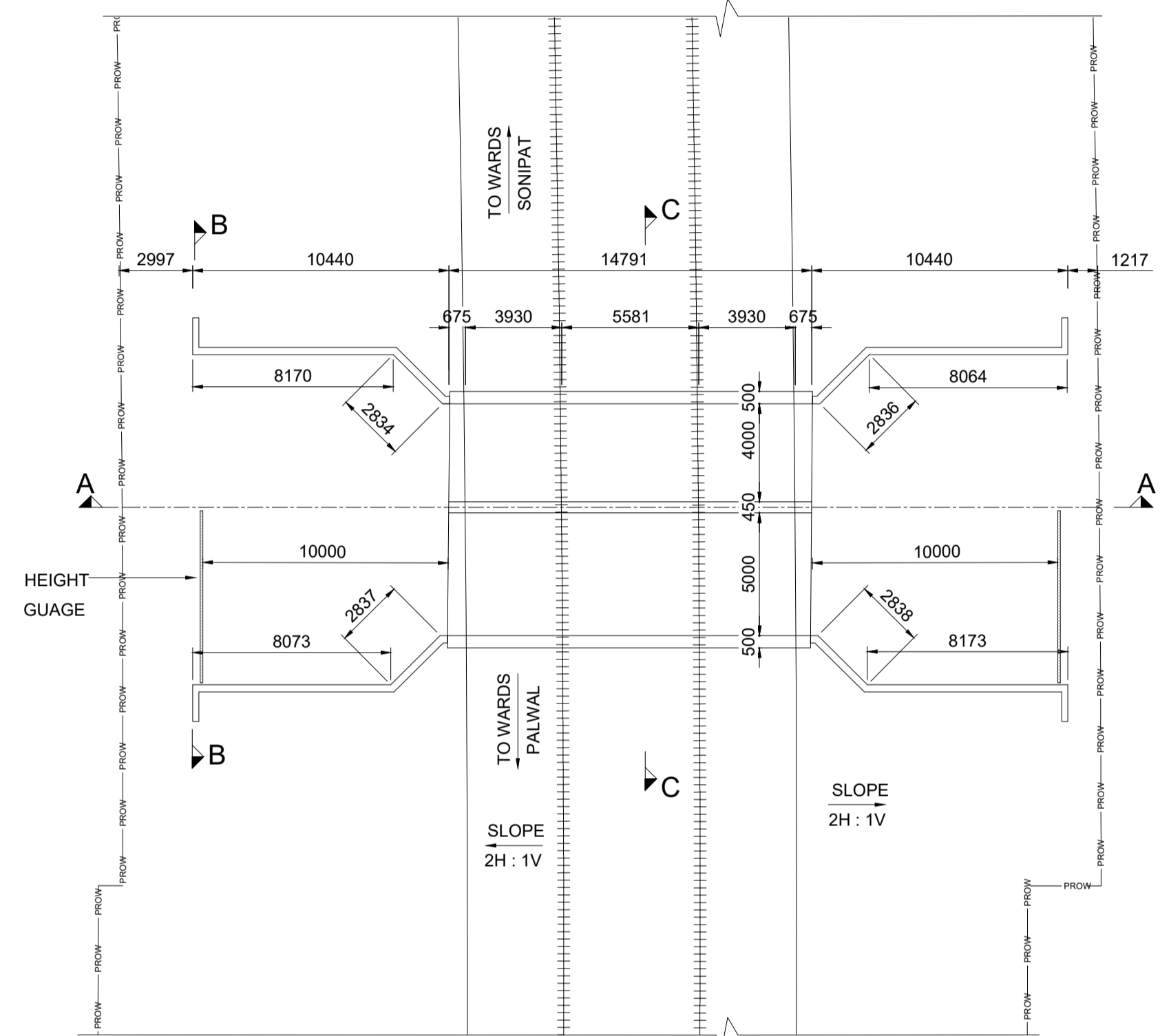
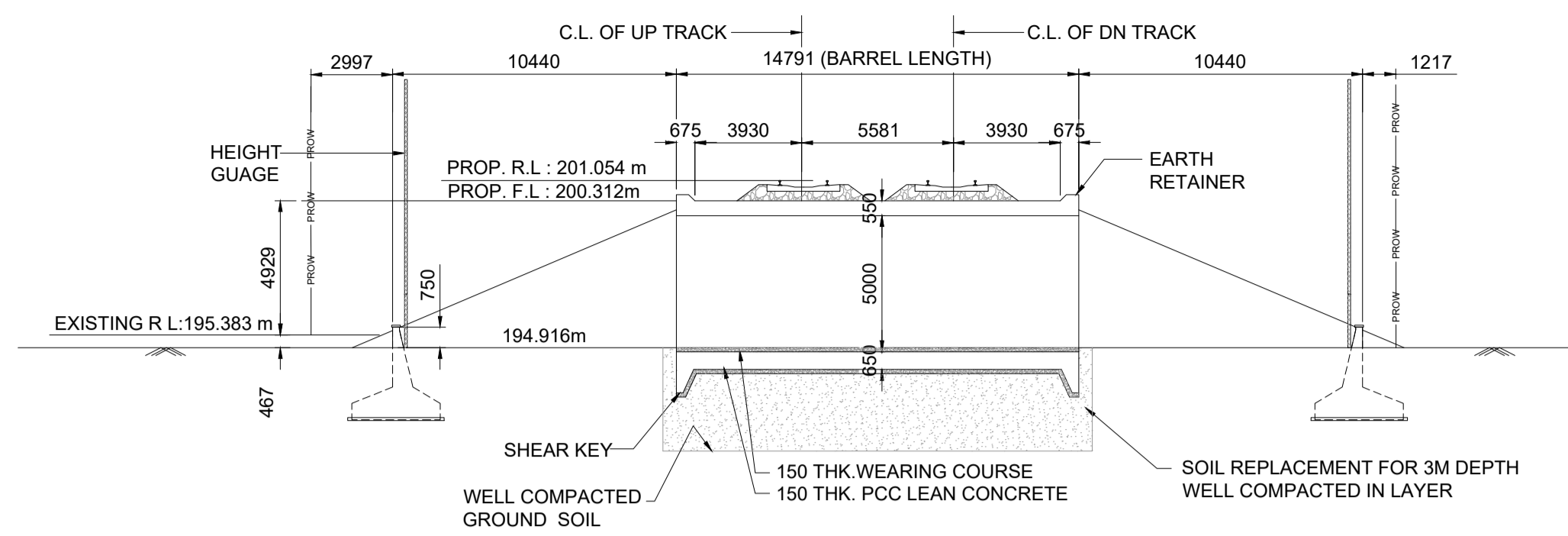


EARTH RETAINER

SCALE 1:50

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu Patial</i>		





LEGEND

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
RL	ROAD LEVEL

HYDRAULIC DATA OF DRAIN

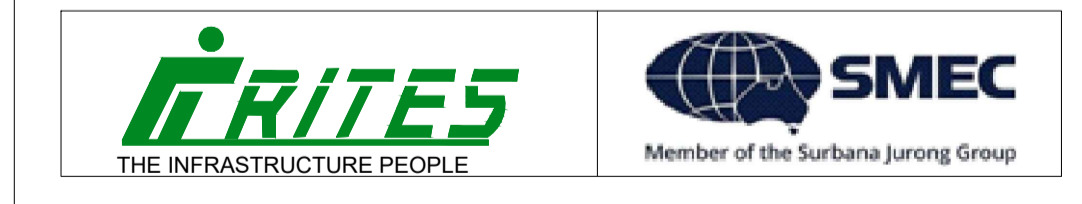
NO	NAME OF MINOR	BHIRAOTI MINOR
1	RD	1120
2	BED LEVEL	630.39
3	FULL SUPPLY LEVEL	640.09
4	FREE BOARD	0.75
5	DISCHARGE	7.00Cs
6	BED WIDTH	CUP SHAPE
7	F.S.D	1.70
8	SIDE SLOPE	1:25%
9	W.S SLOPE	0.25%
10	VELOCITY	1.48
11		

- NOTES :**
- A) GENERAL NOTES**
- ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  - THE CHAINAGES SHOWN ARE RECKONED FROM C/L OF PRITHALA STATION BUILDING TAKEN AS 0+0 M. WITH RESPECT TO UP MAIN LINE.
  - FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  - BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
  - THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  - ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  - SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  - ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
  - THIS DRAWING IS THE PROPERTY OF HRDC AND FOR EXCLUSIVE USE OF HORC.
  - DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  - THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**
- PROTECTION WORK ON SLOPES OF BANK UP TO 15M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRDC-SK-GEN-015.
  - INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
  - FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  - ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  - PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
  - DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
    - IRS BRIDGE RULE
    - IRS CONCRETE BRIDGE CODE
    - IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
  - SEISMIC ZONE- IV
  - EXPOSURE CONDITION- MODERATE.
  - DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST
  - THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB- STRUCTURE AND FOUNDATION CODE.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHALL BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KGS/M<sup>2</sup> CONFORMING TO IS-3117.
  - REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786.
  - FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
    - ALL RCC /WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
    - LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
  - FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  - HEIGHT GAUGE SHALL BE PROVIDED AS PER RDSO STANDARD DRAWING NO. RDSO/M0001.
  - SPEED BREAKER SHOULD BE PROVIDED ON EITHER APPROACH OF RUB AT A DISTANCE OF 20M FROM THE BRIDGE COVERING FULL WIDTH OF THE ROAD INCLUDE BERMS.
- IMPORTANT NOTE:**  
TOP OF BOTTOM SLAB OF RCC BOX SHALL NOT BE KEPT ABOVE THE NATURAL GROUND LEVEL. HOWEVER, ROAD LEVEL AND VERTICAL CLEARANCE ABOVE ROAD LEVEL SHALL BE MAINTAINED AS SHOWN IN THE DRAWING. OVERALL HEIGHT OF THE BOX MAY NEED MODIFICATION ACCORDINGLY. THE HEIGHT OF RCC BOX SHALL BE PROVIDED KEEPING ABOVE PROVISION IN VIEW.

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



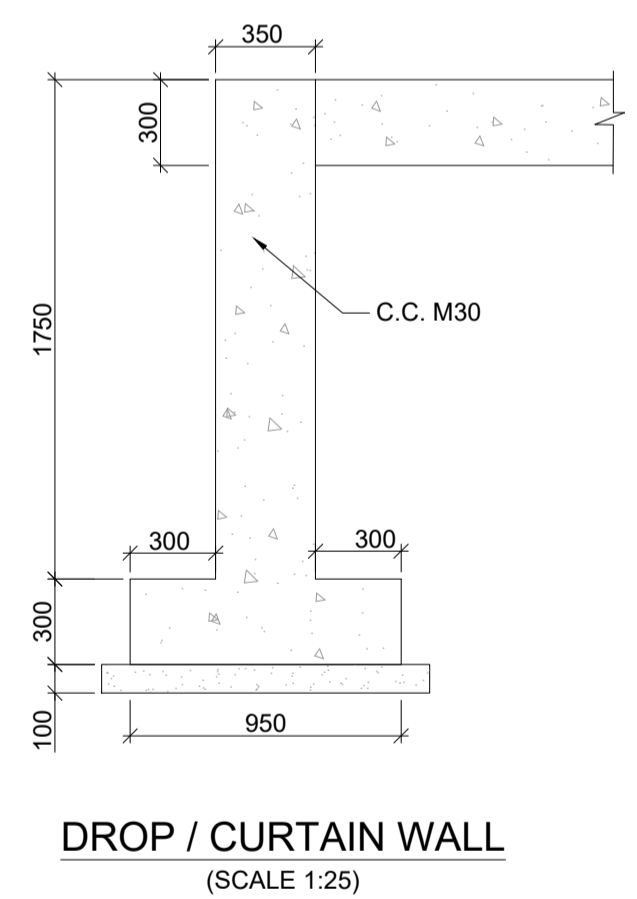
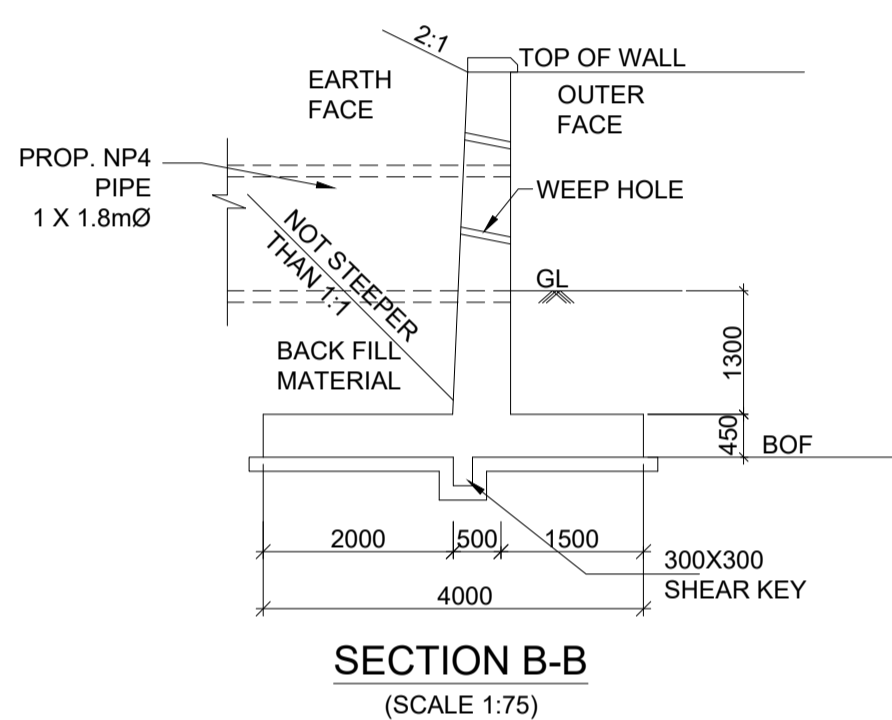
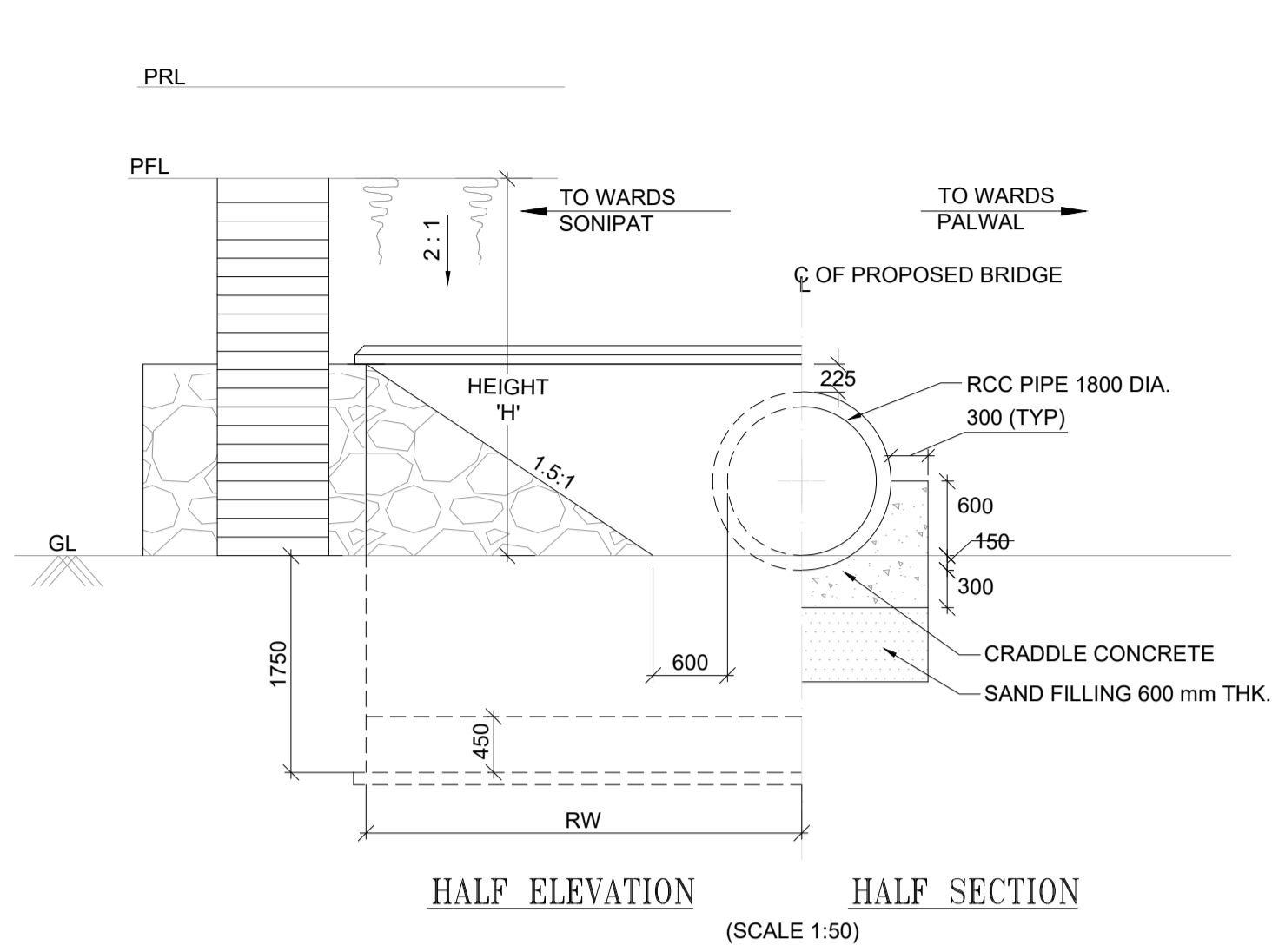
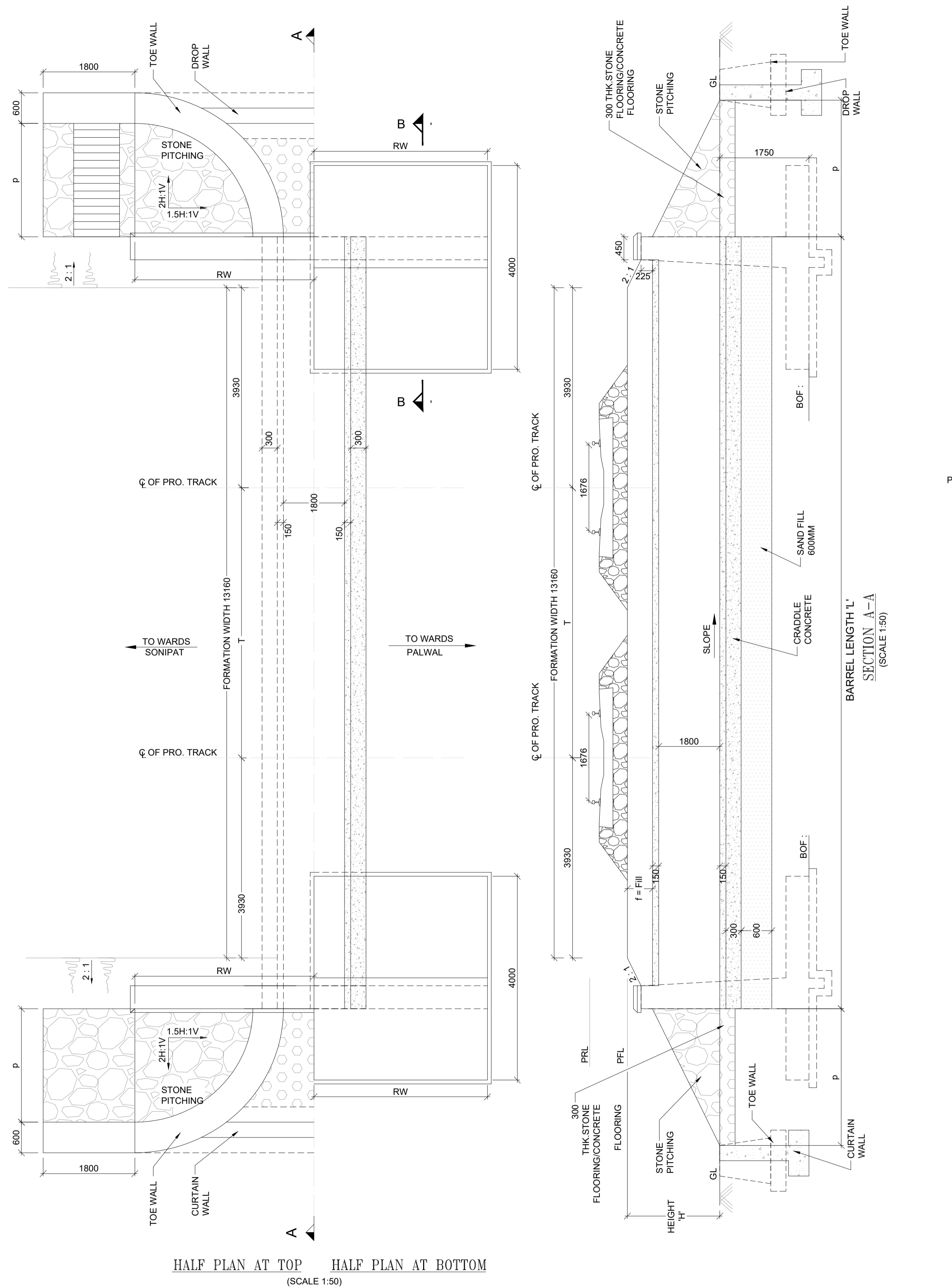
**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING  
FOR ROAD +DRAIN BRIDGE NO. 048 SPAN  
1x5.0x5.0+4.0x5.0 RCC BOX AT CH: 12298.962

**DRG. NO.** GC-HRDC-C4-DRW-BRD-GAD-01048\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

GC/HORC		HRDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		





**LEGEND**

P.F.L	PROPOSED FORMATION LEVEL
P.R.L	PROPOSED RAIL LEVEL
G.L	GROUND LEVEL
BOF	BOTTOM OF FOUNDATION
PROP.	PROPOSED
EXG.	EXISTING
THK.	THICKNESS
CH.	CHAINAGE
PCC	PLAIN CEMENT CONCRETE
RCC	REINFORCED CEMENT CONCRETE
BR.	BRIDGE

**CONSTRUCTION DEPTH**


1) RAIL (60kg)	172 mm
2) RUBBER PAD	10 mm
3) WIDER PSC SLEEPER HEIGHT AT RAIL SEAT	210 mm
4) MINIMUM BALLAST THK.	350 mm
TOTAL	742 mm


**COLOR CODE LEGEND**

RED	PROPOSED
CONTINUOUS	VISIBLE
DOTTED	INVISIBLE
BLACK	EXISTING

- NOTES :**
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS STATED OTHERWISE. WHEREVER WRITTEN DIMENSIONS ARE MENTIONED, SAME SHALL BE FOLLOWED.
  - WHEREVER NECESSARY 'I.R.S BRIDGE SUB-STRUCTURE AND FOUNDATION CODE' AND 'IRC SP 13' HAVE BEEN REFERRED.
  - BRIDGE IS TO BE DESIGNED FOR IRS 32.5 TONNE LOADING.
  - BOX SHOULD BE PROVIDED ON NON ERODIBLE STRATA OR ELSE SUITABLE PROTECTION WORK TO BE TAKEN UP AS SUGGESTED IN THIS DRAWING. NECESSARY MODIFICATION TO PROTECTION WORK MAY BE DONE DURING EXECUTION AS PER REQUIREMENT. GUIDANCE MAY ALSO BE TAKEN FROM INDIAN RAILWAY BRIDGE MANUAL, BRIDGE SUB-STRUCTURE AND FOUNDATION CODE, IRC-5 AND IRC SP-13.
  - LOCATION, FORMATION LEVEL, RAIL LEVEL, NO. OF TRACKS ETC. ARE BASED ON L-SECTION. HOWEVER THESE MAY BE RECHECKED AT SITE BEFORE EXECUTION.
  - BARREL LENGTH OF THE BRIDGE MAY BE SUITABLY MODIFIED AS PER SITE REQUIREMENT.
  - SAFE BEARING CAPACITY OF THE SOIL AT THE FOUNDING LEVEL SHALL NOT BE LESS THAN THE MAXIMUM FOUNDATION PRESSURE AT BOTTOM OF THE PROPOSED BOX AND RETAINING WALL, TO BE ENSURED BY THE ENGINEER IN-CHARGE AT SITE. IF BEARING CAPACITY AT SITE IS INADEQUATE, SUITABLE GROUND IMPROVEMENT METHOD MAY BE ADOPTED.
  - DIMENSIONS SHOW IN THE GAD ARE TENTATIVE AND MAY CHANGE DURING DETAIL DESIGN.
  - FOLLOWING CONCRETE MIX ARE RECOMMENDED BY TREATING EXPOSURE CONDITION AS MODRATE. HOWEVER THESE WILL BE SUBJECT TO CONFIRMATION IN THE DETAILED DESIGN DRAWING.
    - a) ALL RCC MEMBERS --- M35
    - b) WEARING COAT --- M35
    - c) LEVELLING COURSE / LEAN CONCRETE --- M15
  - AGGREGATE 20mm (GRADED) TO BE USED FOR STRUCTURAL MEMBERS.
  - H.Y.S. D BARS CONFORMING TO IS 1786, Fe /500D ARE RECOMMENDED SUBJECT TO CONFIRMATION IN DETAILED DESIGN DRAWINGS.
  - CEMENT SHALL CONFORM TO IRS CONCRETE BRIDGE CODE.
  - BACK FILL MATERIAL BEHIND BOX / RETURN WALLS SHALL BE AS PER CLAUSE 7.5.1 OF BRIDGE SUB-STRUCTURE AND FOUNDATION ANGLE OF REPOSE OF BACK FILL SHOULD NOT BE LESS THAN 30°. ALTERNATIVELY GEO SYNTHETIC MAY BE USED AS PER EXTANT RDSO GUIDELINES.
  - WEARING COURSE IS TO BE PROVIDED AS PER DETAILS SHOWN IN THIS DRAWING.
  - THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
  - ALL CLEAN / EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  - WEEP HOLES IN RETURN WALL SHALL BE OF 100 DIA PVC PIPES STAGGERED @ 1000 C/C BOTH HORIZONTALLY & VERTICALLY FROM LOW WATER LEVEL.
  - SURFACE REINFORCEMENT OF 8 DIA @ 200 C/C BOTH WAY SHALL BE PROVIDED ALONG FACE OF PLAIN CEMENT CONCRETE. DETAILED STRUCTURAL DRAWING MAY BE REFERRED TO IN THIS REGARD.
  - ALL RCC SURFACE COMING IN CONTACT WITH SOIL TO BE PAINTED WITH BITUMEN / COAL TAR OF APPROVED QUALITY.
  - MINIMUM DEPTH OF OPEN FOUNDATION SHALL BE AS PER CLAUSE NO. 6.1 (iv) OF IRS BRIDGE SUB STRUCTURE AND FOUNDATION CODE.
  - CONTROLLED CONCRETE / DESIGN MIX CONCRETE SHALL BE USED.
  - SEISMIC ZONE - IV AND EXPOSURE CONDITION - MODERATE.
  - COVER TO REINFORCEMENT, LAP LENGTH, TEMPERATURE REINFORCEMENT IN MCC SHALL BE PROVIDED AS PER DETAILED STRUCTURAL DRAWING.
  - THIS DRAWING IS THE PROPERTY OF HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (HRIDC) AND EXCLUSIVE USE OF HRIDC.
  - TRACK CENTRE BETWEEN MAIN LINES OF HORC HAS BEEN KEPT AS MIN 5.30M.
  - FOR TOE WALL DETAILS REFER SEPARATE SKETCH NO. GC-HRIDC-SK-GEN-014.
  - PROTECTION WORK ON SLOPES OF BANK UP TO 15M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
 **GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR PIPE CULVERT BRIDGE NO. 049 SPAN 1.0X1.800 PIPE CULVERT AT CH: 12341.836

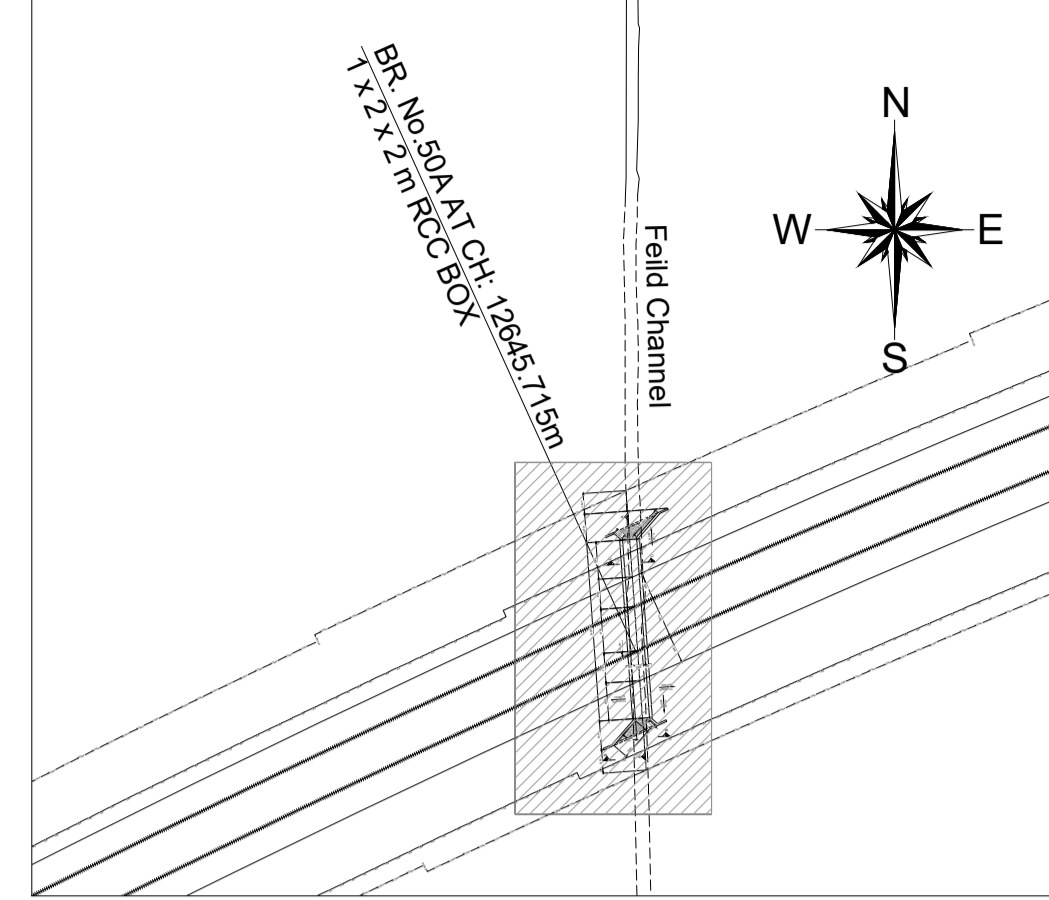
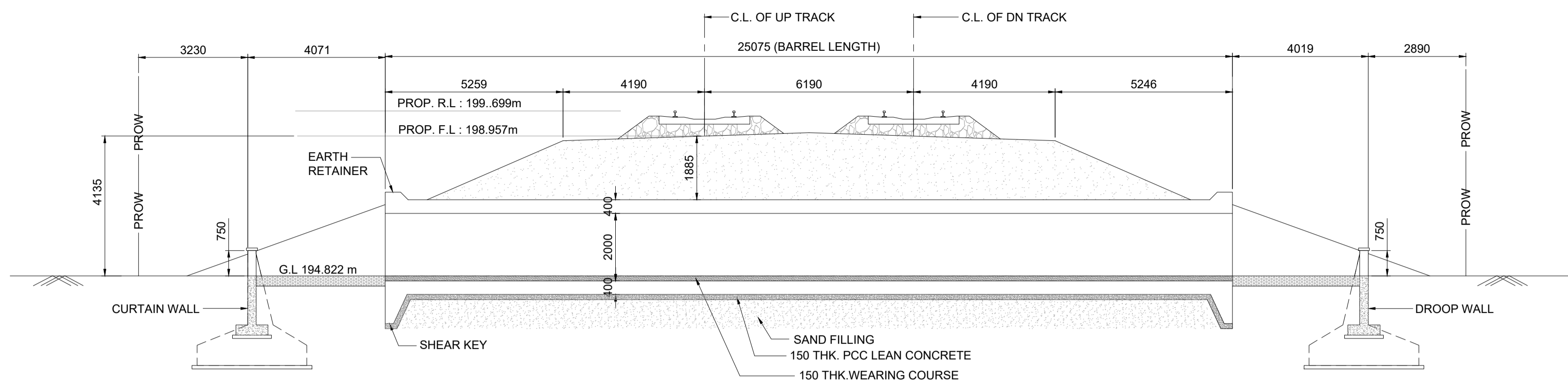
**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01049\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

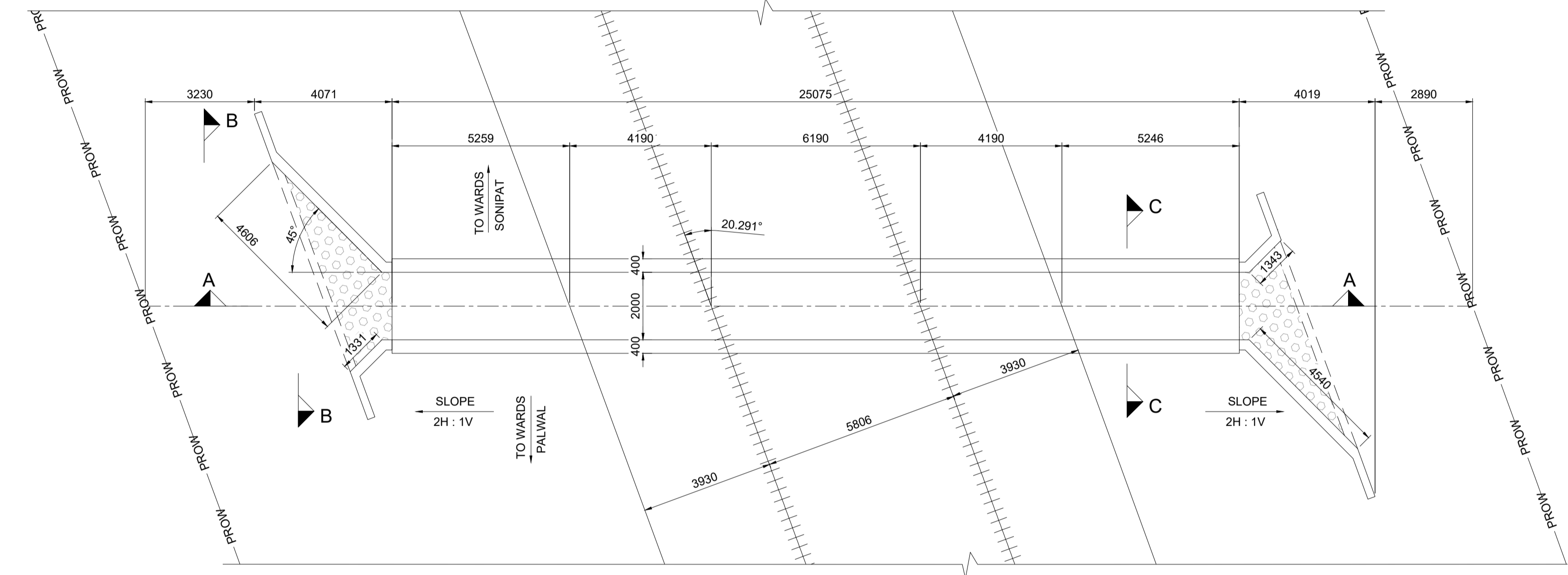
Sr. No.	Chainage (in m)	Br. No.	Span	Prop. RL	Prop. FL	BL	Clear Height	Track on	No. of tracks	T c/c	RW	P	f	H	L
1	12341.836	49	1x1.8m	201.054	200.312	194.996	1.800	Curve	2	5.640	4.765	3.3	3.366	5.316	26.954

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		



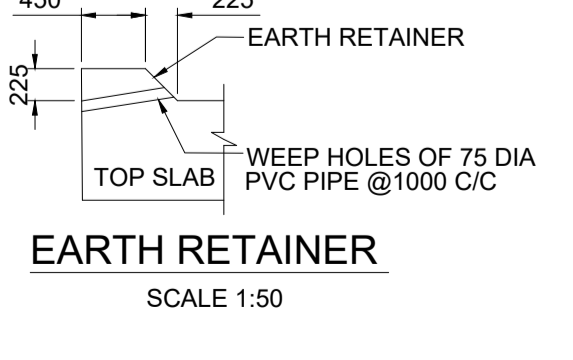
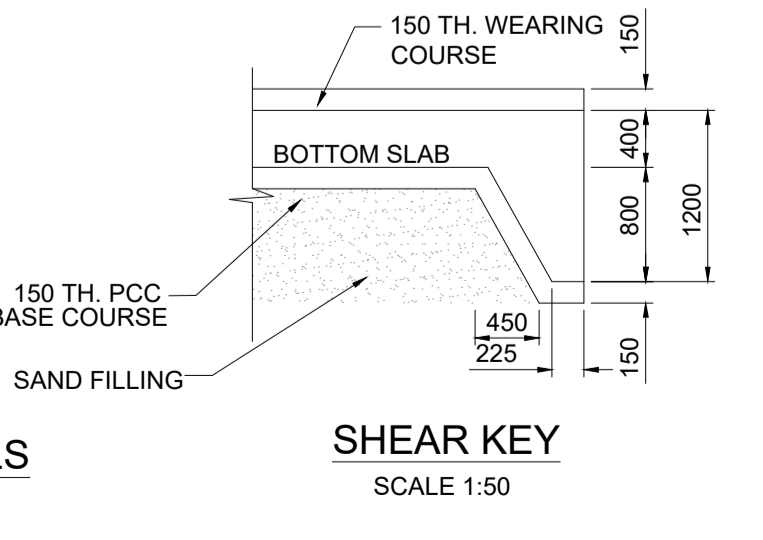
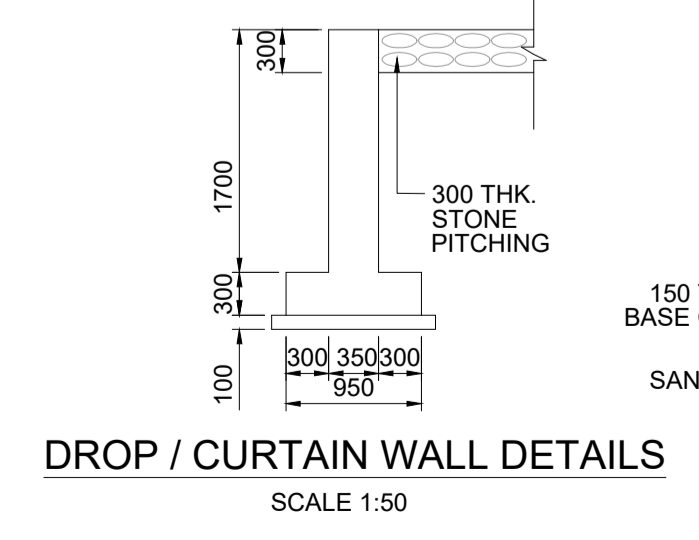
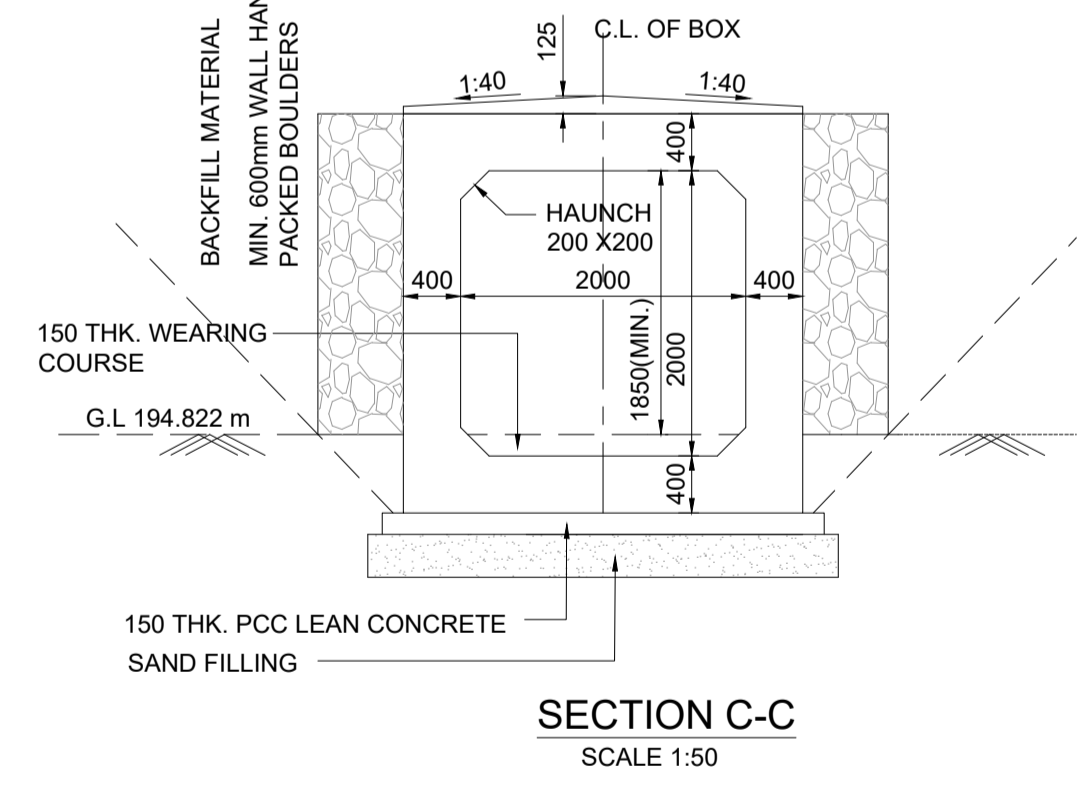
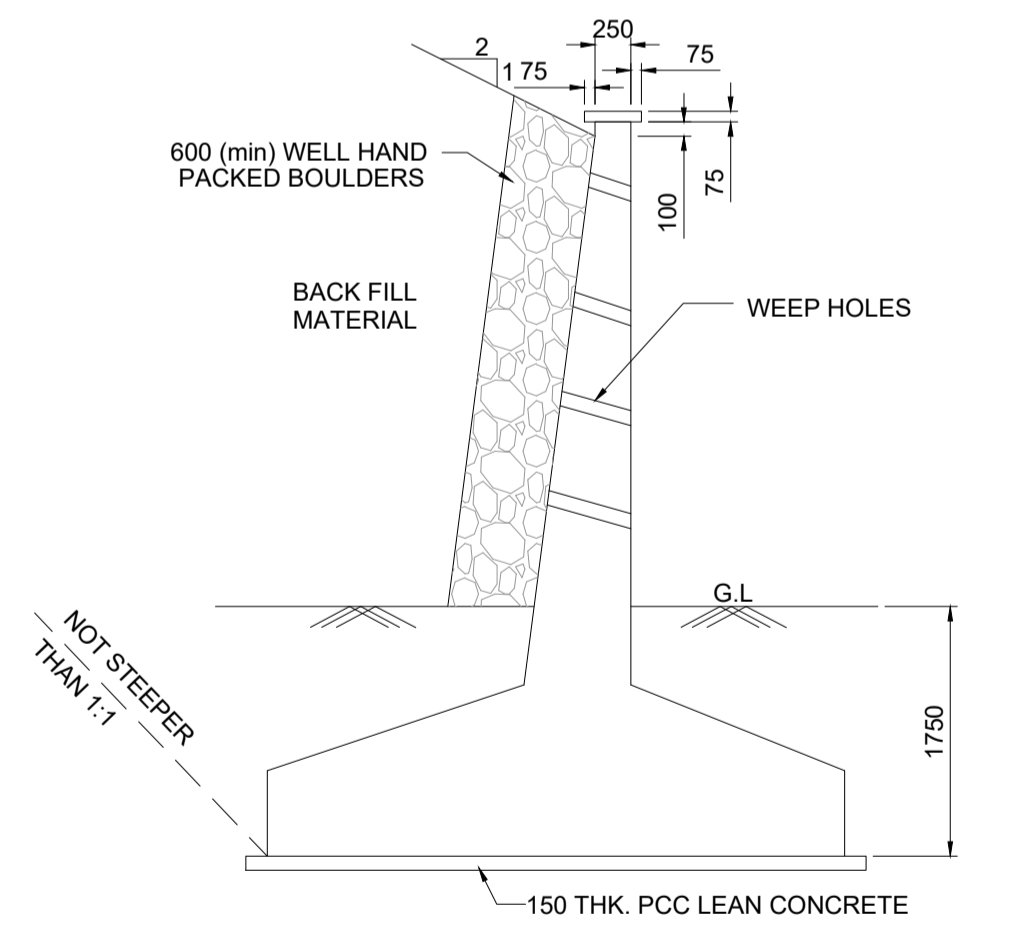
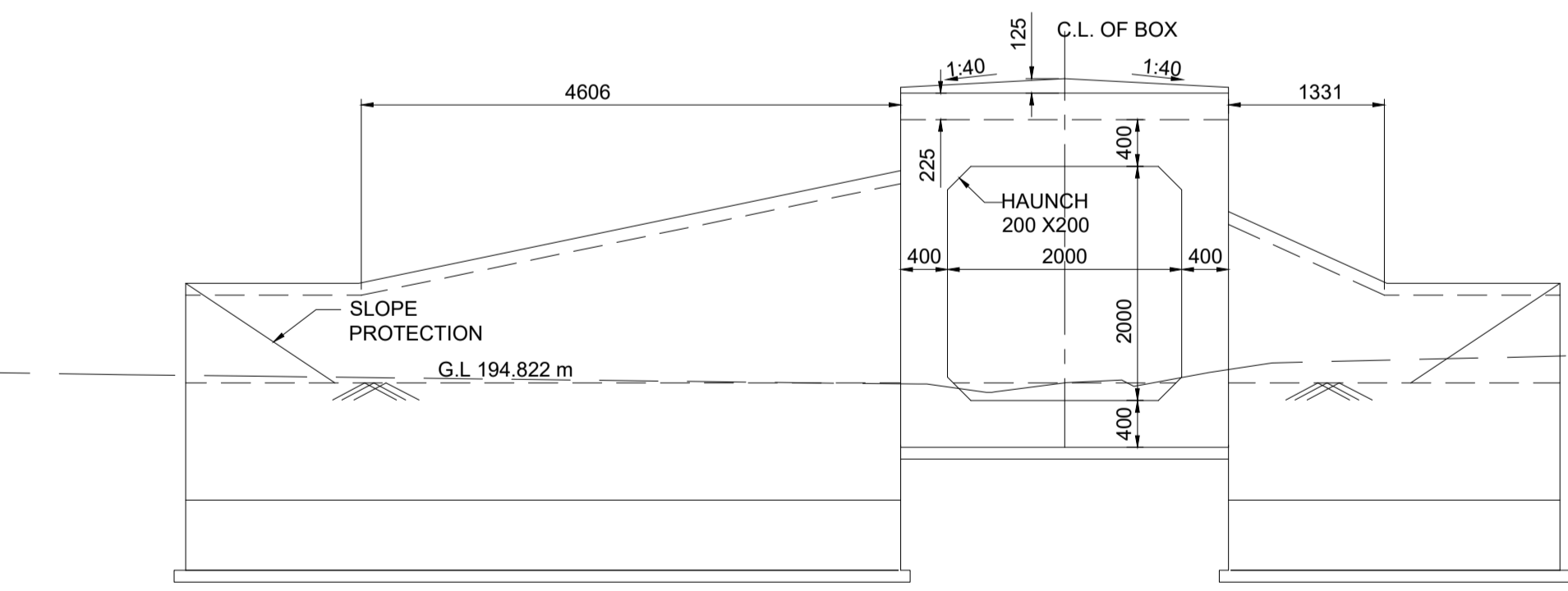


- NOTES :**
- A) GENERAL NOTES**
- ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  - THE CHAINAGES SHOWN ARE RECKONED FROM C/I.L OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
  - FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  - BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
  - THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  - ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  - SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  - ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
  - THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HRIDC.
  - DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  - THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**
- PROTECTION WORK ON SLOPES OF BANK UP TO 15M BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
  - FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  - ALL CLEAN EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  - PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
  - DIMENSION OF THE BOX MAY BE SUITABLY MODIFIED AS PER SITE REQUIREMENT. HEIGHT OF BOX SHOWN INCLUDES MINIMUM REQUIRED CLEAR OPENING HEIGHT AND WEARING COARSE. OVERALL HEIGHT OF BOX OPENING MAY VARY AS PER SITE REQUIREMENT AND ACTUAL ROAD/GROUND PROFILE.
  - DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
    - IRS BRIDGE RULE
    - IRS CONCRETE BRIDGE CODE
    - IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
  - SEISMIC ZONE- IV
  - EXPOSURE CONDITION- MODERATE.
  - DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST
  - THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G/SQM CONFIRMING TO IS-3117.
  - REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786
  - FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
    - ALL RCC /WEARING COURSE(WC) =M.35/DETAILED DESIGN DRG.
    - LEVELING COURSE/LEAN CONCRETE =M.20/DETAILED DESIGN DRG.
  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
  - FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  - ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.



**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL



GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu Patial</i>		

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

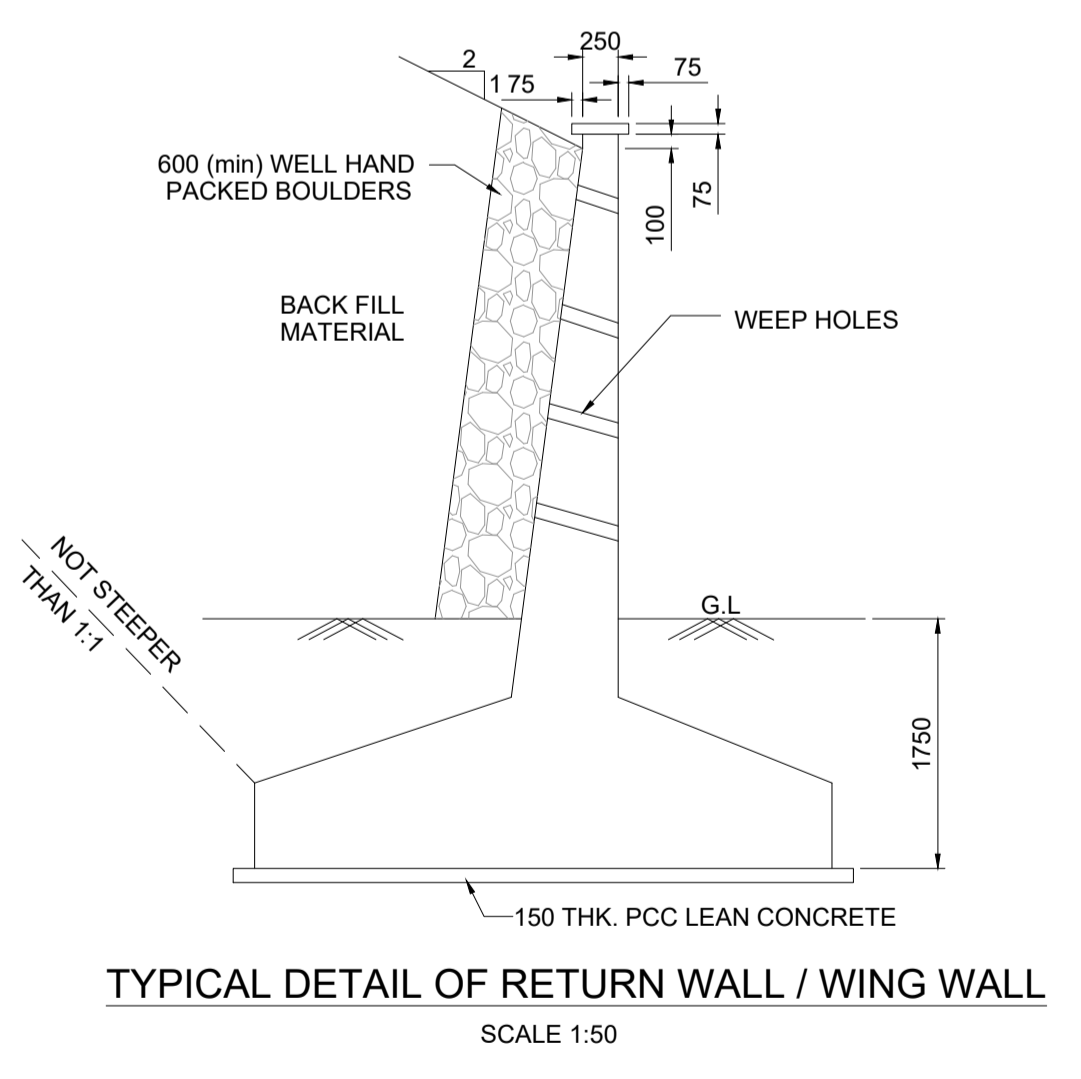
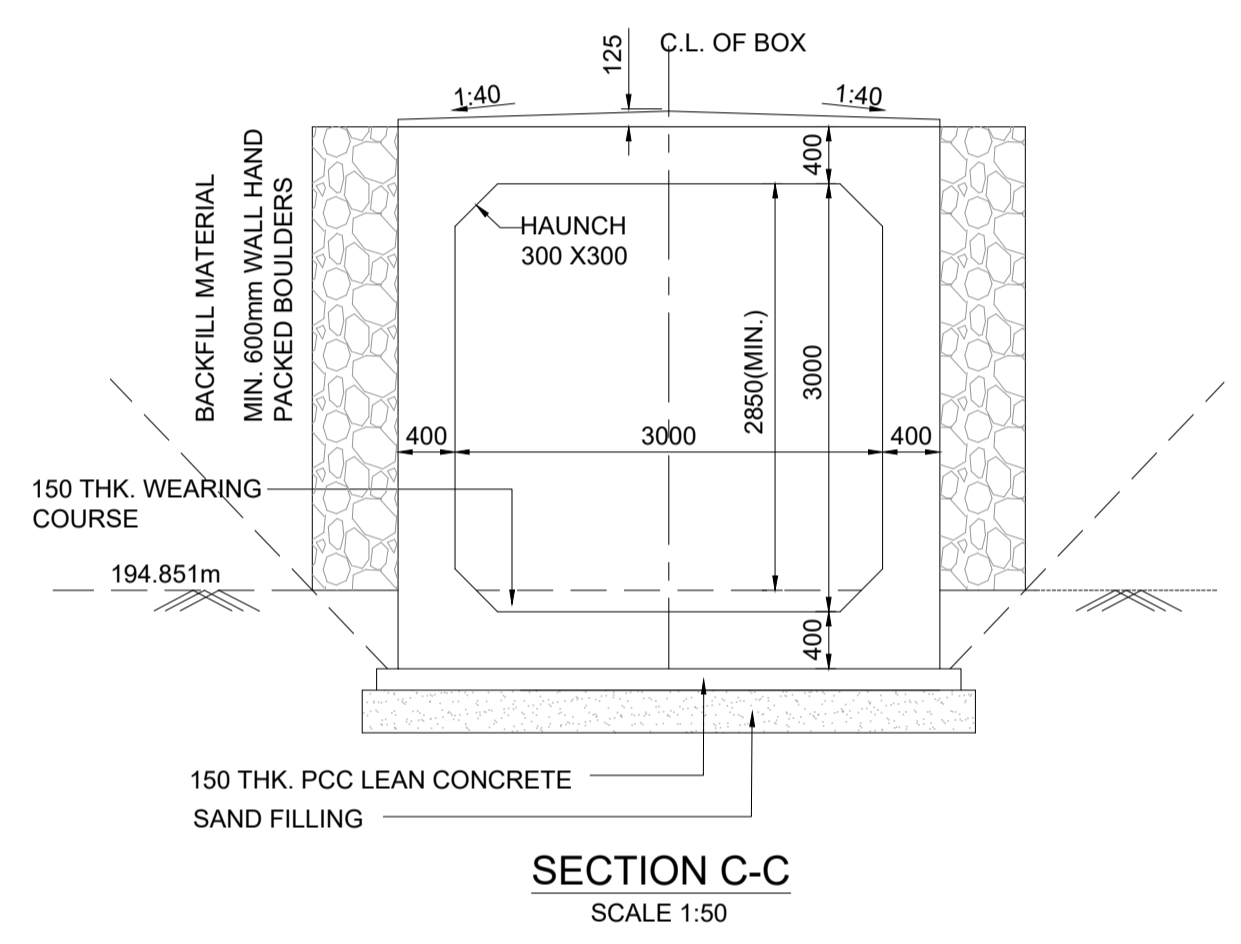
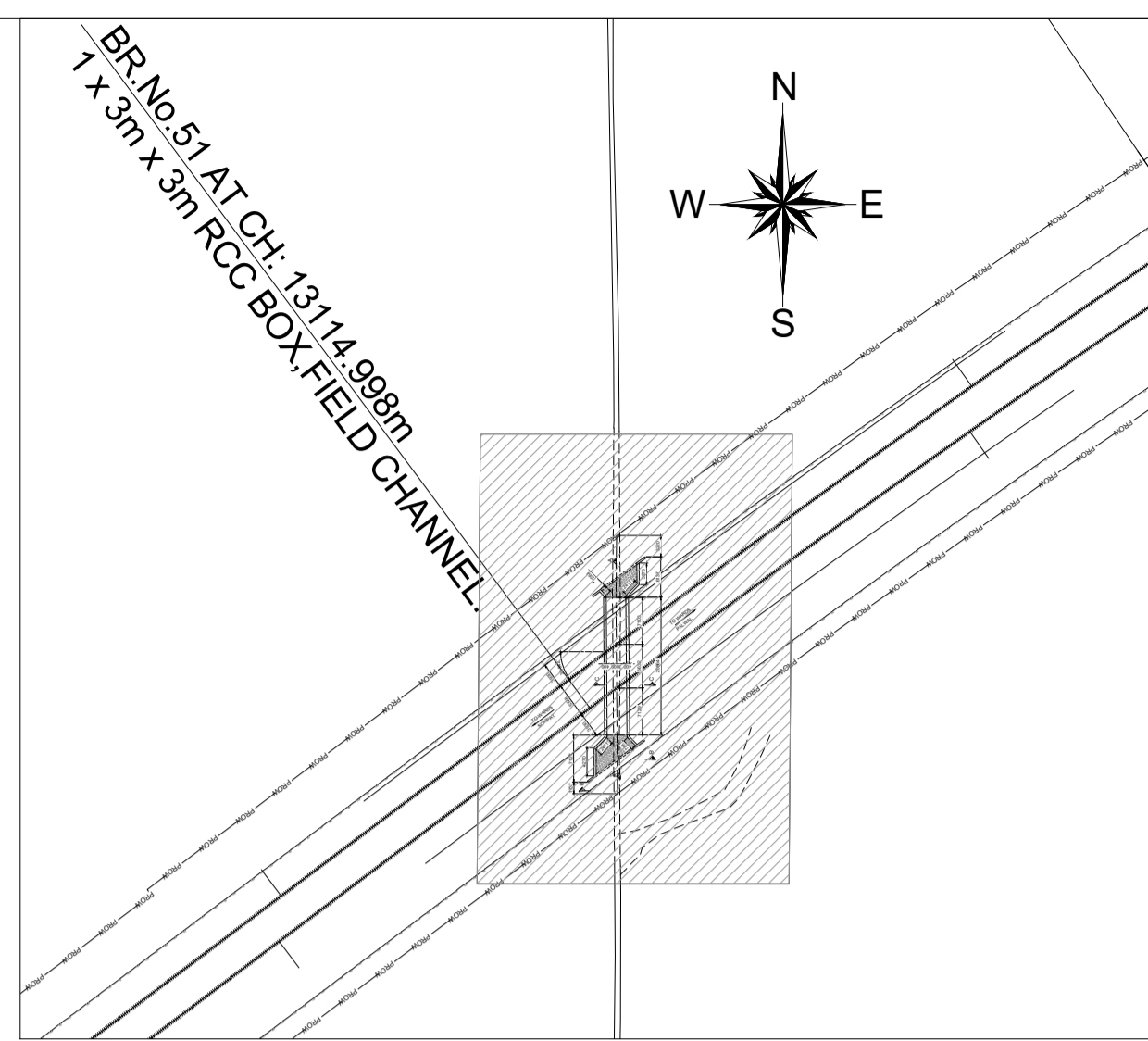
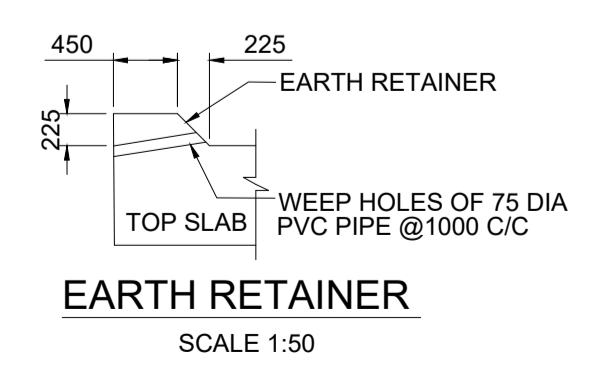
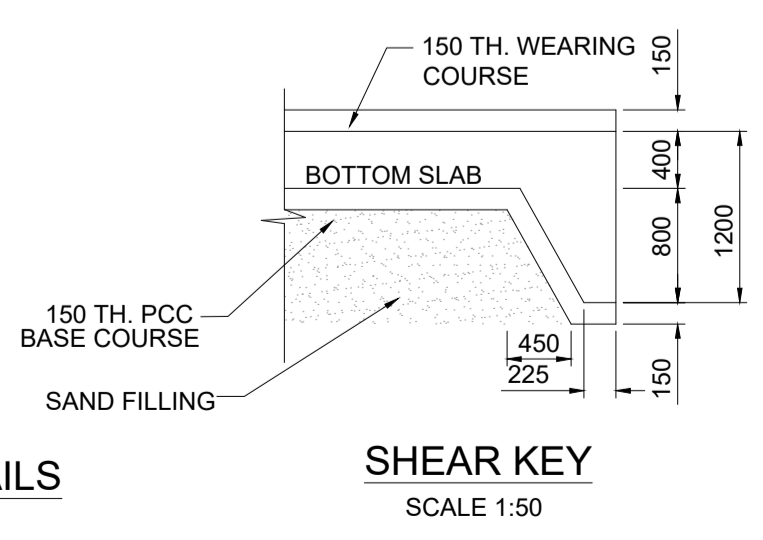
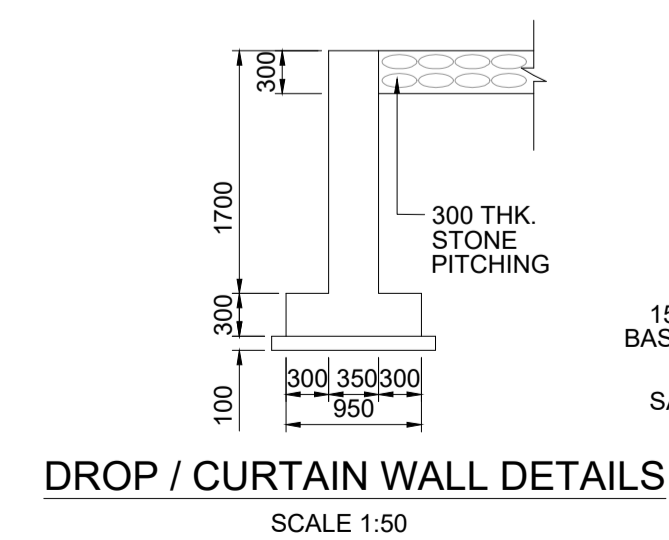
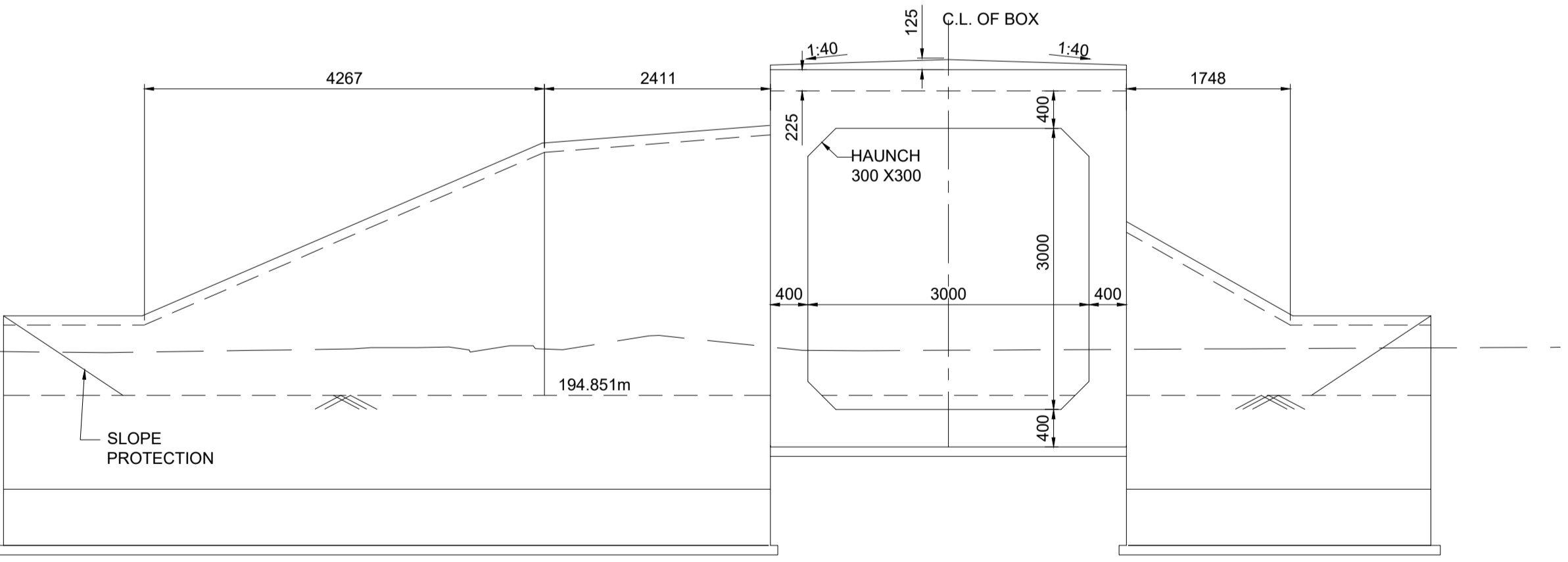
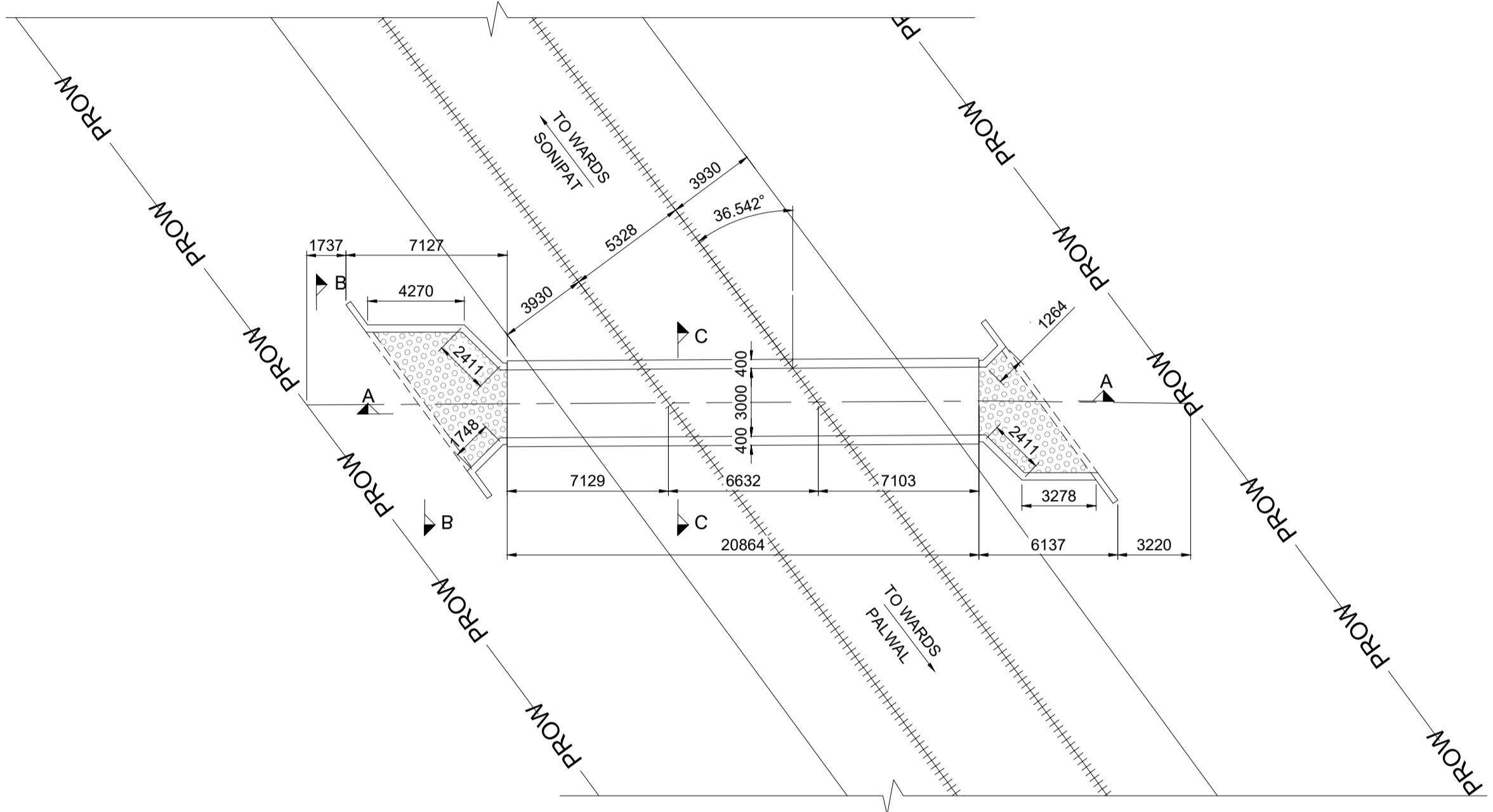
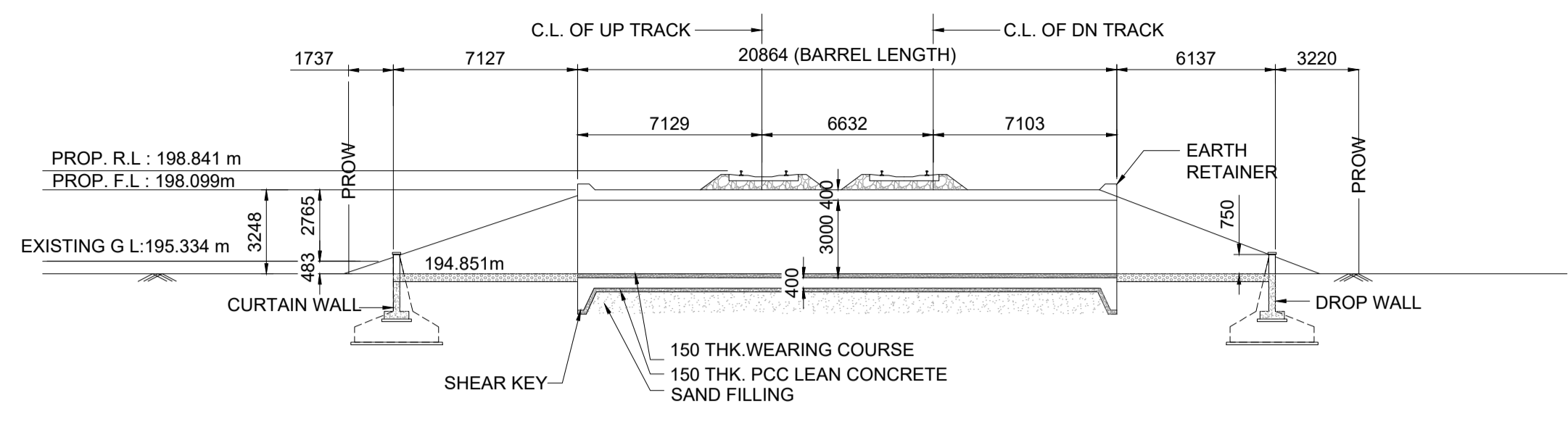


**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR BALANCING CULVERT BRIDGE NO. 050 SPAN 1.0X2.0X2.0 RCC BOX AT CH: 12645.715

**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01050\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**





- NOTES :**
- A) GENERAL NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  2. THE CHAINAGES SHOWN ARE RECKONED FROM C/I OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
  3. FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  4. BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T/LOADING AS APPLICABLE.
  5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
  9. THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HORC.
  10. DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  11. THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**
1. PROTECTION WORK ON SLOPES OF BANK UP TO 15M,BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  2. INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
  3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  4. ALL CLEAN EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
  6. DIMENSION OF THE BOX MAY BE SUITABLY MODIFIED AS PER SITE REQUIREMENT. HEIGHT OF BOX SHOWN INCLUDES MINIMUM REQUIRED CLEAR OPENING HEIGHT AND WEARING COARSE. OVERALL HEIGHT OF BOX OPENING MAY VARY AS PER SITE REQUIREMENT AND ACTUAL ROAD/GROUND PROFILE.
  7. DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
    - (i) IRS BRIDGE RULE
    - (ii) IRS CONCRETE BRIDGE CODE
    - (iii) IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
  8. SEISMIC ZONE- IV
  9. EXPOSURE CONDITION- MODERATE.
  10. DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST
  11. THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
  12. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G/SQM CONFIRMING TO IS-3117.
  13. REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786
  14. FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
    - (i) ALL RCC /WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
    - (ii) LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
  15. BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
  16. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  17. ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.

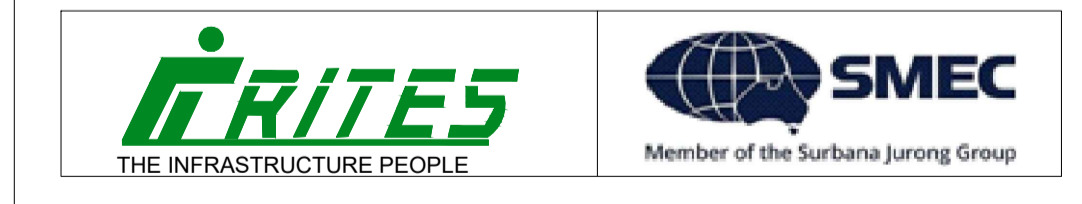
**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HEIGHTEST FLOOD LEVEL
GL	GROUND LEVEL

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
**HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



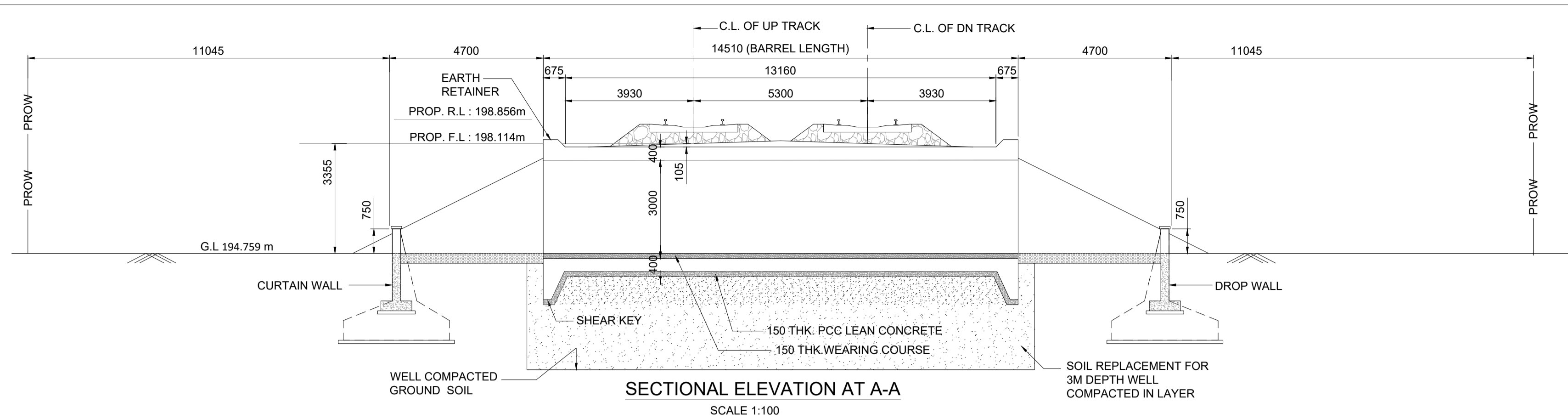
**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING  
 FIELD CANAL BRIDGE NO. 051 SPAN  
 1.0X3.0X3.0 RCC BOX AT CH: 13114.998

**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01051\_A0 **SHEET NO.** 1 OF 1

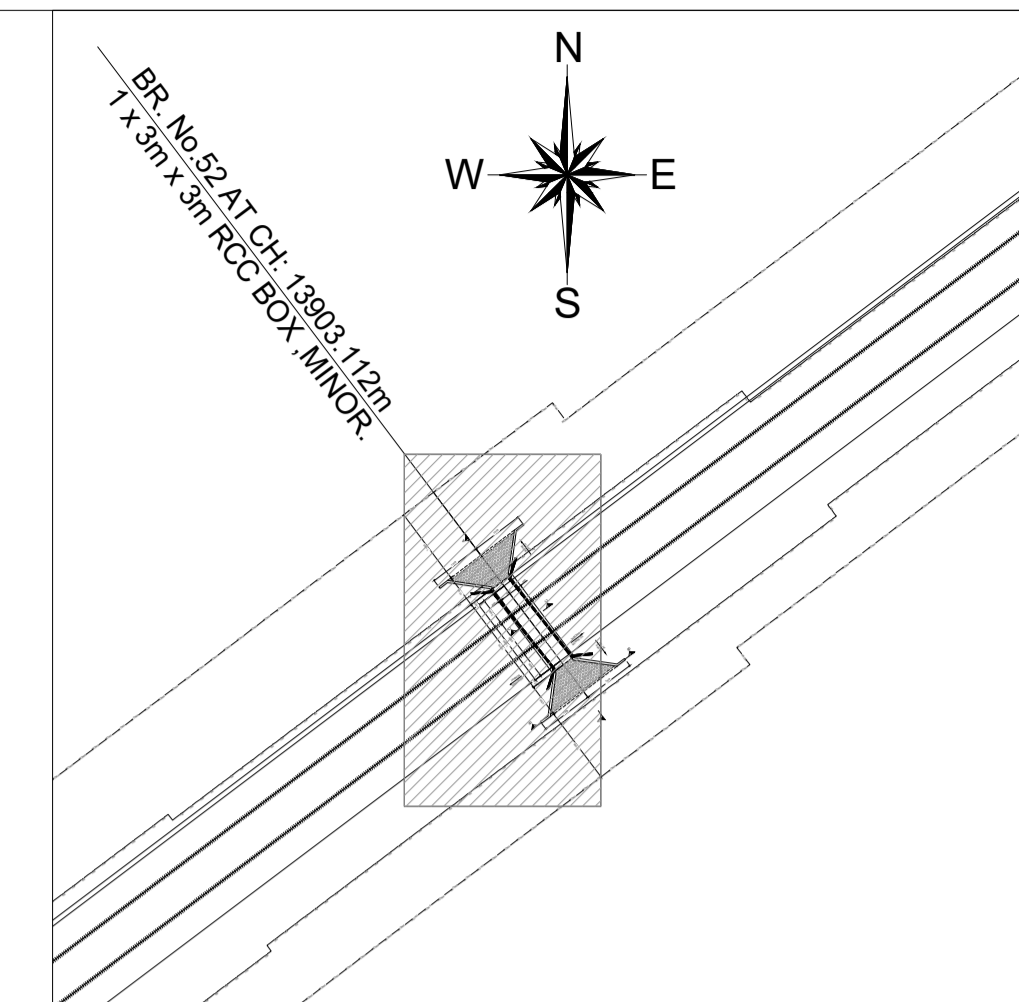
<b>SCALE :</b>	<b>ISSUE DATE</b>	<b>REVISED DATE</b>
AS SHOWN	07-11-2022	

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		





SECTIONAL ELEVATION AT A-A  
SCALE 1:100

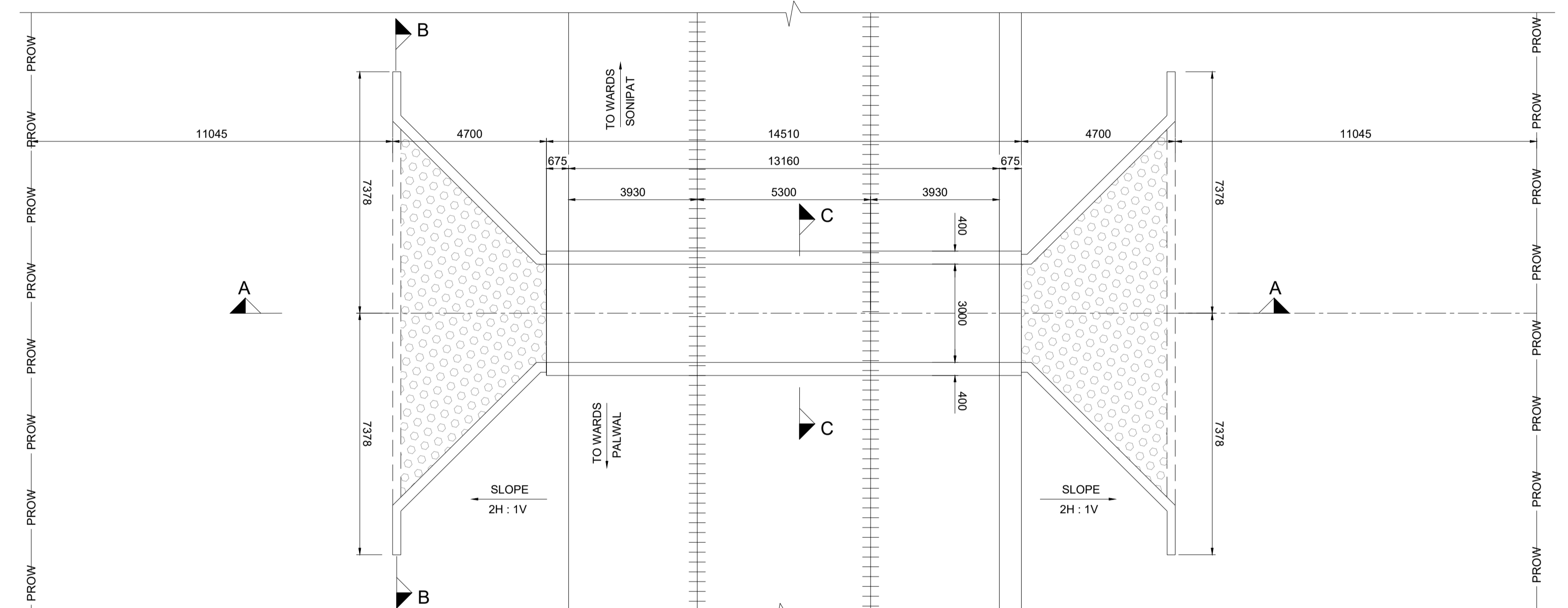


KEY PLAN  
(NOT TO SCALE)

- NOTES :**
- A) GENERAL NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
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  5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
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  10. DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  11. THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**
1. PROTECTION WORK ON SLOPES OF BANK UP TO 15M BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRDC-SK-GEN-015.
  2. INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
  3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  4. ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
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    - (ii) IRS CONCRETE BRIDGE CODE
    - (iii) IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
  8. SEISMIC ZONE- IV
  9. EXPOSURE CONDITION- MODERATE.
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  11. THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
  12. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G./SQM CONFIRMING TO IS-3117.
  13. REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786
  14. FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE.
 

GRADE OF CONCRETE :

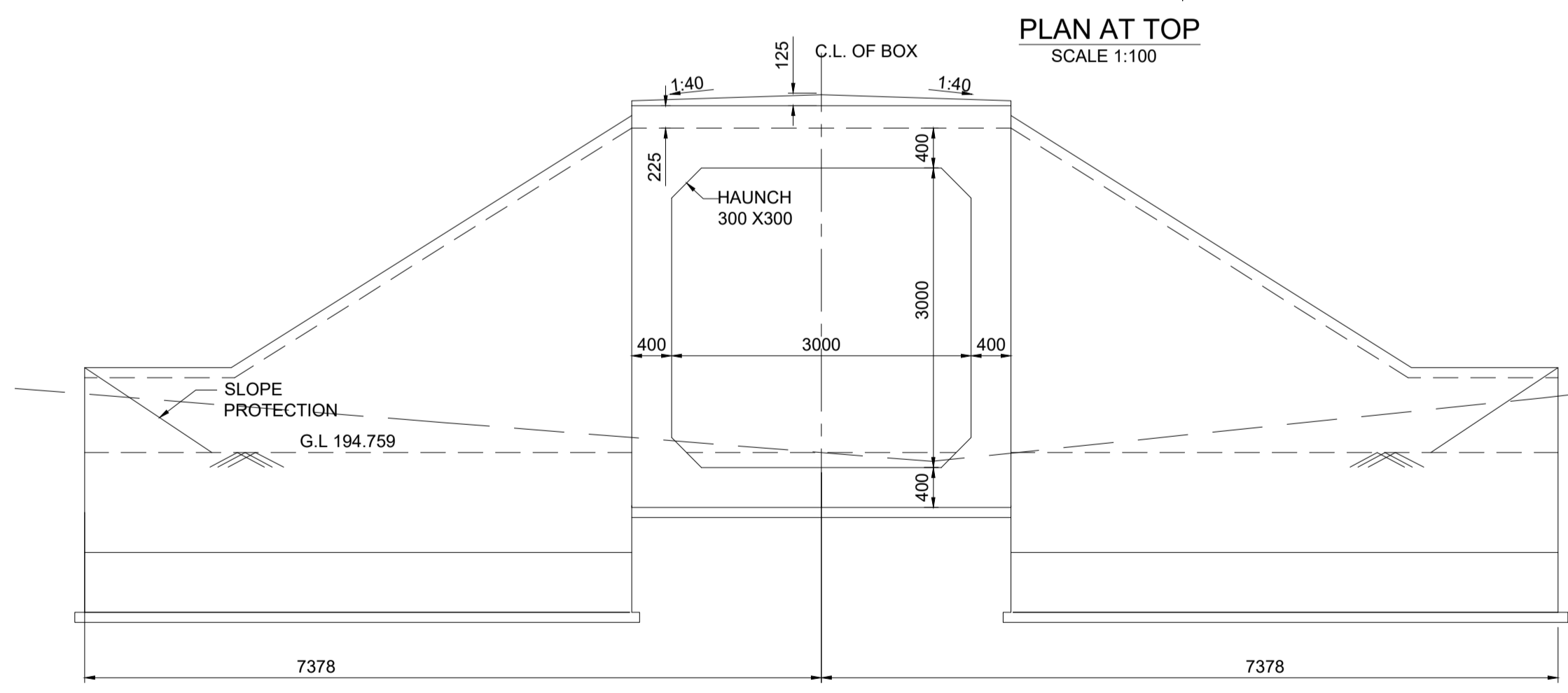
    - (i) ALL RCC /WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
    - (ii) LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
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  16. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  17. ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.



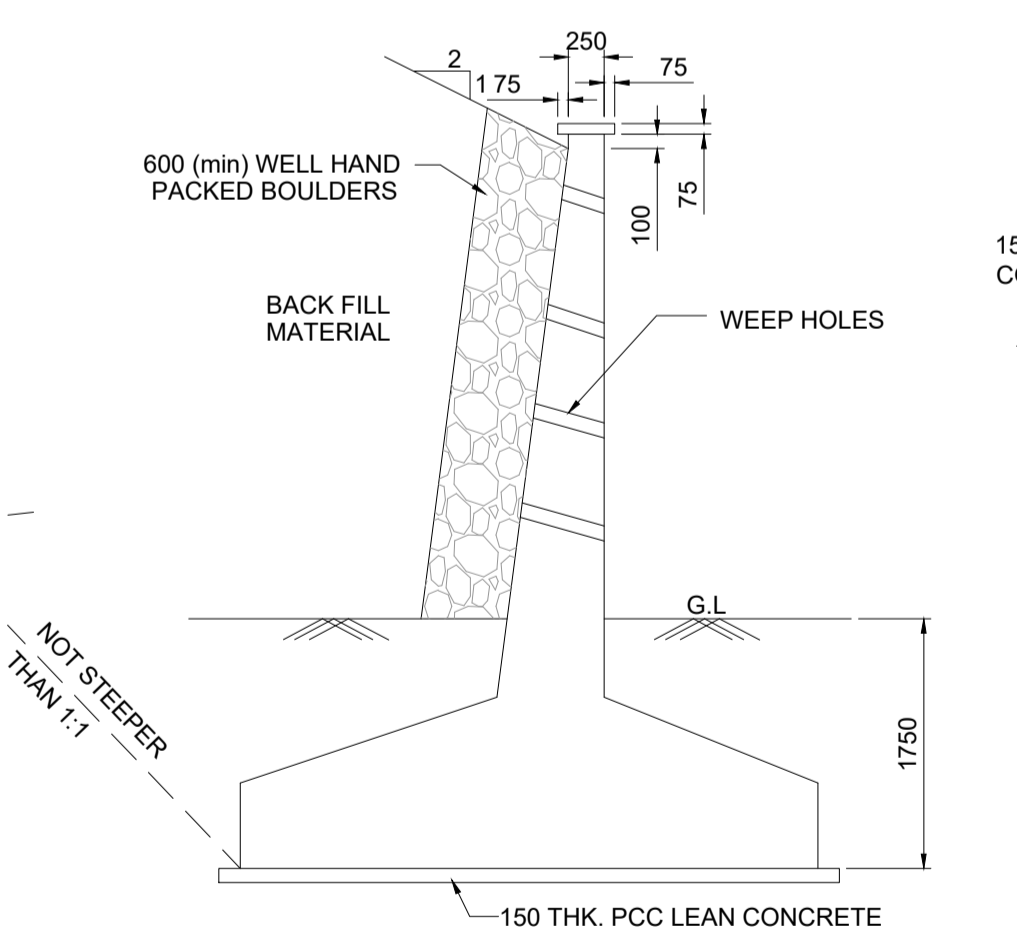
PLAN AT TOP  
SCALE 1:100

**LEGEND**

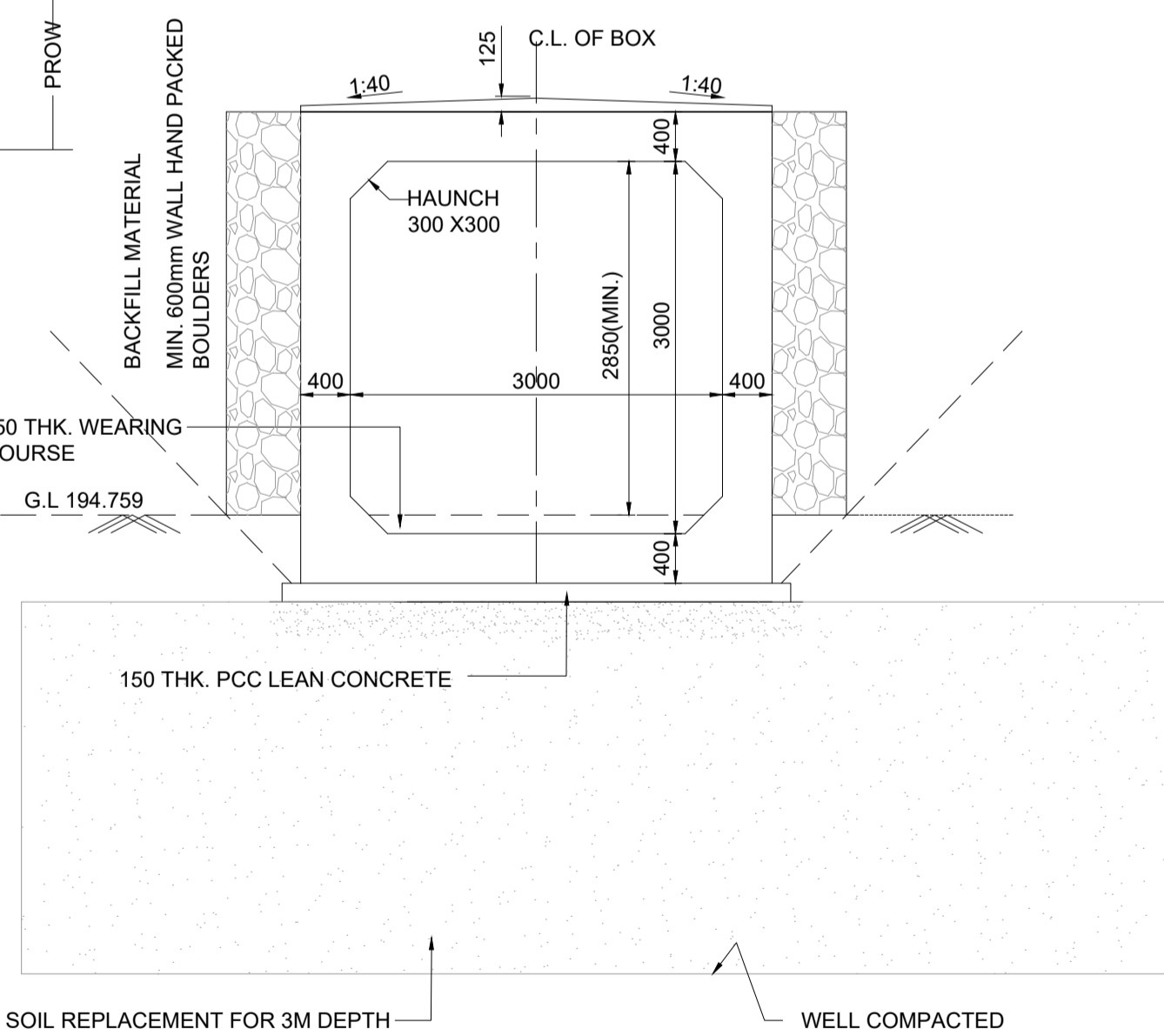
PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL



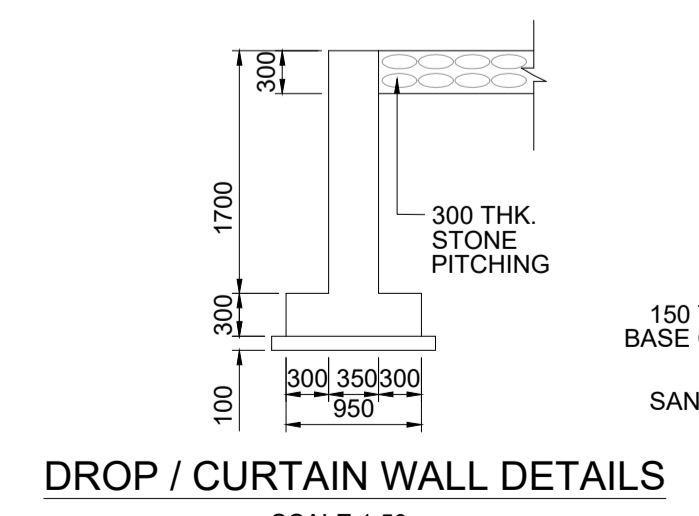
VIEW AT B-B  
SCALE 1:50



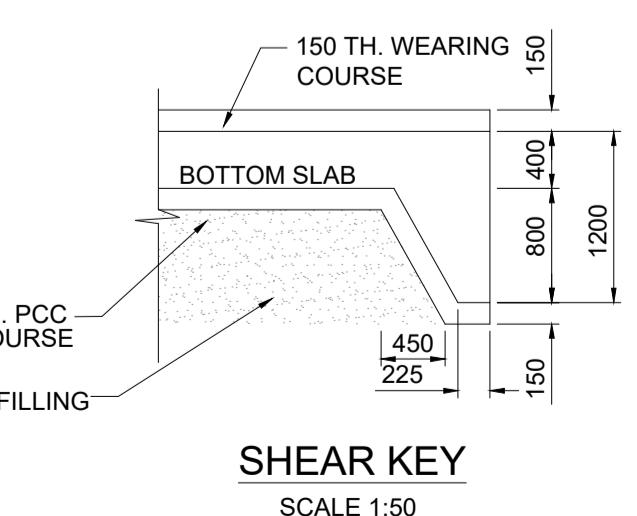
TYPICAL DETAIL OF RETURN WALL / WING WALL  
SCALE 1:50



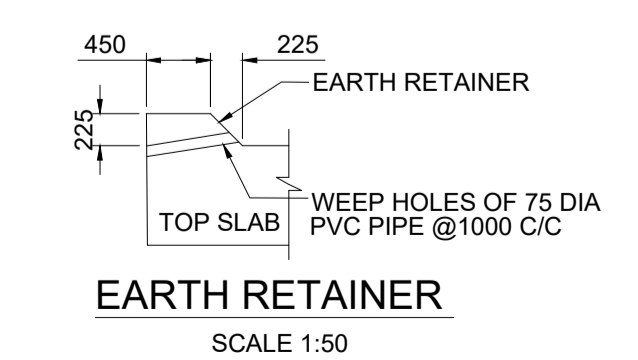
SECTION C-C  
SCALE 1:50



DROP / CURTAIN WALL DETAILS  
SCALE 1:50



SHEAR KEY  
SCALE 1:50



EARTH RETAINER  
SCALE 1:50

GC/HORC		HRDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

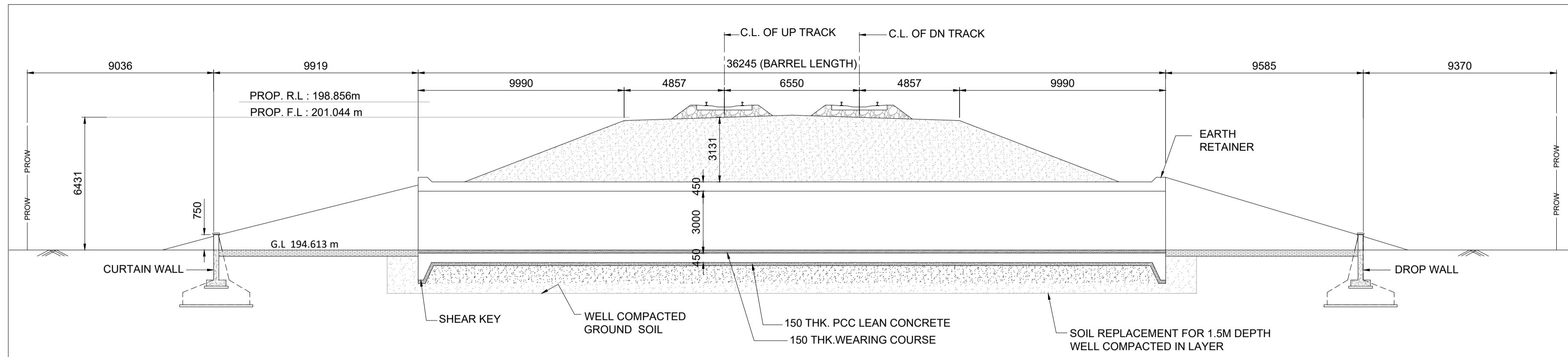


**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR BALANCING CULVERT BRIDGE NO. 052 SPAN 1.0X3.0X3.0 RCC BOX AT CH. 13903.112

**DRG. NO.** GC-HRDC-C4-DRW-BRD-GAD-01052\_A0 **SHEET NO.** 1 OF 1

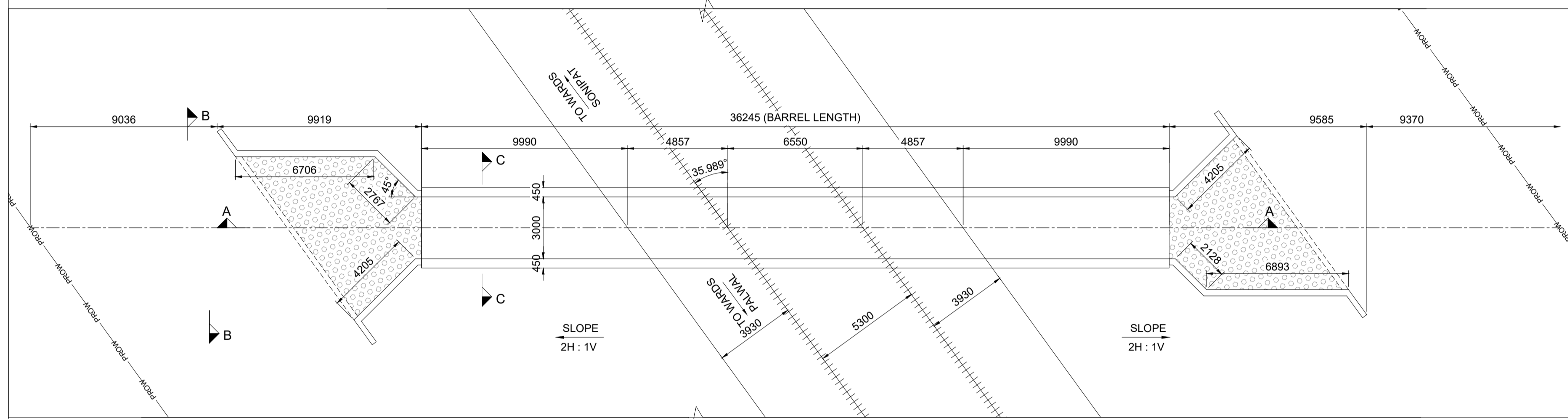
**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**





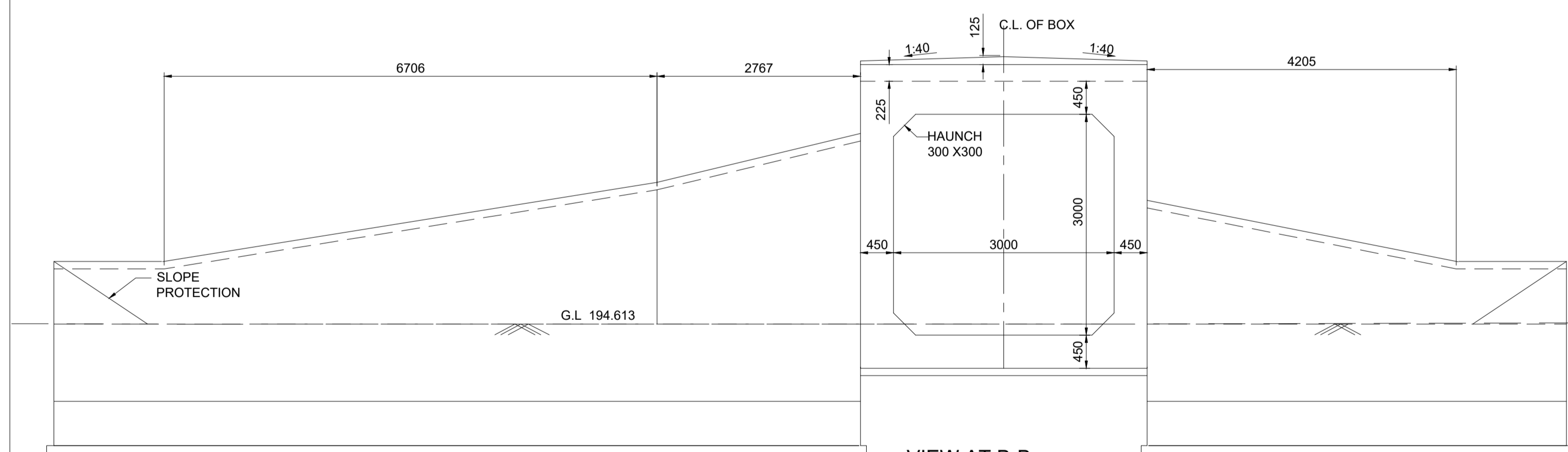
SECTIONAL ELEVATION AT A-A

SCALE 1:150



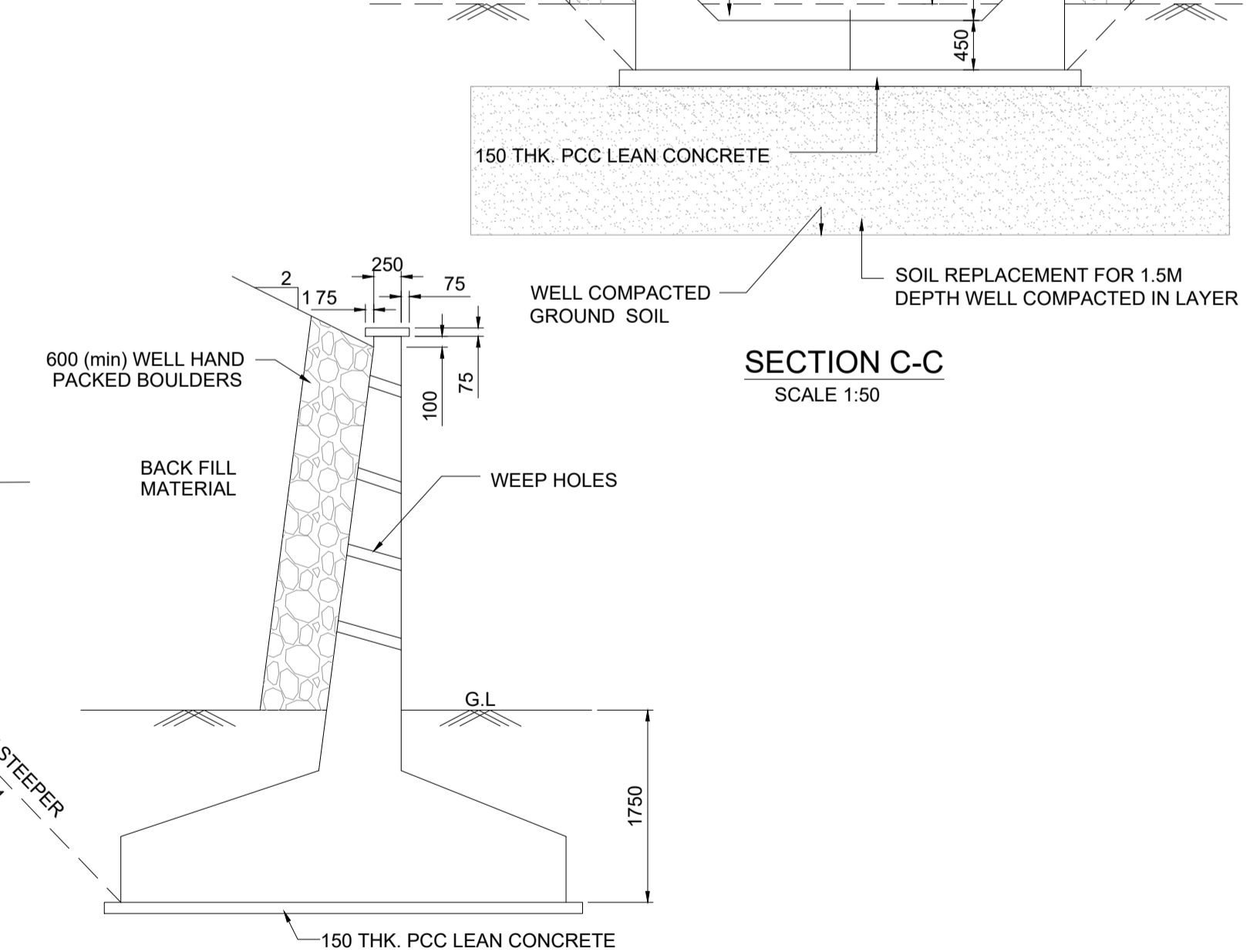
PLAN AT TOP

SCALE 1:180



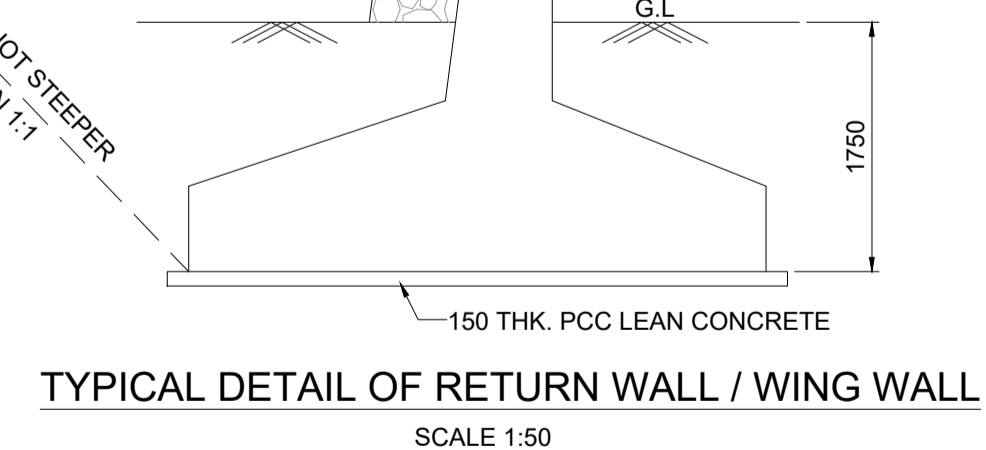
VIEW AT B-B

SCALE 1:50



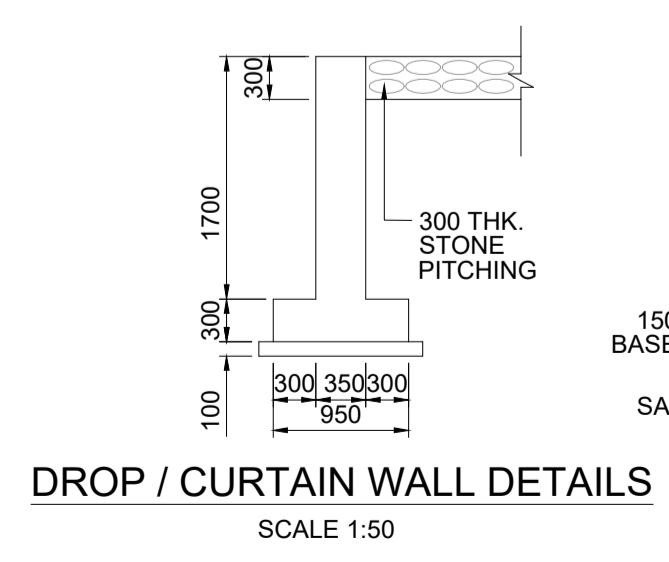
SECTION C-C

SCALE 1:50



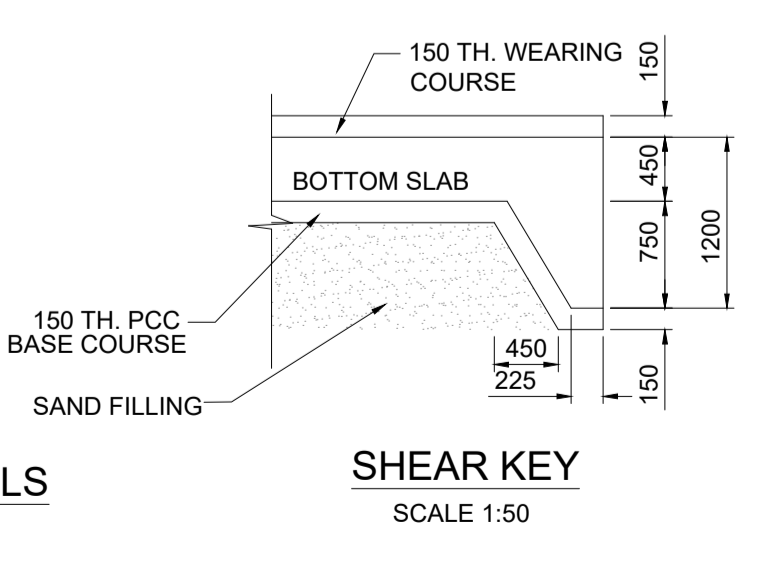
TYPICAL DETAIL OF RETURN WALL / WING WALL

SCALE 1:50



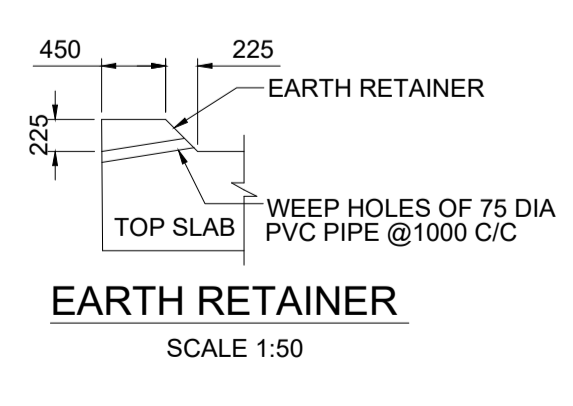
DROP / CURTAIN WALL DETAILS

SCALE 1:50



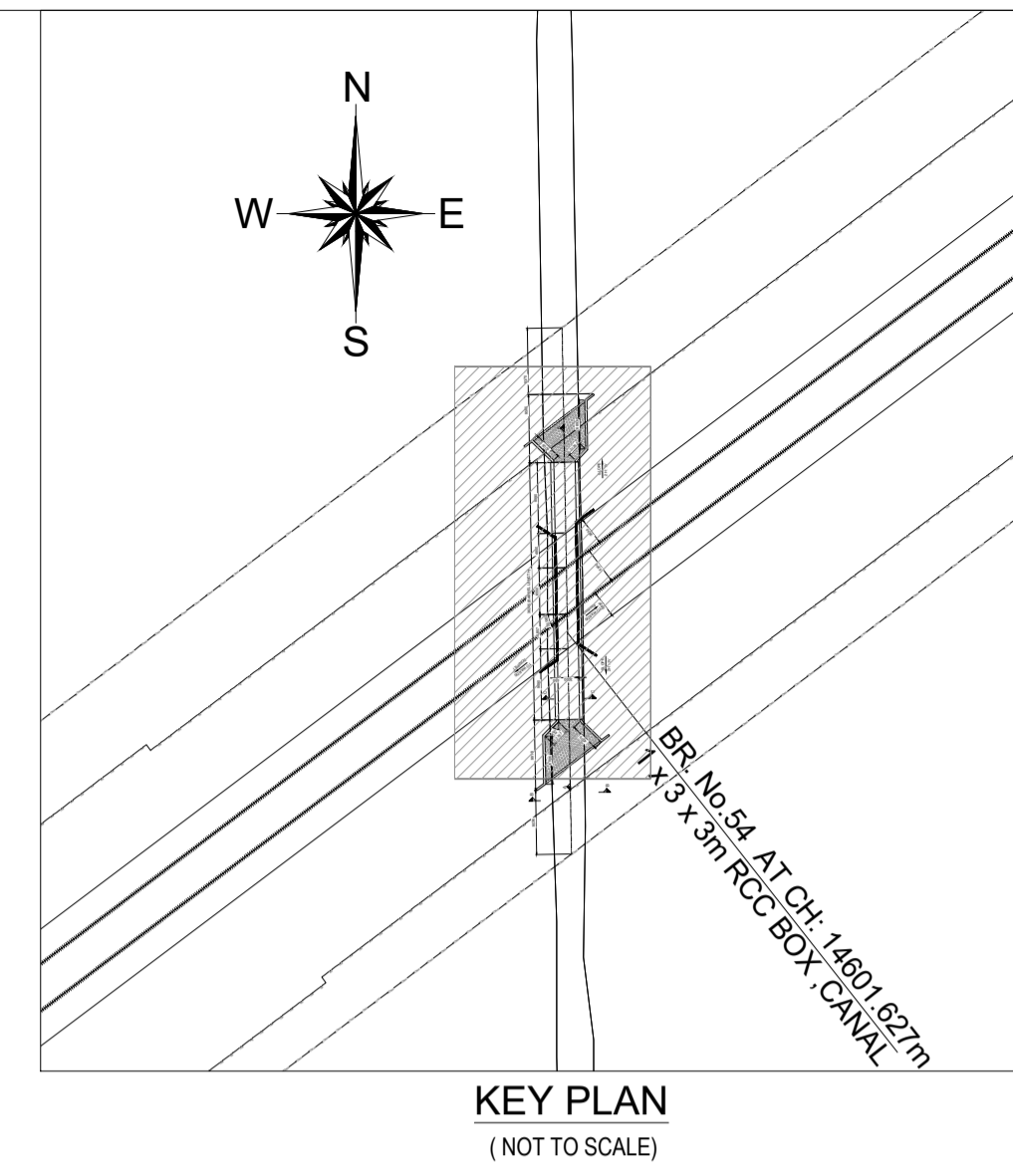
SHEAR KEY

SCALE 1:50



EARTH RETAINER

SCALE 1:50



KEY PLAN

(NOT TO SCALE)

NOTES :

A) GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
2. THE CHAINAGES SHOWN ARE RECKONED FROM C/I OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
3. FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
4. BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
9. THIS DRAWING IS THE PROPERTY OF HRDC AND FOR EXCLUSIVE USE OF HORC.
10. DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
11. THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.

B) TECHNICAL NOTES :

1. PROTECTION WORK ON SLOPES OF BANK UP TO 15M BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRDC-SK-GEN-015.
2. INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
4. ALL CLEAN EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
6. DIMENSION OF THE BOX MAY BE SUITABLY MODIFIED AS PER SITE REQUIREMENT. HEIGHT OF BOX SHOWN INCLUDES MINIMUM REQUIRED CLEAR OPENING HEIGHT AND WEARING COARSE. OVERALL HEIGHT OF BOX OPENING MAY VARY AS PER SITE REQUIREMENT AND ACTUAL ROAD/GROUND PROFILE.
7. DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
  - (i) IRS BRIDGE RULE
  - (ii) IRS CONCRETE BRIDGE CODE
  - (iii) IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
8. SEISMIC ZONE- IV
9. EXPOSURE CONDITION- MODERATE.
10. DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST.
11. THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB-STRUCTURE AND FOUNDATION CODE.
12. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G/SQM CONFIRMING TO IS-3117.
13. REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786
14. FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
  - (i) ALL RCC /WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
  - (ii) LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
15. BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
16. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
17. ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.

LEGEND

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL

PROJECT:

**HARYANA ORBITAL RAIL CORRIDOR**  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:

**HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

CONSULTANT:

**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
RITES Limited in consortium with SMEC International Pty. Ltd.



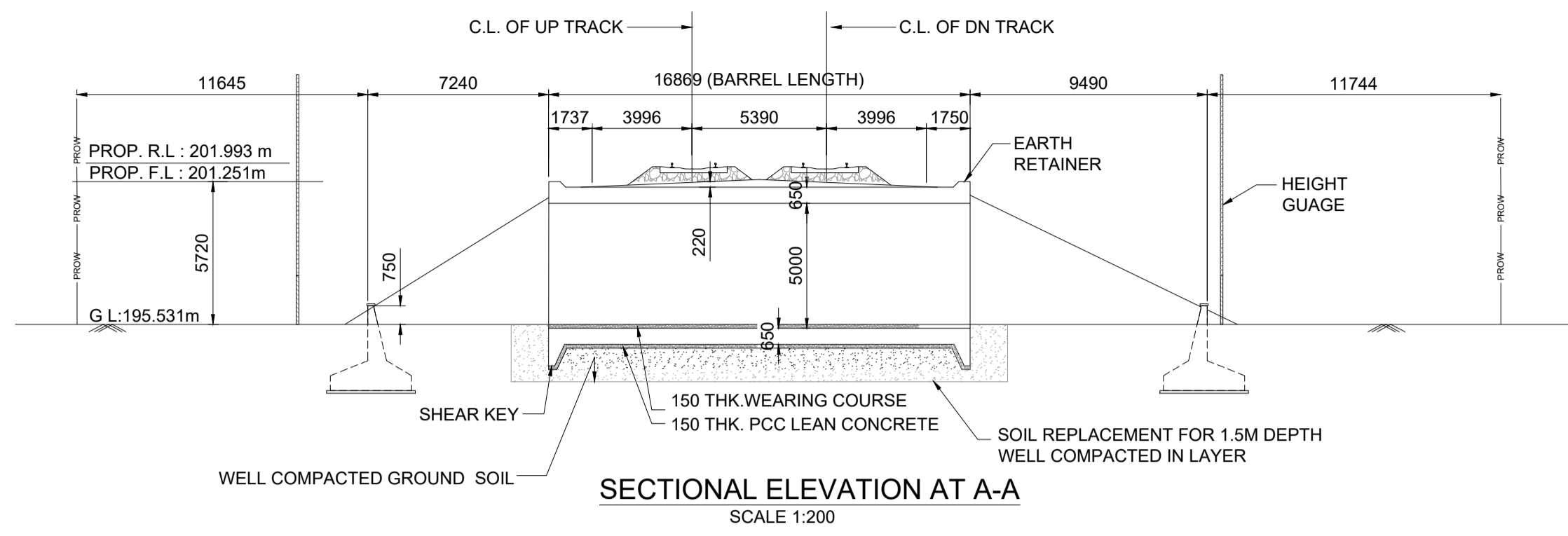
TITLE:- **CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR CANAL BRIDGE NO. 054**  
1.0X3.0X3.0 RCC BOX AT CH: 14601.627

DRG. NO. **GC-HRDC-C4-DRW-BRD-GAD-01054\_A0** SHEET NO. **1 OF 1**

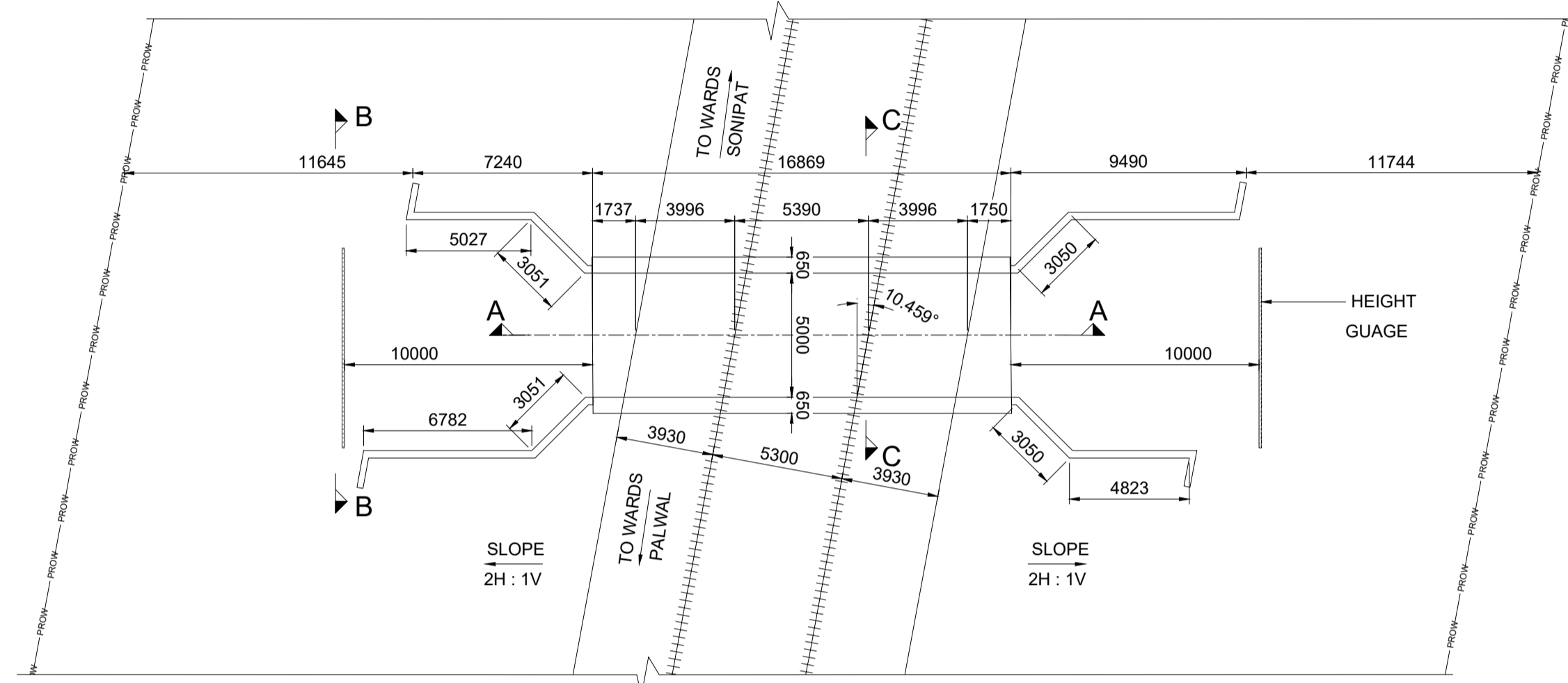
SCALE :	ISSUE DATE	REVISED DATE
AS SHOWN	07-11-2022	

GC/HORC		HRDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD		SHIV OM DWIVEDI CPM/HRDC	
SUDHIR AGRAWAL DPD/CIVIL		RAJU SOLANKI DGM/CIVIL/SOUTH	
REETU PATIAL CDE/ CIVIL			

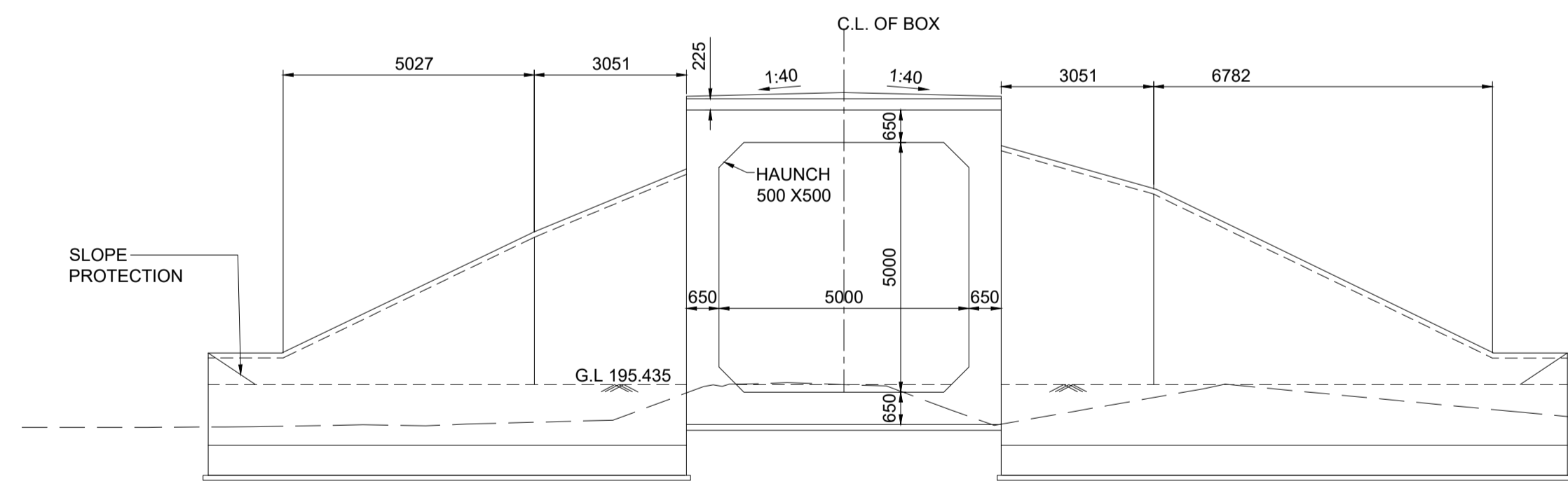




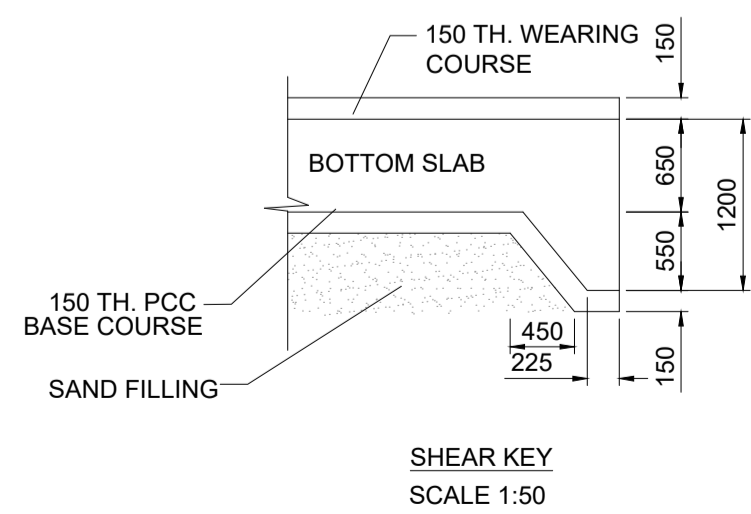
SECTIONAL ELEVATION AT A-A  
SCALE 1:200



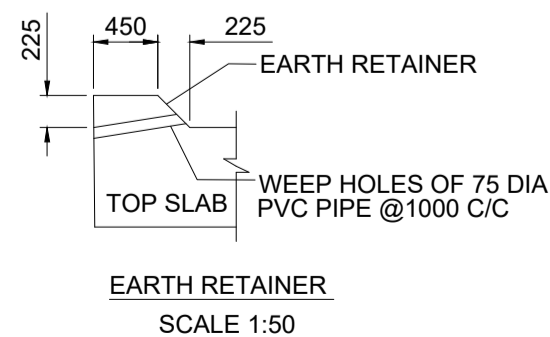
PLAN AT TOP  
SCALE 1:200



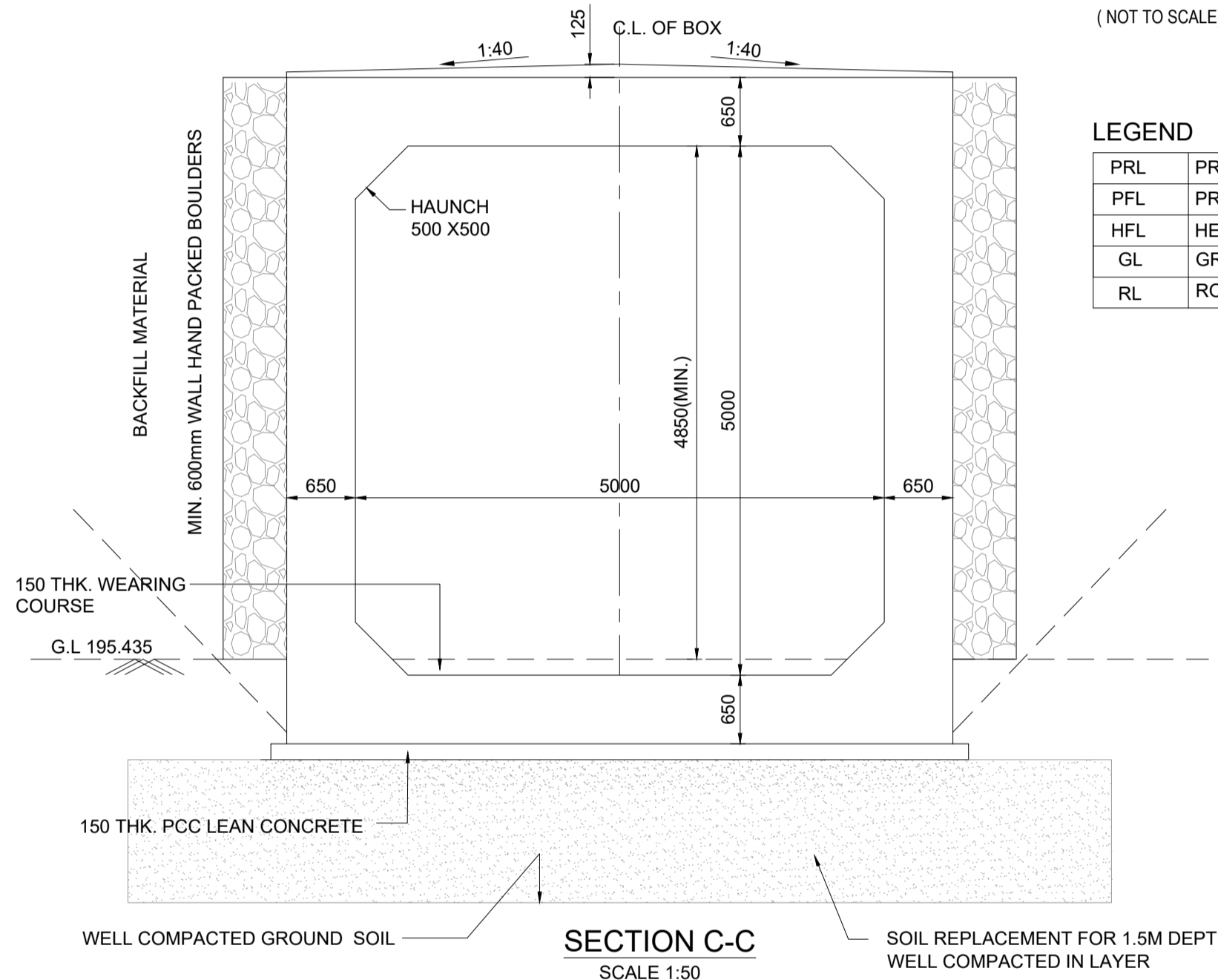
VIEW AT B-B  
SCALE 1:100



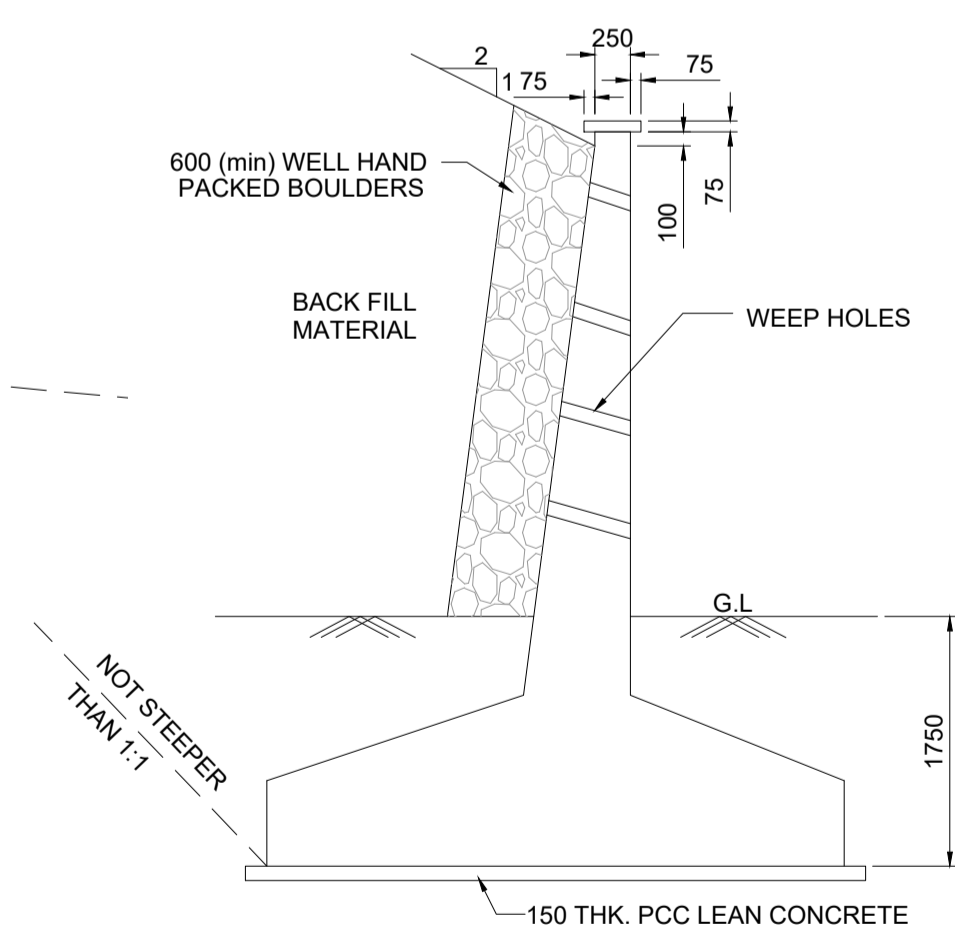
SHEAR KEY  
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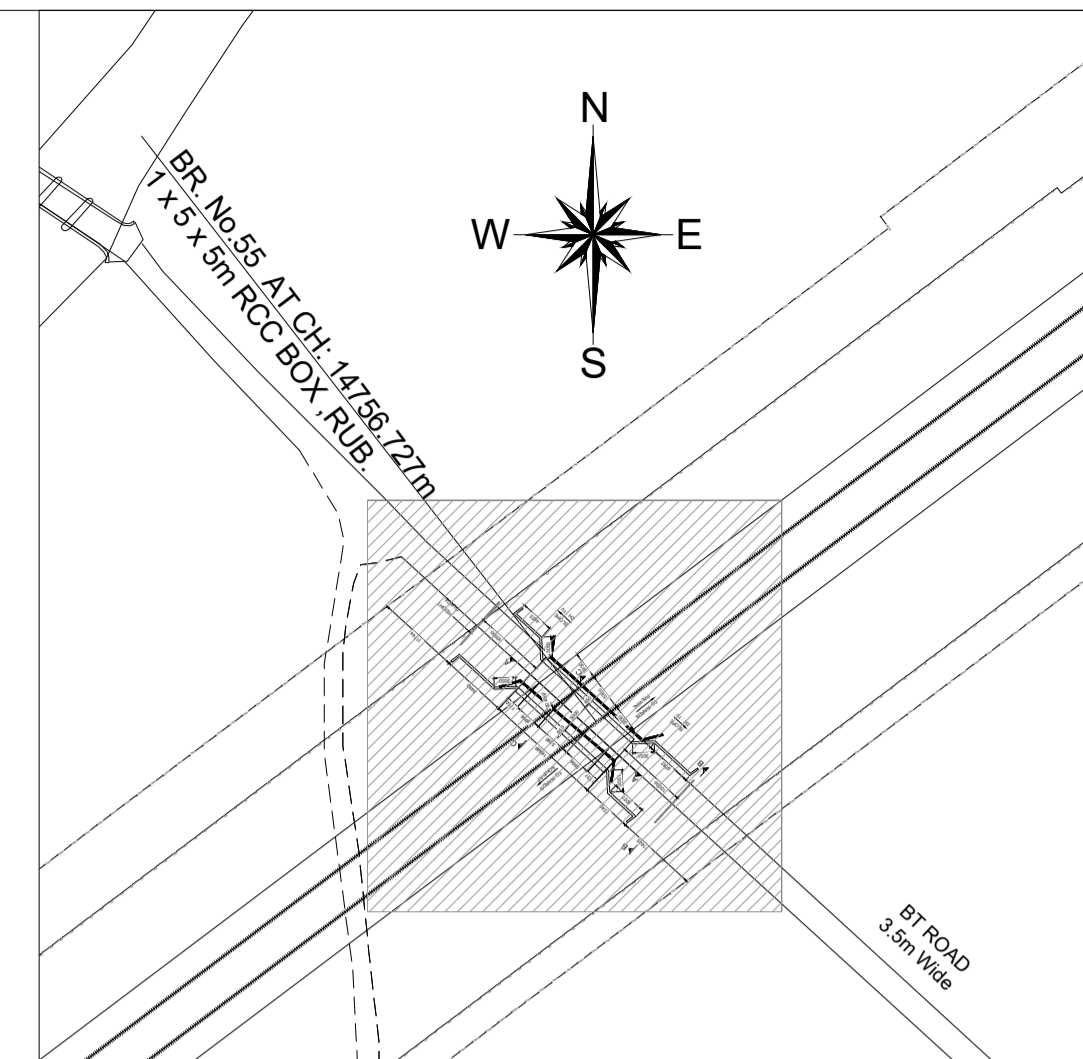
EARTH RETAINER  
SCALE 1:50



SECTION C-C  
SCALE 1:50



TYPICAL DETAIL OF RETURN WALL / WING WALL  
SCALE 1:50



KEY PLAN  
(NOT TO SCALE)

LEGEND

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
RL	ROAD LEVEL

**NOTES :**

**A) GENERAL NOTES**

- ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
- THE CHAINAGES SHOWN ARE RECKONED FROM C/L OF PRITHALA STATION BUILDING TAKEN AS 0.00 M. WITH RESPECT TO UP MAIN LINE.
- FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
- BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
- THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
- ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
- SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
- ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
- THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HORC.
- DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
- THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.

**B) TECHNICAL NOTES :**

- PROTECTION WORK ON SLOPES OF BANK UP TO 15M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
- INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
- FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
- ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
- PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
- DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
  - IRS BRIDGE RULE
  - IRS CONCRETE BRIDGE CODE
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- SEISMIC ZONE- IV
- EXPOSURE CONDITION- MODERATE.
- DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST.
- THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB- STRUCTURE AND FOUNDATION CODE.
- ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K/GSQM. CONFIRMING TO IS-3117.
- REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786.
- FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
  - ALL RCC/WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
  - LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
- BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
- FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
- HEIGHT GAUGE SHALL BE PROVIDED AS PER RDSO STANDARD DRAWING NO. RDSO/M0001.
- SPEED BREAKER SHOULD BE PROVIDED ON EITHER APPROACH OF RUB AT A DISTANCE OF 20M FROM THE BRIDGE COVERING FULL WIDTH OF THE ROAD INCLUDE BERMS.

**IMPORTANT NOTE:**  
TOP OF BOTTOM SLAB OF RCC BOX SHALL NOT BE KEPT ABOVE THE NATURAL GROUND LEVEL. HOWEVER, ROAD LEVEL AND VERTICAL CLEARANCE ABOVE ROAD LEVEL SHALL BE MAINTAINED AS SHOWN IN THE DRAWING. OVERALL HEIGHT OF THE BOX MAY NEED MODIFICATION ACCORDINGLY. THE HEIGHT OF RCC BOX SHALL BE PROVIDED KEEPING ABOVE PROVISION IN VIEW.

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



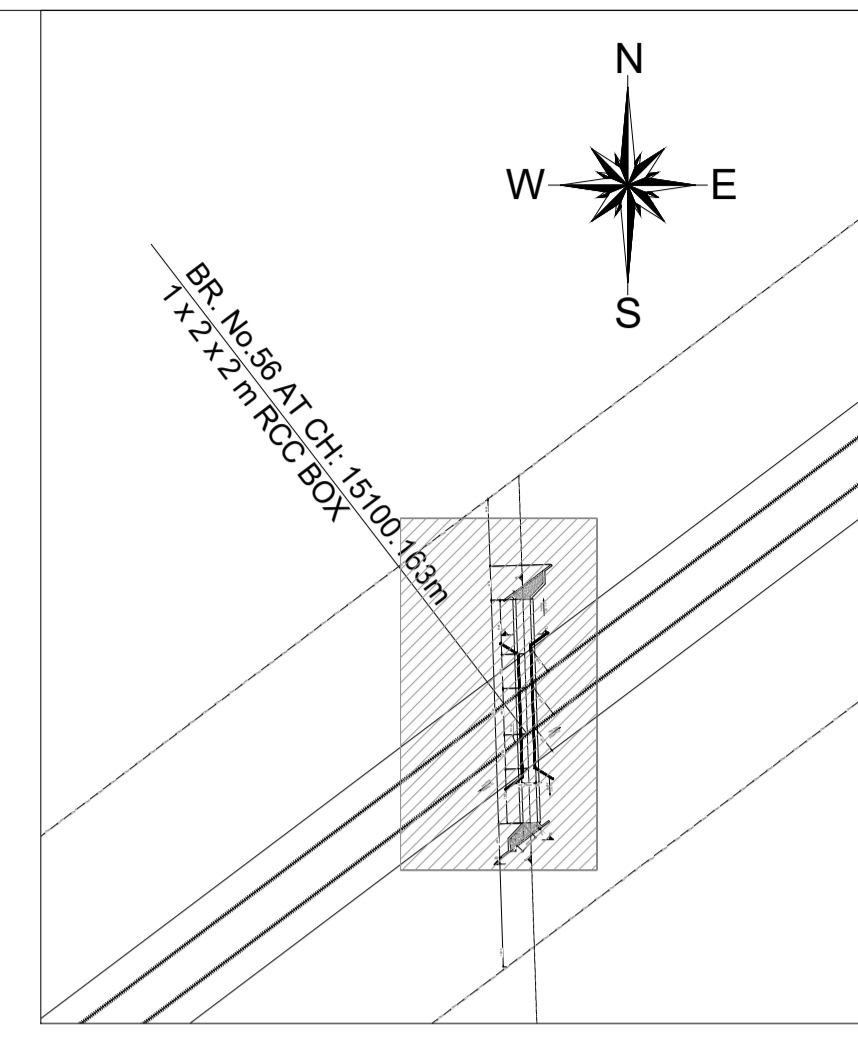
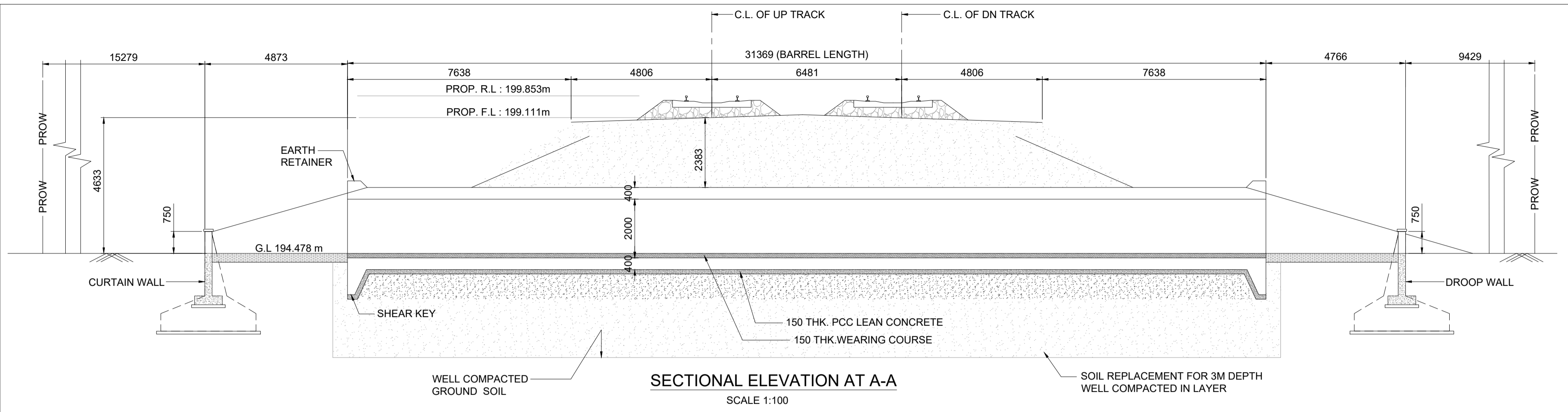
**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR ROAD UNDER BRIDGE BRIDGE NO. 055 SPAN 1x5.0x5.0 RCC BOX AT CH. 14756.727

**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01055\_A0 **SHEET NO.** 1 OF 1

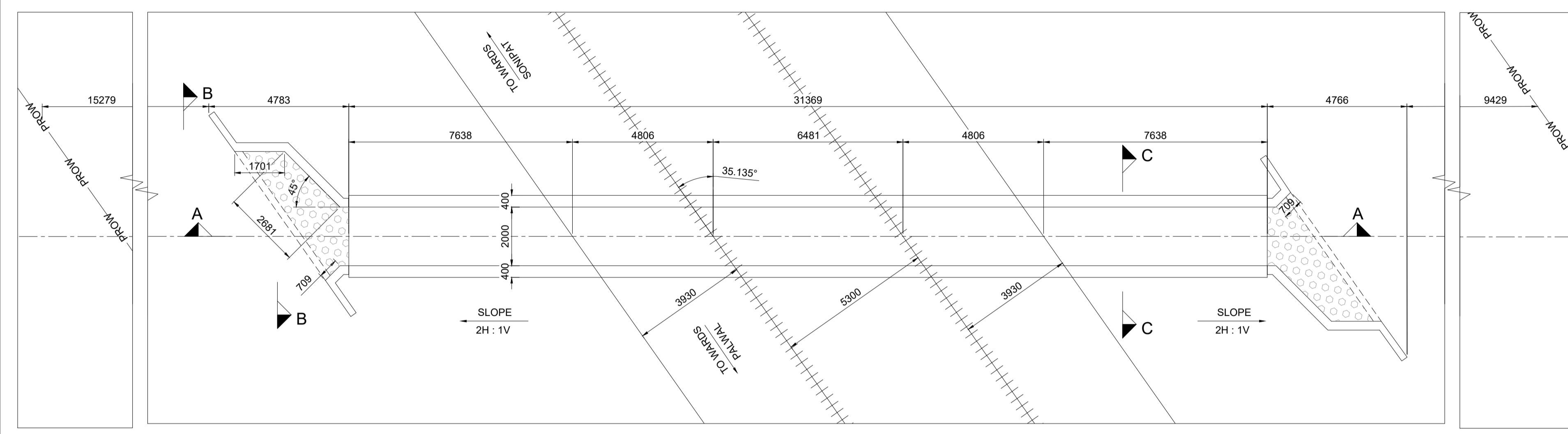
**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>MS</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		



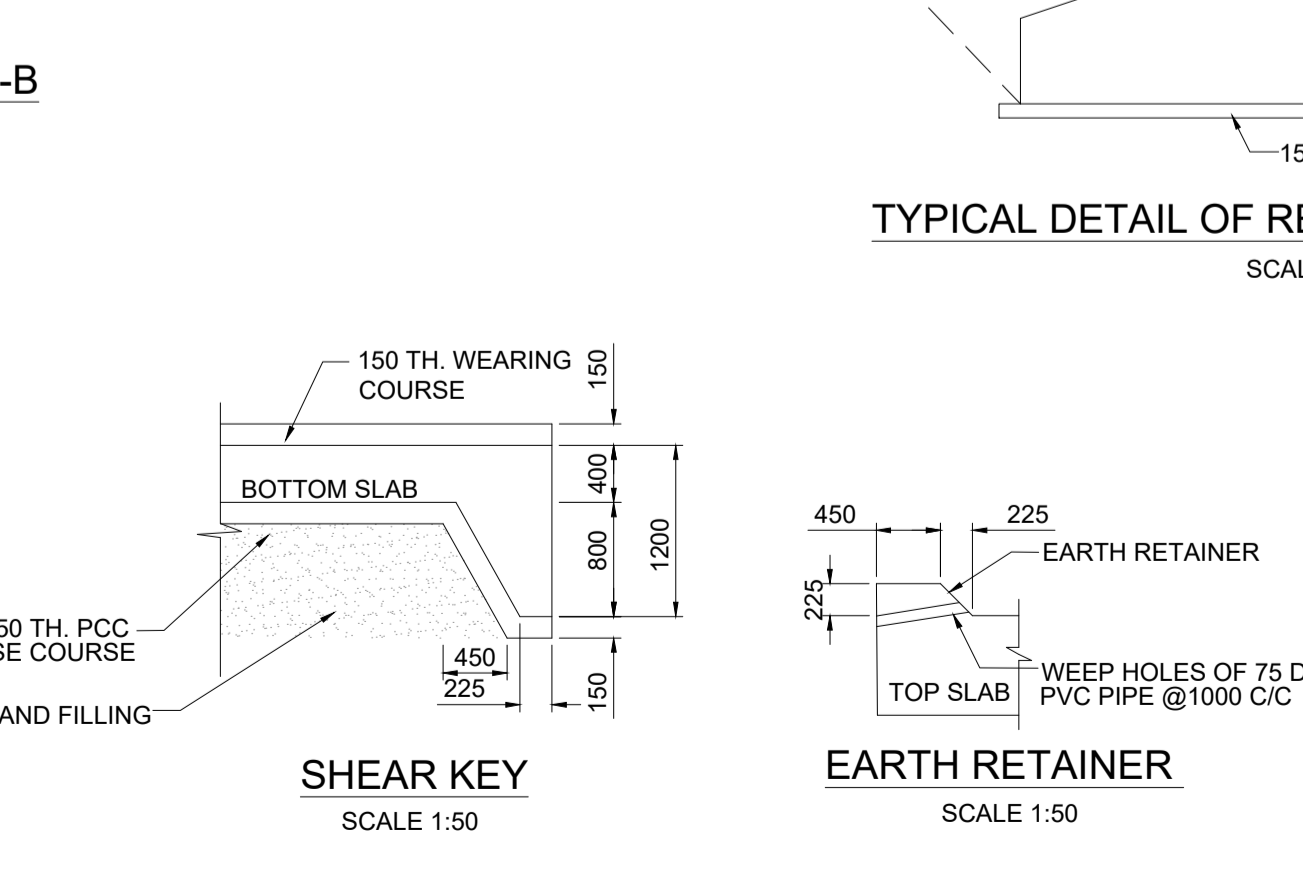
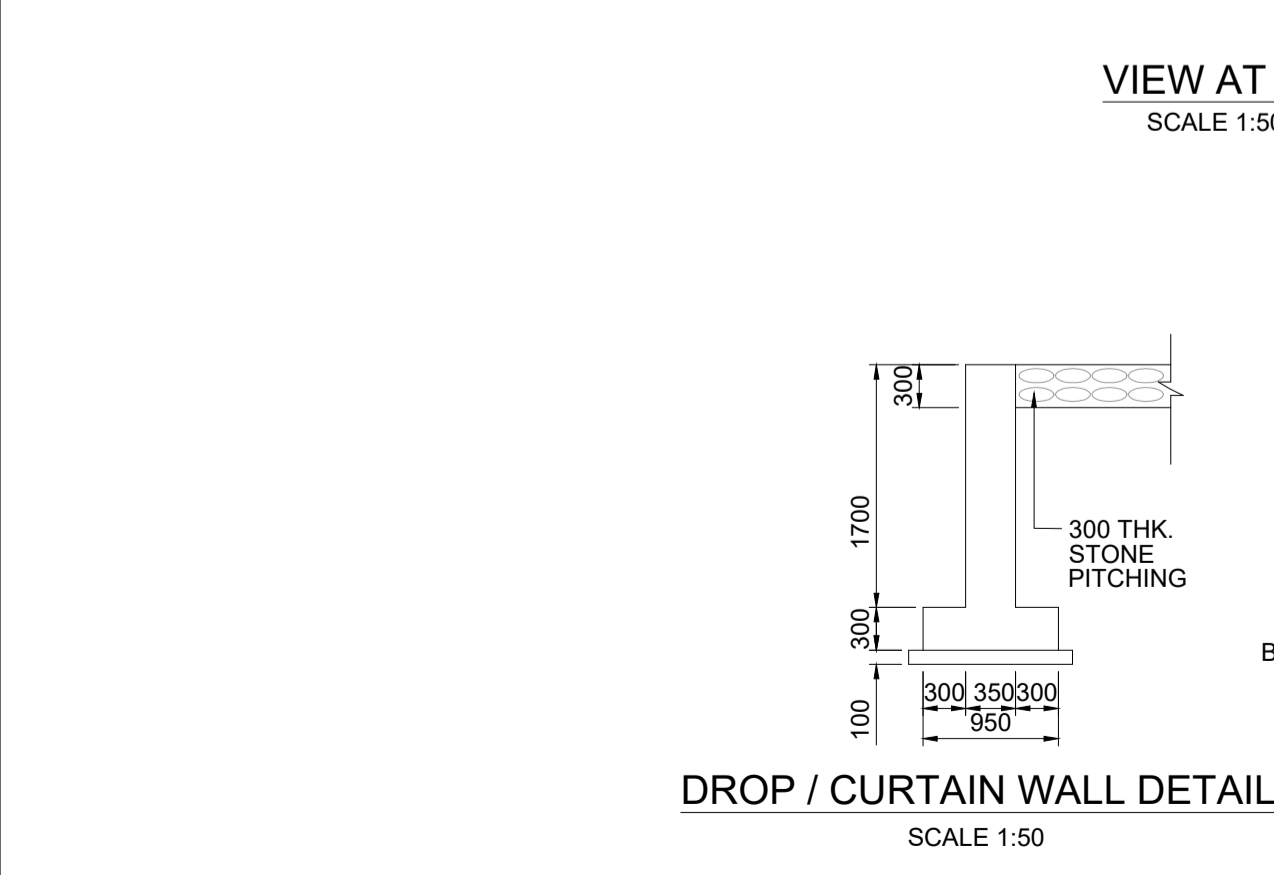
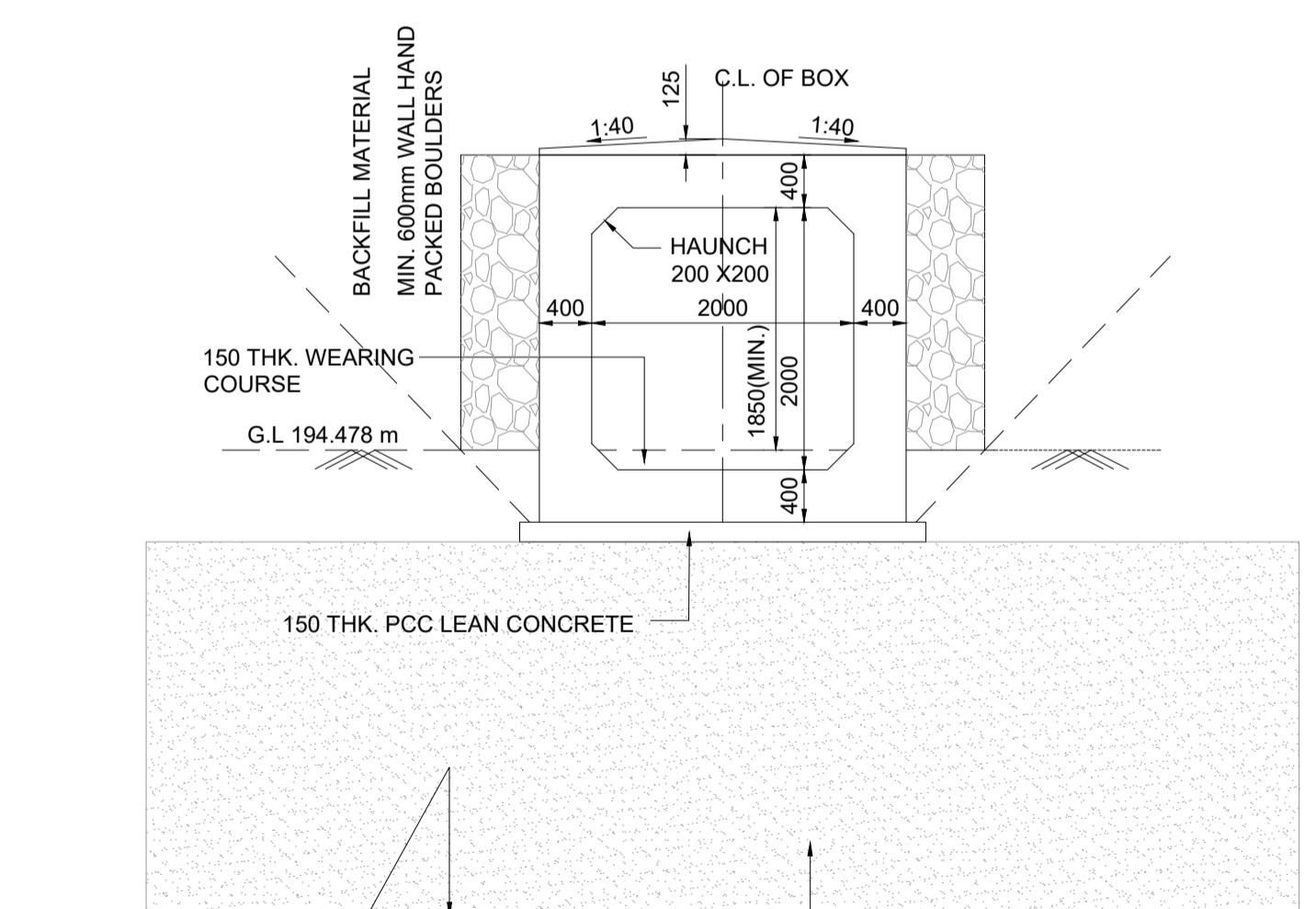
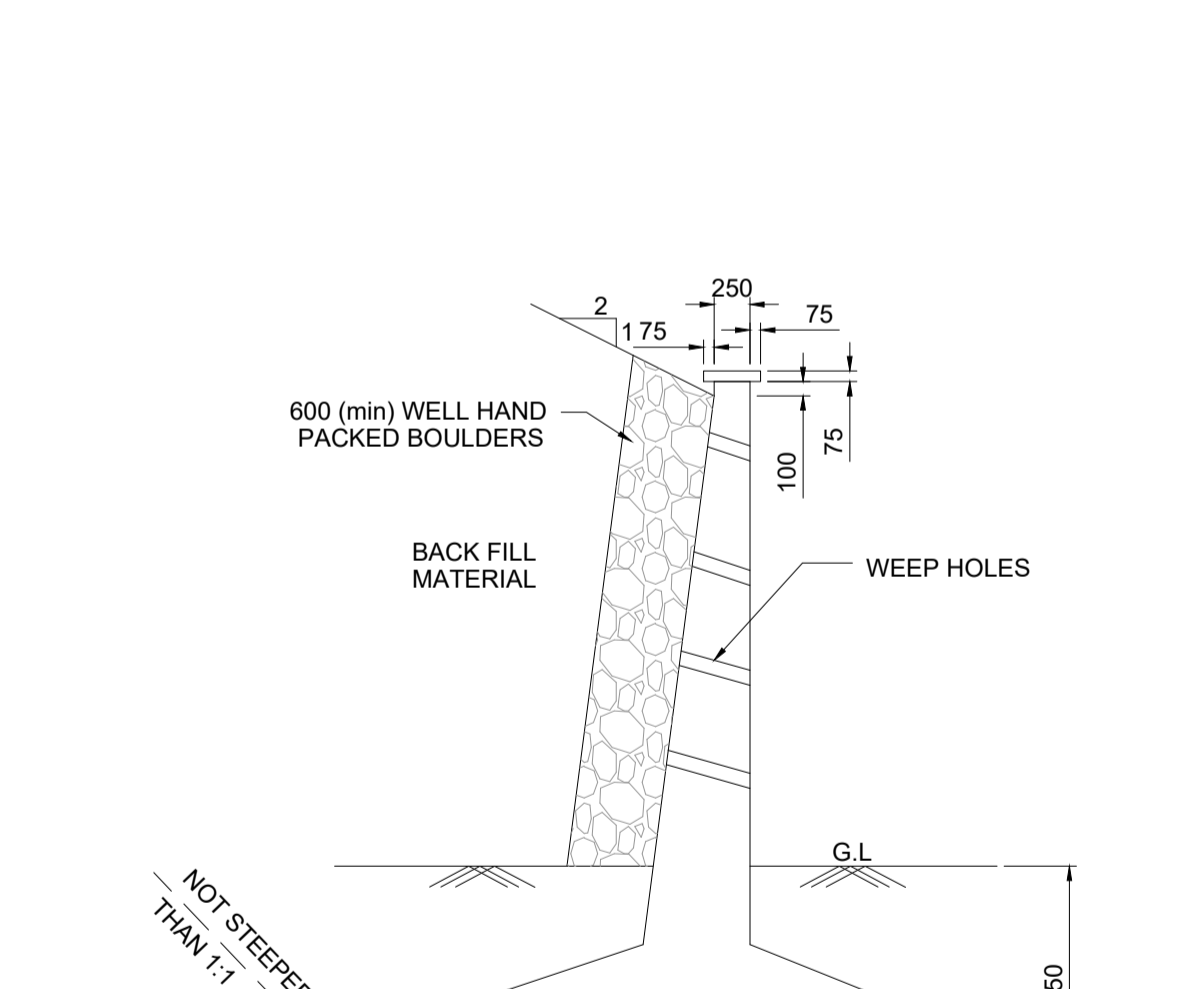
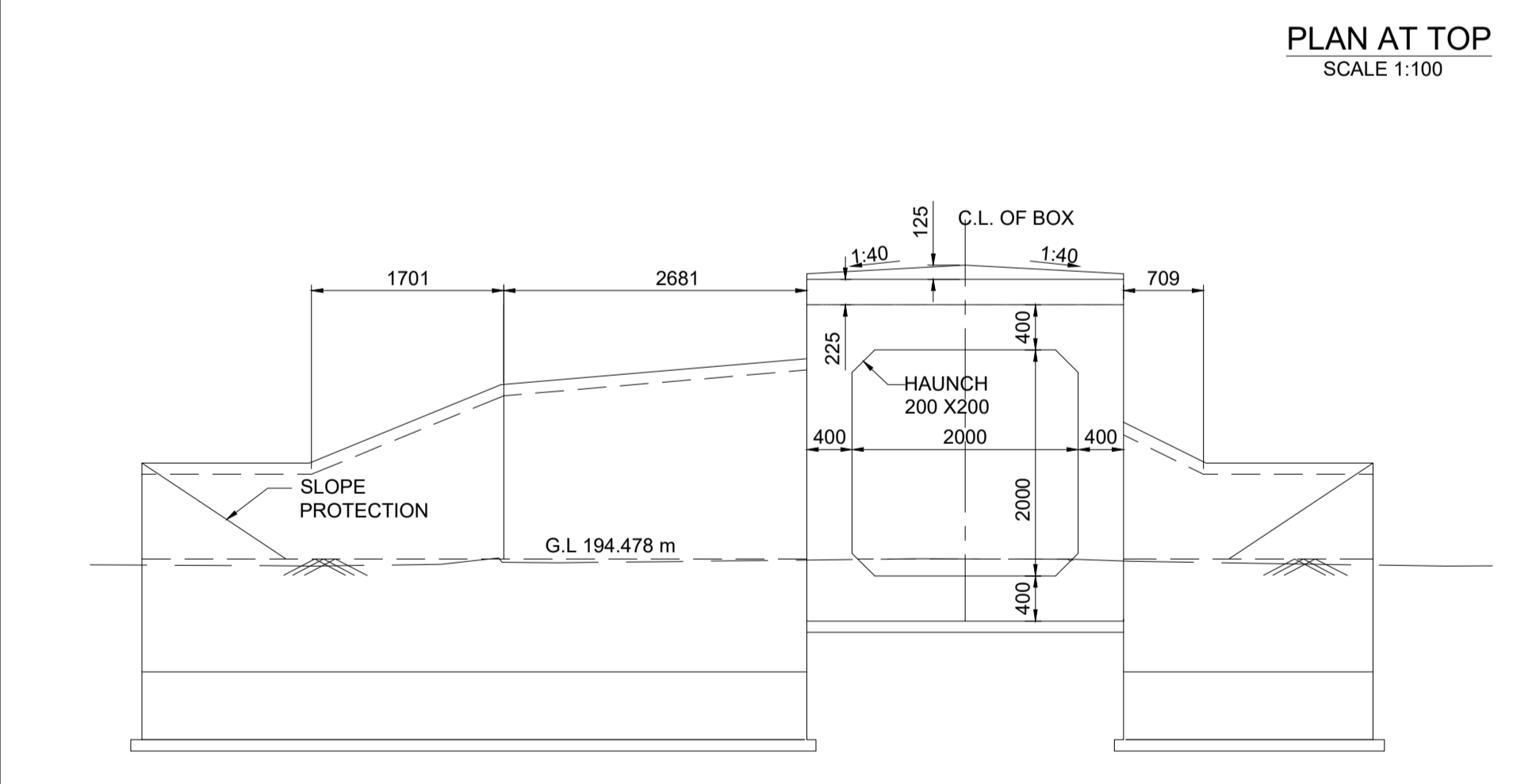


- NOTES :**
- A) GENERAL NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  2. THE CHAINAGES SHOWN ARE RECKONED FROM C/I OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
  3. FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  4. BOX BRIDGE IS TO BE DESIGNED FOR 22.5 T LOADING AS APPLICABLE.
  5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
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- B) TECHNICAL NOTES :**
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  3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  4. ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
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  8. SEISMIC ZONE- IV
  9. EXPOSURE CONDITION- MODERATE.
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  16. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  17. ADEQUATE SLOPE IN BOTTOM SLAB OF RCC BOX TOWARDS DIRECTION OF FLOW SHALL BE PROVIDED.



**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL

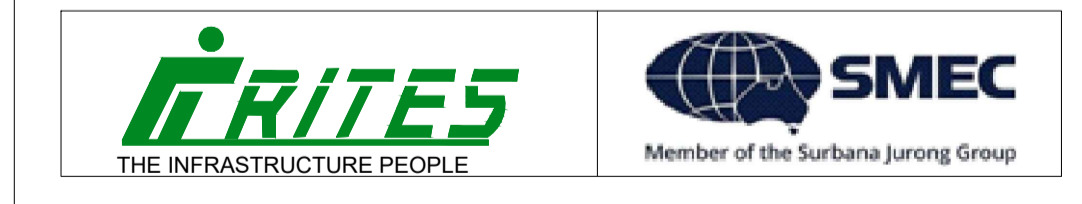


GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sh</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		

**PROJECT:**  
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CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

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**CONSULTANT:**  
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RITES Limited in consortium with SMEC International Pty. Ltd.

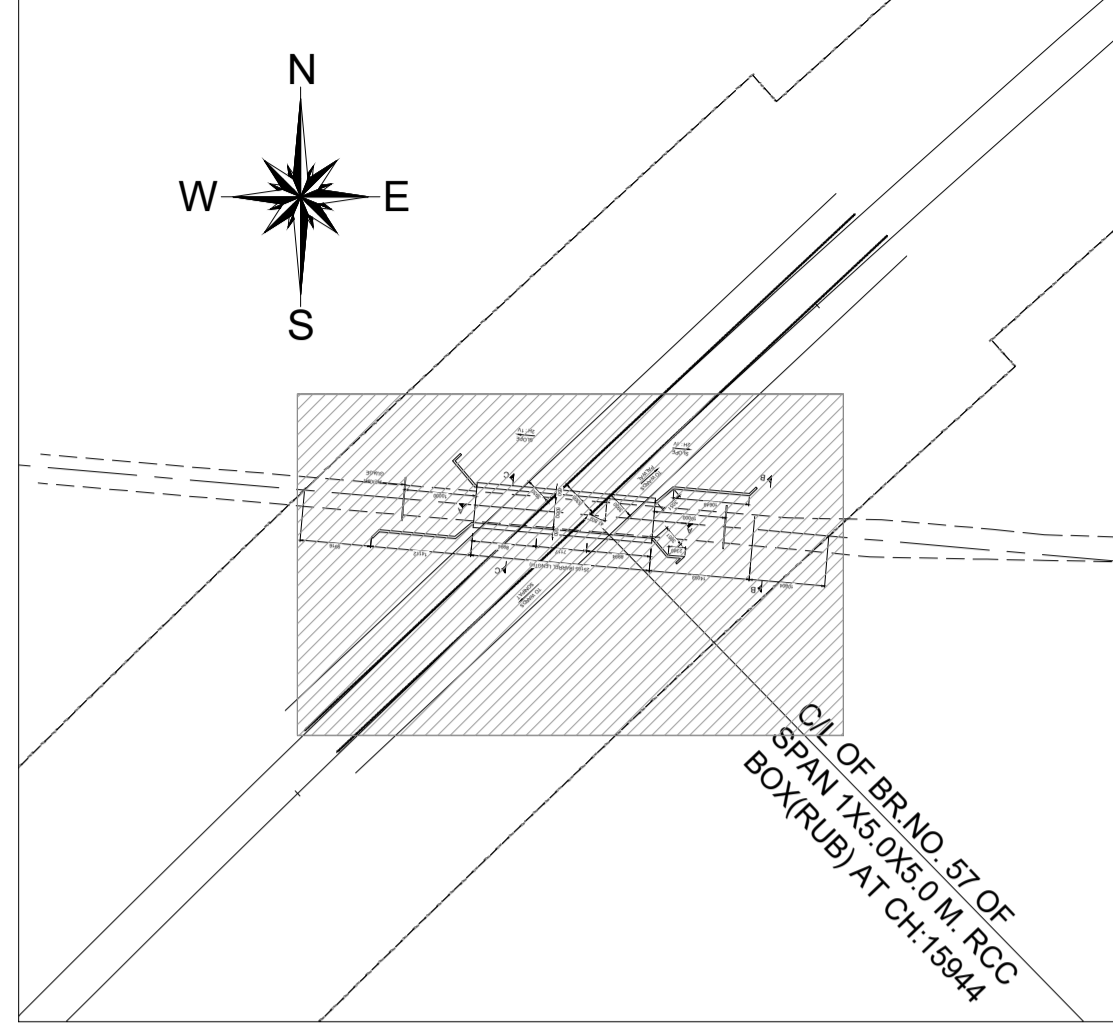
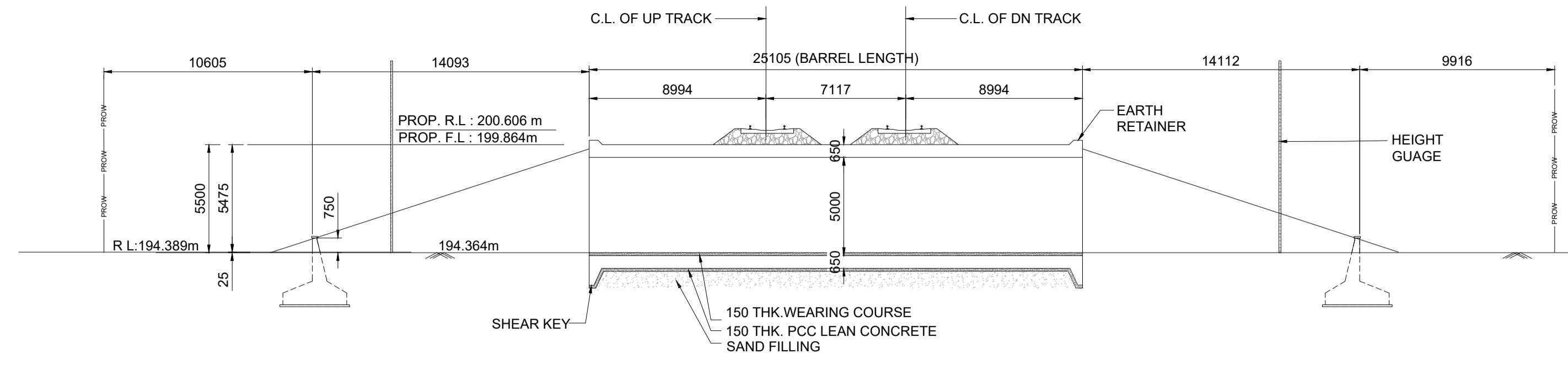


**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR BALANCING CULVERT BRIDGE NO. 056 SPAN 1.0X2.0X2.0 RCC BOX AT CH: 15100.163

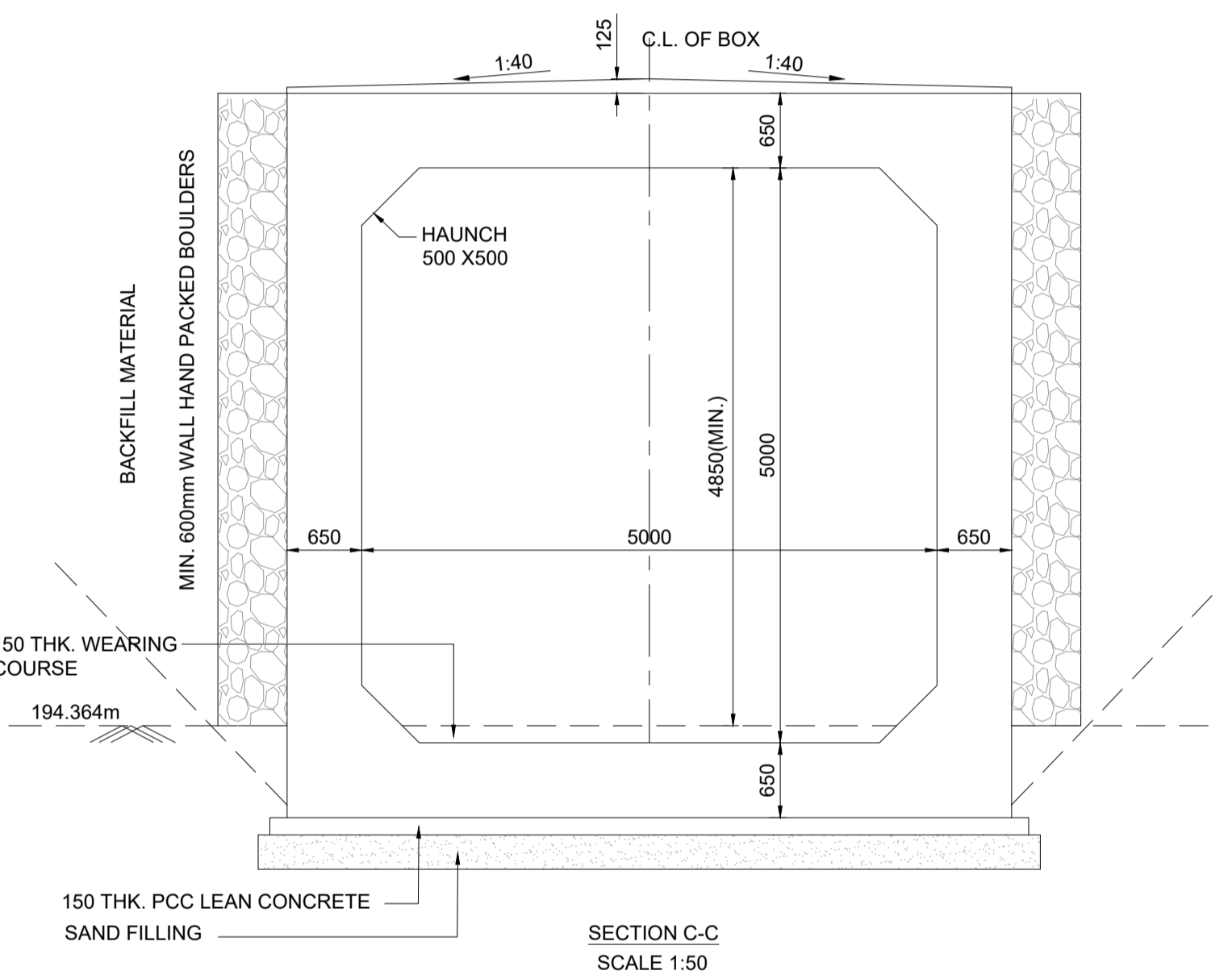
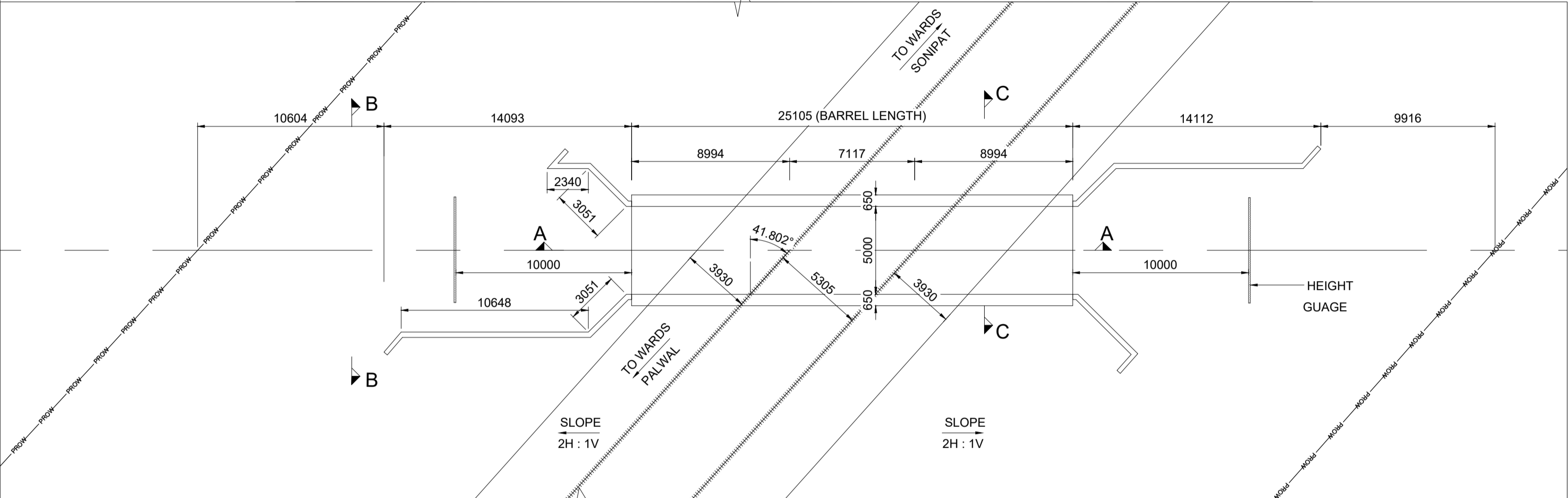
**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01056\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

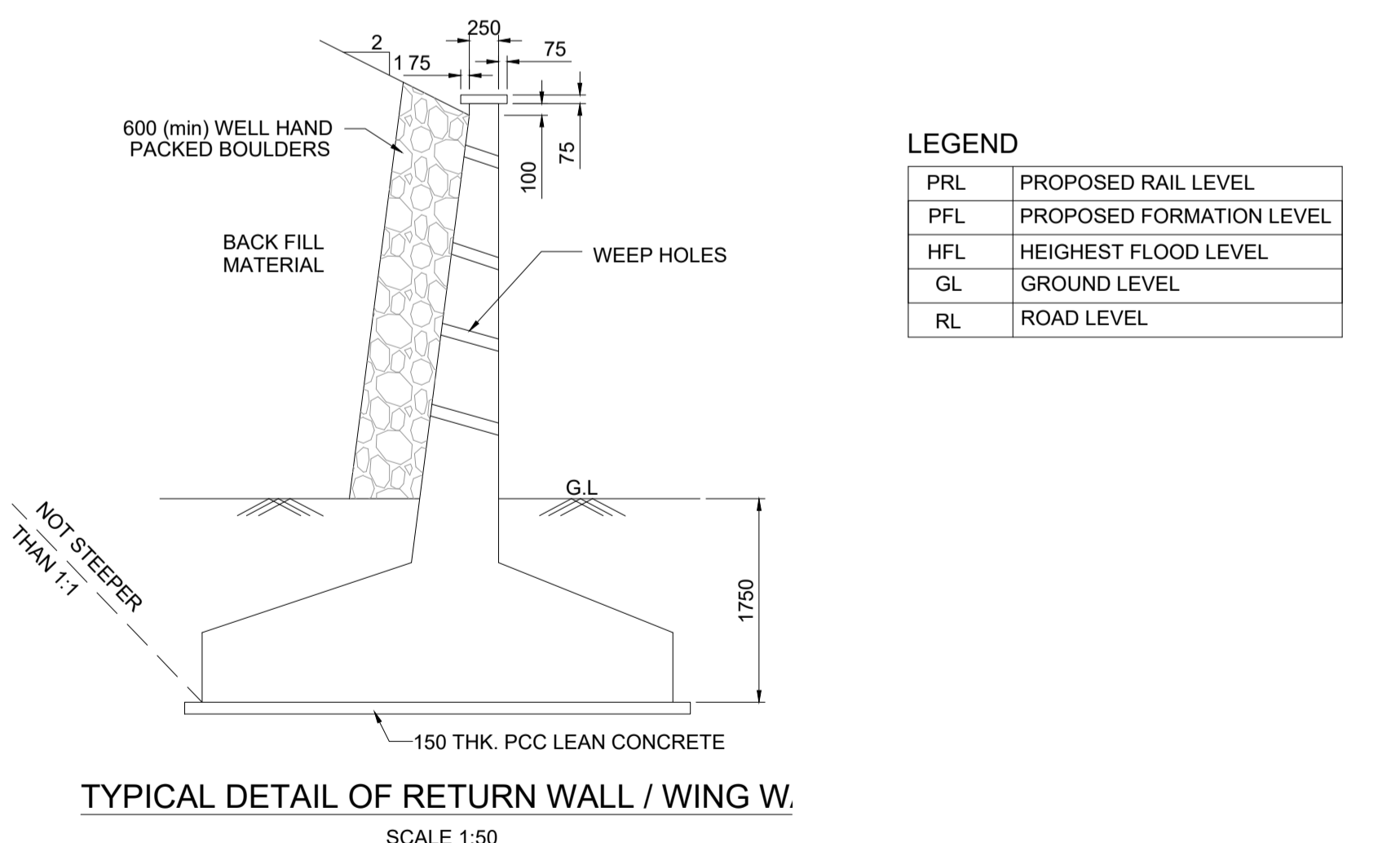
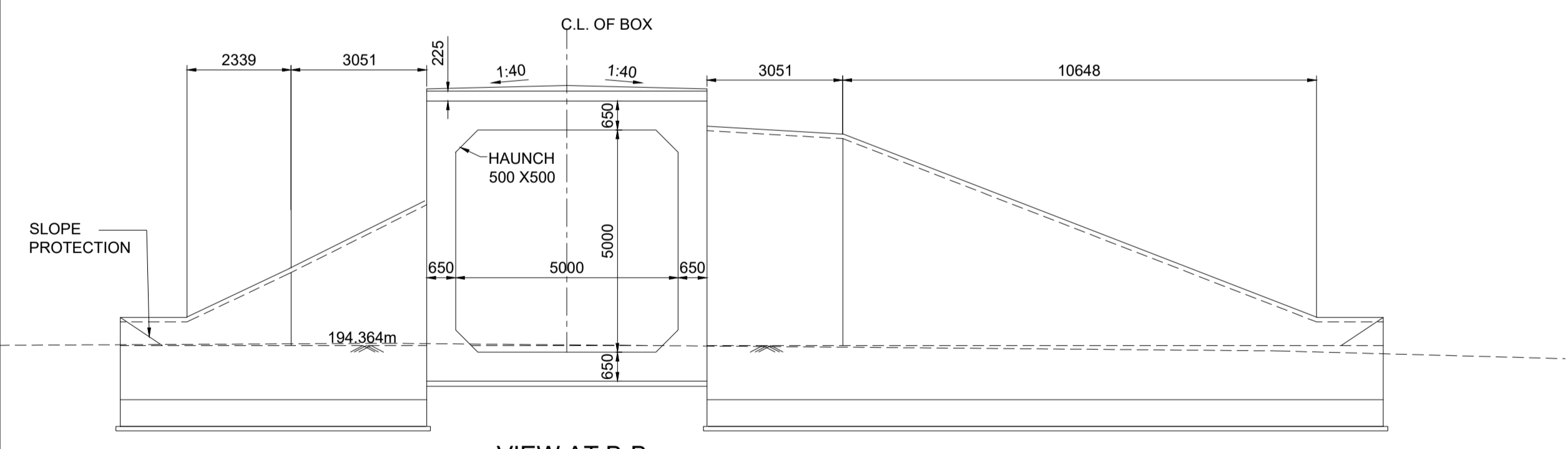




- NOTES :**
- A) GENERAL NOTES**
- ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  - THE CHAINAGES SHOWN ARE RECKONED FROM C/L OF PRITHALA STATION BUILDING TAKEN AS 0.00 M. WITH RESPECT TO UP MAIN LINE.
  - FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  - BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
  - THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  - ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  - SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  - ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
  - THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HORC.
  - DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  - THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**
- PROTECTION WORK ON SLOPES OF BANK UP TO 15M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
  - FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
  - ALL CLEAN/ EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
  - PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
  - DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
    - IRS BRIDGE RULE
    - IRS CONCRETE BRIDGE CODE
    - IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
  - SEISMIC ZONE- IV
  - EXPOSURE CONDITION- MODERATE.
  - DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST
  - THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB- STRUCTURE AND FOUNDATION CODE.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHALL BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM CONFIRMING TO IS-3117.
  - REINFORCEMENT SHALL BE Fe 500D (TMT) CONFORMING TO IS 1786.
  - FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
    - ALL RCC/WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
    - LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
  - FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
  - HEIGHT GAUGE SHALL BE PROVIDED AS PER RDSO STANDARD DRAWING NO. RDSO/M0001.
  - SPEED BREAKER SHOULD BE PROVIDED ON EITHER APPROACH OF RUB AT A DISTANCE OF 20M FROM THE BRIDGE COVERING FULL WIDTH OF THE ROAD INCLUDE BERMS AS PER ANNEXURE 9/5 OF P WAY MANUAL.

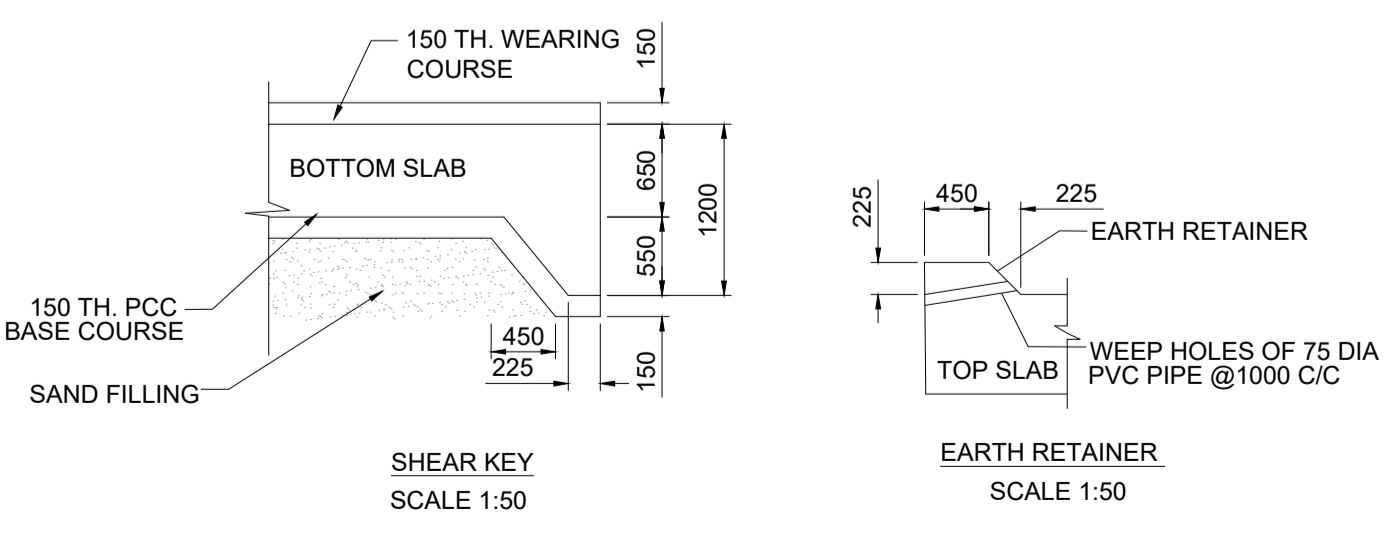


- IMPORTANT NOTE:**  
TOP OF BOTTOM SLAB OF RCC BOX SHALL NOT BE KEPT ABOVE THE NATURAL GROUND LEVEL. HOWEVER, ROAD LEVEL AND VERTICAL CLEARANCE ABOVE ROAD LEVEL SHALL BE MAINTAINED AS SHOWN IN THE DRAWING. OVERALL HEIGHT OF THE BOX MAY NEED MODIFICATION ACCORDINGLY. THE HEIGHT OF RCC BOX SHALL BE PROVIDED KEEPING ABOVE PROVISION IN VIEW.



**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
RL	ROAD LEVEL



GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

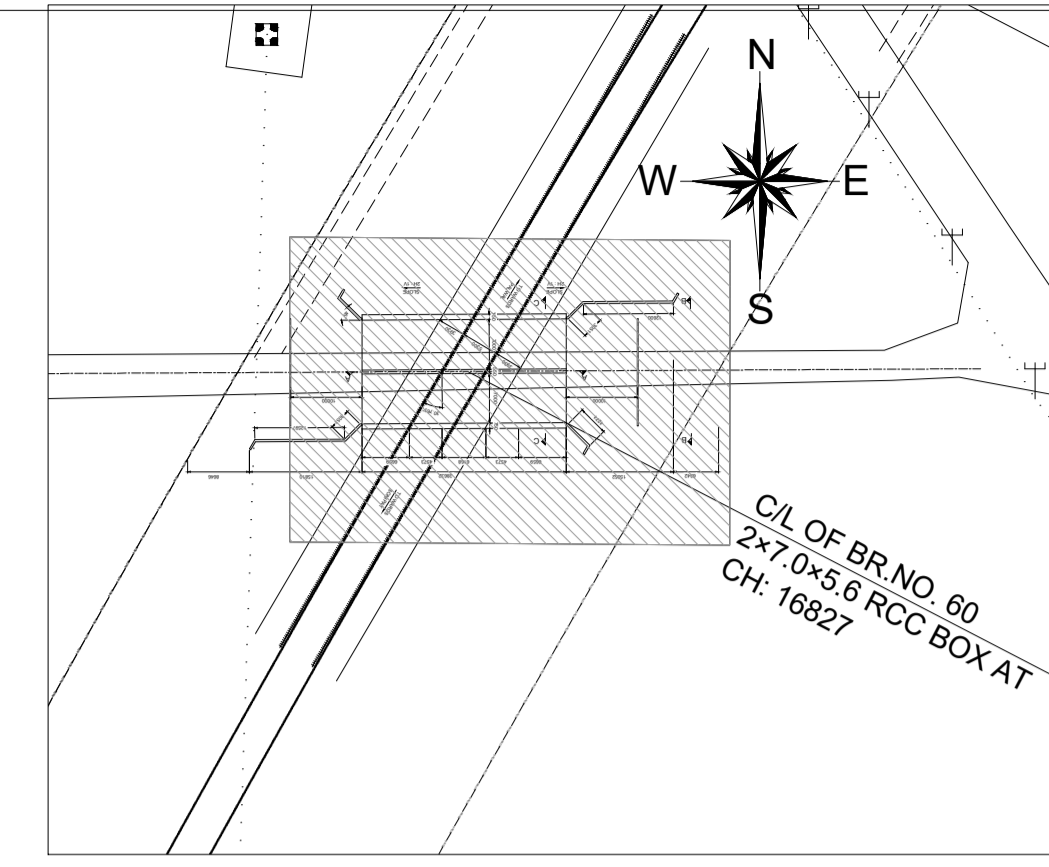
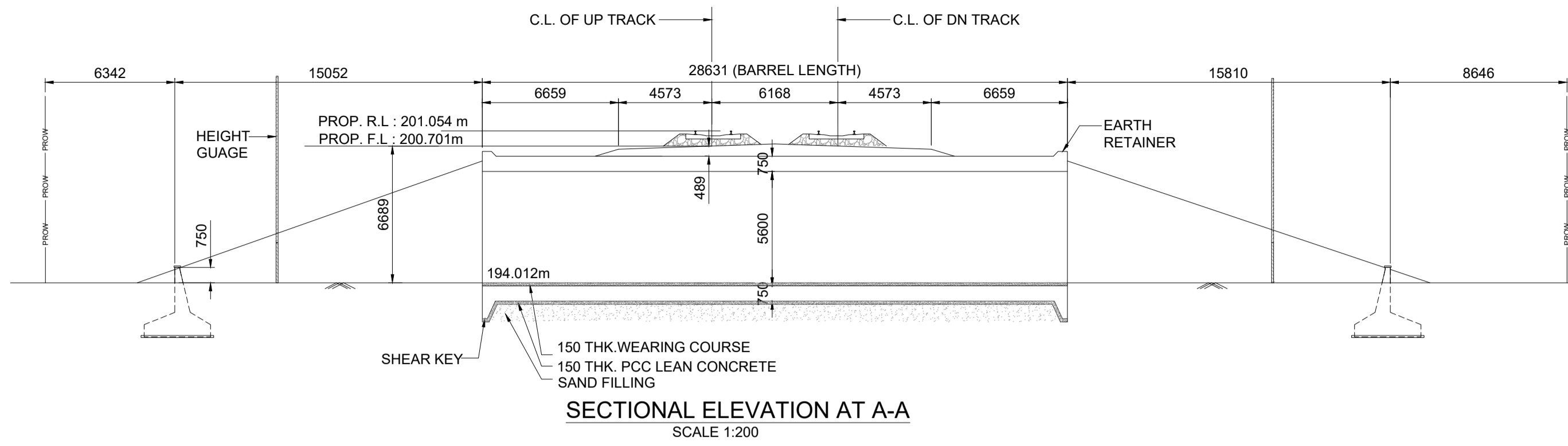


**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR ROAD UNDER BRIDGE BRIDGE NO. 057 SPAN 1x5.0x5.0 RCC BOX AT CH: 15944

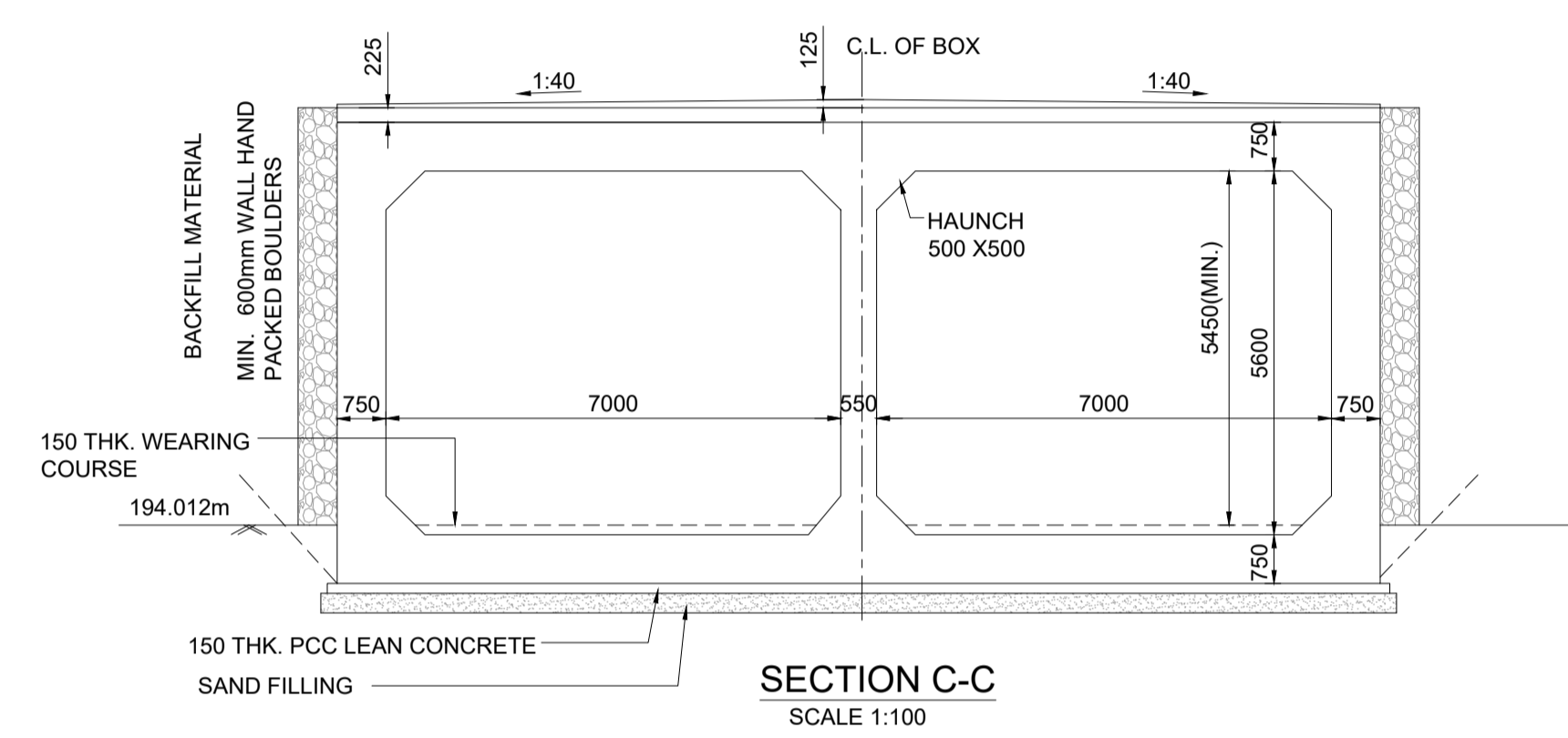
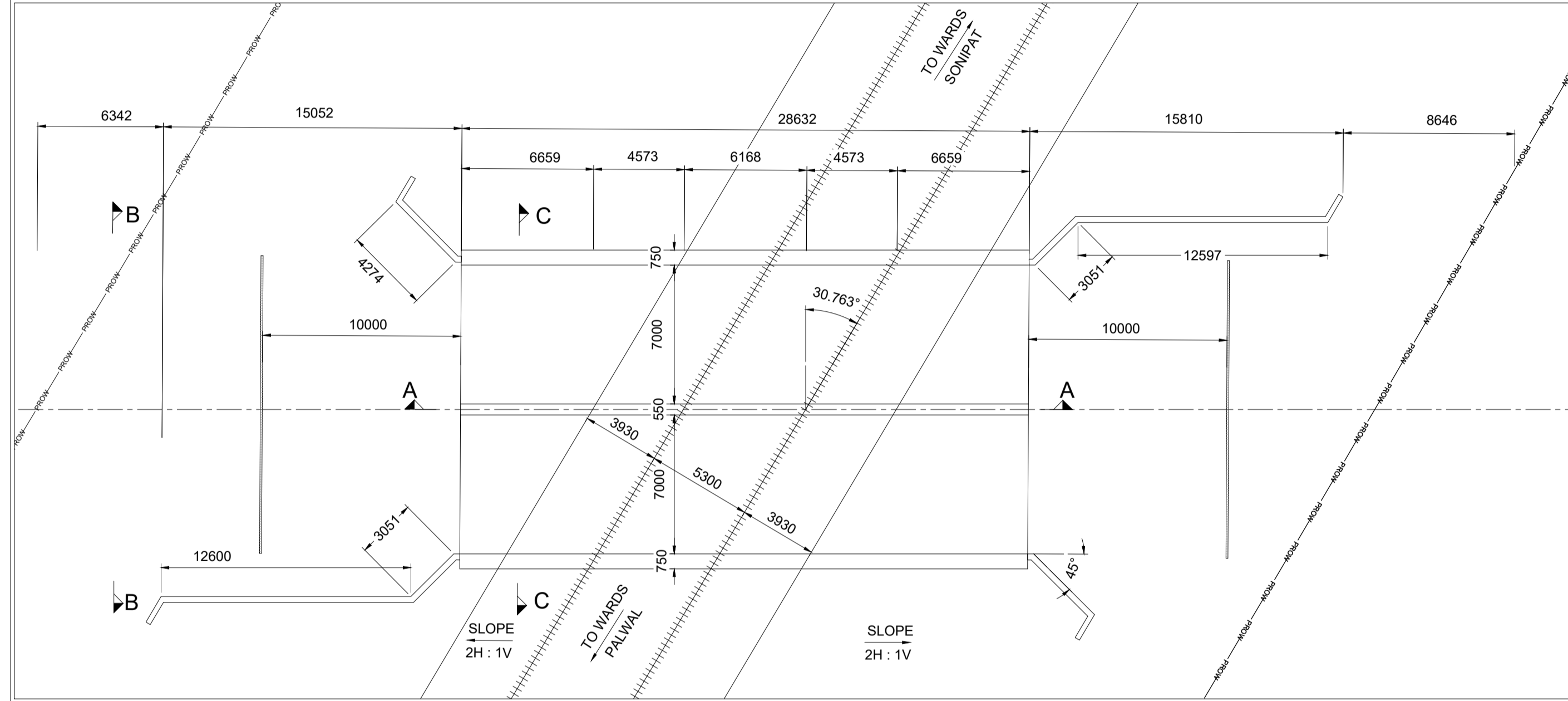
**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01057\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

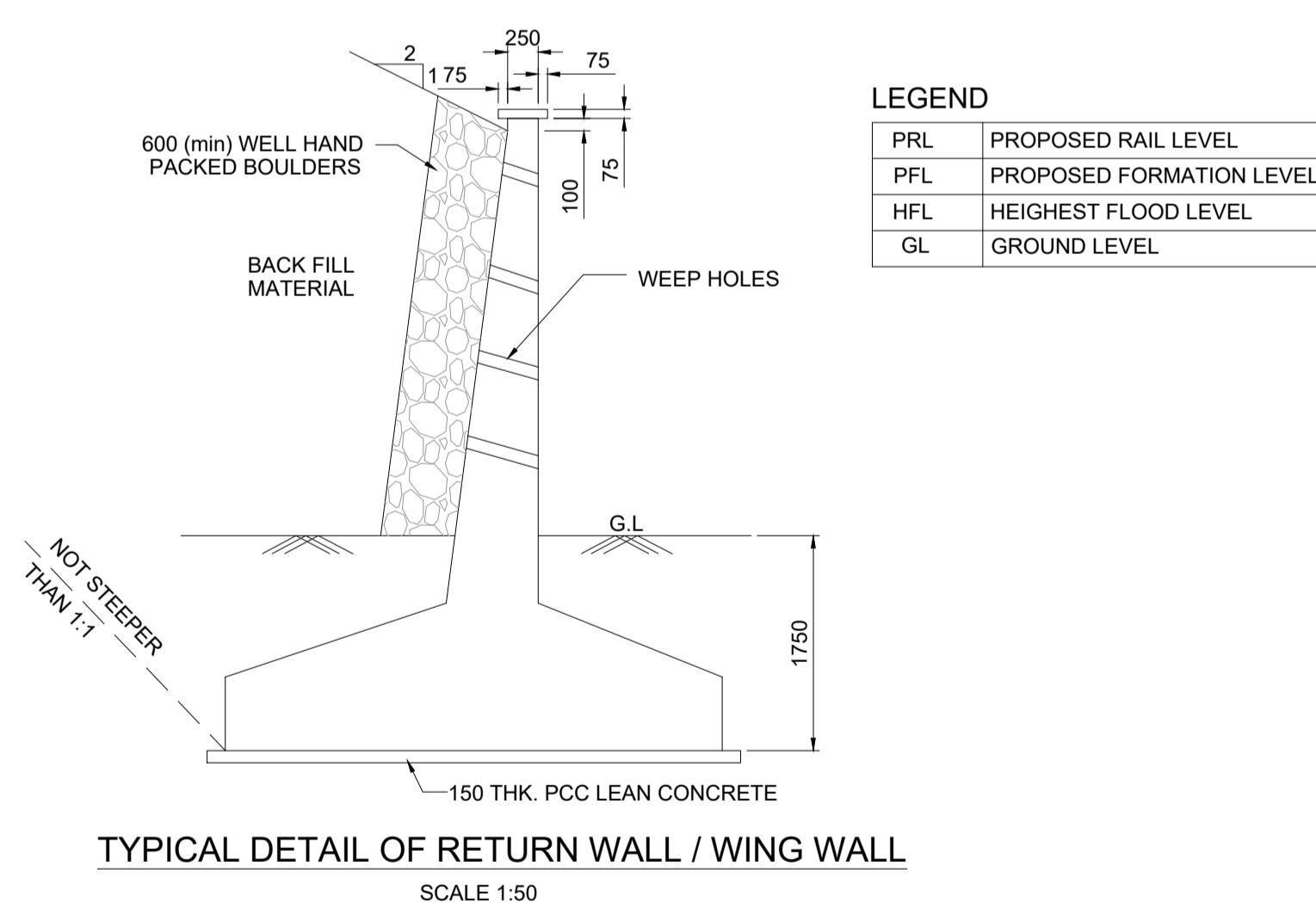
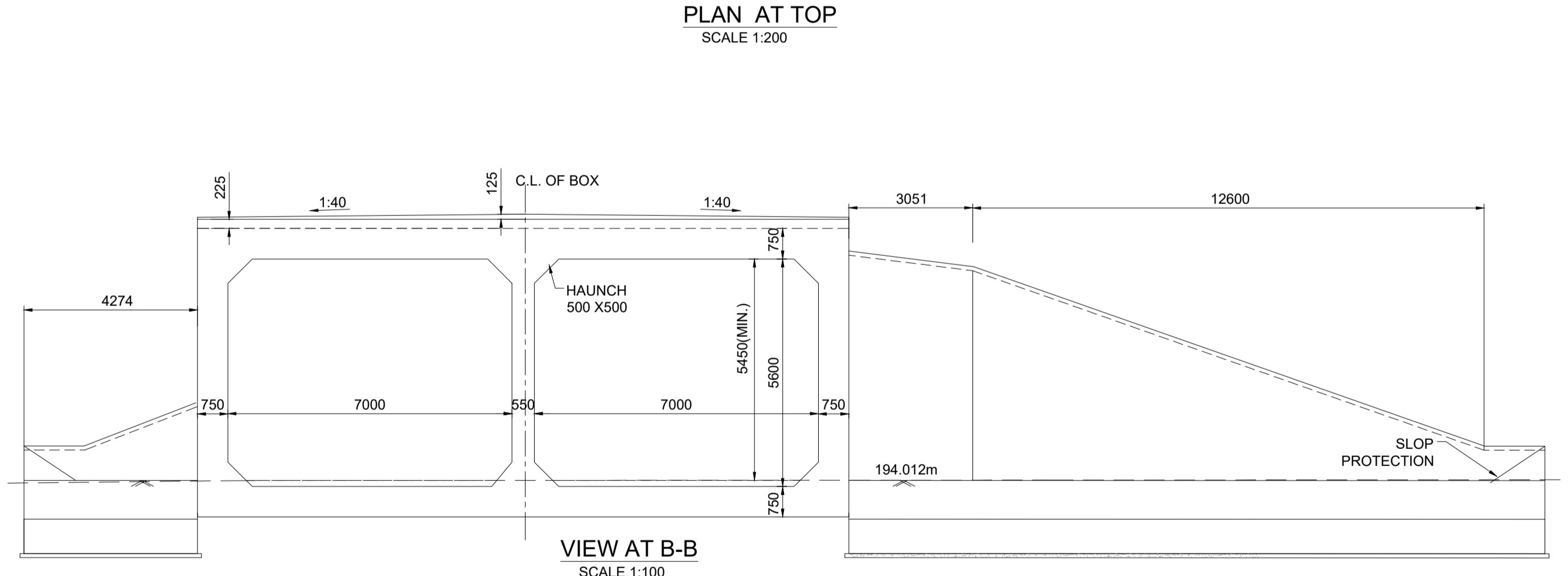




- NOTES :**
- A) GENERAL NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METER, UNLESS OTHERWISE MENTIONED.
  2. THE CHAINAGES SHOWN ARE RECKONED FROM C/L OF PRITHALA STATION BUILDING TAKEN AS 0.00 M, WITH RESPECT TO UP MAIN LINE.
  3. FOR RAIL LEVELS, FORMATION LEVEL, GRADES ETC. REFER L-SECTION.
  4. BOX BRIDGE IS TO BE DESIGNED FOR 32.5 T LOADING AS APPLICABLE.
  5. THE EXISTING DETAILS ARE AS PER SITE SURVEY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE EXECUTION.
  6. ENGINEER IN CHARGE/ SITE ENGINEER SHOULD VERIFY THE RAIL LEVEL FORMATION LEVEL, BED LEVEL & TRACK CENTER AT SITE BEFORE COMMENCEMENT OF WORK.
  7. SUITABLE BED SLOPE SHALL BE PROVIDED AND ADJUSTED AS PER SITE CONDITIONS.
  8. ENGINEER IN CHARGE/SITE ENGINEER SHALL ENSURE THE SAFETY OF TRACK/ROAD AT ALL THE TIME AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DAMAGE OF S&T CABLE /OFC DURING EXECUTION OF WORK CONCERNED DEPT. SUCH AS BSNL/AIRTEL/SSE/SIG/ADSTE ETC. SHALL BE INFORMED WELL IN ADVANCE BEFORE EXECUTION OF WORK.
  9. THIS DRAWING IS THE PROPERTY OF HRIDC AND FOR EXCLUSIVE USE OF HORC.
  10. DETAILED DESIGN DRAWING WILL BE PREPARED BASED ON THIS CONCEPTUAL APPROVED GAD.
  11. THICKNESS OF STRUCTURAL MEMBERS ARE TENTATIVE AND WILL BE FINALISED AFTER DETAILED DESIGN.
- B) TECHNICAL NOTES :**

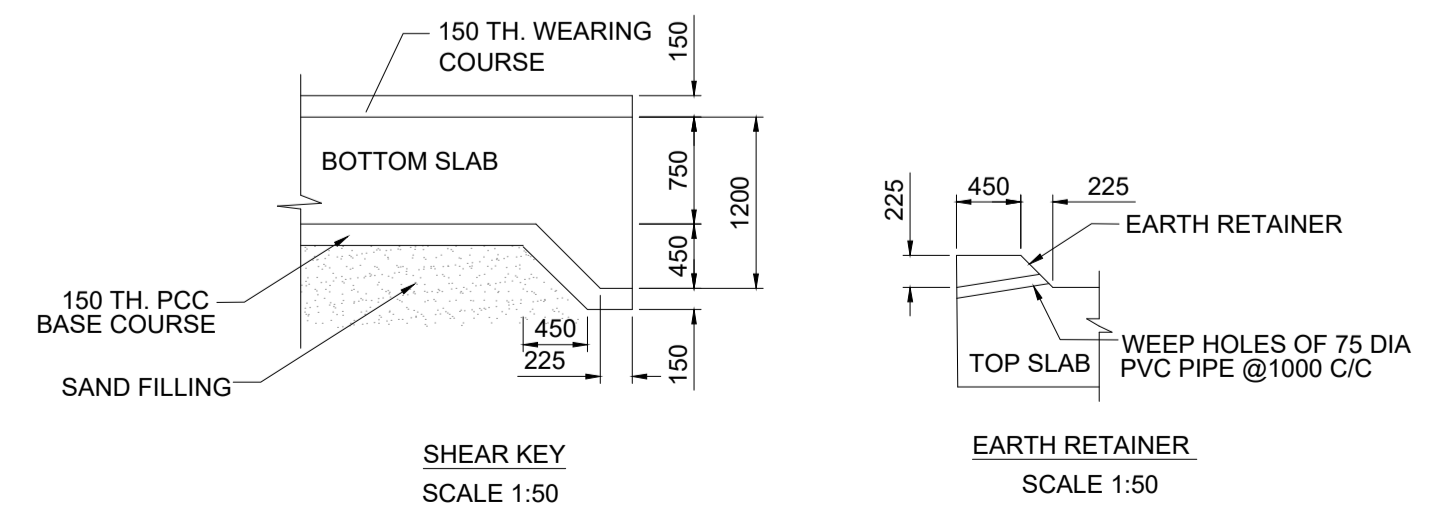


1. PROTECTION WORK ON SLOPES OF BANK UP TO 15M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
2. INSPECTION STEPS SHALL BE PROVIDED AT DIAGONALLY OPPOSITE ENDS OF THE BOX AFTER PROTECTION WORK.
3. FOR PROPER DRAINAGE OF WATER, 50mm PCC M-20 WITH SUITABLE SLOPE TO BE USED ON TOP OF BOX SLAB.
4. ALL CLEAN EXPANSION JOINTS SHALL BE FILLED WITH THERMOCOL.
5. PLACEMENT LEVEL OF BOX AS SHOWN IN THIS GAD IS INDICATIVE AND MAY BE SUITABLY LOWERED/ELEVATED BASED UPON THE REQUIREMENT OF CLEARANCE, DRAINAGE & NATURAL GROUND PROFILE.
6. DESIGN CRITERIA SHALL BE BASED ON FOLLOWING IRS CODES
  - (i) IRS BRIDGE RULE
  - (ii) IRS CONCRETE BRIDGE CODE
  - (iii) IRS BRIDGE SUB-STRUCTURE & FOUNDATION CODE
7. SEISMIC ZONE- IV
8. EXPOSURE CONDITION- MODERATE.
9. DURING CONSTRUCTION, IF REQUIRED, ROAD CLOSURE TO BE OBTAINED FROM CONCERNED ROAD/CIVIL AUTHORITIES. DIVERSION OF ROAD IF ANY, REQUIRED IS TO BE DONE BY CONTRACTOR AT HIS COST.
10. THE BACK FILL MATERIAL SHALL BE CONFORMING TO CLAUSE 7.5 OF IRS SUB- STRUCTURE AND FOUNDATION CODE.
11. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 K.G/SQM. CONFIRMING TO IS-3117.
12. REINFORCEMENT SHALL BE F<sub>8</sub>-500D (TMT) CONFORMING TO IS 1786
13. FOR CONCRETE SPECIFICATION REFER IRS CONCRETE BRIDGE CODE. GRADE OF CONCRETE :
  - (i) ALL RCC WEARING COURSE(WC) =M:35/DETAILED DESIGN DRG.
  - (ii) LEVELING COURSE/LEAN CONCRETE =M:20/DETAILED DESIGN DRG.
14. BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.
15. FOUNDATION LEVEL SHOWN IN DRAWING IS TENTATIVE. DETAILED DESIGN DRAWING SHALL BE FOLLOWED FOR FOUNDATION LEVEL DURING EXECUTION.
16. HEIGHT GAUGE SHALL BE PROVIDE AS PER RDSO STANDARD DRAWING NO. RDSO/M0001.
17. SPEED BREAKER SHOULD BE PROVIDED ON EITHER APPROACH OF RUB AT A DISTANCE OF 20M FROM THE BRIDGE COVERING FULL WIDTH OF THE ROAD INCLUDE BERMS.



**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL

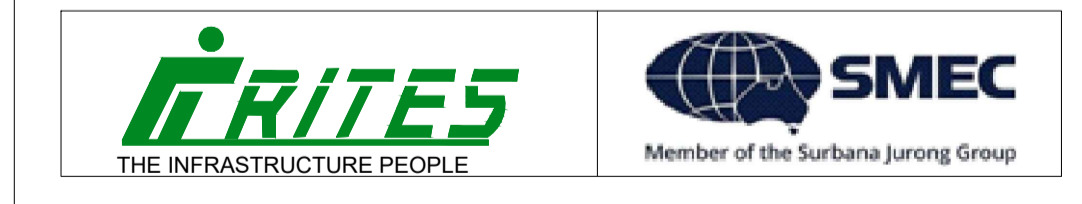


**IMPORTANT NOTE:**  
TOP OF BOTTOM SLAB OF RCC BOX SHALL NOT BE KEPT ABOVE THE NATURAL GROUND LEVEL. HOWEVER, ROAD LEVEL AND VERTICAL CLEARANCE ABOVE ROAD LEVEL SHALL BE MAINTAINED AS SHOWN IN THE DRAWING. OVERALL HEIGHT OF THE BOX MAY NEED MODIFICATION ACCORDINGLY. THE HEIGHT OF RCC BOX SHALL BE PROVIDED KEEPING ABOVE PROVISION IN VIEW.

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAHAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING  
PROPOSED RUB NO. 060  
SPAN 2x7.0x5.6 RCC BOX AT CH: 16827

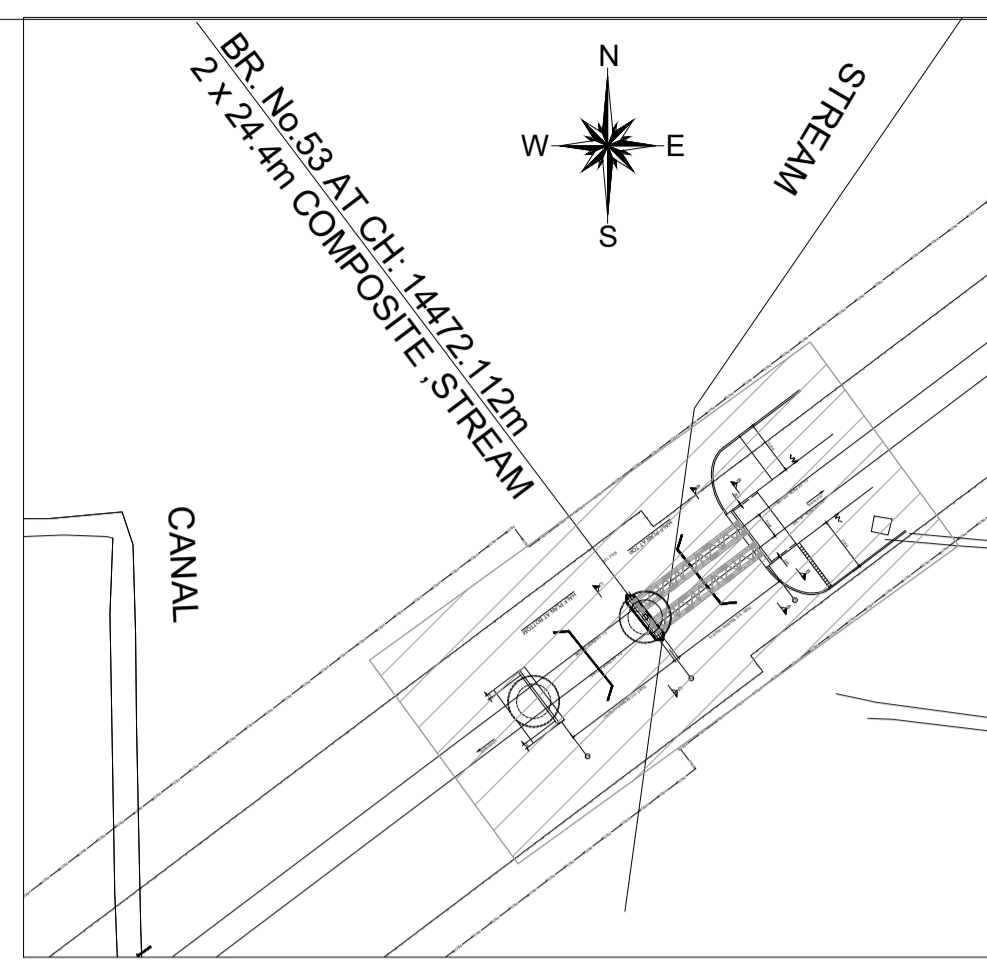
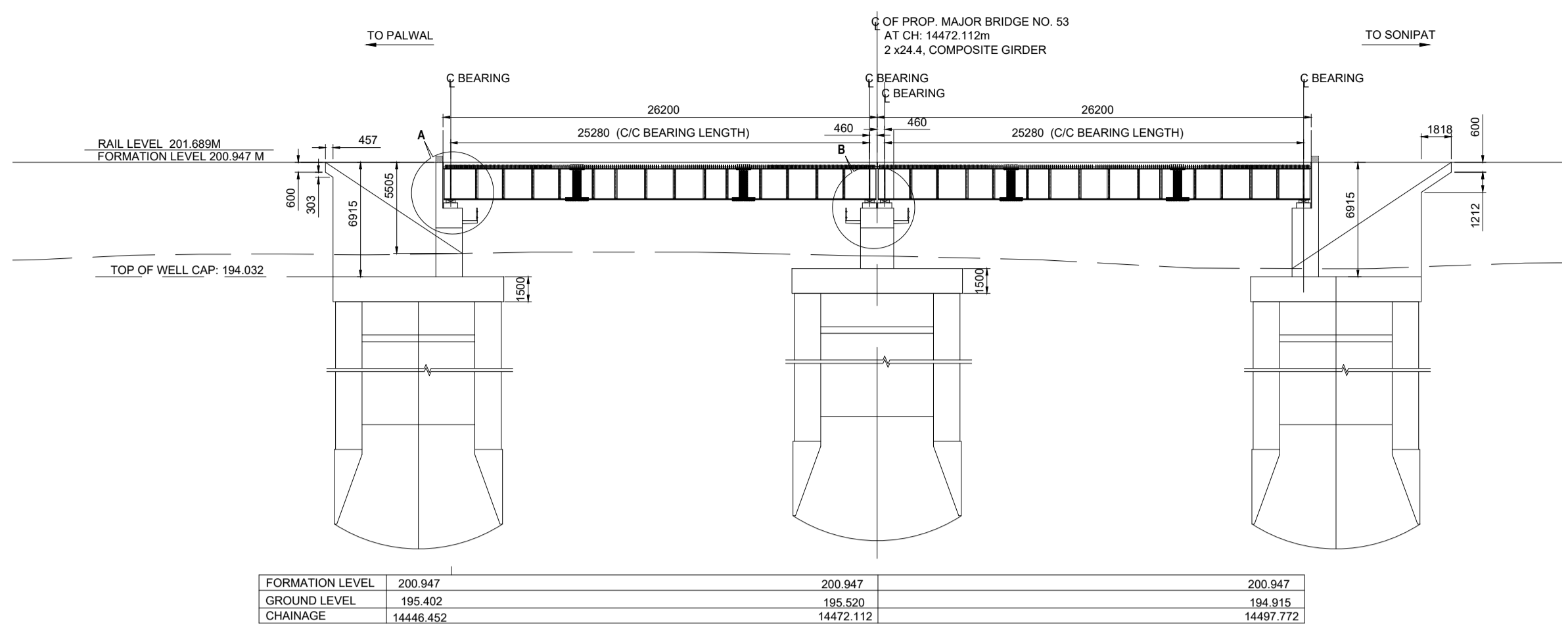
**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01060\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

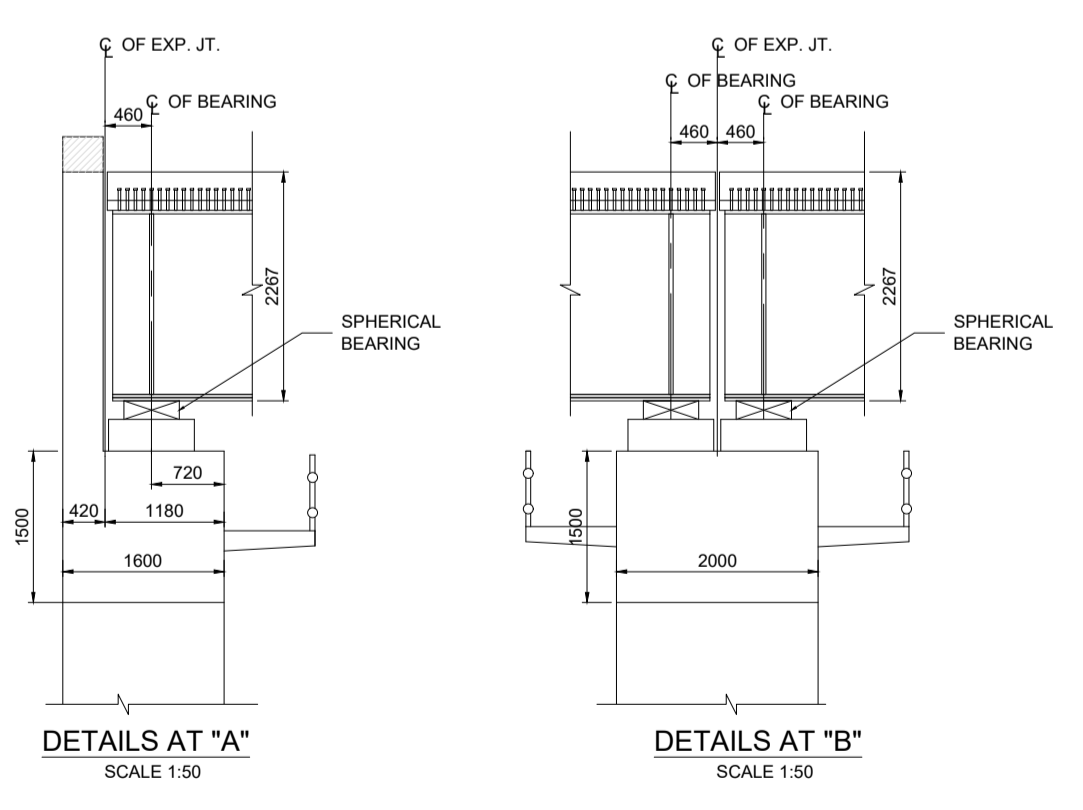
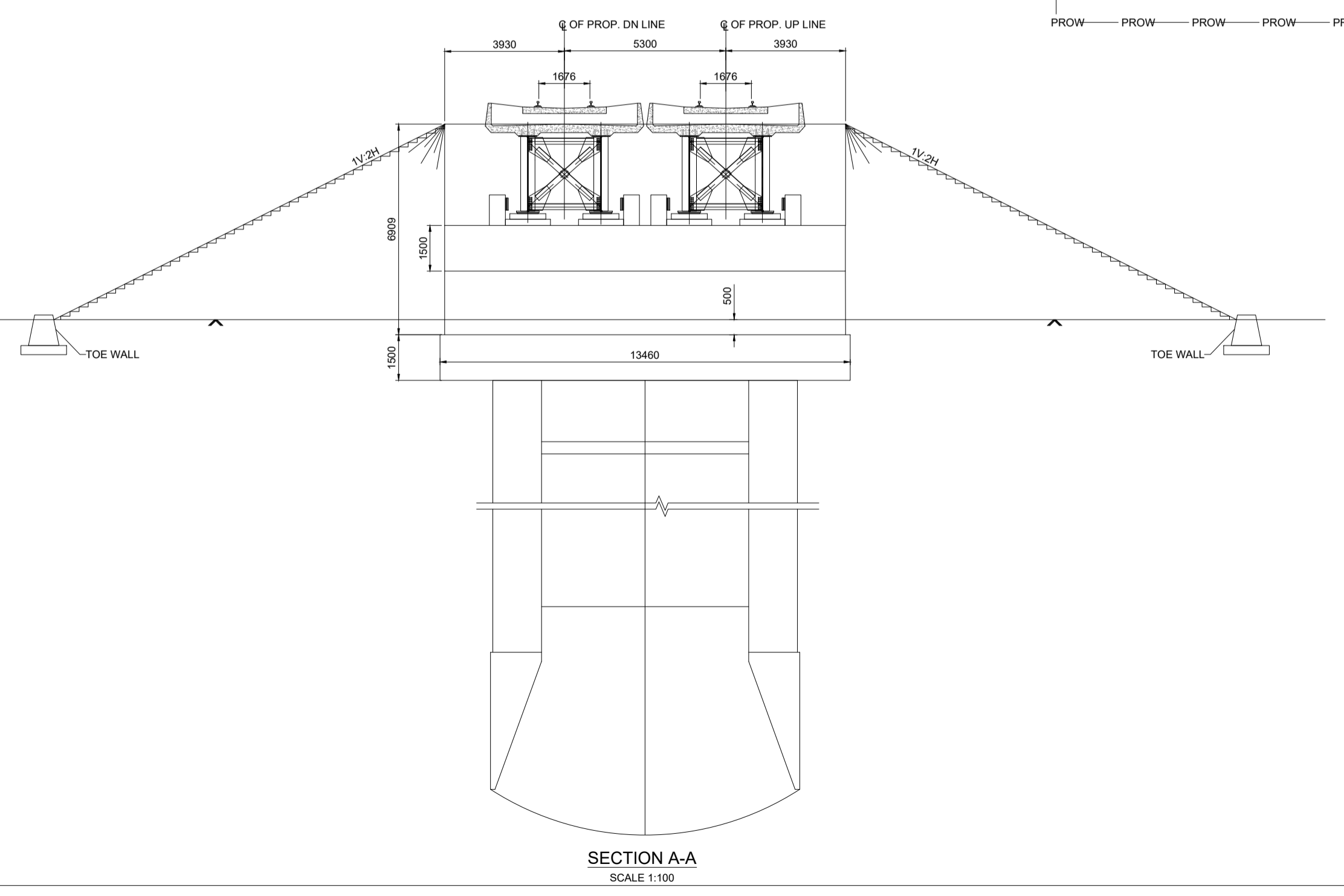
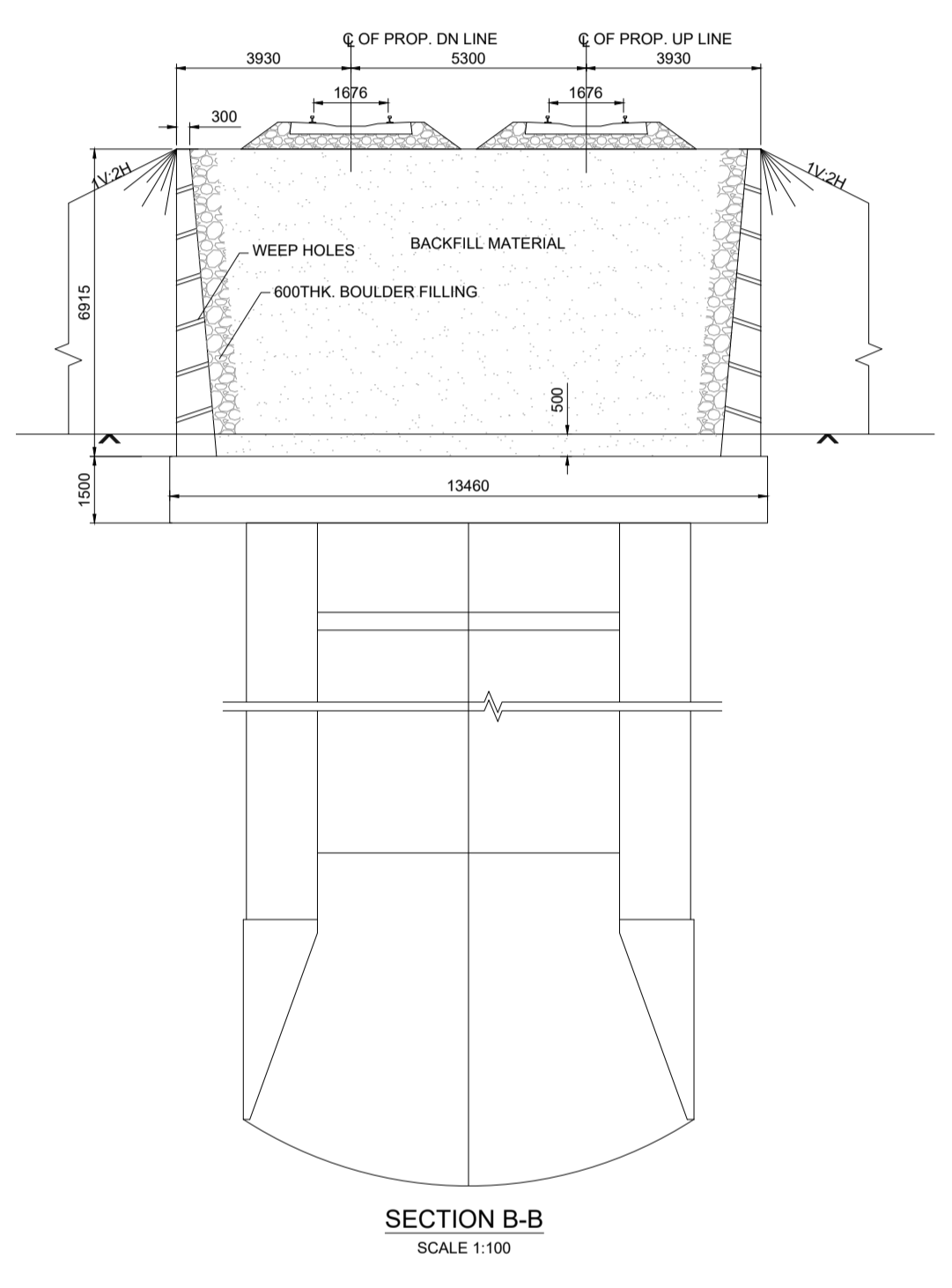
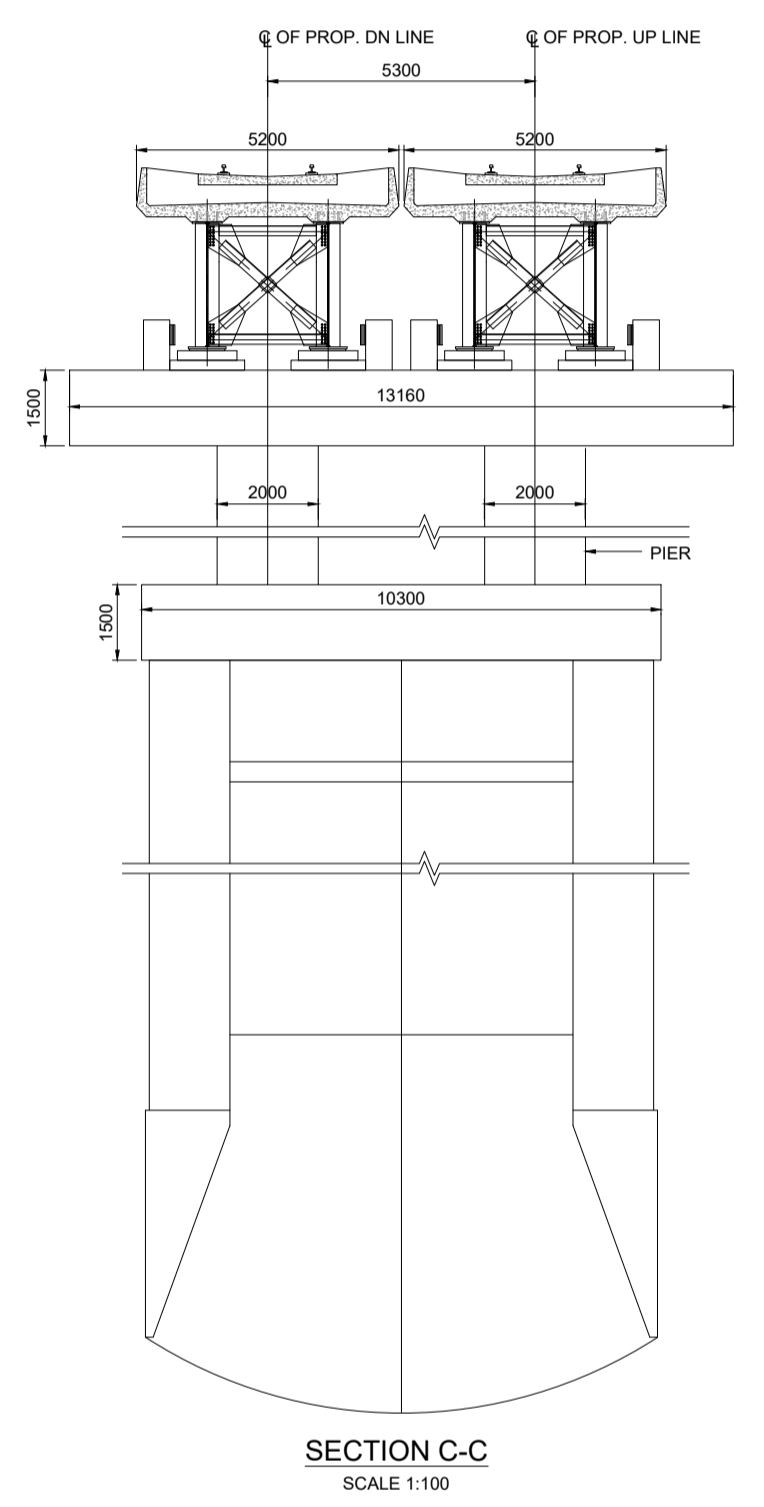
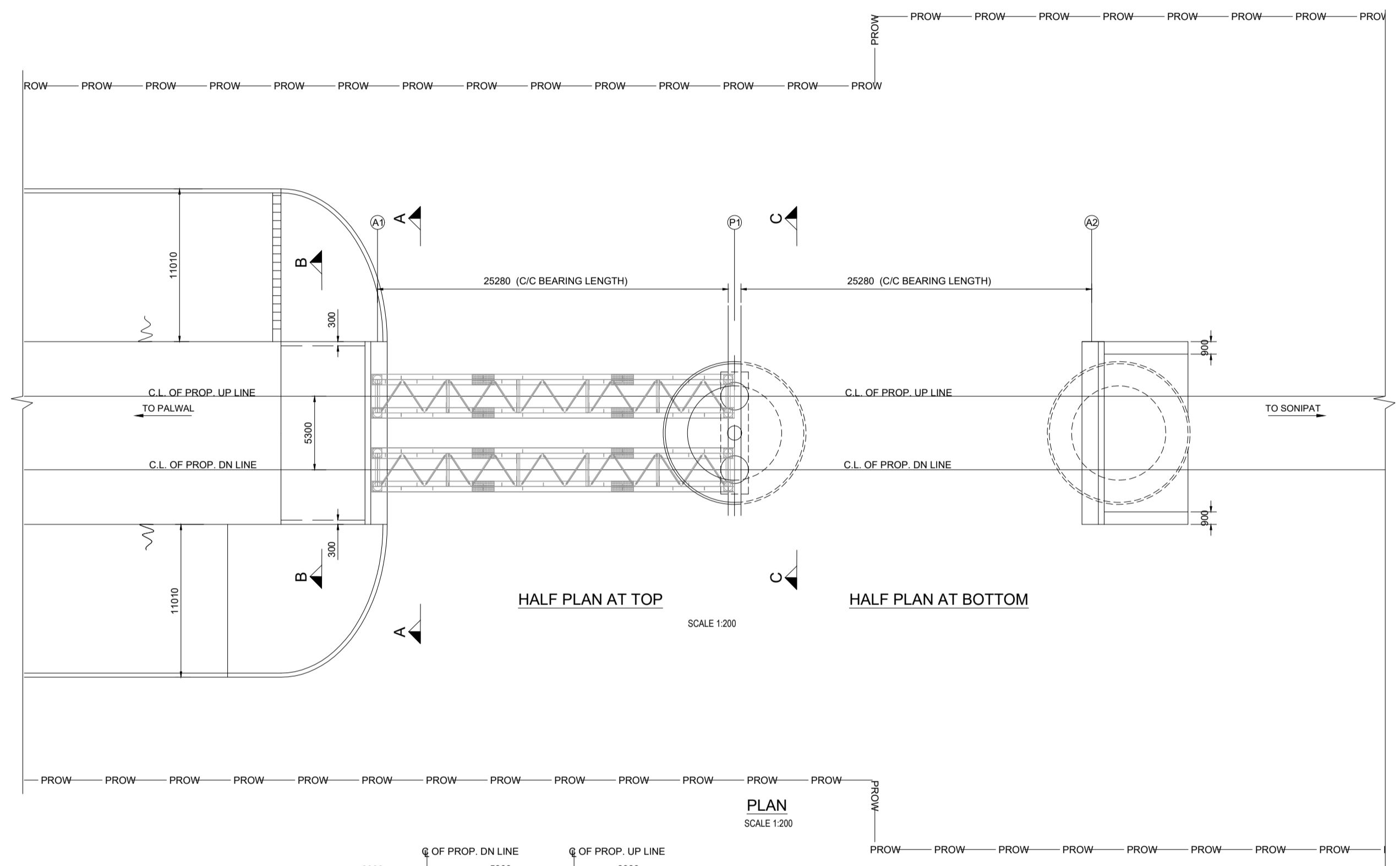
GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu Patial</i>		

## **3.2 MAJOR BRIDGES**





- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METER
  - DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS TO BE FOLLOWED
  - DESIGN CRITERIA
    - IRS BRIDGE SUBSTRUCTURE AND FOUNDATION CODE 2013.
    - IRS CONCRETE BRIDGE CODE 2014.
    - IRS BRIDGE RULES 2014.
    - IS 2911 PART-1 SECTION-2
    - EXPOSURE CONDITION - MODERATE.
    - SEISMIC ZONE - IV
    - STANDARD OF LOADING - SUPER STRUCTURE-25T (RDSO STANDARD CG) & SUB STRUCTURE-32.5T - 2008 LOADING.
  - THE STRUCTURAL DIMENSIONS AND SIZES ARE INDICATIVE AND THESE MAY VARY DURING DETAIL DESIGN.
  - SIZE AND TYPE OF FOUNDATION SHOWN IS TENTATIVE AND MAY CHANGE DURING DETAILED DESIGN.
  - ALL RCC AND CC WORKS SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION LAID DOWN IN IRS CONCRETE BRIDGE CODE.
  - THE GRADE OF CONCRETE
    - FOR ABUTMENT DIRT & RETURN WALL WEARING COURSE(WC)-----M35
    - FOR FOUNDATION -----M35
    - FOR LEVELING COURSE-----M20
  - ALL CONCRETE WORK SHALL BE MECHANICALLY MIXED AND VIBRATED.
  - MIX DESIGN SHALL BE APPROVED BY ENGINEER - IN CHARGE.
  - HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe-500D CONFORMING TO IS: 1798-2008 SHALL BE USED AS REINFORCEMENT.
  - BED LEVEL & ROAD LEVEL, FORMATION LEVEL AND RAIL LEVEL & ALIGNMENT SHALL BE VERIFIED BY THE ENGINEER AT SITE BEFORE EXECUTION OF WORK.
  - ANGLE OF INTERNAL FRICTION OF BACK FILL SHALL NOT BE LESS THAN 35.
  - PROTECTION WORK ON SLOPES OF BANK UP TO 30M BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - BACK FILL SHALL BE AS PER CL.7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE 2013.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.484 KG/SQM CONFIRMING TO IS-3117.
  - CURING SHALL BE DONE AS PER CLAUSE NO 8.4 OF IRS CONCRETE BRIDGE CODE.
  - SAFETY & PROTECTION OF THE PROPOSED WORK IS TO BE ENSURED BY THE CONTRACTOR AS PER PARA 826 OF IRPWM WITH UPDATED CORRECTION SLIPS OF 2011-12.
  - THE SPECIFICATIONS FOR THE COMPOSITE GIRDER SHALL BE IN ACCORDANCE WITH RDSO DRG NOS. RDSO B-11753/1R1 TO 11753/7R1.
  - CONCRETING SHALL BE DONE IN ACCORDANCE WITH IRS CONCRETE BRIDGE CODE WITH 20MM MAXIMUM SIZE AGGREGATE.
  - ALL DIMENSIONS AND LEVELS SHOULD BE VERIFIED AT SITE BEFORE EXECUTION.
  - BRIDGE DETAILS LIKE, DL, INSPECTION STEPS PAINTINGS ETC SHOULD BE FOLLOWED AS PER BRIDGE MANUAL DURING CONSTRUCTION.
  - THIS DRAWING IS PROPERTY OF HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (HRIDC) AND EXCLUSIVE USE OF HRIDC.
  - ARRANGEMENT FOR PATHWAY SHALL BE PROVIDED AS PER RDSO DWG. NO. CBS-0046 (FOR CG).
  - SEISMIC ARRESTOR SHALL BE PROVIDED ON THE PIER/ABUTMENT CAP.



PROJECT:  
**HARYANA ORBITAL RAIL CORRIDOR**  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
**HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

CONSULTANT:  
**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
RITES Limited in consortium with SMEC International Pty. Ltd.

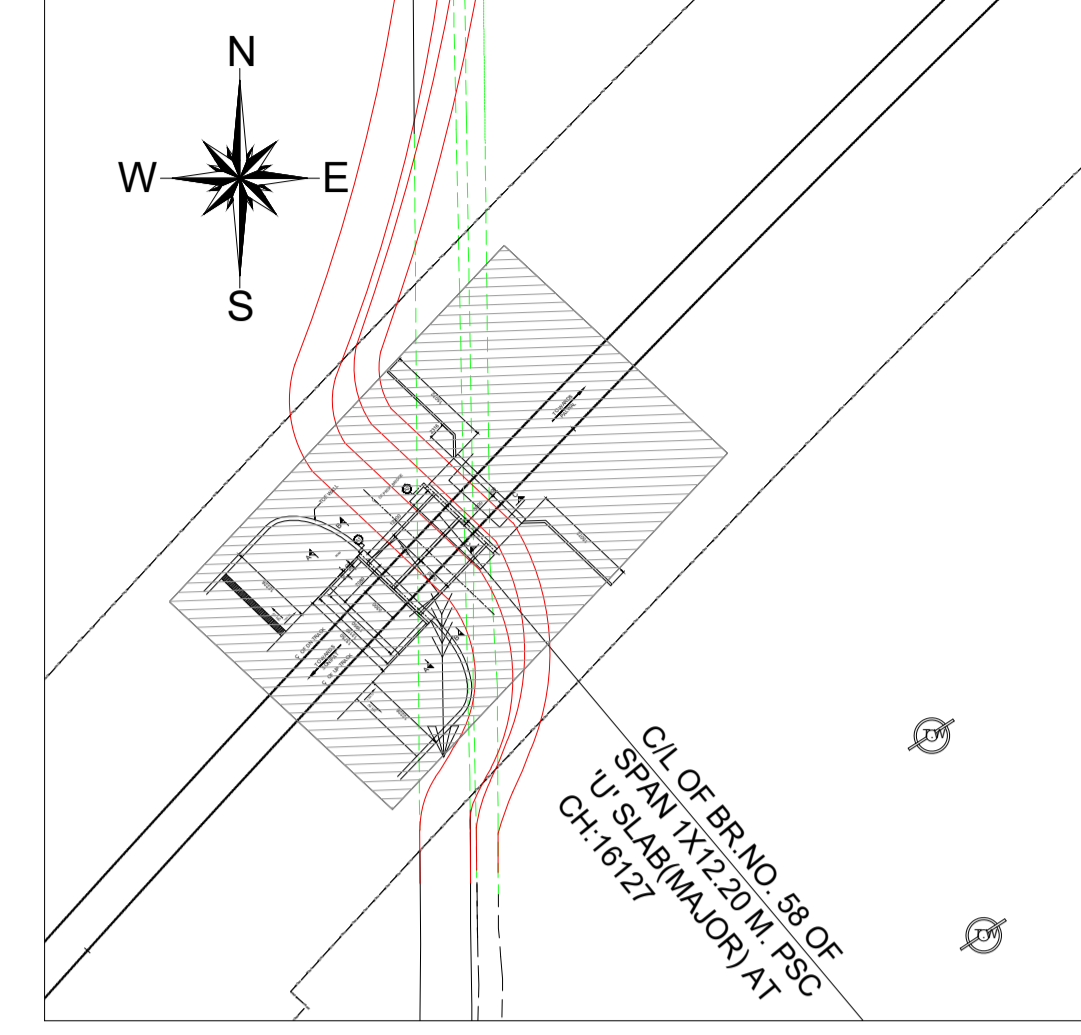
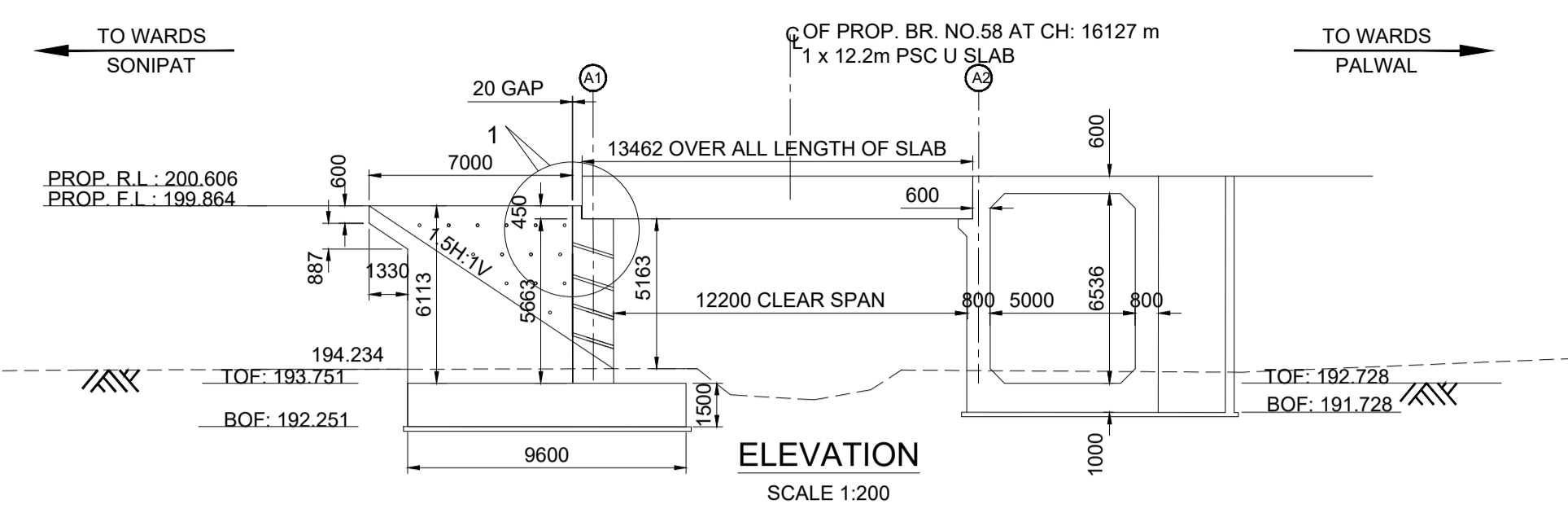


TITLE:- **CONCEPTUAL GENERAL ARRANGEMENT DRAWING**  
FOR PROPOSED MAJOR ROR BRIDGE NO.53  
2x24.4 CG AT CH: 14472.112m

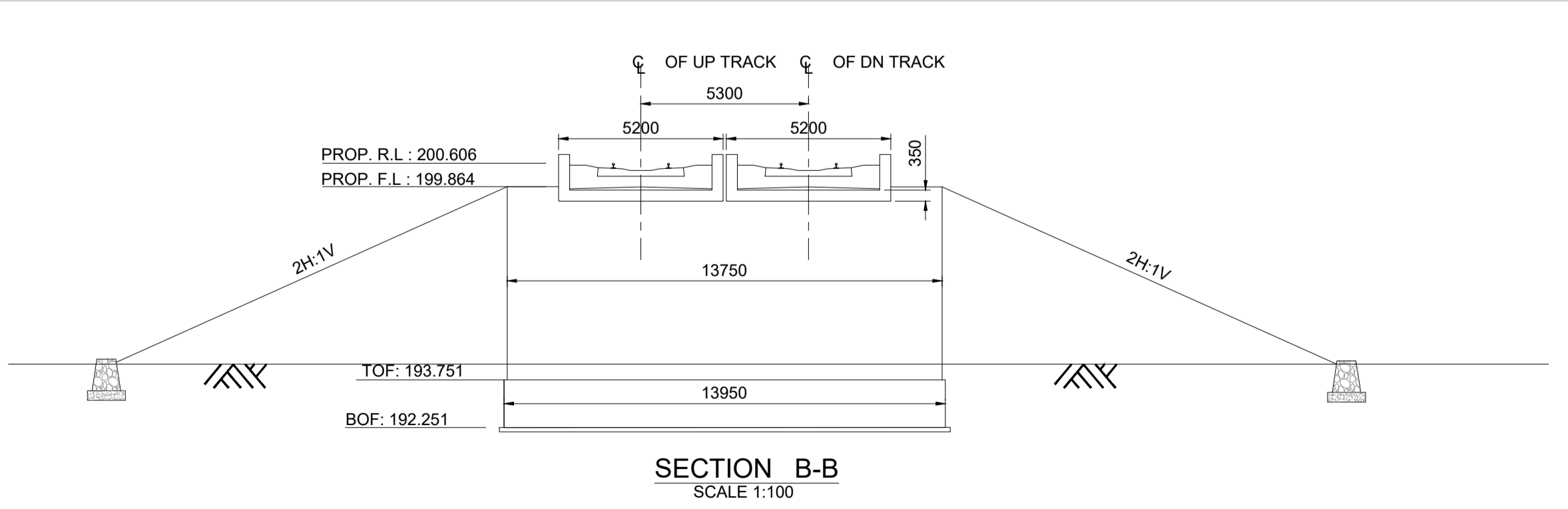
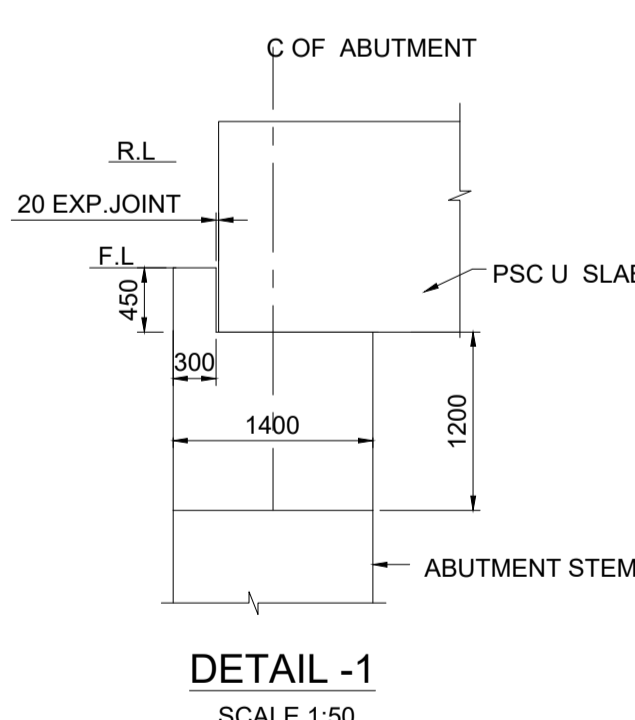
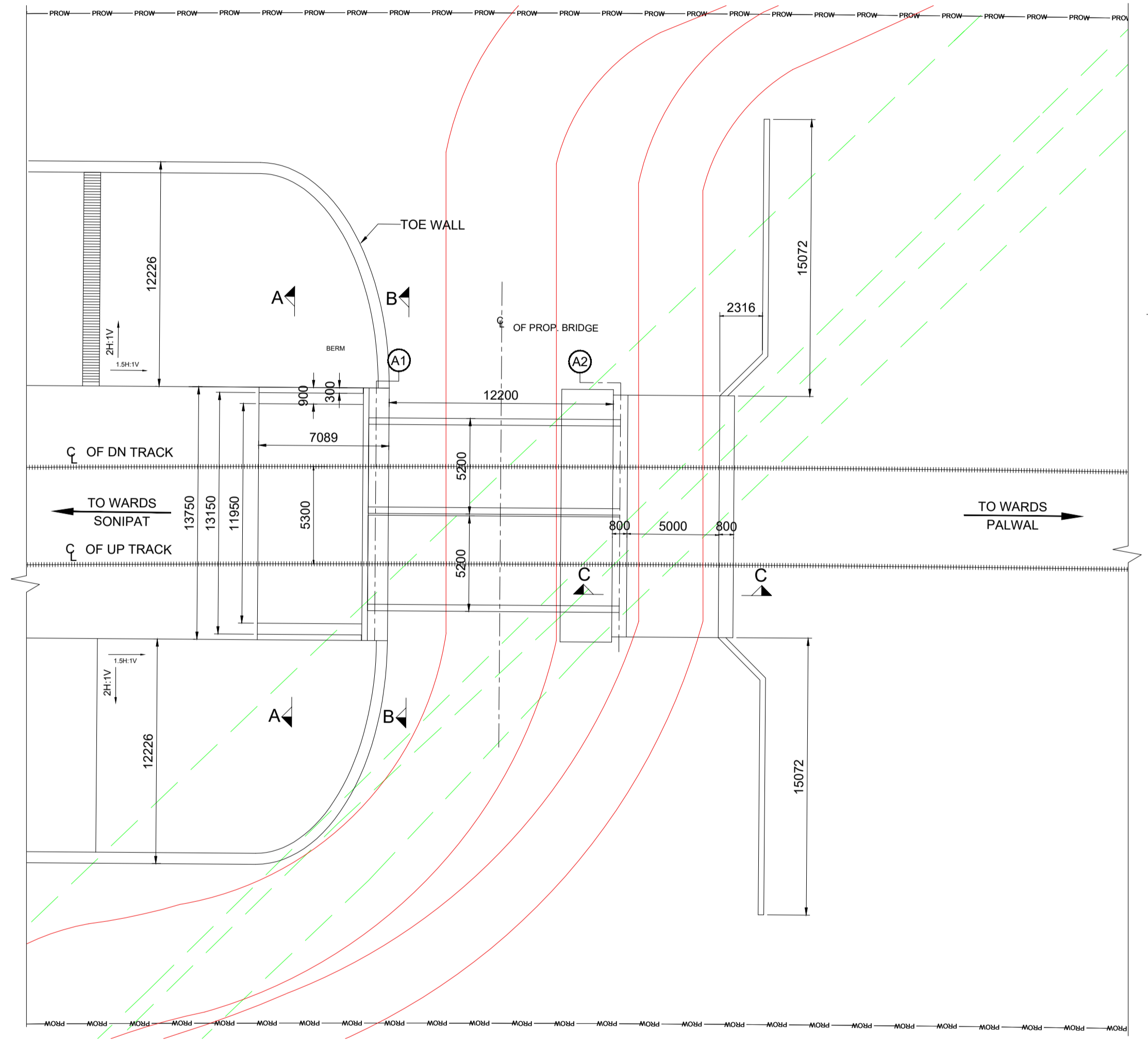
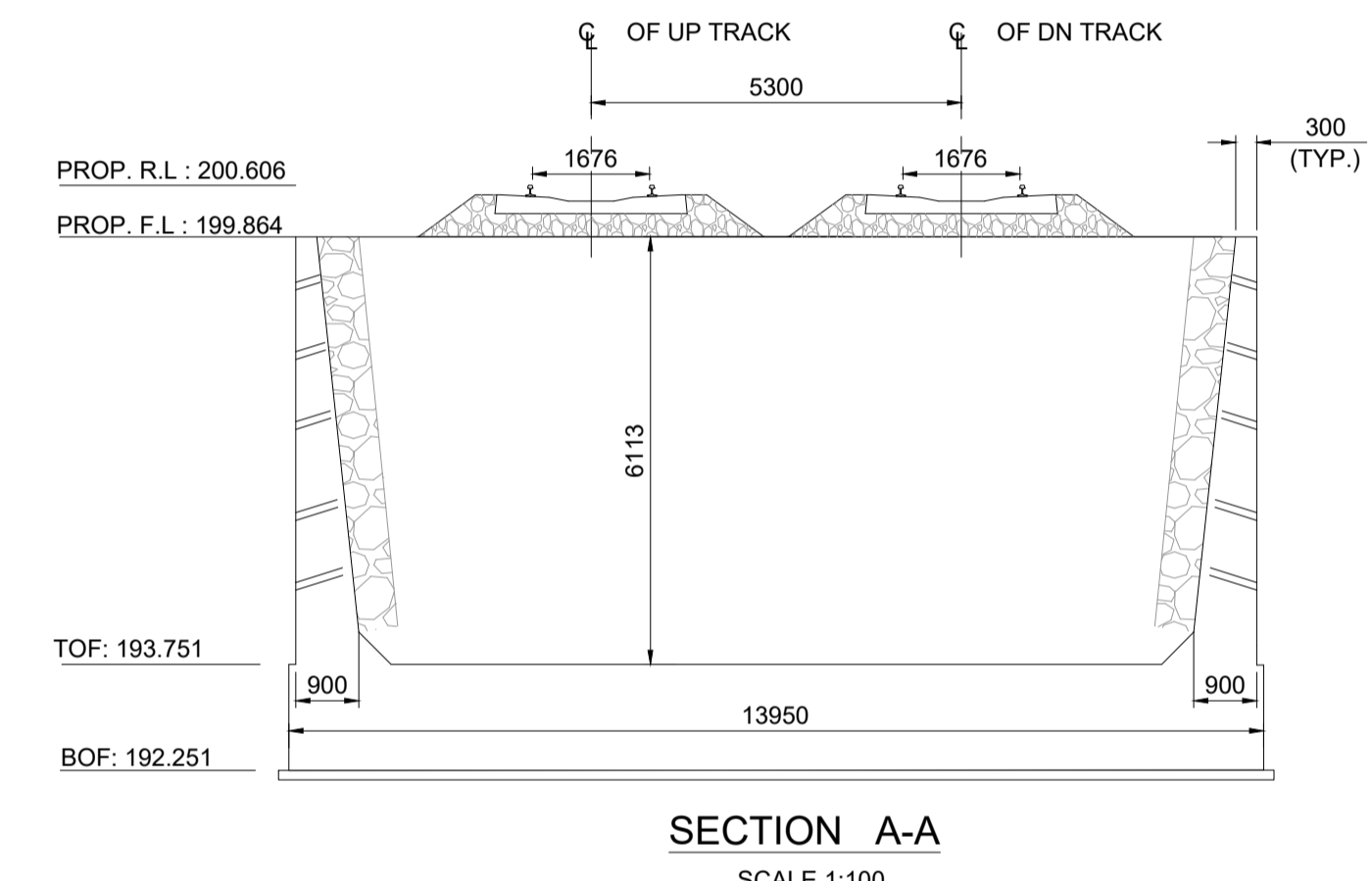
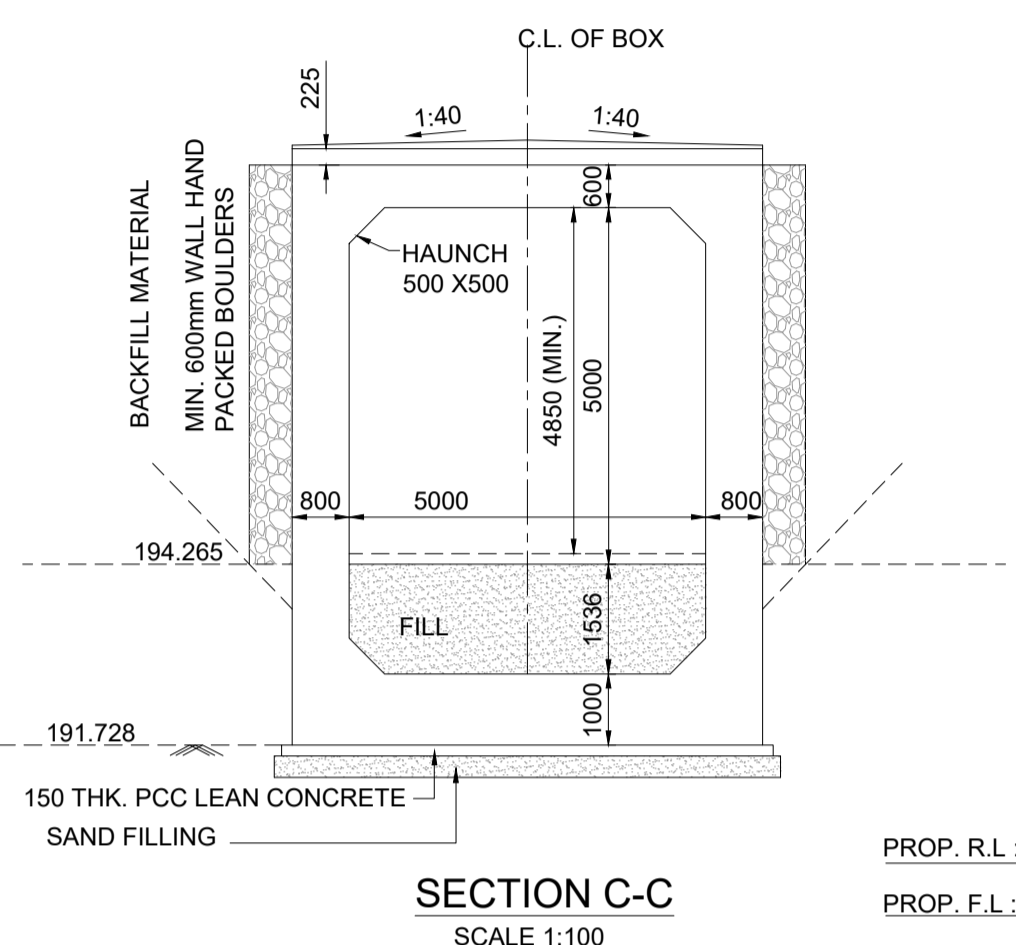
GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		

DRG. NO. GC-HRIDC-C4-DRW-BRD-GAD-01053_A0	SHEET NO. 1 OF 1
SCALE : AS SHOWN	ISSUE DATE 07-11-2022
	REVISED DATE





- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METER DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS TO BE FOLLOWED
  - DESIGN CRITERIA
    - IRS BRIDGE SUBSTRUCTURE AND FOUNDATION CODE 2013.
    - IRS CONCRETE BRIDGE CODE 2014.
    - IRS BRIDGE RULES 2014.
    - IS 2911 PART-1 SECTION-2.
    - EXPOSURE CONDITION - MODERATE.
    - SEISMIC ZONE - IV
    - STANDARD OF LOADING :- SUPER STRUCTURE-25T (RDSO STANDARD) & SUB STRUCTURE-32.5T- 2008 LOADING.
  - THE STRUCTURAL DIMENSIONS AND SIZES ARE INDICATIVE AND THESE MAY VARY DURING DETAIL DESIGN.
  - SIZE & TYPE OF FOUNDATION SHOWN IS TENTATIVE AND MAY CHANGE DURING DETAILED DESIGN.
  - ALL RCC AND CC WORKS SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION LAID DOWN IN IRS CONCRETE BRIDGE CODE.
  - THE GRADE OF CONCRETE
    - FOR ABUTMENT, DIRT & RETURN WALL WEARING COURSE(WC)---M35
    - FOR FOUNDATION -----M20
    - FOR LEVELING COURSE-----M20
  - ALL CONCRETE WORK SHALL BE MECHANICALLY MIXED AND VIBRATED.
  - MIX DESIGN SHALL BE APPROVED BY ENGINEER - IN CHARGE.
  - HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe-500D CONFORMING TO IS: 1786-2008 SHALL BE USED AS REINFORCEMENT.
  - BED LEVEL & ROAD LEVEL, FORMATION LEVEL AND RAIL LEVEL & ALIGNMENT SHALL BE VERIFIED BY THE ENGINEER AT SITE BEFORE EXECUTION OF WORK.
  - ANGLE OF INTERNAL FRICTION OF BACK FILL SHALL NOT BE LESS THAN 35.
  - PROTECTION WORK ON SLOPES OF BANK UP TO 30M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - BOULDER FILLING & BOULDER PACKING BEHIND ABUTMENT TO BE DONE AS PER IRS FOUNDATION & SUBSTRUCTURE CODE CL.7.5.2.
  - BACK FILL SHALL BE AS PER CL.7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE 2013.
  - 75mm DIA WEEP HOLES TO BE PROVIDED @1000 C/C HORIZ. AND 1000 MM C/C VERTICALLY ABOVE LOWEST WATER LEVEL IN RETURN WALL AS PER IRS SUB STRUCTURE CODE CLAUSE 7.6.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM CONFIRMING TO IS-3117.
  - CURING SHALL BE DONE AS PER CLAUSE NO 8.4 OF IRS CONCRETE BRIDGE CODE.
  - SAFETY & PROTECTION OF THE PROPOSED WORK IS TO BE ENSURED BY THE CONTRACTOR AS PER PARA 826 OF IRPMM WITH UPDATED CORRECTION SLIPS OF 2011-12.
  - THE SPECIFICATIONS FOR THE PSC U SLAB SHALL BE IN ACCORDANCE WITH RDSO DRC NO'S : RDSO 10281, 10281/1 AND 10281/2.
  - CONCRETING SHALL BE DONE IN ACCORDANCE WITH IRS CONCRETE BRIDGE CODE WITH 20MM MAXIMUM SIZE AGGREGATE.
  - ALL DIMENSIONS AND LEVELS SHOULD BE VERIFIED AT SITE BEFORE EXECUTION.
  - BRIDGE DETAILS LIKE , DL, INSPECTION STEPS PAINTINGS ETC SHOULD BE FOLLOWED AS PER BRIDGE MANUAL, DURING CONSTRUCTION.
  - THIS DRAWING IS PROPERTY OF HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (HRIDC) AND EXCLUSIVE USE OF HRIDC.
  - FOR TOE WALL DETAILS REFER SEPARATE SKETCH NO. GC-HRIDC-SK-GEN-014.
  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.




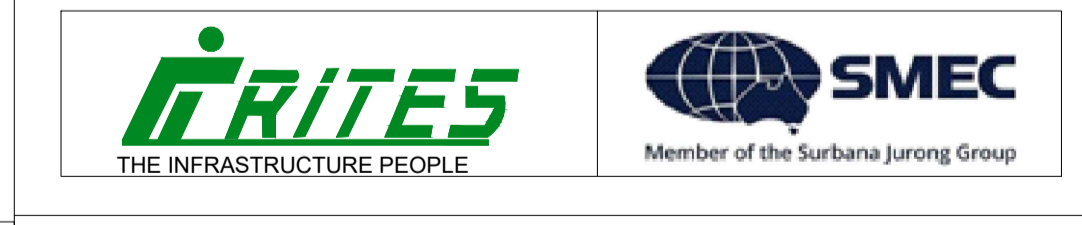
**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
TOF	TOP OF FOUNDATION
BOF	BOTTOM OF FOUNDATION
---	PROPOSED
---	DISMANTEL

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASADAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
 **GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



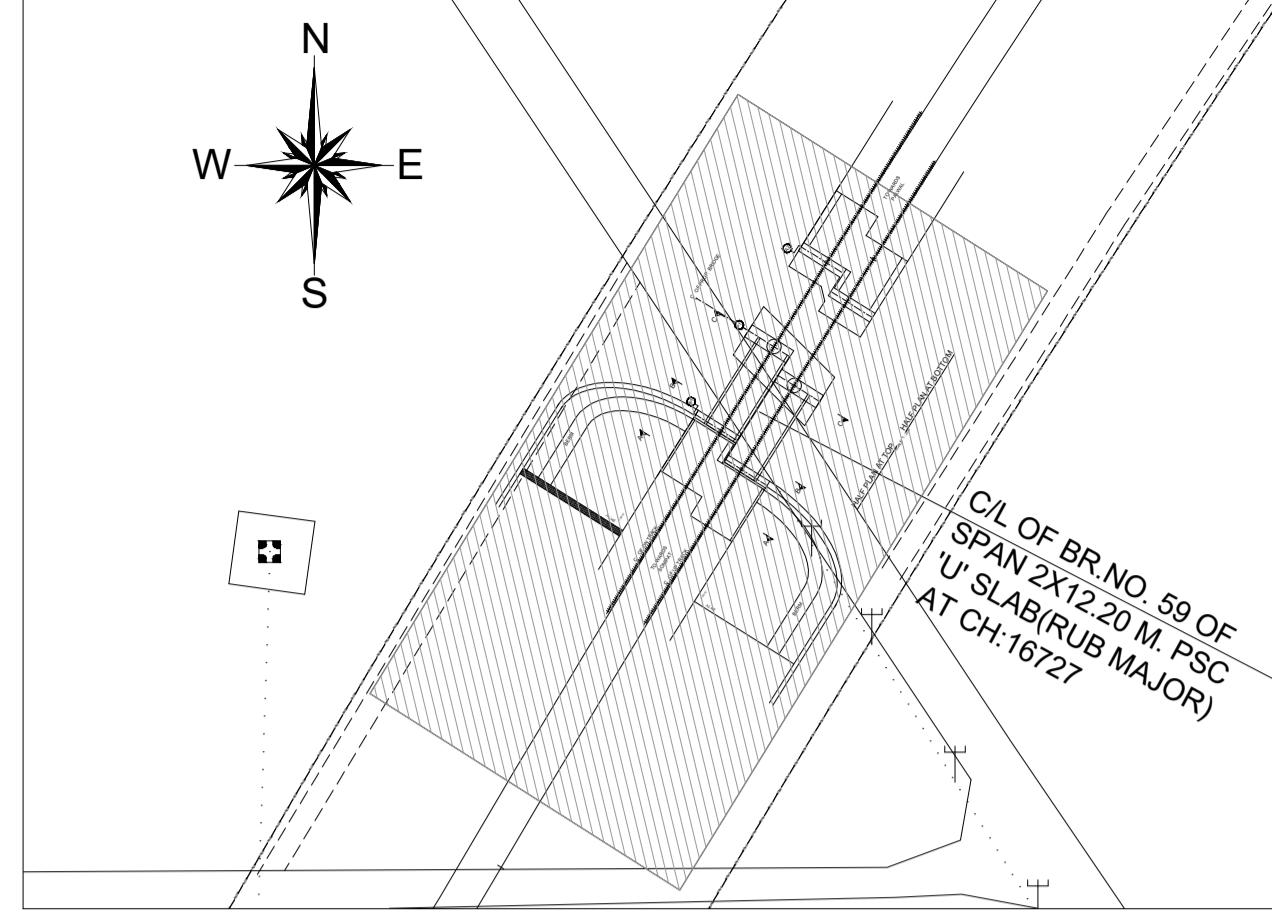
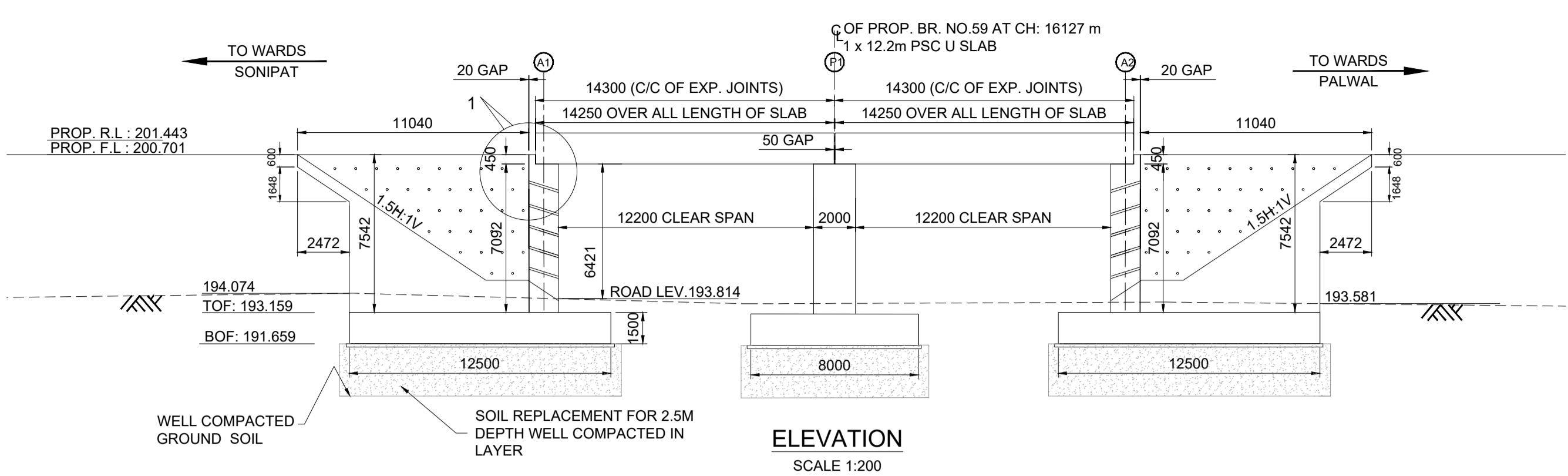
**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING FOR CANAL+ RUB BR. NO. 058 1 x 12.2m PSC U SLAB CH: 16127

**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01058\_A0 **SHEET NO.** 1 OF 1

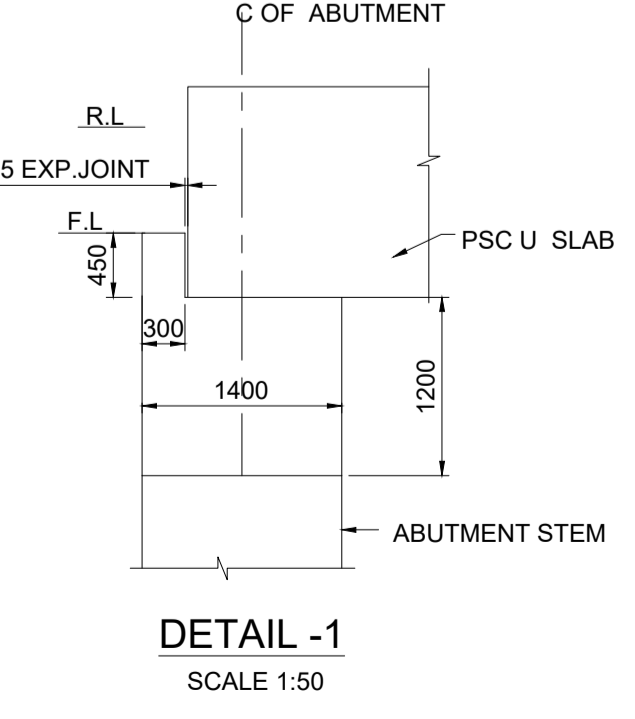
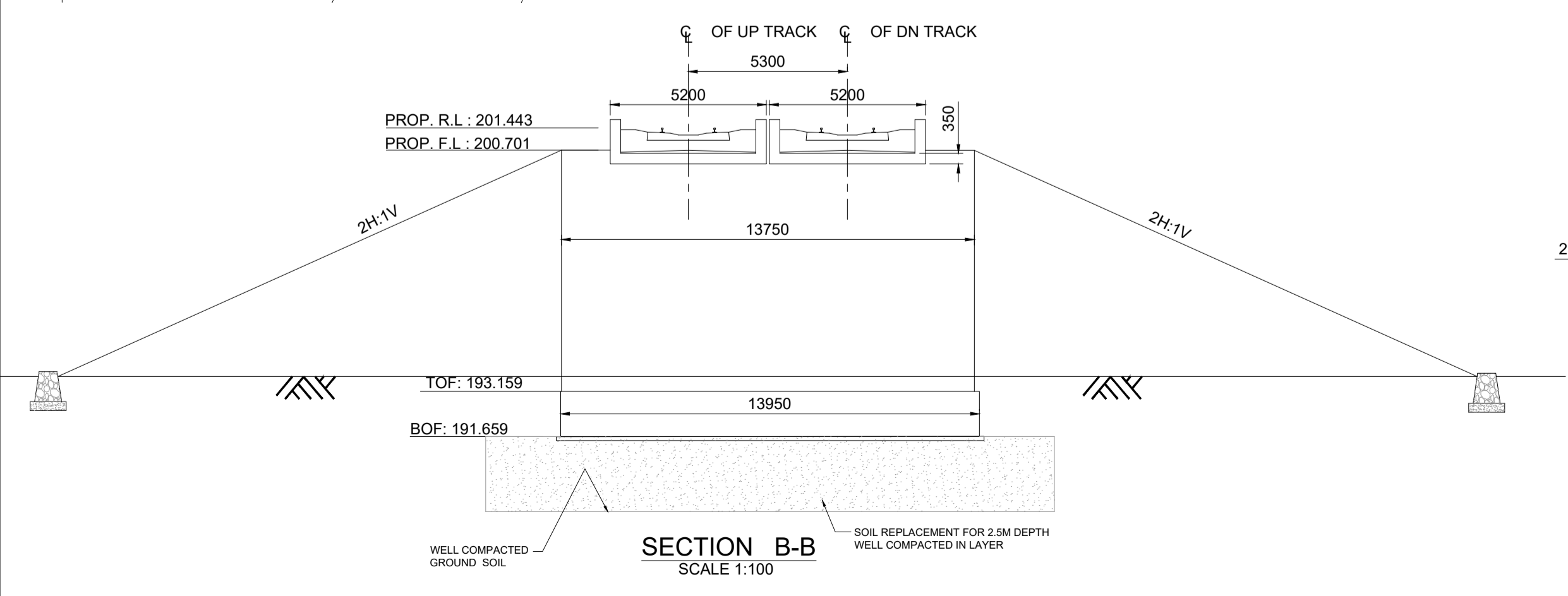
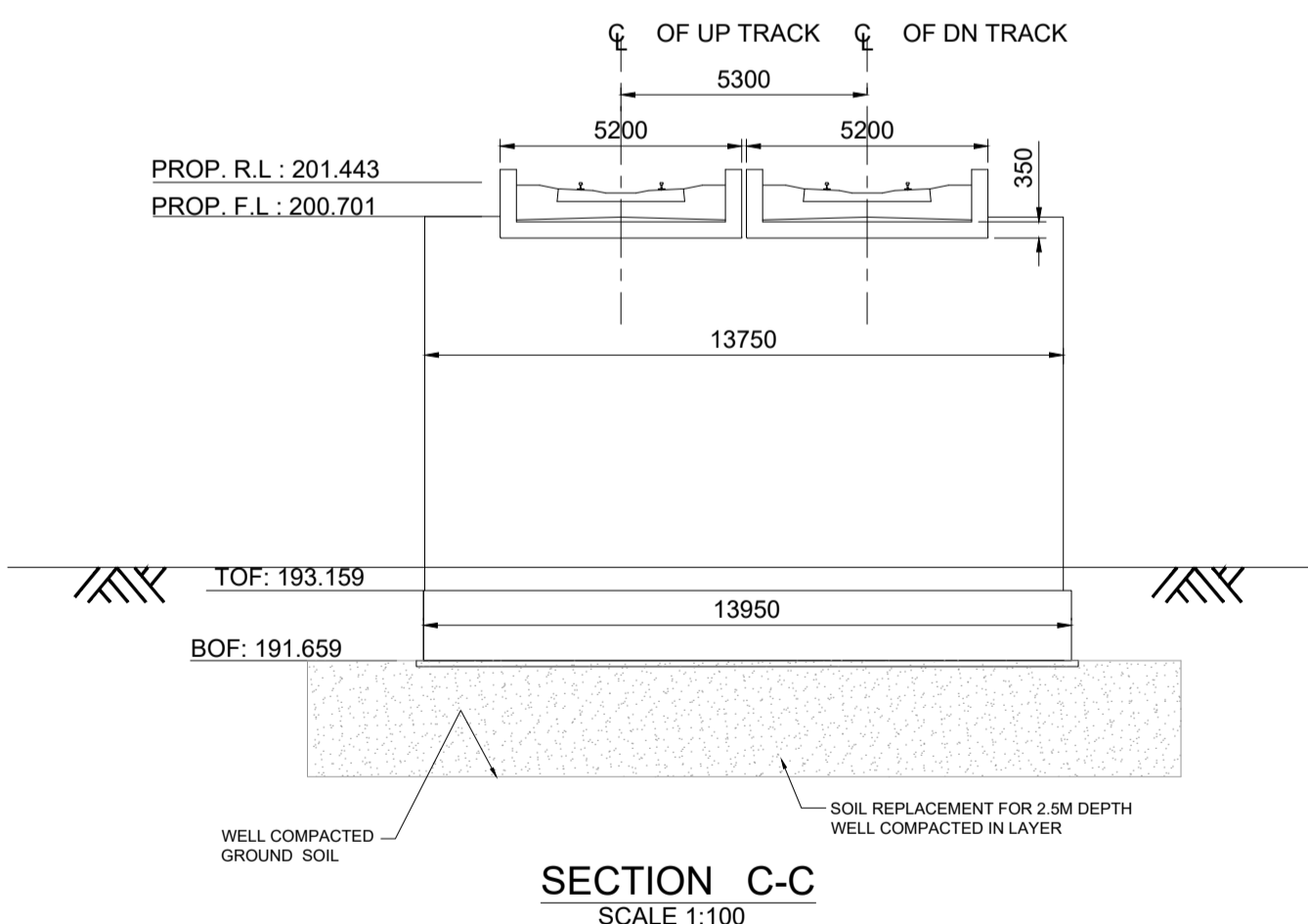
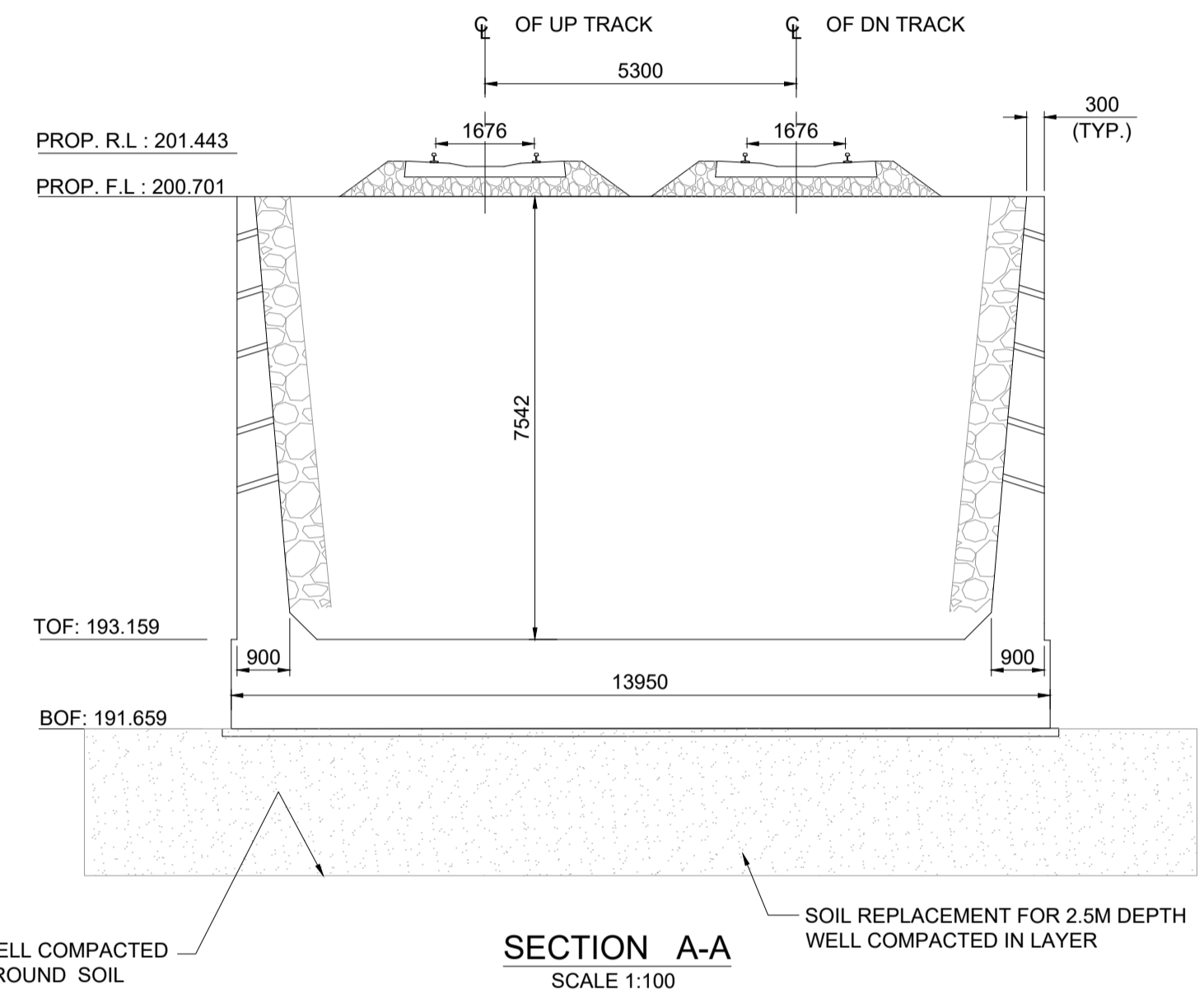
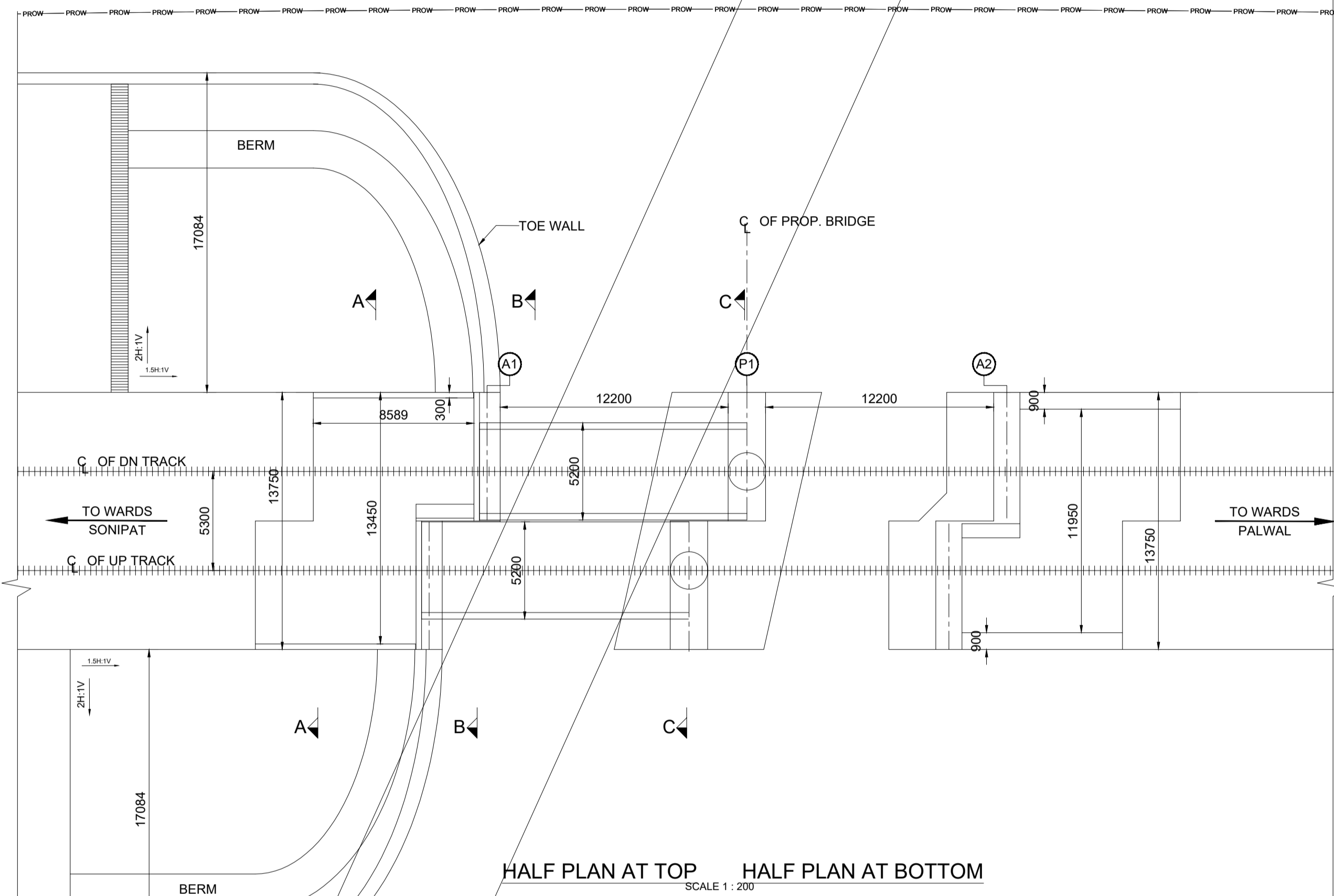
**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		





- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METER DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS TO BE FOLLOWED
  - DESIGN CRITERIA
    - IRS BRIDGE SUBSTRUCTURE AND FOUNDATION CODE 2013.
    - IRS CONCRETE BRIDGE CODE 2014.
    - IRS BRIDGE RULES 2014.
    - IS 2911 PART-1 SECTION-2.
    - EXPOSURE CONDITION - MODERATE.
    - SEISMIC ZONE - IV
    - STANDARD OF LOADING :- SUPER STRUCTURE-25T (RDSO STANDARD) & SUB STRUCTURE-32.5T- 2008 LOADING.
  - THE STRUCTURAL DIMENSIONS AND SIZES ARE INDICATIVE AND THESE MAY VARY DURING DETAIL DESIGN.
  - SIZE & TYPE OF FOUNDATION SHOWN IS TENTATIVE AND MAY CHANGE DURING DETAILED DESIGN.
  - ALL RCC AND CC WORKS SHALL BE DONE IN ACCORDANCE WITH SPECIFICATION LAID DOWN IN IRS CONCRETE BRIDGE CODE.
  - THE GRADE OF CONCRETE
    - FOR ABUTMENT, DIRT & RETURN WALL-----M35
    - FOR FOUNDATION -----M35
    - FOR LEVELING COURSE-----M20
  - ALL CONCRETE WORK SHALL BE MECHANICALLY MIXED AND VIBRATED.
  - MIX DESIGN SHALL BE APPROVED BY ENGINEER - IN CHARGE.
  - HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe-500D CONFORMING TO IS: 1786-2008 SHALL BE USED AS REINFORCEMENT.
  - BED LEVEL & ROAD LEVEL, FORMATION LEVEL AND RAIL LEVEL & ALIGNMENT SHALL BE VERIFIED BY THE ENGINEER AT SITE BEFORE EXECUTION OF WORK.
  - ANGLE OF INTERNAL FRICTION OF BACK FILL SHALL NOT BE LESS THAN 35.
  - PROTECTION WORK ON SLOPES OF BANK UP TO 30M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - BOULDER FILLING & BOULDER PACKING BEHIND ABUTMENT TO BE DONE AS PER IRS FOUNDATION & SUBSTRUCTURE CODE CL.7.5.2.
  - BACK FILL SHALL BE AS PER CL.7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE 2013.
  - 75mm DIA WEEP HOLES TO BE PROVIDED @1000 C/C HORIZ. AND 1000 MM C/C VERTICALLY ABOVE LOWEST WATER LEVEL IN RETURN WALL AS PER IRS SUB STRUCTURE CODE CLAUSE 7.6.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM CONFIRMING TO IS-3117.
  - CURING SHALL BE DONE AS PER CLAUSE NO 8.4 OF IRS CONCRETE BRIDGE CODE.
  - SAFETY & PROTECTION OF THE PROPOSED WORK IS TO BE ENSURED BY THE CONTRACTOR AS PER PARA 826 OF IRPVM WITH UPDATED CORRECTION SLIPS OF 2011-12.
  - THE SPECIFICATIONS FOR THE PSC U SLAB SHALL BE IN ACCORDANCE WITH RDSO DRG NO'S : RDSO 10281, 10281/1 AND 10281/2.
  - CONCRETING SHALL BE DONE IN ACCORDANCE WITH IRS CONCRETE BRIDGE CODE WITH 20MM MAXIMUM SIZE AGGREGATE.
  - ALL DIMENSIONS AND LEVELS SHOULD BE VERIFIED AT SITE BEFORE EXECUTION.
  - BRIDGE DETAILS LIKE , DL, INSPECTION STEPS PAINTINGS ETC SHOULD BE FOLLOWED AS PER BRIDGE MANUAL, DURING CONSTRUCTION.
  - THIS DRAWING IS PROPERTY OF HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (HRIDC) AND EXCLUSIVE USE OF HRIDC.
  - FOR TOE WALL DETAILS REFER SEPARATE SKETCH NO. GC-HRIDC-SK-GEN-014.
  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.




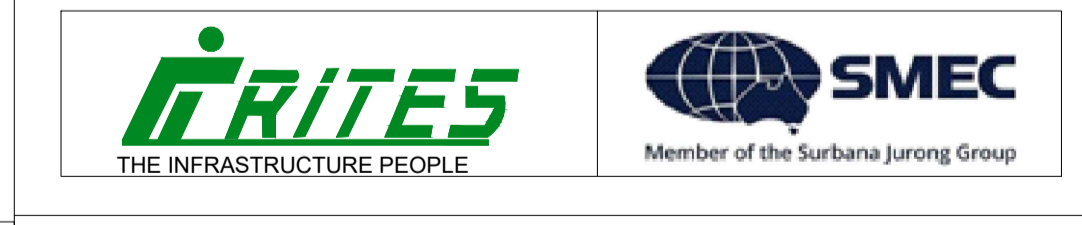
**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
TOF	TOP OF FOUNDATION
BOF	BOTTOM OF FOUNDATION

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**


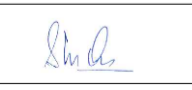



**CONSULTANT:**  
 **GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



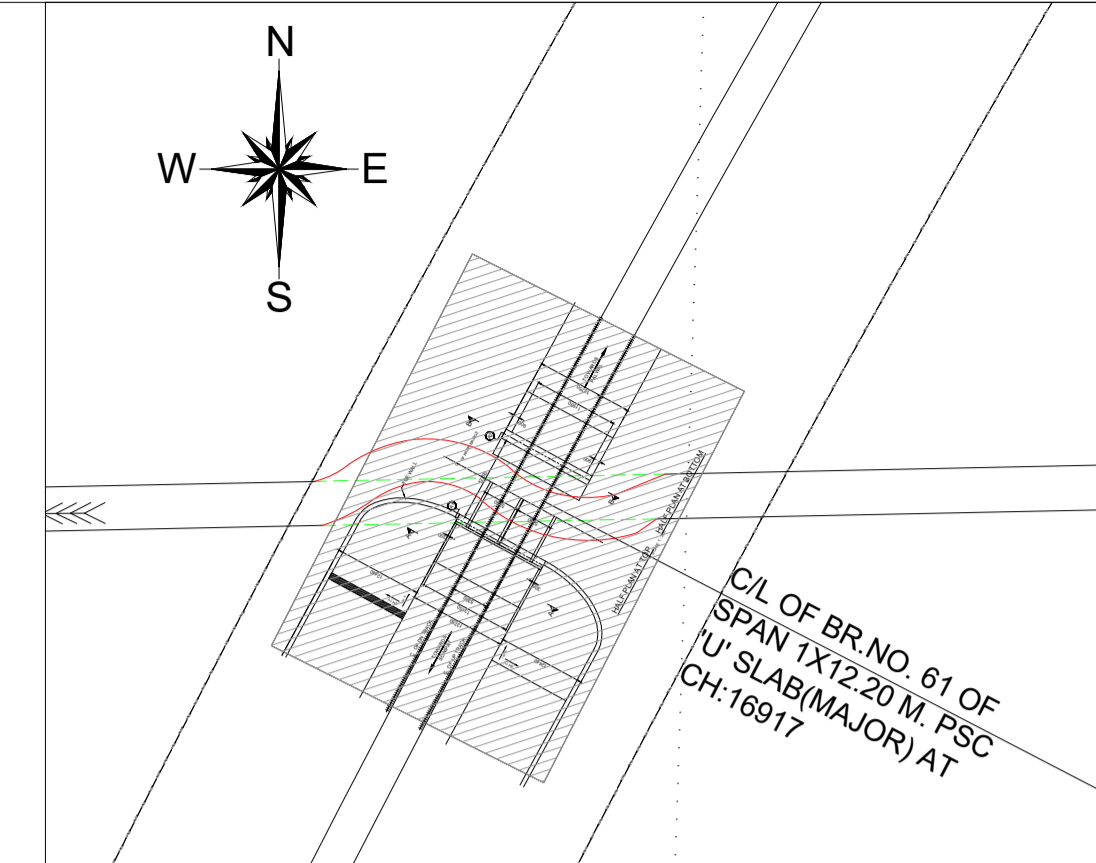
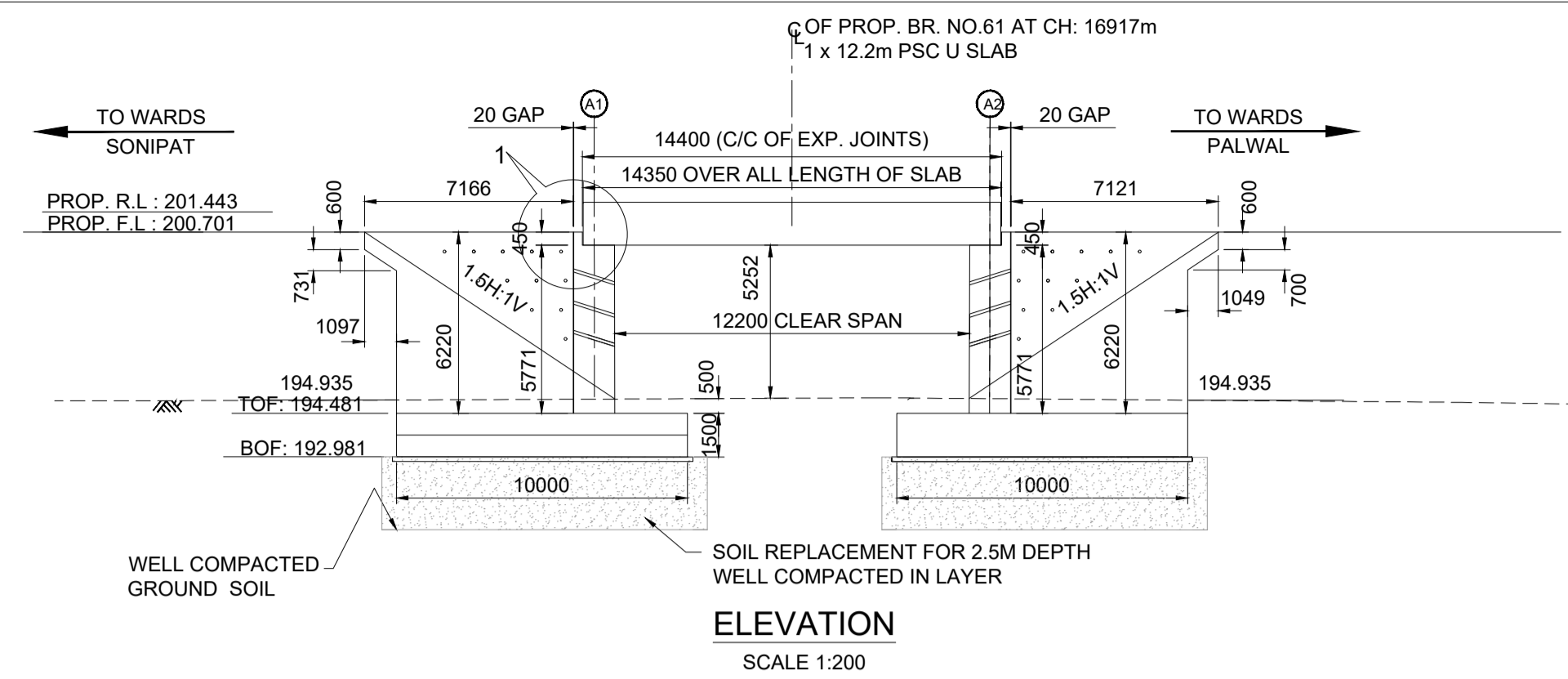
**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING  
 PROPOSED RUB NO. 059  
 2 x 12.2m PSC U SLAB CH: 16727

**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01059\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD		SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL		RAJU SOLANKI DGM/CIVIL/SOUTH	
REETU PATIAL CDE/ CIVIL			





KEY PLAN  
(NOT TO SCALE)

- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METER DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS TO BE FOLLOWED
  - DESIGN CRITERIA
    - IRS BRIDGE SUBSTRUCTURE AND FOUNDATION CODE 2013.
    - IRS CONCRETE BRIDGE CODE 2014.
    - IRS BRIDGE RULES 2014.
    - IS 2911 PART-1 SECTION-2.
    - EXPOSURE CONDITION - MODERATE.
    - SEISMIC ZONE - IV
    - STANDARD OF LOADING :- SUPER STRUCTURE-25T (RDSO STANDARD) & SUB STRUCTURE-32.5T- 2008 LOADING.
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  - THE GRADE OF CONCRETE
    - FOR ABUTMENT, DIRT & RETURN WALL-----M35
    - FOR FOUNDATION -----M35
    - FOR LEVELING COURSE-----M20
  - ALL CONCRETE WORK SHALL BE MECHANICALLY MIXED AND VIBRATED.
  - MIX DESIGN SHALL BE APPROVED BY ENGINEER - IN CHARGE.
  - HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe-500D CONFORMING TO IS: 1786-2008 SHALL BE USED AS REINFORCEMENT.
  - BED LEVEL & ROAD LEVEL, FORMATION LEVEL AND RAIL LEVEL & ALIGNMENT SHALL BE VERIFIED BY THE ENGINEER AT SITE BEFORE EXECUTION OF WORK.
  - ANGLE OF INTERNAL FRICTION OF BACK FILL SHALL NOT BE LESS THAN 35.
  - PROTECTION WORK ON SLOPES OF BANK UP TO 30M, BOTH SIDES ON APPROACHES OF BRIDGE SHALL BE DONE AS PER SKETCH NO. GC-HRIDC-SK-GEN-015.
  - BOULDER FILLING & BOULDER PACKING BEHIND ABUTMENT TO BE DONE AS PER IRS FOUNDATION & SUBSTRUCTURE CODE CL.7.5.2.
  - BACK FILL SHALL BE AS PER CL.7.5 OF IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE 2013.
  - 75mm DIA WEEP HOLES TO BE PROVIDED @1000 C/C HORIZ. AND 1000 MM C/C VERTICALLY ABOVE LOWEST WATER LEVEL IN RETURN WALL AS PER IRS SUB STRUCTURE CODE CLAUSE 7.6.
  - ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1.464 KG/SQM CONFIRMING TO IS-3117.
  - CURING SHALL BE DONE AS PER CLAUSE NO 8.4 OF IRS CONCRETE BRIDGE CODE.
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  - BEARING CAPACITY OF SOIL SHALL BE ENSURED AS PER DETAILED DESIGN REQUIREMENT. GROUND IMPROVEMENT SHALL BE CARRIED OUT AS PER GT REPORT AND CONFIRMED THROUGH FIELD TESTING.

LEGEND

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
TOF	TOP OF FOUNDATION
BOF	BOTTOM OF FOUNDATION
---	PROPOSED
---	DISMANTEL

PROJECT:  
**HARYANA ORBITAL RAIL CORRIDOR**  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
**HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

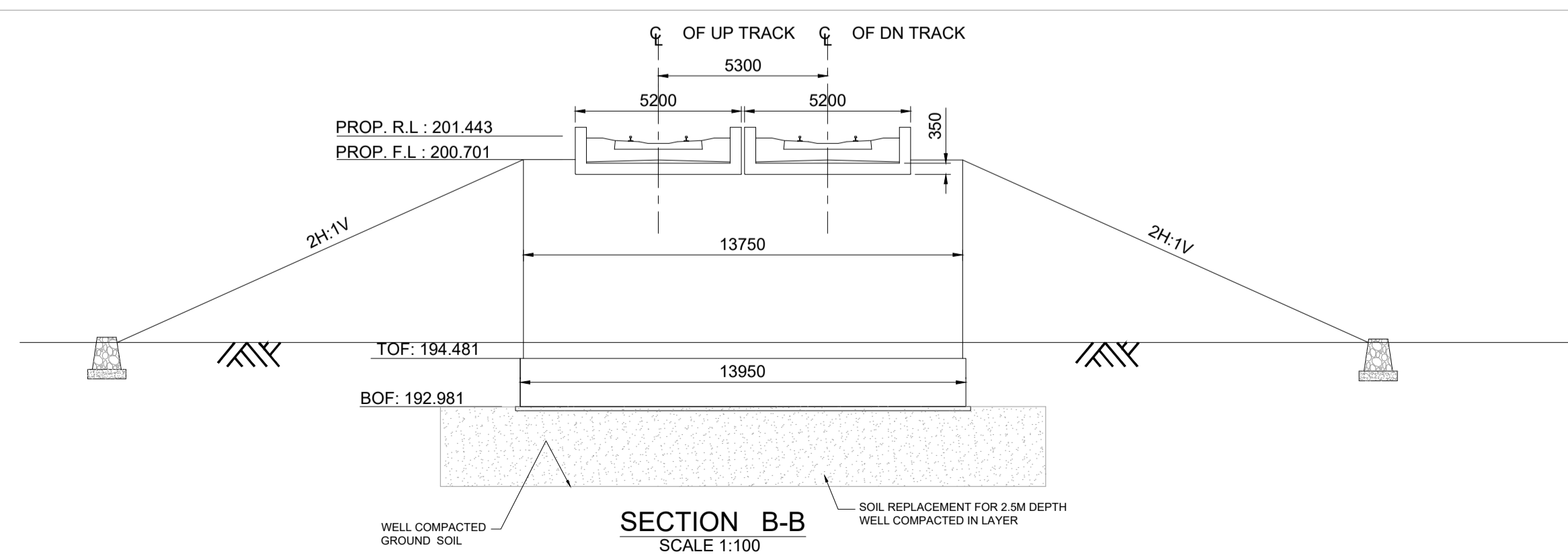
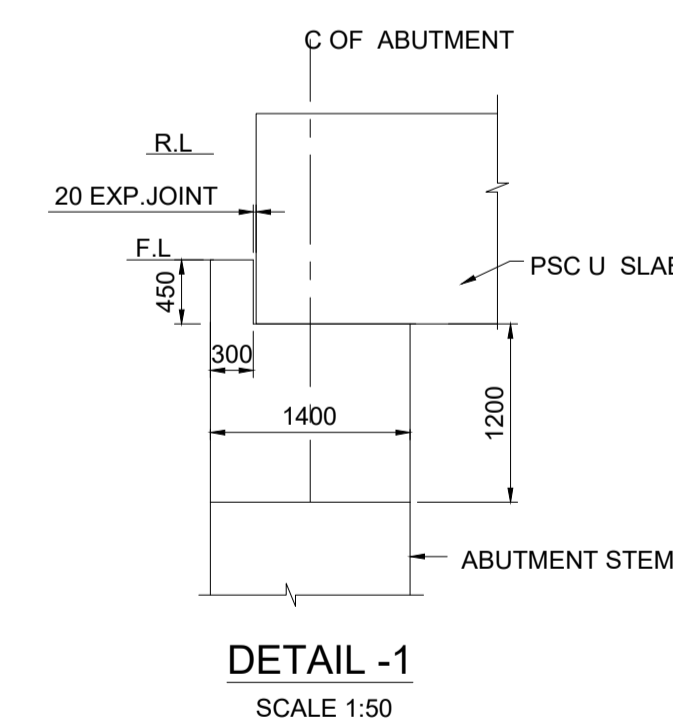
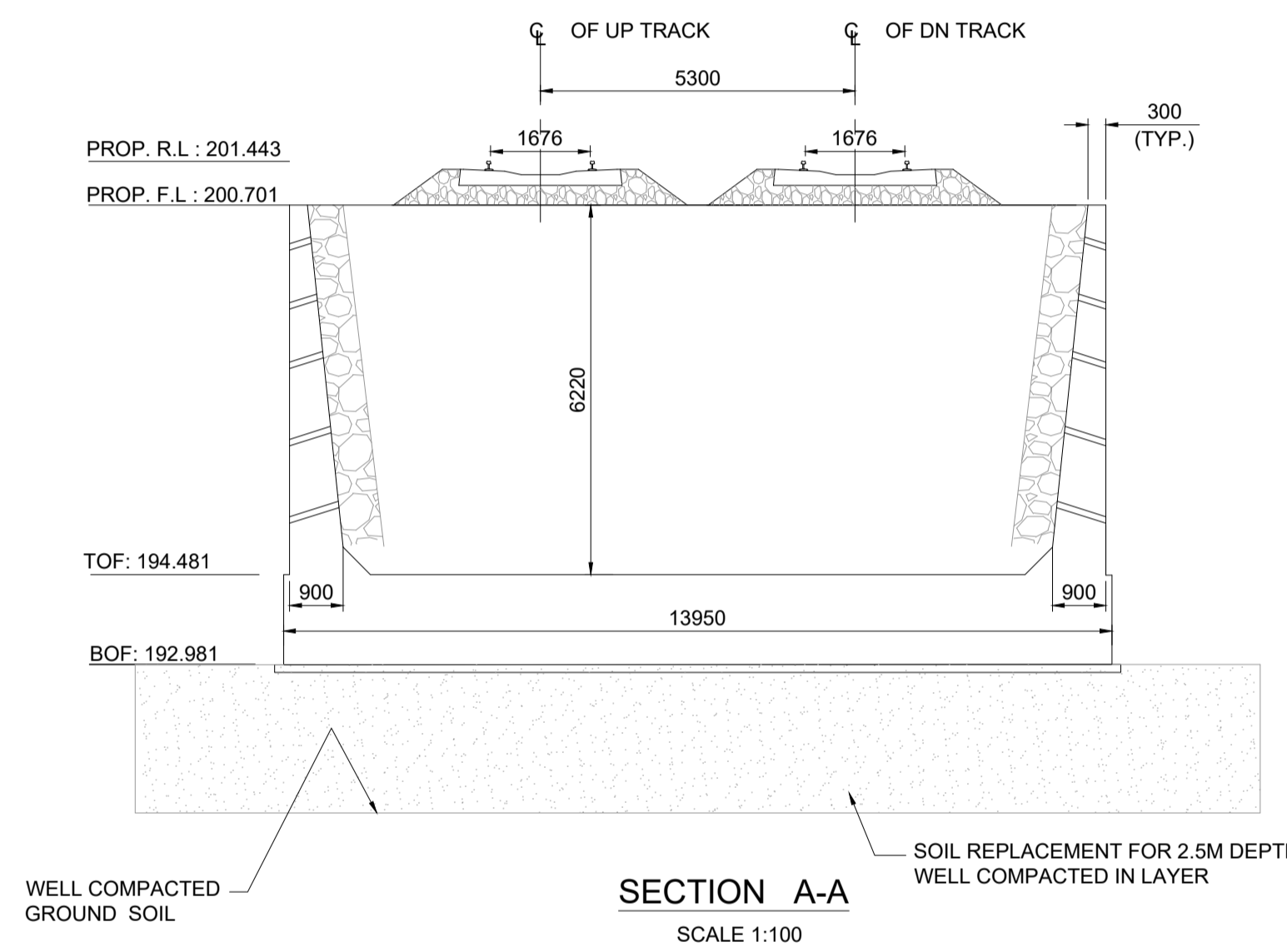
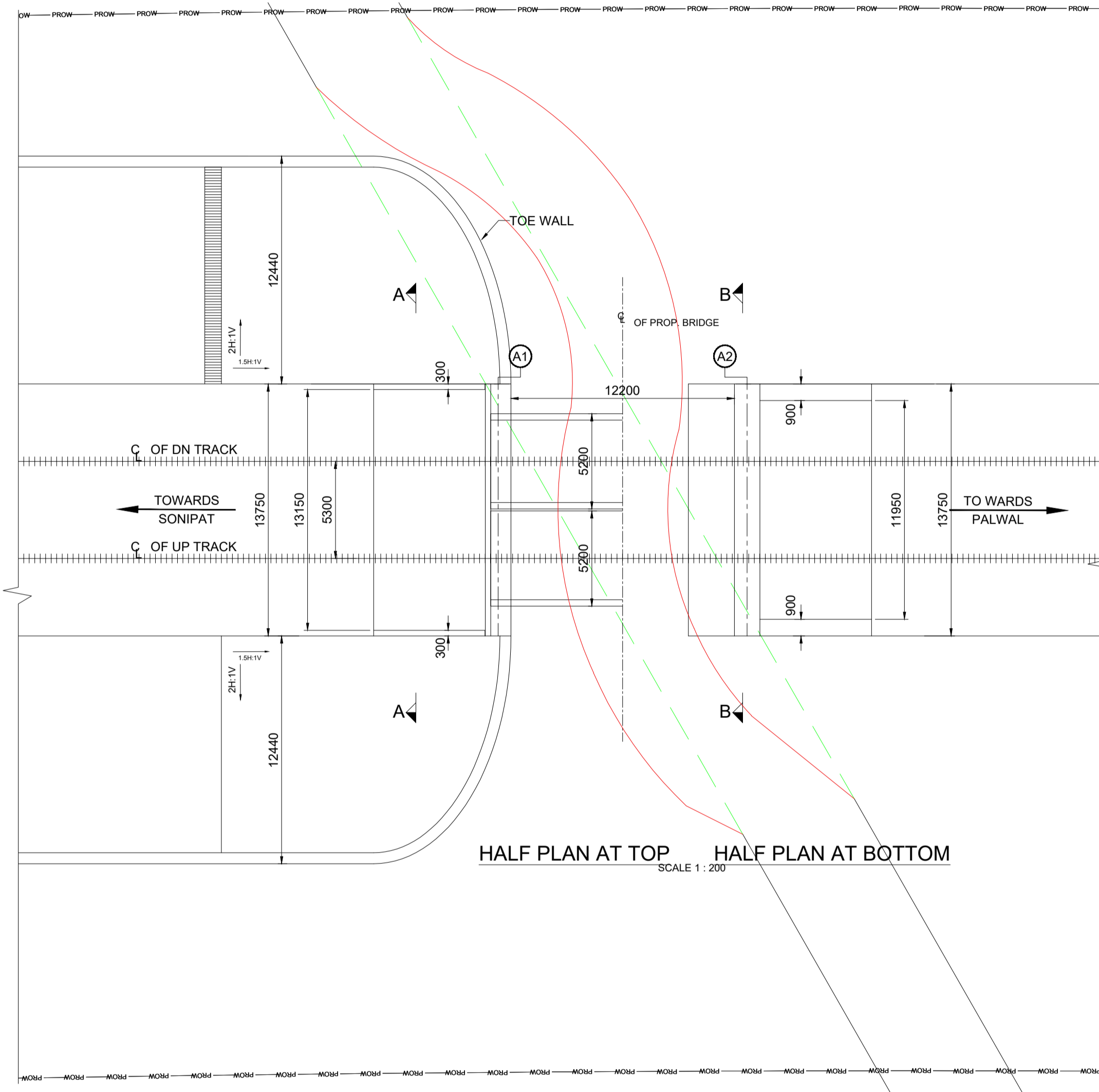
CONSULTANT:  
**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
RITES Limited in consortium with SMEC International Pty. Ltd.



TITLE:- **CONCEPTUAL GENERAL ARRANGEMENT DRAWING**  
PROPOSED CANAL BR. NO. 061  
1 x 12.2m PSC U SLAB CH: 16917

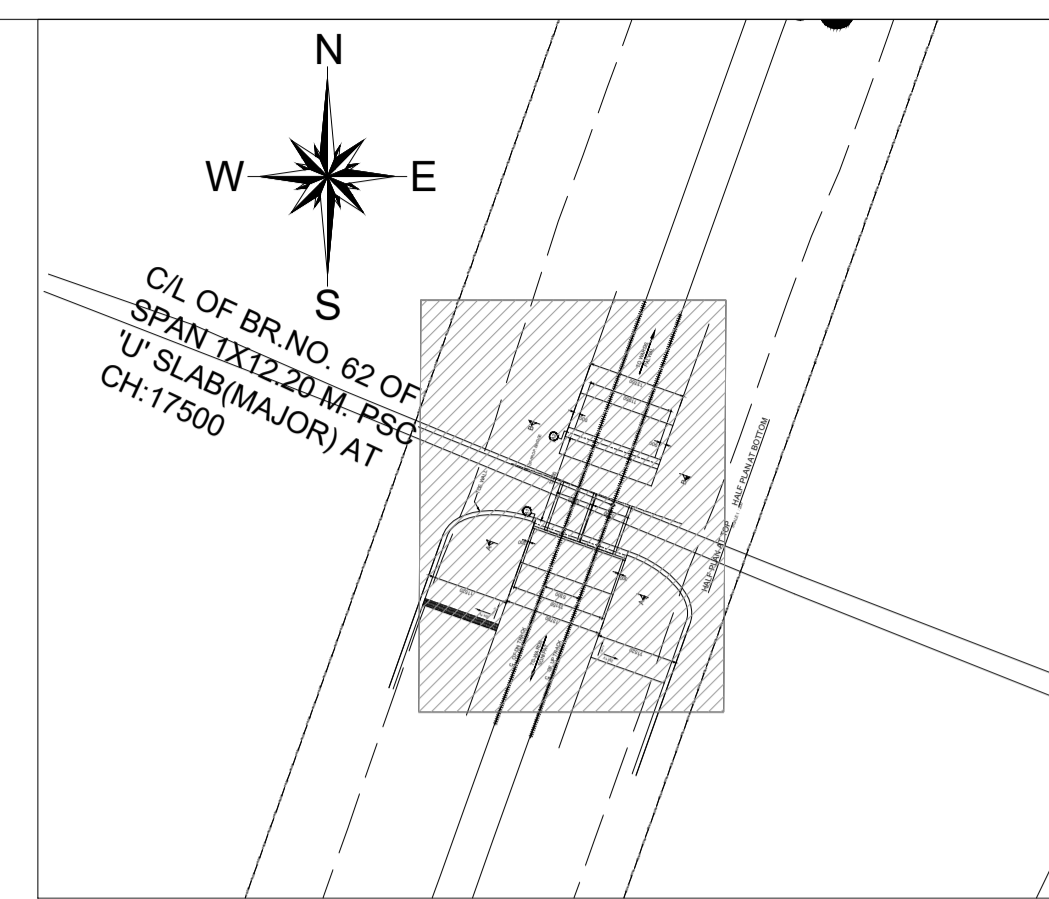
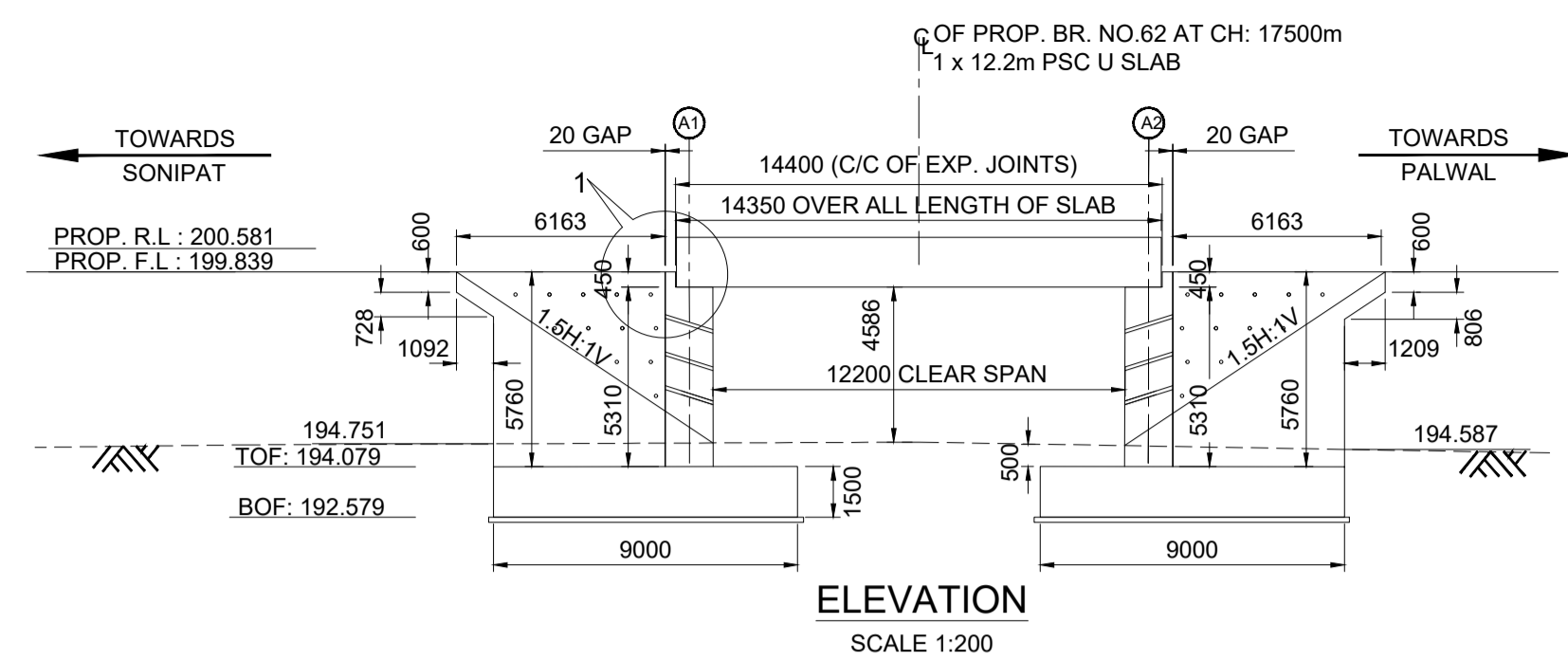
DRG. NO. **GC-HRIDC-C4-DRW-BRD-GAD-01061\_A0** SHEET NO. **1 OF 1**

SCALE : **AS SHOWN** ISSUE DATE **07-11-2022** REVISED DATE



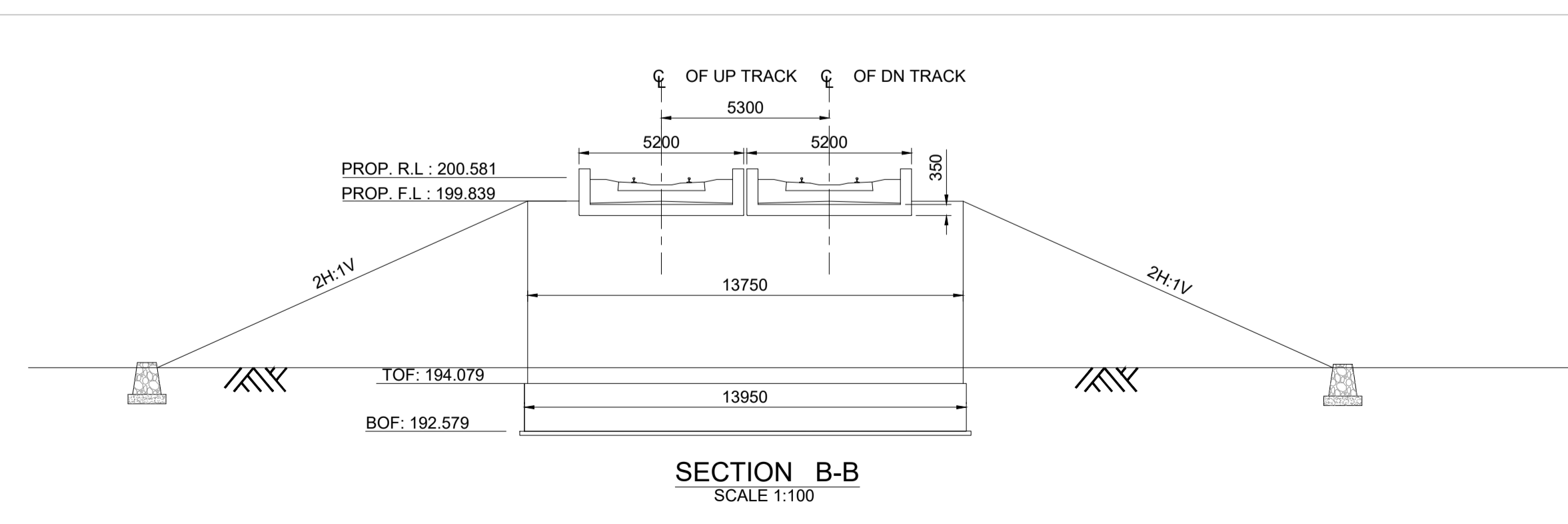
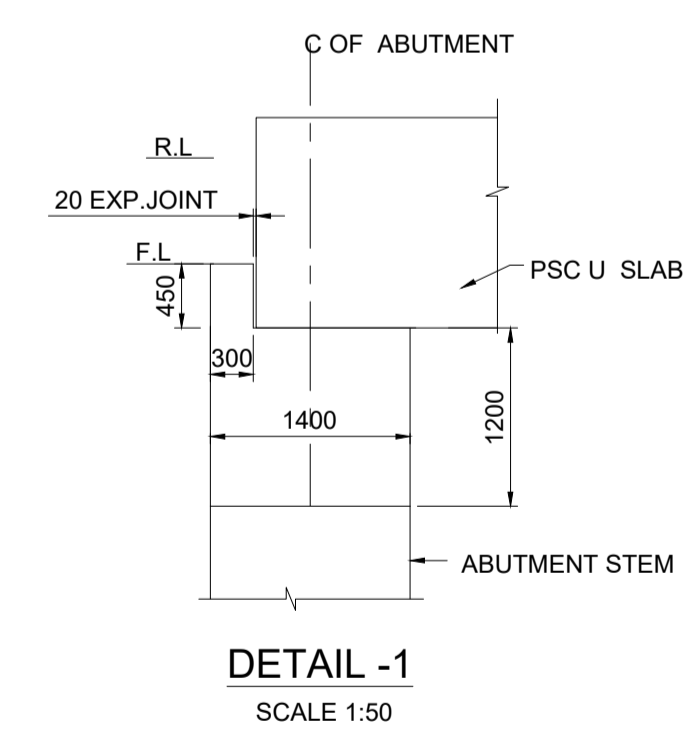
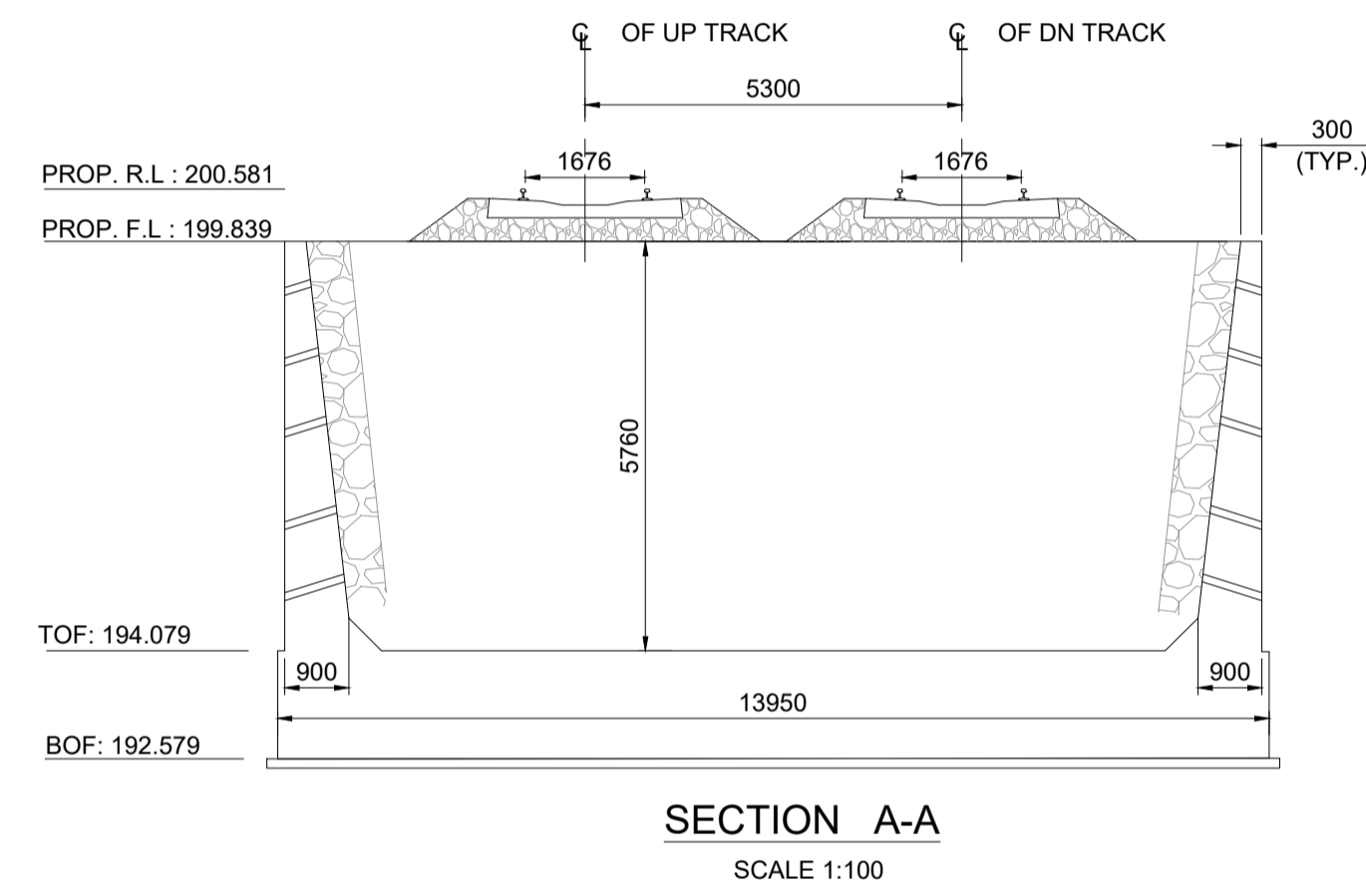
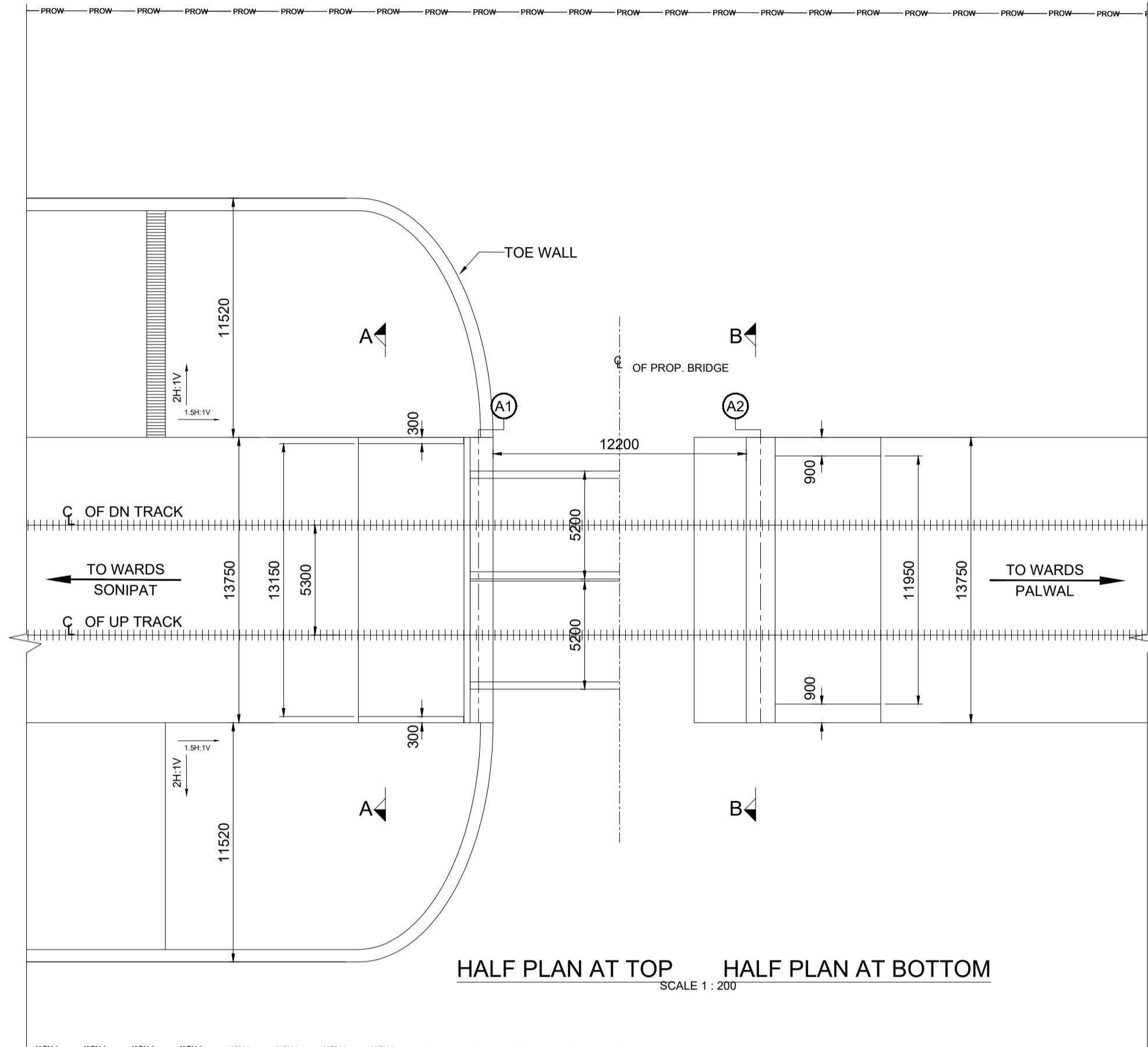
GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		





KEY PLAN  
(NOT TO SCALE)

- NOTES:**
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    - IRS BRIDGE SUBSTRUCTURE AND FOUNDATION CODE 2013.
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    - IRS BRIDGE RULES 2014.
    - IS 2911 PART-1 SECTION-2.
    - EXPOSURE CONDITION - MODERATE.
    - SEISMIC ZONE - IV
    - STANDARD OF LOADING :- SUPER STRUCTURE-25T (RDSO STANDARD) & SUB STRUCTURE-32.5T- 2008 LOADING.
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    - FOR FOUNDATION -----M35
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  - FOR TOE WALL DETAILS REFER SEPARATE SKETCH NO. GC-HRIDC-SK-GEN-014.




**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL
TOF	TOP OF FOUNDATION
BOF	BOTTOM OF FOUNDATION

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
 **GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



**TITLE:-** CONCEPTUAL GENERAL ARRANGEMENT DRAWING  
 PROPOSED RUB NO. 062  
 1 x 12.2m PSC U SLAB CH: 17500

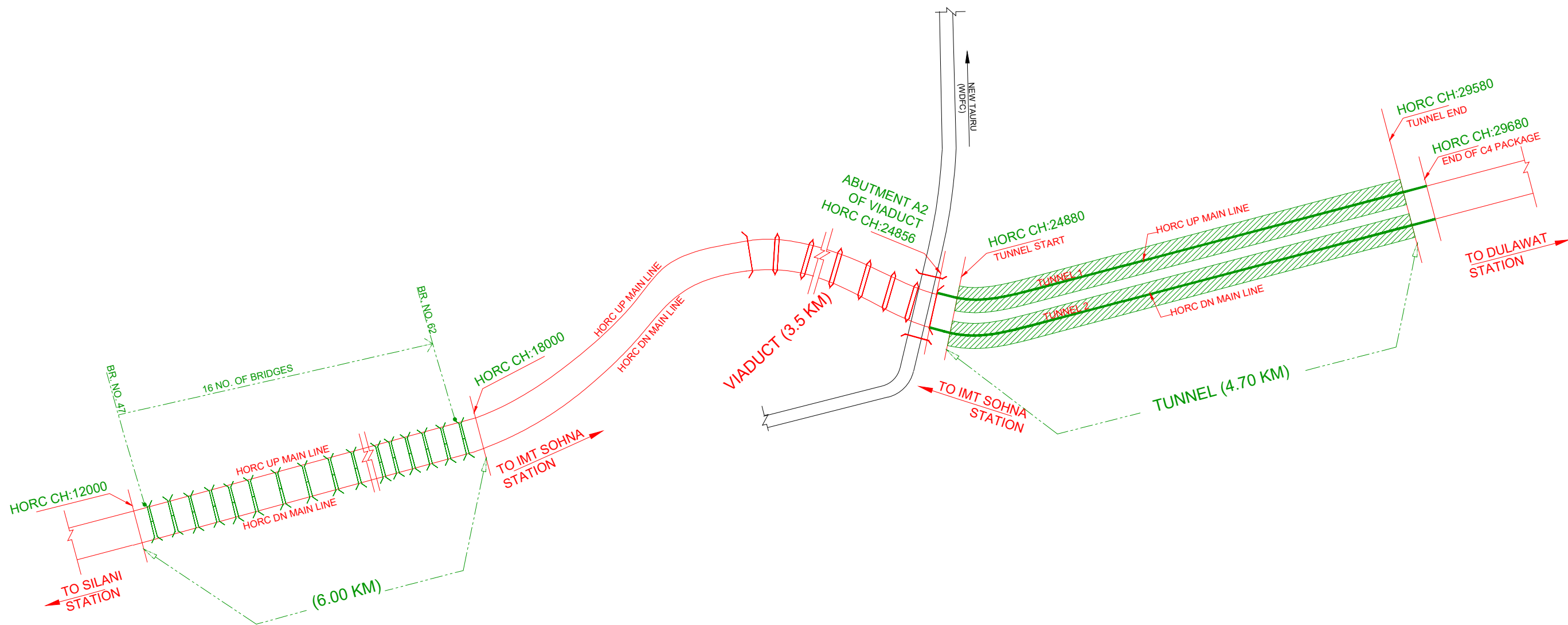
**DRG. NO.** GC-HRIDC-C4-DRW-BRD-GAD-01062\_A0 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** 07-11-2022 **REVISED DATE**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir Agrawal</i>	RAJU SOLANKI DGM/CIVIL/SOUTH	<i>Raju Solanki</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu Patial</i>		

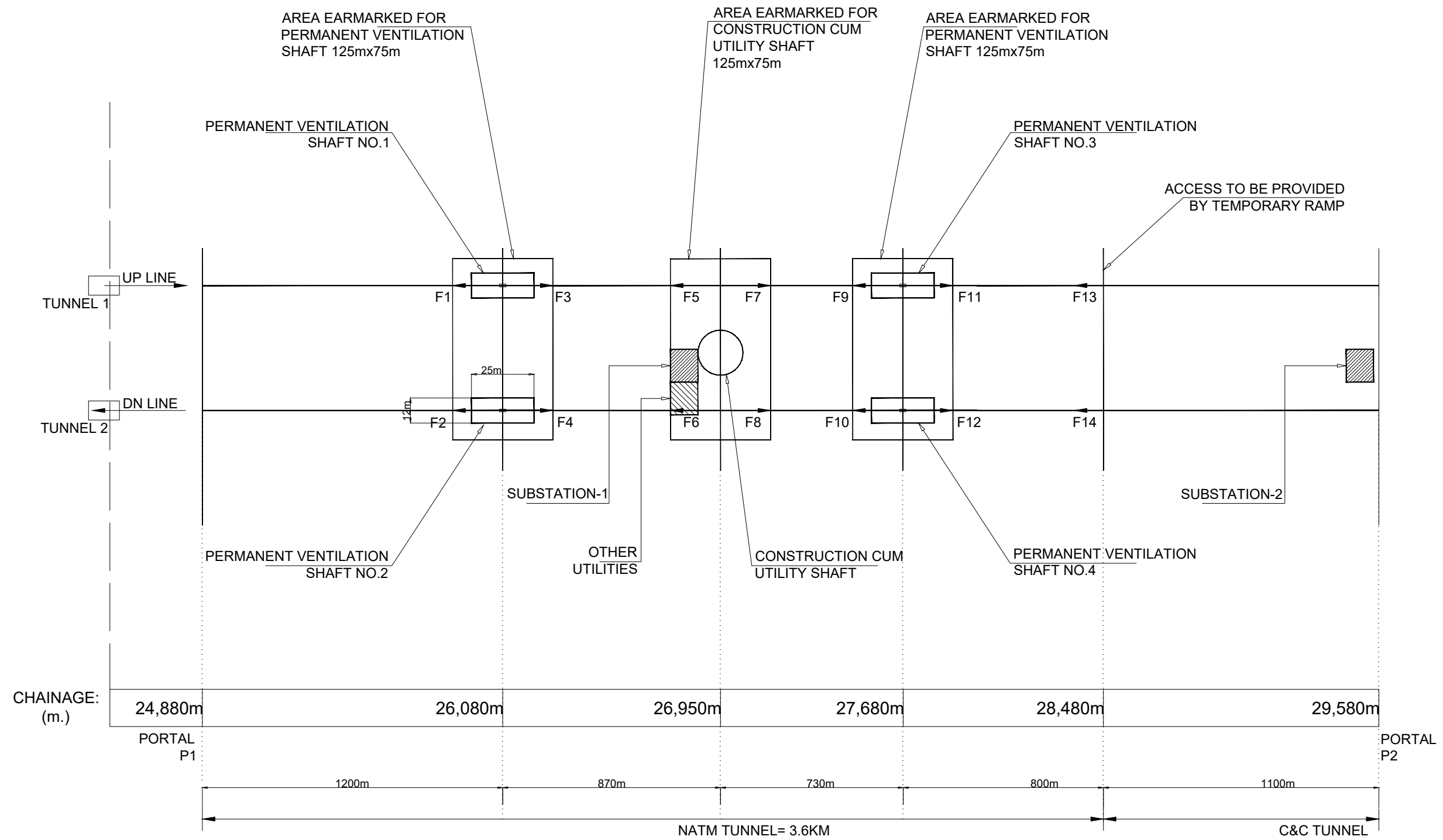
## **4.MISCELLANEOUS DRAWINGS (CONCEPTUAL PLAN)**





NOTE: JURISDICTION OF C4 PACKAGE SHOWN IN GREEN COLOUR.

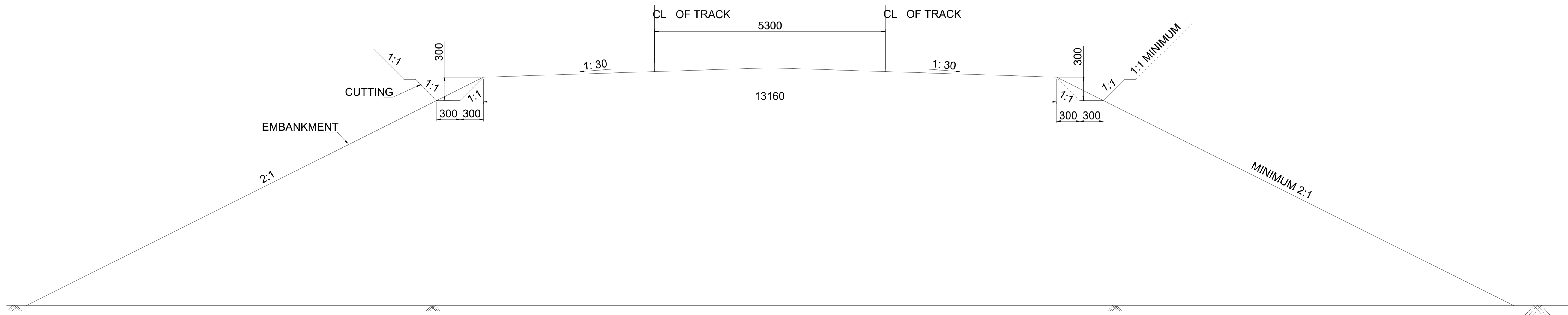
<b>GC/HORC</b>	<b>HRIDC</b>	<b>TITLE:</b> <b>JURISDICTIONAL SKETCH OF C-4 PACKAGE</b>
<i>Chakraborty</i> <b>PD</b>	<b>CPM</b>	
<i>MH</i> <b>DPD/ CIVIL</b>	<b>DGM</b>	<b>DRAWING NO. :</b> <b>GC-HRIDC-C4-SK-CIVIL-001_A0</b>



NOTE: F1 - F14 ARE THE WORKING FACES OF NATM TUNNEL.

<b>GC/HORC</b>	<b>HRIDC</b>	<b>TITLE:</b> <b>SCHEMATIC DIAGRAM OF HORC TUNNEL</b>
<i>Chakraborty</i> <b>PD</b>	<b>CPM</b>	
<i>ML</i> <b>DPD/ CIVIL</b>	<b>DGM</b>	<b>DRAWING NO.</b> <b>GC-HRIDC-C4-SK-TUNNEL-001_A0</b>





**TYPICAL EMBANKMENT/CUTTING PROFILE**

**NOTE**

1. ALL DIMENSION ARE IN MM.
2. CROSS SLOPE OF 1 IN 30 SHALL BE PROVIDED.
3. MINIMUM FORMATION WIDTH OF 13160 MM SHALL BE ENSURED IN BOTH EMBANKMENT AND IN CUTTING (EXCLUDING SIDE DRAIN)
4. ON CURVES CENTER TO CENTER DISTANCE BETWEEN TWO TRACK SHALL BE INCREASED AS PER IRSOD.

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
 AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
 NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE  
 DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
 **GENERAL CONSULTANT FOR  
 HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.

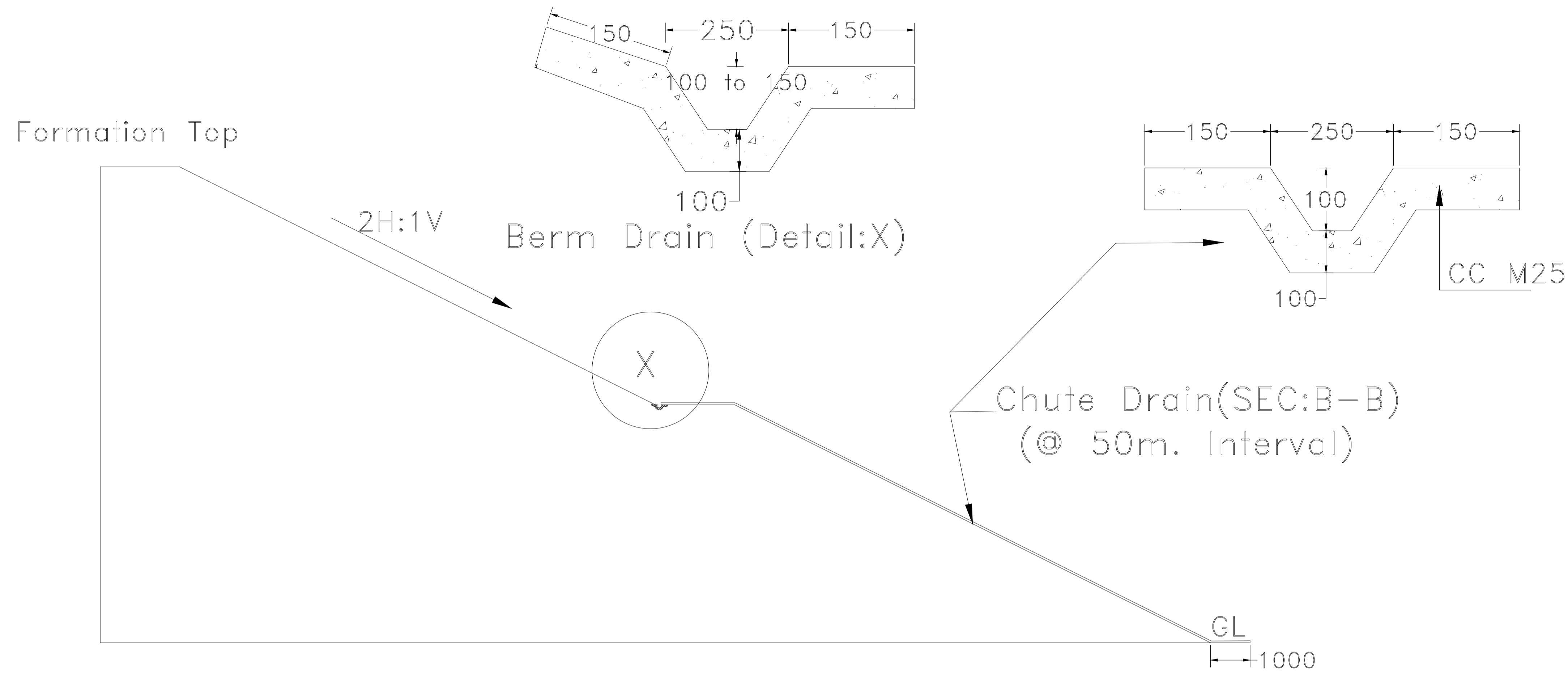


**TITLE:-** CONCEPTUAL PLAN  
 TYPICAL EMBANKMENT/CUTTING PROFILE

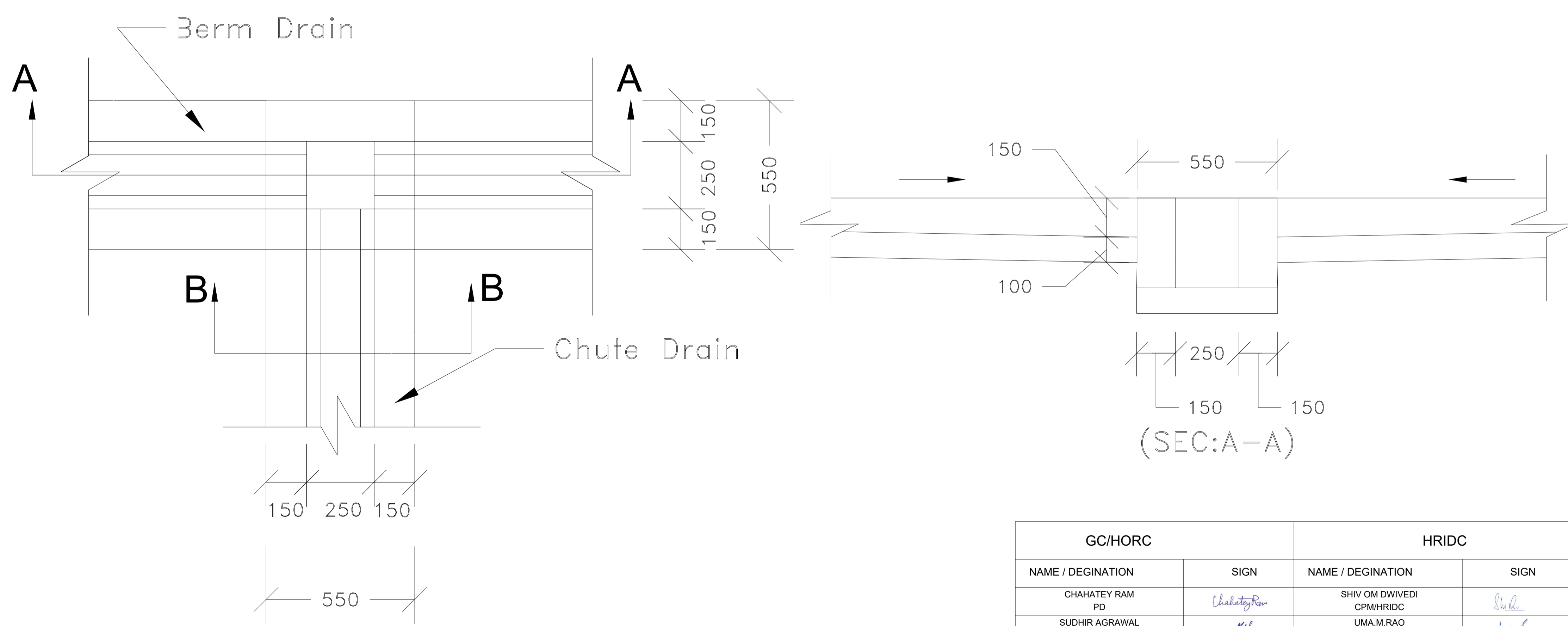
**DRG. NO.** GC-HRIDC-SK-GEN-001 **SHEET NO.**

**SCALE :** AS SHOWN **ISSUE DATE** **REVISED DATE**

GC/HORC		HRIDC	
NAME / DEGINATION	SIGN	NAME / DEGINATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	UMA.M.RAO DGM/C-1	<i>Uma M. Rao</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		




Note:-  
1. All dimension are in mm unless otherwise specified.



PROJECT:  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
 HARYANA RAIL INFRASTRUCTURE  
DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:  
 GENERAL CONSULTANT FOR  
HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



TITLE:- CONCEPTUAL PLAN  
DRAINS FOR FORMATION

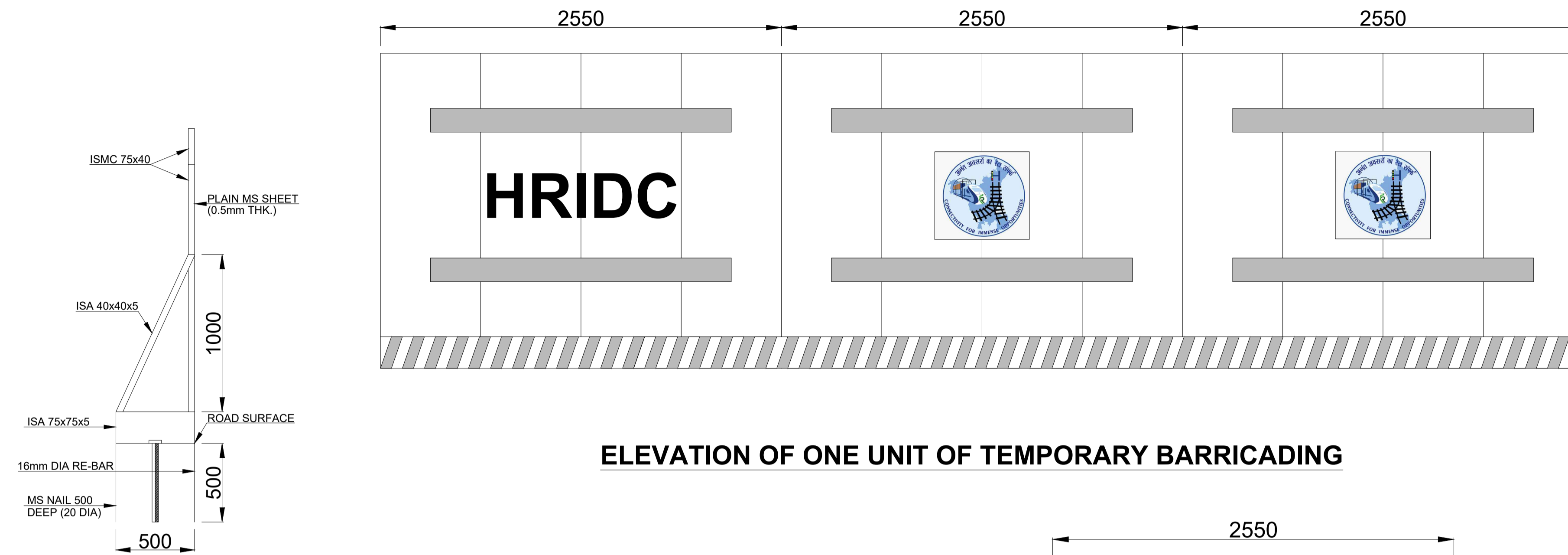
GC/HORC		HRIDC	
NAME / DEGINATION	SIGN	NAME / DEGINATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>MS</i>	UMA.M.RAO DGM/C-1	<i>U</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		

DRG. NO. GC-HRIDC-SK-GEN-008	SHEET NO.
SCALE : AS SHOWN	ISSUE DATE
	REVISED DATE

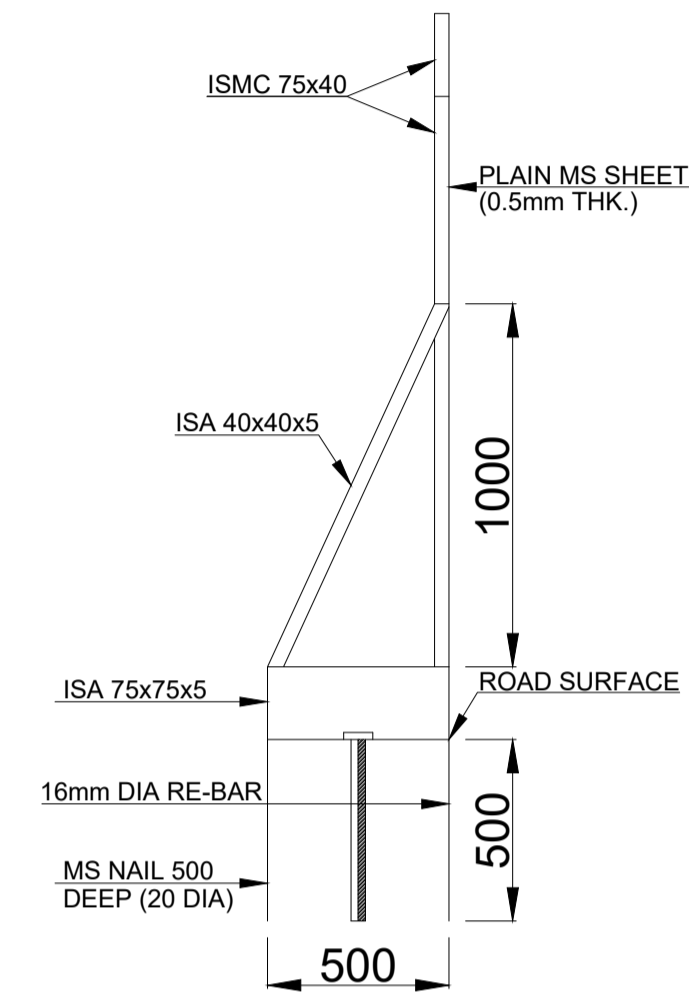


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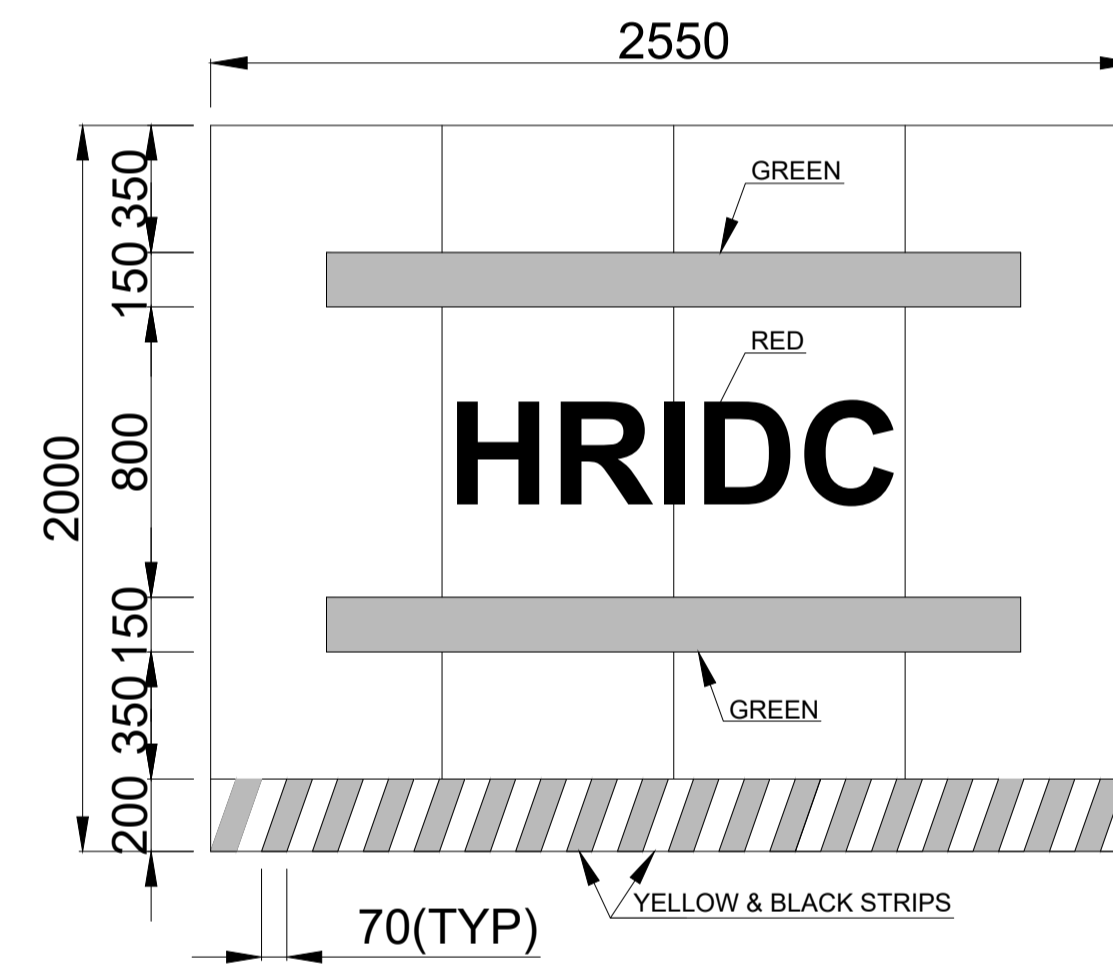
1. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
2. THIS BARRICADING SHALL BE USED AT LOCATION OF ROAD AND PEDESTRIAN TRAFFIC.



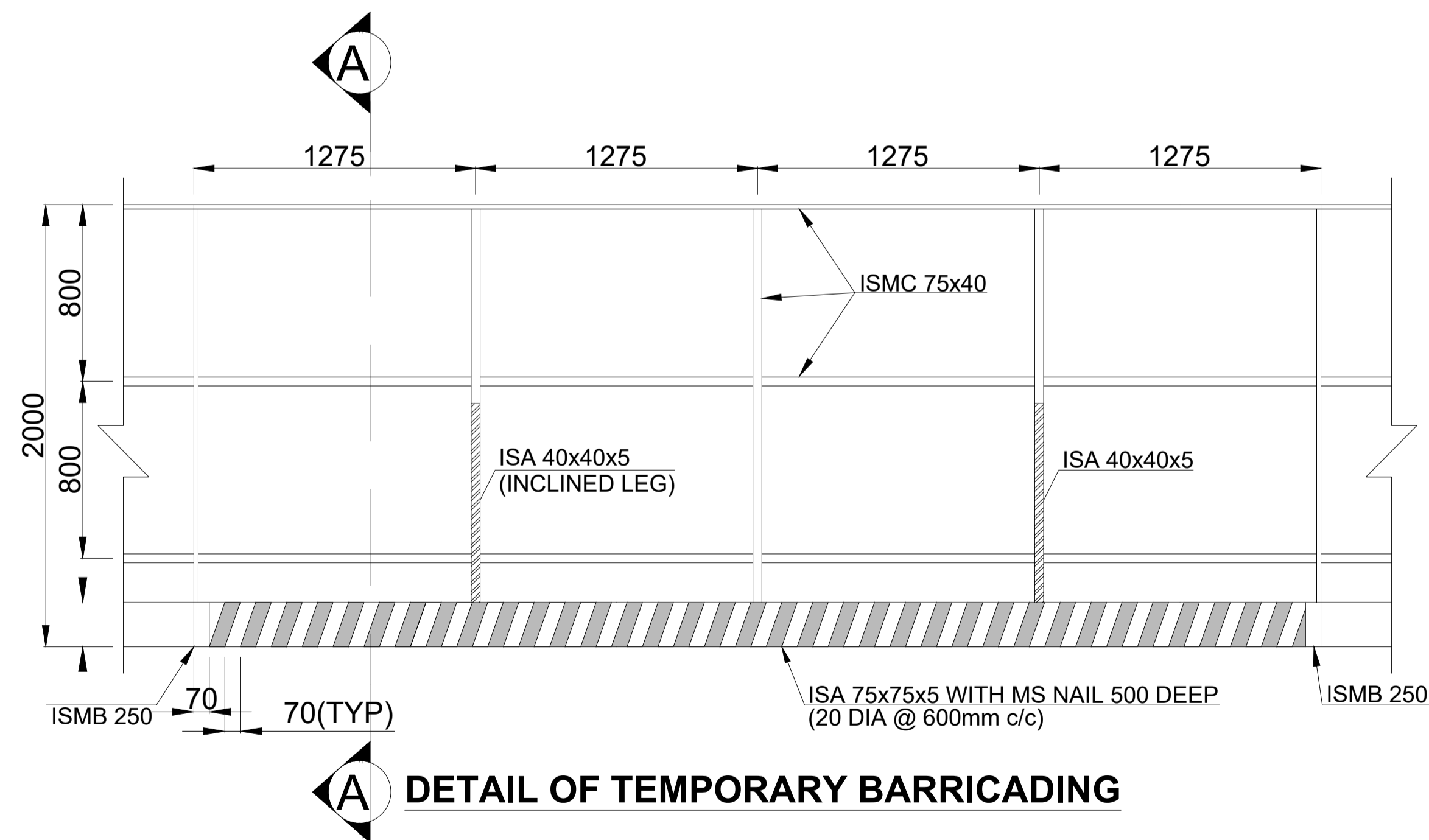
ELEVATION OF ONE UNIT OF TEMPORARY BARRICADING



SECTION A-A



ELEVATION OF ONE SET OF TEMPORARY BARRICADING



DETAIL OF TEMPORARY BARRICADING

PROJECT:  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
 HARYANA RAIL INFRASTRUCTURE  
DEVELOPMENT CORPORATION LIMITED.

CONSULTANT:  
 GENERAL CONSULTANT FOR  
HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

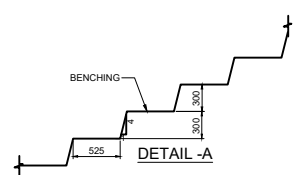
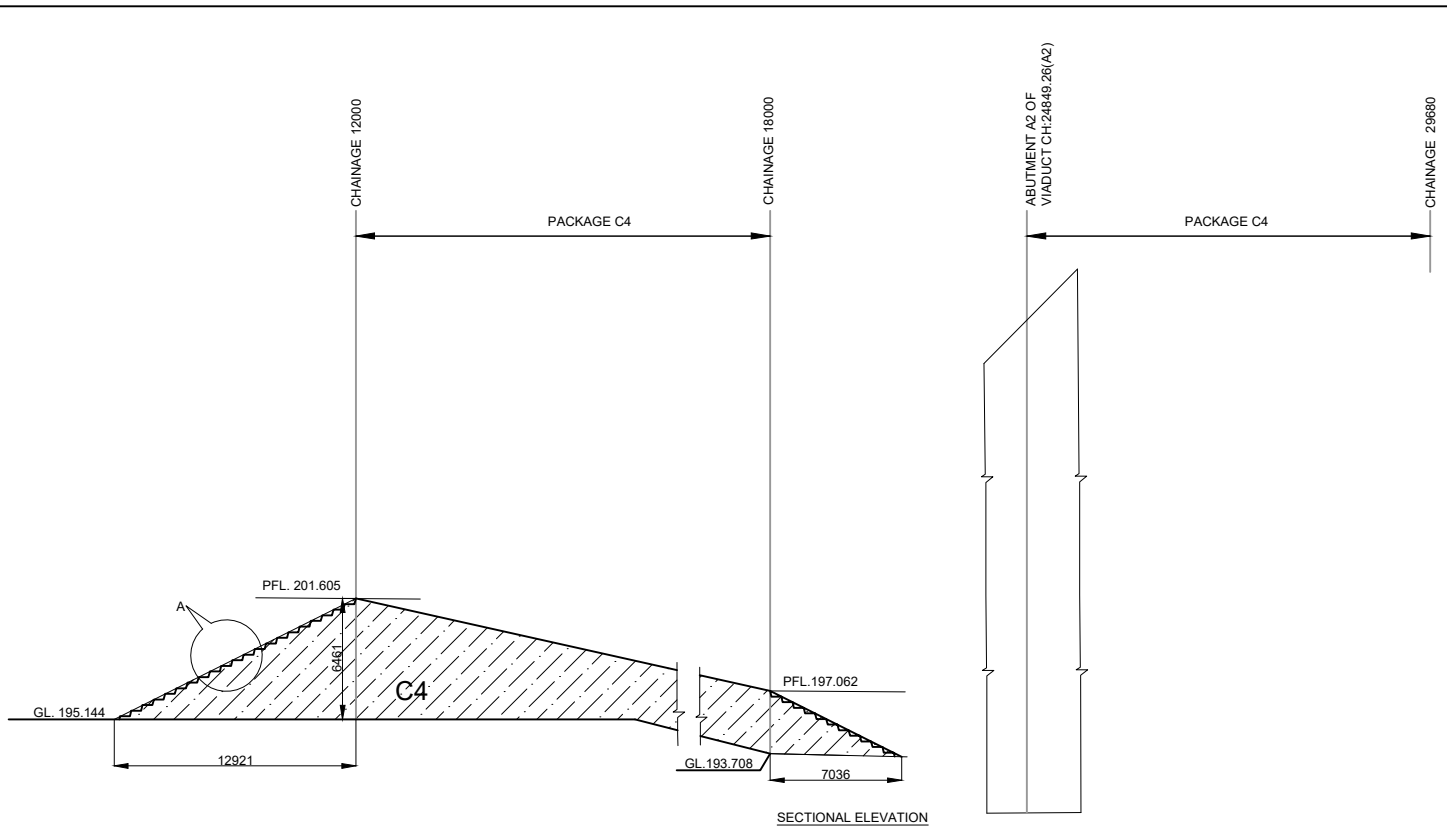


TITLE:- CONCEPTUAL PLAN  
STEEL BARRICADE

DRG. NO. GC-HRIDC-SK-GEN-009 SHEET NO.

SCALE : AS SHOWN ISSUE DATE REVISED DATE

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	<i>Shiv Om Dwivedi</i>
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	UMA.M.RAO DGM/C-1	<i>Uma M Rao</i>
REETU PATIAL CDE/ CIVIL	<i>Reetu</i>		




- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. FOR OTHER DETAILS REFER RDSO SPECIFICATION NO. RDSO/2020/GE:IRS-004 SEPTEMBER 2020 "COMPREHENSIVE GUIDELINES AND SPECIFICATIONS FOR RAILWAY FORMATION".
  3. HATCHED AREA IS IN THE SCOPE OF C-4.

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI AREA BY LINKING ASOTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  

**HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED**

**CONSULTANT:**  

**GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



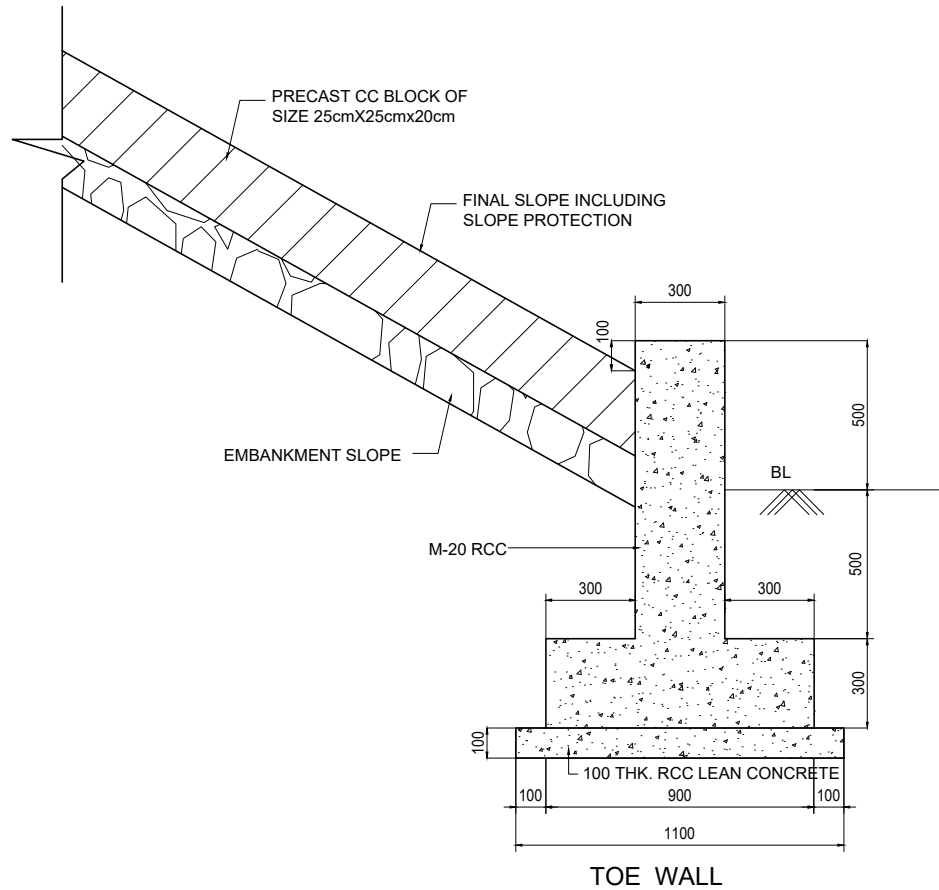
GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD		SHY OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL SPS/CIVIL		RAJU SOLANKI DSM/CIVIL/SOUTH	
REETU PATIAL CDE/ CIVIL			

**TITLE:- CONCEPTUAL PLAN INTERFACING LOCATION BANK BENCHING**

**SKETCH NO.** GC-HRIDC-SK-GEN-012 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE:** 07-11-2022 **REVISED DATE:**







- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE 25mmX25mmX20mm
  2. REINFORCEMENT SHALL BE F4 500 D (TMT) CONFORMING TO IS 1786 - 2008.
  3. DESIGN CRITERIA IS BASED ON THE FOLLOWING IRS CODES :  
i) IRS BRIDGE RULES.  
ii) IRS CONCRETE BRIDGE CODE.  
iii) IRS BRIDGE SUBSTRUCTURE & FOUNDATION CODE.
  4. LAP SPICE SHALL BE AS PER CL. 15.9.6.4 OF IRS CONCRETE BRIDGE CODE. NOT MORE THAN 50% OF BARS SHALL BE SPLICED AT ONE SECTION.
  5. MINIMUM DEVELOPMENT LENGTH / ANCHORAGE LENGTH SHALL BE 52D, WHERE 'D' IS DIA OF BAR.
  6. ALL RCC SURFACES COMING IN CONTACT WITH SOIL SHOULD BE PAINTED WITH BITUMEN OR COAL TAR OF APPROVED QUALITY @ 1:46kg/m<sup>2</sup> CONFORMING TO IS:3117.
  7. CLEAR COVER FOR REINFORCING BARS SHOULD BE 50mm.
  8. TOLERANCE SHALL BE FOLLOWED AS PER IRS CONCRETE BRIDGE CODE.
  9. M20 GRADE CONCRETE SHALL BE USED FOR TOE WALL RCC WORKS.
  10. 25MM EXPARATION GAP SHALL BE PROVIDED AT THE 30m OF LENGTH OF RETAINING WALL.

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
AREA BY LINKING ASOTTI-PATLI-SULTANPUR-ASAUDAH BY  
NEW ELECTRIFIED BG DOUBLE LINE

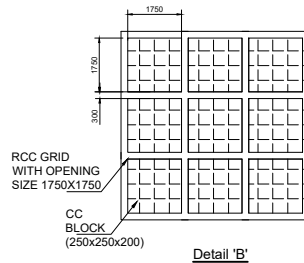
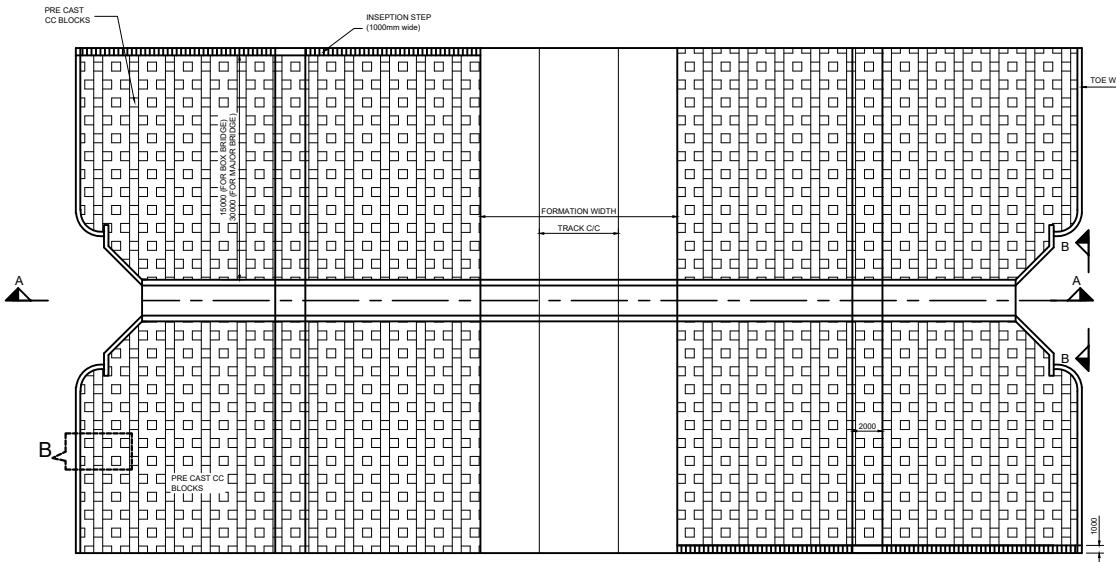
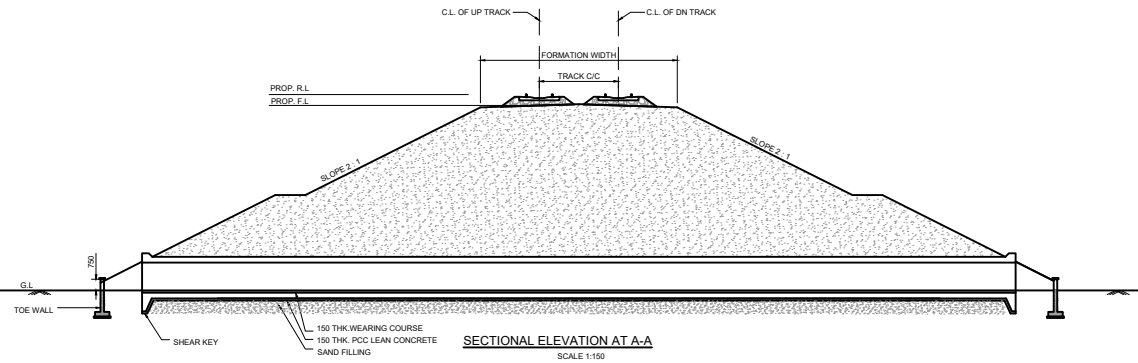
**CLIENT:**  
 HARYANA RAIL INFRASTRUCTURE  
DEVELOPMENT CORPORATION LIMITED

**CONSULTANT:**  
 GENERAL CONSULTANT FOR  
HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.

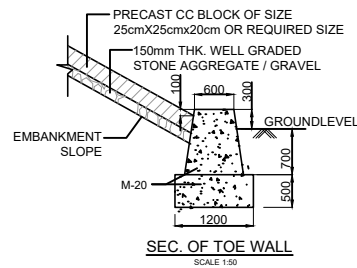


GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD		SHY OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL SPO/CIVIL		RAJU SOLANKI DSM/CIVIL/SOUTH	
REETU PATIL CDE/ CIVIL			

<b>TITLE:-</b> CONCEPTUAL PLAN TOE WALL		
<b>SKETCH NO.</b> GC-HRIDC-SK-GEN-014	<b>SHEET NO.</b> 1 OF 1	
<b>SCALE :</b> AS SHOWN	<b>ISSUE DATE</b>	<b>REVISED DATE</b>



PLAN AT TOP  
SCALE 1:150



SEC. OF TOE WALL  
SCALE 1:50

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
2. PROTECTION WORK WITH PRECAST CC BLOCK ON BOTH SIDES OF BRIDGES SHALL BE DONE FOR 15m LENGTH AND 30m LENGTH FOR MINOR BRIDGES & MAJOR BRIDGES RESPECTIVELY.
3. THIS DRAWING IS VALID FOR SINGLE/MULTIPLE NO. OF TRACKS. TRACKS SHOWN IN DRAWING ARE SYMBOLIC PRESENTATION ONLY.

**LEGEND**

PRL	PROPOSED RAIL LEVEL
PFL	PROPOSED FORMATION LEVEL
HFL	HIGHEST FLOOD LEVEL
GL	GROUND LEVEL

**PROJECT:**

HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
AREA BY LINKING ASOTI-PATLI-SULTANPUR-ASAUDAH BY  
NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**

HARYANA RAIL INFRASTRUCTURE  
DEVELOPMENT CORPORATION LIMITED

**CONSULTANT:**

GENERAL CONSULTANT FOR  
HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



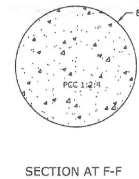
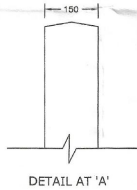
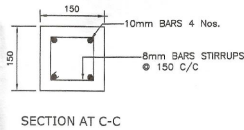
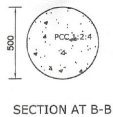
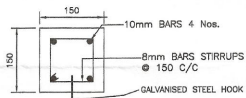
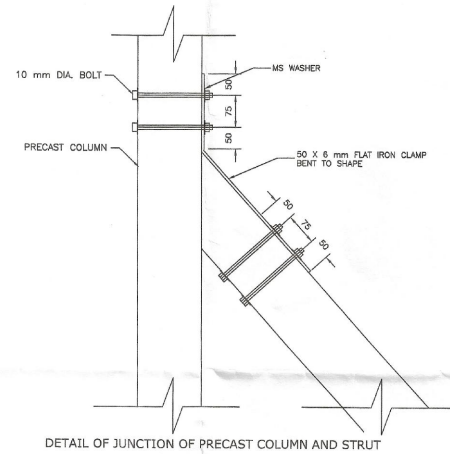
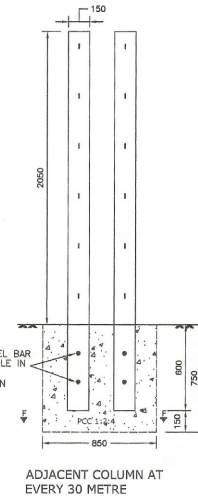
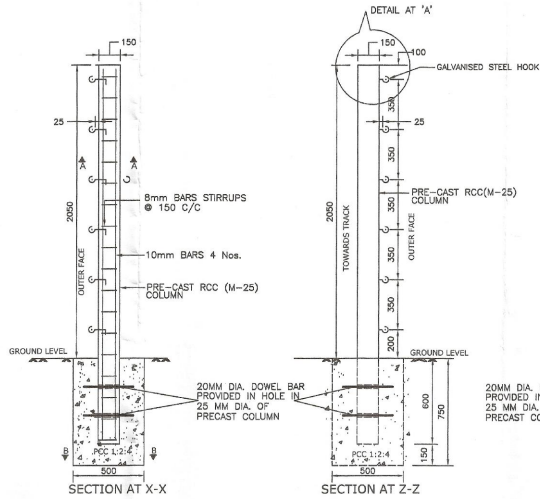
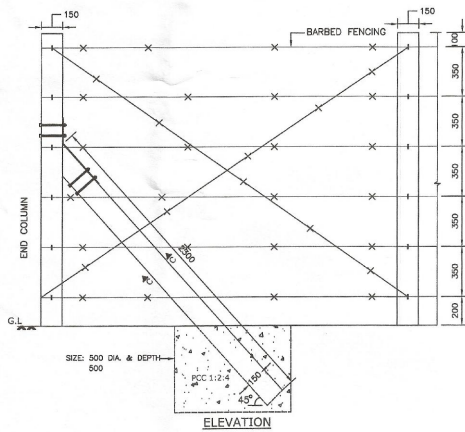
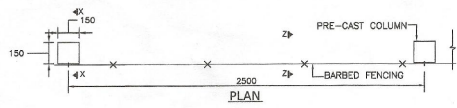
GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>[Signature]</i>	SHY OM DWIVEDI CPM/HRIDC	<i>[Signature]</i>
SUDHIR AGRAWAL SPO/CIVIL	<i>[Signature]</i>	UMA M. RAO EGMIC-1	<i>[Signature]</i>
REETU PATIL CDE/ CIVIL	<i>[Signature]</i>		

TITLE:- CONCEPTUAL PLAN  
TYPICAL DETAILS OF PROTECTION WORK

DRG. NO. GC-HRIDC-SK-GEN-015 SHEET NO.

SCALE : AS SHOWN ISSUE DATE REVISED DATE





GALVANISED STEEL HOOK 6 mm DIA. FOR HOLDING BARBED WIRE

**NOTES:**

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BARBED FENCING SHALL BE MADE OF G.I. BARBED WIRES CONFIRMING TO IS: 278. THE WEIGHT OF G.I. BARBED WIRE SHALL BE AS PER SOR.
3. THE G.I. BARBED WIRES SHALL BE TIED TO THE COLUMNS WITH HOOKS MADE OF 6 mm DIA. GALVANIZED STEEL. ANOTHER END OF GALVANIZED STEEL HOOK SHALL BE PLACED BEHIND STIRRUPS AND TIED WITH STIRRUPS AS PER DRAWING TO PROVIDE STRENGTH.
4. FOR ERECTION OF WIRE FENCING, RECOMMENDATIONS GIVEN IN IS:4996-1984 SHALL BE FOLLOWED. FENCING WIRE SHALL BE TIED TO GALVANISED STEEL HOOKS WITH SHORT PIECE OF LIGHT WIRE.
5. M-25 GRADE CONCRETE SHALL BE USED IN PRECAST COLUMN/ STRUT. COLUMN/ STRUT SHALL BE CAST AT CENTRALIZED DEPOT UNDER CONTROLLED CONDITION AS PER IS :456-2000.
6. TMT BARS OF GRADE FE 415/ 500 OF SPECIFIED DIA. SHALL BE USED. TMT BAR SHALL BE CONFIRMING TO IS:1786 (LATEST).
7. ZONAL RAILWAY MAY PAINT THEIR INITIALS (SUCH AS NR, SER etc.) ON COLUMN AND STRUT.
8. STRUT OR BRACE SHALL BE FIXED WITH END RCC COLUMN BY SUITABLE ARRANGEMENT AS DETAILED IN DRAWING. 50 X 6 mm MS FLAT SHALL BE USED TO CONNECT STRUT/BRACE TO RCC COLUMN. 10 mm DIA. MS BOLT BLACK HEXAGONAL HEAD ROUND NECK WITH HEXAGONAL NUTS AND TWO WASHER SHALL BE USED. AFTER TIGHTING NUT, END OF BOLT SHALL BE HAMMERED TO MAKE ANTITHEFT.
9. SUPPORTING STRUT SHALL BE PROVIDED AT FIRST / END COLUMN OR CHANGE OF DIRECTION.
10. 1:20 SLOPE SHALL BE PROVIDED ON TOP OF COLUMN AT THE TIME OF CASTING.
11. AT EVERY 30 METRE TWO COLUMN SHALL BE GROUDED SIDE BY SIDE.
12. IN UNDULATING AREA, COLUMN SHALL BE PLACED ACCORDINGLY SO THAT BARBED WIRE ARE ALIGNED HORIZONTAL. VERTICALITY OF COLUMN SHALL BE CHECKED DURING ERECTION.
13. FOUNDATION SHALL BE DIG USING AUGER/ MECHANICAL BORING EARTH SHALL BE RAMMED PROPERLY AND 50 MM SAND SHALL BE PLACED BEFORE FOUNDATION CASTING. FOUNDATION SHALL BE CURED PROPERLY.
14. THIS CATLE FENCE SHALL BE PROVIDED AT RAILWAY BOUNDARY.

**Notes:**

1. THIS DRAWING IS BASED ON RDSO DRAWING NO. RDSO/WKS/2019/2.
2. GRADE OF CONCRETE M25.

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONPAT BYPASSING DELHI AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED

**CONSULTANT:**  
GENERAL CONSULTANT FOR HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



**TITLE:-** CONCEPTUAL PLAN BARBED WIRE FENCING

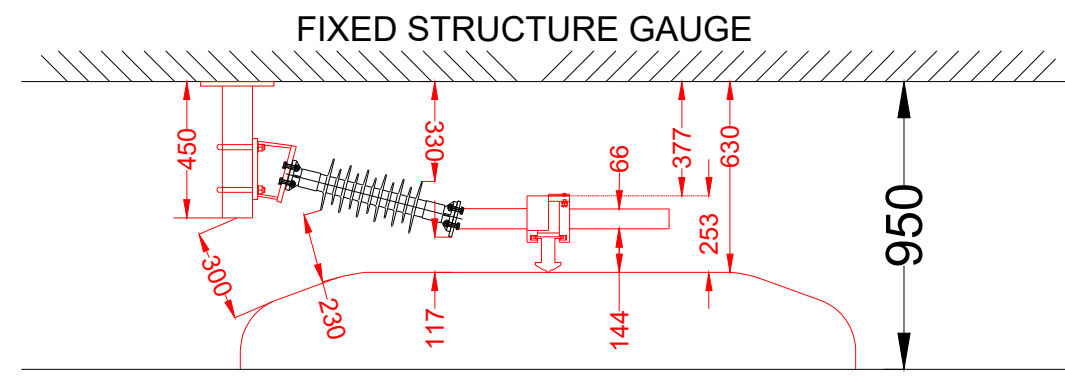
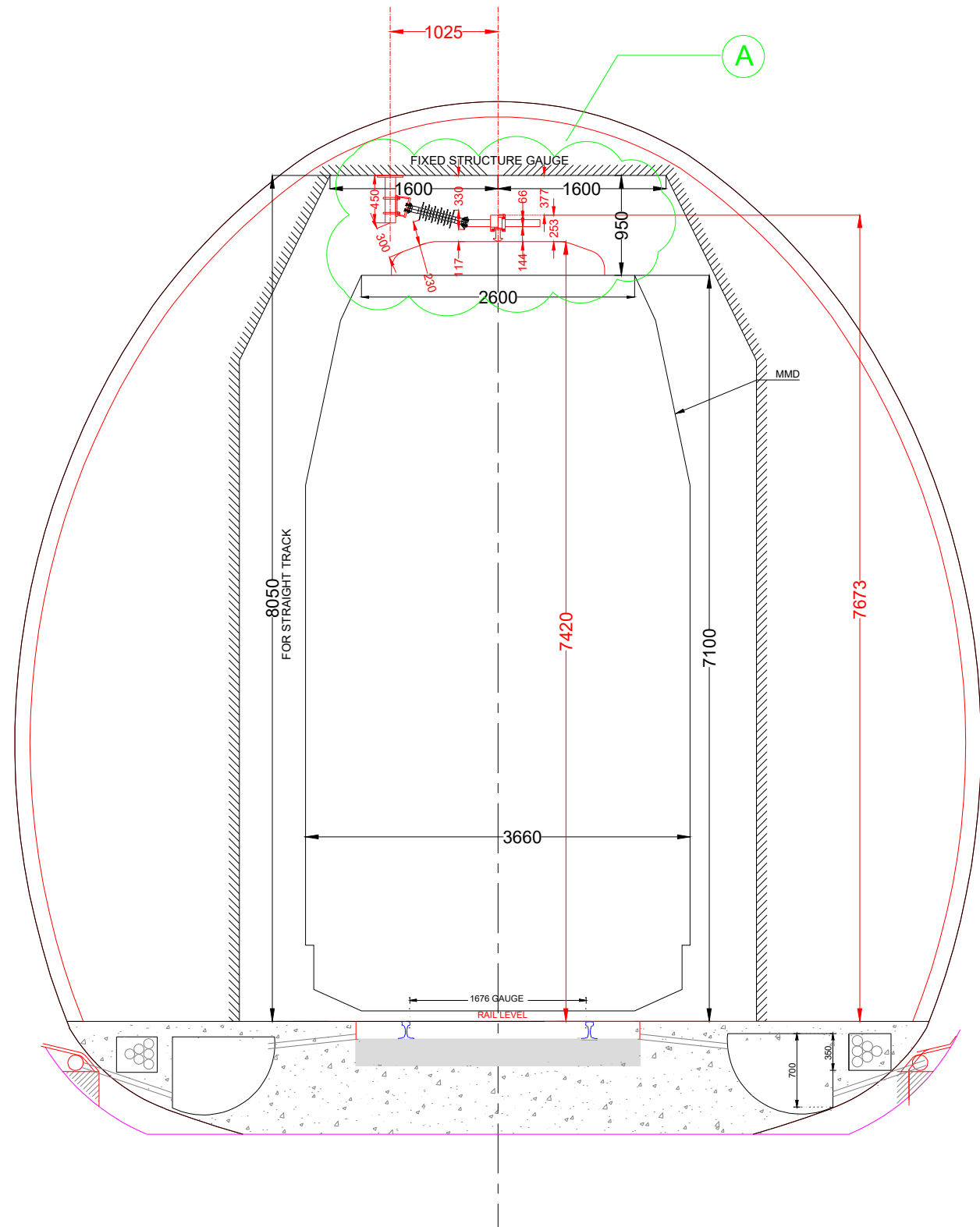
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NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>[Signature]</i>	SHY GM DWVEDI CPM/HRDC	<i>[Signature]</i>
SUDHIR KISHANAL DPO/CIVIL	<i>[Signature]</i>	USA SR/PRO DM/C-1	<i>[Signature]</i>
REETU PATAL CDE/ CIVIL	<i>[Signature]</i>		

**SKETCH NO.** GC-HRIDC-SK-GEN-016 **SHEET NO.** 1 OF 1

**SCALE :** AS SHOWN **ISSUE DATE** **REVISED DATE**

## **5. OHE & GENERAL ELECTRICAL SERVICES DRAWINGS**






**DETAILS OF 'A'**

**PROJECT:**  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
 AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
 NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
 **HARYANA RAIL INFRASTRUCTURE  
 DEVELOPMENT CORPORATION LIMITED.**

**CONSULTANT:**  
 **GENERAL CONSULTANT FOR  
 HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



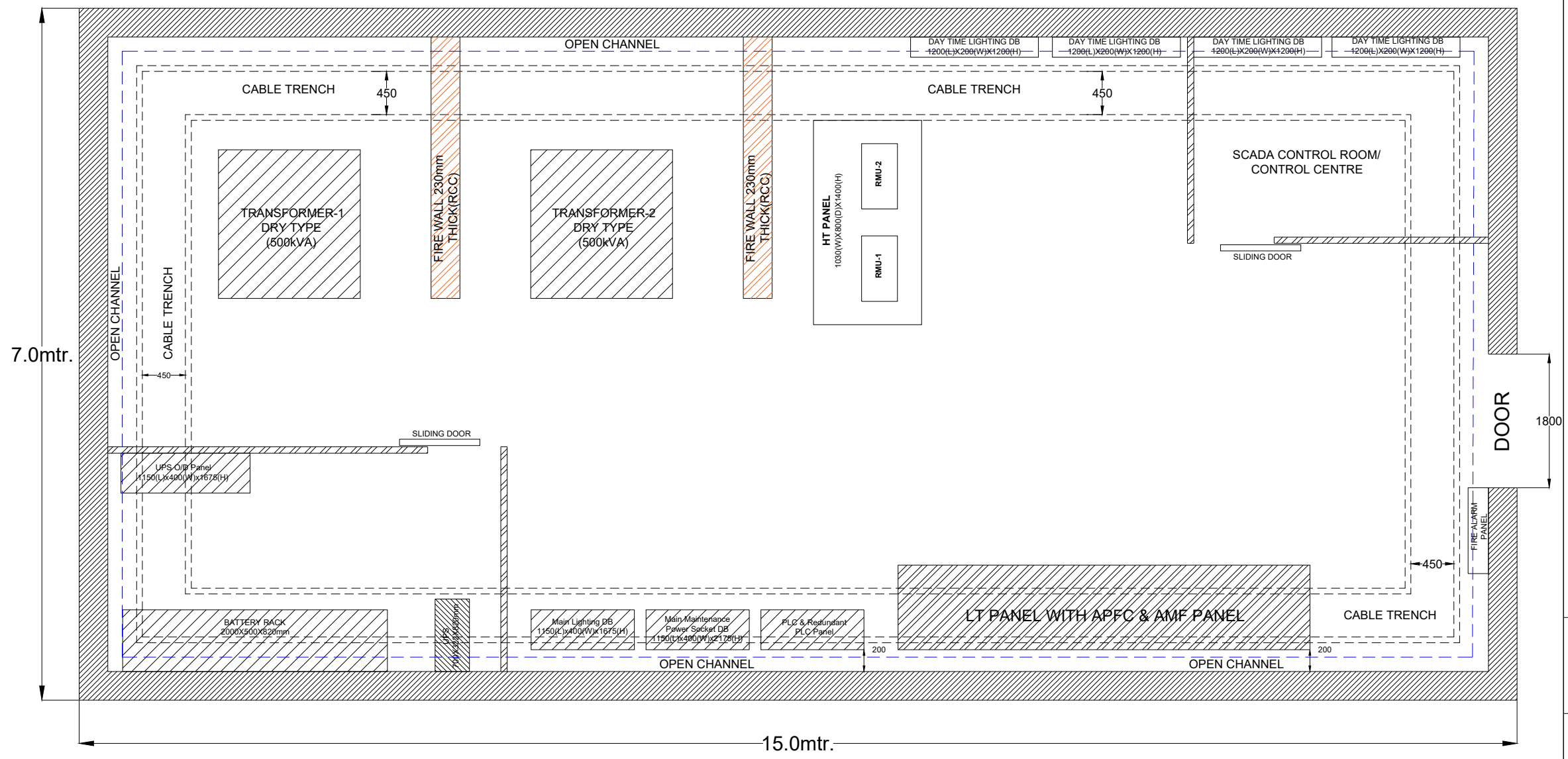
**TITLE:- INDICATIVE DRAWING OF HIGH RISE ROCS  
 FOR HORC TUNNEL**

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	MENDLEEF KATIYAR AM/Elect.	
STIPHEN SAHOO SRE/Elect.			

<b>DRG. NO.</b> GC-HRIDC-C4-DRW-ROCS-ELE-001_A0	<b>SHEET NO.</b>
<b>SCALE :</b> AS SHOWN	<b>ISSUE DATE</b> <b>REVISED DATE</b>

- NOTES:
- 1 SUBSTATION TO BE PROVIDED WITH VENTILATION SYSTEM \* TO CATER LOAD OF EQUIPMENTS.
  - 2 FIRE WALL HEIGHT SHALL COVER TOP OF THE TRANSFORMER LEVEL.
  - 3 THE CABLE LAYING ARRANGEMENT INSIDE THE TRENCHES (SUB STATIONS NICHE) SHALL BE AS PER SITE CONDITION.


THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TENDER SPECIFICATION



**INDICATIVE LAYOUT PLAN OF PORTAL SUB-STATION  
11/0.433kV(15M X 7M) FOR REFERENCE PURPOSE ONLY**

PROJECT:  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
 AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
 NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
 **HARYANA RAIL INFRASTRUCTURE  
 DEVELOPMENT CORPORATION LIMITED.**

CONSULTANT:  
 **GENERAL CONSULTANT FOR  
 HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



TITLE:- **INDICATIVE LAYOUT PLAN OF PORTAL  
 SUB-STATION 11/0.433kV  
 (OUTSIDE TUNNEL)**

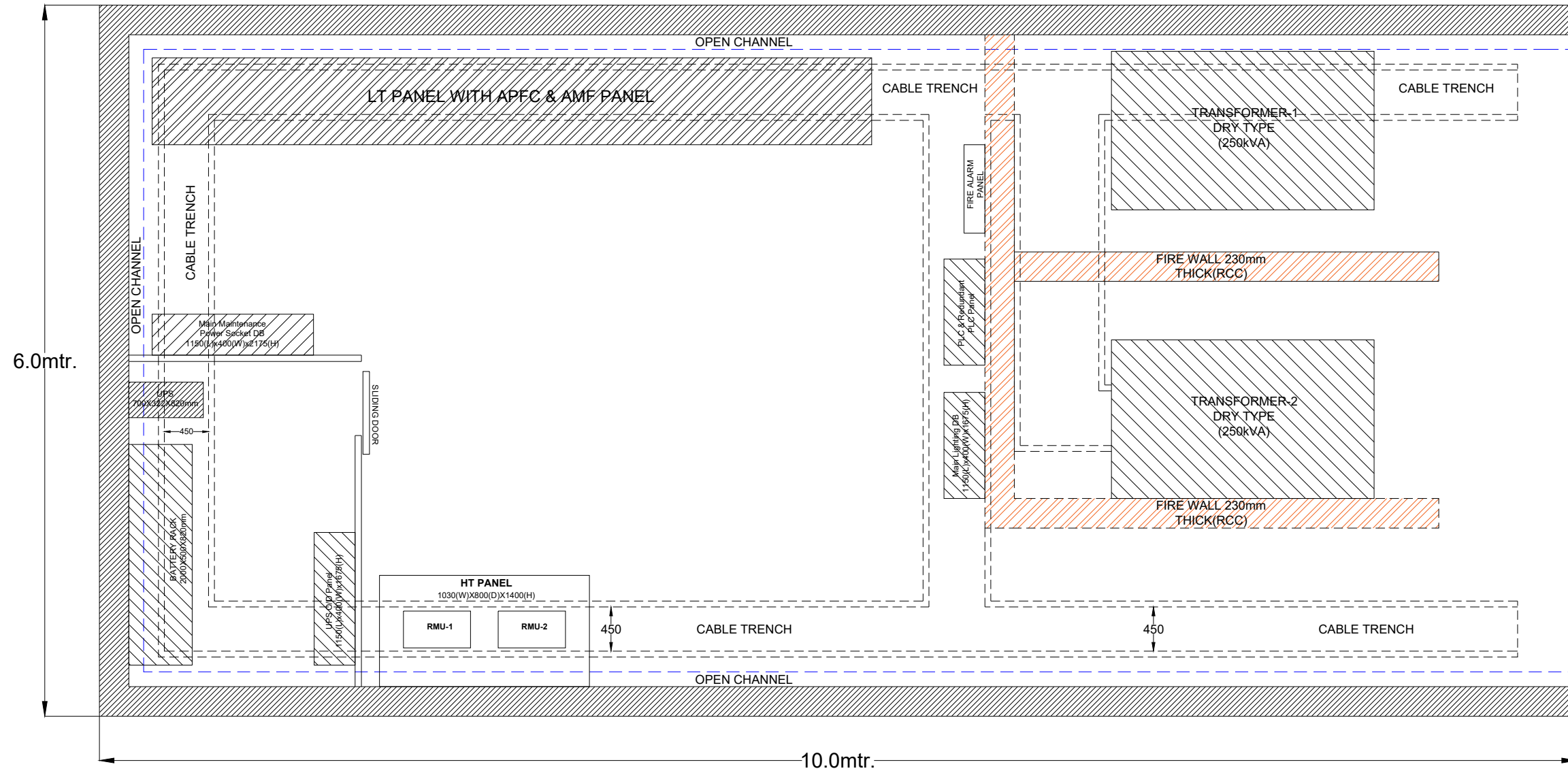
GC/HORC		HRIDC	
NAME / DEGINATION	SIGN	NAME / DEGINATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL	<i>AS</i>	MENDLEEF KATIYAR AM/Elect.	
STIPHEN SAHOO SRE/Elect.			

DRG. NO. GC-HRIDC-C4-DRW-TTL-ELE-001_A0	SHEET NO.
SCALE : AS SHOWN	ISSUE DATE REVISED DATE



- NOTES:
- 1 SUBSTATION TO BE PROVIDED WITH VENTILATION SYSTEM \* TO CATER LOAD OF EQUIPMENTS.
  - 2 FIRE WALL HEIGHT SHALL COVER TOP OF THE TRANSFORMER LEVEL.
  - 3 THE CABLE LAYING ARRANGEMENT INSIDE THE TRENCHES (SUB STATIONS NICHE) SHALL BE AS PER SITE CONDITION.

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TENDER SPECIFICATION



**INDICATIVE LAYOUT PLAN OF SUB-STATION  
11/0.433kV (INSIDE TUNNEL 10.0mX6.0m)  
FOR REFERENCE PURPOSE ONLY**

**PROJECT:**  
HARYANA ORBITAL RAIL CORRIDOR  
CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
NEW ELECTRIFIED BG DOUBLE LINE

**CLIENT:**  
HARYANA RAIL INFRASTRUCTURE  
DEVELOPMENT CORPORATION LIMITED.

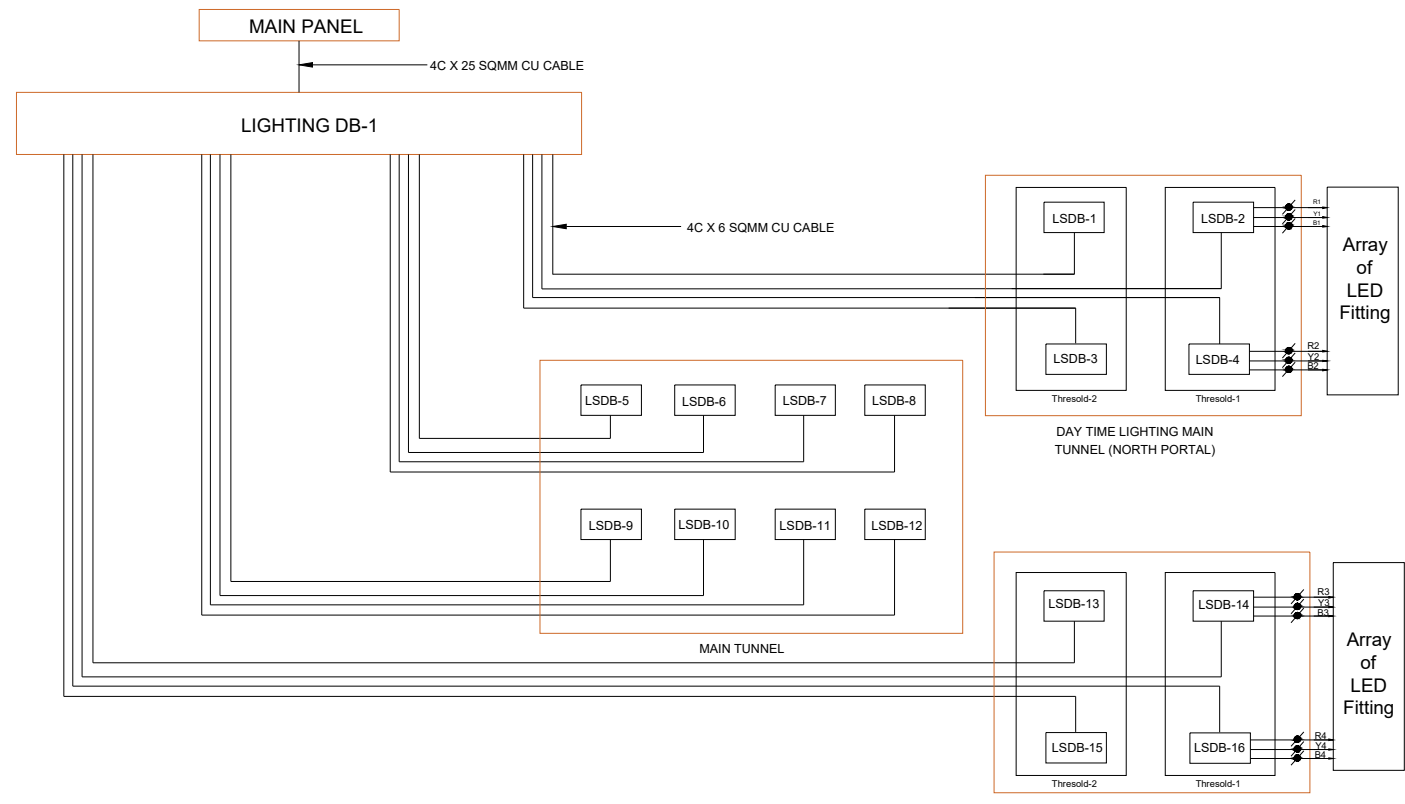
**CONSULTANT:**  
GENERAL CONSULTANT FOR  
HARYANA ORBITAL RAIL CORRIDOR  
RITES Limited in consortium with SMEC International Pty. Ltd.



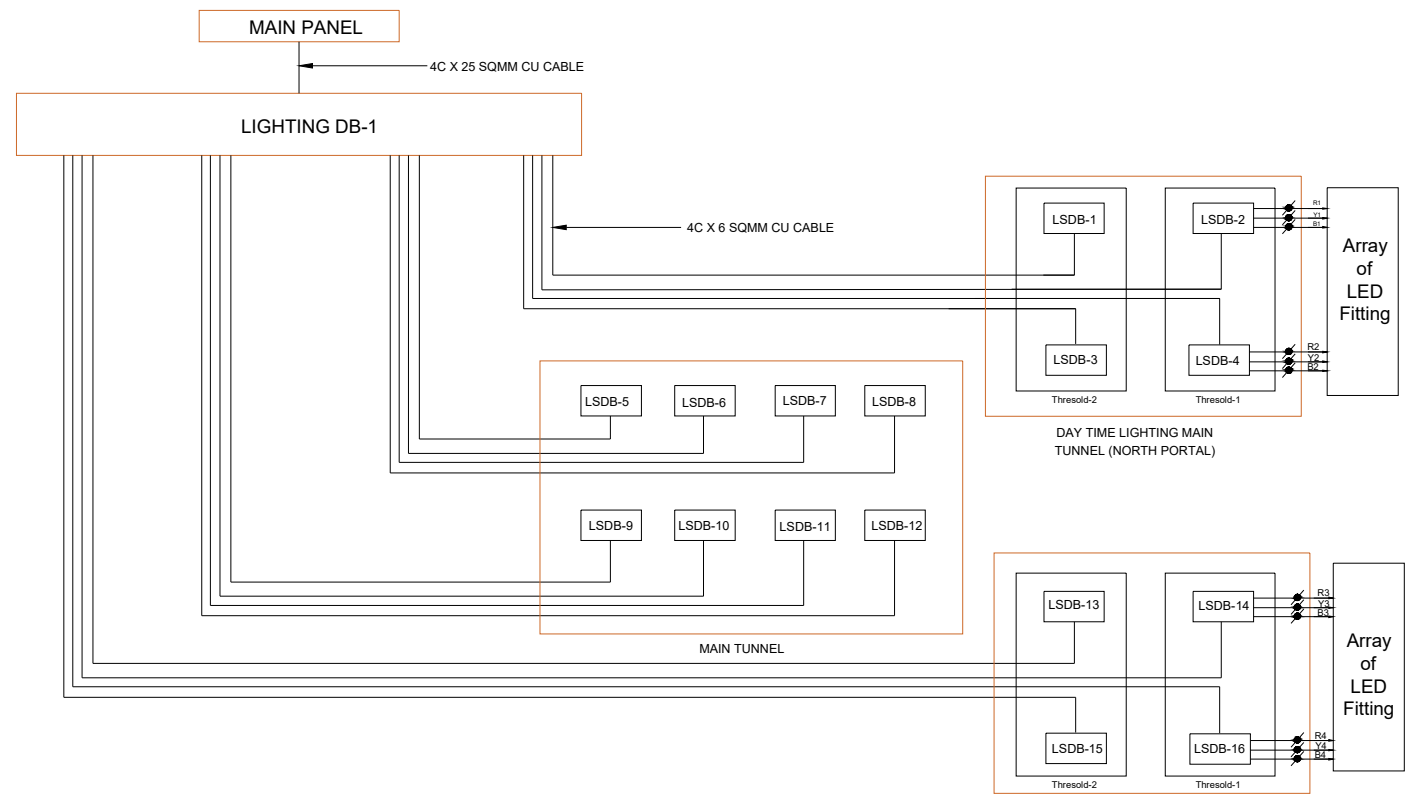
**TITLE:-** INDICATIVE LAYOUT PLAN OF  
SUB-STATION 11/0.433kV  
(INSIDE TUNNEL)

GC/HORC		HRIDC	
NAME / DESIGNATION	SIGN	NAME / DESIGNATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL	<i>AS</i>	MENDLEEF KATIYAR AM/Elect.	
STIPHEN SAHOO SRE/Elect.			

<b>DRG. NO.</b> GC-HRIDC-C4-DRW-TTL-ELE-002_A0	<b>SHEET NO.</b>
<b>SCALE :</b> AS SHOWN	<b>ISSUE DATE</b> <b>REVISED DATE</b>



**POWER SUPPLY FOR LIGHTING ARRANGEMENT  
(TUNNEL) AT NORTH PORTAL**



**POWER SUPPLY FOR LIGHTING ARRANGEMENT  
(TUNNEL) AT NORTH PORTAL**

PROJECT:  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
 AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
 NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  

**HARYANA RAIL INFRASTRUCTURE  
 DEVELOPMENT CORPORATION LIMITED.**

CONSULTANT:  

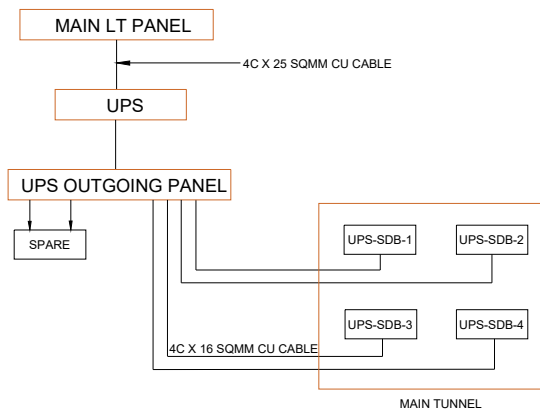
**GENERAL CONSULTANT FOR  
 HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.  
  
 Member of the Surlana Jurong Group

TITLE:- **POWER SUPPLY FOR LIGHTING  
 ARRANGEMENT**

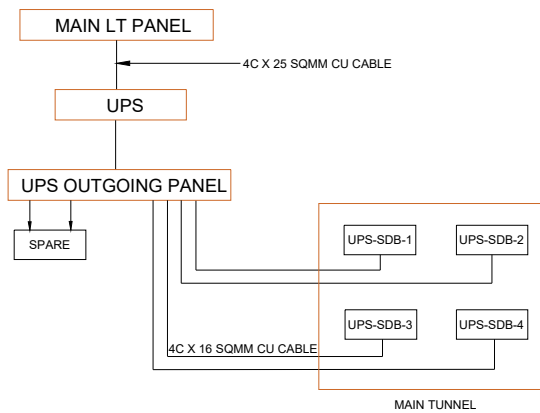
GC/HORC		HRIDC	
NAME / DEGINATION	SIGN	NAME / DEGINATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL	<i>Sudhir</i>	MENDLEEF KATIYAR AM/Elect.	
STIPHEN SAHOO SRE/Elect.			

DRG. NO. GC-HRIDC-C4-DRW-TTL-ELE-003_A0	SHEET NO.
SCALE : AS SHOWN	ISSUE DATE REVISED DATE

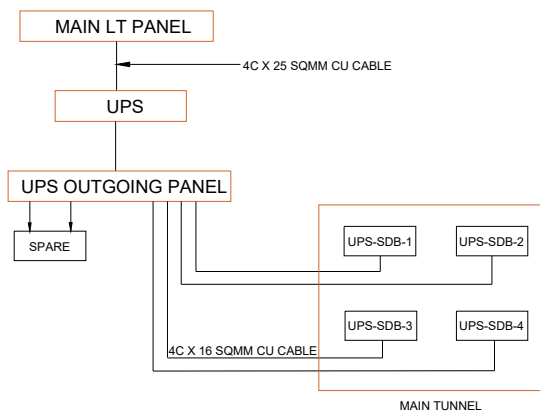




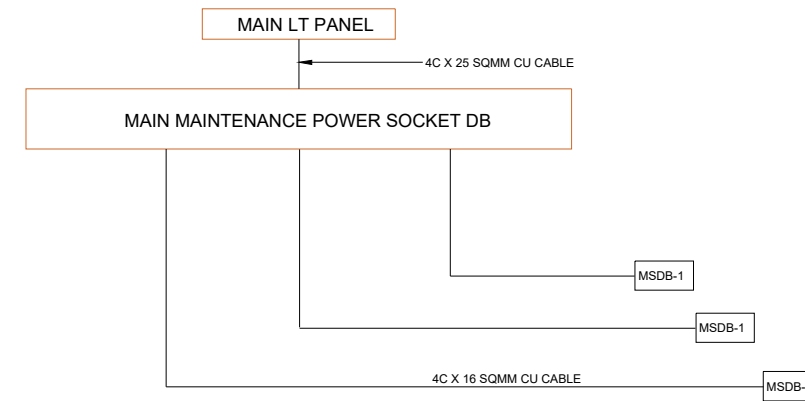
**POWER SUPPLY ARRANGEMENT OF UPS MAIN PANEL AT (SS-1) FOR EMERGENCY**



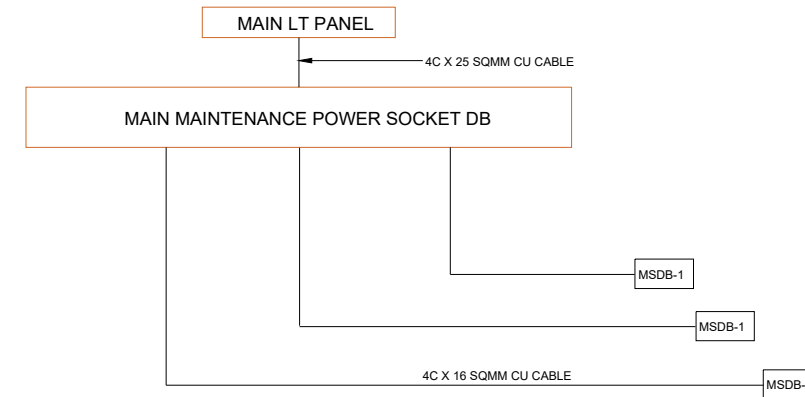
**POWER SUPPLY ARRANGEMENT OF UPS MAIN PANEL AT (SS-2) FOR EMERGENCY**



**POWER SUPPLY ARRANGEMENT OF UPS MAIN PANEL AT (USS-3) FOR EMERGENCY**




**MAINTENANCE POWER SOCKET DB DIAGRAM FOR NORTH PORTAL**



**MAINTENANCE POWER SOCKET DB DIAGRAM FOR SOUTH PORTAL**

PROJECT:  
**HARYANA ORBITAL RAIL CORRIDOR**  
 CONNECTING PALWAL TO SONIPAT BYPASSING DELHI  
 AREA BY LINKING ASAOTI-PATLI-SULTANPUR-ASAUDAH BY  
 NEW ELECTRIFIED BG DOUBLE LINE

CLIENT:  
 **HARYANA RAIL INFRASTRUCTURE  
 DEVELOPMENT CORPORATION LIMITED.**

CONSULTANT:  
 **GENERAL CONSULTANT FOR  
 HARYANA ORBITAL RAIL CORRIDOR**  
 RITES Limited in consortium with SMEC International Pty. Ltd.



TITLE:- **POWER SUPPLY ARRANGEMENT FOR  
 EMERGENCY AND MAINTENANCE POWER  
 SOCKET DIAGRAM**

GC/HORC		HRIDC	
NAME / DEGINATION	SIGN	NAME / DEGINATION	SIGN
CHAHATEY RAM PD	<i>Chahatey Ram</i>	SHIV OM DWIVEDI CPM/HRIDC	
SUDHIR AGRAWAL DPD/CIVIL	<i>AS</i>	MENDLEEF KATIYAR AM/Elect.	
STIPHEN SAHOO SRE/Elect.			

DRG. NO. **GC-HRIDC-C4-DRW-TTL-ELE-004\_A0** SHEET NO.

SCALE : **AS SHOWN** ISSUE DATE REVISED DATE