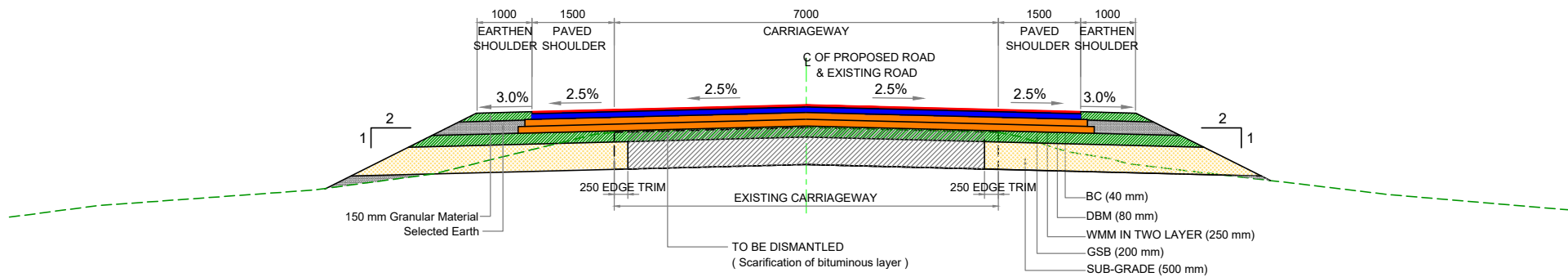






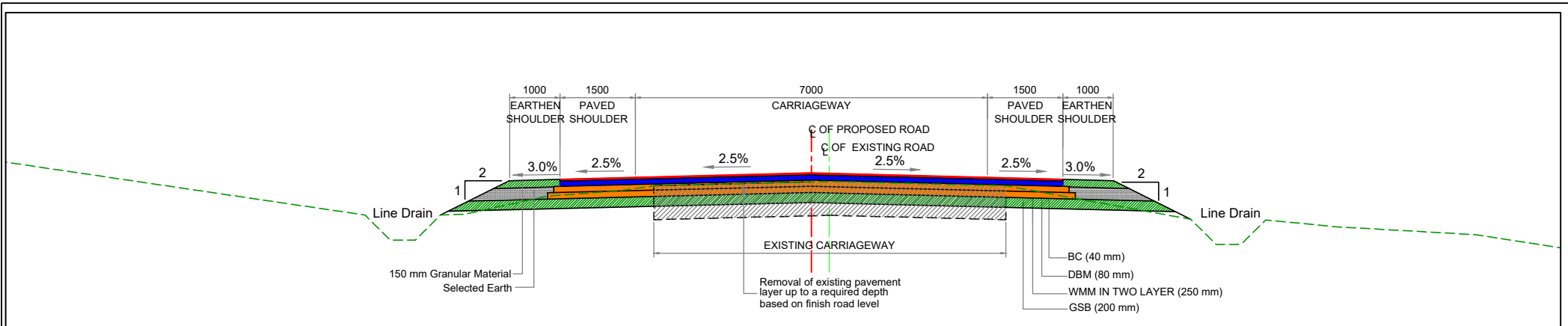


**TCS- 1 :- TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY WITH PAVED SHOULDER IN BUILT UP AREA
WITH BOTH SIDE COVERED DRAIN CUM FOOTPATH IN PLAIN TERRAIN**

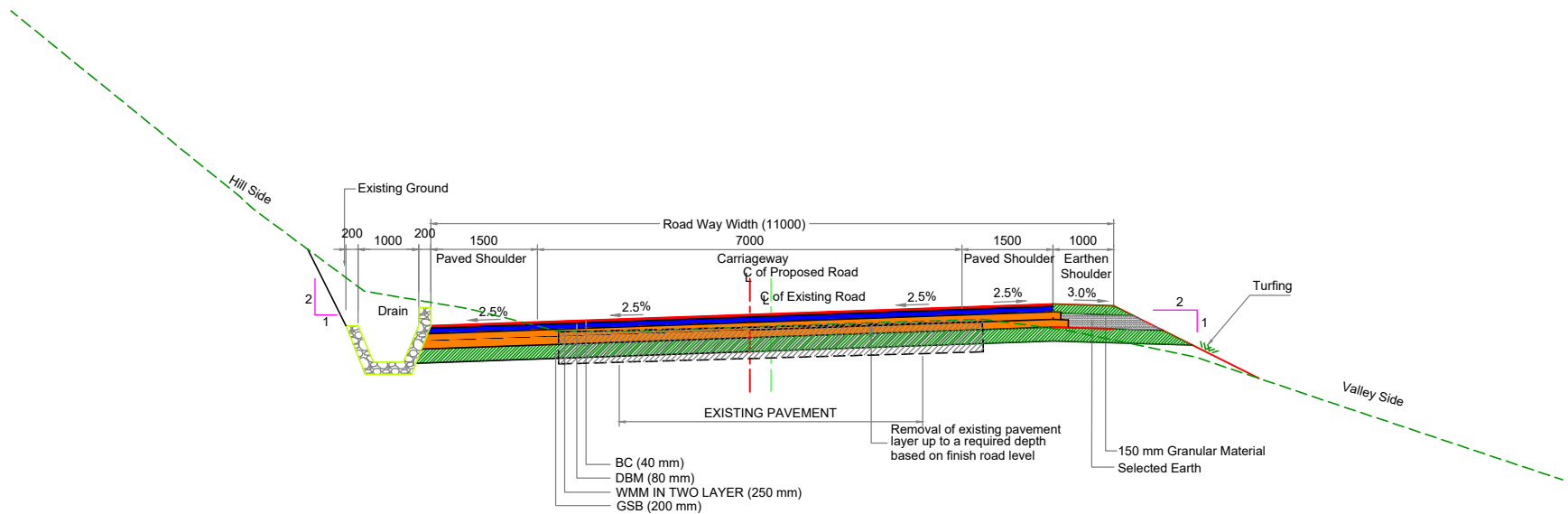


**TCS- 2 :- TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY WITH PAVED SHOULDER
RURAL AREA IN PLAIN TERRAIN (RECONSTRUCTION)**

					Scale :- 1 : 75		CLIENT : NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI Building, 3rd Floor, 4, Parliament Street, New Delhi - 110001	TITLE : TYPICAL CROSS SECTION	CONSULTANT :  CE TESTING COMPANY PVT. LTD. 124-A, N.S.C. Bose Road, Kolkata - 700092.	DWG NO :-CET/4047/NHIDCL/NH-37/I-I/DDPR/TCS						
					DATE: DEC, 2020	REVISION MKD. - R0				SHEET NO. - 02						
					PROJECT: CONSULTANCY SERVICES FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANE WITH PAVED SHOULDER OF IMPHAL-JIRIBAM SECTION OF NH-37 (NH-53) (LENGTH- 220 KM) IN THE STATE OF MANIPUR	SUBMISSION TYPE : DRAFT DETAIL PROJECT REPORT (PACKAGE NO. II)				Drawn By	Designed By	Checked By	Issued By			
REVISIONS										 P.GHOSH	 B. DAS	 A.DEY	 A. K.DAS			

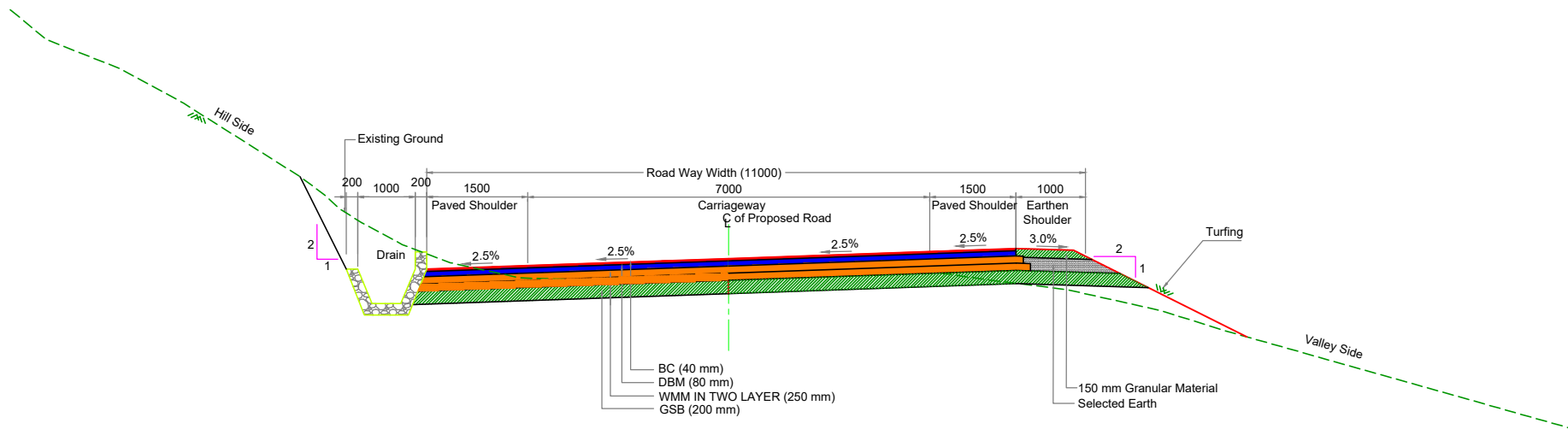


**TCS-2A :- TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY WITH PAVED SHOULDER
IN RURAL AREA IN HILLY TERRAIN (RECONSTRUCTION)**

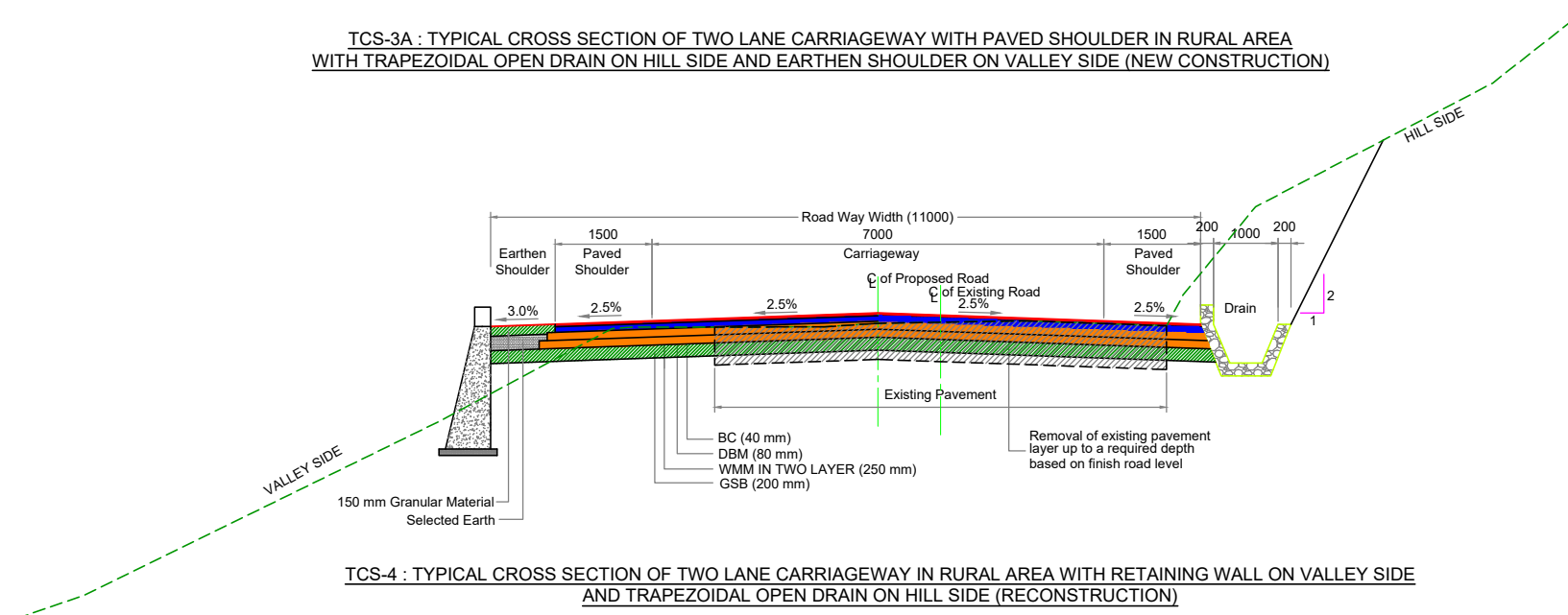


**TCS-3 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA
WITH TRAPEZOIDAL OPEN DRAIN ON HILL SIDE AND EARTHEN SHOULDER ON VALLEY SIDE (RECONSTRUCTION)**







Scale :- 1 : 75					CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI Building, 3rd Floor, 4, Parliament Street, New Delhi - 110001					TITLE: TYPICAL CROSS SECTION					CONSULTANT : CETEST Engineering Consultants 124-A, N.S.C. Bose Road, Kolkata - 700092.					DWG NO :- CET/4047/NHIDCL/NH-37/I-I/DDPR/TCS REVISION MKD. - R0 SHEET NO. - 03				
DATE: DEC, 2020					PROJECT: CONSULTANCY SERVICES FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANE WITH PAVED SHOULDER OF IMPHAL-JIRIBAM SECTION OF NH-37 (NH-53) (LENGTH- 220 KM) IN THE STATE OF MANIPUR					SUBMISSION TYPE : DRAFT DETAIL PROJECT REPORT (PACKAGE NO. II)					Drawn By P. GHOSH					Designed By B. DAS				
REVISIONS MKD. DATE DESCRIPTION CHKD. APPRD.					Checked By A. DEY					Issued By A. K. DAS														

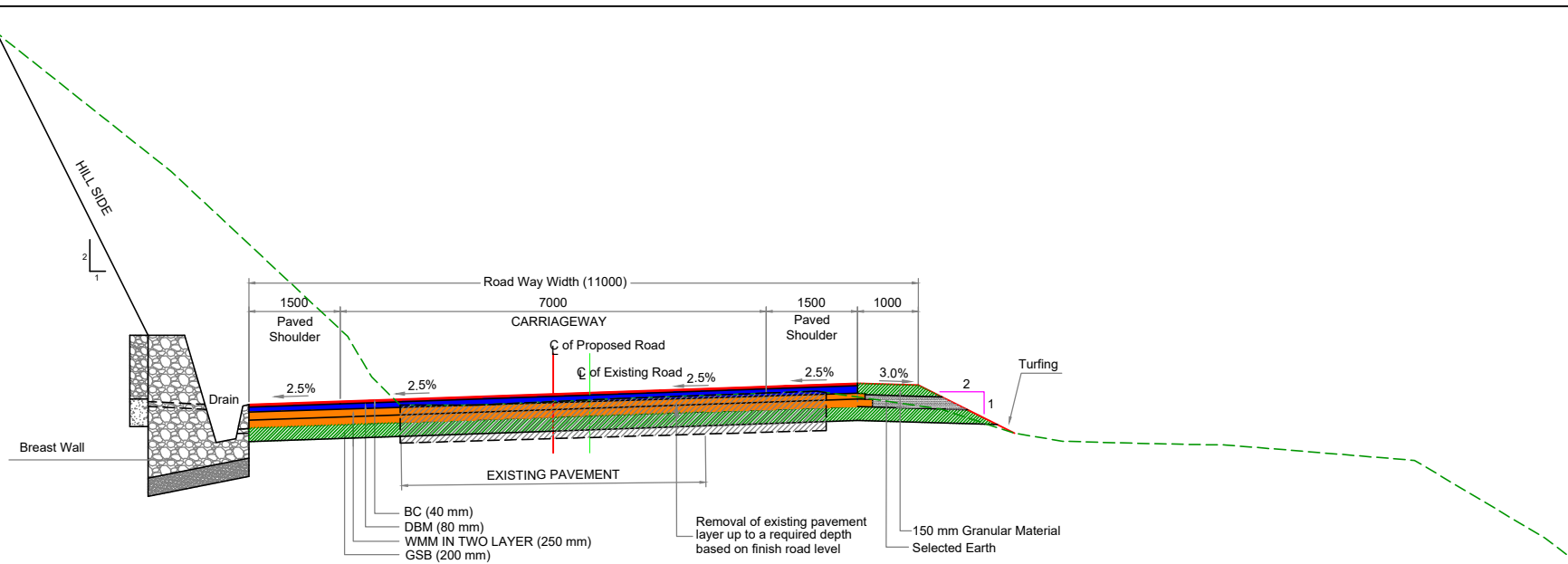


TCS-3A : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA WITH TRAPEZOIDAL OPEN DRAIN ON HILL SIDE AND EARTHEN SHOULDER ON VALLEY SIDE (NEW CONSTRUCTION)

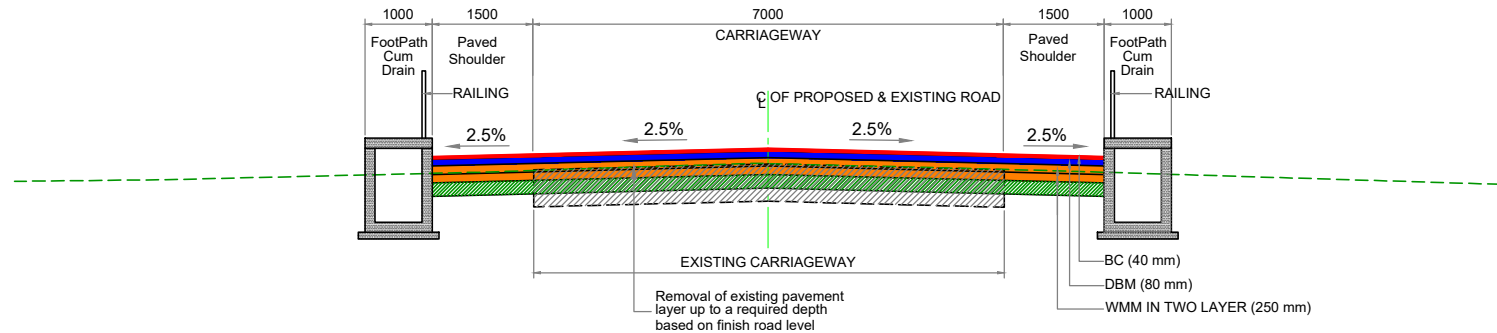


TCS-4 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY IN RURAL AREA WITH RETAINING WALL ON VALLEY SIDE AND TRAPEZOIDAL OPEN DRAIN ON HILL SIDE (RECONSTRUCTION)



					Scale :- 1 : 75		CLIENT : NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI Building, 3rd Floor, 4, Parliament Street, New Delhi - 110001	TITLE : TYPICAL CROSS SECTION	SUBMISSION TYPE : DRAFT DETAIL PROJECT REPORT (PACKAGE NO. II)	CONSULTANT :  CE TESTING COMPANY PVT. LTD. 124-A, N.S.C. Bose Road, Kolkata - 700092	DWG NO :- CET/4047/NHIDCL/NH-37/I-J/DDPR/TCS							
					DATE: DEC, 2020	REVISION MKD. - R0					SHEET NO. - 04							
					PROJECT: CONSULTANCY SERVICES FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANE WITH PAVED SHOULDER OF IMPHAL-JIRIBAM SECTION OF NH-37 (NH-53) (LENGTH- 220 KM) IN THE STATE OF MANIPUR						Drawn By	Designed By	Checked By	Issued By				
REVISIONS											 P. GHOSH	 B. DAS	 A. DEY	 A. K.DAS				
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.														

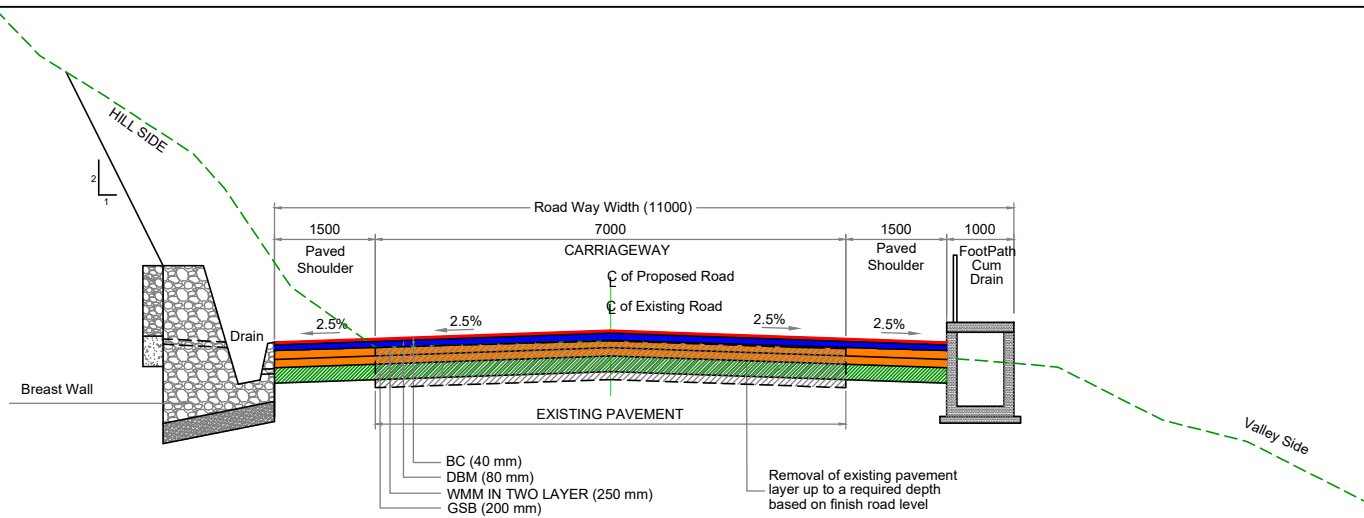


TCS-5 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY IN RURAL AREA WITH BREAST WALL ON HILL SIDE AND EARTHEN SHOULDER ON VALLEY SIDE (RECONSTRUCTION)

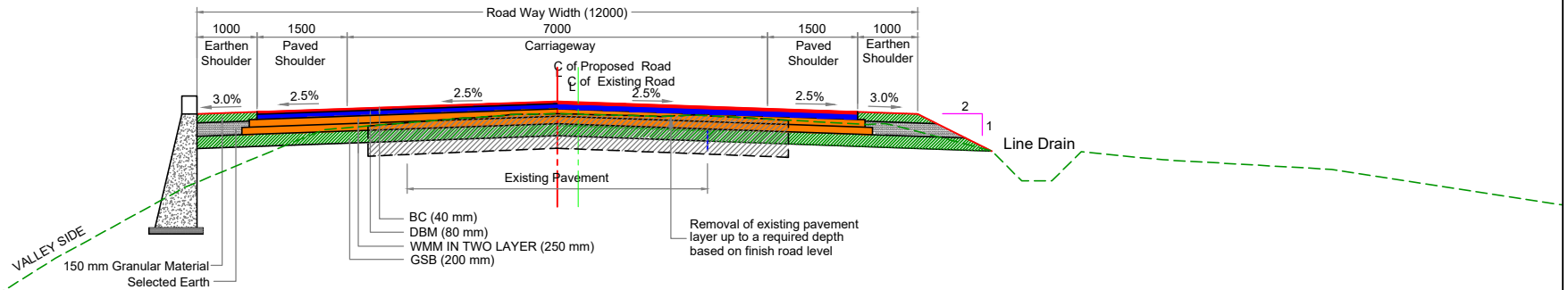


TCS-6 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY IN BUILT UP AREA WITH BOTH SIDE FOOTPATH CUM RCC RECTANGULAR COVERED DRAIN IN HILLY TERRAIN (RECONSTRUCTION)







					Scale :- 1 : 75		CLIENT : NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD PTI Building, 3rd Floor, 4, Parliament Street, New Delhi - 110001	TITLE : TYPICAL CROSS SECTION	CONSULTANT :  CE TESTING COMPANY PVT. LTD. 124-A, N.S.C. Bose Road, Kolkata - 700092.	DWG NO :-CET/4047/NHIDCL/NH-37/I-I/DDPR/TCS								
					DATE: DEC, 2020	PROJECT: CONSULTANCY SERVICES FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANE WITH PAVED SHOULDER OF IMPHAL-JIRIBAM SECTION OF NH-37 (NH-53) (LENGTH- 220 KM) IN THE STATE OF MANIPUR			SUBMISSION TYPE : DRAFT DETAIL PROJECT REPORT		REVISION MKD. - R0		SHEET NO. - 05					
										Drawn By	Designed By	Checked By	Issued By					
										P. Ghosh	B. DAS	A. DEY	A. K.DAS					



TCS-7 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY IN BUILT-UP AREA WITH BREAST WALL ON HILL SIDE AND FOOTPATH CUM RCC RECTANGULAR COVERED DRAIN ON VALLEY SIDE (RECONSTRUCTION)



TCS-8 : TYPICAL CROSS SECTION OF TWO LANE CARRIAGEWAY IN RURAL AREA WITH RETAINING WALL ON ONE SIDE AND EARTHEN SHOULDER ON OTHER SIDE (RECONSTRUCTION)

					Scale :- 1 : 75		CLIENT : NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI Building, 3rd Floor, 4, Parliament Street, New Delhi - 110001	TITLE : TYPICAL CROSS SECTION	CONSULTANT :  CE TESTING COMPANY PVT. LTD. 124-A, N.S.C. Bose Road, Kolkata - 700092.	DWG NO :-CET/4047/NHIDCL/NH-37/I-J/DDPR/TCS						
					DATE: DEC, 2020	PROJECT : CONSULTANCY SERVICES FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANES WITH PAVED SHOULDER OF IMPHAL-JIRIBAM SECTION OF NH-37 (NH-53) (LENGTH- 220 KM) IN THE STATE OF MANIPUR			SUBMISSION TYPE : DRAFT DETAIL PROJECT REPORT		REVISION MKD. - R0	SHEET NO. - 06				
										Drawn By	Designed By	Checked By	Issued By			
										 P.GHOSH	 B. DAS	 A.DEY	 A. K.DAS			
										(PACKAGE NO. II)						

STRUCTURE DRAWING FOR MINOR BRIDGE AT CH. 25+348

CLIENT

:



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**



**AUTHORITY
ENGINEER**

:

**PROOF
CONSULTANT**

:



Hindia Engineers Pvt. Ltd.

Address: 33/7, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681



**SAFETY
CONSULTANT**

:



Antique Buildtech Pvt. Ltd.

Address: 191, Mohan Nagar, Gopalpura Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

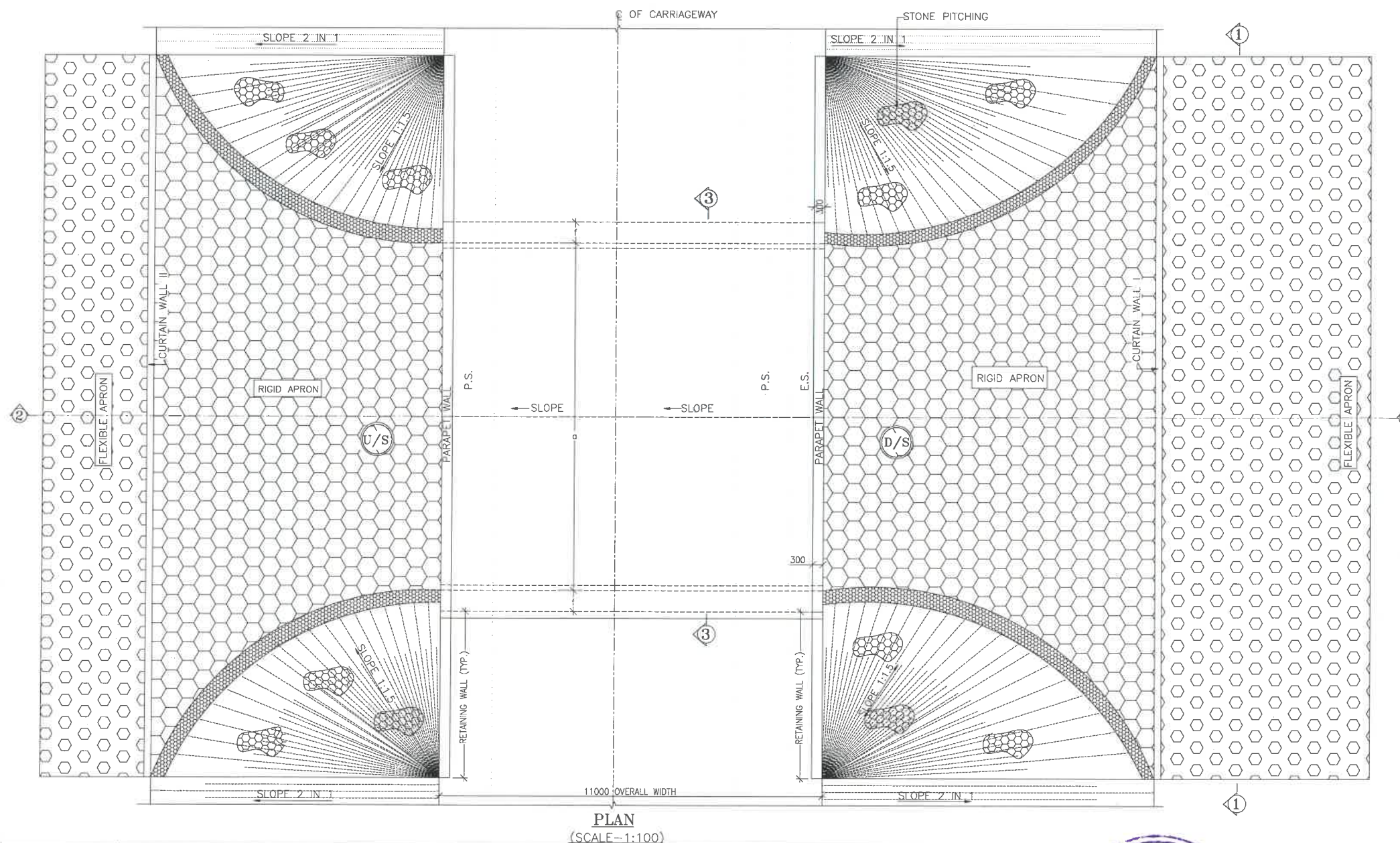
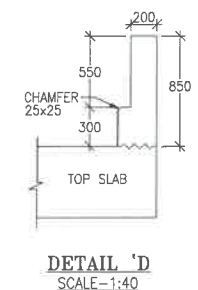
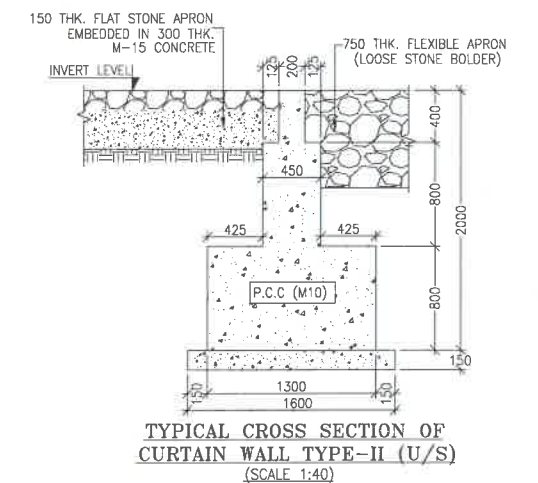
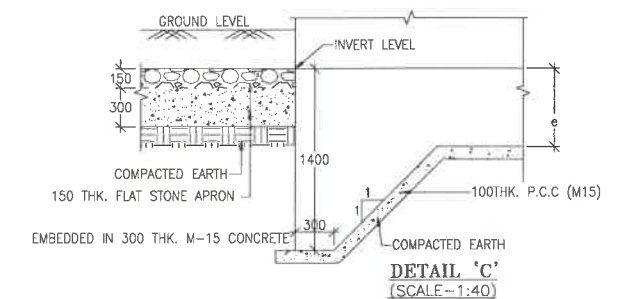
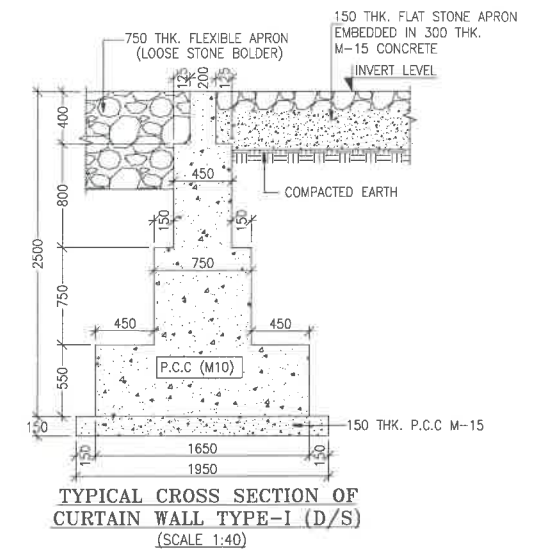
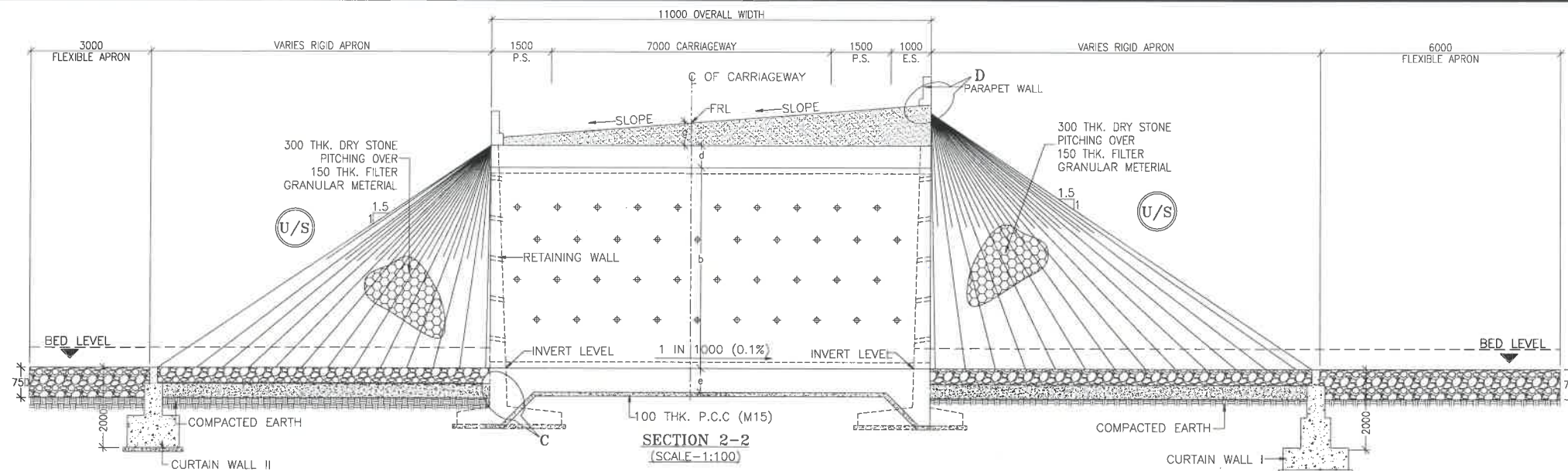


PROJECT

:

**WIDENING OF TWO LANE WITH PAVESHOULDER OF IMPHAL TO
JIRIBAM SECTION OF NH-37 FROM CHAINAGE 15+940 TO
CHAINAGE 33+120 TOTAL LENGTH 17+180 PACKAGE-II IN THE STATE
OF MANIPUR UNDER EPC MODE.**

MINOR BRIDGE _GA DRAWING



CLIENT :
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:
"CMM" M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:
DESIGN DIRECTOR

PROOF CONSULTANT:
Hindia Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

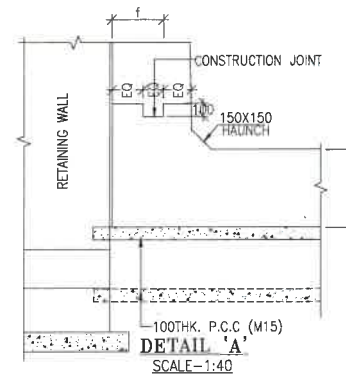
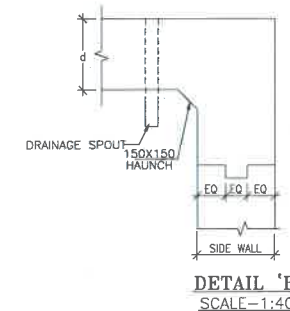
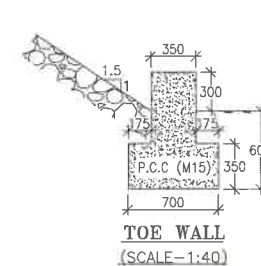
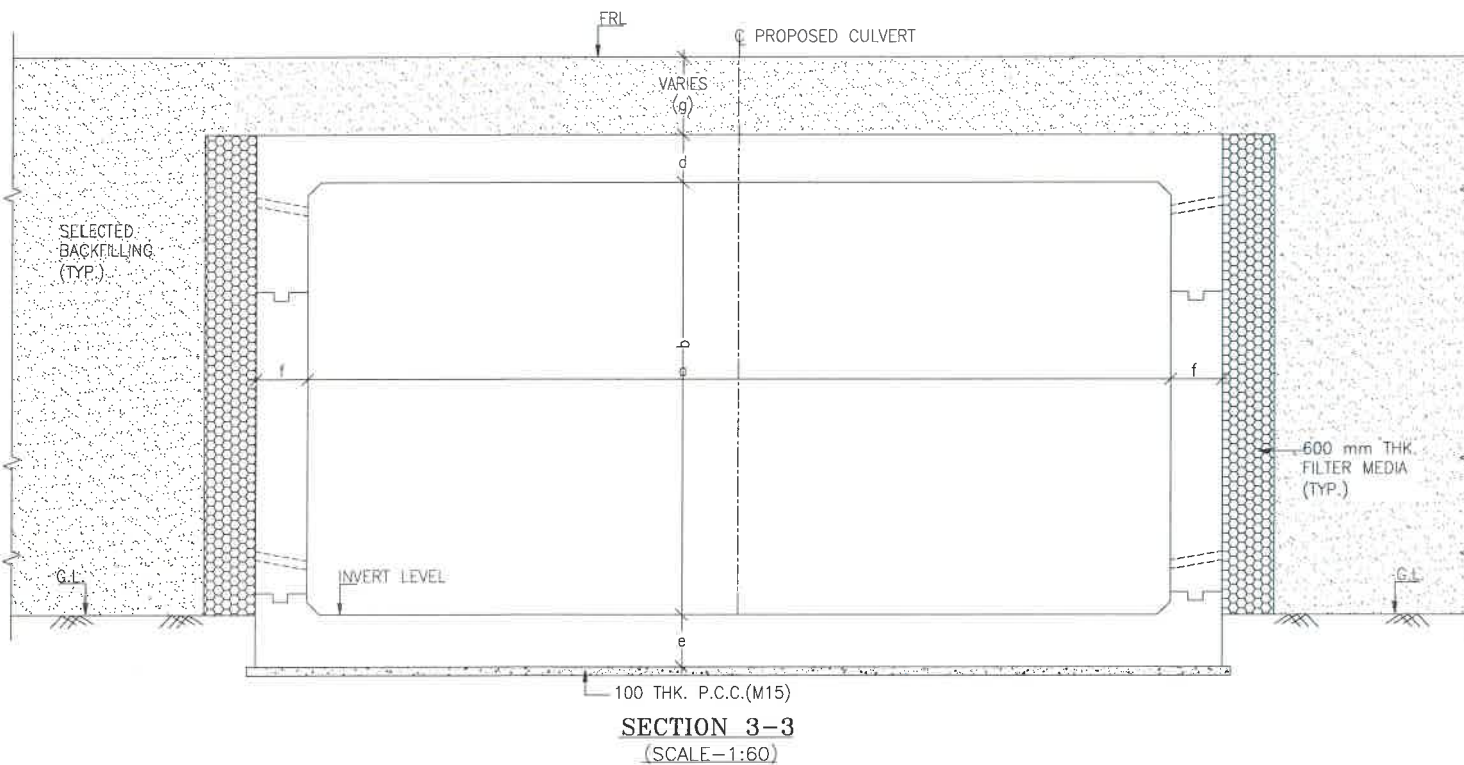
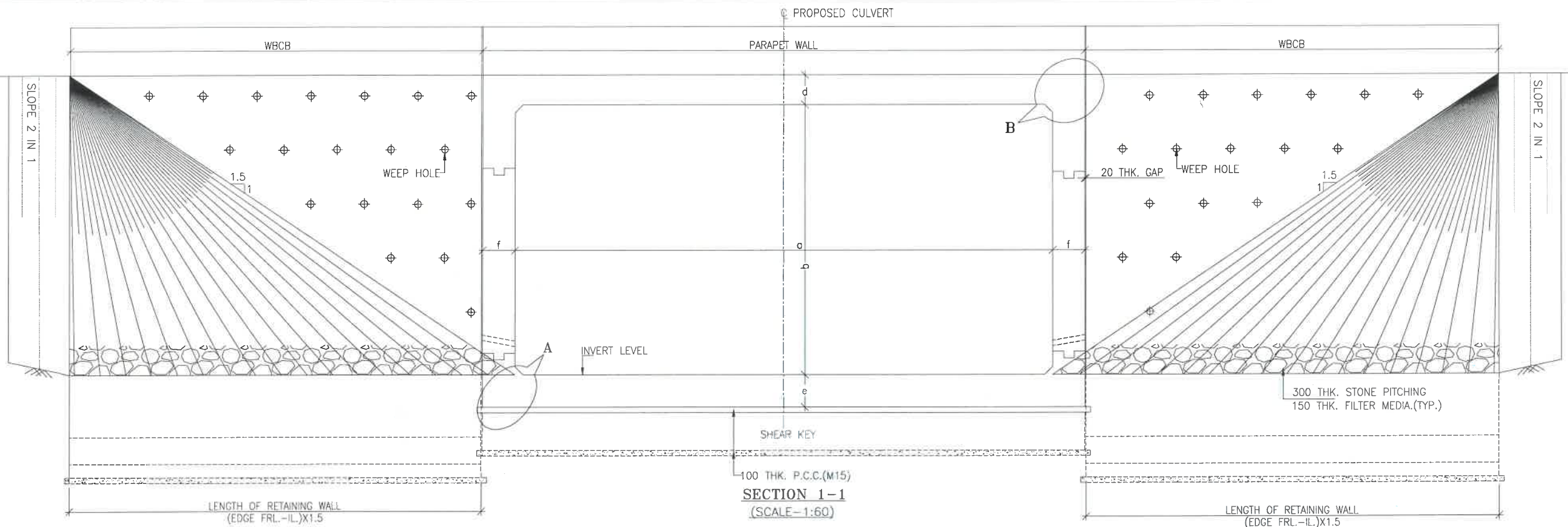
SAFETY CONSULTANT:
Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER:
BLOOM
123 & 18

DRAWING SCALE:
NTS

PROJECT NAME:-
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.	SHEET:	REV.
DD/IMP-JIR/MIN/GAD-01	01OF02	R0
DATE AUG-2021	DRAWN STRUCTURE DRAFTSMAN	
DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)	g (mm)	FRL (m)	IL (m)
1X10X5	10000	5000	550	600	600	600	1144.400	1138.25

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



"CMM"
M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindustan Engineers Pvt. Ltd.
Address: 23/7, H-Block, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Akshay Vihar, Gurgaon Bypass,
Jaipur-302015 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

GENERAL ARRANGEMENT
DRAWING FOR CH. 25+348

DRG. NO.

DD/IMP-JIR/MIN/GAD-01

SHEET: REV.

02OF02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

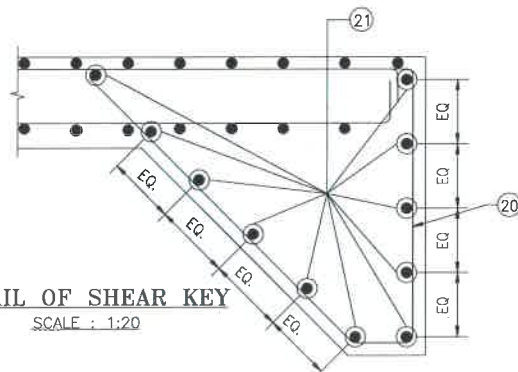
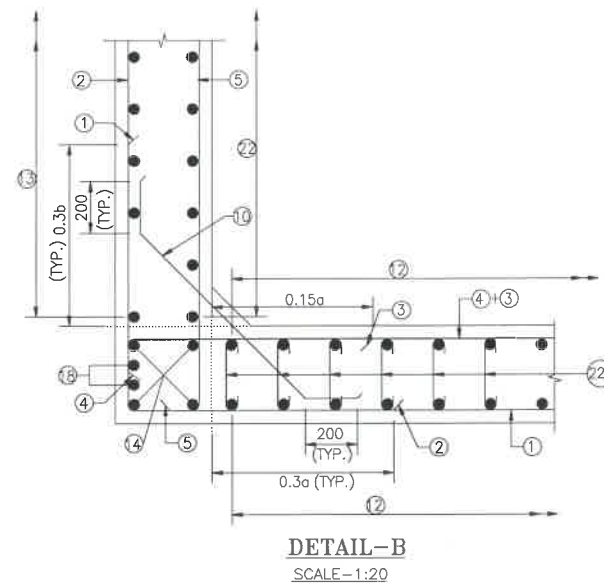
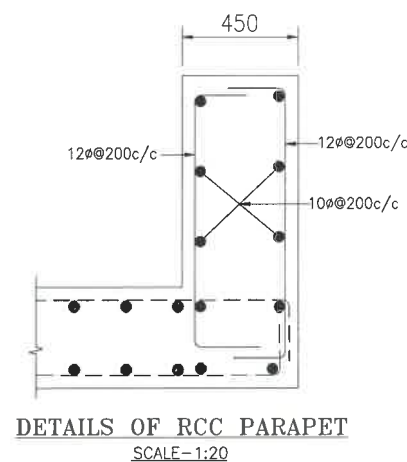
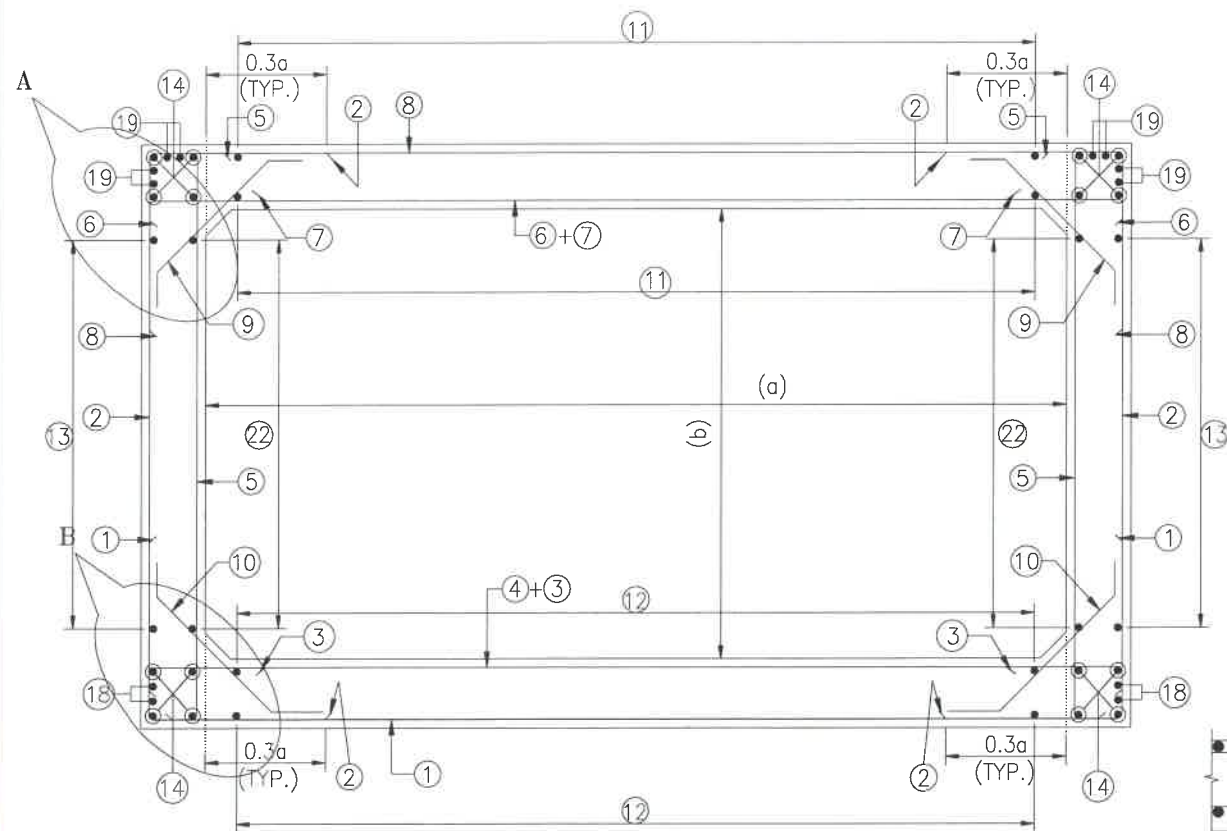
DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER

MINOR BRIDGE_REINFORCEMENT DRAWING



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		20	180 C/C
②		20	180 C/C
③		25	180 C/C
④		16	180 C/C
⑤		12	180 C/C
⑥		16	180 C/C
⑦		20	180 C/C
⑧		16	180 C/C
⑨		10	180 C/C
⑩		10	180 C/C
⑪		12	220 C/C
⑫		12	180 C/C
⑬		12	180 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	180 C/C
㉑		12	20 NOS.
㉒		8	180 C/C
㉒a		10DIA.360(LONG. DIRECTION) 180(TRANS. DIRECTION)	

REINFORCEMENT DETAILS OF BOX CULVERT

SCALE : 1:40

DETAIL OF SHEAR KEY

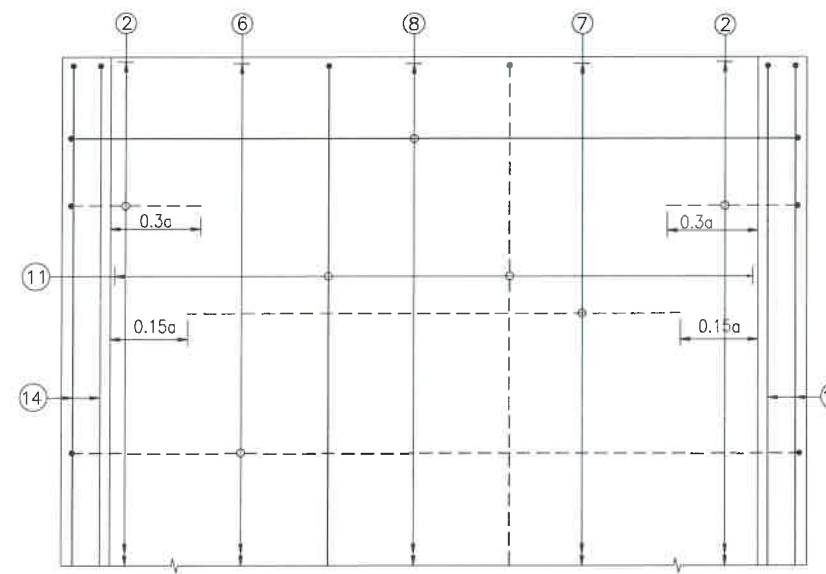
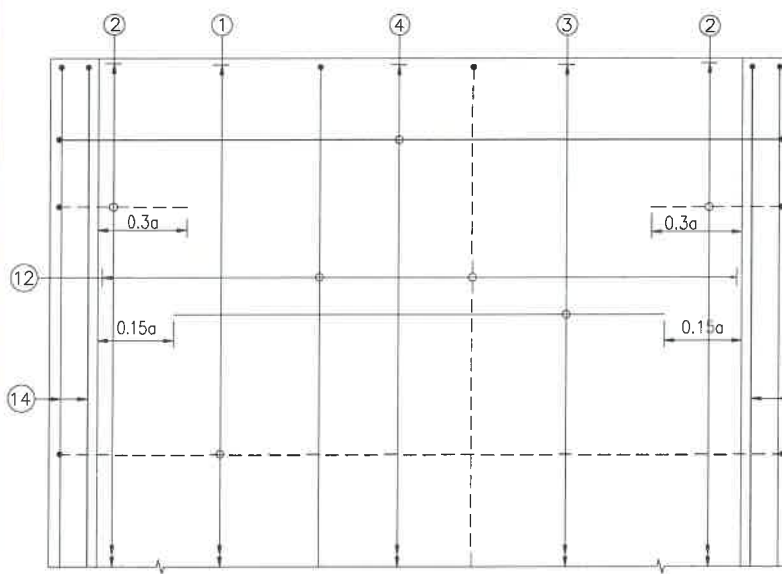
SCALE : 1:20

DETAIL-A

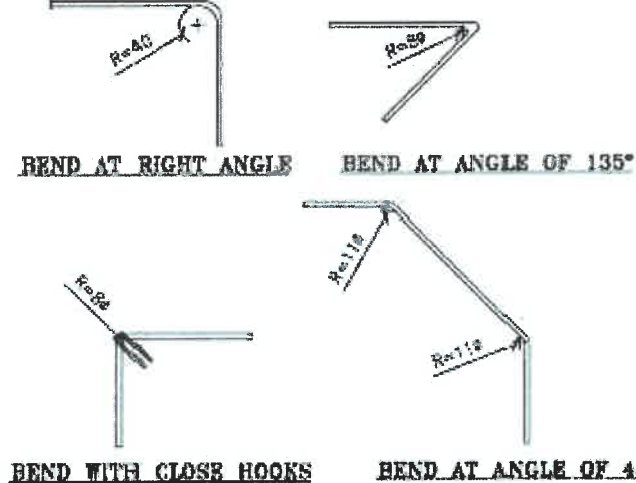
SCALE-1:20

TRAFFIC DIRECTION

TRAFFIC DIRECTION



BENDING OF BARS



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



"CMM"
M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hirdia Engineers Pvt. Ltd.
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Gurgaon - 122002, Haryana, INDIA-122002,
Phone No. 4124-4028681

SAFETY CONSULTANT:



Antiqua Buildtech Pvt. Ltd.
Address: 181, Main Road, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquabuildtech.com

AUTHORITY'S ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

REINFORCEMENT DETAILS OF
BOX CULVERT AT CH. 25+348

DRG. NO.

DD/IMP-JIR/RF/01

SHEET:

01 OF 01

REV.

R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

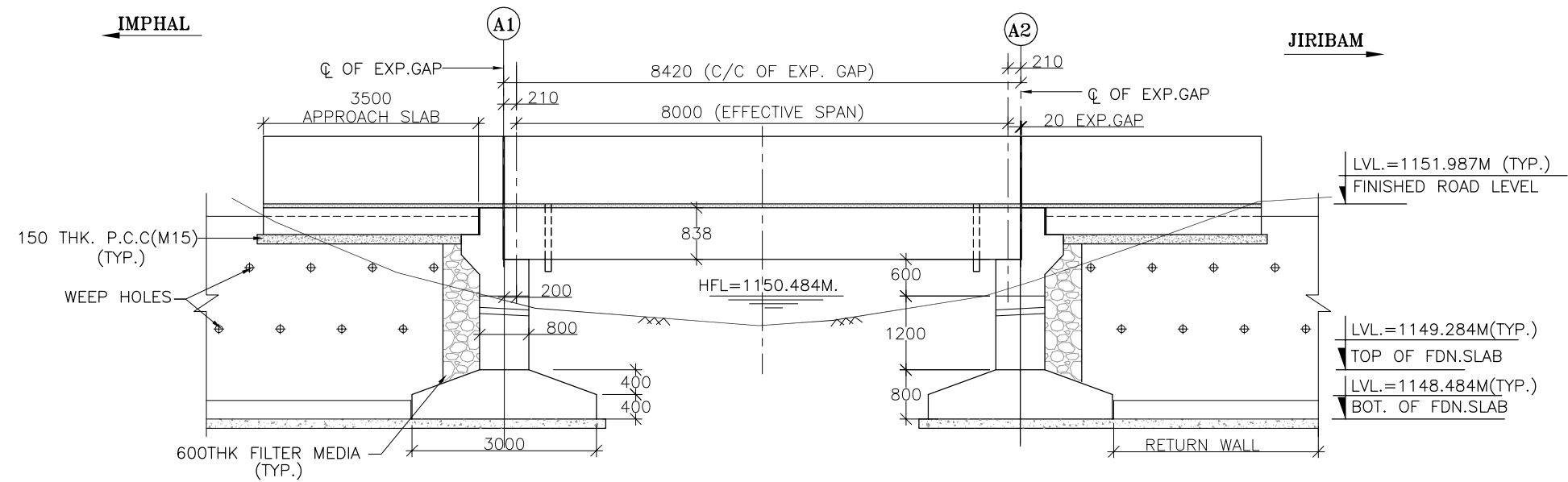
DRAWN STRUCTURE DRAFTSMAN

DESIGNED

ENGINEER

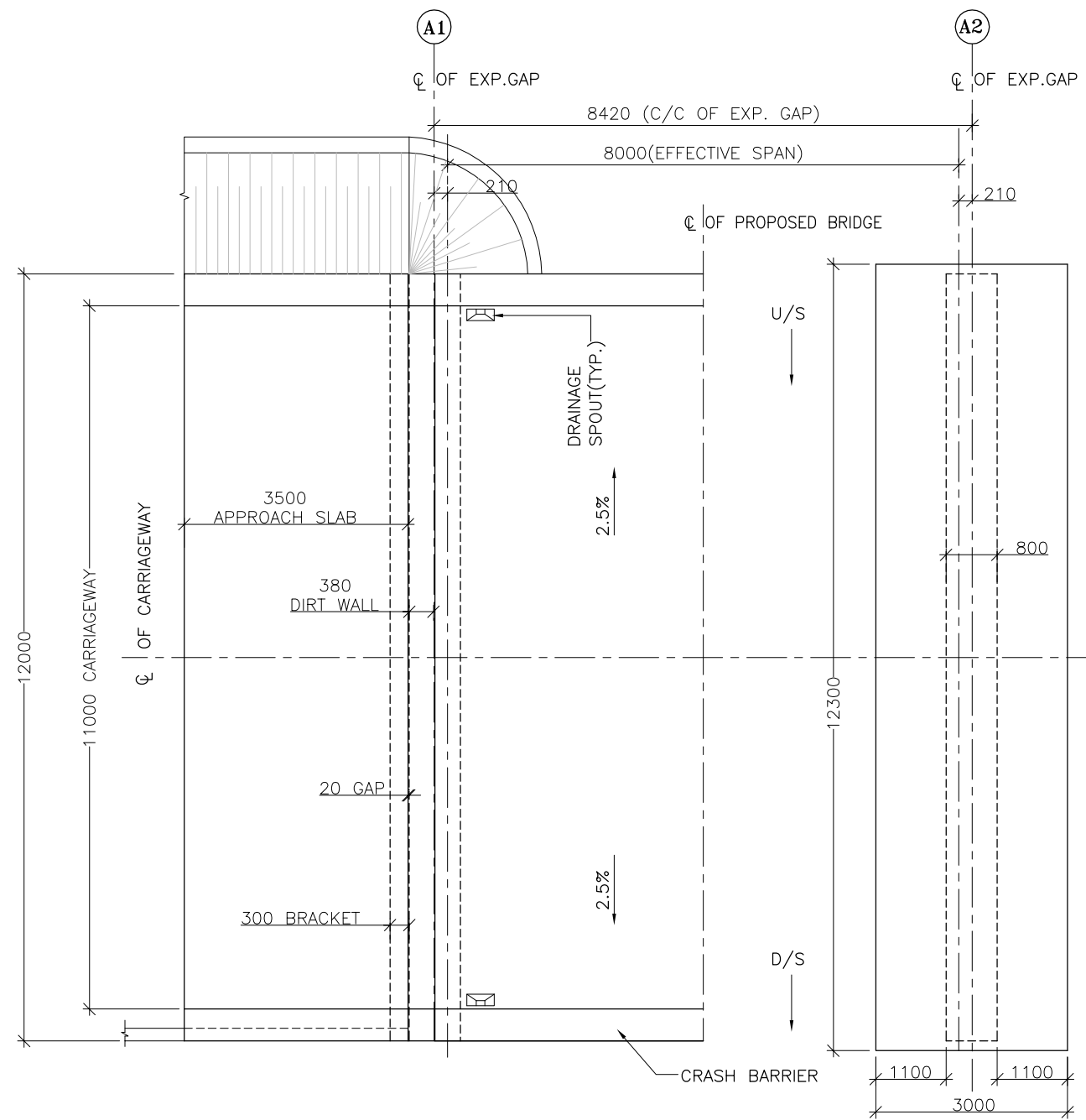
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APPROVED



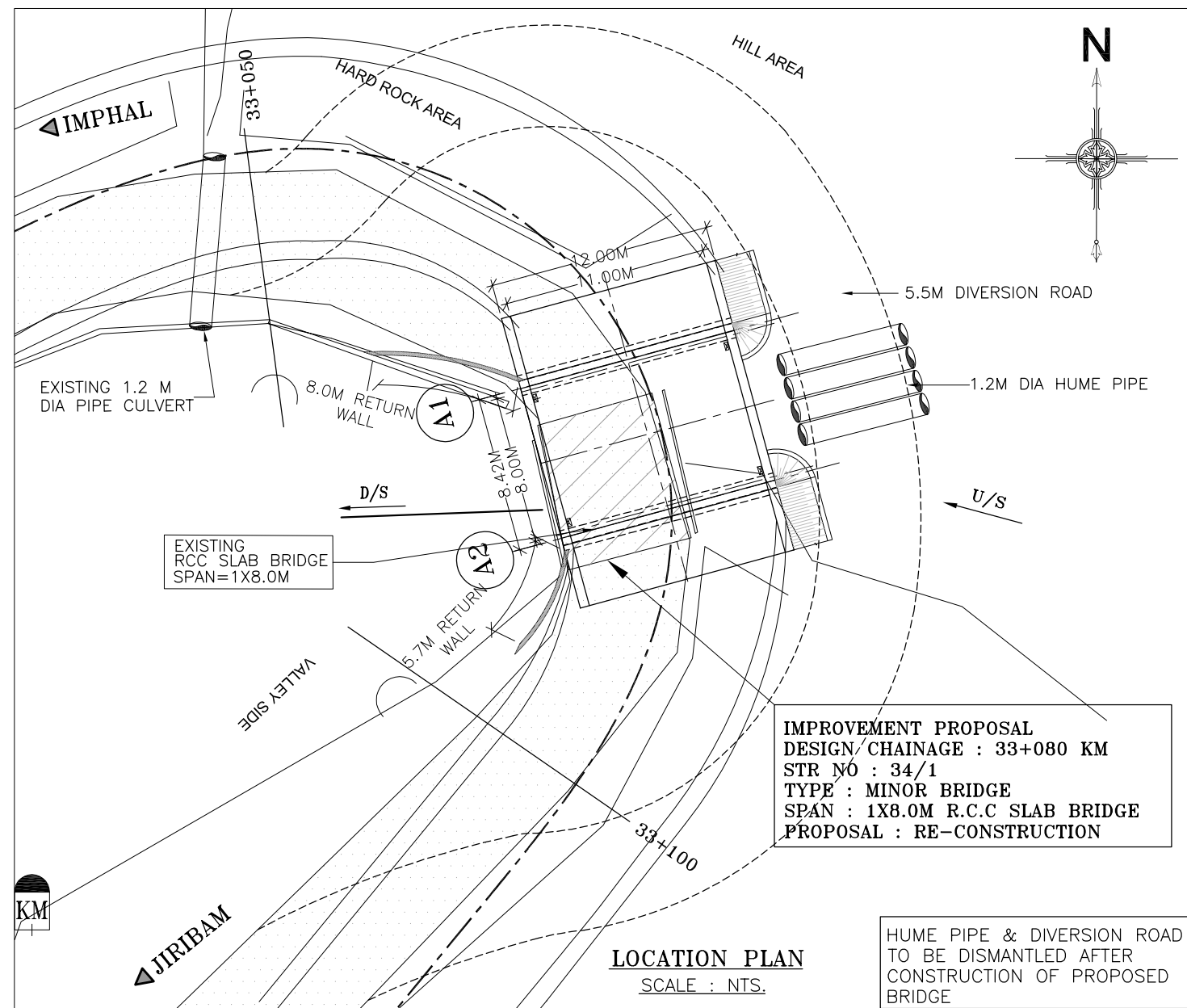
EGL (M)	1150.417	1150.003	1150.665
CHAINAGE (M)	28+882	33+082	37+282

SECTIONAL ELEVATION
SCALE 1:100

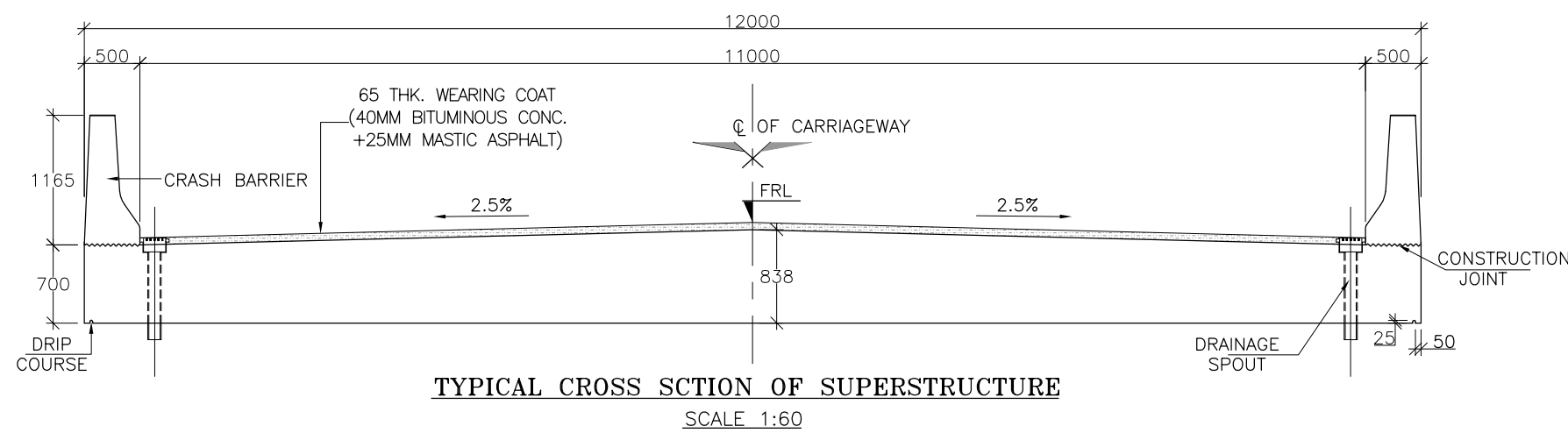


HALF SUPERSTRUCTURE PLAN
SCALE 1:100

HALF FOUNDATION PLAN
SCALE 1:100



LOCATION PLAN
SCALE : NTS.



TYPICAL CROSS SECTION OF SUPERSTRUCTURE
SCALE 1:60

GENERAL NOTES :

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

B. MATERIALS SPECIFICATIONS :

(I) CONCRETE :

1. GRADE OF CONCRETE USED :-

- SUPERSTRUCTURE = M30,
- SUB STRUCTURE & FOUNDATION = M30,
- RETURN WALL = M30,
- APPROACH SLAB = M30,
- P.C.C. BELOW APPROACH SLAB = M15,
- R.C.C. RAILING & KERB = M30,
- CRASH BARRIER = M40

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

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

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

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

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

(II) REINFORCEMENT :

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

(III) WATER :

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

(IV) EXPANSION JOINTS :

THE EXPANSION JOINTS SHOULD BE STRIP SEAL TYPE.

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

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

C. WORKMANSHIP/DETAILING :

1. MINIMUM CLEAR COVER :

- SUPERSTRUCTURE = 40MM
- ABUTMENT, ABUTMENT CAP = 50MM
- RETURN WALL = 50MM
- FOUNDATION SLAB = 75MM

2. DESIGN LOAD :

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

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

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

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

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

7. SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.

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

9. CONSTRUCTION JOINT SHOULD BE PROVIDED WHERE MOMENT
EQUAL TO ZERO.

10. IN CASE ANY LOOSE POCKET IS OBSERVED AT THE FOUNDING
LEVEL, THEN THE SAME SHOULD BE EXCAVATED OUT AND THE
SAME SHALL BE FILLED UP WITH PCC UPTO THE FOUNDING LEVEL.

11. MAXIMUM SCOUR LEVEL :-

- AT ABUTMENT = 1150.003 M

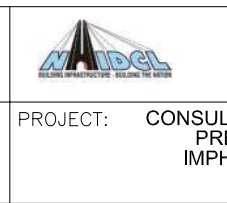
12. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO.:
CET/BDG/2017/4047/NH-37/IMPHAL-JIRIBAM/FDPR/MN/(STR-34/1)/GA
(SHEET NO. 02)

CET/BDG/2017/4047/NH-37/IMPHAL-JIRIBAM/FDPR/MN/(STR-34/1)/MISC
(SHEET NO. 02)

DWG. NO. CET/BDG/2017/4047/NH-37/IMPHAL-JIRIBAM/FDPR/MN/(STR-34/1)/GA	(SHEET NO. 01 OF 02)		
REVISION MKD. - R0	DESIGN BY.	CHECKED BY.	ISSUED BY.
DRAWN BY.	DESIGN BY.	CHECKED BY.	ISSUED BY.
M.GHOSH	S.ALI	A.DEY	A.K.DAS (TEAM LEADER)

MKD.	DATE	DESCRIPTION	CHKD.	APPRD.
REVISIONS				

SCALE: AS SHOWN	DATE: JANUARY, 2021
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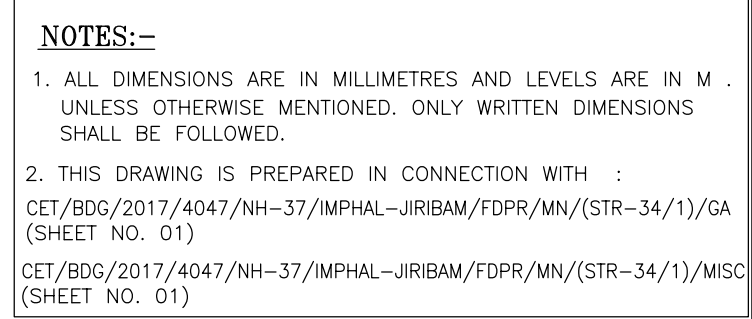
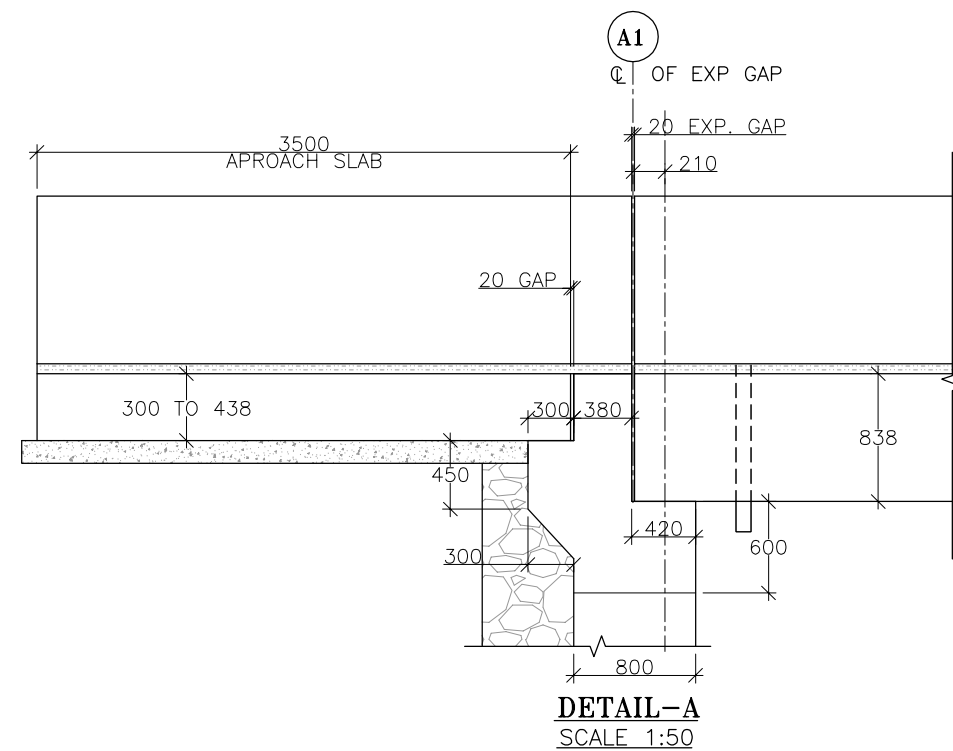
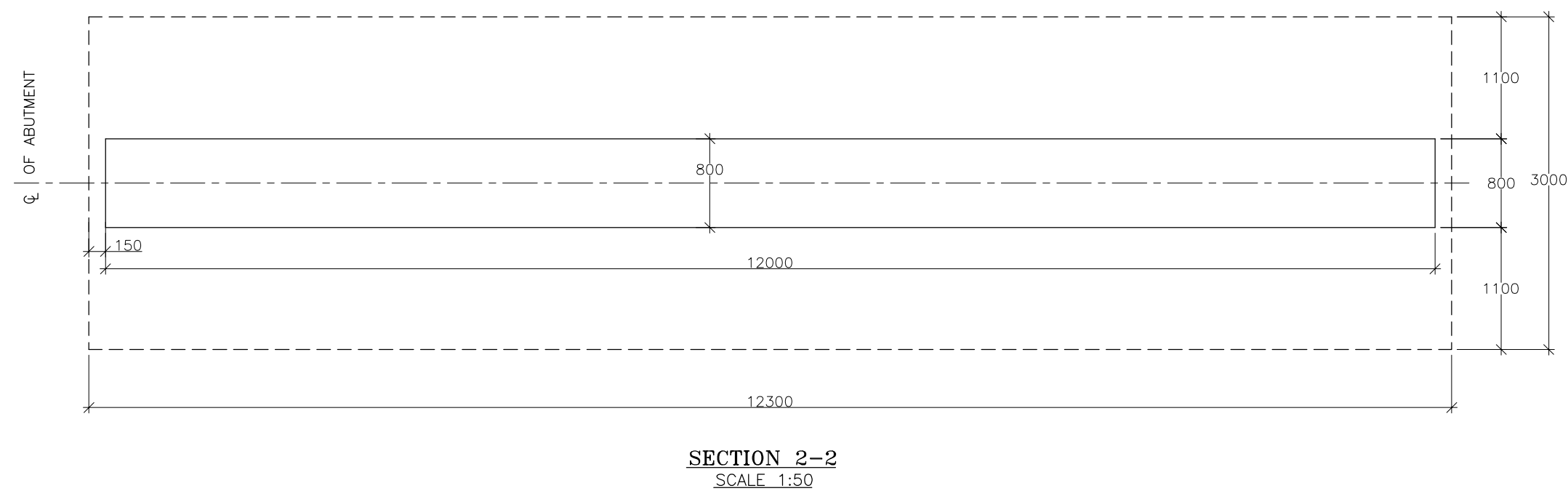








CLIENT:	NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 4, PARLIAMENT STREET, NEW DELHI - 110001
PROJECT:	CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 4 LANING WITH PAVED SHOULDER OF IMPHAL - JIRIBAM SECTION (LENGTH-220 KM) ON NH-37 (NH-53) FOR PROPOSED BRIDGE OVER RIVER IRANG IN THE STATE OF MANIPUR.

TITLE :	GENERAL ARRANGEMENT OF 1 X 8.0M RCC SLAB BRIDGE (AT CHAINAGE 33.080KM) PKG NO. - NHIDCL/DPR/CT-IJ-TP/MANIPUR/2017
SUBMISSION TYPE :	FINAL DETAILED PROJECT REPORT



CONSULTANT :	CE TESTING COMPANY PVT. LTD.
	124-A, N.S.C. Bose Road Kolkata - 700092.



					SCALE: AS SHOWN		CLIENT: NATIONAL HIGHWAYS AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 4, PARLIAMENT STREET, NEW DELHI - 110001	TITLE: DETAIL OF ABUTMENT		 CE TESTING COMPANY PVT. LTD. 124-A, N.S.C. Bose Road Kolkata - 700092.	DWG. NO. CET/BDG/2017/4047/NH-37/IMPHAL-JIRIBAM/FDPR/MN/(STR-34/11/GA)				
								PKG NO. - NHIDCL/DPR/CT-IJ-TP/MANIPUR/2017	(SHEET NO. 02 OF 02)						
								SUBMISSION TYPE :							
MKD.	DATE	DESCRIPTION	CHKD.	APPRD.	DATE: JANUARY, 2021	PROJECT:	CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 4 LANING WITH PAVED SHOULDER OF IMPHAL - JIRIBAM SECTION (LENGTH-220 KM) ON NH-37 (NH-53) FOR PROPOSED BRIDGE OVER RIVER IRANG IN THE STATE OF MANIPUR.		FINAL DETAILED PROJECT REPORT		DRAWN BY.		DESIGN BY.	CHECKED BY.	ISSUED BY.
REVISIONS											 M.GHOSH	 S.ALI	 A.DEY	 A.K.DAS (TEAM LEADER)	



CMM INFRAPROJECTS LTD.

CIN - L45201MP2006PLC018506

108, Shalimar Corporate Centre, 8-B, South Tukoganj, Indore - 452 001

Phone : +91-731-2516386 Fax : +91-731-2527955

E-mail : cmm.kmundra@gmail.com

Letter No: CMM/IJ/NH-37/21-22/171

Dated: 09-12-2022

To,
The Team Leader
M/s Bloom Companies LLC in association with
Shri Bhavani consultancy services Pvt Ltd

Sub: "Widening of two Lane with Pave shoulder of Imphal to Jiribam section of NH-37 from chainage 15+940 to chainage 33+120 total length 17.180 Km package-ii in the state of Manipur under EPC mode". **Submission of Drawing of CC Retaining wall (20% Plum asper IS 456:2000) for approval-Reg**

Dear Sir,

With reference to the above cited subject, the undersign hereby enclosed the Drawing of **CC Retaining wall (20% Plum asper IS 456:2000)** for the work mentioned above for your early approval please. Requesting you to kindly approve as early as possible.

This is for your kind information and necessary action please.

Thanking you.

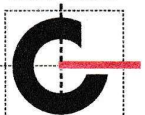
Yours faithfully,

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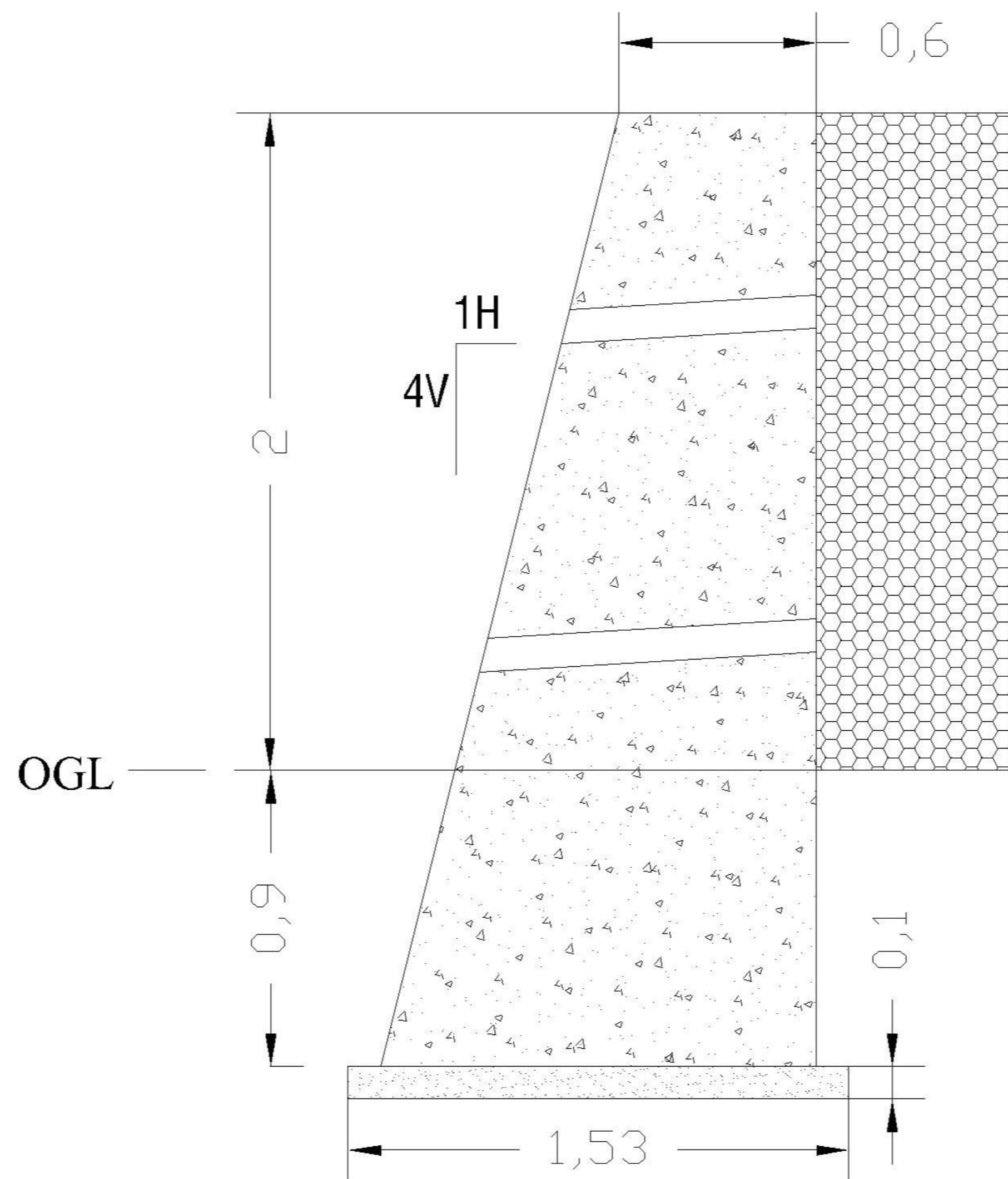
1. PMU-Noney, NHIDCL



JAS-ANZ



S3111204IN



Retaining Wall
All Dimension in Metre

NOTES:

1. All dimensions are in "Metre" unless specified.
2. Weep holes of 100 mm dia. opening shall be provided at 1000 m interval and should be staggered both horizontally and vertically.
3. 600mm width of filter media composed of good quality stones (50-100mm) shall be provided.
4. A separation gap of 50-100mm shall be provided at maximum of 8m length of wall. Also gaps shall be provided at bends and junctions.
5. The wall shall be properly cured for a minimum of two weeks to attain good bonding strength.
6. The size of stone Plums may be from 150-300 mm. The maximum dimension of these stones or Plums shall not exceed $1/3^{RD}$ the least dimension of the member.
7. Plum Concrete 1:2:4 (1 cement: 2 Sand : 4 Graded stone aggregate 20 mm nominal size) with 20% Plums as per IS 456.2000
8. Retaining wall design as per IRC 48:1998 and IS 14458 :1998 (Table-01)

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR:  "CMM" M/S. CMM INFRAPROJECTS LTD.	DESIGN DIRECTOR: 	PROOF CONSULTANT:  Hindia Engineers Pvt. Ltd. <small>Address: 197, Mohan Nagar, Gopalpura Bypass, Jaipur-302018 (Rajasthan) Phone No. 0141-2760303 Email : info@antiquebulldtech.com</small>	SAFETY CONSULTANT:  Antique Bulldtech Pvt. Ltd. <small>Address: 197, Mohan Nagar, Gopalpura Bypass, Jaipur-302018 (Rajasthan) Phone No. 0141-2760303 Email : info@antiquebulldtech.com</small>	AUTHORITY ENGINEER : M/s Bloom Companies LLC In Association With Shri Bhavani Consultancy Servico Pvt. Ltd	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL DETAILS OF Retaining Wall	DRG. NO. HEPL/STR/RRM/001			SHEET: 01 OF 01	REV. R0
						PROJECT NAME:- Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 13.940 km to 33.120 Km (Total length-17.180 Km) (PKG-2) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode,	DATE - JUL.-2021 NAVEEN			DESIGNED Highway Engineering	CHECKED ---	APPROVED ---

STRUCTURE DRAWINGS

CLIENT

:



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**



**AUTHORITY
ENGINEER**

:

**PROOF
CONSULTANT**

:



Hindia Engineers Pvt. Ltd.

Address: 33/7, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681



**SAFETY
CONSULTANT**

:



Antique Buildtech Pvt. Ltd.

Address: 191, Mohan Nagar, Gopalpura Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

PROJECT

:

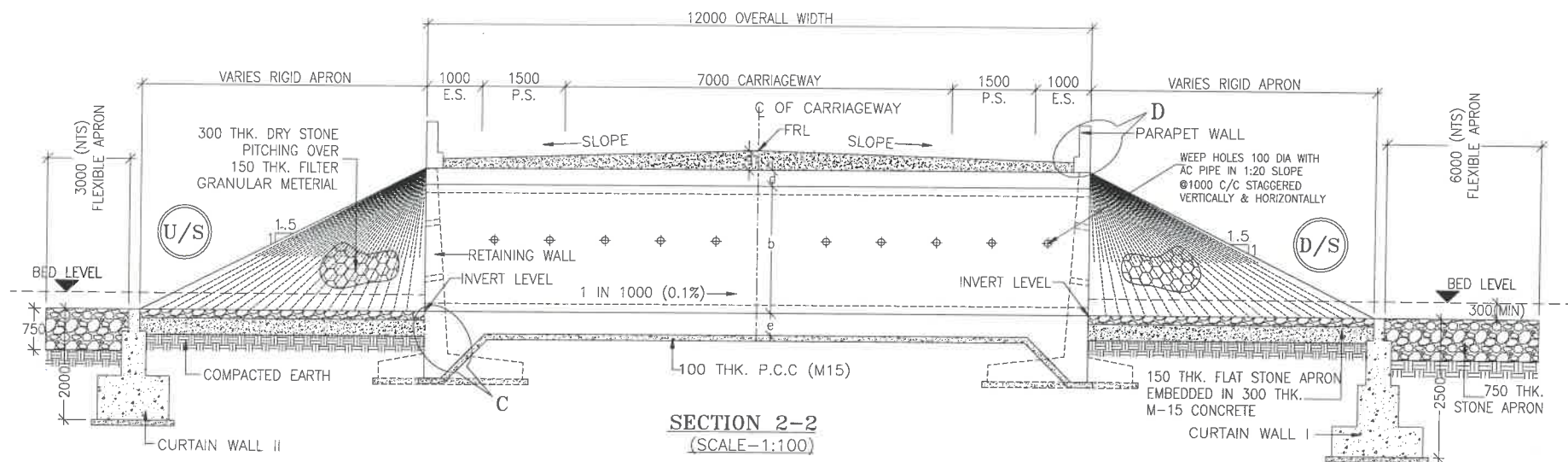
**WIDENING OF TWO LANE WITH PAVESHOULDER OF IMPHAL TO
JIRIBAM SECTION OF NH-37 FROM CHAINAGE 15+940 TO
CHAINAGE 33+120 TOTAL LENGTH 17+180 PACKAGE-II IN THE STATE
OF MANIPUR UNDER EPC MODE.**



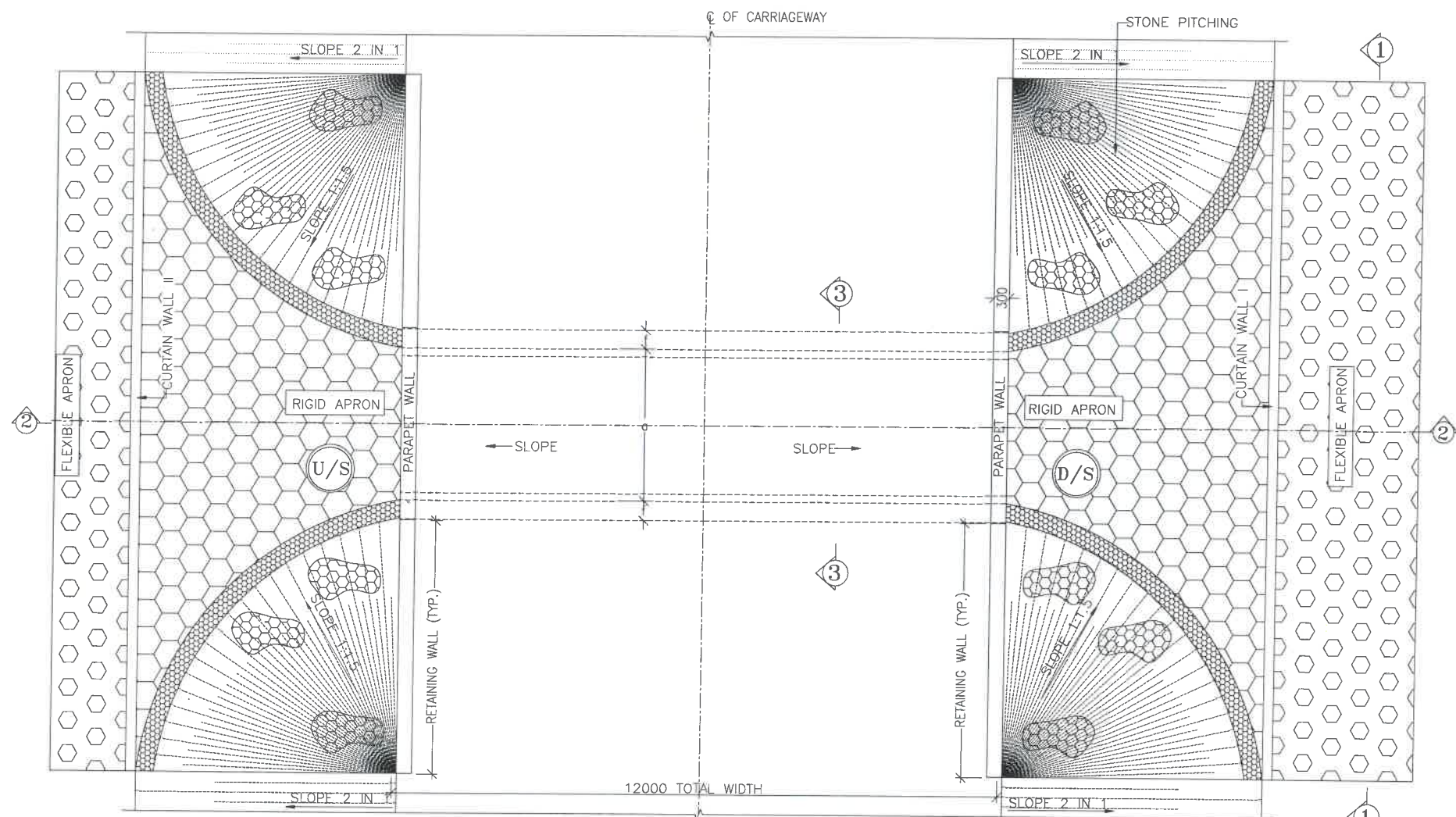
TABLE OF CONTENTS

SR.NO.	TITLE OF DRAWINGS	DRAWING NO GAD	DRAWING NO REINF.
	REINFORCEMENT DRAWING OF BOX CULVERT		
①	SIZE _1X2X2 AT CH. 17+532,18+141,18+393,19+010,20+106,21+755,22+728, 22+874,23+870,24+510,25+130,27+096,27+284,27+481, 27+684,28+002,28+167,28+655,28+879,29+220,30+033,30+415	DD/IMP-JIR/BOX/GAD	DD/IMP-JIR/RF
②	SIZE _1X2X3 AT CH. 17+016,18+029,18+762,19+267,21+260,21+648,22+299,23+376,24+164, 25+643,26+430,26+666,26+840,27+529,29+610,30+775,30+982,32+060,32+460	DD/IMP-JIR/BOX/GAD	DD/IMP-JIR/RF
③	SIZE _1X3X3 AT CH. 28+949,31+450,32+832	DD/IMP-JIR/BOX/GAD	DD/IMP-JIR/RF
④	SIZE _1X3X4 AT CH. 16+530,17+248,18+564,19+955,20+254,21+562,22+039,22+257,22+516, 23+195,23+410,24+836,25+381,26+074,27+150,27+893,29+501,29+501	DD/IMP-JIR/BOX/GAD	DD/IMP-JIR/RF
⑤	SIZE _1X5X3 AT CH. 16+119	DD/IMP-JIR/BOX/GAD	DD/IMP-JIR/RF

BOX CULVERT DRAWING _1X2X2



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 33/7, HUDA, D/F Phase-1,
Gurgaon-Faridabad Road, Haryana, INDIA-122002,
Phone No.-0124-4026661

SAFETY CONSULTANT:



Antique Builders Pvt. Ltd.
Address: 191, Noida, Noida Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2780303
Email : Info@antiquebuilders.com

AUTHORITY ENGINEER :



DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.
DD/IMP-JIR/ BOX/GAD/01

SHEET: 01 OF 02
REV. R0

PROJECT NAME:-
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE	AUG-2021	DRAWN	STRUCTURE DRAFTSMAN
DESIGNED		CHECKED	
STRUCTURE ENGINEER			

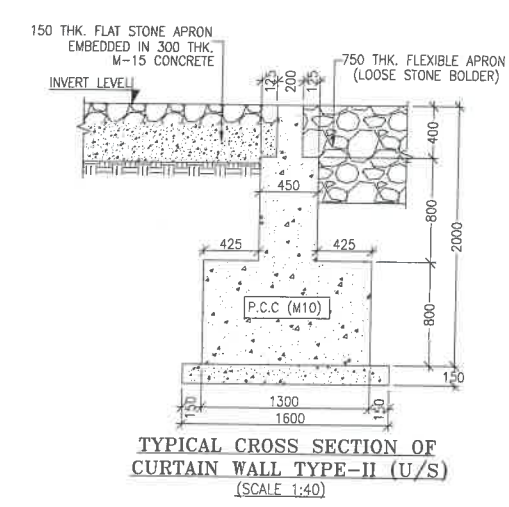
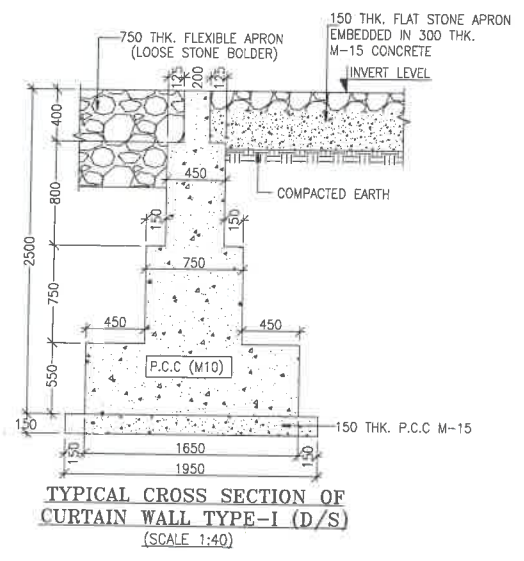
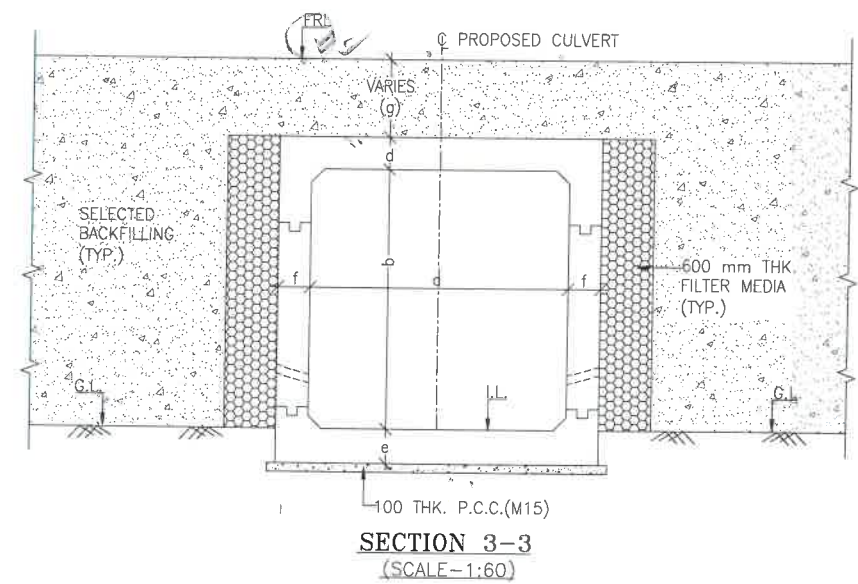
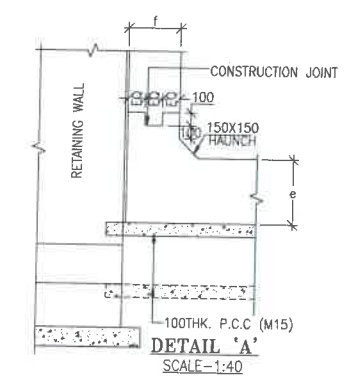
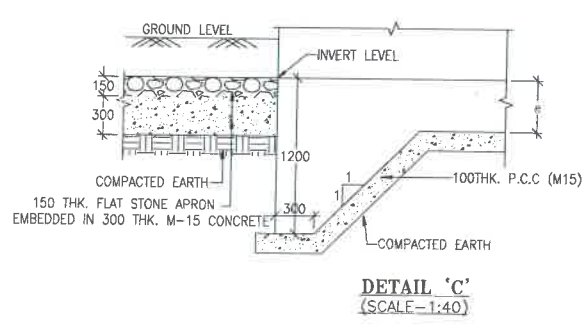
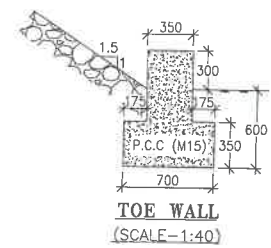
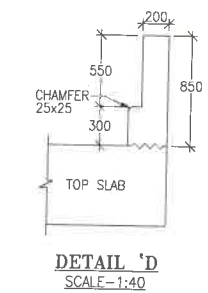
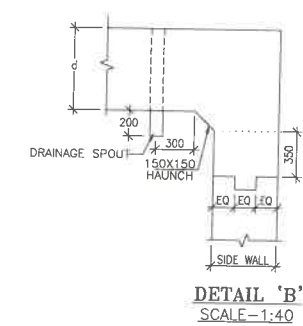
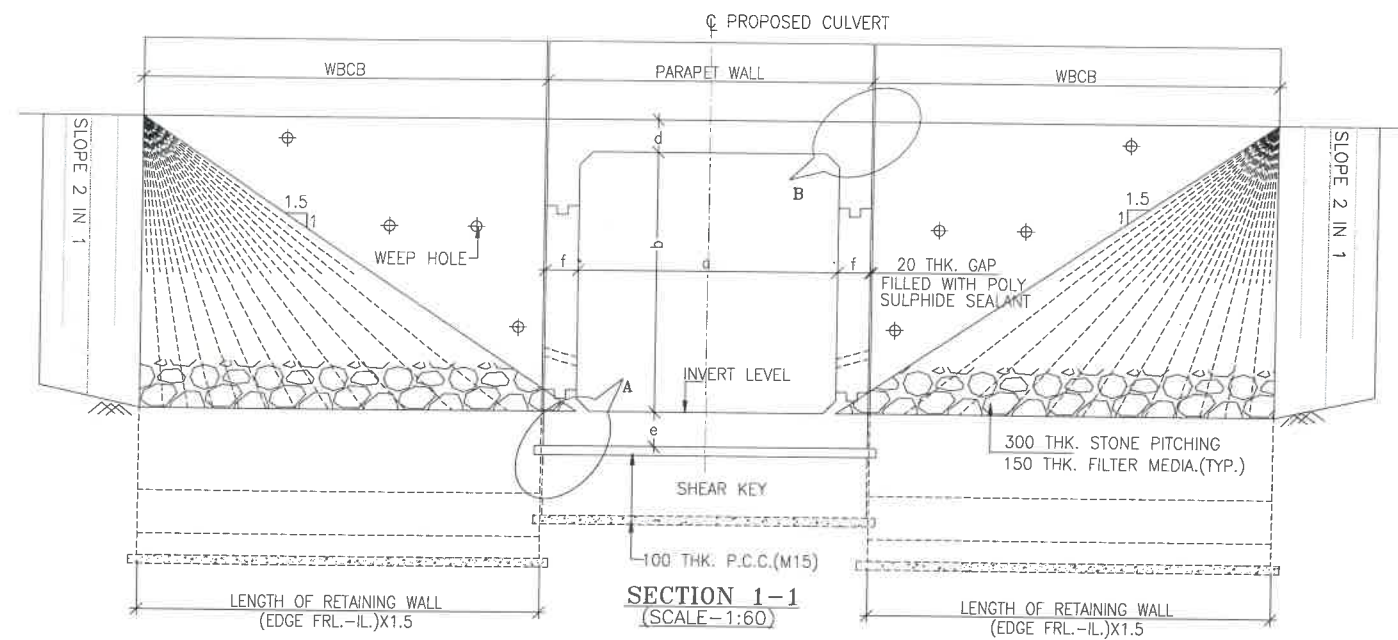


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM MIN.	TCS
①	20+106	1X2X2	970.357	967.527	967.627	600	TSC-2A
②	21+755	1X2X2	1038.139	1035.309	1035.409	600	TSC-2A

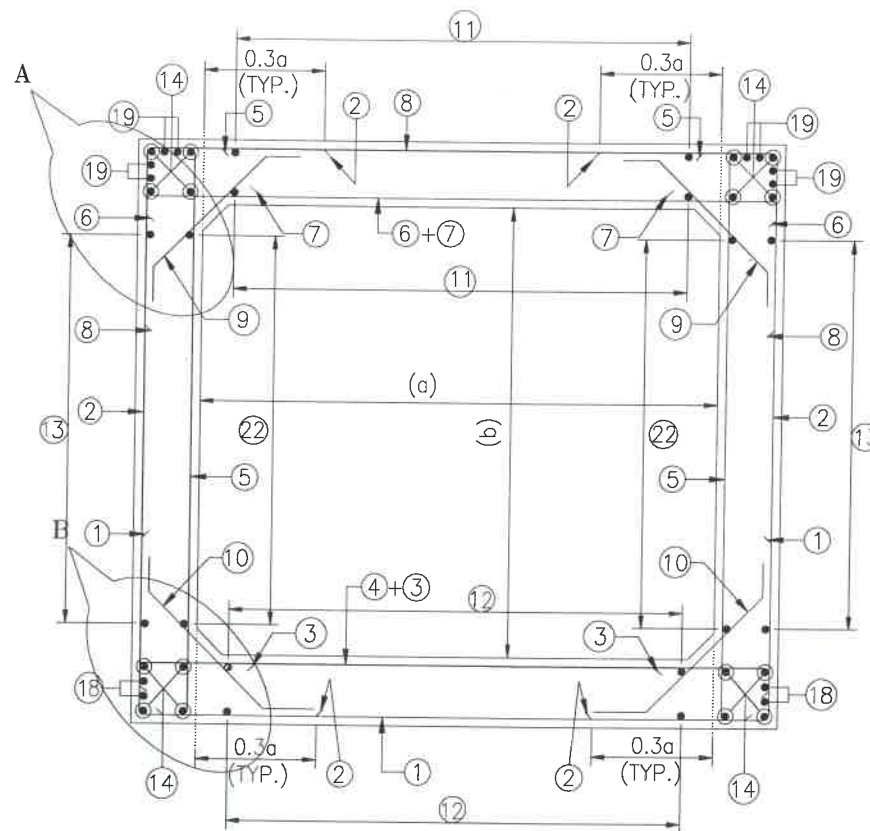
LEGEND:-

- FRL - FINISHED ROAD LEVEL
- LVL - LEVEL
- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER

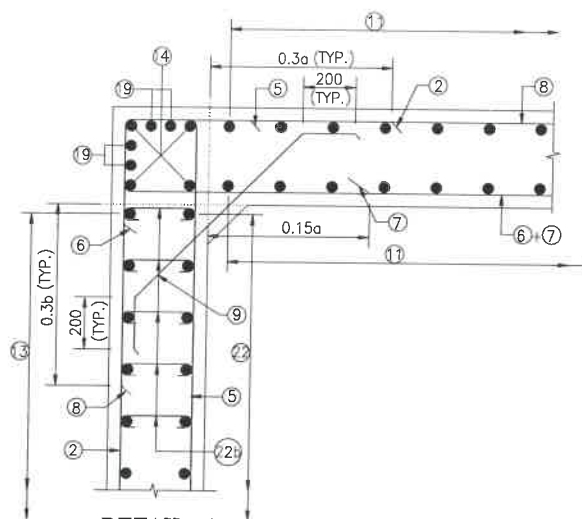
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 - c) PCC LEVELLING COURSE.....M15
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- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.07/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
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- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
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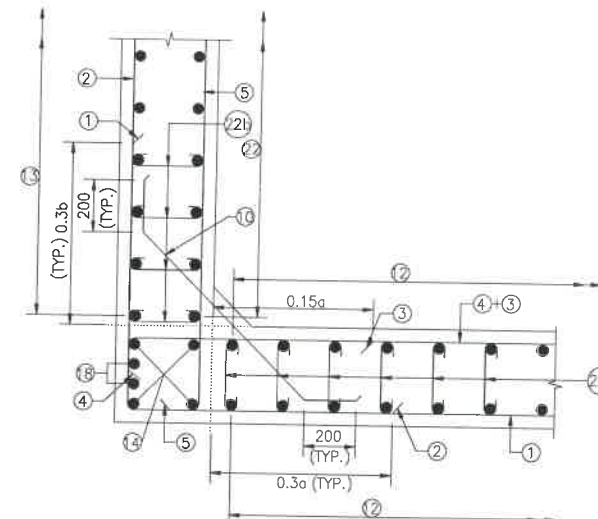
CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR: M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: DESIGN DIRECTOR	PROOF CONSULTANT: Hindia Engineers Pvt. Ltd. Address: 53/7, H.B. Nagar, Gandhinagar Byepass, Jalpur-302018 (Raj.) Ph: 0141-2760303, Email: info@hindiaengineers.com	SAFETY CONSULTANT: Antique Engineering Pvt. Ltd. Address: 191, M.P. Nagar, Gandhinagar Byepass, Jalpur-302018 (Raj.) Ph: 0141-2760303, Email: info@antiqueengineers.com	AUTHORITY ENGINEER: BLOOM L&S SBC&PL	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: 02 OF 02	REV. R0
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DATE AUG-2021	DRAWN STRUCTURE DRAFTSMAN	DESIGNED STRUCTURE ENGINEER	CHECKED ---	APPROVED ---



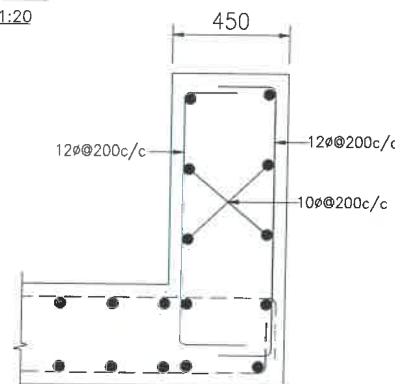
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



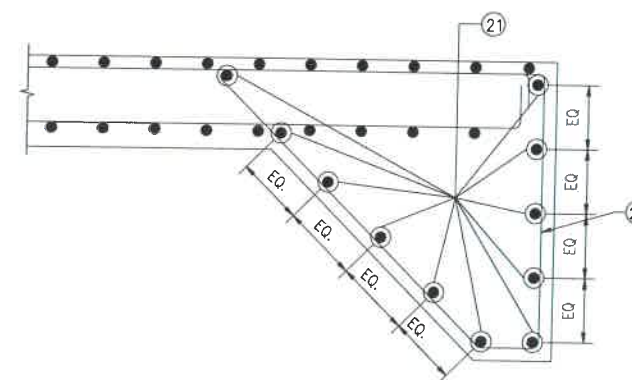
DETAIL-A
SCALE-1:20



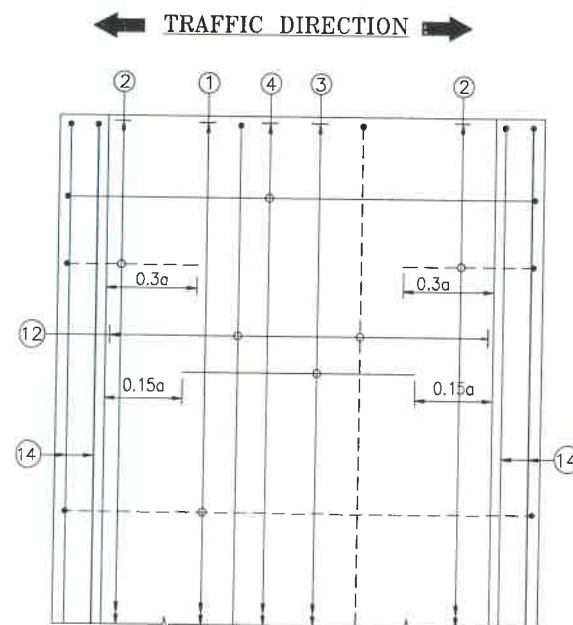
DETAIL-B
SCALE-1:20



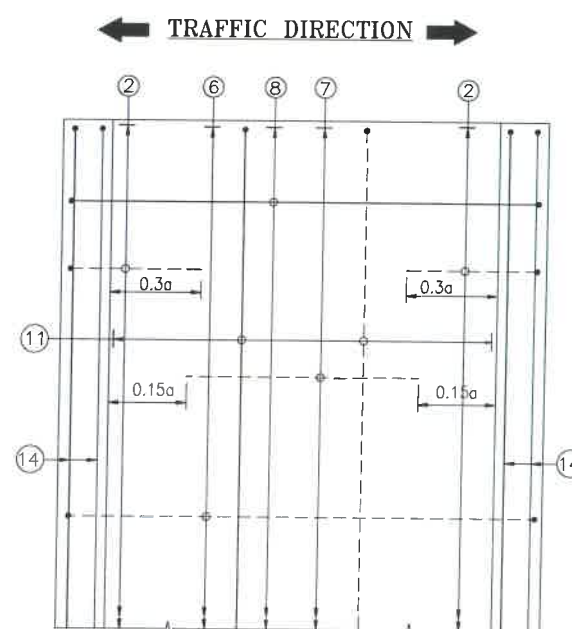
DETAILS OF RCC PARAPET
SCALE-1:20



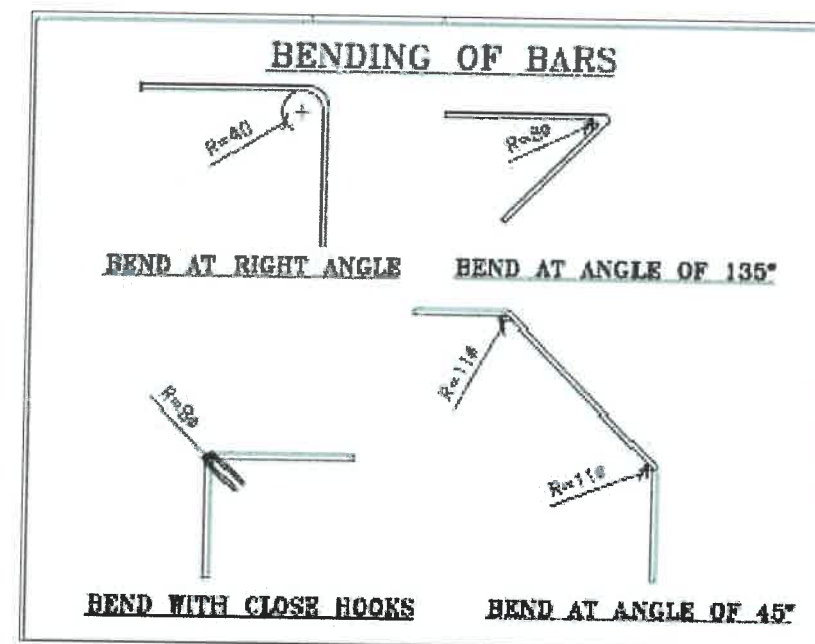
DETAIL OF SHEAR KEY
SCALE : 1:20



**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
- ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
- JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
- FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
1	U	12	250 C/C
2	U	12	250 C/C
3	U	12	250 C/C
4	U	12	250 C/C
5	U	12	250 C/C
6	U	12	250 C/C
7	U	12	250 C/C
8	U	12	250 C/C
9	U	10	250 C/C
10	U	10	250 C/C
11	U	10	220 C/C
12	U	10	220 C/C
13	U	10	220 C/C
14	U	10	12 NOS.
15	U	NOT IN USE	NOT IN USE
16	U	NOT IN USE	NOT IN USE
17	U	NOT IN USE	NOT IN USE
18	U	10	4 NOS.
19	U	10	8 NOS.
20	U	12	220 C/C
21	U	12	20 NOS.
22	U	10	220 C/C
22a	U	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
22b	U	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

CLIENT :

**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR:

M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:

**DESIGN
DIRECTOR**

PROOF CONSULTANT:

Hindia Engineering Pvt. Ltd.
Address: 33/7, H. No. 1, G. F. Ph. 1, G. F.
Gurgaon-Faridabad Road, Faridabad, Haryana, India-121002.
Phone No.-0124-4122222

SAFETY CONSULTANT:

Antique Building Pvt. Ltd.
Address: 191, Main Road, Gurgaon Bypass,
Jaipur-302018 (Raj.) Ph. 0141-2760383
Email : info@antiquebuilding.com

AUTHORITY ENGINEER :

**BLOOM
LLC &
SBOSPL**

DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2**

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET:

01OF 01

REV.

R0

DATE AUG-2021

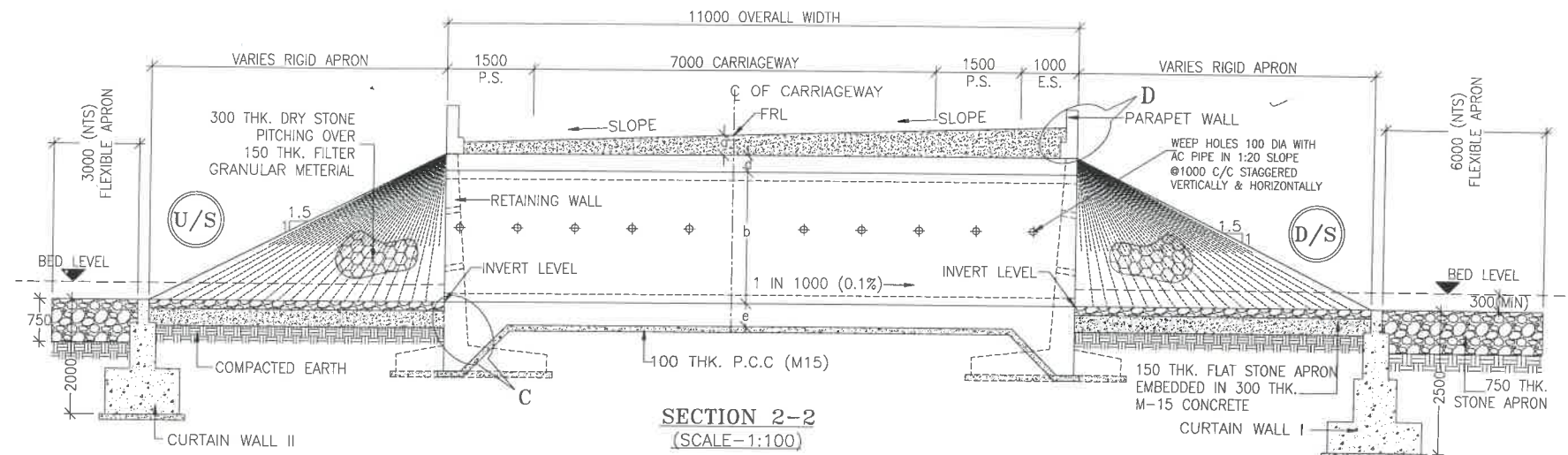
DESIGNED

STRUCTURE
ENGINEER

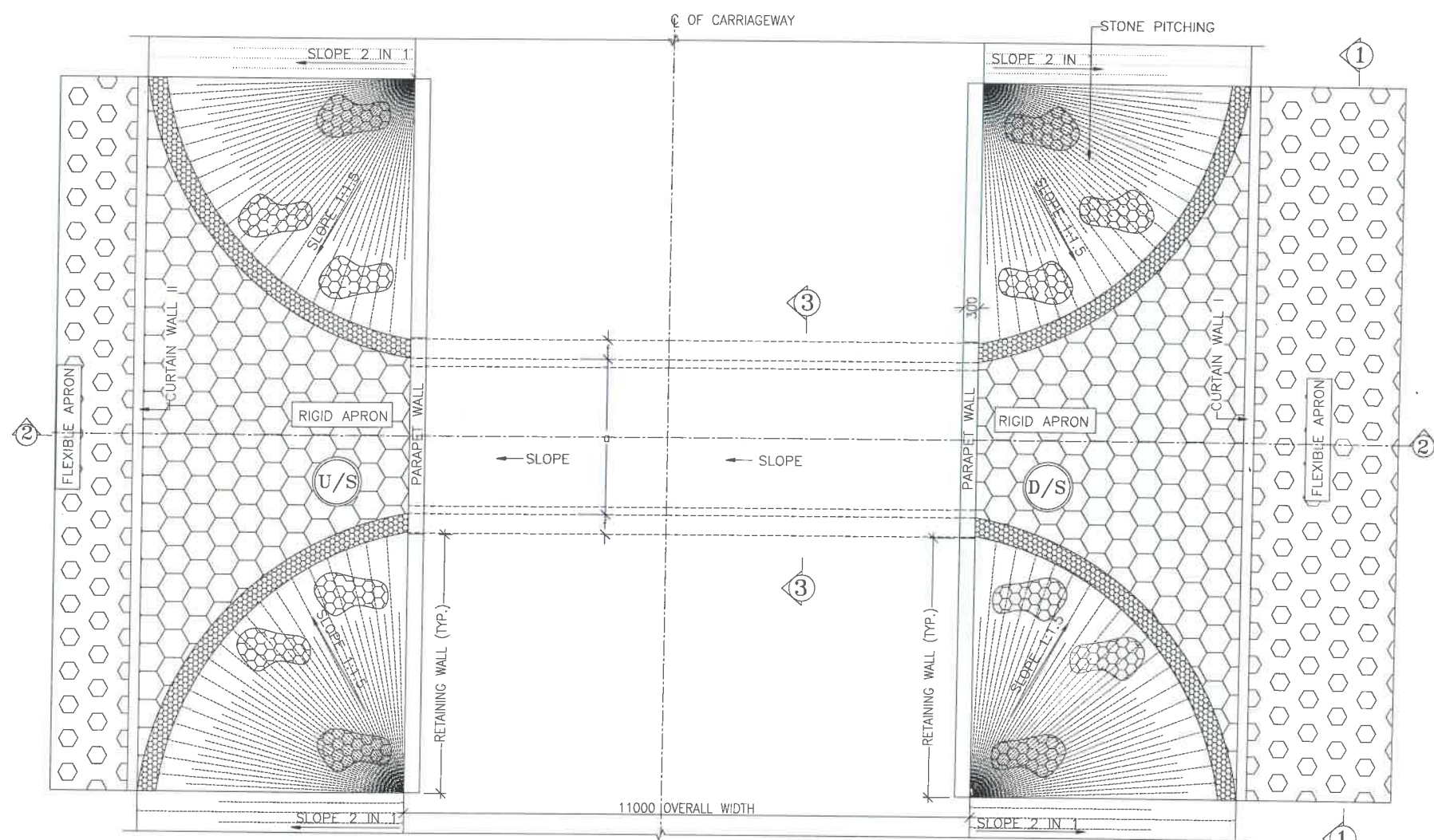
DRAWN STRUCTURE DRAFTSMAN

CHECKED

APPROVED



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

NOTES:-

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.07/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
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LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. GMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



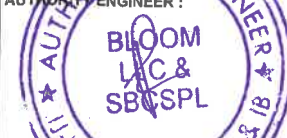
Hindia Engineers & Architects
Address: 33/7, H-Block, Gurgaon, Haryana
Gurgaon-Faridabad Road, Gurgaon, Haryana
Phone No. 0124-4555555

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan, Gurgaon, Haryana
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

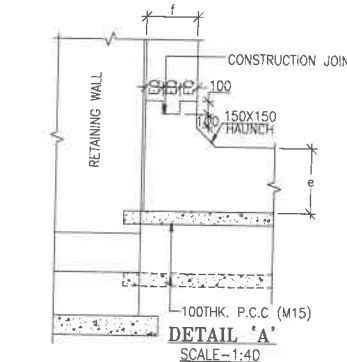
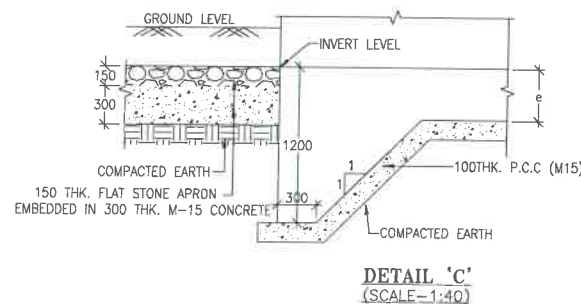
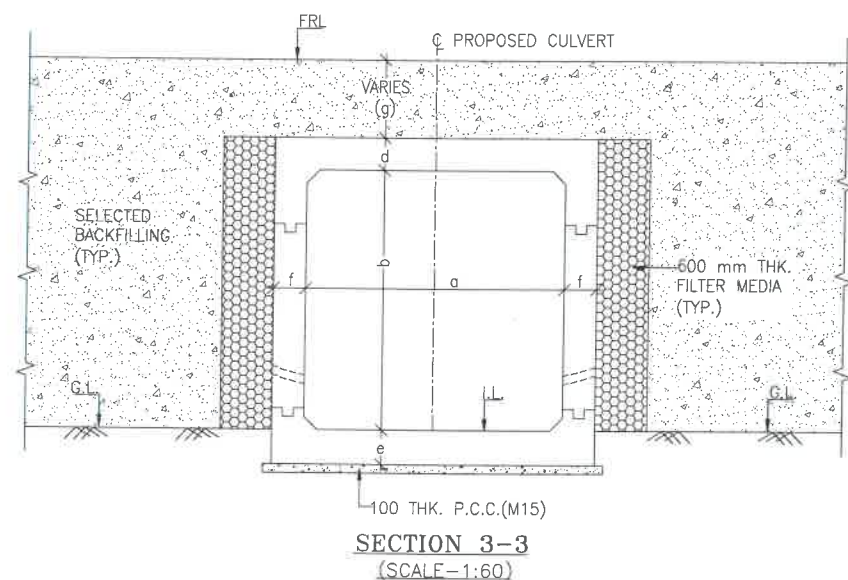
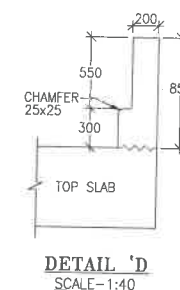
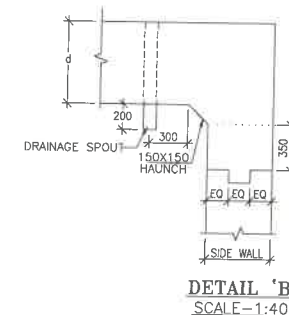
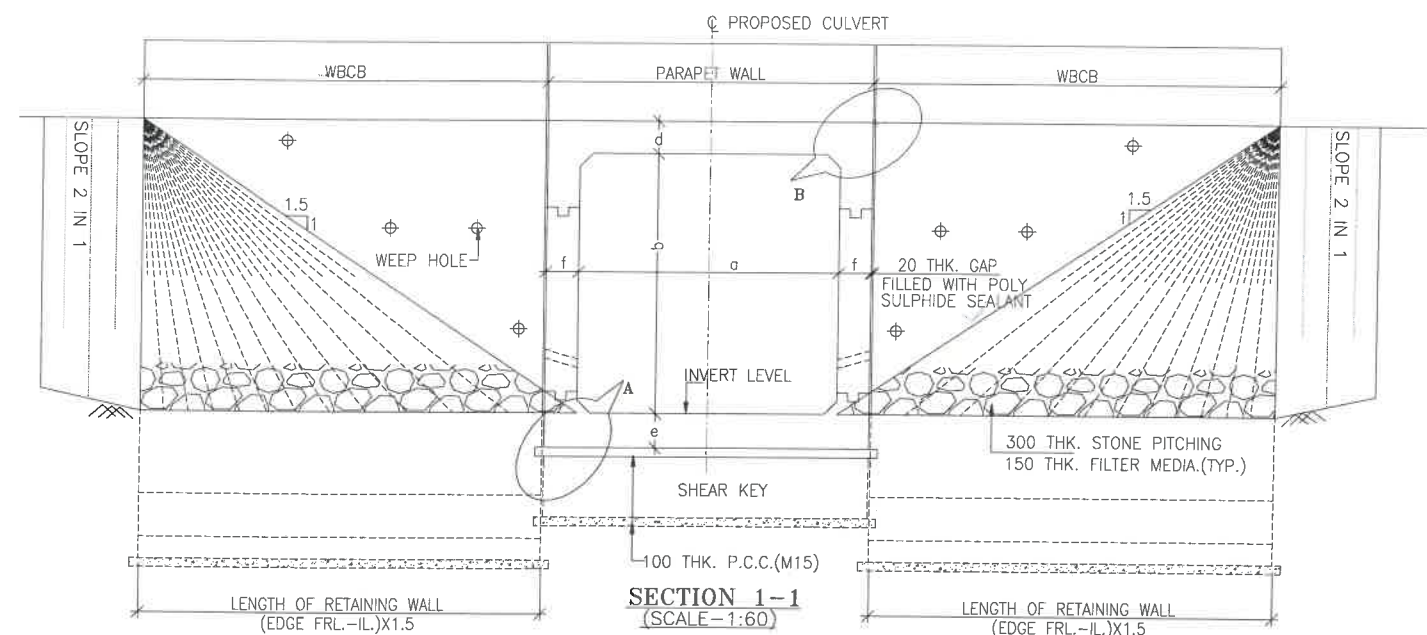
PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



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TABLE SHOWING SILENT DIMENSIONS

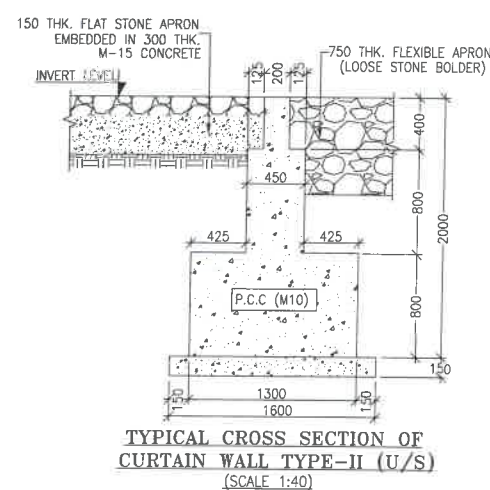
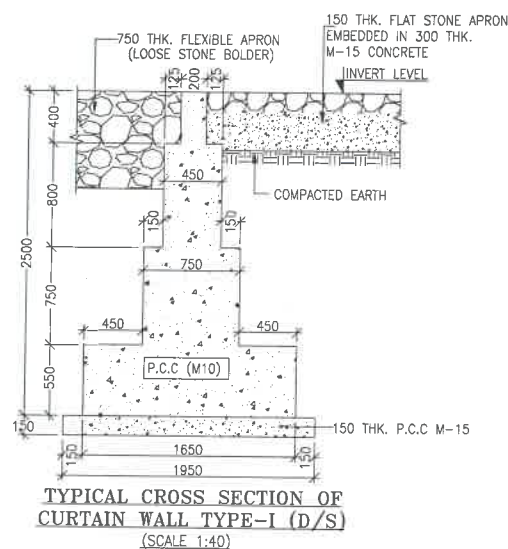
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	19+010	1X2X2	915.866	913.036	913.136	600	TSC-3
②	22+874	1X2X2	1084.616	1081.786	1081.886	600	TSC-3

LEGEND:-

- FRL - FINISHED ROAD LEVEL
- LVL - LEVEL
- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER



CLIENT :
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:

PROOF CONSULTANT:

Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, Def. House-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:

Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-3760363
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER:

BLOOM
AEC &
SBCSPL
U.NH.37 PKG. 1,2,3 & 1B

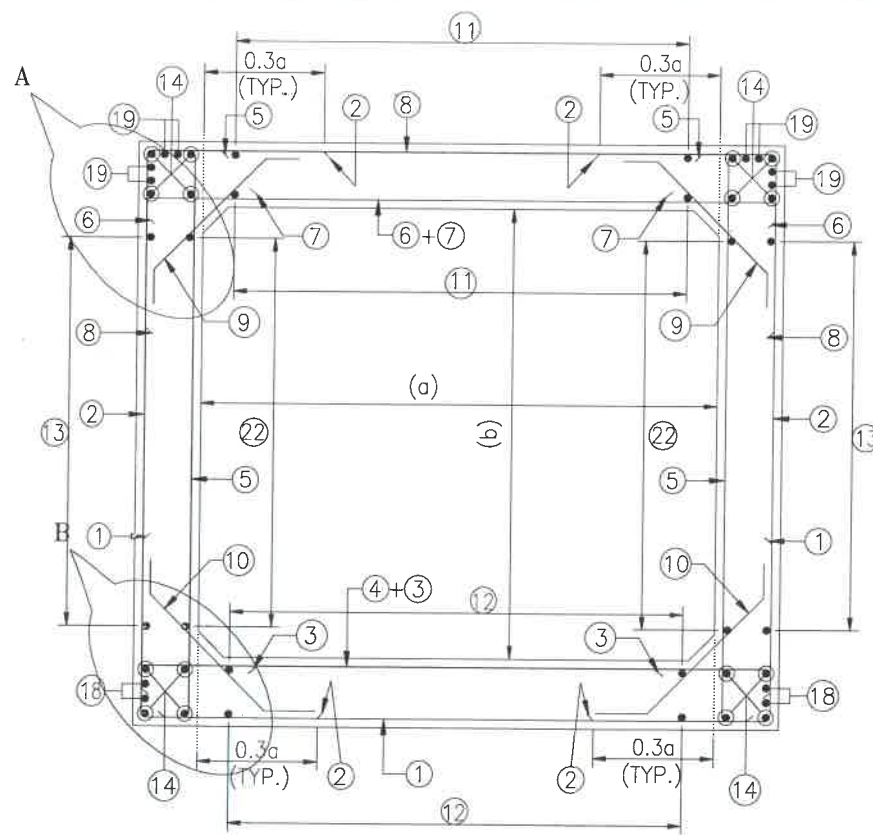
DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

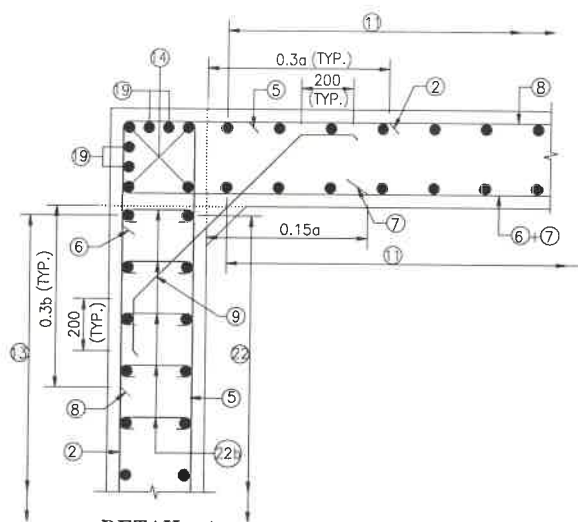
DRG. NO.
DD/IMP-JIR/ BOX/GAD/01
SHEET:
02 OF 02
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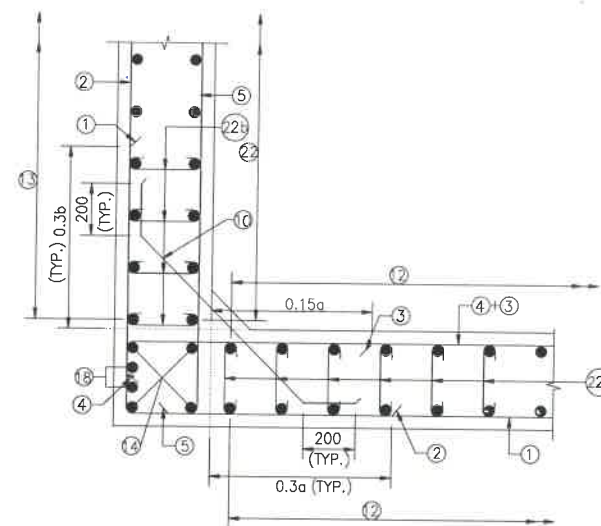
DATE AUG-2021
DESIGNED
STRUCTURE ENGINEER
DRAWN
STRUCTURE DRAFTSMAN
APPROVED



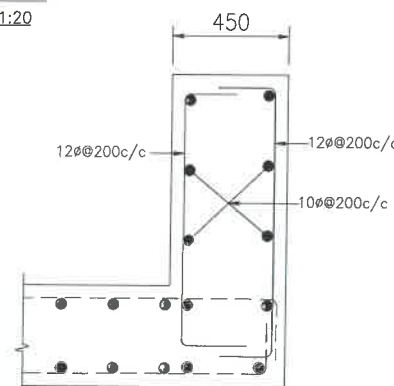
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



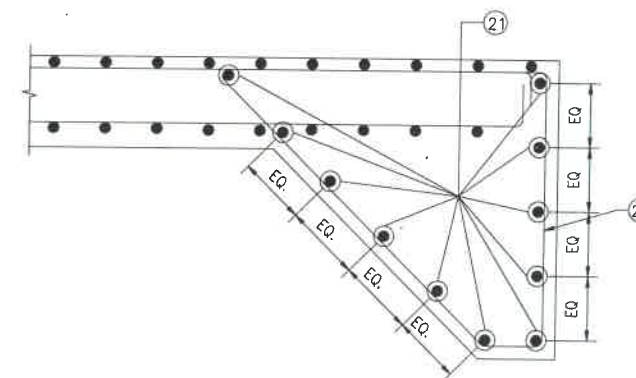
DETAIL-A
SCALE-1:20



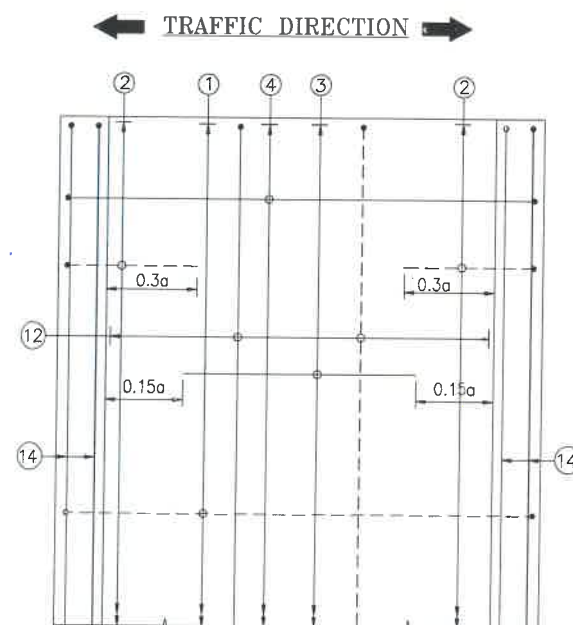
DETAIL-B
SCALE-1:20



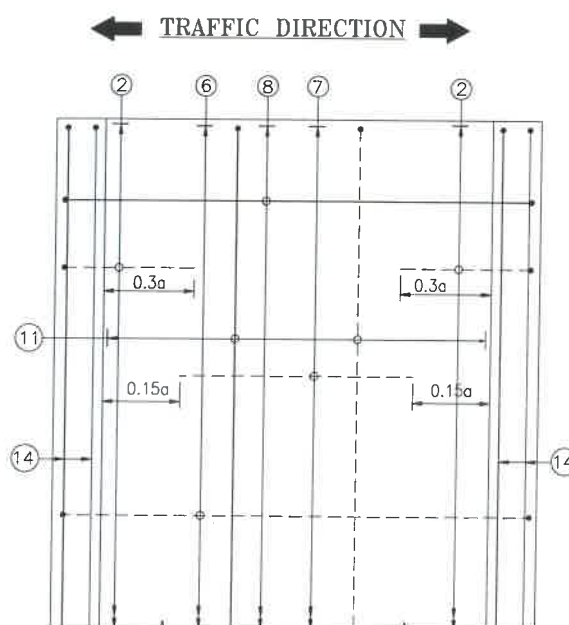
DETAILS OF RCC PARAPET
SCALE-1:20



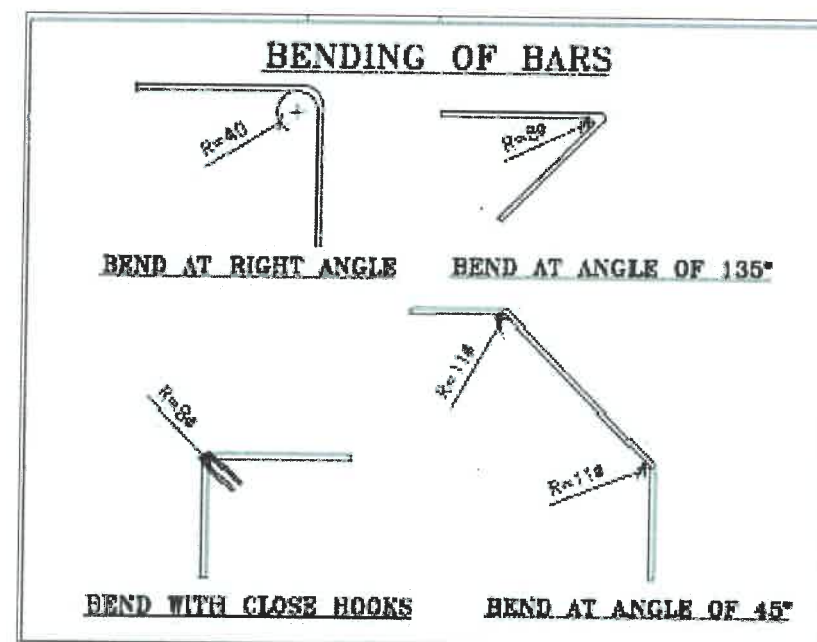
DETAIL OF SHEAR KEY
SCALE : 1:20



**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



NOTES:-

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LEGEND :-

	TOP FACE BARS/OUTER FACE BARS
	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		12	250 C/C
②		12	250 C/C
③		12	250 C/C
④		12	250 C/C
⑤		12	250 C/C
⑥		12	250 C/C
⑦		12	250 C/C
⑧		12	250 C/C
⑨		10	250 C/C
⑩		10	250 C/C
⑪		10	220 C/C
⑫		10	220 C/C
⑬		10	220 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	220 C/C
㉑		12	20 NOS.
㉒		10	220 C/C
㉒a		8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b		8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
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Address: 191, Mohan Nagar, Gopalpura Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

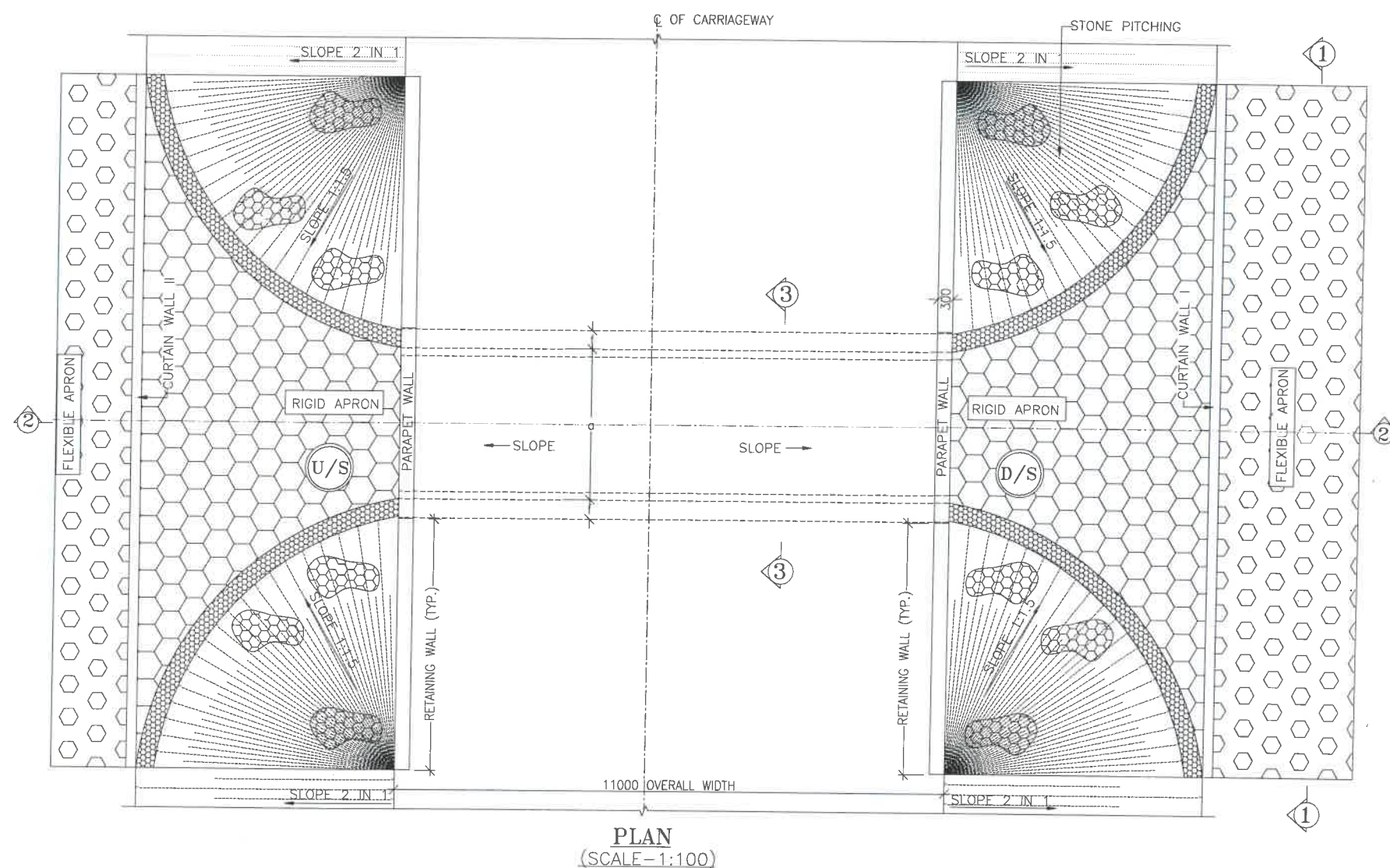
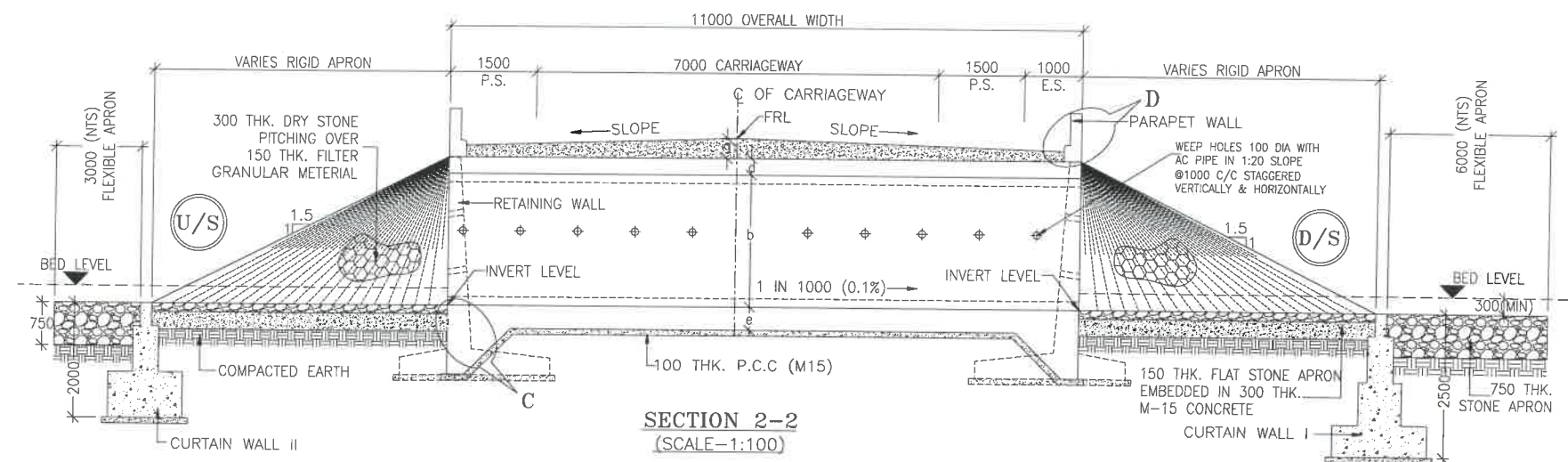
SHEET: REV.

01 OF 01 R0

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.01/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	---	FINISHED ROAD LEVEL
LVL	---	LEVEL
GL	---	GROUND LEVEL
IL	---	INVERT LEVEL
EQ	---	EQUAL
F.P.	---	FOOTPATH
U/S	---	UP STREAM
D/S	---	DOWN STREAM
P.S.	---	PAVED SHOULDER
E.S.	---	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, Phase-I,
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SAFETY CONSULTANT:



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Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER :



DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/MP-JIR/ BOX/GAD/01

SHEET: REV.
01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRBAM
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---

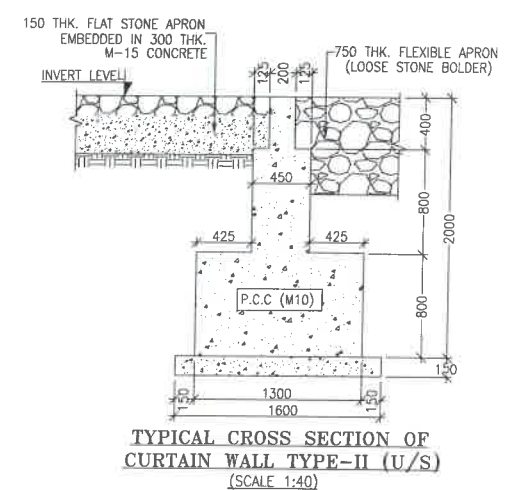
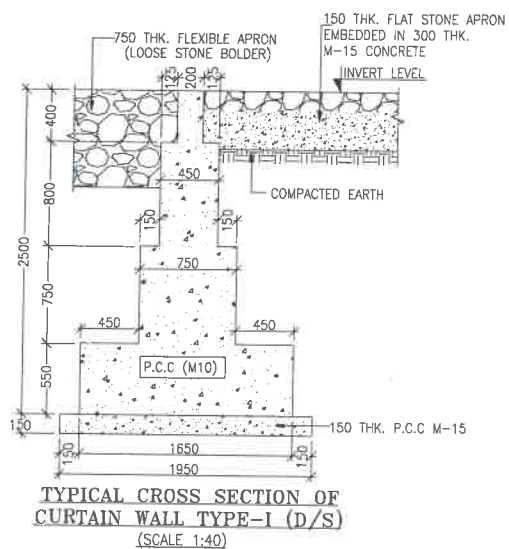
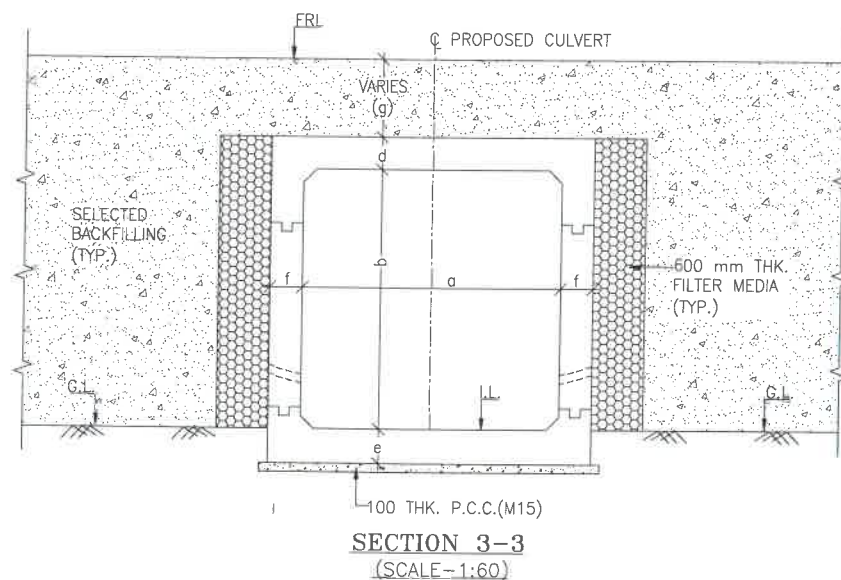
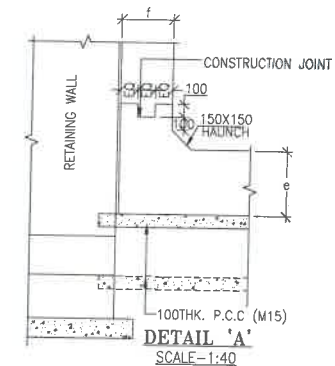
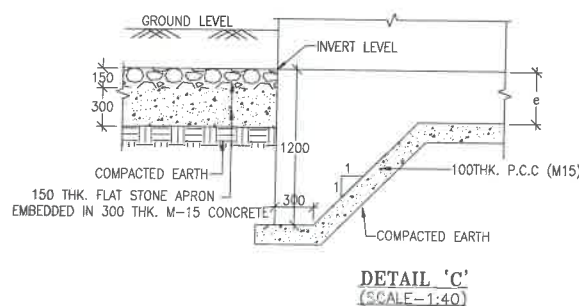
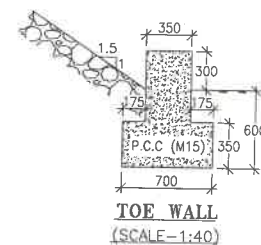
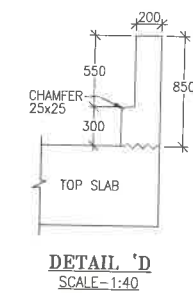
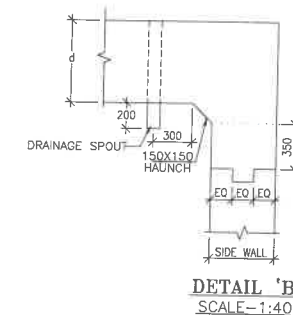
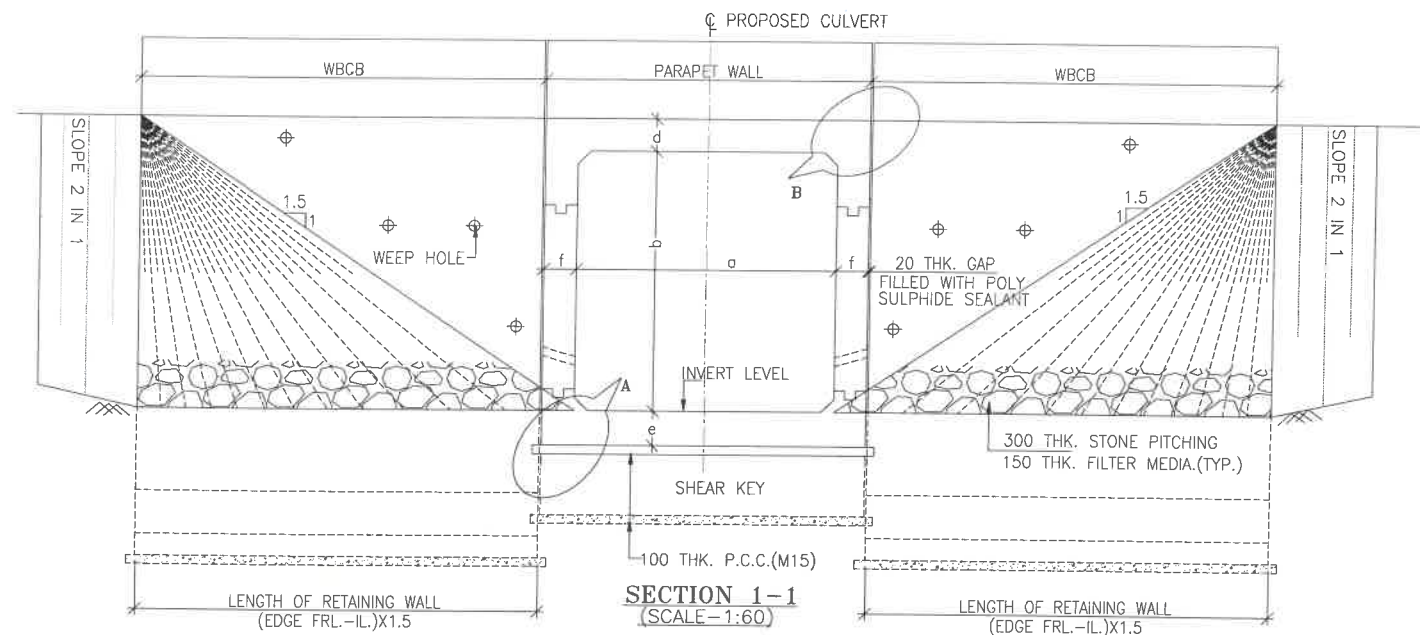


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	17+532	1X2X2	853.813	850.983	851.083	600	TSC-3
②	18+141	1X2X2	877.779	874.949	875.049	600	TSC-3
③	22+728	1X2X2	1081.464	1078.634	1078.734	600	TSC-3
④	24+510	1X2X2	1136.648	1133.818	1133.918	600	TSC-3
⑤	25+130	1X2X2	1140.313	1137.483	1137.583	600	TSC-3
⑥	27+096	1X2X2	1217.779	1214.949	1215.049	600	TSC-3
⑦	27+284	1X2X2	1227.117	1224.287	1224.387	600	TSC-3
⑧	27+481	1X2X2	1234.928	1232.098	1232.198	600	TSC-3
⑨	27+684	1X2X2	1243.938	1241.108	1241.208	600	TSC-3
⑩	28+002	1X2X2	1259.467	1256.637	1256.737	600	TSC-3
⑪	28+167	1X2X2	1268.268	1265.438	1265.538	600	TSC-3
⑫	28+879	1X2X2	1271.742	1268.912	1269.012	600	TSC-3

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- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



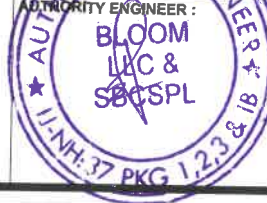
Hindia Engineers Pvt. Ltd.
Address: 317, B Block, PCT Phase-1,
Gurgaon-Faridabad Road Faridabad, INDIA-122002,
Phone No.-0124-4628681

SAFETY CONSULTANT:



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Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

02 OF 02

REV.

R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

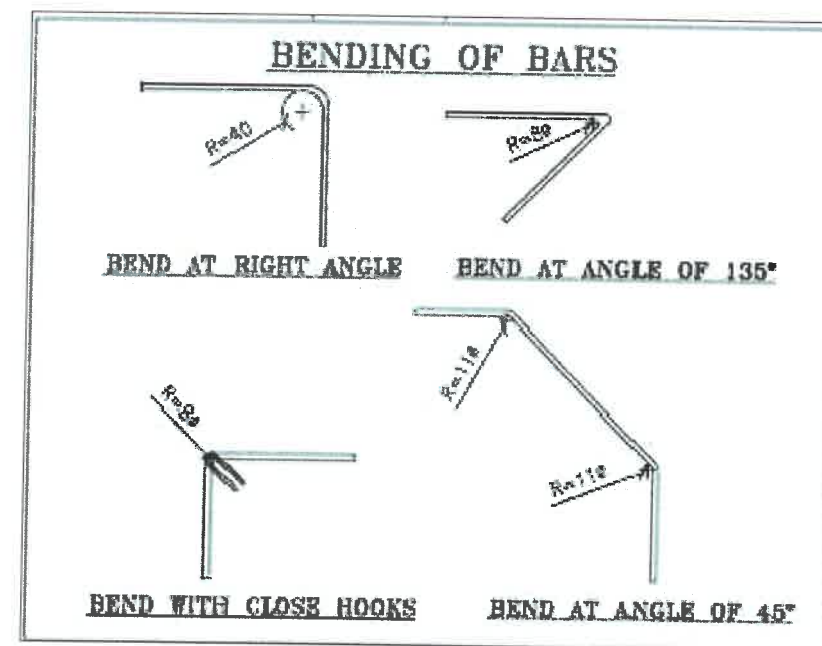
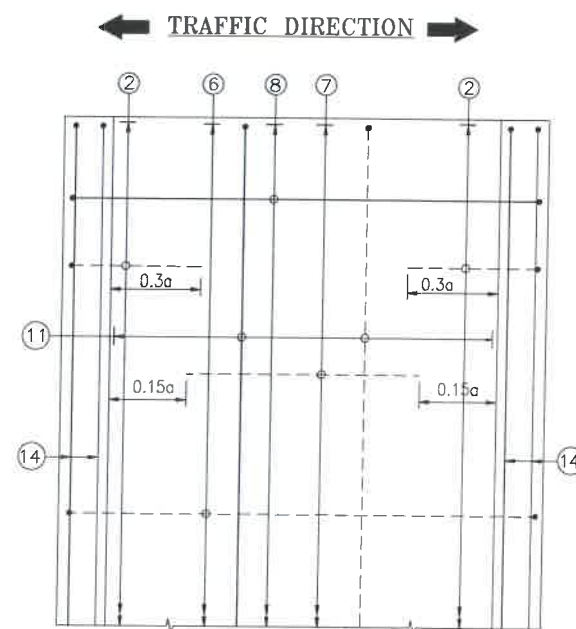
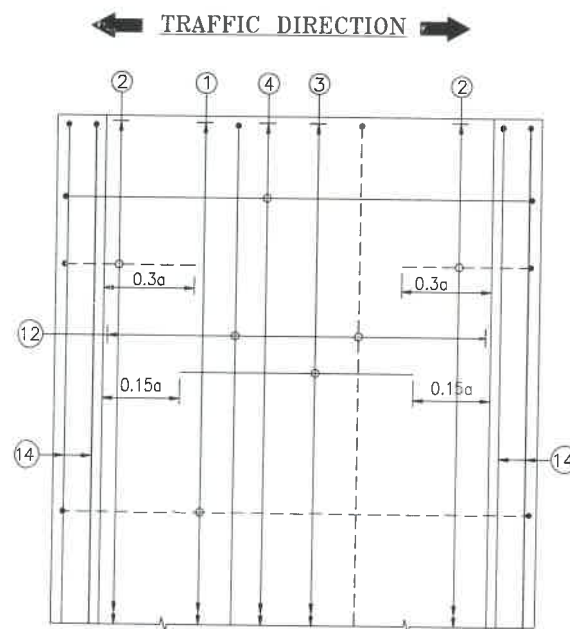
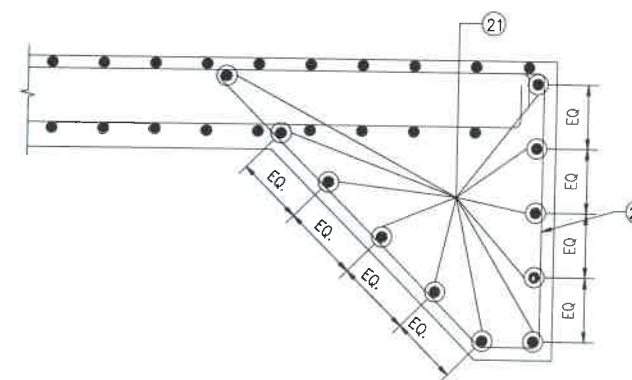
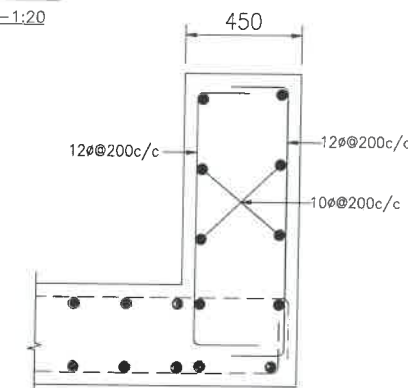
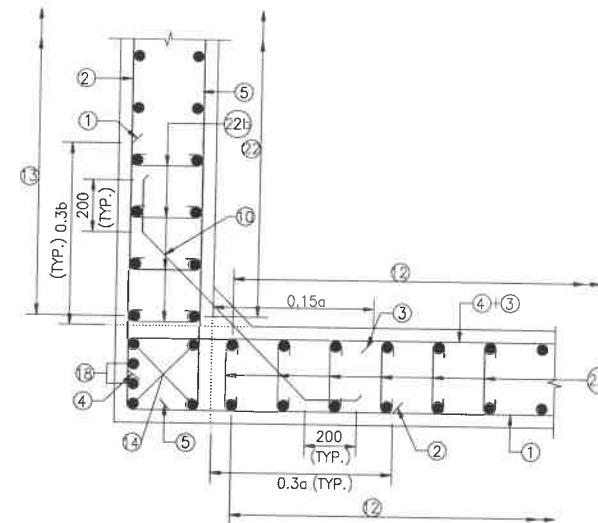
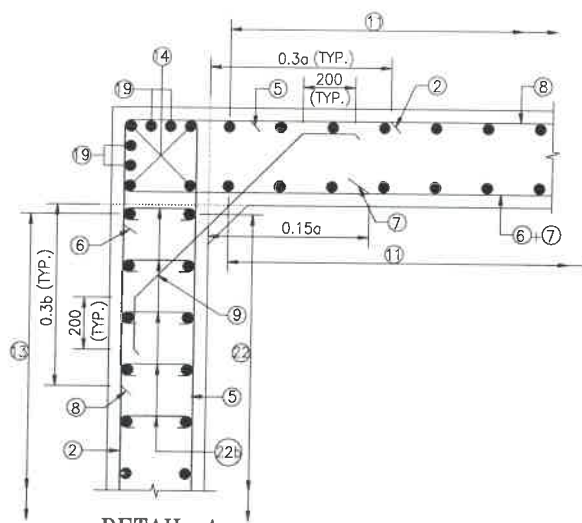
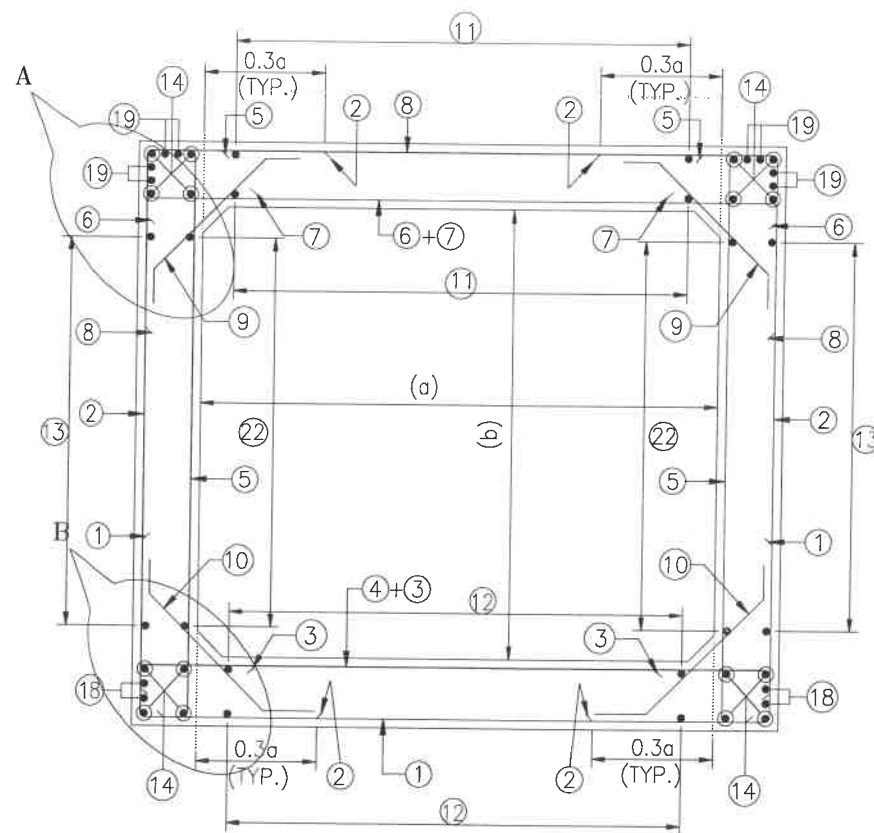
DESIGNED

STRUCTURE ENGINEER

DRAWN

CHECKED

APPROVED



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
- ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
- JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
- FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

	TOP FACE BARS/OUTER FACE BARS
	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		12	250 C/C
②		12	250 C/C
③		12	250 C/C
④		12	250 C/C
⑤		12	250 C/C
⑥		12	250 C/C
⑦		12	250 C/C
⑧		12	250 C/C
⑨		10	250 C/C
⑩		10	250 C/C
⑪		10	220 C/C
⑫		10	220 C/C
⑬		10	220 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	220 C/C
㉑		12	20 NOS.
㉒		10	220 C/C
㉒a		8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b		8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRASTRUCTURE PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindia Engineers Pvt. Ltd.
Address: 33/7, T-Block, DLF Phase-1,
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Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS OF BOX CULVERT FOR 1X2X2

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET:

01OF 01

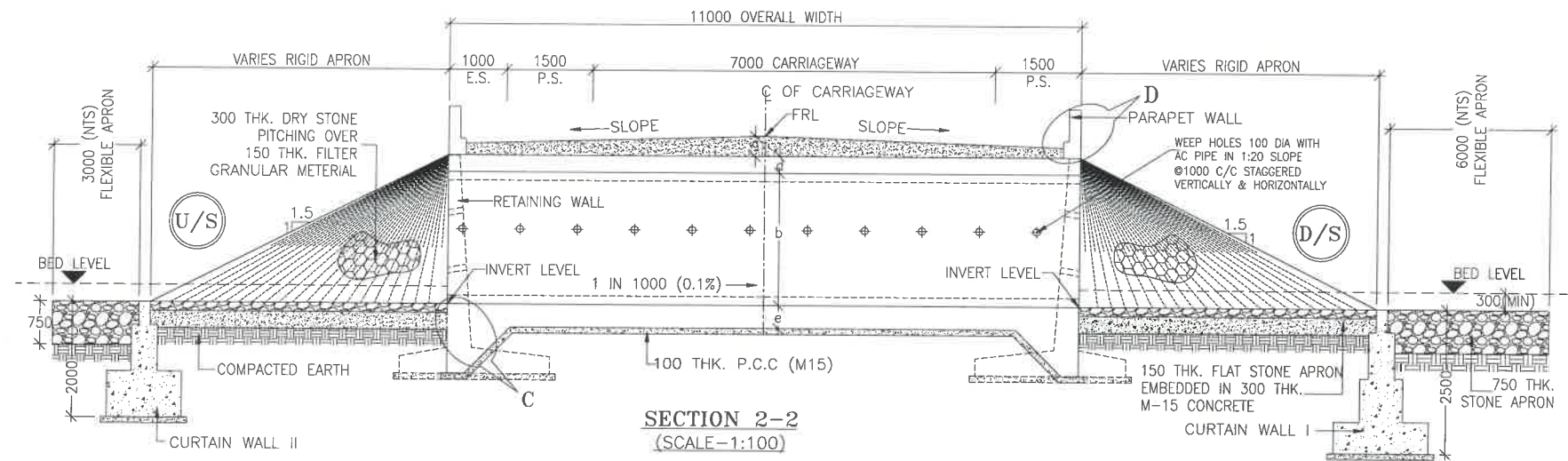
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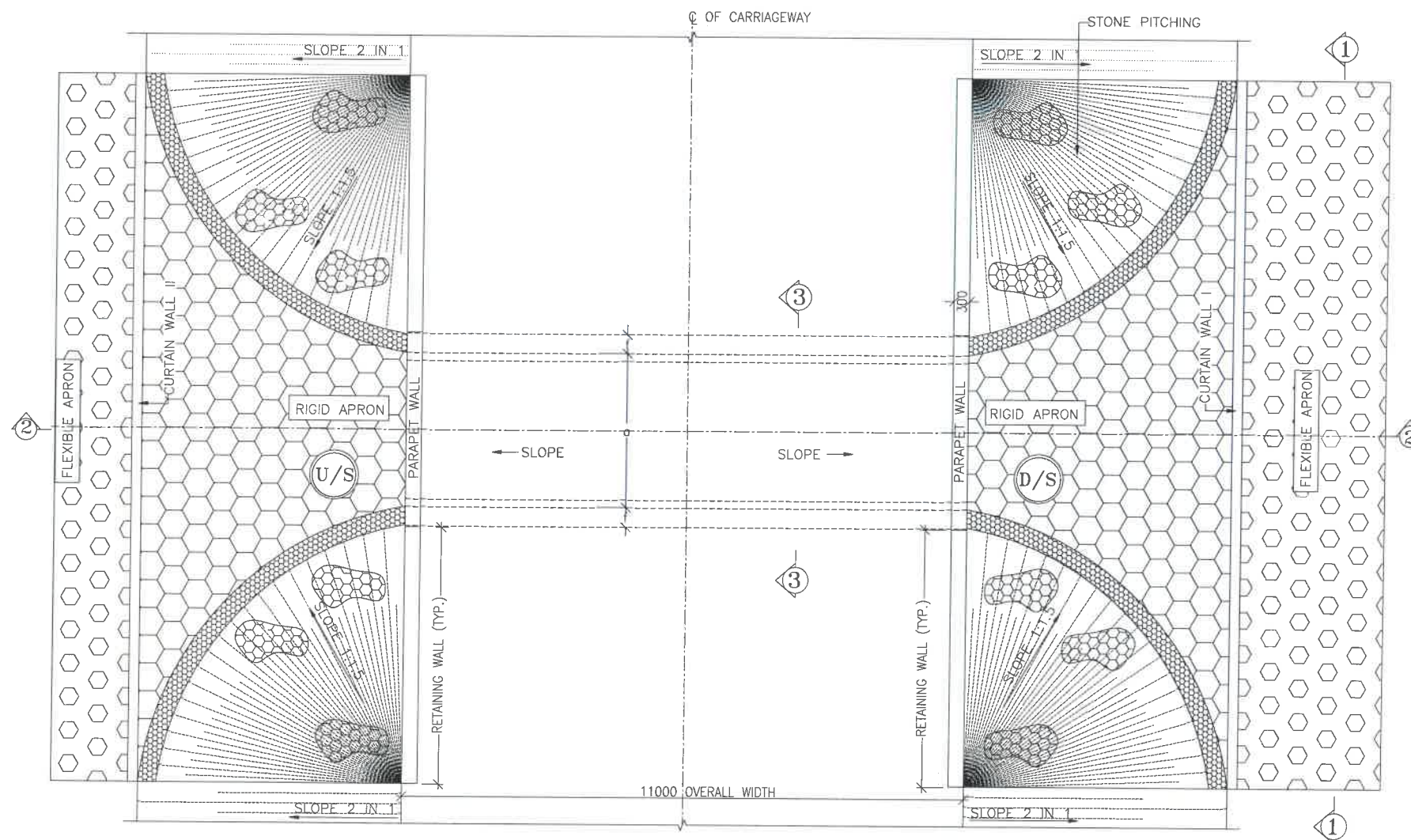
DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

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P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



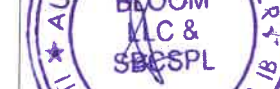
Hindia Engineers Pvt. Ltd.
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AUTHORITY ENGINEER:



DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.
DD/IMP-JIR/ BOX/GAD/01

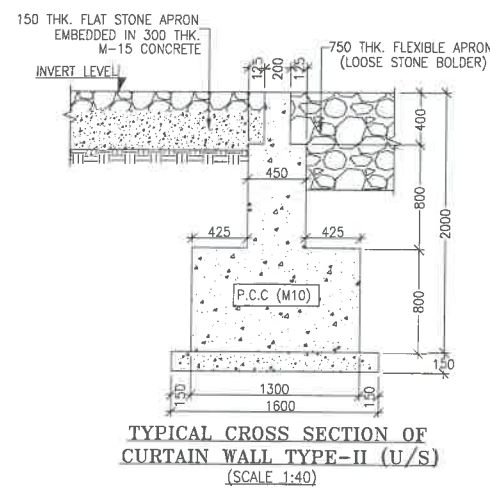
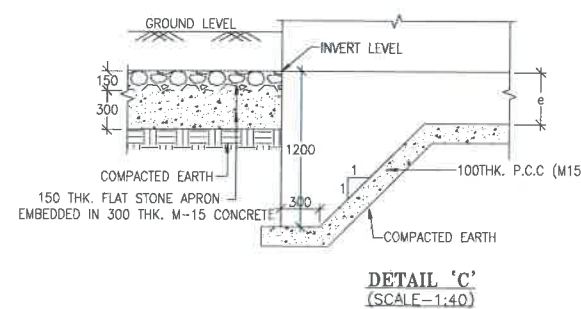
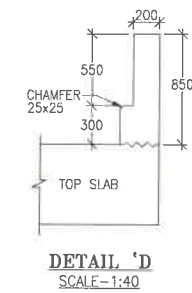
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DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



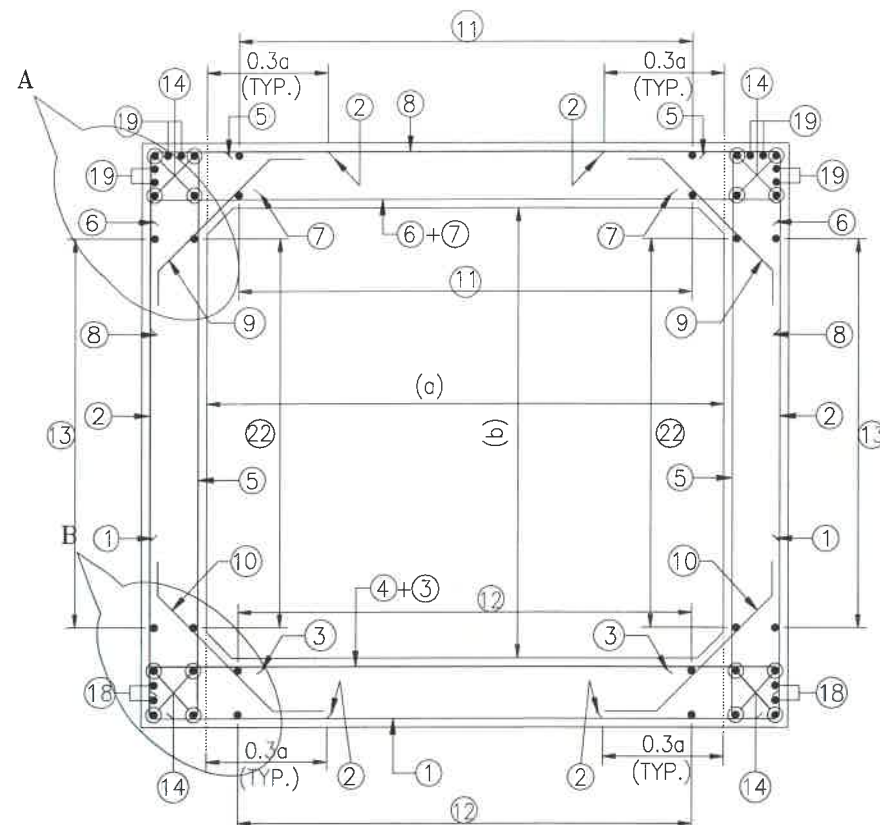
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1X2X2	2000	2000	230	250	230

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	18+393	1X2X2	888.320	885.490	885.590	600	TSC--

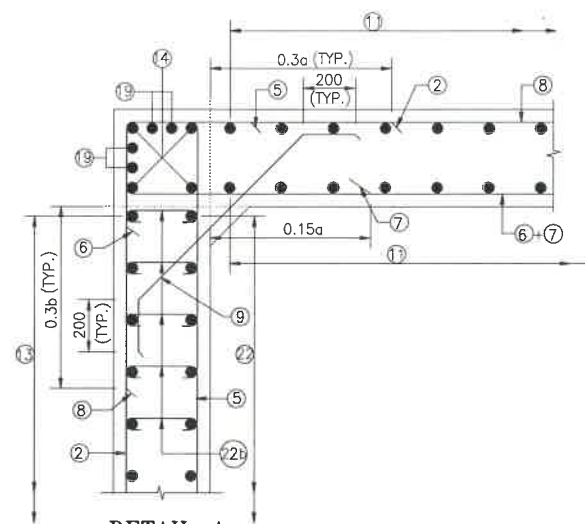
- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
 3. GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - a) RCC BOX.....M30
 - b) RCC RETAINING WALL.....M30
 - c) PCC LEVELLING COURSE.....M15
 - d) PCC CURTAIN WALL.....M15
 - e) PARAPET WALL.....M30
 4. GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
 5. BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 3\phi$, C=0, $\gamma = 2.07/M^3$
 6. COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
 7. FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT , SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH , WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
 8. 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
 9. ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
 10. BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
 11. SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

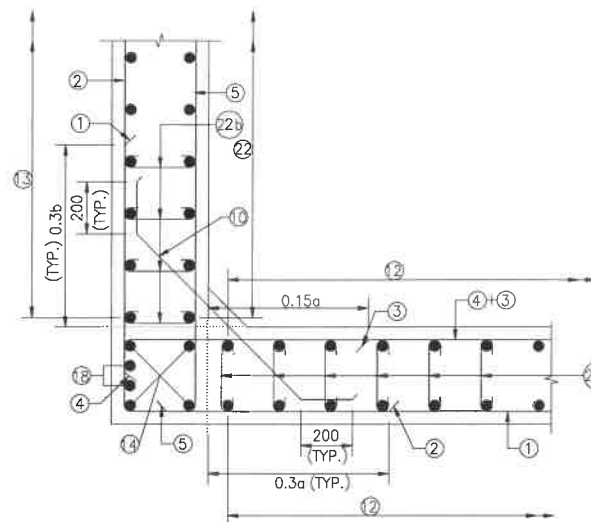
FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



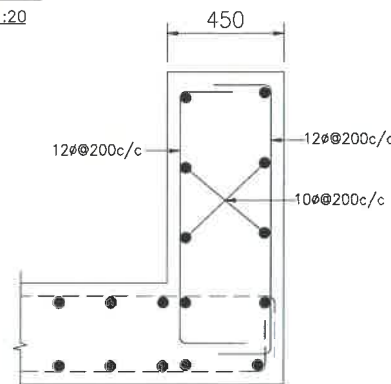
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
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6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
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LEGEND :-

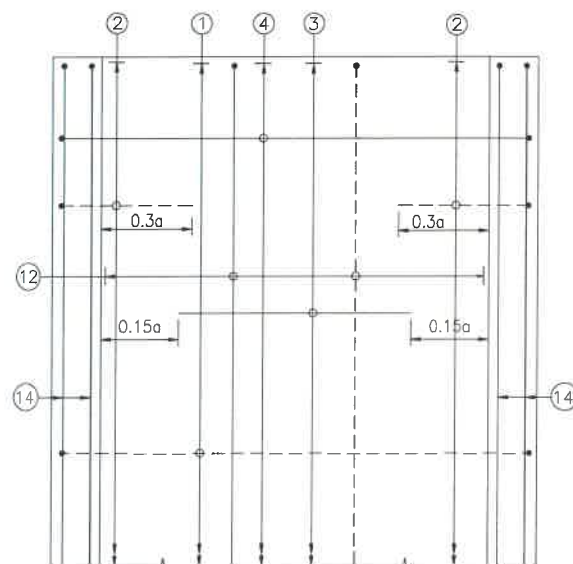
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

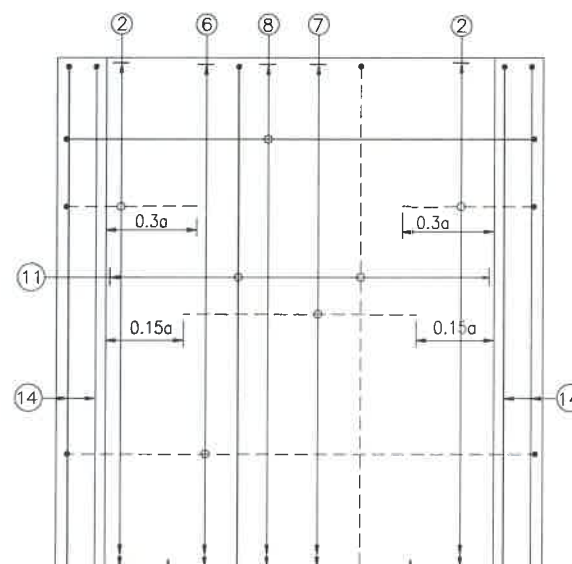
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	12	250 C/C
②	└─┘	12	250 C/C
③	└─┘	12	250 C/C
④	└─┘	12	250 C/C
⑤	└─┘	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	└─┘	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	└─┘	10	220 C/C
⑫	└─┘	10	220 C/C
⑬	└─┘	10	220 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	220 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	220 C/C
㉓	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉔	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

← TRAFFIC DIRECTION →

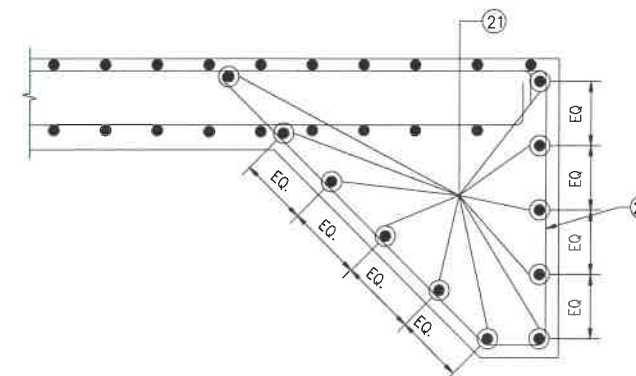


**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

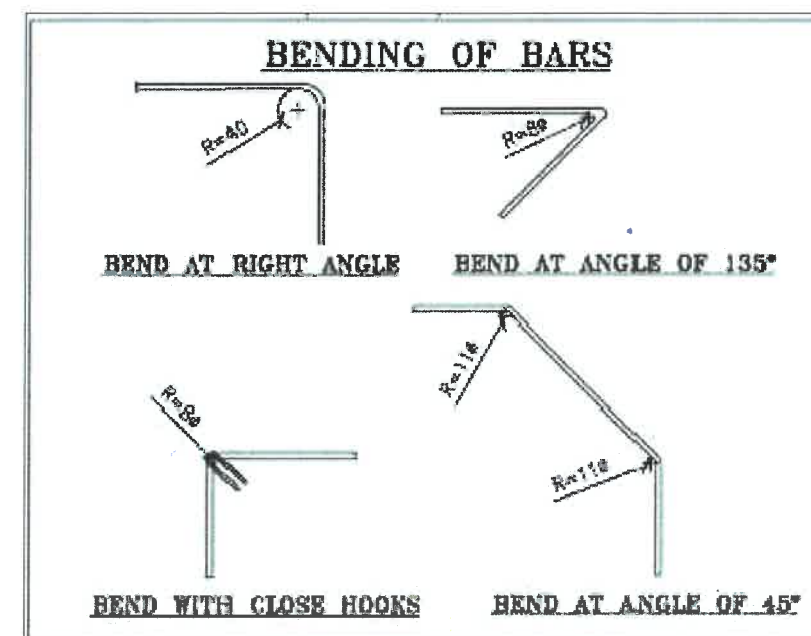
← TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



DETAIL OF SHEAR KEY
SCALE : 1:20



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



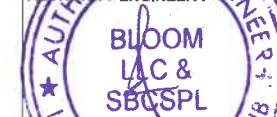
Hindia Engineers Pvt. Ltd.
Address: 3377, H-Block, 1st Floor-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Road, 4th Floor, Gurgaon,
Jalpur-302018 (Rajasthan) Phone No. 0122-7000303
Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

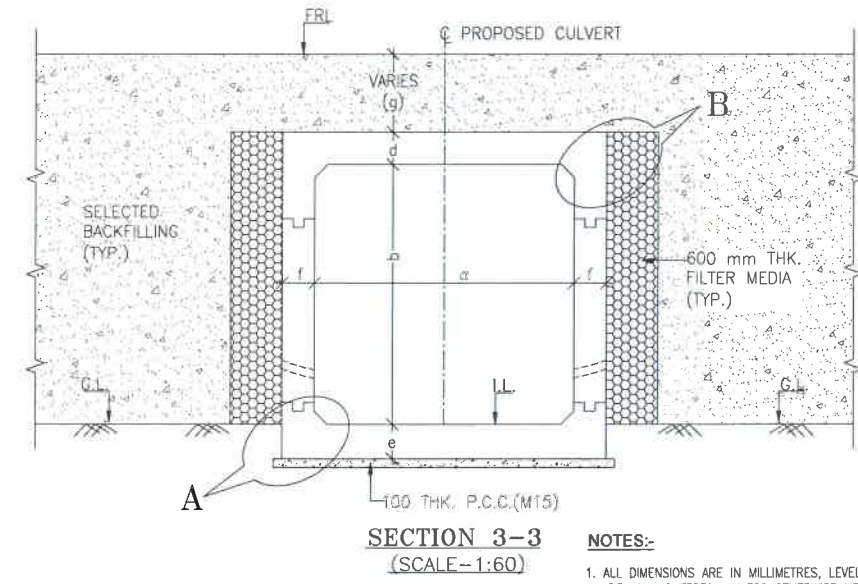
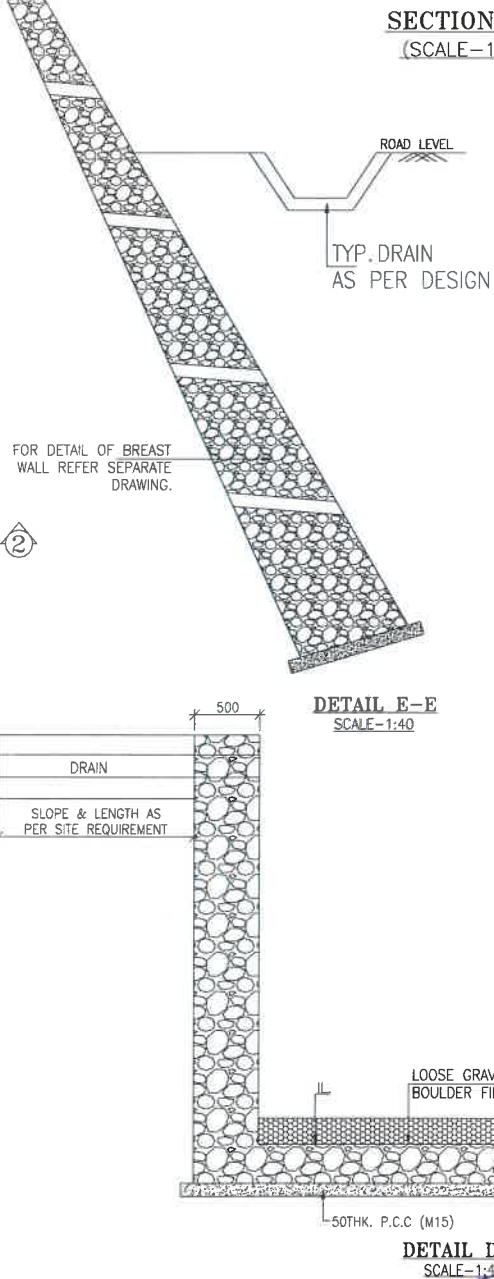
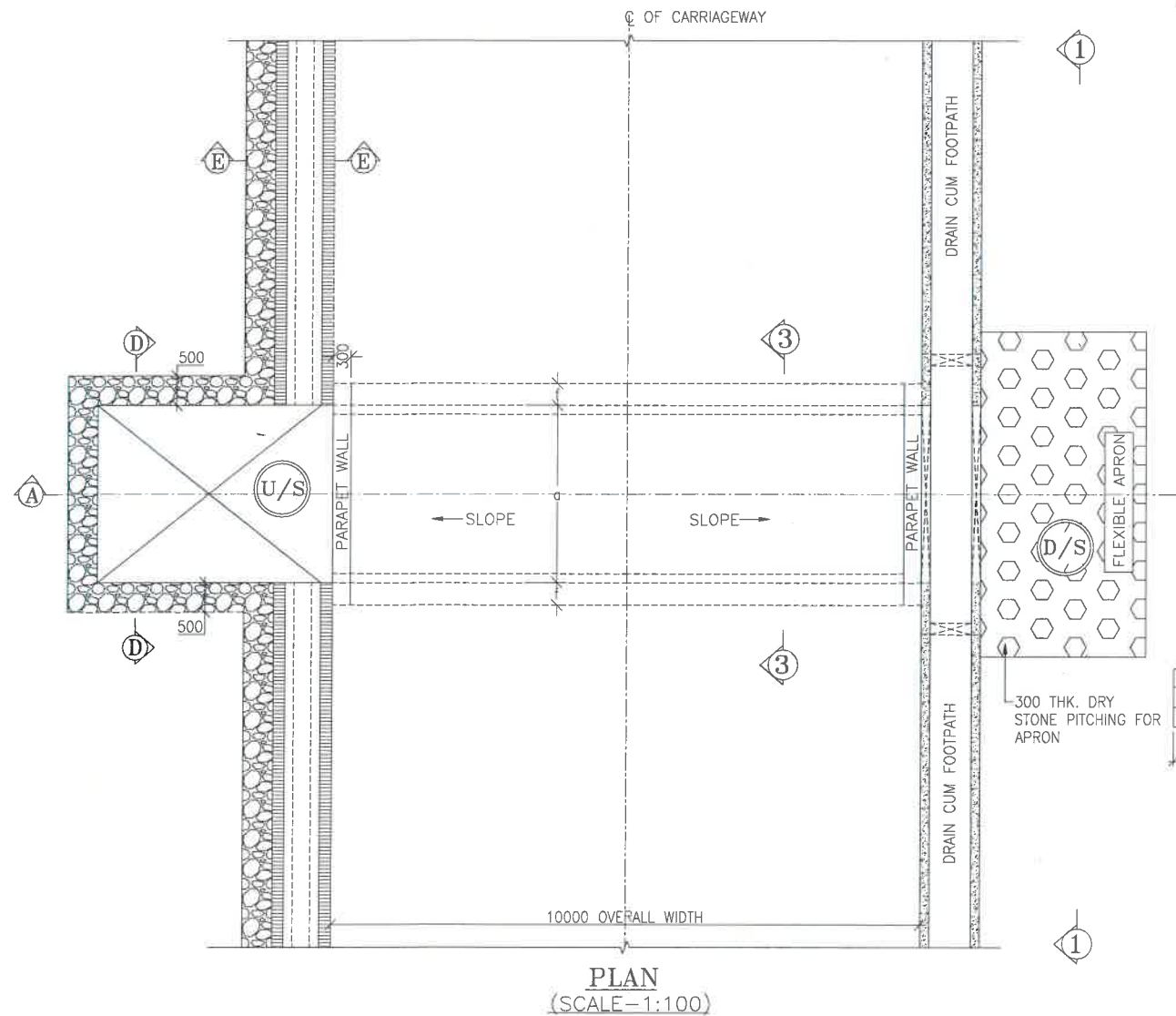
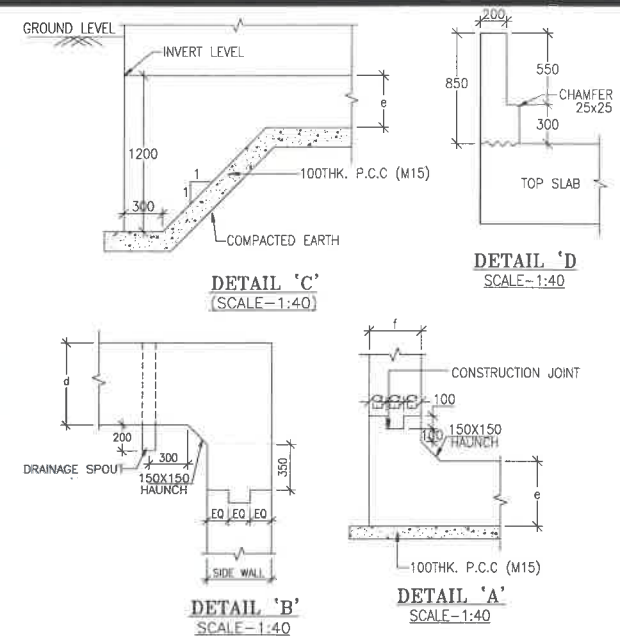
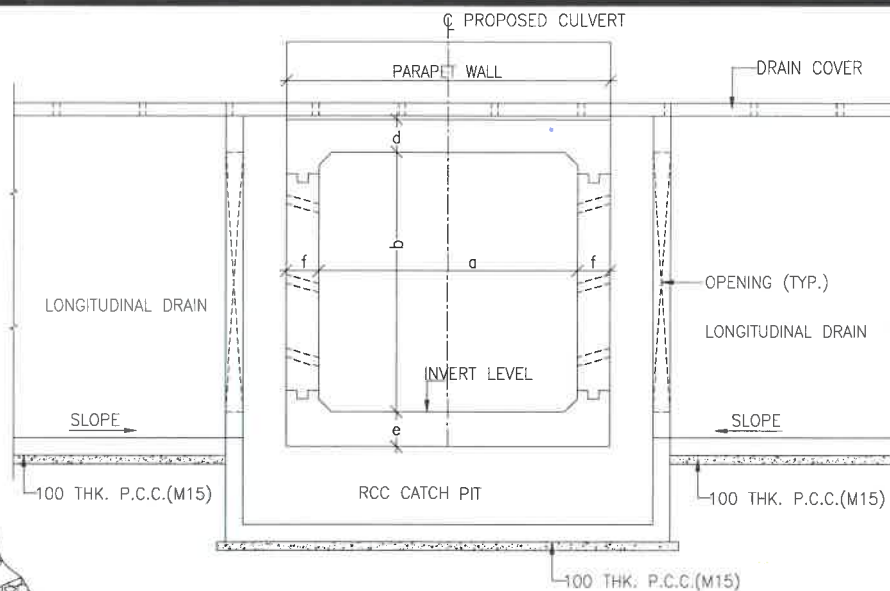
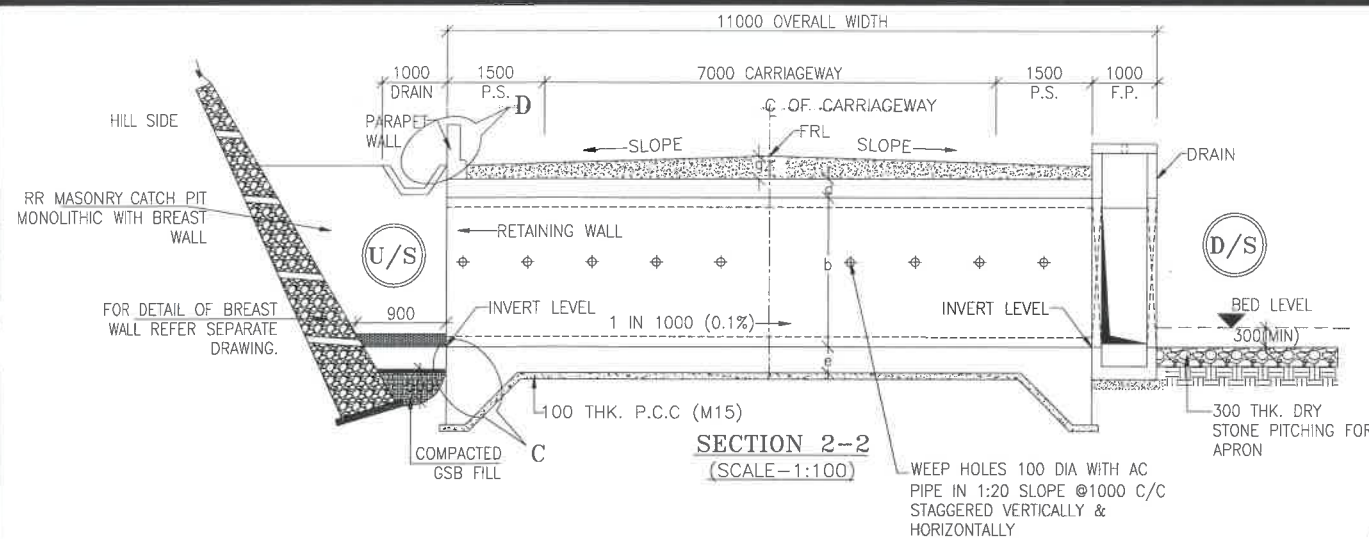
PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
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 - c) PCC LEVelling COURSE.....M15
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 - e) PARAPET WALL.....M30
 4. GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
 5. BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX B OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
 6. COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
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TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	23+870	1X2X2	1112.709	1109.879	1109.979	600	TSC-7
②	28+655	1X2X2	1275.390	1272.560	1272.660	600	TSC-7

CLIENT: 
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR: 
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR: 

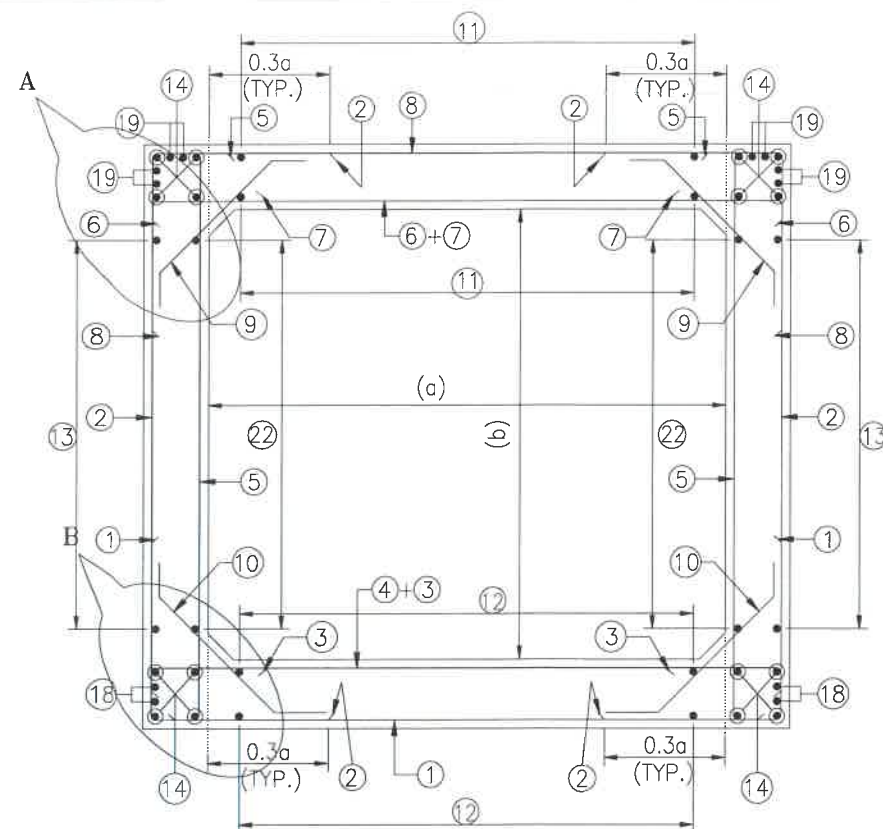
PROOF CONSULTANT: 
Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT: 
Antique Buildtech Pvt. Ltd.
Address: 191, Nandan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2780303
Email : info@antiquebuildtech.com

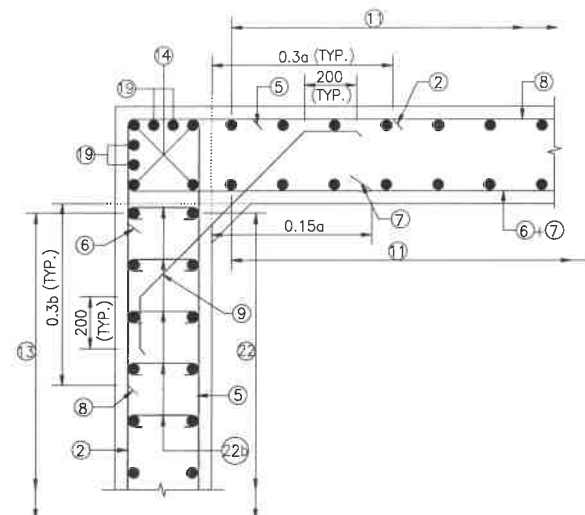
AUTHORITY ENGINEER: 
BLOOM LIC & SBOSPL
U.NH-37 PKG 1,2,3 & 18

DRAWING SCALE: NTS
DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT
PROJECT NAME:-
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

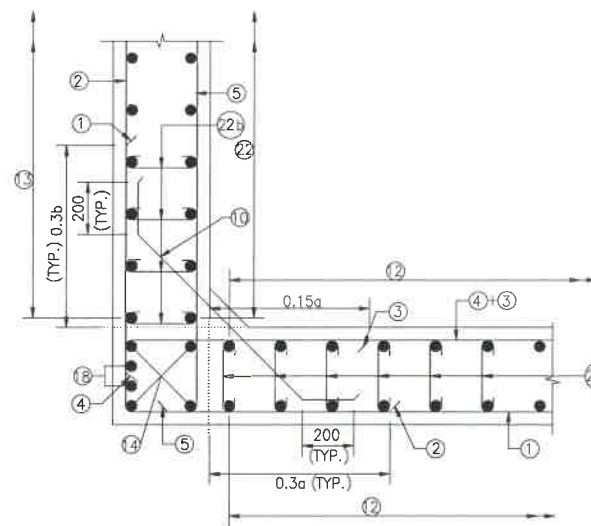
DRG. NO. DD/IMP-JIR/ BOX/GAD/01
SHEET: 01 OF 01
REV. R0
DATE AUG-2021
DESIGNED: STRUCTURE ENGINEER
CHECKED: ---
APPROVED: ---



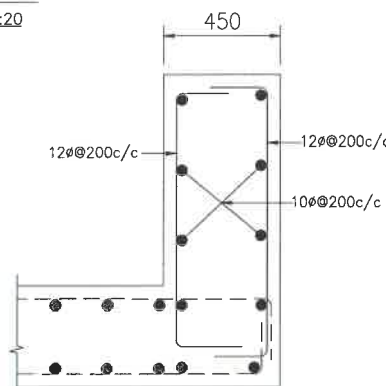
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20

NOTES:-

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7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

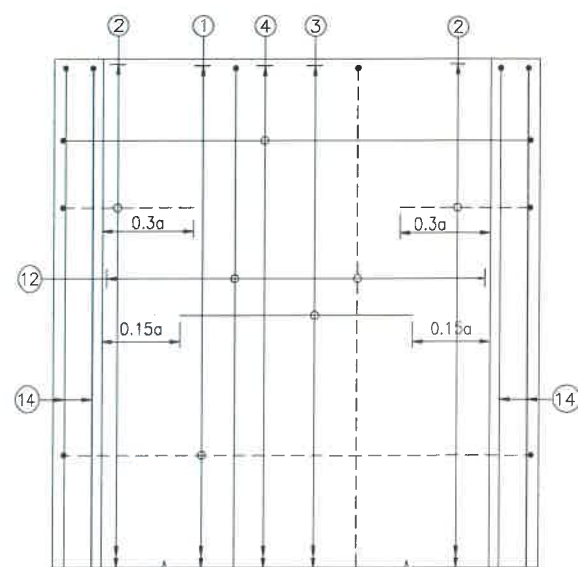
—————	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

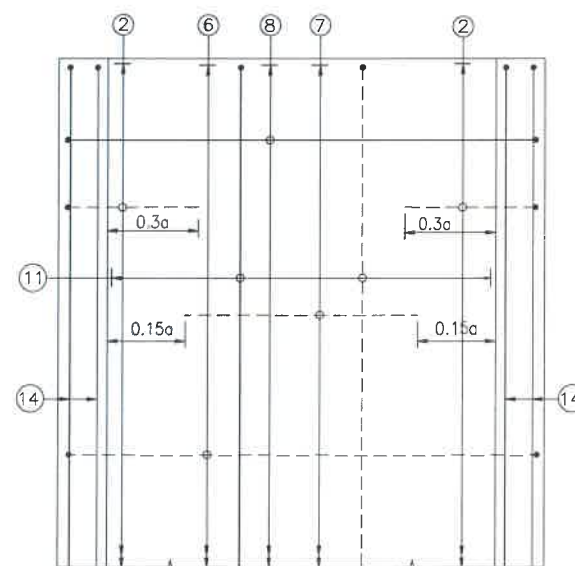
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	12	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	—	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	┌─┐	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	220 C/C
⑫	—	10	220 C/C
⑬	—	10	220 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	220 C/C
㉑	└─┘	12	20 NOS.
㉒	—	10	220 C/C
㉒a	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

TRAFFIC DIRECTION

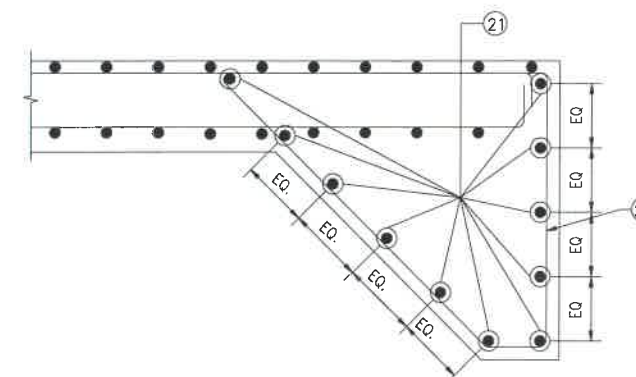


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

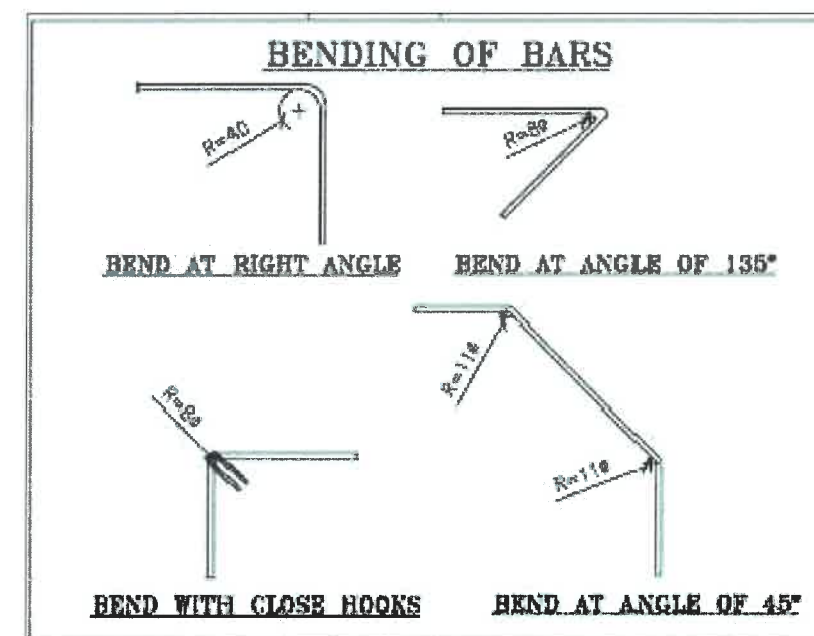
TRAFFIC DIRECTION



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



DETAIL OF SHEAR KEY
SCALE : 1:20



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. GMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



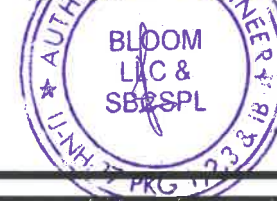
Hindia Engineers Pvt. Ltd.
Address: 33/7, H Block, DLF Phase-I,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Bulb Pvt. Ltd.
Address: 191, Main Road, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Ph No. 0141-2760303
Email : info@antiquebulb.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

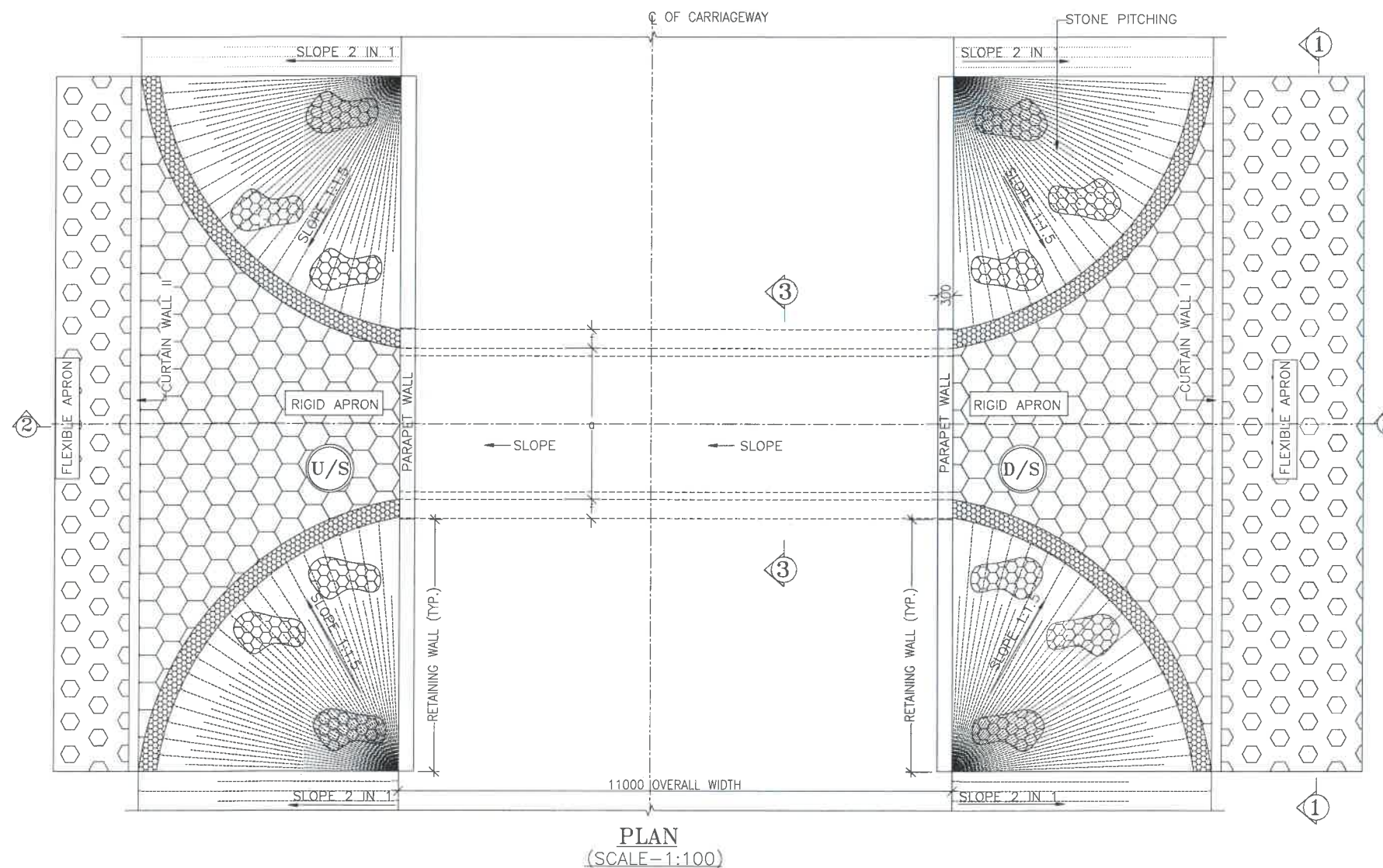
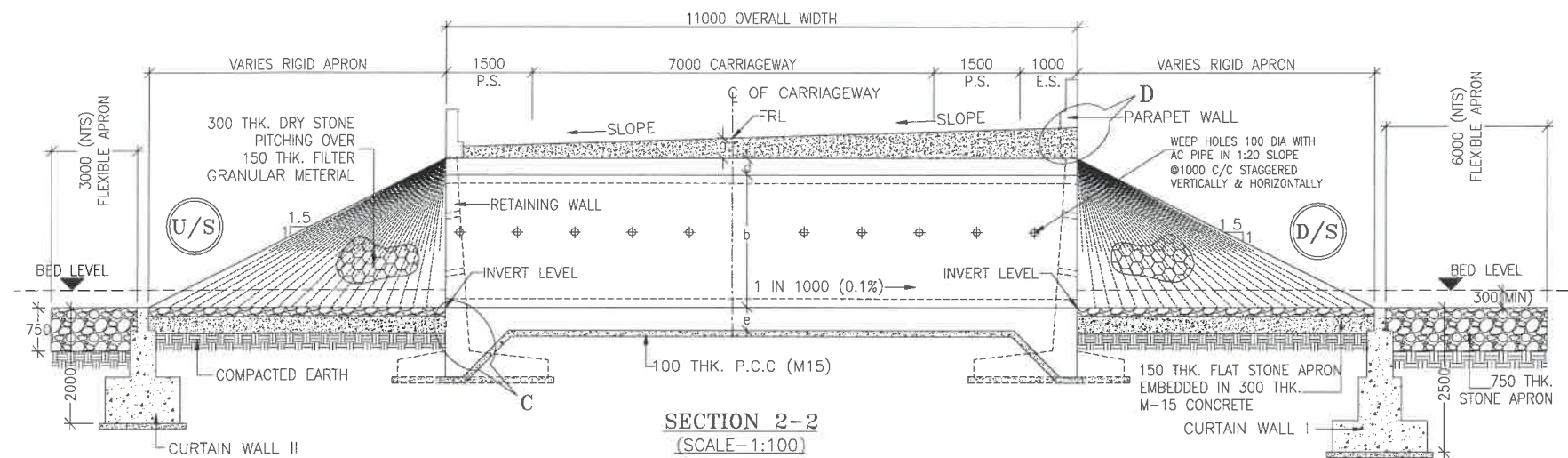
SHEET: REV.

01 OF 01 R0

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



NOTES:-

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LEGEND:-

FRL	FINISHED ROAD LEVEL
LVL	LEVEL
GL	GROUND LEVEL
IL	INVERT LEVEL
EQ	EQUAL
F.P.	FOOTPATH
U/S	UP STREAM
D/S	DOWN STREAM
P.S.	PAVED SHOULDER
E.S.	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2780303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

PROJECT NAME:-

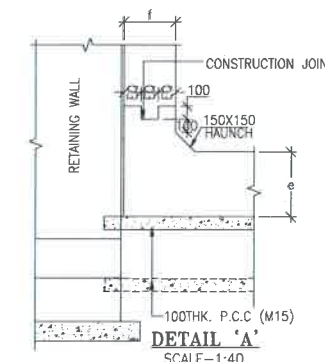
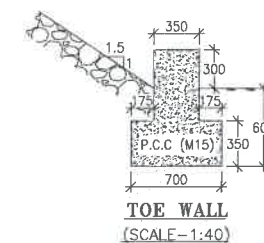
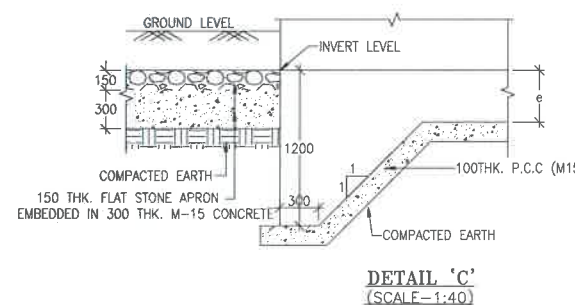
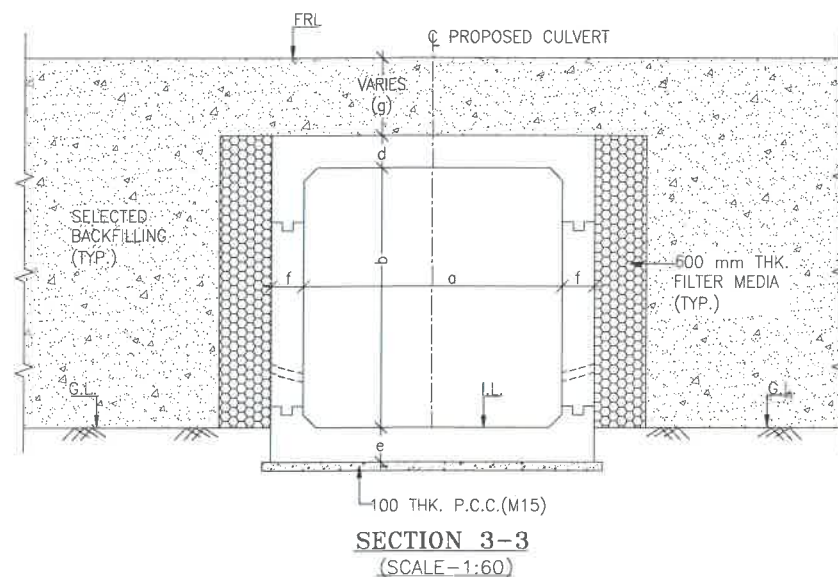
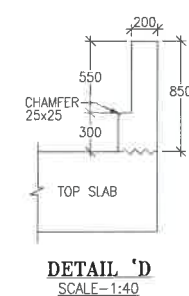
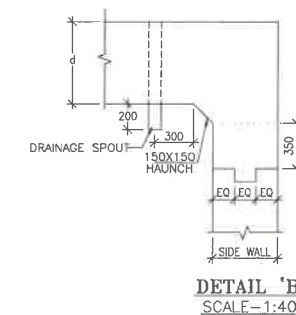
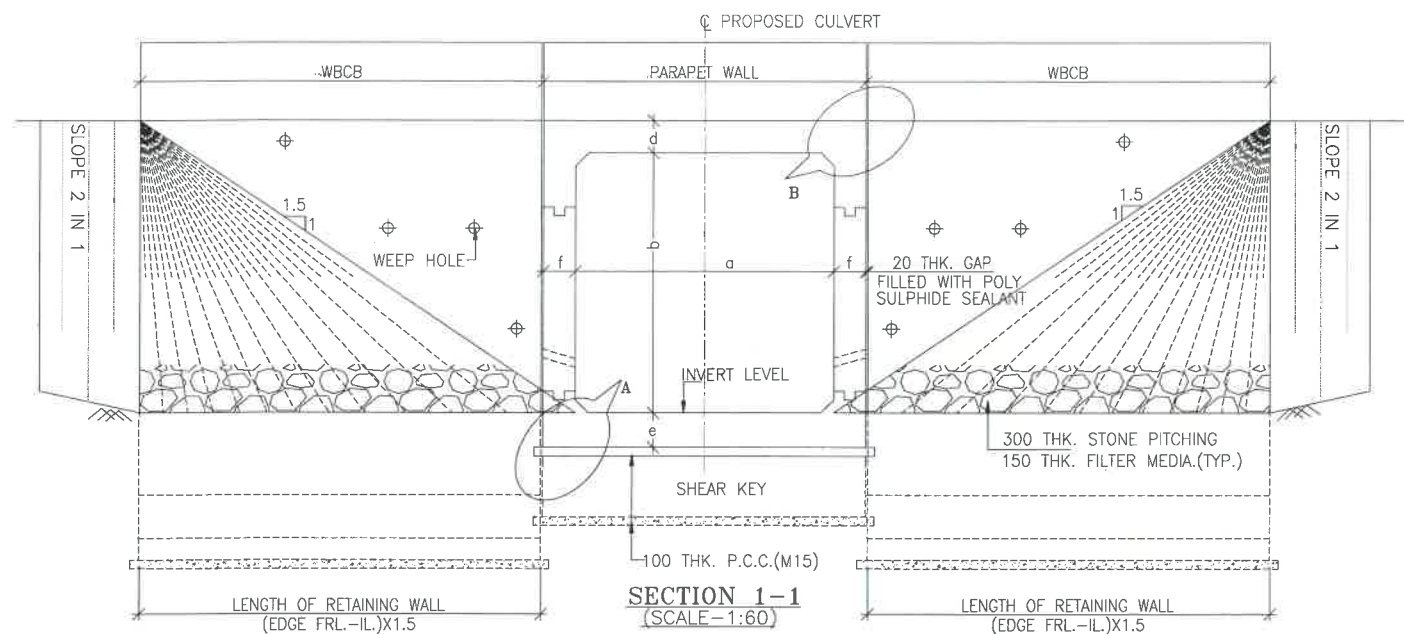
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX B OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0 \text{ T/M}^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
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- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
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TABLE SHOWING SILENT DIMENSIONS

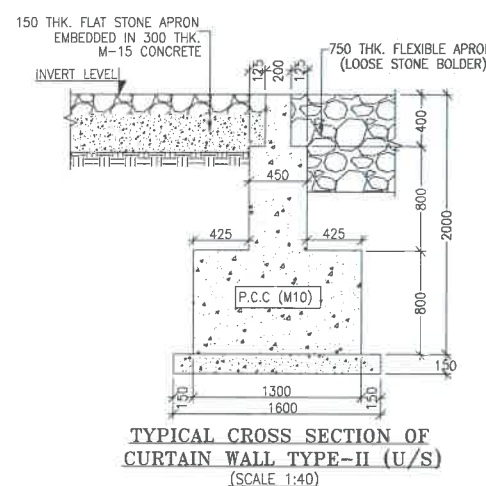
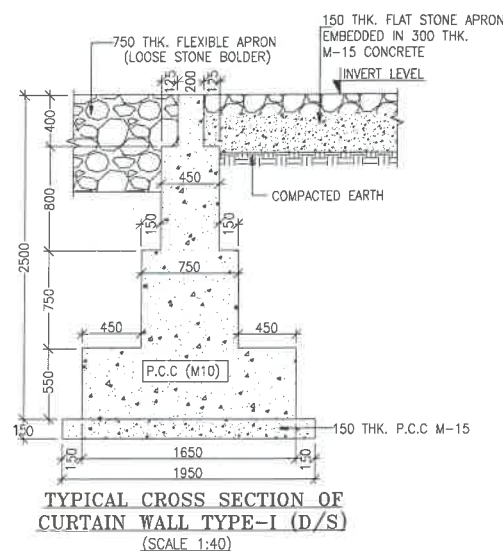
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE-II

S.R. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	30+033	1X2X2	1244.942	1242.112	1242.212	600	TSC-3

LEGEND:-

- FRL - FINISHED ROAD LEVEL
- LVL - LEVEL
- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER



CLIENT :

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 DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 M/S. CMML INFRA PROJECTS LTD.

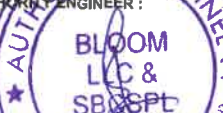
DESIGN DIRECTOR:


PROOF CONSULTANT:

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 Gurgaon-Faridabad Road Haryana, INDIA-122002,
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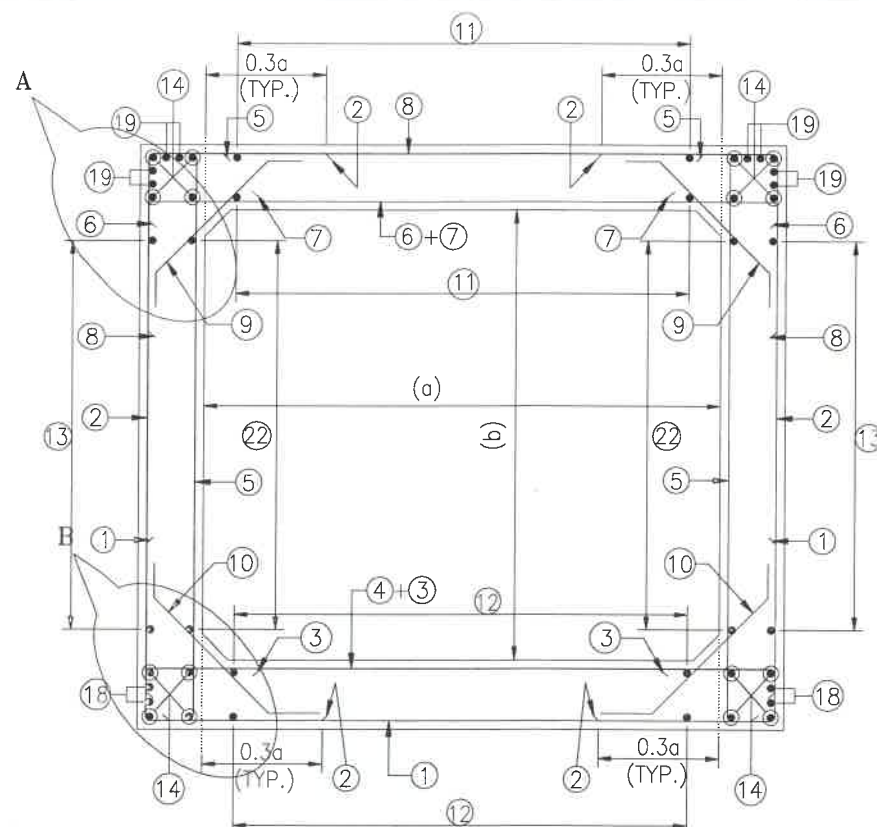
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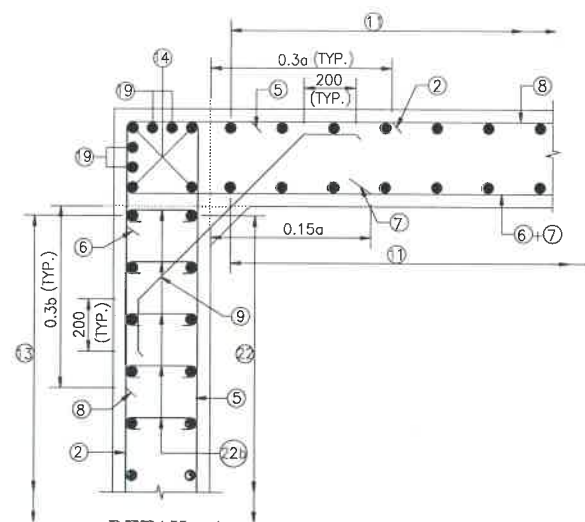
AUTHORITY'S ENGINEER:

 BLOOM
 L & S
 B&SPT

DRAWING SCALE:
 NTS
 DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT
 DRAWING FOR BOX CULVERT
 PROJECT NAME:-
 WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
 SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
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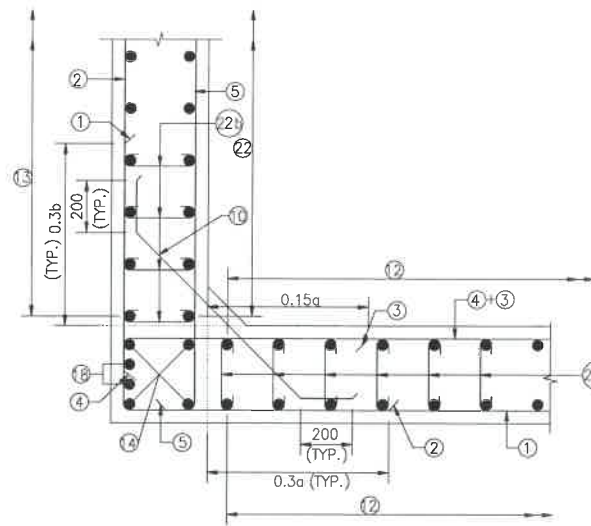
DRG. NO.
 DD/IMP-JIR/ BOX/GAD/01
 SHEET: REV.
 02 OF 02 R0
 DATE AUG-2021
 DESIGNED: ENGINEER
 CHECKED: ---
 APPROVED: ---



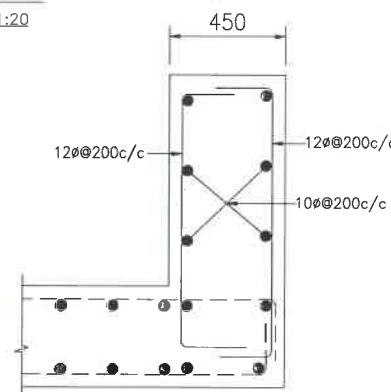
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



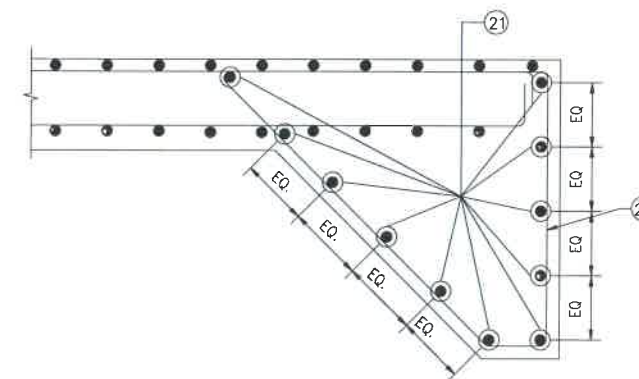
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

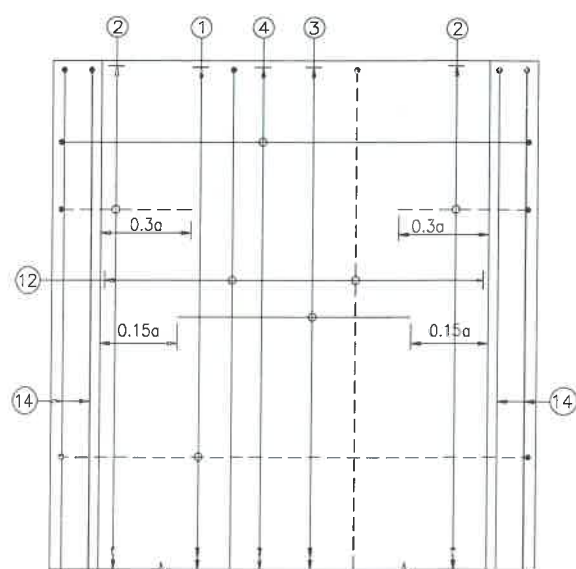
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

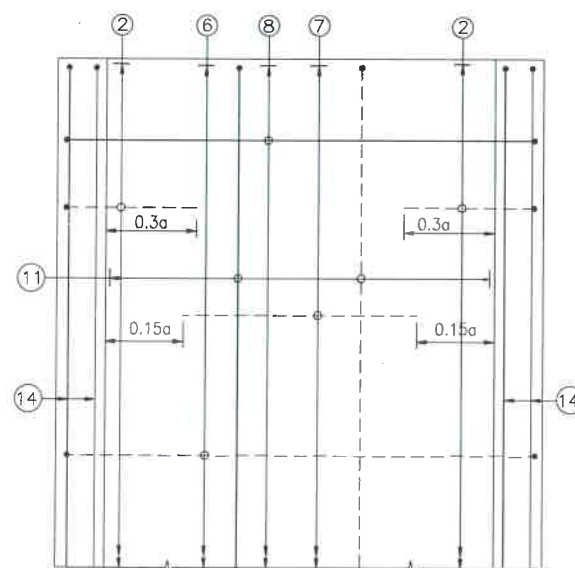
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	12	250 C/C
②	└─┘	12	250 C/C
③	└─┘	12	250 C/C
④	└─┘	12	250 C/C
⑤	└─┘	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	└─┘	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	└─┘	10	220 C/C
⑫	└─┘	10	220 C/C
⑬	└─┘	10	220 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	220 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	220 C/C
㉓	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉔	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

TRAFFIC DIRECTION →

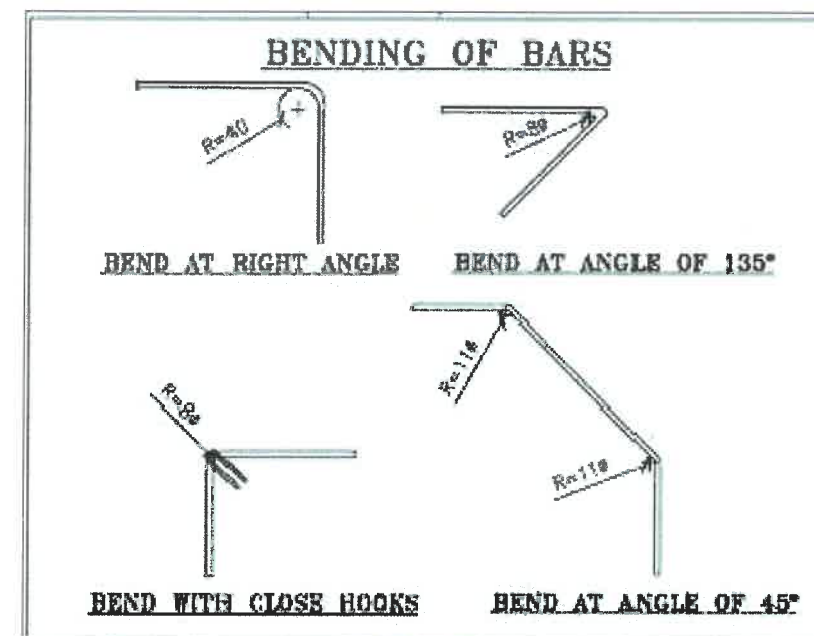


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



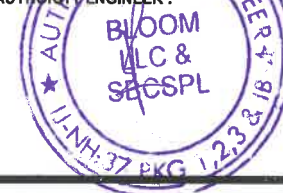
Hinda Engineers Pvt. Ltd.
Address: 191, Mohan Road, Gurgaon, Haryana, INDIA-122002,
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Phone No.-0124-4028681

SAFETY CONSULTANT :



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Address: 191, Mohan Road, Gurgaon, Haryana, INDIA-122002,
Jalpur-302016 (Rajasthan), INDIA-302016,
Email : info@antiquebuilders.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

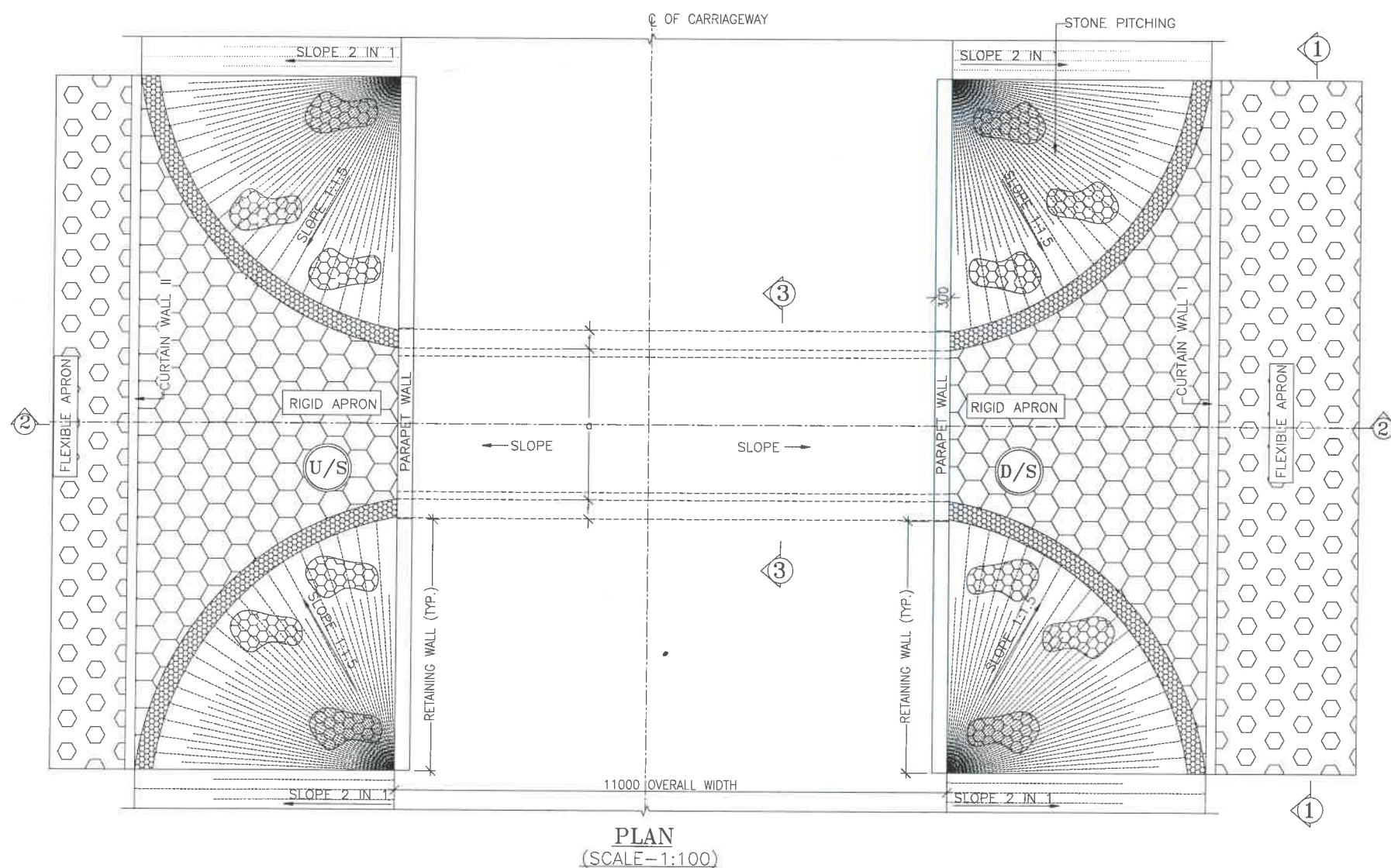
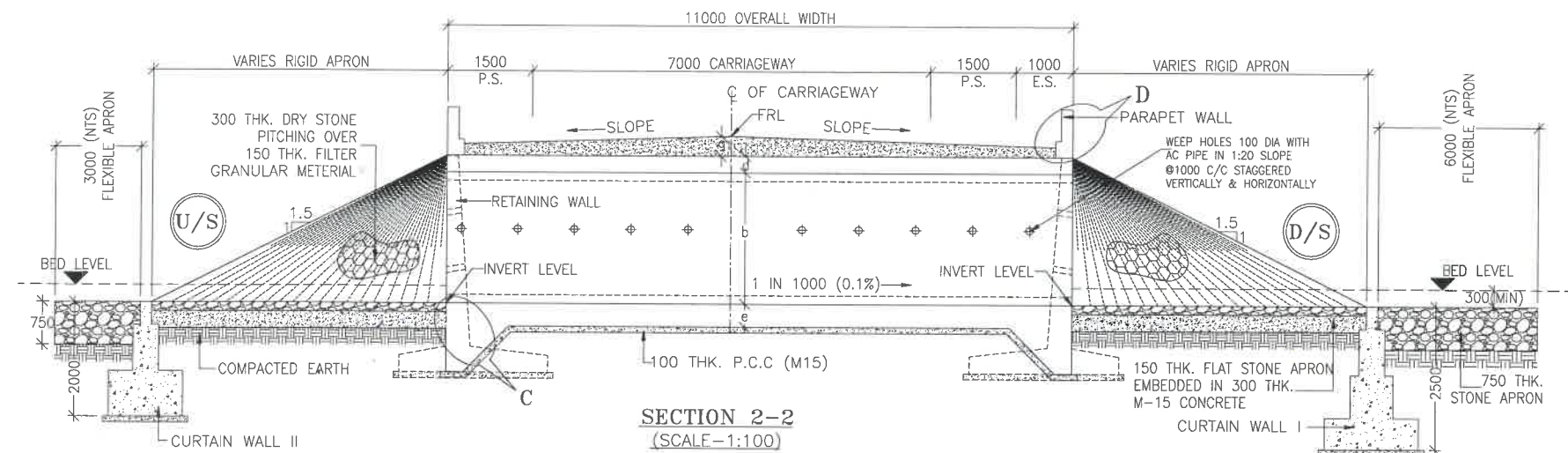
PROJECT NAME:-

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SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



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LEGEND:-

FRL	---	FINISHED ROAD LEVEL
LVL	---	LEVEL
GL	---	GROUND LEVEL
IL	---	INVERT LEVEL
EQ	---	EQUAL
F.P.	---	FOOTPATH
U/S	---	UP STREAM
D/S	---	DOWN STREAM
P.S.	---	PAVED SHOULDER
E.S.	---	EARTH SHOULDER

CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR:



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DESIGN DIRECTOR:



PROOF CONSULTANT:



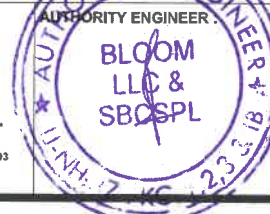
Hindia Engineers Pvt. Ltd.
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Email : info@antiquebuildtech.com

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT**

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

01 OF 02

REV.

R0

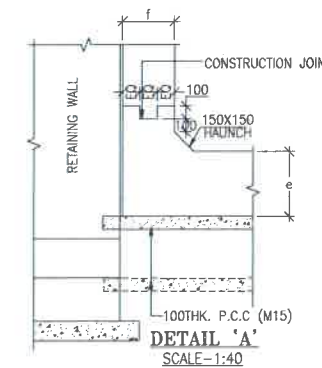
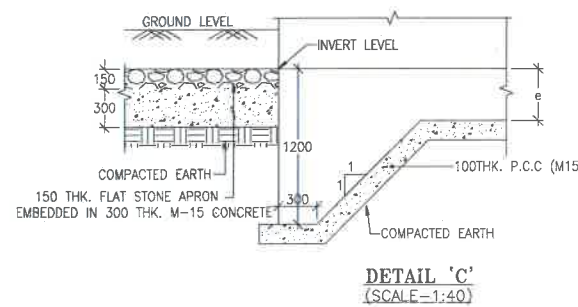
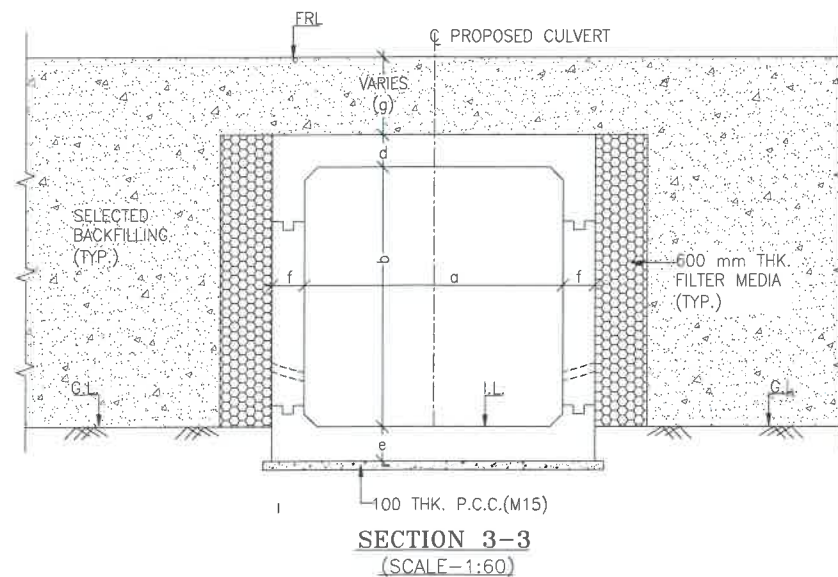
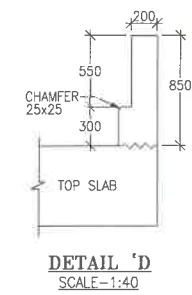
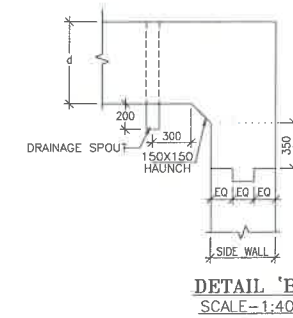
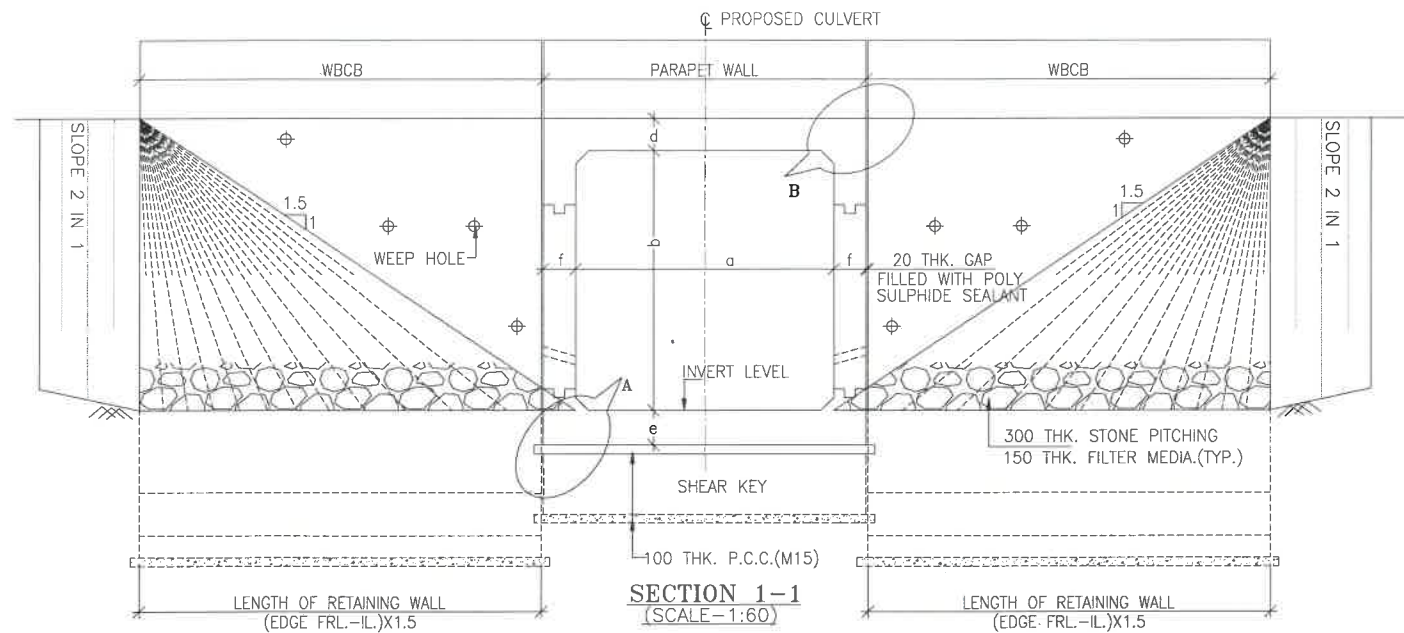
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DATE AUG-2021

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DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



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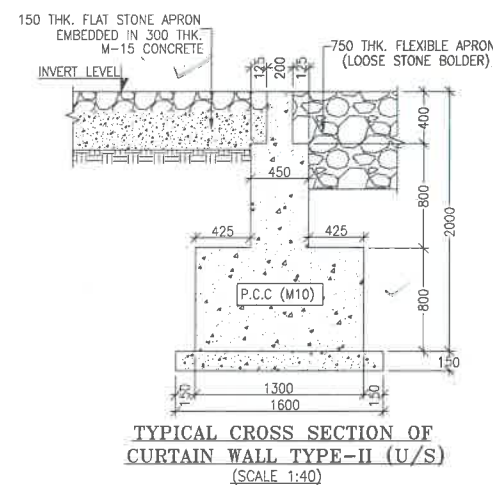
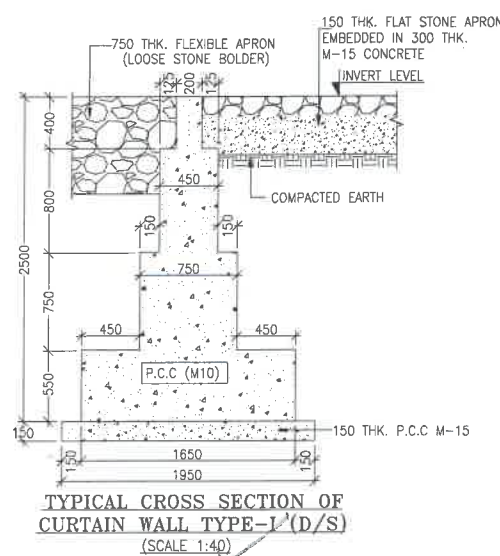
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X2	2000	2000	230	250	230

TABLE-II

S.R. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	29+220	1X2X2	1262.855	1260.025	1260.125	600	TSC-3
②	30+415	1X2X2	1233.995	1231.165	1231.265	600	TSC-3

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. MM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



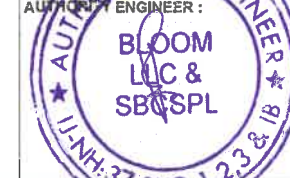
Hindia Engineers Pvt. Ltd.
Address: 30/7, Hitech DLF Phase-1,
Gurgaon-Faridabad Road, Faridabad, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Engineers Pvt. Ltd.
Address: 191, Main Market, Gurgaon Bypass,
Jaipur-302013 (Rajasthan) Phone No. 0141-2760303
Email: info@antiqueengineers.com

AUTHORITY ENGINEER:



DRAWING 3SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

02 OF 02

REV.

R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

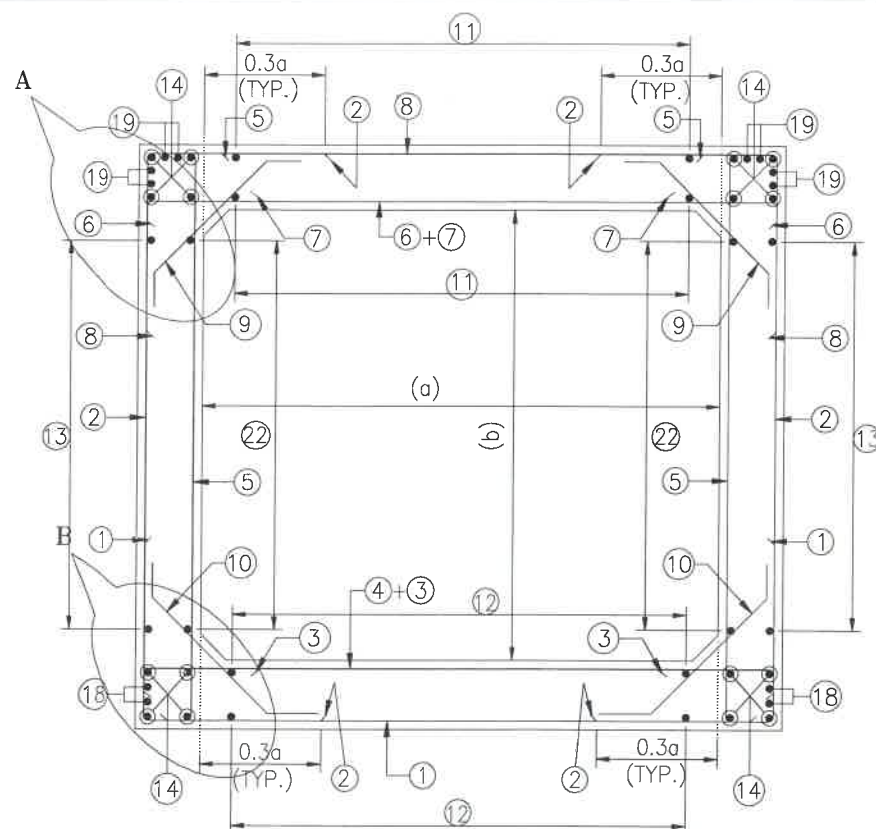
DESIGNED

STRUCTURE ENGINEER

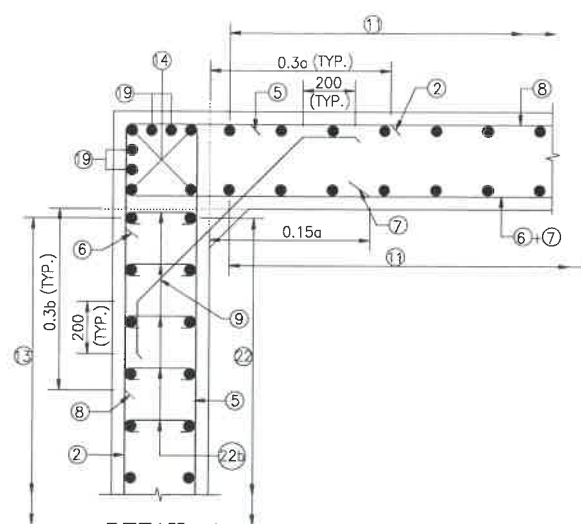
DRAWN STRUCTURE DRAFTSMAN

CHECKED

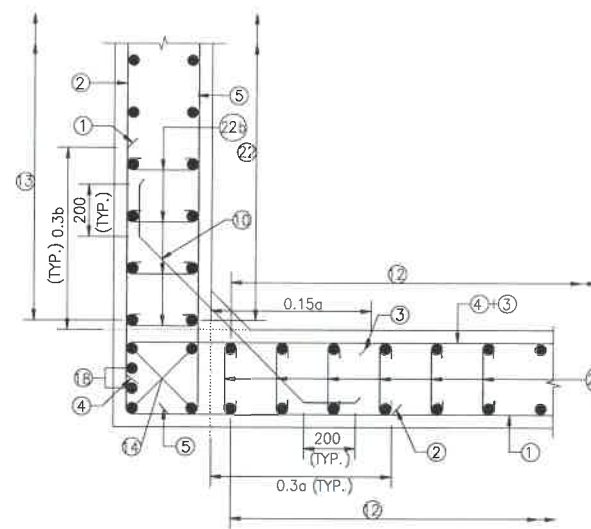
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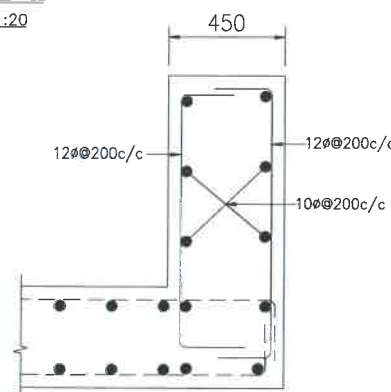
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



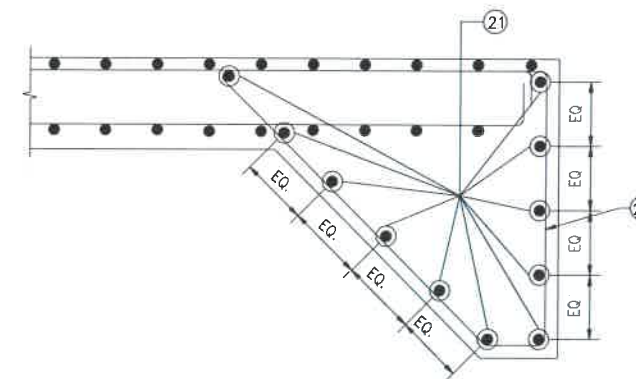
DETAIL-A
SCALE-1:20



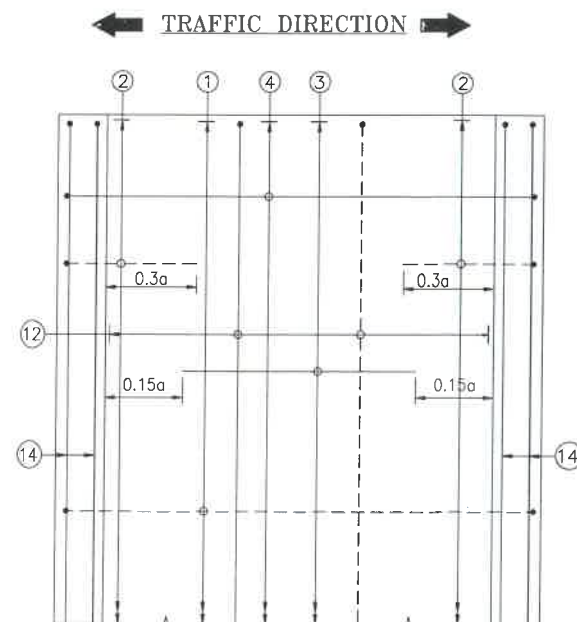
DETAIL-B
SCALE-1:20



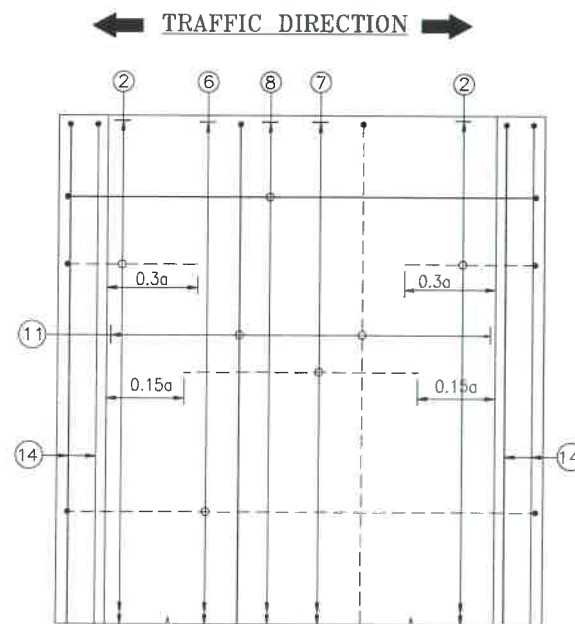
DETAILS OF RCC PARAPET
SCALE-1:20



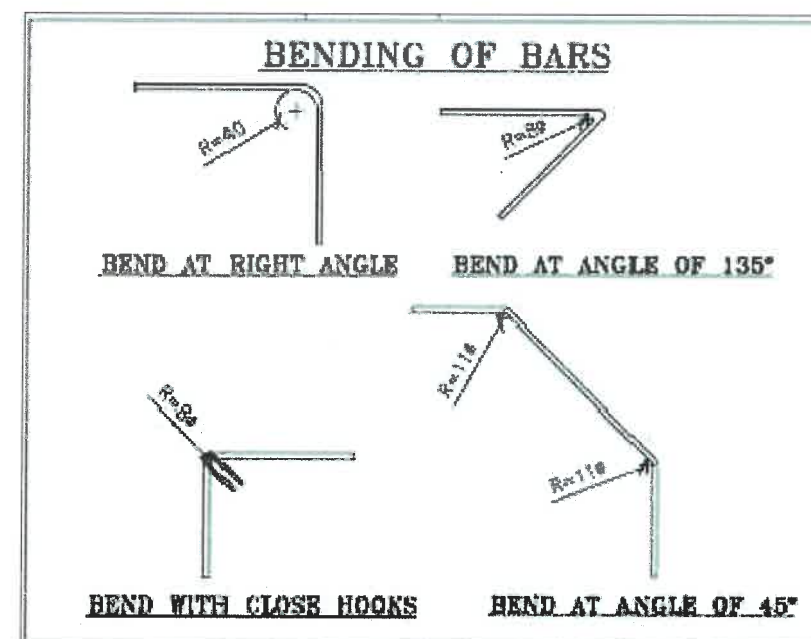
DETAIL OF SHEAR KEY
SCALE : 1:20



**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
- ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
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- JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
- FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	12	250 C/C
②	└─┘	12	250 C/C
③	└─┘	12	250 C/C
④	└─┘	12	250 C/C
⑤	└─┘	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	└─┘	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	└─┘	10	220 C/C
⑫	└─┘	10	220 C/C
⑬	└─┘	10	220 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	220 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	220 C/C
㉓	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉔	└─┘	8DIA.220(LONG. DIRECTION) 500(TRANS. DIRECTION)	

CLIENT :
NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :
DESIGN DIRECTOR

PROOF CONSULTANT :
HINDU ENGINEERS PVT. LTD.
Address: 337, H. Road, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-4124-4028681

SAFETY CONSULTANT :
Antique Buildtech Pvt. Ltd.
Address: 101, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No.-141-244303
Email : info@antiquebuildtech.com

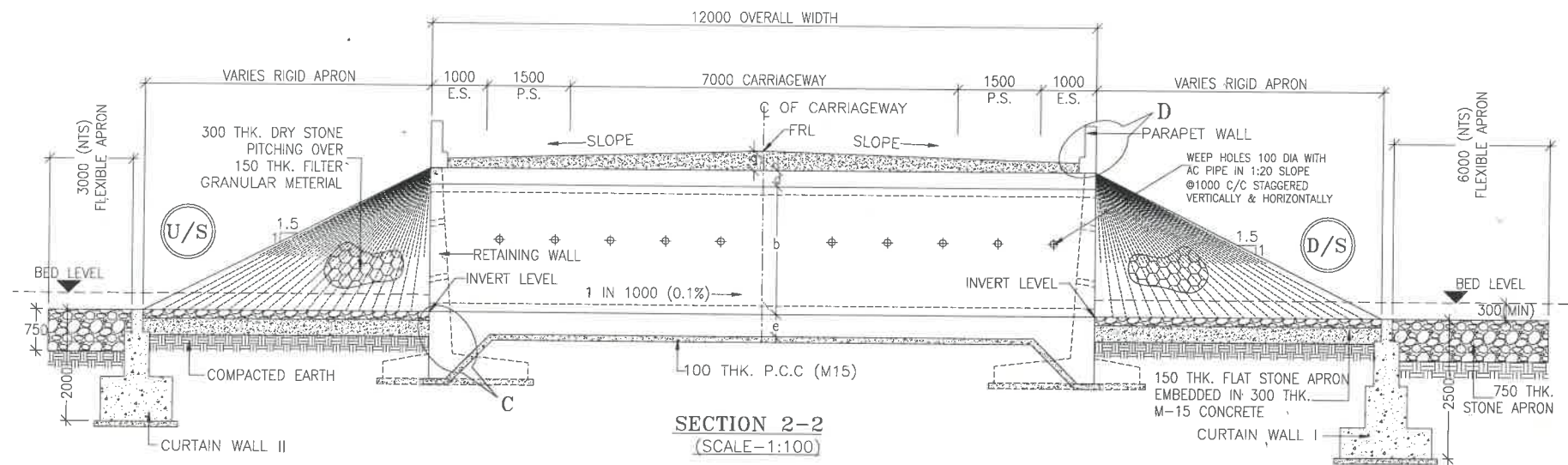
AUTHORITY ENGINEER :
BLOOM
I.C. &
SBSPL

DRAWING SCALE :
NTS
DRAWING TITLE :
**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X2**
PROJECT NAME :-
**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

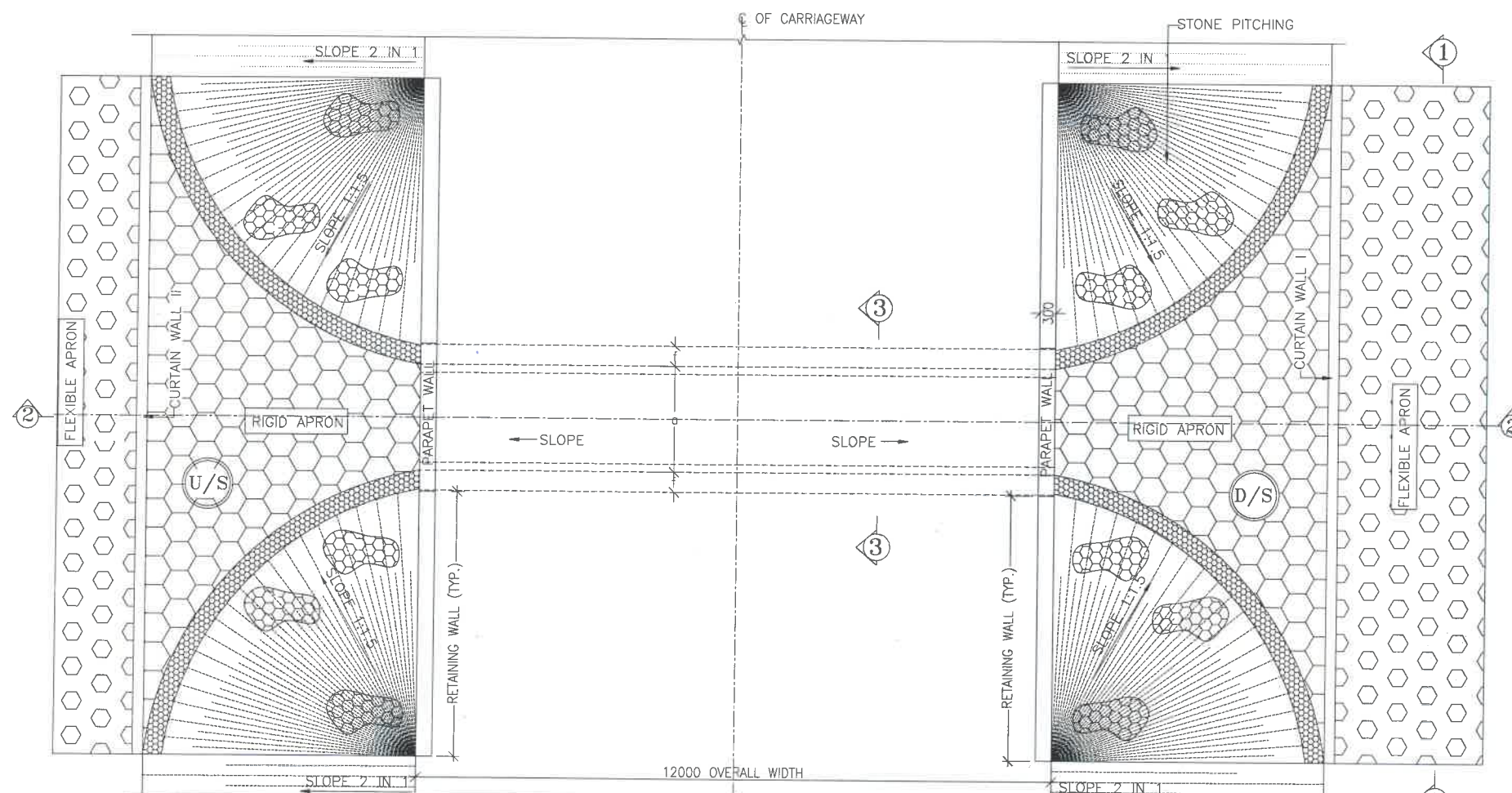
DRG. NO. :
DD/IMP-JIR/ RF/01
SHEET :
01 OF 01
REV. :
R0
DATE :
AUG-2021
DRAWN :
STRUCTURE DRAFTSMAN
DESIGNED :
STRUCTURE ENGINEER
CHECKED :

APPROVED :

BOX CULVERT DRAWING _1X2X3



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



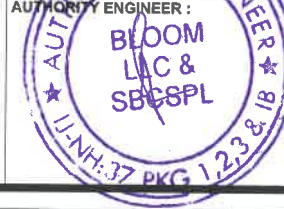
Hindia Engineers Pvt. Ltd.
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Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



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Address: 191, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No. 0124-2760303
Email : Info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
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PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED
STRUCTURE ENGINEER

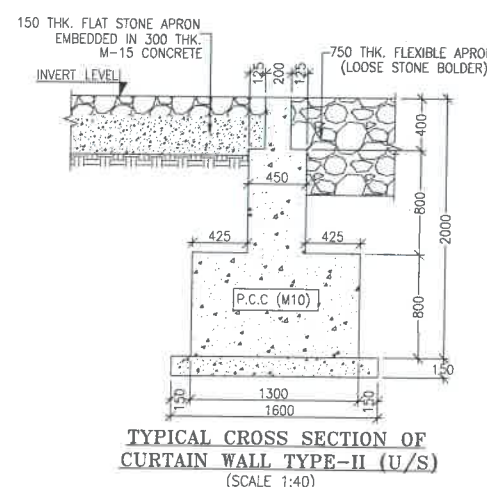
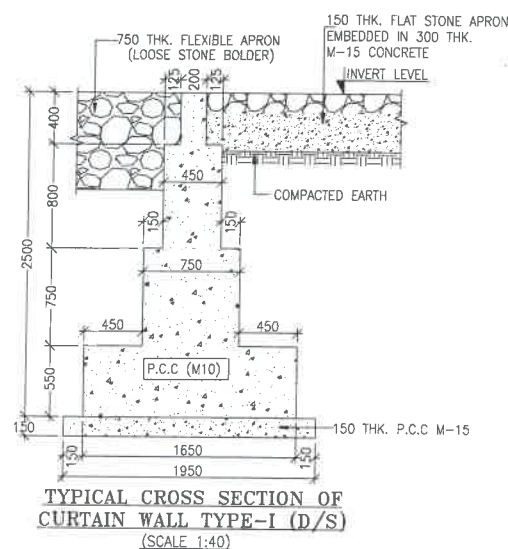
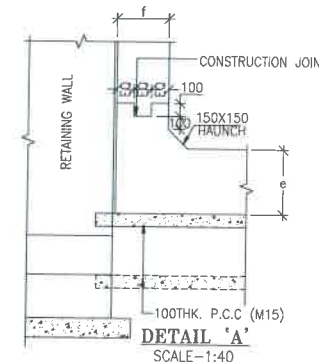
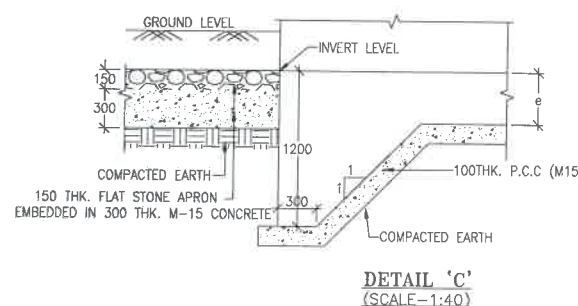
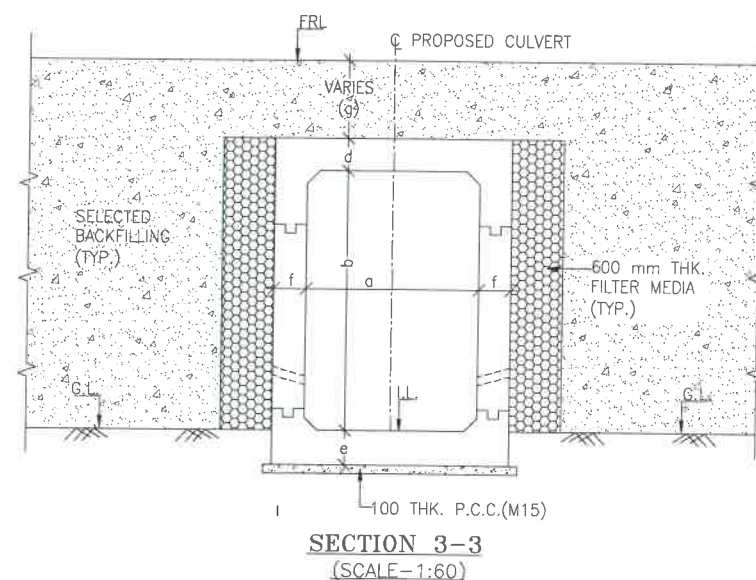
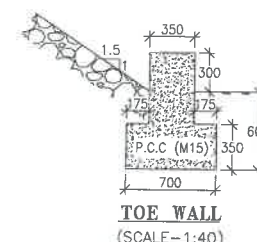
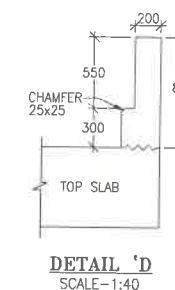
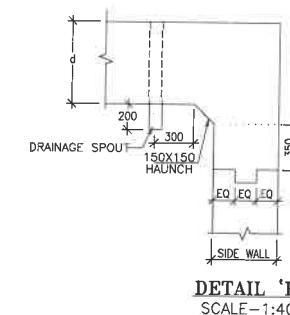
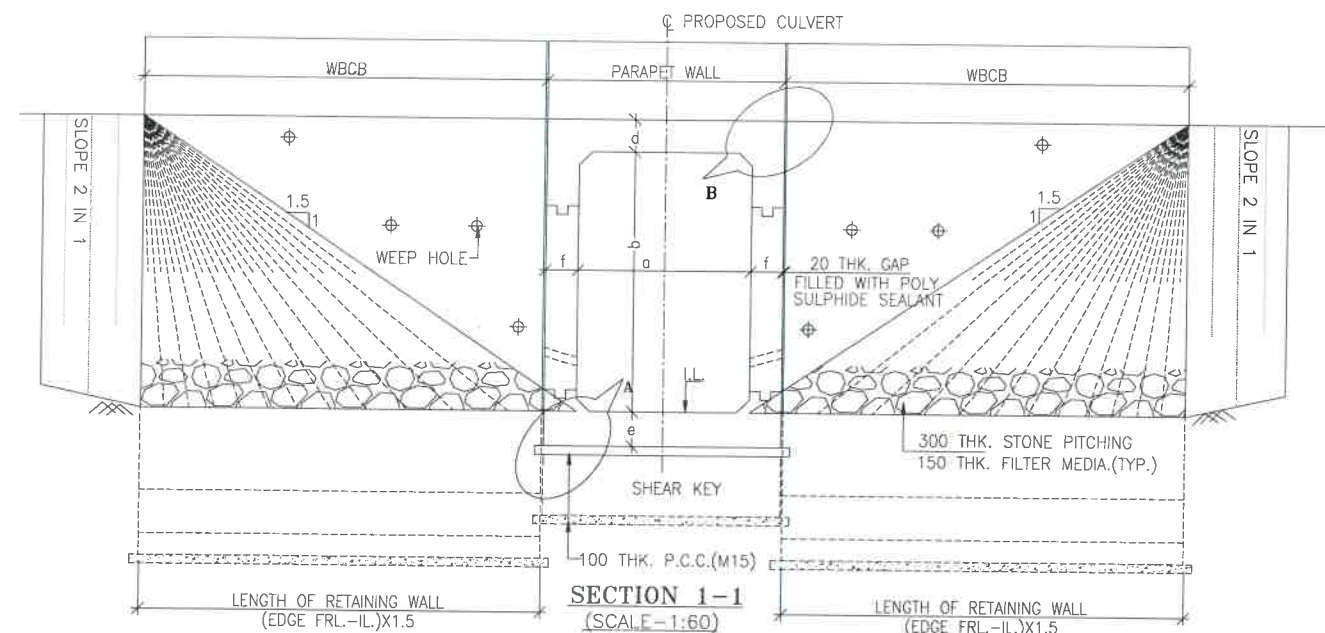


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	18+762	1X2X3	905.894	902.064	902.164	600	TSC-2A

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LEGEND:-

FRL	FINISHED ROAD LEVEL
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F.P.	FOOTPATH
U/S	UP STREAM
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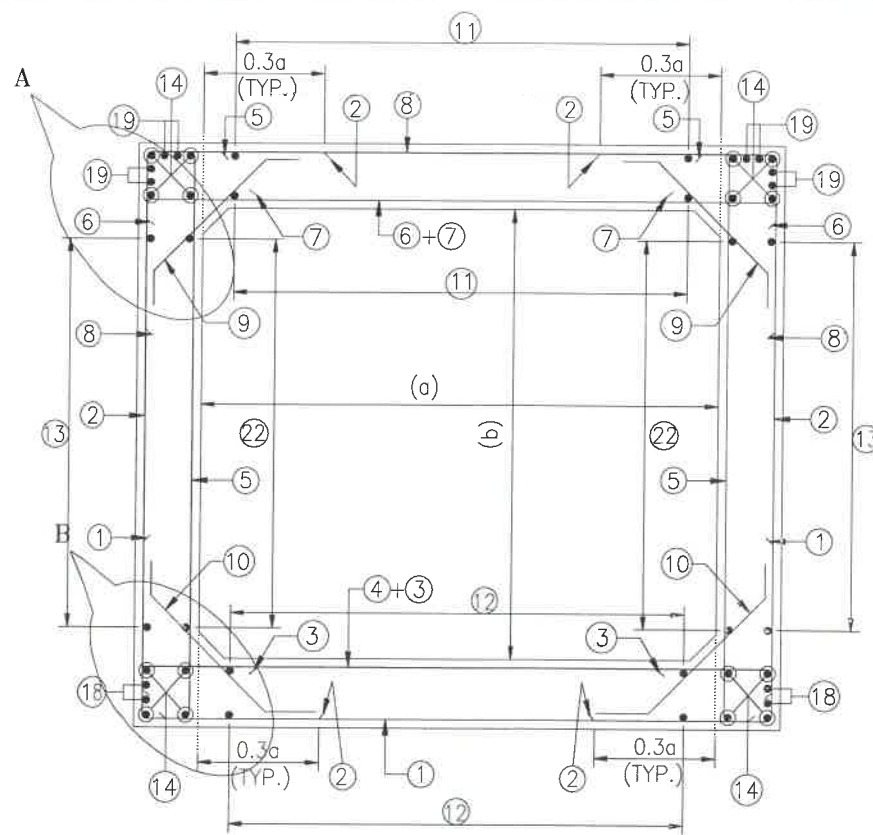
AUTHORITY ENGINEER:
BLOOM
LLC &
SACSPL
11-NH-37 PKG 1,23 & 18

DRAWING SCALE:
NTS

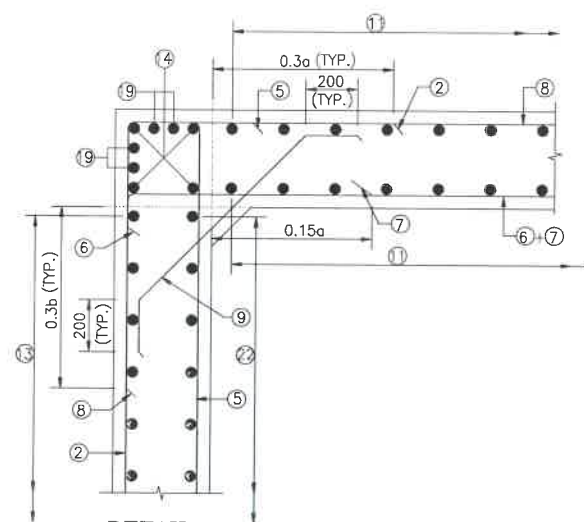
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DRAWING FOR BOX CULVERT

DRG. NO.
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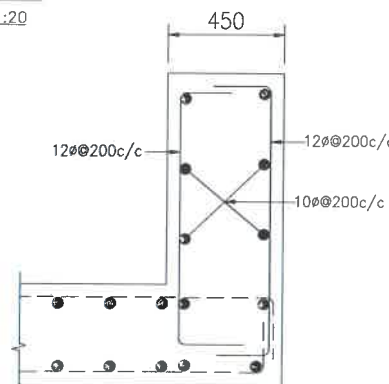
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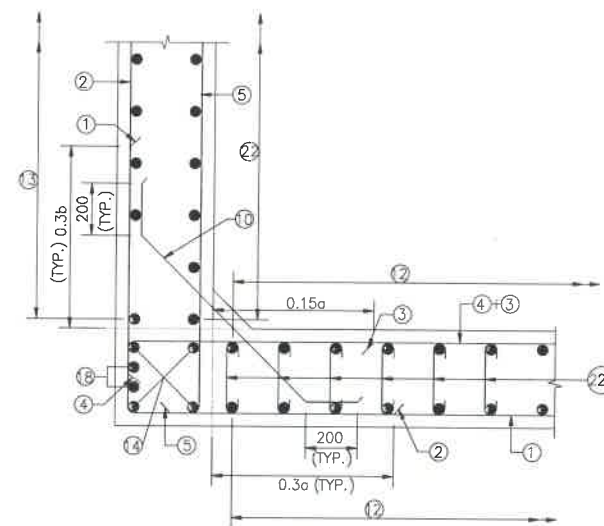
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



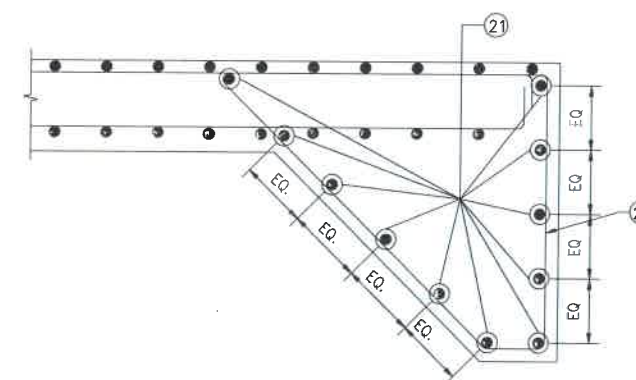
DETAIL-A
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

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LEGEND :-

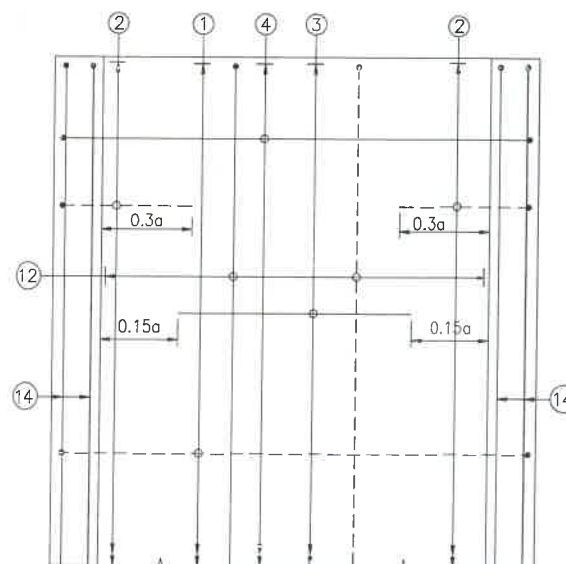
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

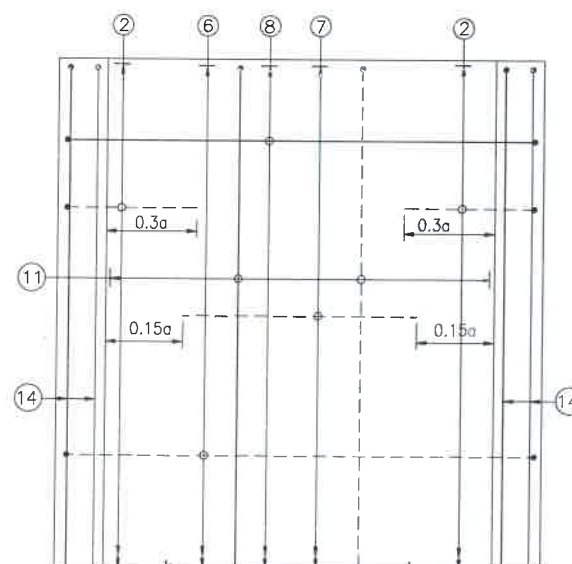
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	└─┘	12	250 C/C
③	└─┘	12	250 C/C
④	└─┘	12	250 C/C
⑤	└─┘	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	└─┘	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	└─┘	10	300 C/C
⑫	└─┘	10	300 C/C
⑬	└─┘	10	300 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	300 C/C
㉒a	└─┘	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

TRAFFIC DIRECTION

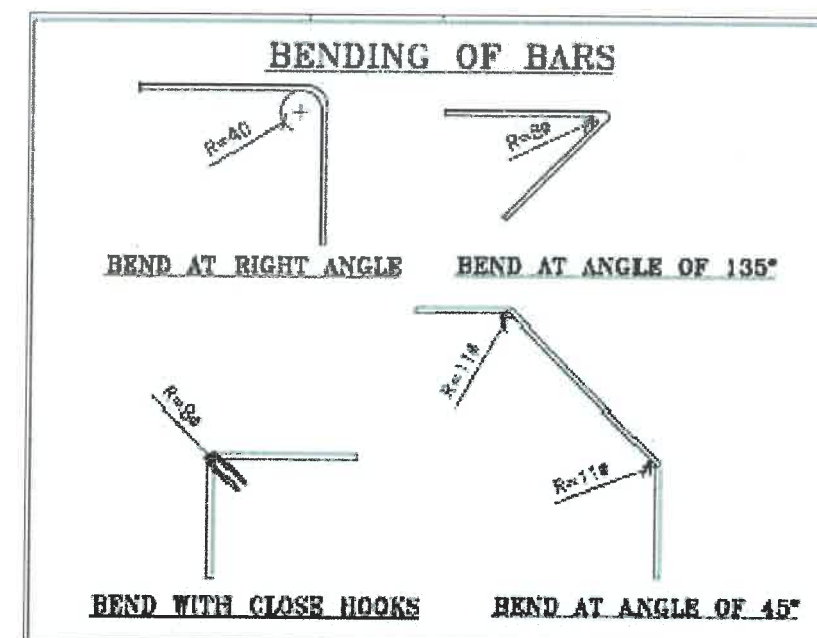


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CHM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



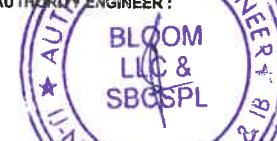
Hines Engineers Pvt. Ltd.
Address: 330, H Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT:



Antique Building Pvt. Ltd.
Address: 181, Mohan Nagar, Gopalpur Bypass,
Jaipur-302018 (Rajasthan) Phone No.-0141-2760303
Email : info@antiquebuilding.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

PROJECT NAME:-

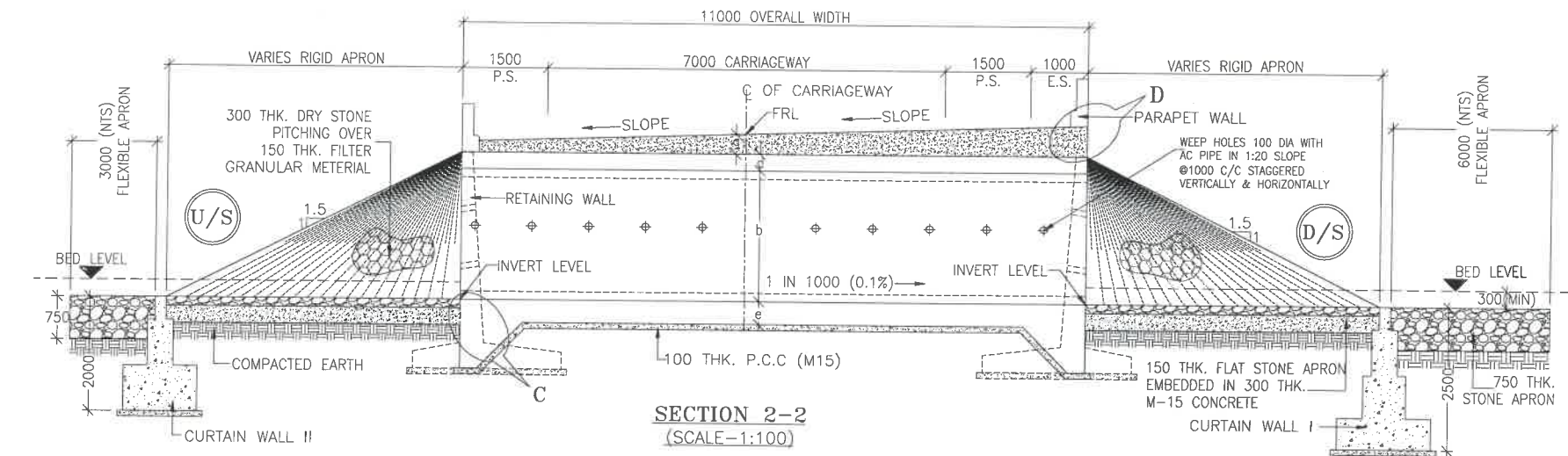
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

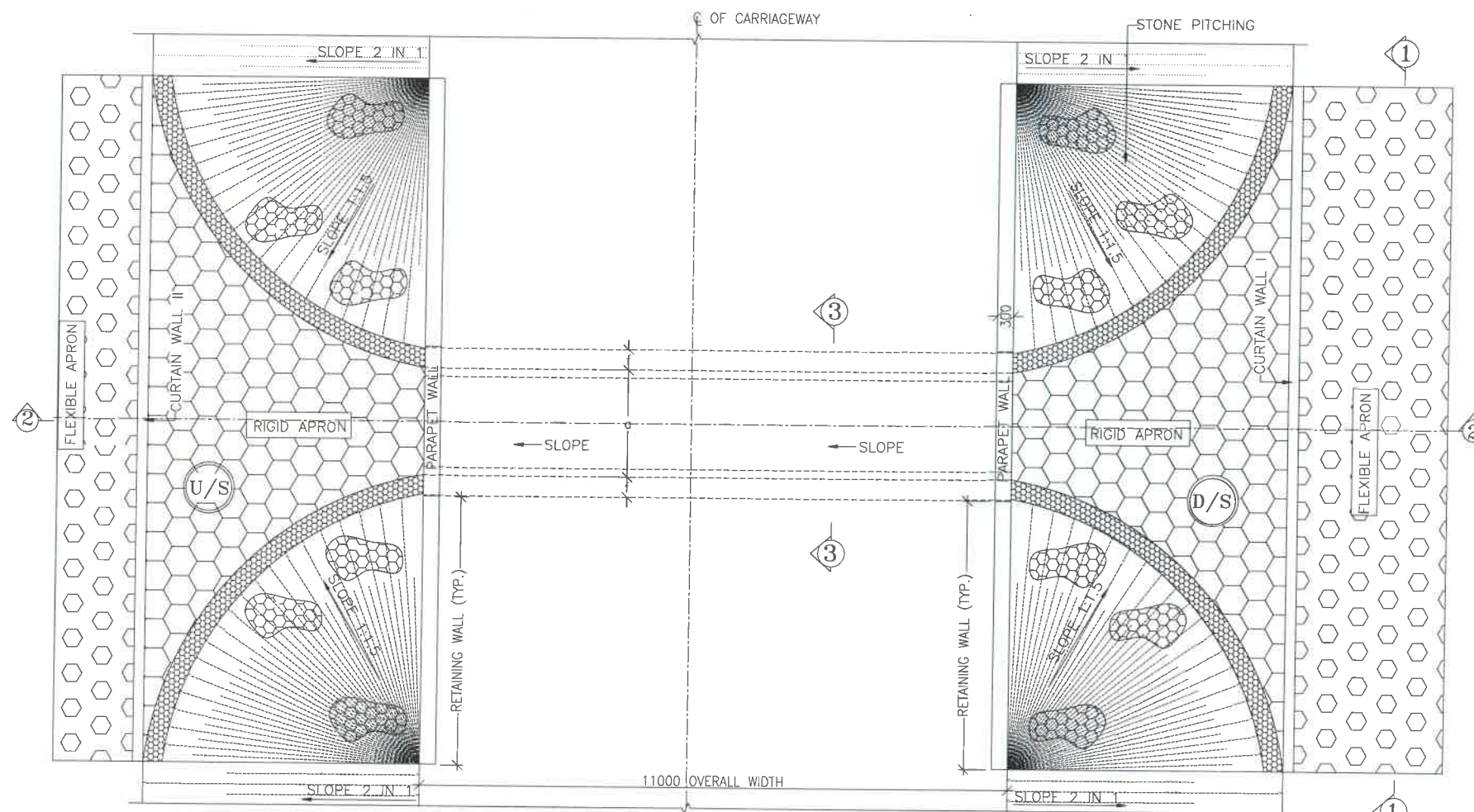
DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
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- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
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LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



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DESIGN DIRECTOR:



PROOF CONSULTANT:



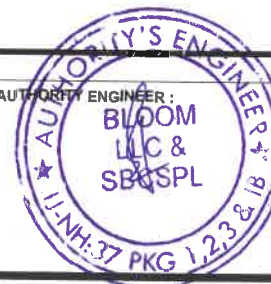
Hiraja Engineers Pvt. Ltd.
Address: 371, Block, DLF Phase-1,
Gurgaon, Road Haryana, INDIA-122002,
Phone No. 0124-4028661

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

01 OF 02

REV.

R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
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DATE AUG-2021

DESIGNED

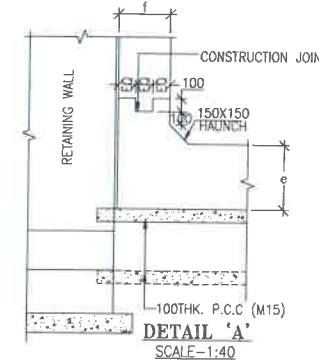
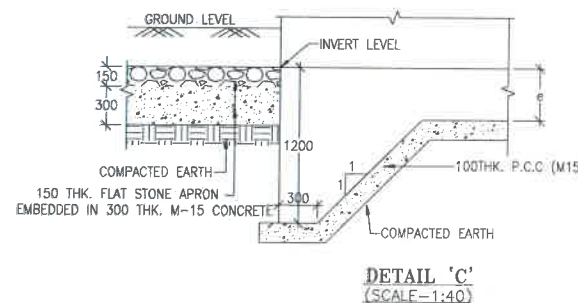
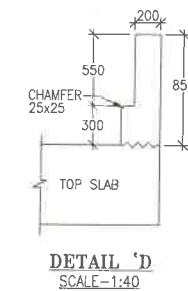
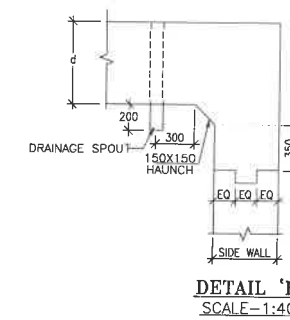
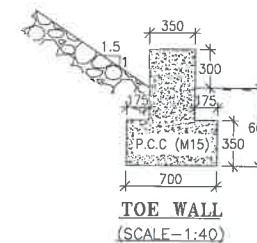
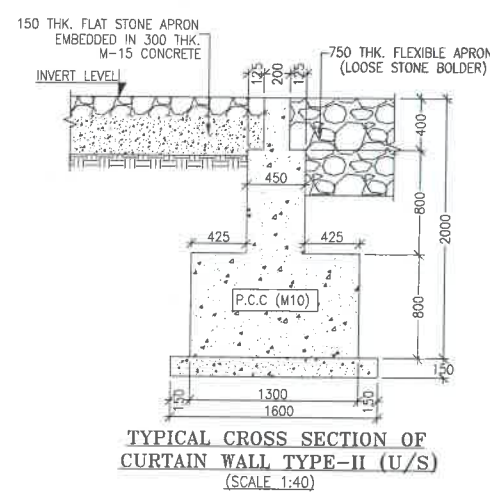
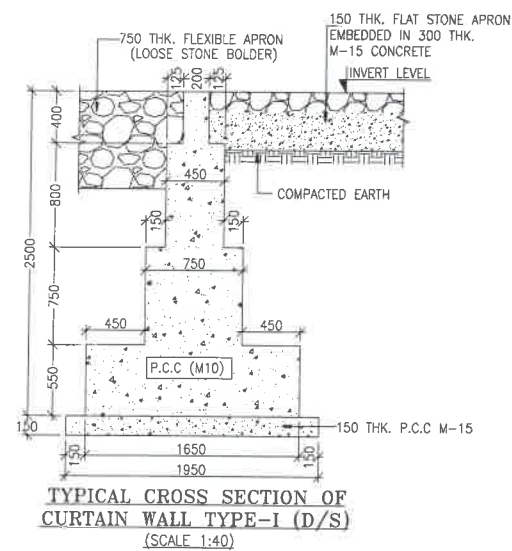
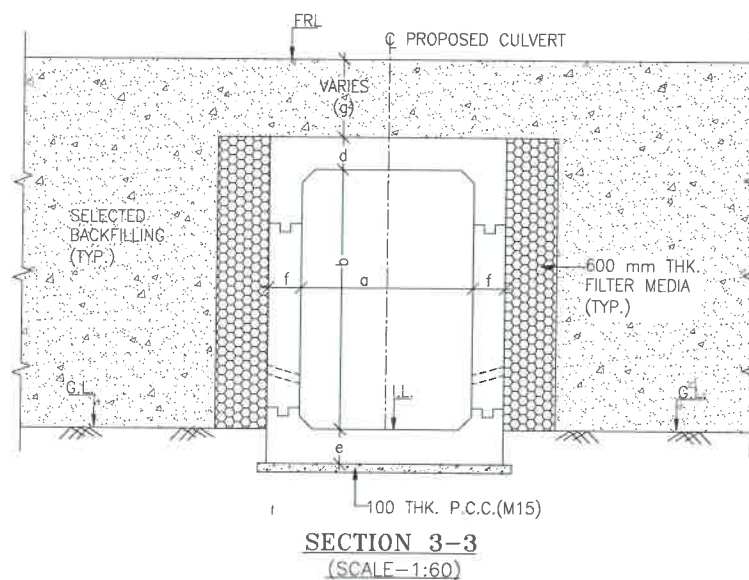
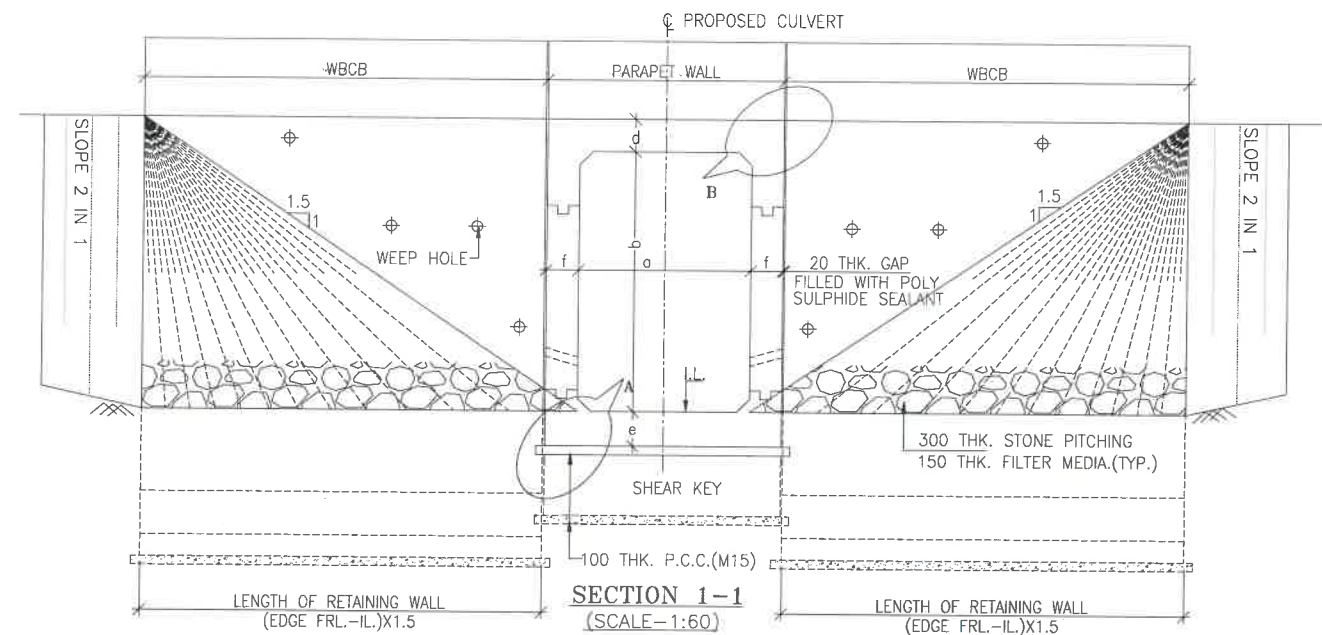
STRUCTURE
ENGINEER

DRAWN

CHECKED

APPROVED

STRUCTURE DRAFTSMAN



NOTES:-

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TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	18+004	1X2X3	874.283	870.453	870.553	600	TSC-3
②	24+164	1X2X3	1112.904	1109.074	1109.174	600	TSC-3
③	26+430	1X2X3	1187.169	1183.339	1183.439	600	TSC-3
④	26+666	1X2X3	1199.360	1195.530	1195.630	600	TSC-3
⑤	26+840	1X2X3	1208.976	1208.146	1208.246	600	TSC-3
⑥	27+529	1X2X3	1236.780	1232.950	1233.050	600	TSC-3

LEGEND:-

FRL	FINISHED ROAD LEVEL
LVL	LEVEL
GL	GROUND LEVEL
IL	INVERT LEVEL
EQ	EQUAL
F.P.	FOOTPATH
U/S	UP STREAM
D/S	DOWN STREAM
P.S.	PAVED SHOULDER
E.S.	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



DESIGN DIRECTOR:



PROOF CONSULTANT:



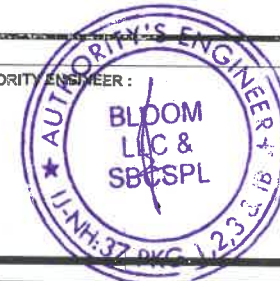
Hird Engineering Pvt. Ltd.
Address: 101, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 101, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

02 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
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DATE AUG-2021

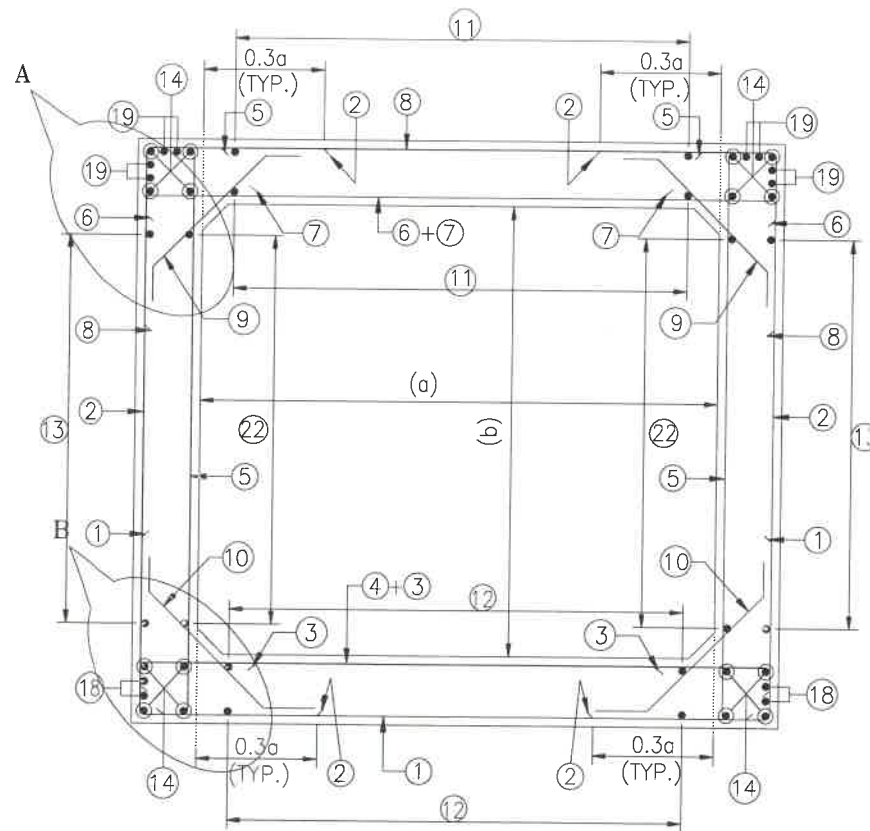
DESIGNED

STRUCTURE ENGINEER

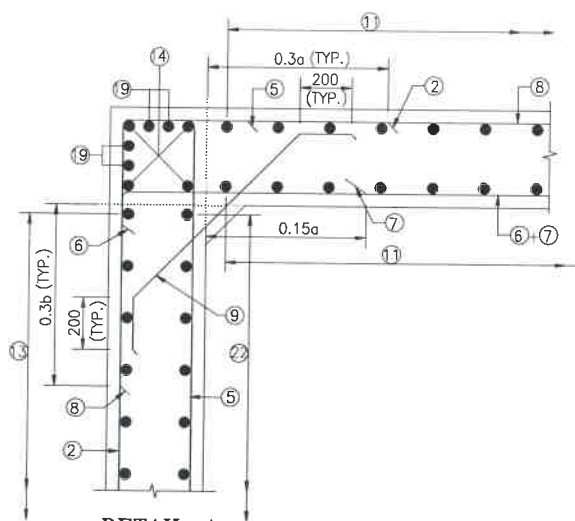
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CHECKED

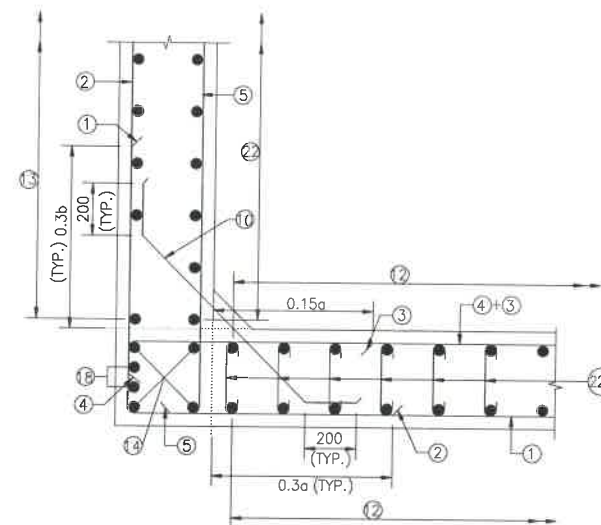
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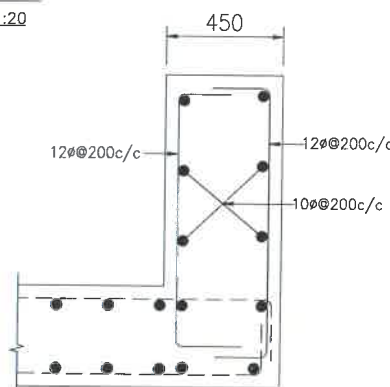
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



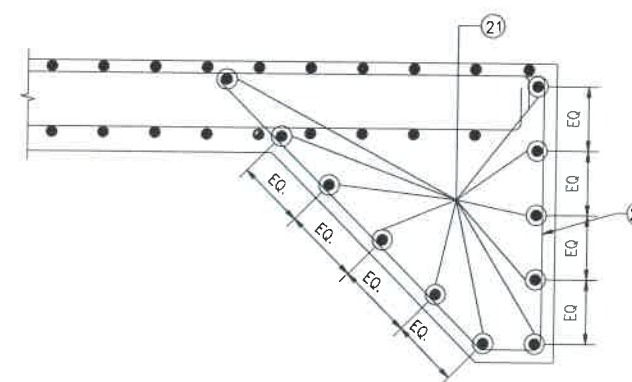
DETAIL-A
SCALE-1:20



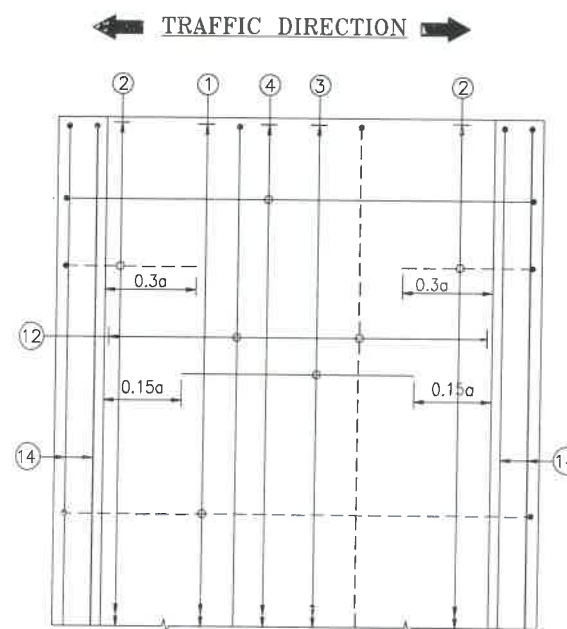
DETAIL-B
SCALE-1:20



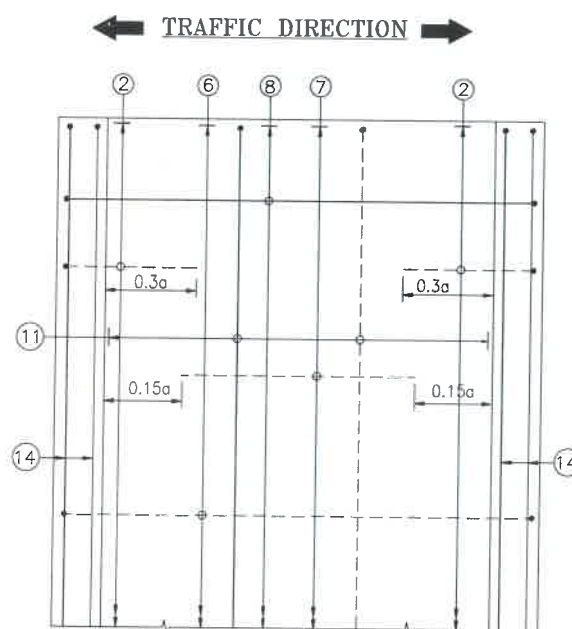
DETAILS OF RCC PARAPET
SCALE-1:20



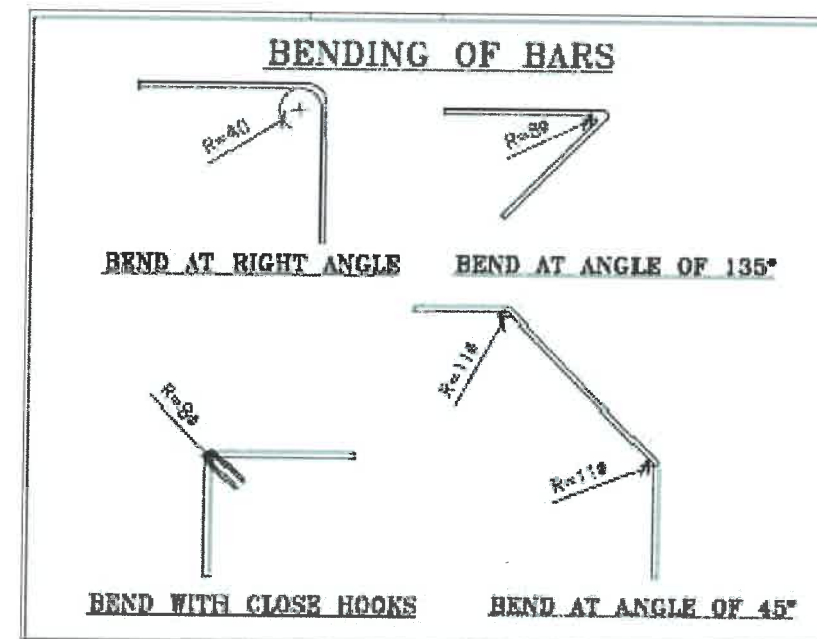
DETAIL OF SHEAR KEY
SCALE : 1:20



**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

	TOP FACE BARS/OUTER FACE BARS
	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	250 C/C
②		12	250 C/C
③		12	250 C/C
④		12	250 C/C
⑤		12	250 C/C
⑥		12	250 C/C
⑦		12	250 C/C
⑧		12	250 C/C
⑨		10	250 C/C
⑩		10	250 C/C
⑪		10	300 C/C
⑫		10	300 C/C
⑬		10	300 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	300 C/C
㉑		12	20 NOS.
㉒		10	300 C/C
㉒a		8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b		NOT IN USE	

CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

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DESIGN DIRECTOR :



PROOF CONSULTANT :



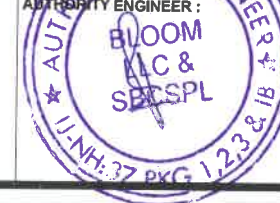
Hindustan Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridkot Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



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Address: 191, Mohan Nagar, DLF Phase-1,
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DRG. NO.

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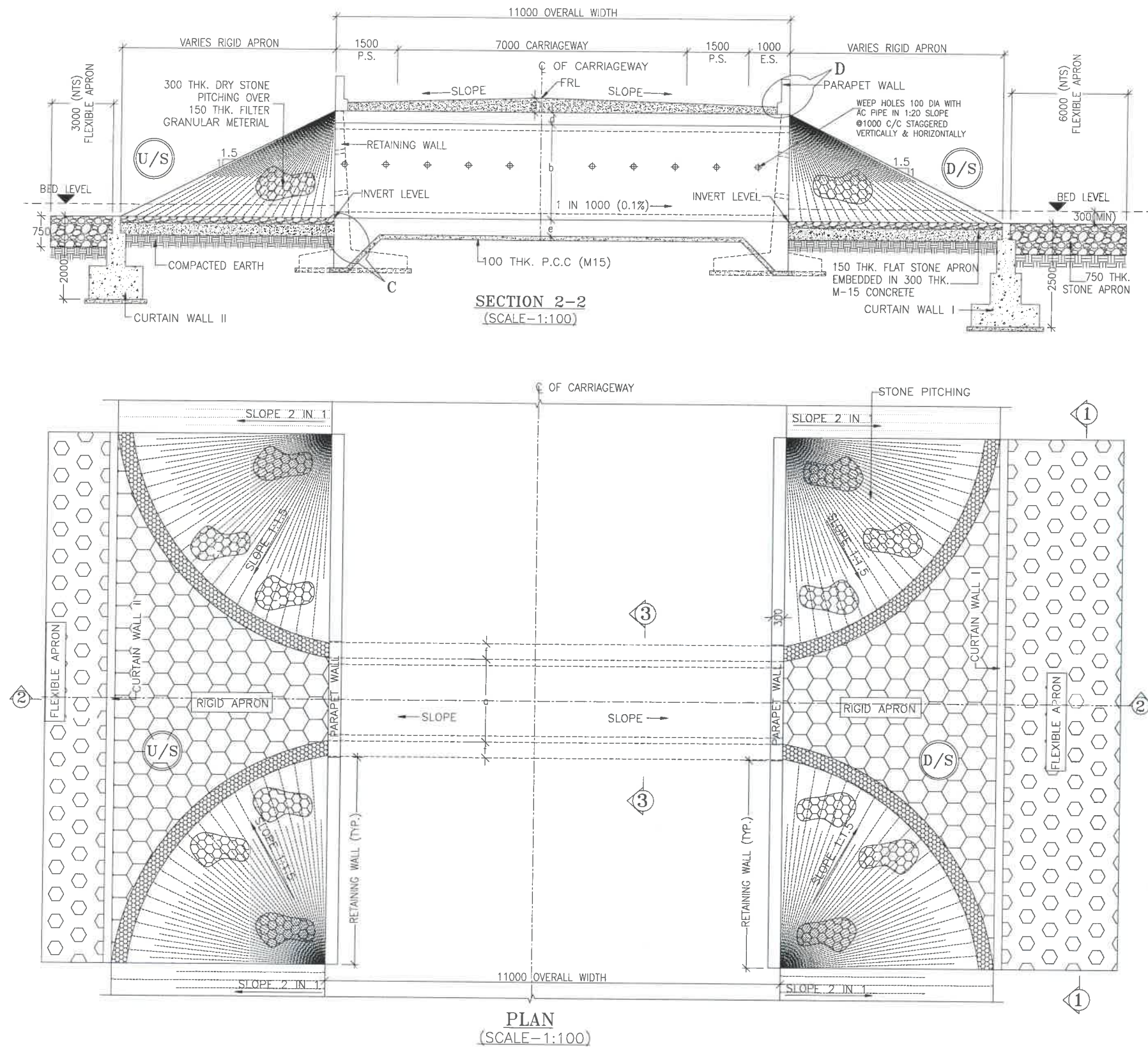
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

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CLIENT :



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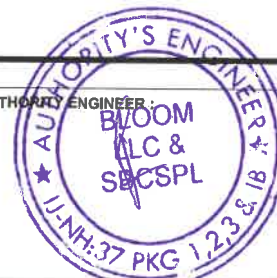
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DRG. NO.
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SHEET: **01 OF 02**
REV. **R0**

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AUG-2021					
	STRUCTURE ENGINEER	---	---	---	---

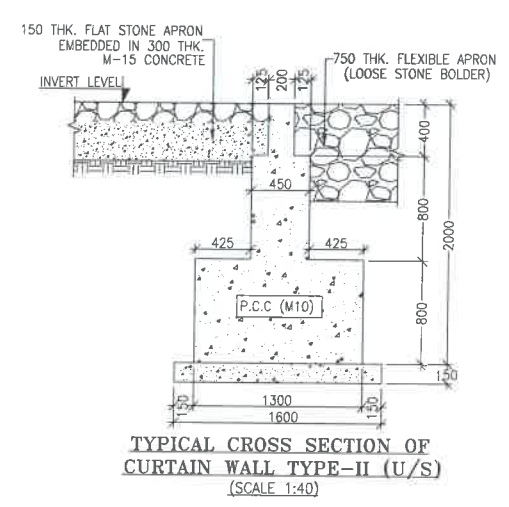
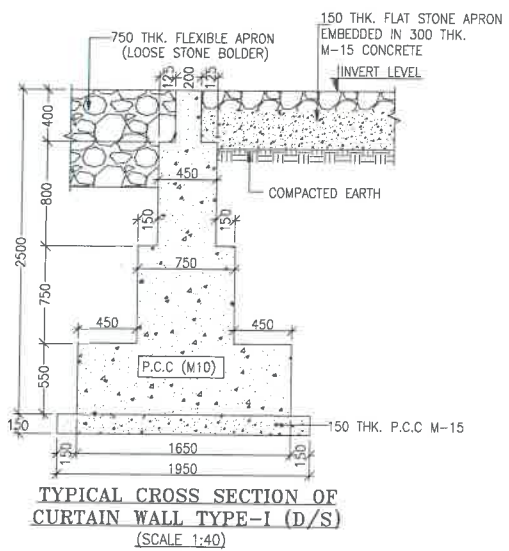
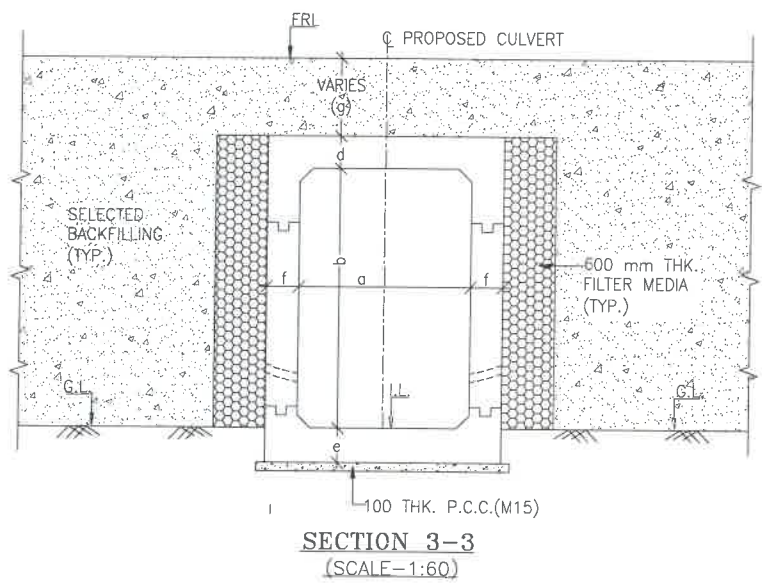
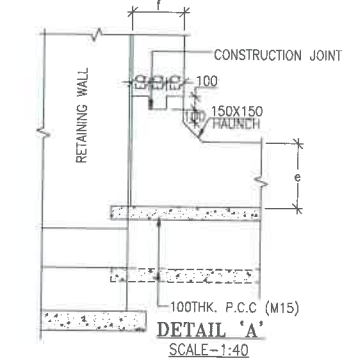
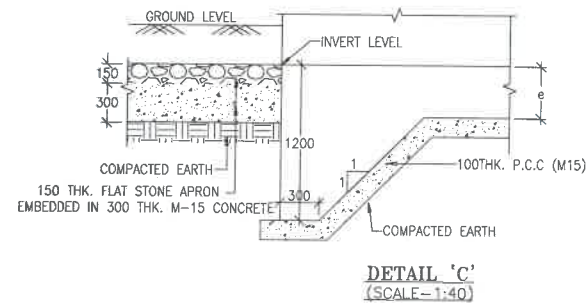
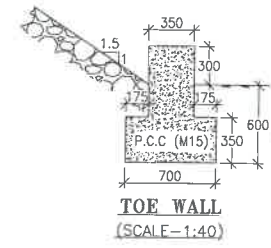
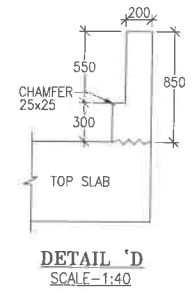
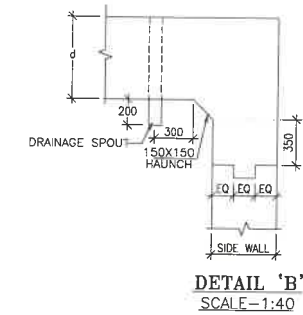
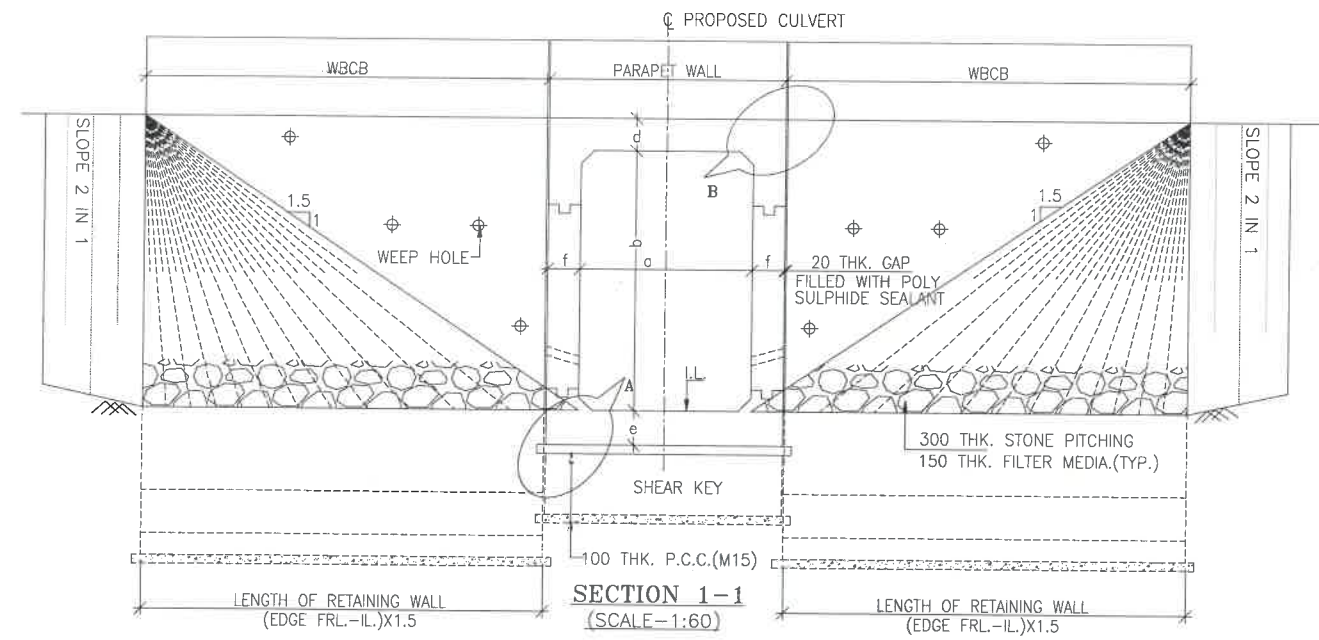


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	19+262	1X2X3	926.890	923.060	923.160	600	TSC-3
②	25+643	1X2X3	1152.336	1148.506	1148.606	600	TSC-3

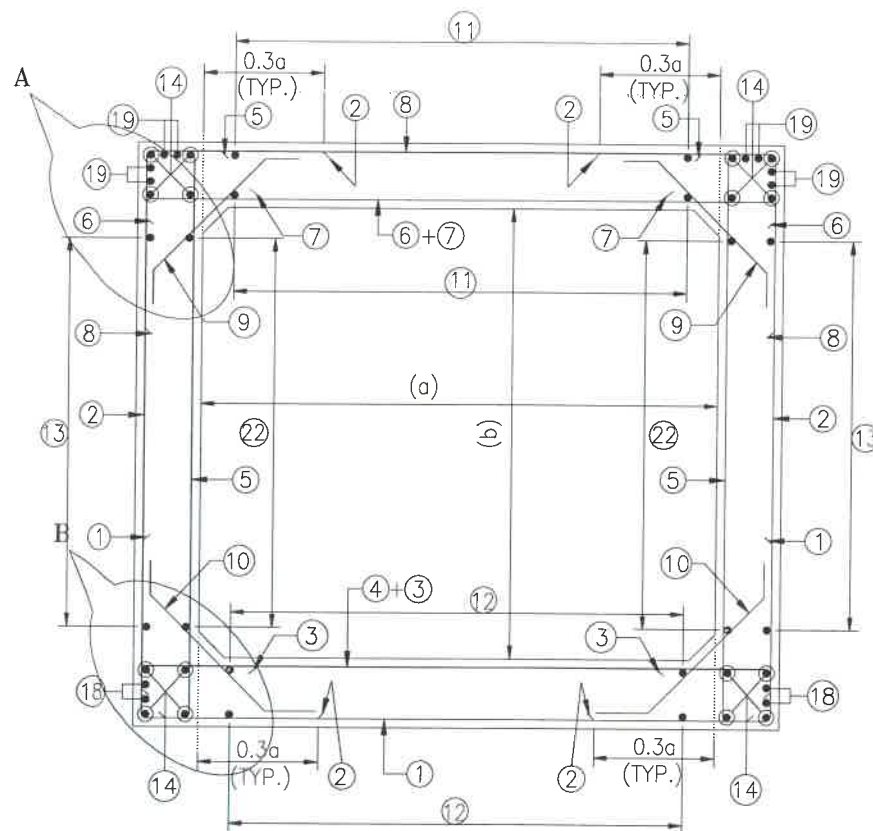
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

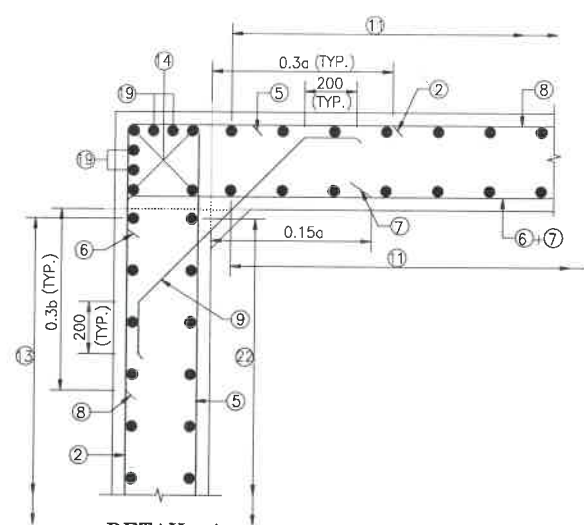
LEGEND:-

- FRL - FINISHED ROAD LEVEL
- LVL - LEVEL
- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER

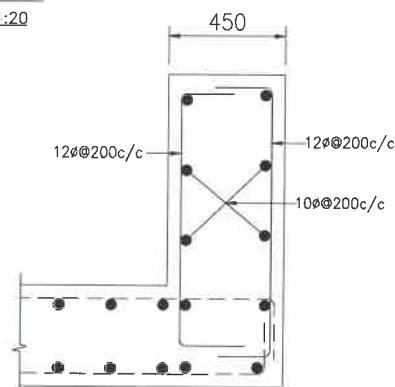
CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR: M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: DESIGN DIRECTOR	PROOF CONSULTANT: Hines Engineers Pvt. Ltd. Address: 181, Mohan Nagar, Gurgaon, Haryana, INDIA-122002, Phone No. 0124-4028681	SAFETY CONSULTANT: Antique Buildtech Pvt. Ltd. Address: 181, Mohan Nagar, Gurgaon, Haryana, INDIA-122002, Phone No. 0124-4028681	AUTHORITY ENGINEER: AUTHORITY ENGINEER	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: 02 OF 02	REV. R0
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DATE AUG-2021	DRAWN STRUCTURE DRAFTSMAN	DESIGNED	CHECKED	APPROVED
						STRUCTURE ENGINEER				



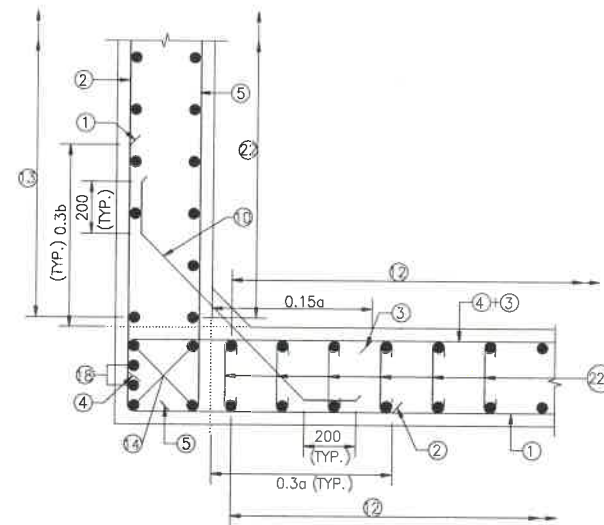
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



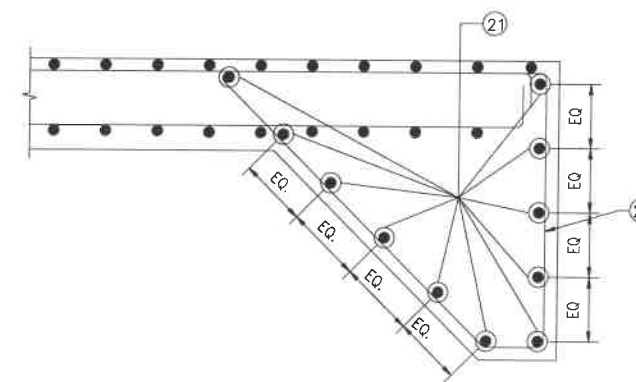
DETAIL-A
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

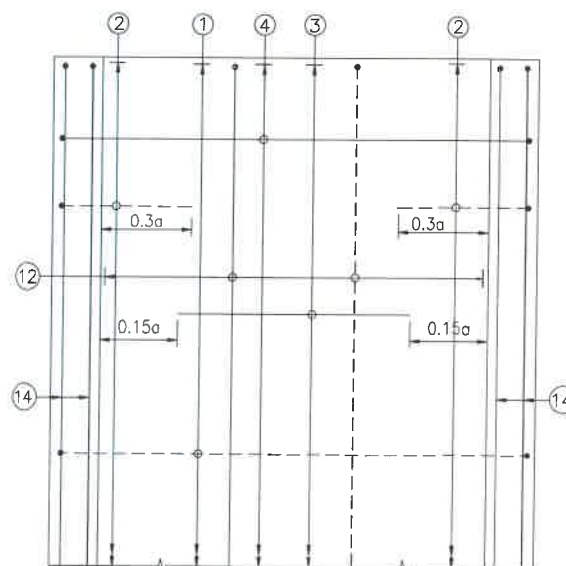
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

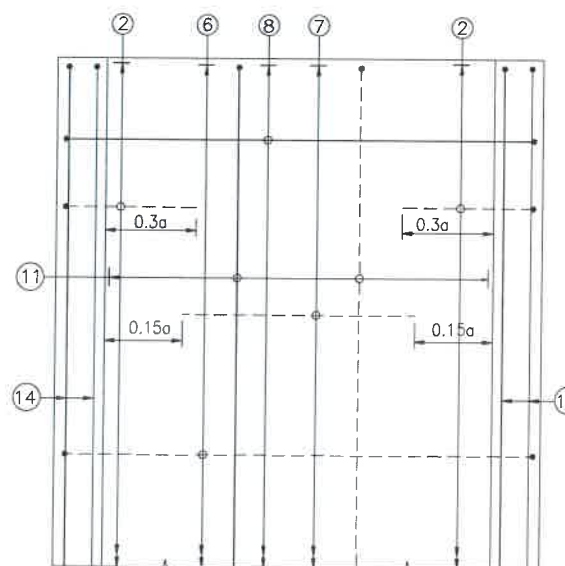
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	—	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	┌─┐	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	300 C/C
⑫	—	10	300 C/C
⑬	—	10	300 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	┌─┐	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	—	10	300 C/C
㉒a	┌─┐	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

← TRAFFIC DIRECTION →

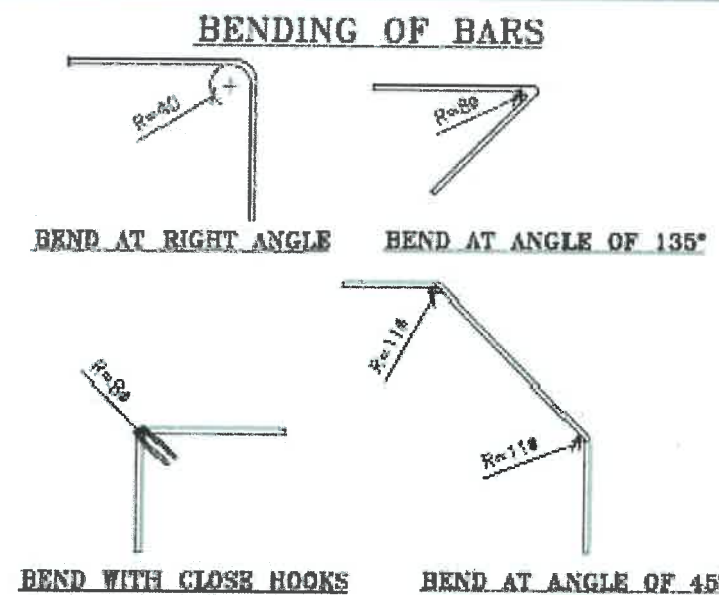


**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

← TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRASTRUCTURE PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



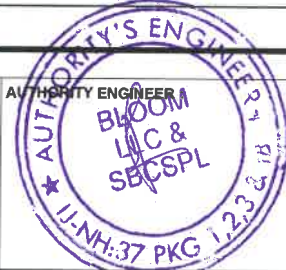
Hindia Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-I,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028851

SAFETY CONSULTANT :



Antique Builders Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-I,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Email : info@antiquebuilders.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET:

01 OF 01

REV.

R0

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DATE AUG-2021

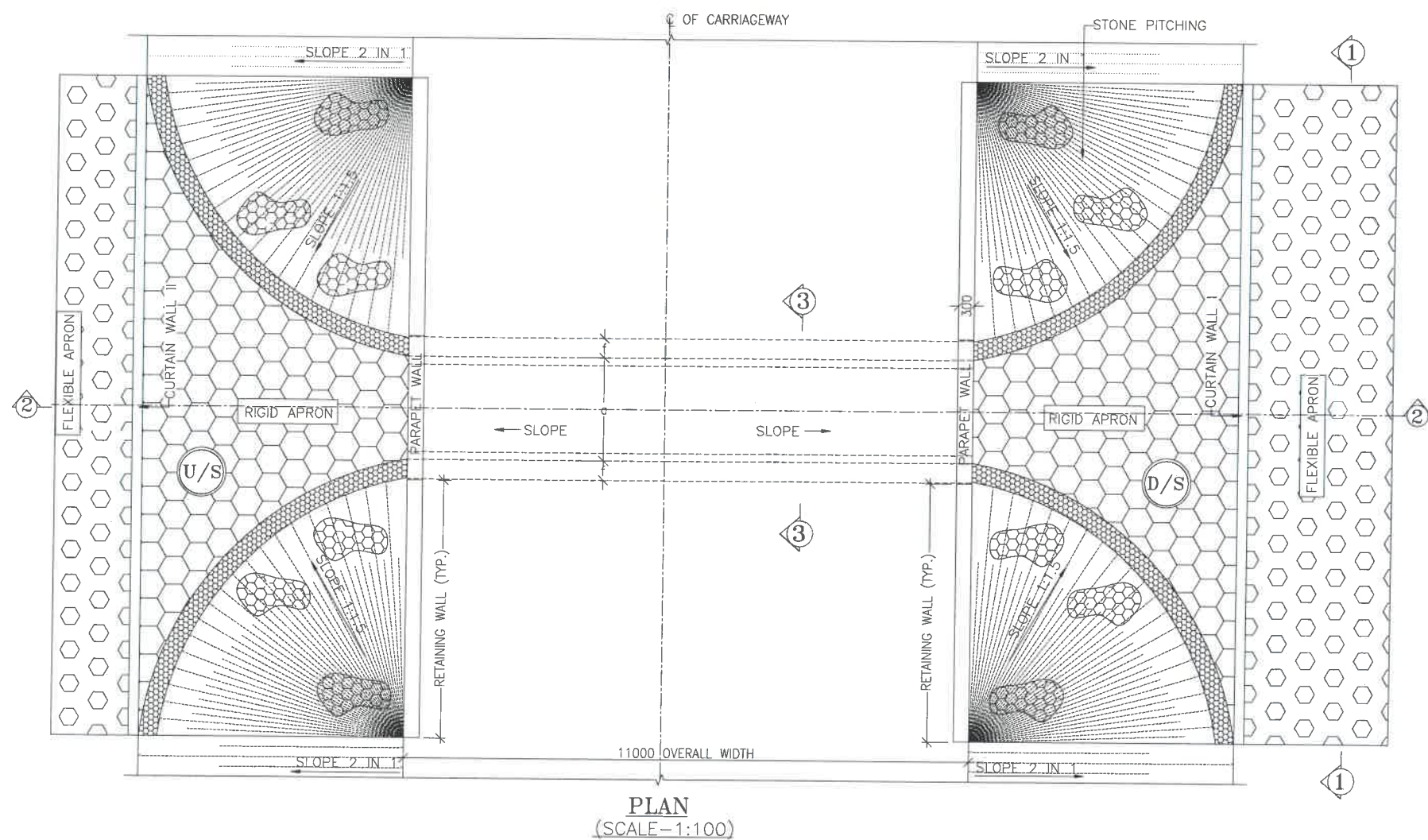
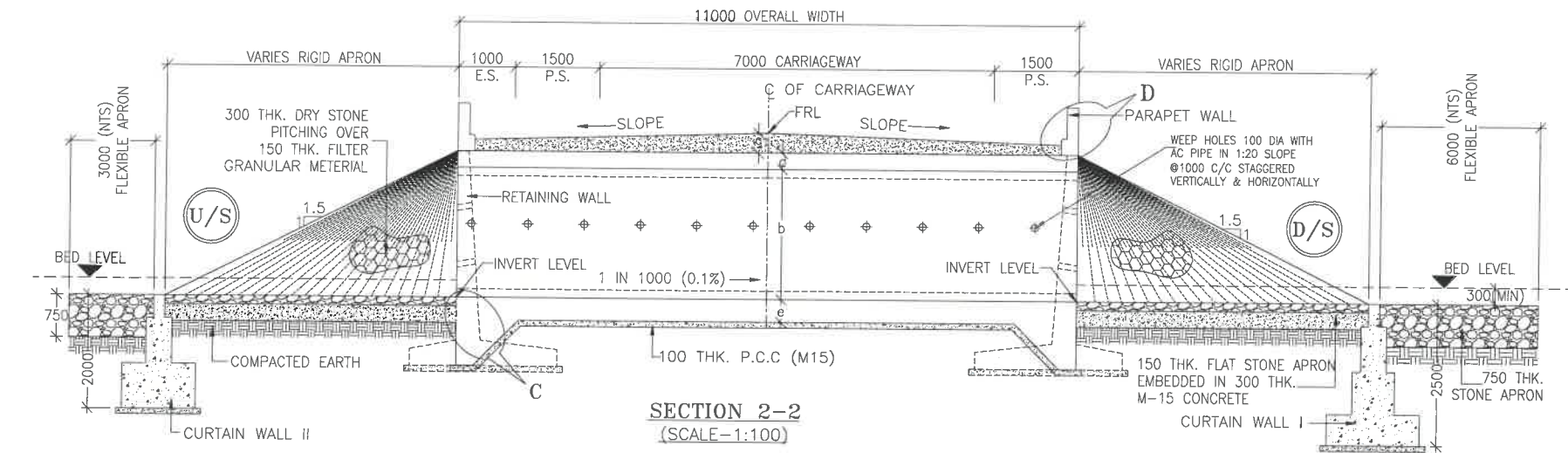
DESIGNED

STRUCTURE ENGINEER

DRAWN STRUCTURE DRAFTSMAN

CHECKED

APPROVED



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 - RCC BOX.....M30
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 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
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LEGEND:-

FRL	---	FINISHED ROAD LEVEL
LVL	---	LEVEL
GL	---	GROUND LEVEL
IL	---	INVERT LEVEL
EQ	---	EQUAL
F.P.	---	FOOTPATH
U/S	---	UP STREAM
D/S	---	DOWN STREAM
P.S.	---	PAVED SHOULDER
E.S.	---	EARTHEN SHOULDER

CLIENT :

 NATIONAL HIGHWAYS & INFRASTRUCTURE
 DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 M/S. CMM INFRA PROJECTS LTD.

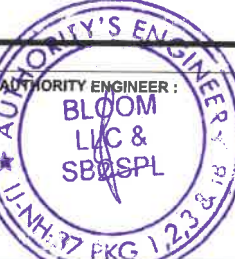
DESIGN DIRECTOR:


PROOF CONSULTANT:

 Hindus Engineers Pvt. Ltd.
 Address: 338, H Block, DLF Phase-1,
 Gurgaon-Faridkot Road Haryana, INDIA-122002,
 Phone No.-0124-4028681

SAFETY CONSULTANT:

 Antique Buildtech Pvt. Ltd.
 Address: 191, Mohan Nagar, Durgam Chattrapatti,
 Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
 Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER

 BLOOM
 LLC &
 SBOSPL

DRAWING SCALE:
 NTS

DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT
 DRAWING FOR BOX CULVERT

DRG. NO.
 DD/IMP-JIR/ BOX/GAD/01
 SHEET: 01 OF 02
 REV. R0

PROJECT NAME:-

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DATE AUG-2021
 DESIGNED
 STRUCTURE ENGINEER
 DRAWN
 CHECKED
 STRUCTURE DRAFTSMAN
 APPROVED

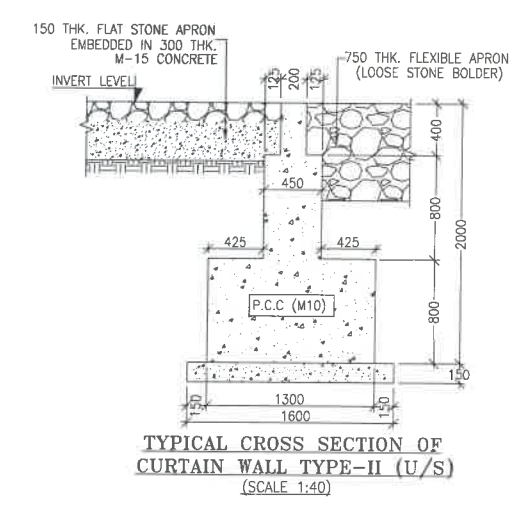
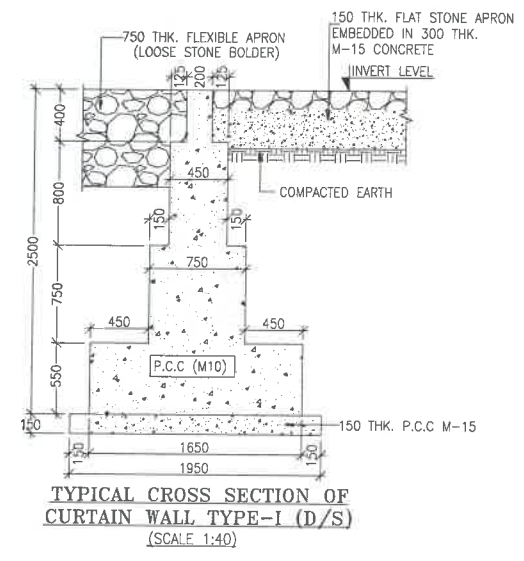
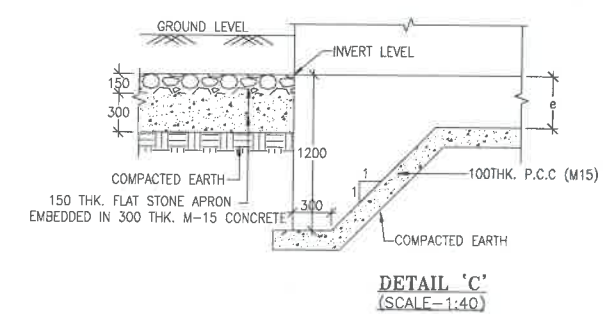
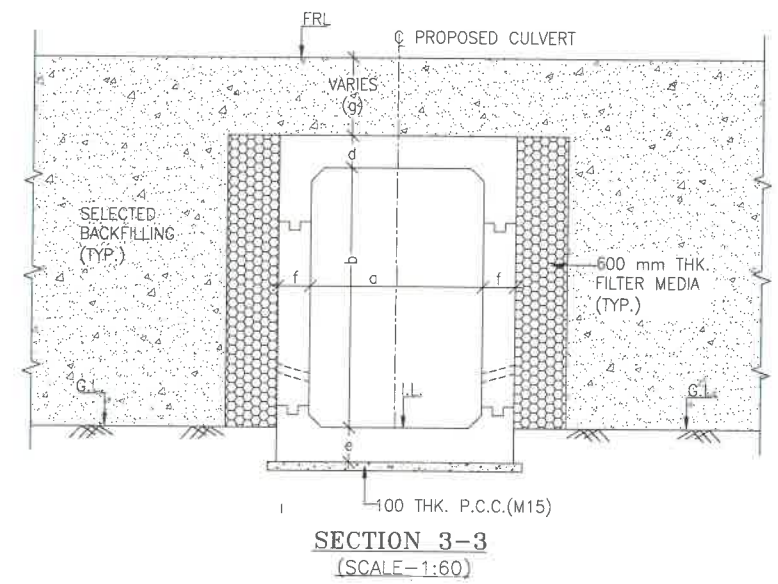
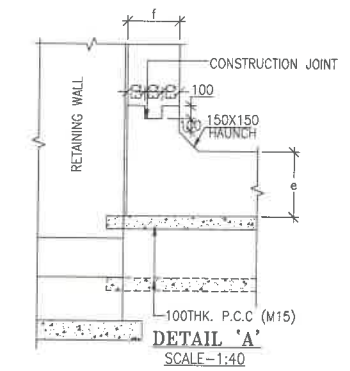
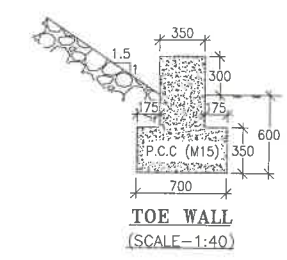
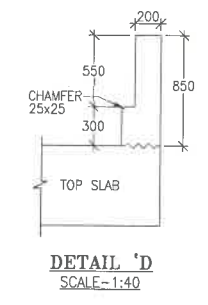
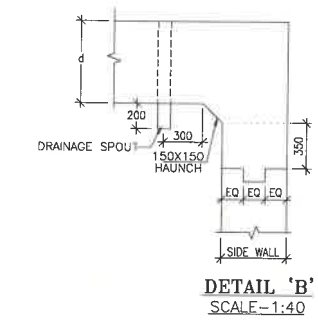
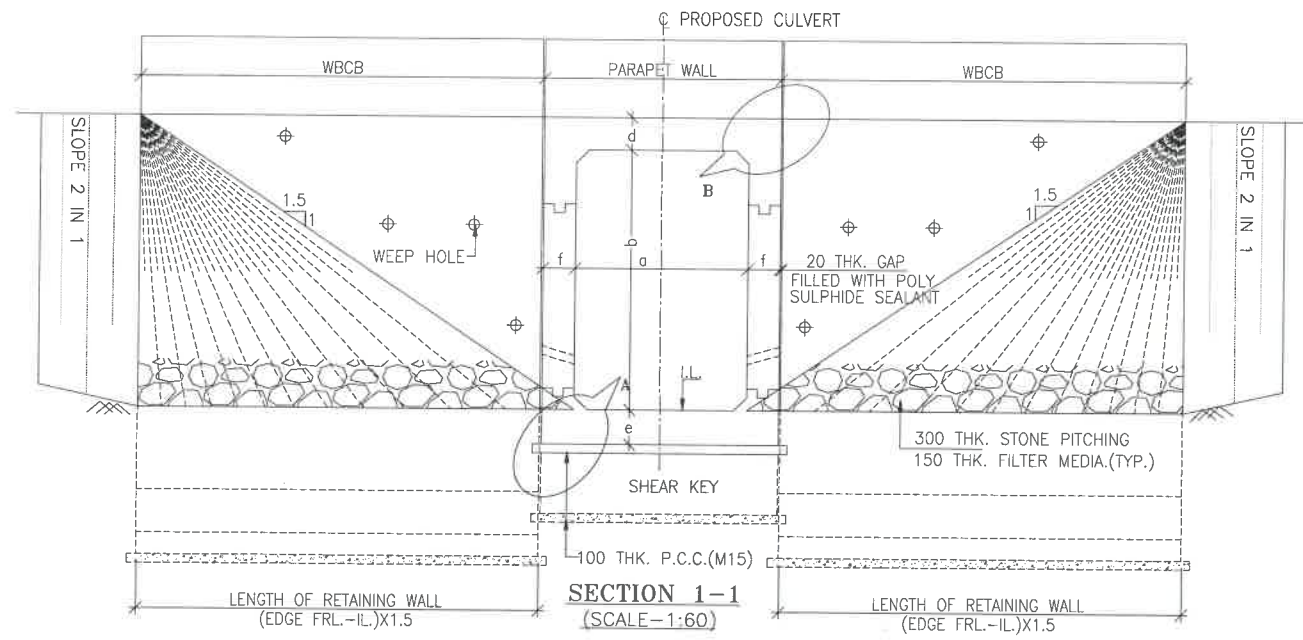


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

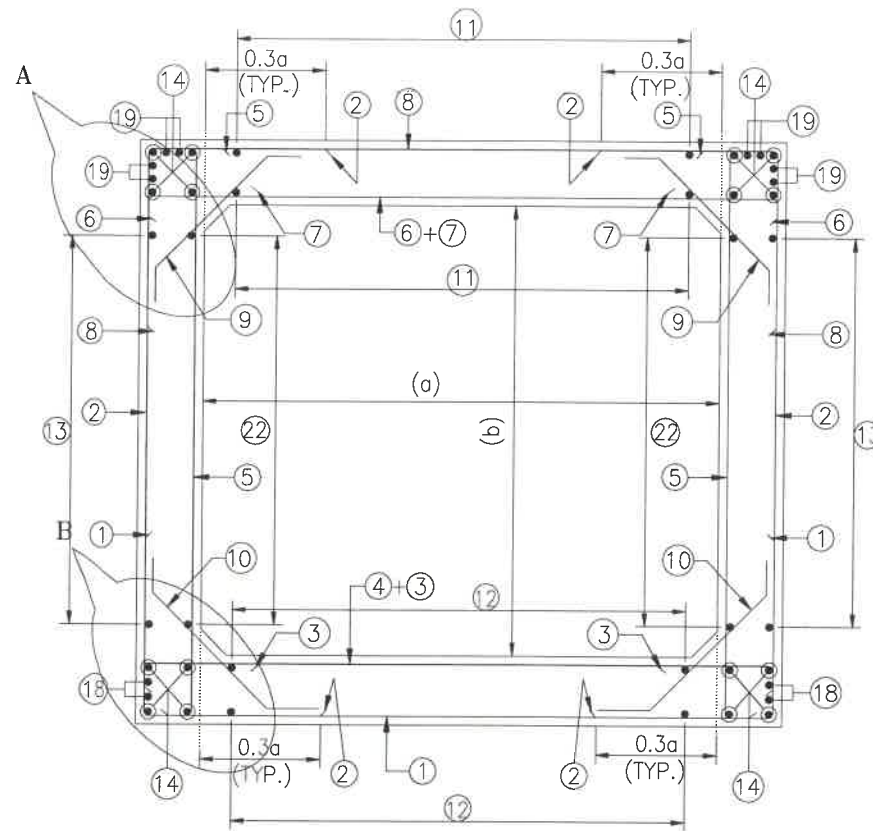
TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	18+650	1X2X3	901.001	897.171	897.271	600	TSC-4

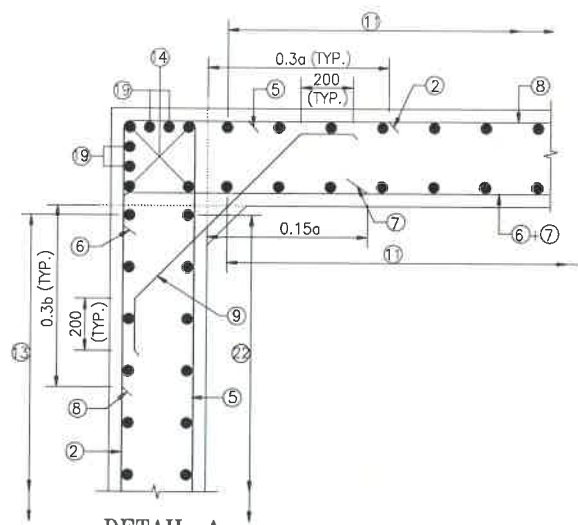
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- LEGEND:-**
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 - LVL --- LEVEL
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 - D/S --- DOWN STREAM
 - P.S. --- PAVED SHOULDER
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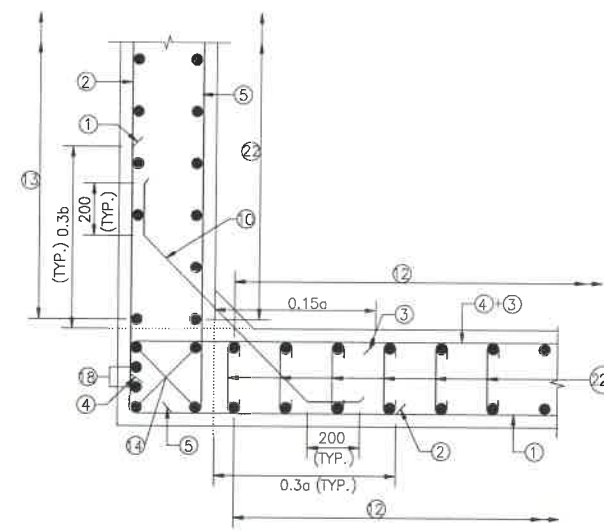
CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR: M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: DESIGN DIRECTOR	PROOF CONSULTANT: Hindia Engineering Pvt. Ltd. Address: 20/7, Mahatma Jyoti Bypass, Gurgaon-Faridkot Road, Faridkot, INDIA-122002, Phone No. 0124-4028681	SAFETY CONSULTANT: Antique Buldtech Pvt. Ltd. Address: 191, Mahatma Jyoti Bypass, Jalpur-302018 (Rajasthan), India. Phone No. 0141-2760303 Email : info@antiquebuldtech.com	AUTHORITY'S ENGINEER : BLOOM KIC & SPS SPL	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: 02 OF 02	REV. R0
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DATE AUG-2021	DRAWN STRUCTURE DRAFTSMAN	DESIGNED	CHECKED	APPROVED
						STRUCTURE ENGINEER	---	---	---	---



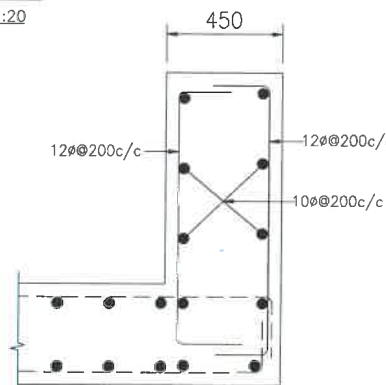
REINFORCEMENT DETAILS OF BOX CULVERT
SCALE : 1:40



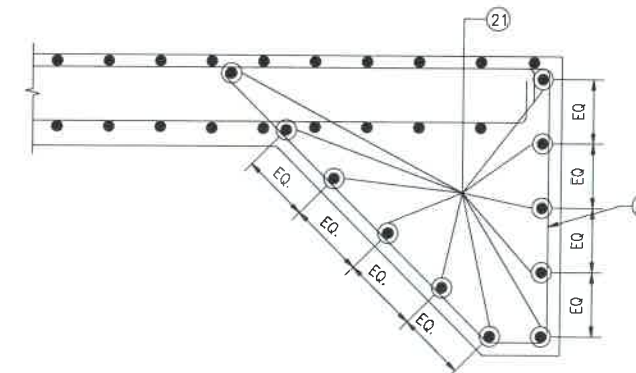
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
 2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
 3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
 4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
 5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
 6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
 7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
 8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

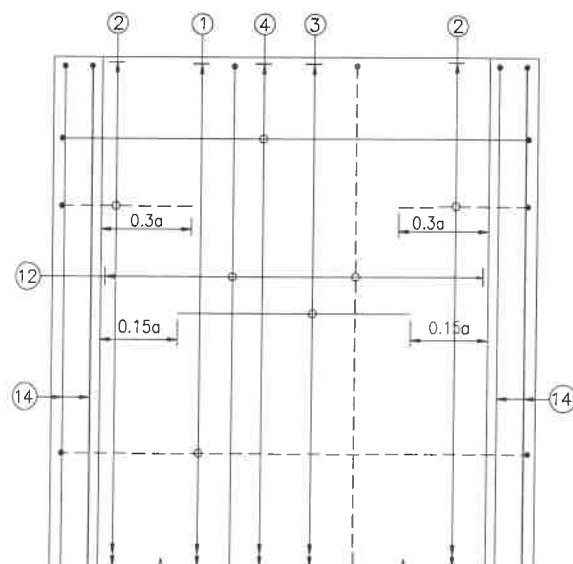
	TOP FACE BARS/OUTER FACE BARS
	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

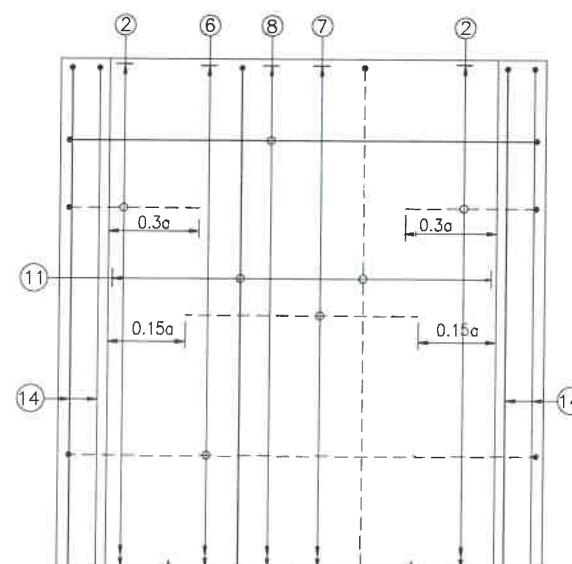
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	250 C/C
②		12	250 C/C
③		12	250 C/C
④		12	250 C/C
⑤		12	250 C/C
⑥		12	250 C/C
⑦		12	250 C/C
⑧		12	250 C/C
⑨		10	250 C/C
⑩		10	250 C/C
⑪		10	300 C/C
⑫		10	300 C/C
⑬		10	300 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	300 C/C
㉑		12	20 NOS.
㉒		10	300 C/C
㉒a		8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b		NOT IN USE	

← TRAFFIC DIRECTION →

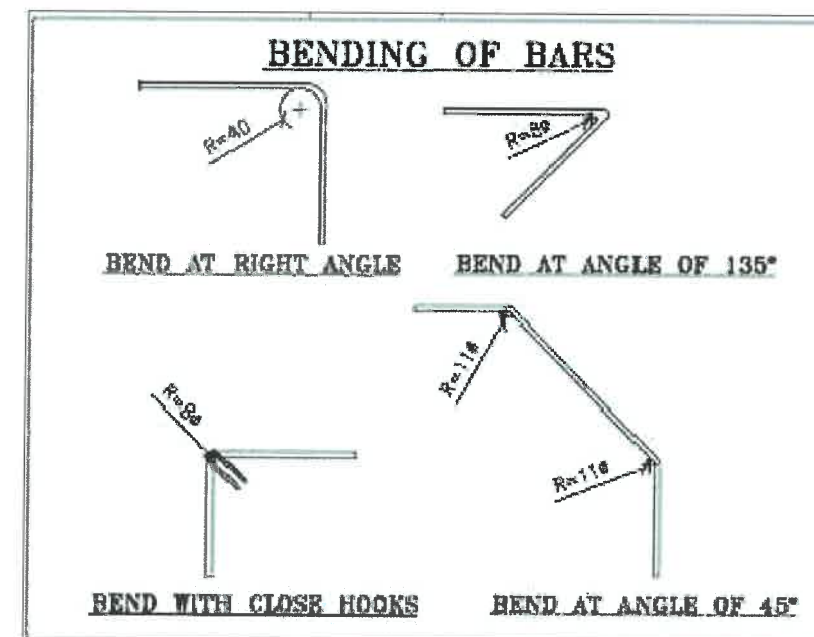


PLAN SHOWING REINFORCEMENT DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

← TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



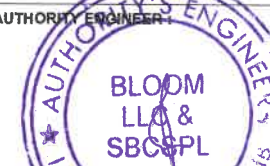
Hindo Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-0124-4028681

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

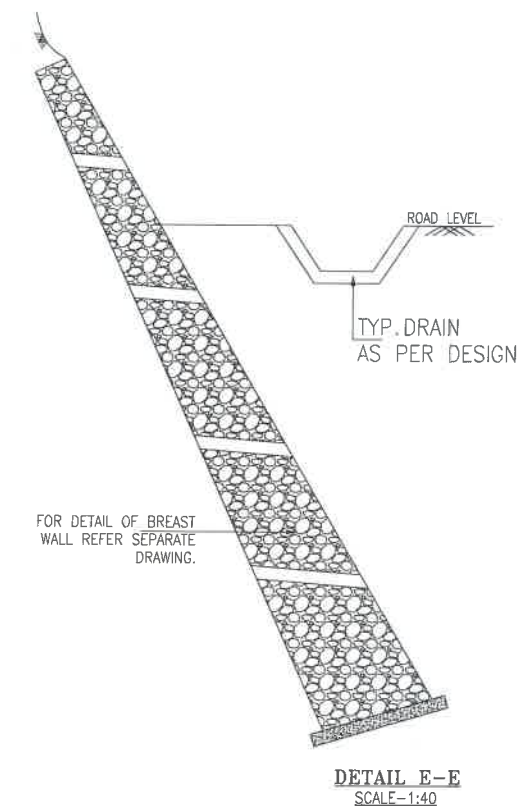
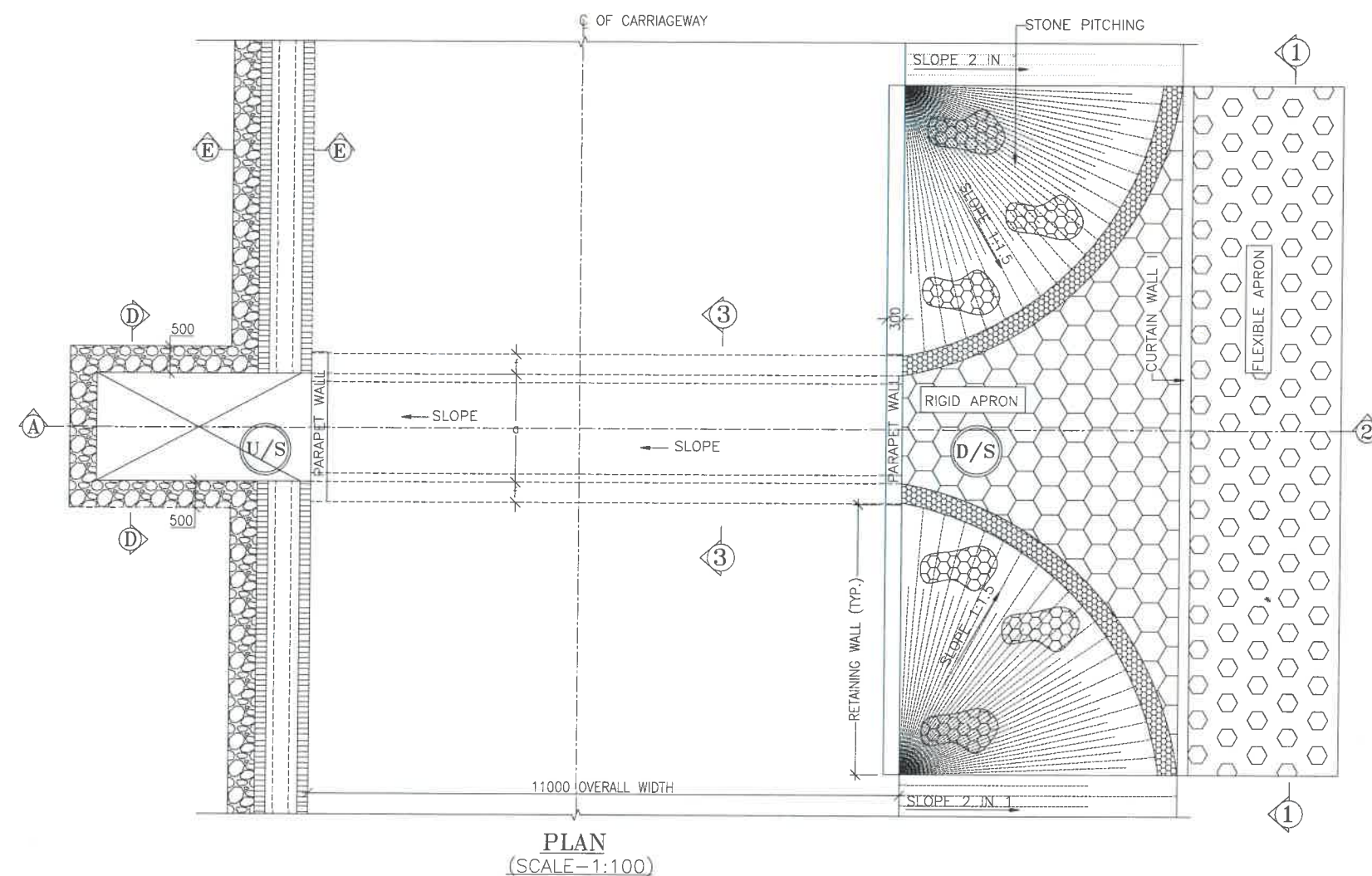
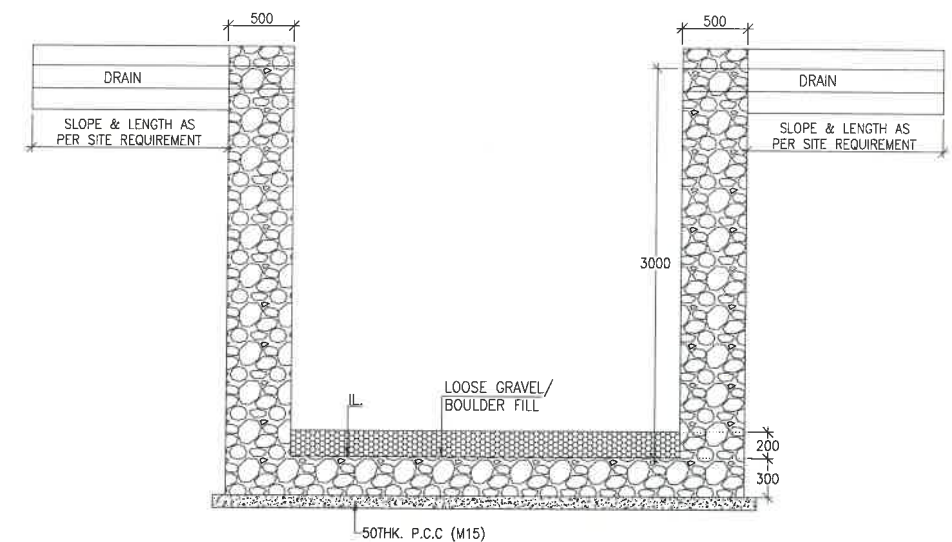
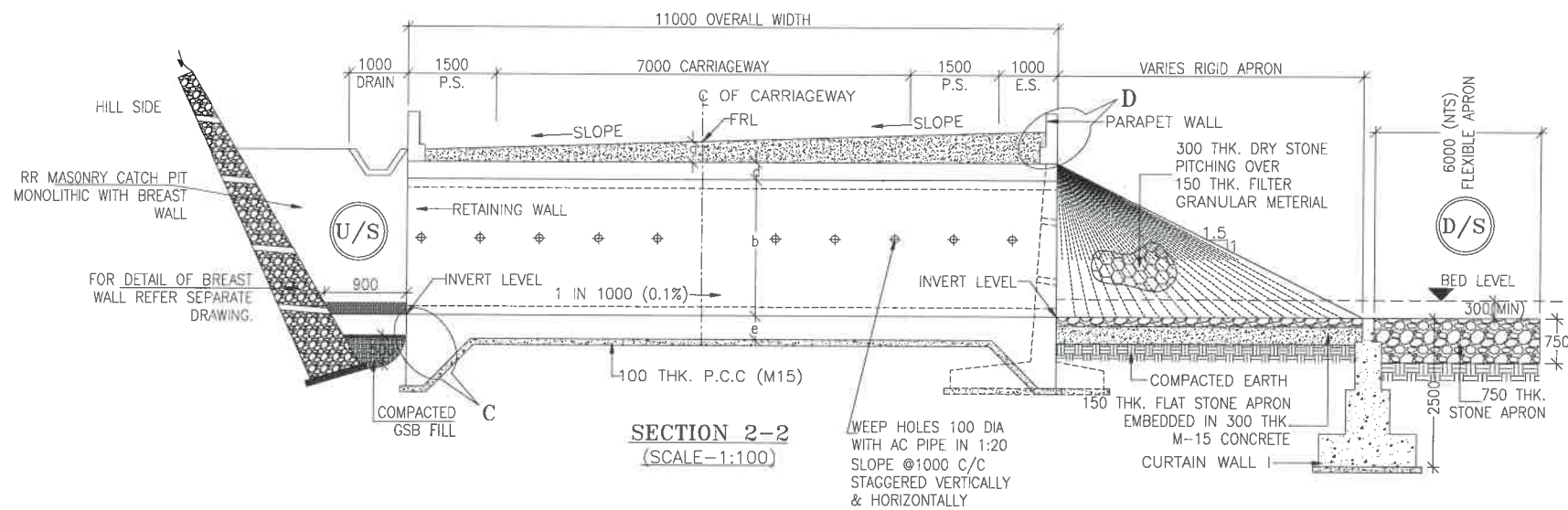
01 OF 01 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



DESIGN DIRECTOR :



PROOF CONSULTANT :



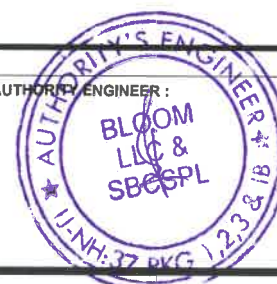
Hinkaj Engineers Pvt. Ltd.
Address: 191, Mohan Road, Gurgaon, Haryana, India-122002,
Gurgaon-122002 (Rajasthan), India-122002,
Phone No. 4124-402861

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Road, Gurgaon, Haryana, India-122002,
Jalpur-302018 (Rajasthan), India-122002,
Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER :



DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.
DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.
01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---

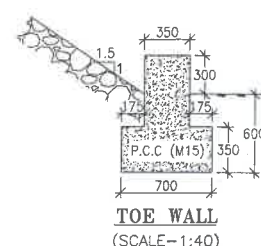
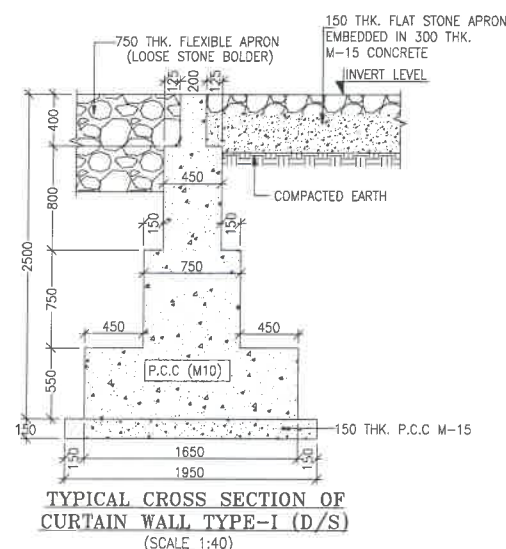
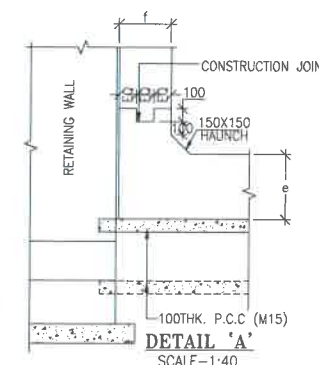
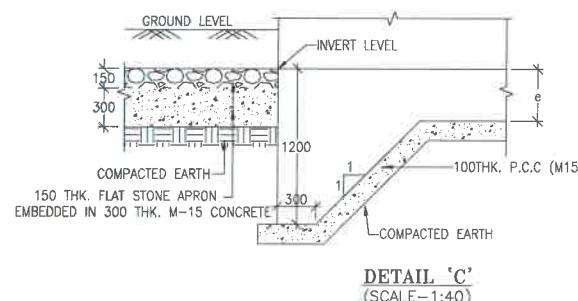
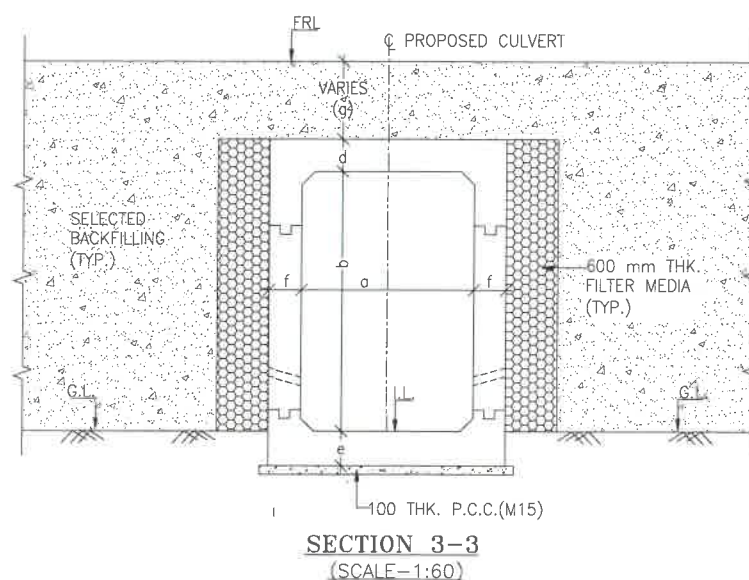
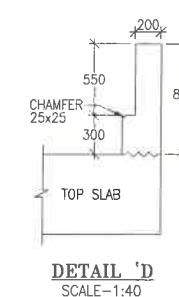
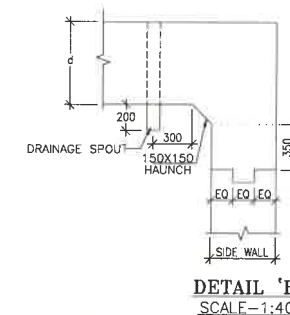
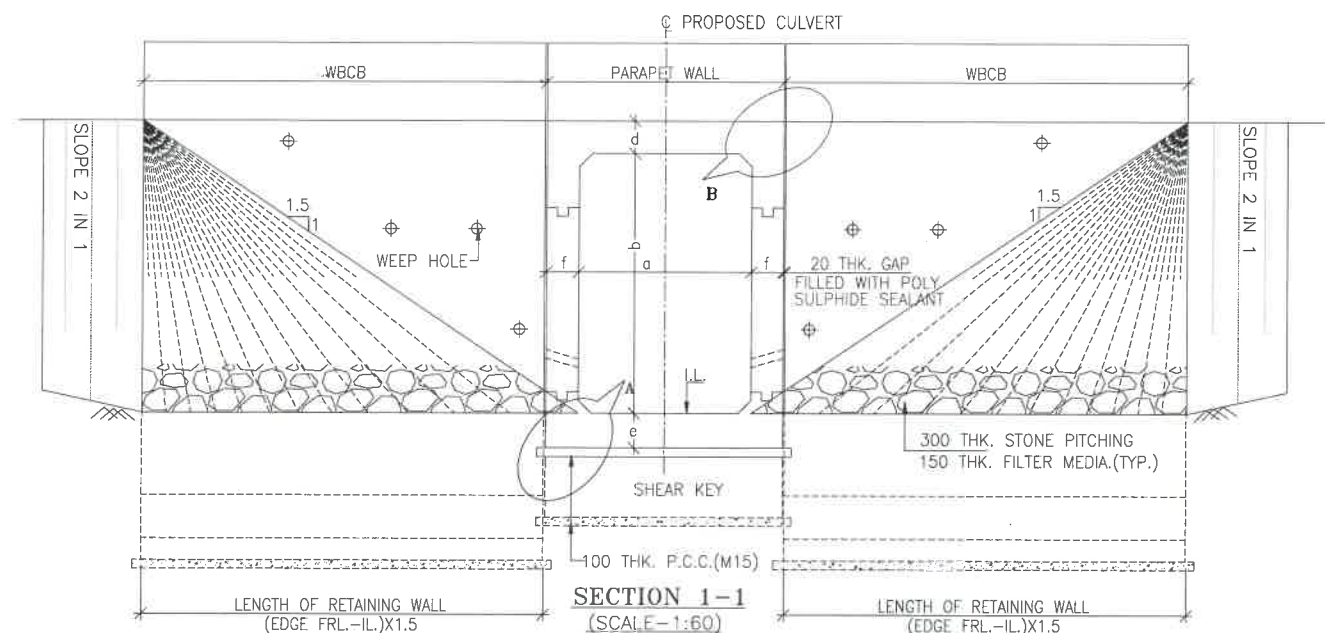


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	22+299	1X2X3	1067.703	1063.873	1063.973	600	TSC-5

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:7B-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:7B-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



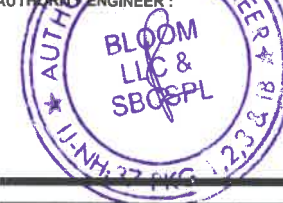
Hindia Engineers Pvt. Ltd.
Address: 33rd Floor, DLF Phase-I,
Gurgaon-Faridkot Road, Faridkot, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No. 0141-2768303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

02 OF 02

REV.

R0

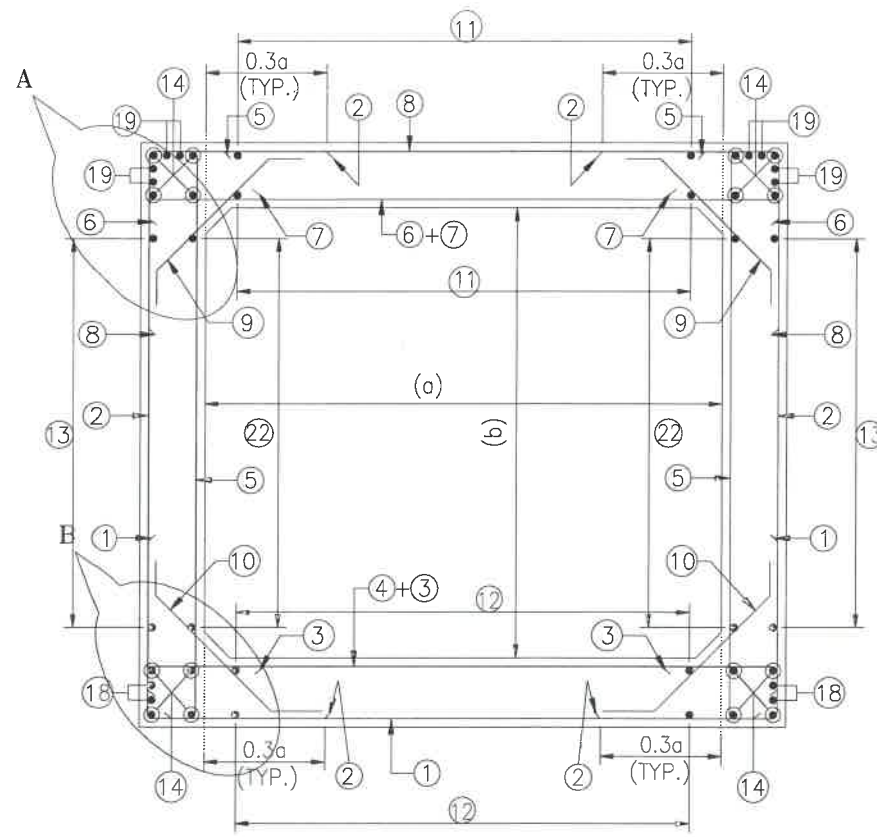
PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

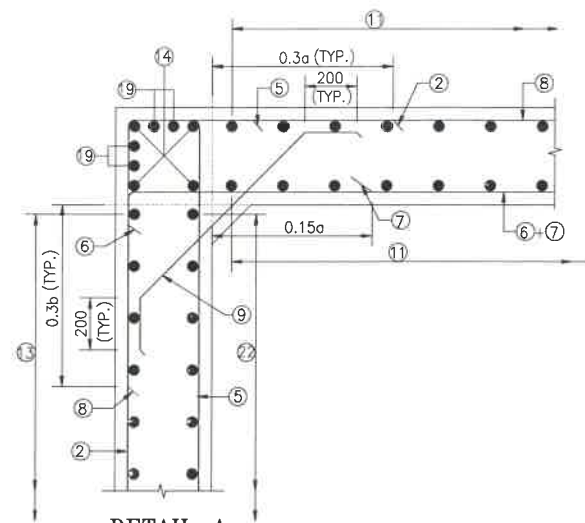
DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

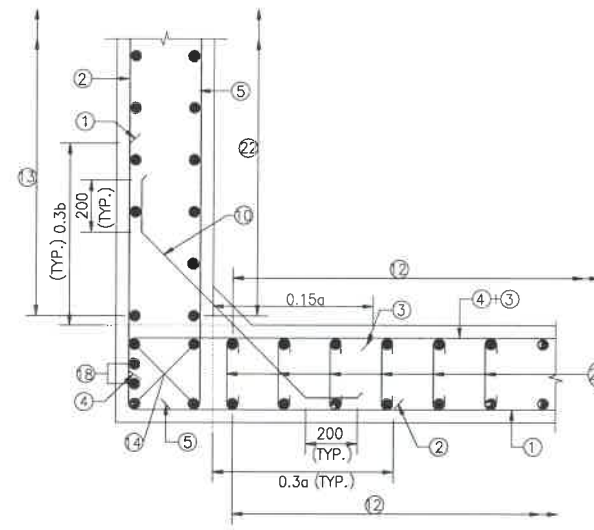
DESIGNED CHECKED APPROVED
STRUCTURE ENGINEER



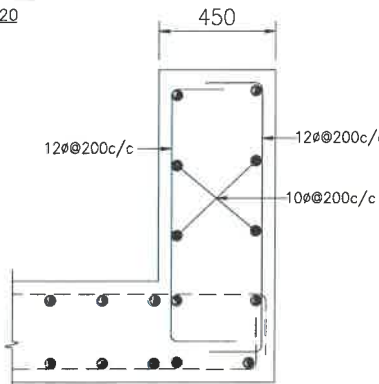
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



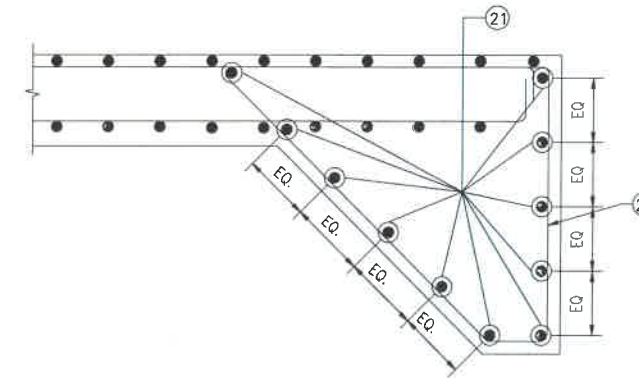
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

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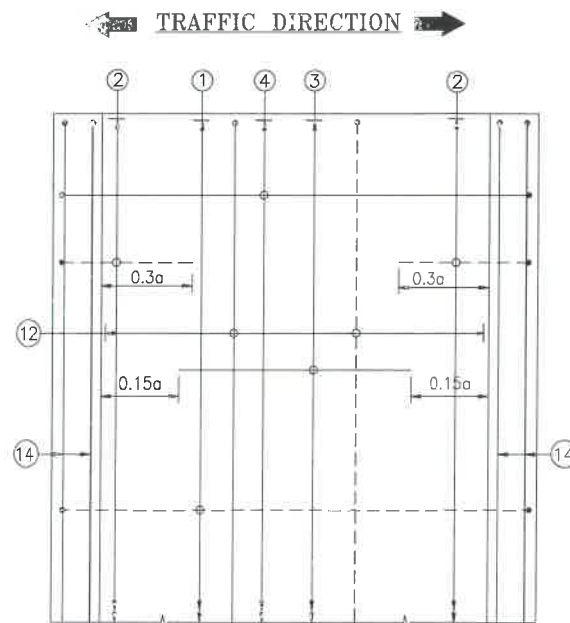
LEGEND :-

—	TOP FACE BARS/OUTER FACE BARS
- - - -	BOTTOM FACE BARS/INNER FACE BARS

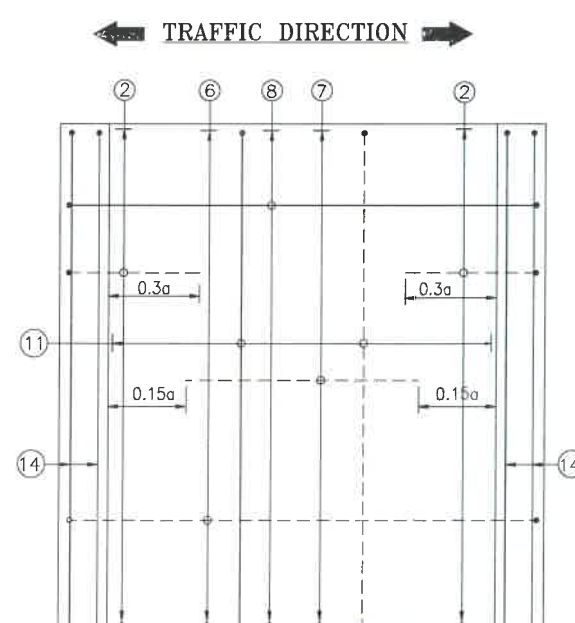
SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

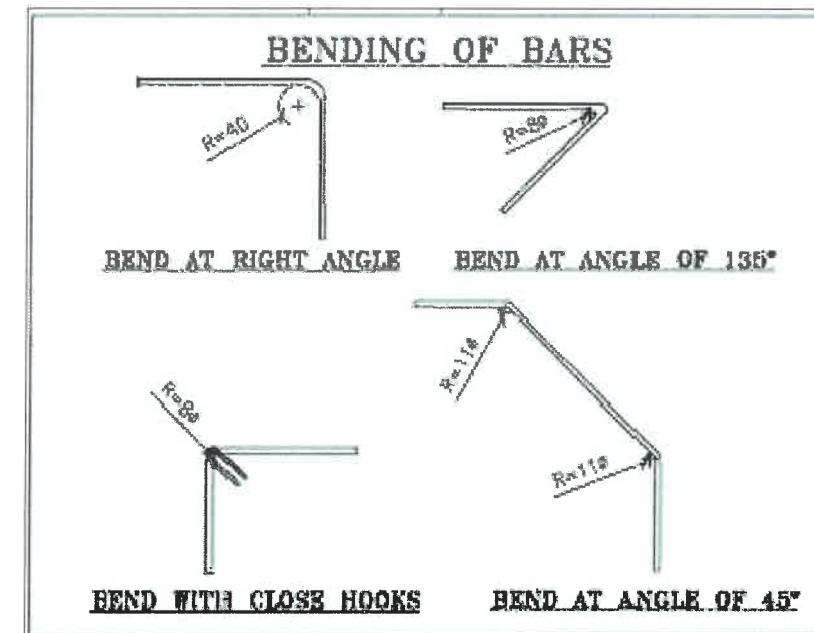
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	┌─┐	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	300 C/C
⑫	—	10	300 C/C
⑬	—	10	300 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	300 C/C
㉒a	└─┘	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	



PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. GMM INFRASTRUCTURE PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 53/7, H-Block,
Gurgaon-Faridabad Road Haryana, INDIA-120002,
Phone No.-0124-4028661

SAFETY CONSULTANT:



Antique Buldoz Pvt. Ltd.
Address: 191, Mohan Nagar, Connaught Bypass,
Jaipur-302018 (Rajasthan), Phone No. 0141-2760303
Email : info@antiquebuldoz.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

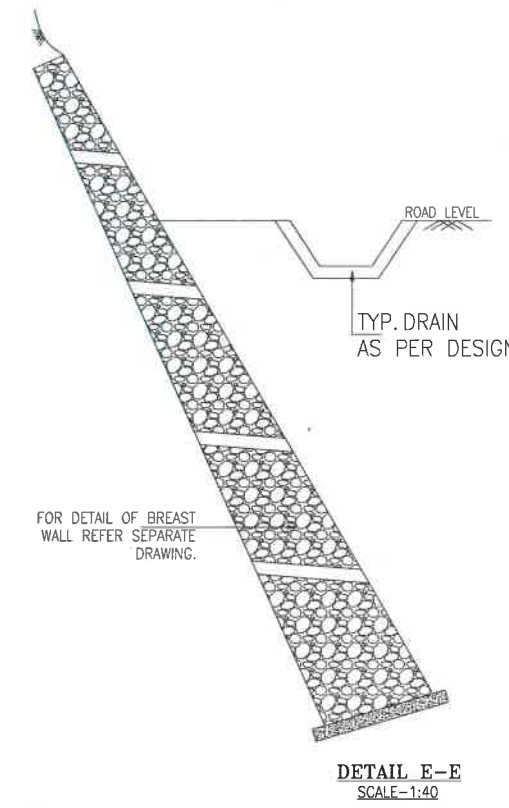
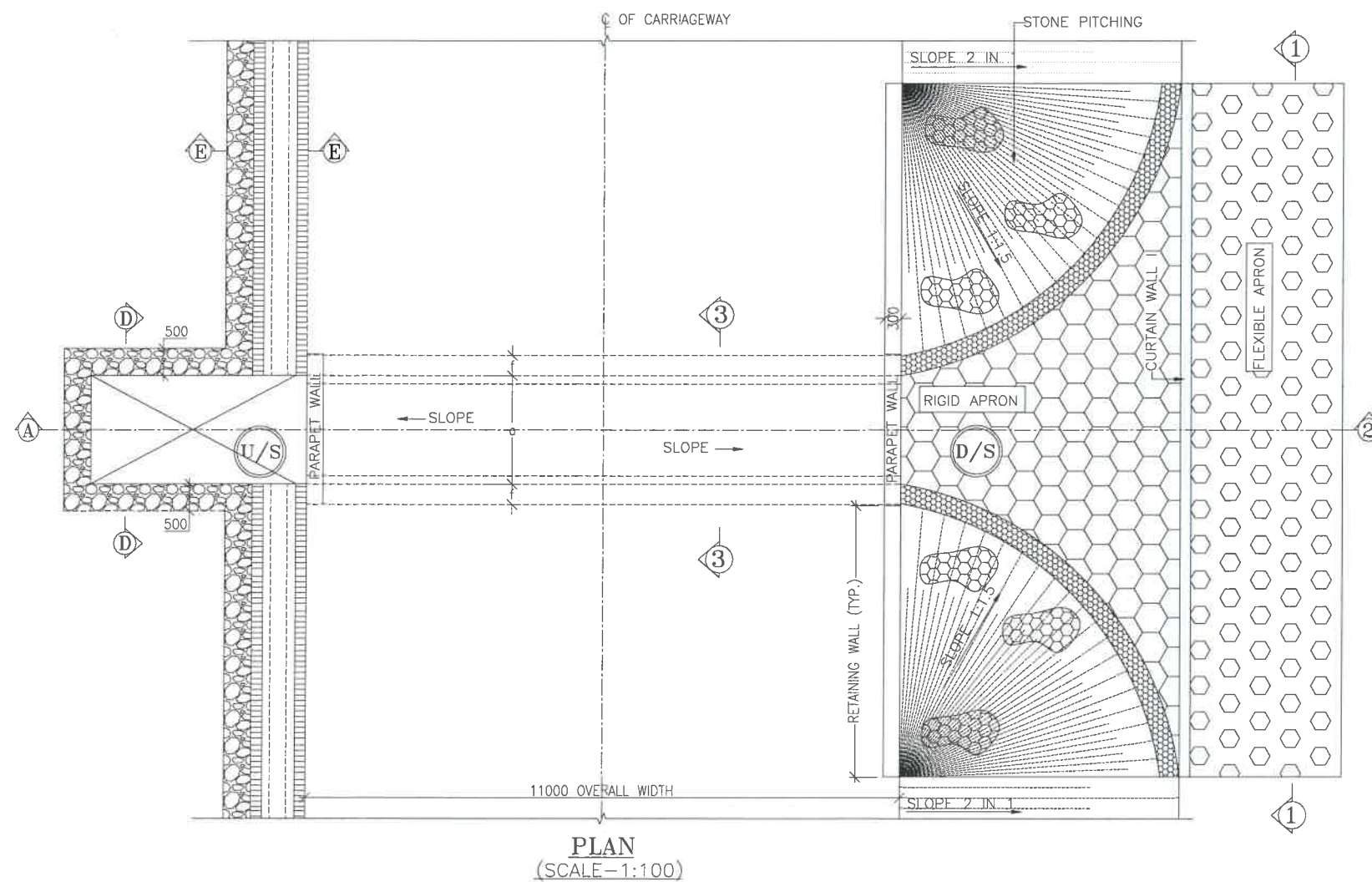
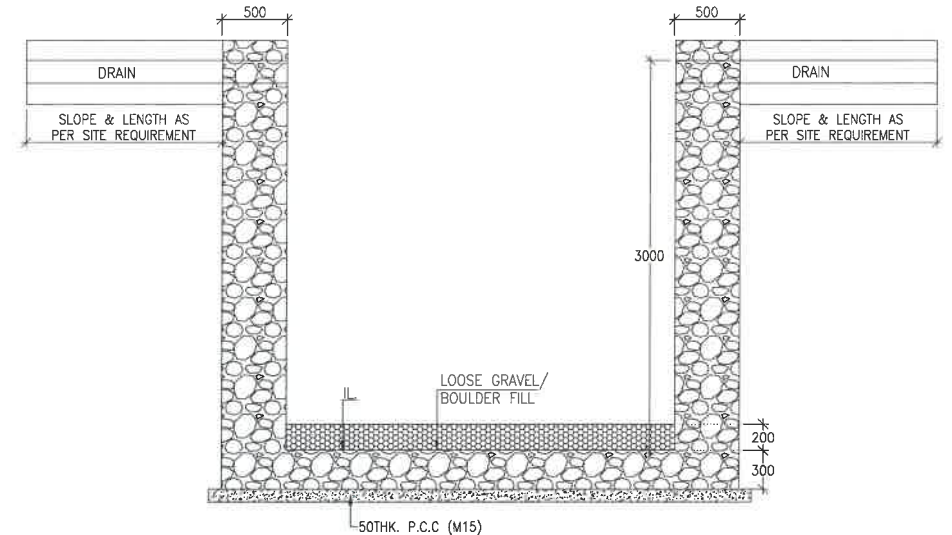
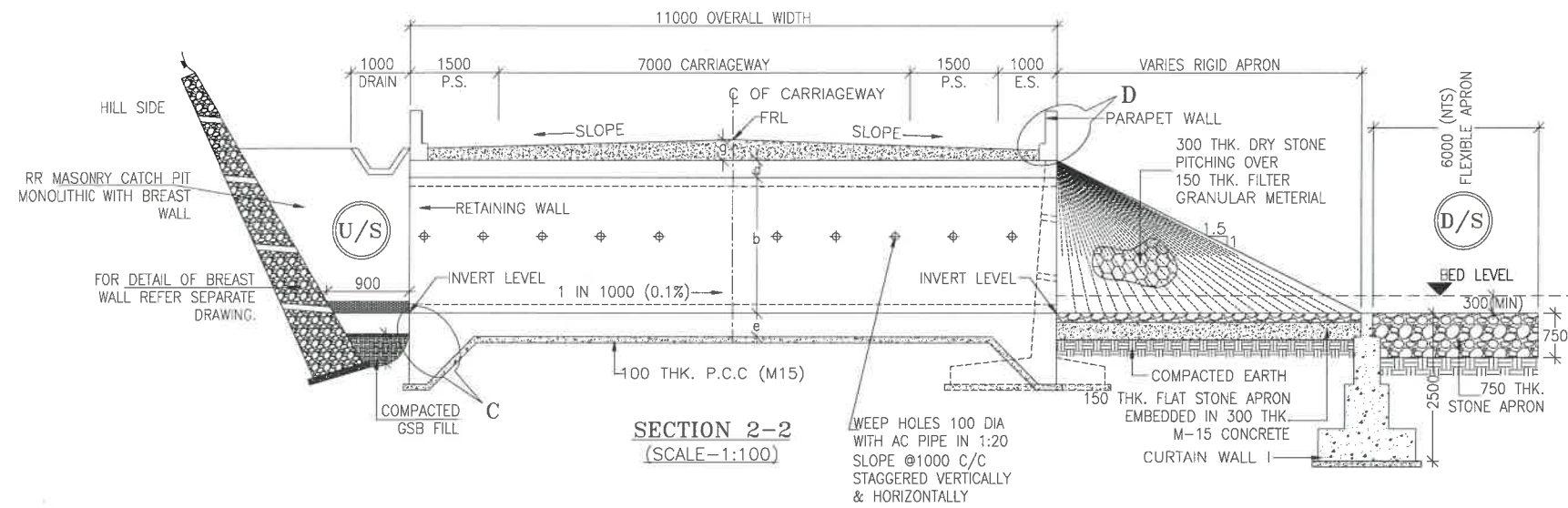
01 OF 01 R0

PROJECT NAME:-

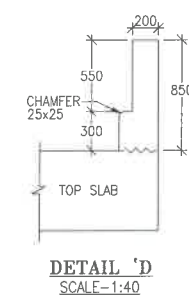
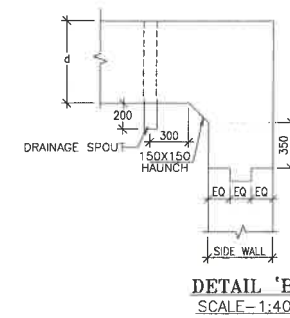
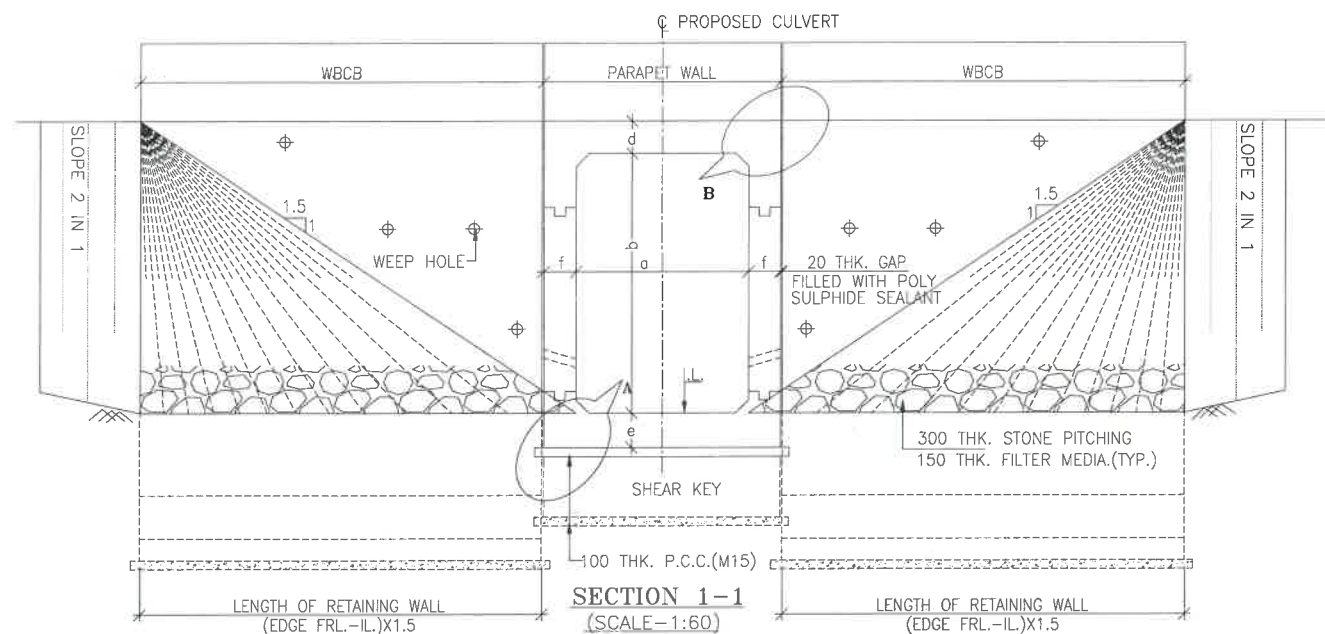
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-3) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



CLIENT :	EPC CONTRACTOR :	DESIGN DIRECTOR :	PROOF CONSULTANT :	SAFETY CONSULTANT :	AUTHORITY ENGINEER :	DRAWING SCALE :	DRAWING TITLE :	DRG. NO. :	SHEET :	REV. :
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR	Hindia Engineers Pvt. Ltd.	Antique Buildtech Pvt. Ltd.	BLOOM I/C & SBESPL	NTS	TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DD/IMP-JIR/ BOX/GAD/01	01 OF 02	R0
PROJECT NAME:-						DATE AUG-2021			DRAWN STRUCTURE DRAFTSMAN	
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DESIGNED	CHECKED	APPROVED		
						STRUCTURE ENGINEER	---	---		



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.01/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

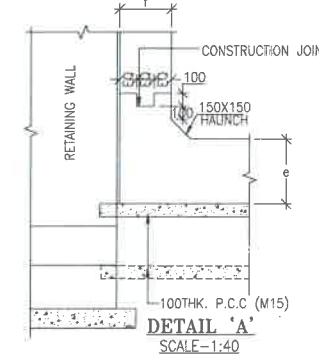
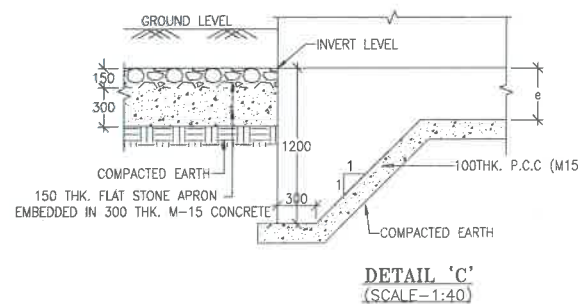
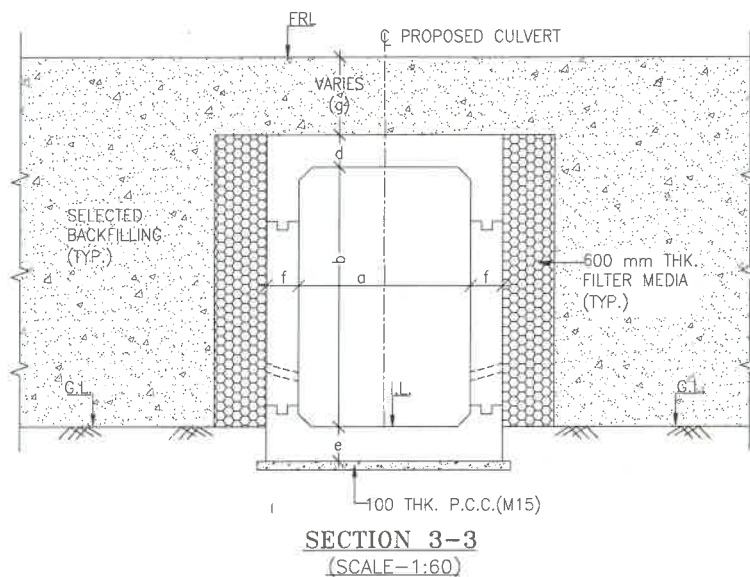


TABLE SHOWING SILENT DIMENSIONS

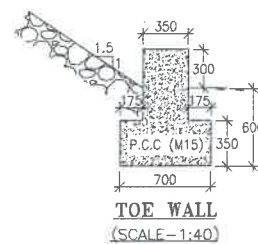
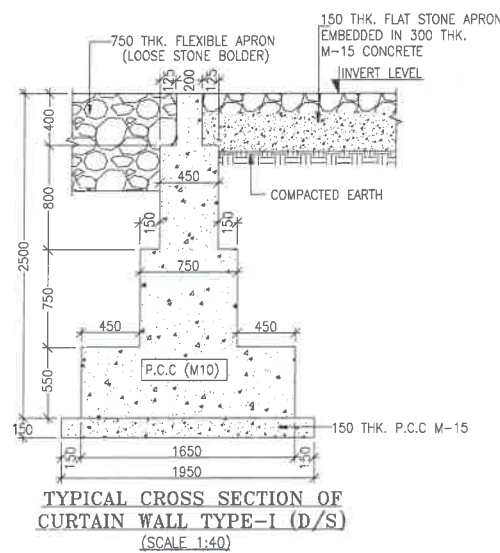
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	21+260	1X2X3	1013.783	1009.953	1010.053	600	TSC-5
②	21+648	1X2X3	1033.418	1029.588	1029.688	600	TSC-5
③	22+376	1X2X3	1069.500	1065.670	1065.770	600	TSC-5

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 44/37, 3-BLOCK, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohi, Bypass, Gurgaon Byepass,
Jaipur-302019 (Rajasthan) Phone No. 0141-2760393
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

02 OF 02

REV.

R0

PROJECT NAME:-

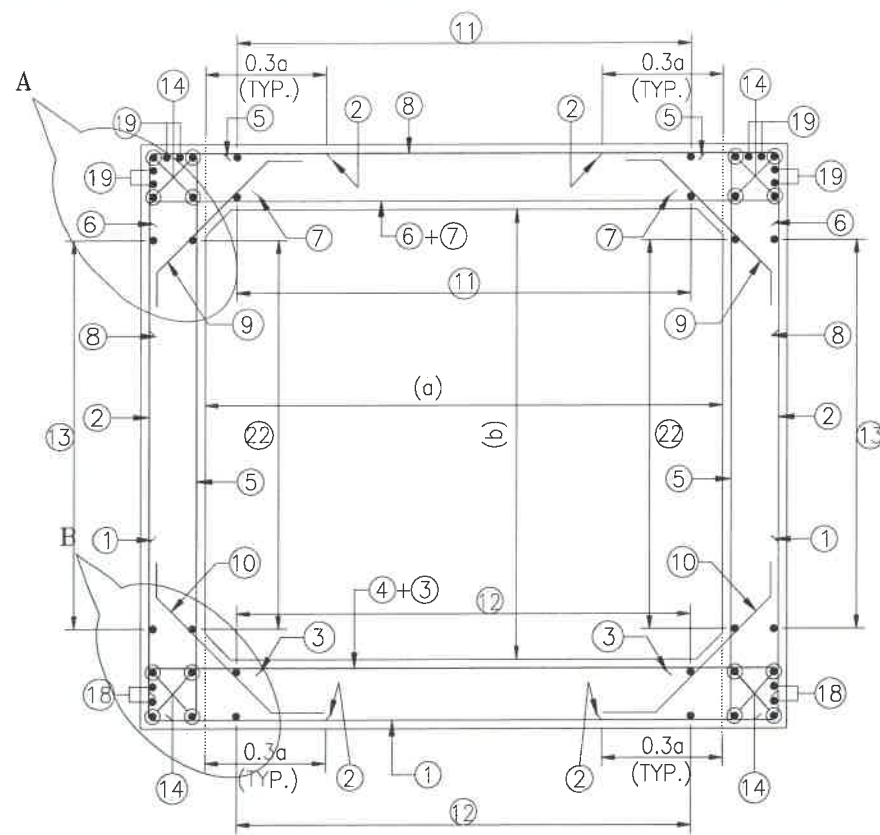
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

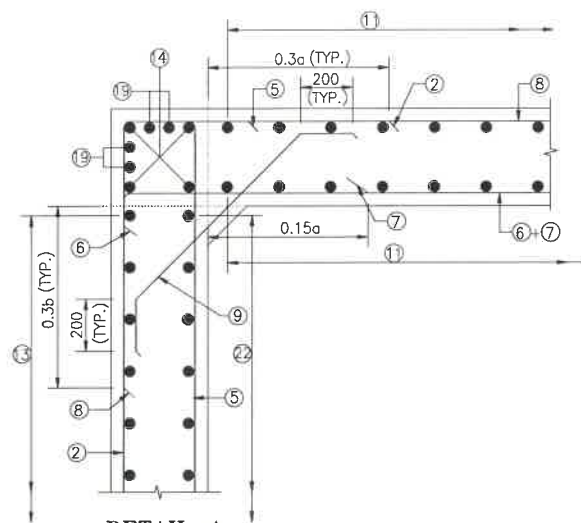
DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

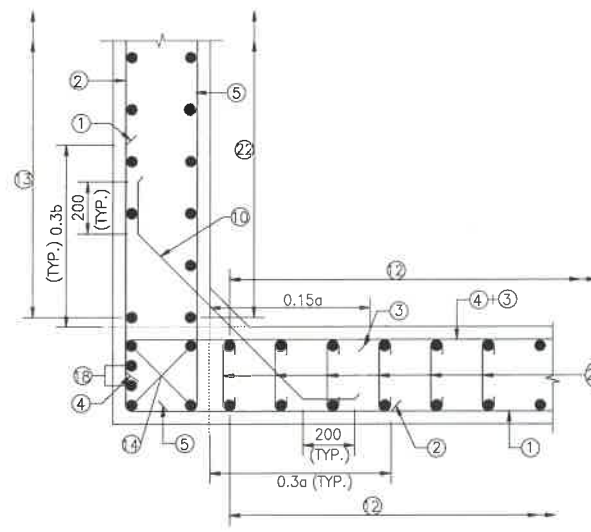
STRUCTURE ENGINEER



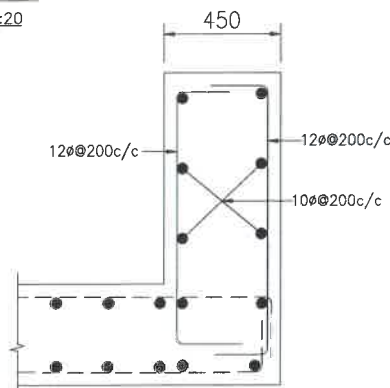
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



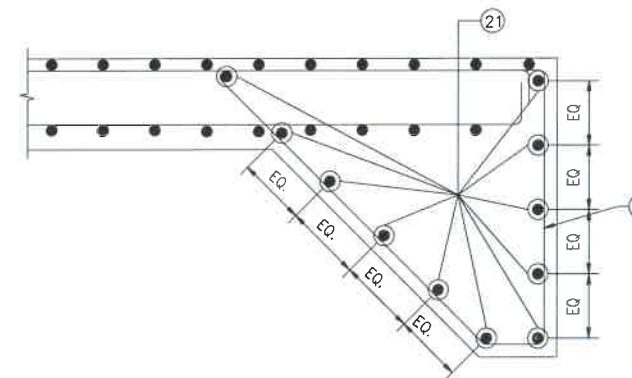
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

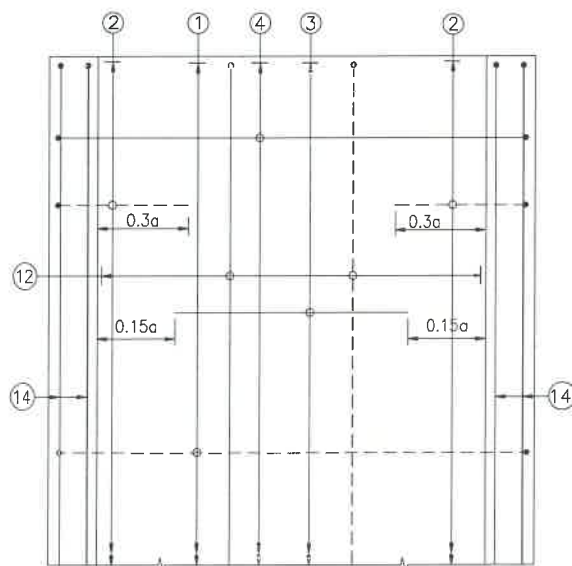
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

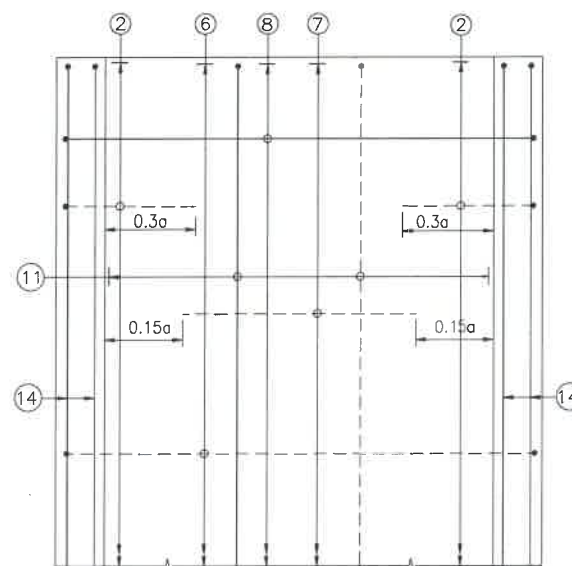
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	—	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	┌─┐	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	300 C/C
⑫	—	10	300 C/C
⑬	—	10	300 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	300 C/C
㉒a	└─┘	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

TRAFFIC DIRECTION



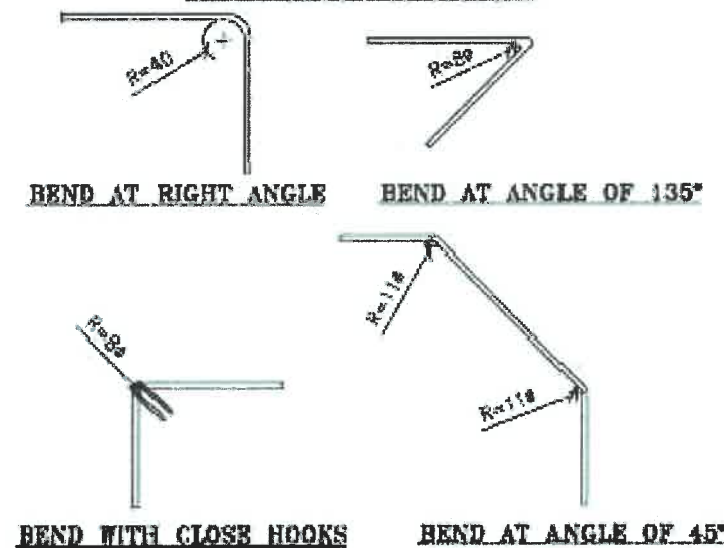
**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

BENDING OF BARS



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hinda Engineers Pvt. Ltd.

Address: 338, H Block, DLF Phase-1,
Gurgaon-Faridkot Road Haryana, INDIA-122002,
Phone No. 4124-402861

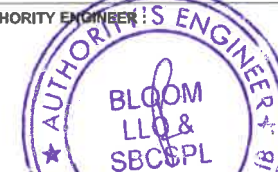
SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.

Address: 191, Mohan Garden, Gurgaon Bypass,
Jaipur-302018 (Rajasthan), Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET :

01OF 01

REV.

R0

PROJECT NAME:-

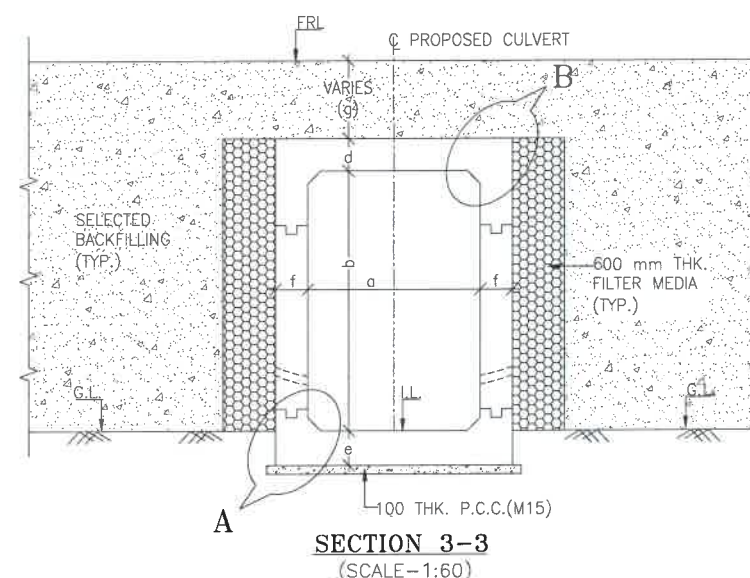
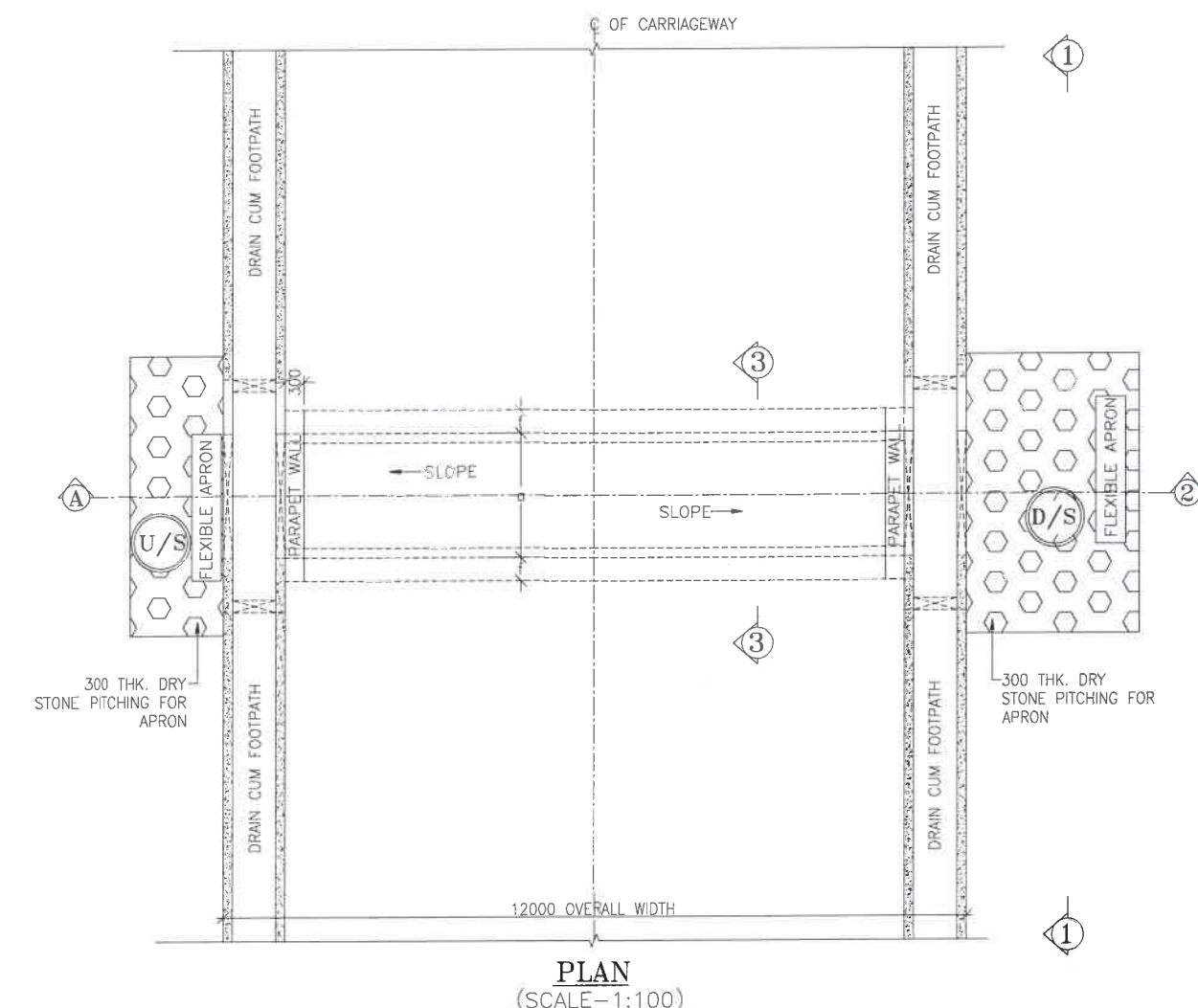
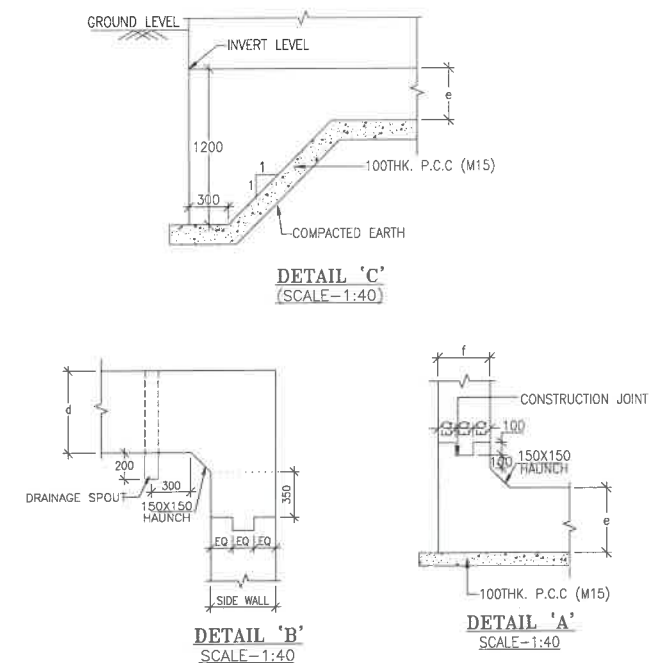
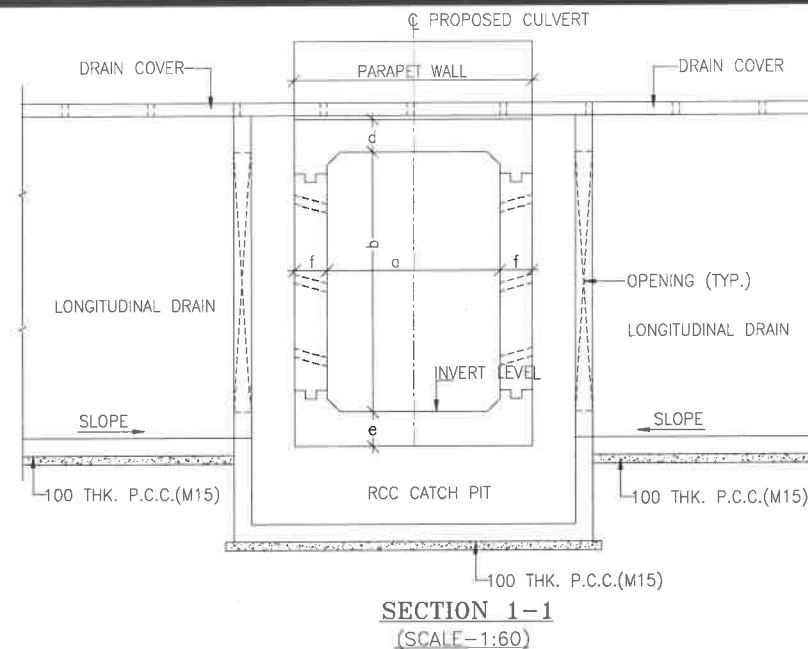
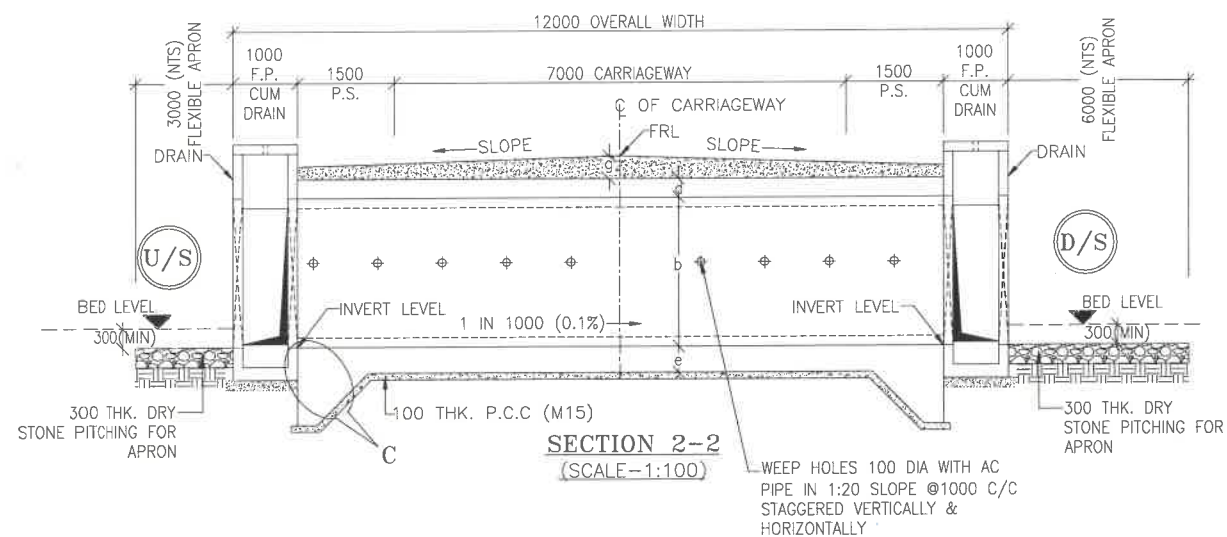
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
 - GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
 - GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
 - BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
 - COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
 - FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
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 - BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
 - SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

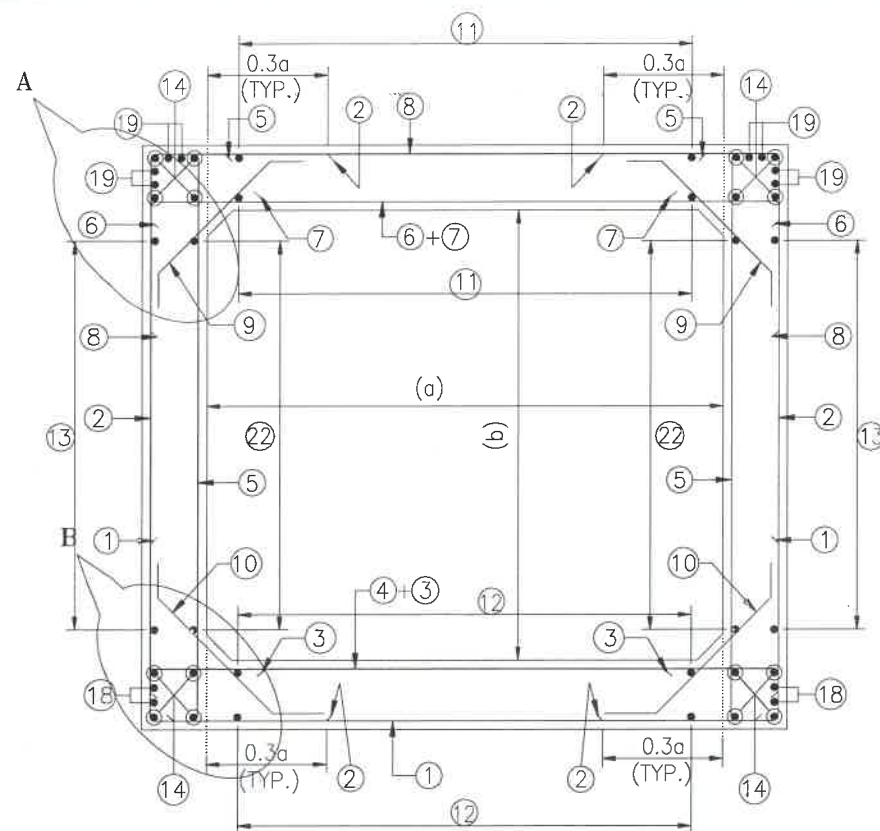
TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	17+016	1X2X3	830.076	826.246	826.346	600	TSC-6

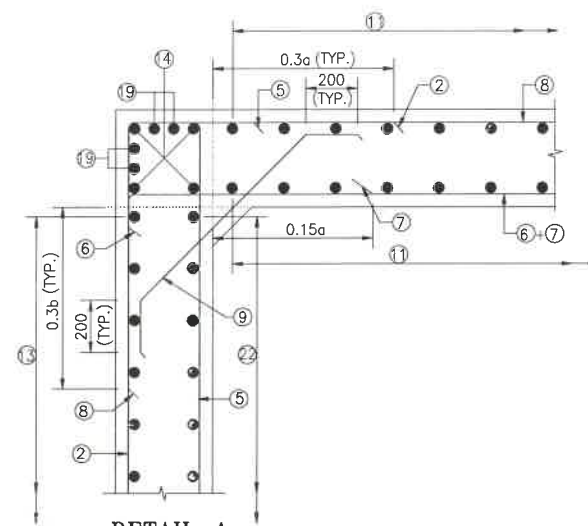
LEGEND:-

- FRL - FINISHED ROAD LEVEL
 LVL - LEVEL
 GL - GROUND LEVEL
 IL - INVERT LEVEL
 EQ - EQUAL
 F.P. - FOOTPATH
 U/S - UP STREAM
 D/S - DOWN STREAM
 P.S. - PAVED SHOULDER
 E.S. - EARTHEN SHOULDER

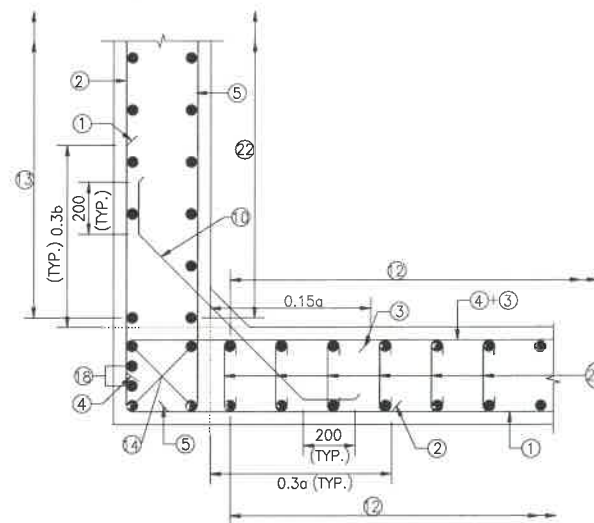
CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR:  "CMM" M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: 	PROOF CONSULTANT:  Hindia Engineers Pvt. Ltd. Address: 191, Mohan Nagar, Gopalpur Bypass, Jaipur-302018 (Rajasthan) Phone No.-0141-2760303 Email : info@antiquebuilders.com	SAFETY CONSULTANT:  Antique Builders Pvt. Ltd. Address: 191, Mohan Nagar, Gopalpur Bypass, Jaipur-302018 (Rajasthan) Phone No.-0141-2760303 Email : info@antiquebuilders.com	AUTHORITY ENGINEER :  BLOOM LLC & SBSPCL	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: REV. 01 OF 01 R0	
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 16.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DATE AUG-2021	DRAWN STRUCTURE DRAFTSMAN	DESIGNED ENGINEER	CHECKED ---	APPROVED ---



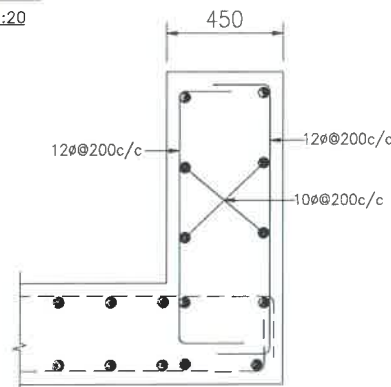
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



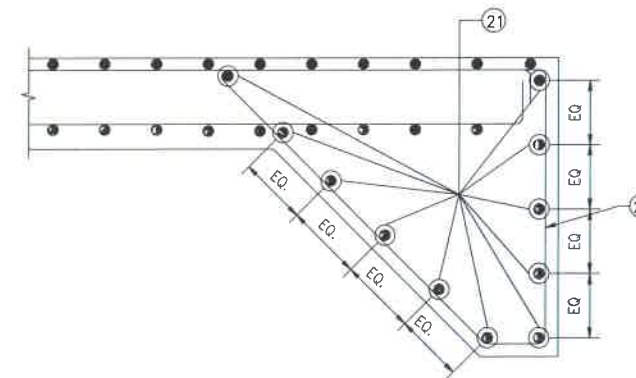
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
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- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
- JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
- FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

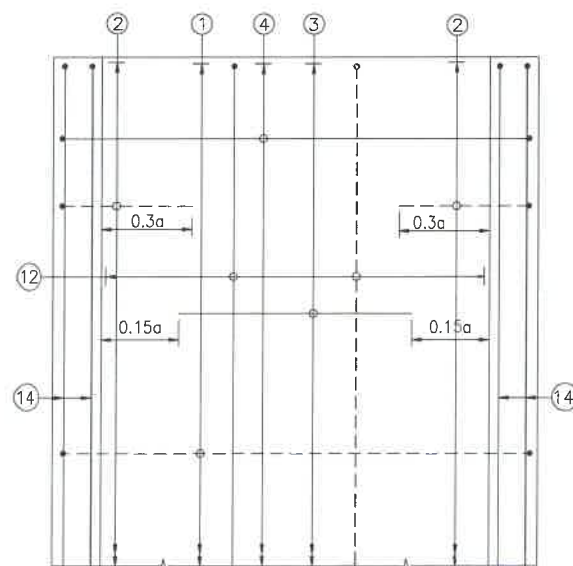
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

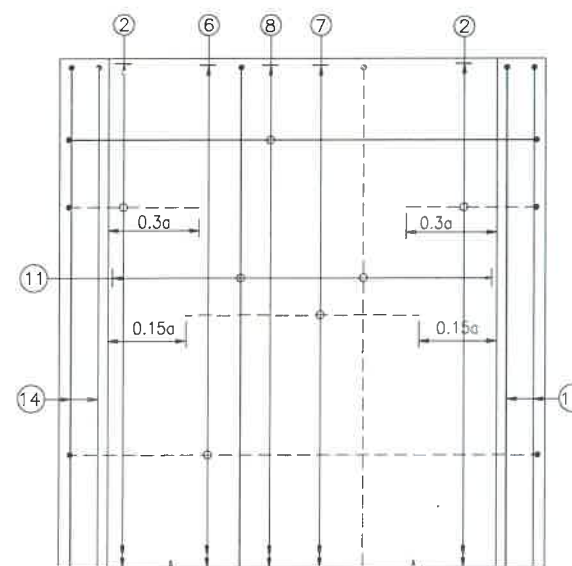
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	250 C/C
②		12	250 C/C
③		12	250 C/C
④		12	250 C/C
⑤		12	250 C/C
⑥		12	250 C/C
⑦		12	250 C/C
⑧		12	250 C/C
⑨		10	250 C/C
⑩		10	250 C/C
⑪		10	300 C/C
⑫		10	300 C/C
⑬		10	300 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	300 C/C
㉑		12	20 NOS.
㉒		10	300 C/C
㉒a		8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b		NOT IN USE	

TRAFFIC DIRECTION →

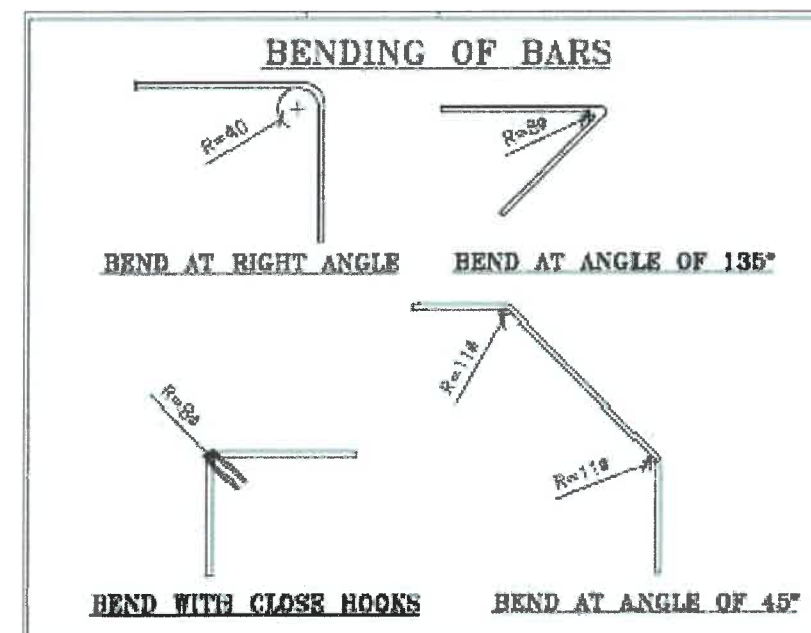


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



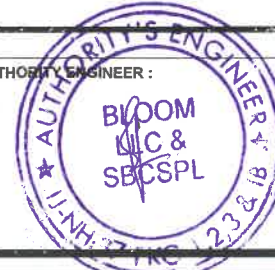
Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 131, Mohan Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2780303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

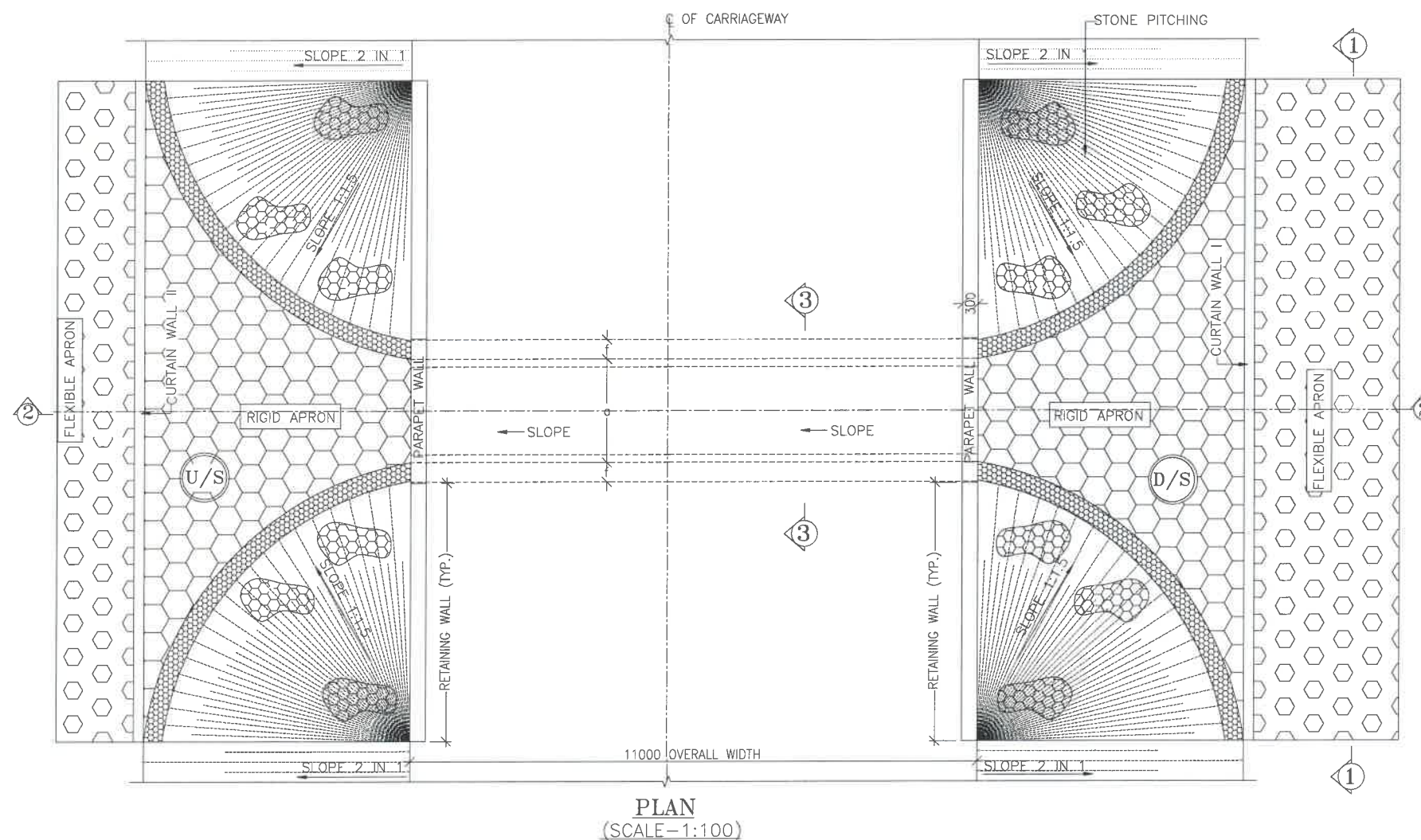
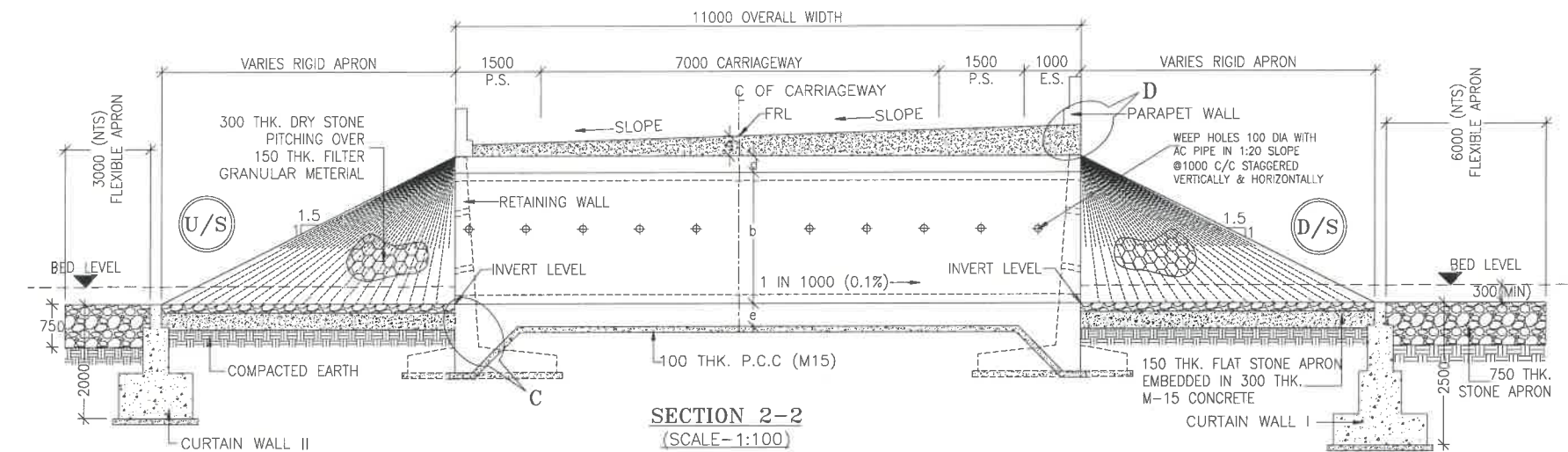
01 OF 01 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRISAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED
STRUCTURE ENGINEER



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.01/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, S.F.E. Enclave,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 191, Model Town, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

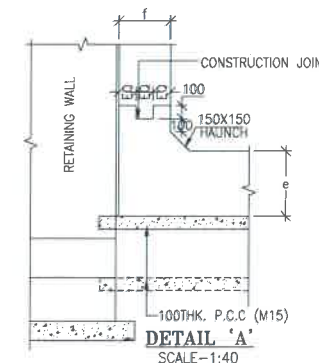
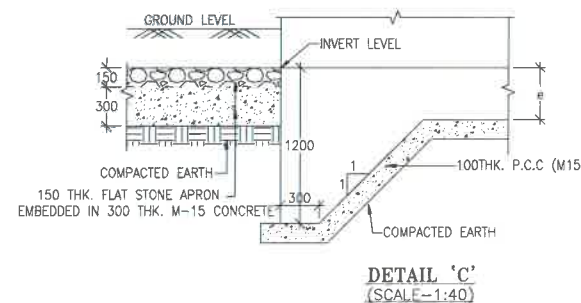
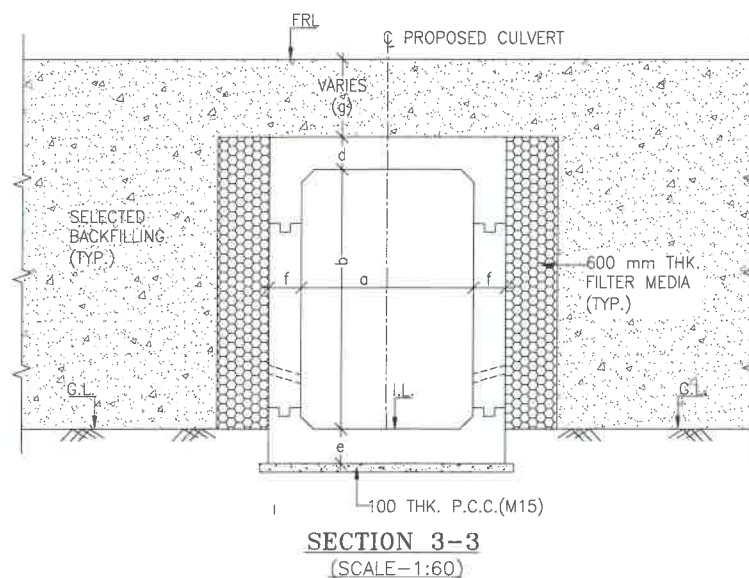
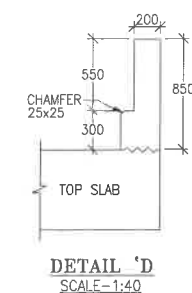
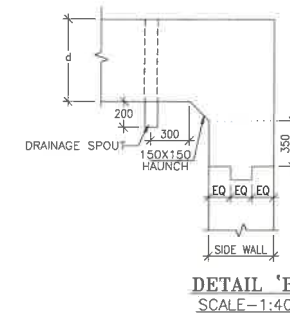
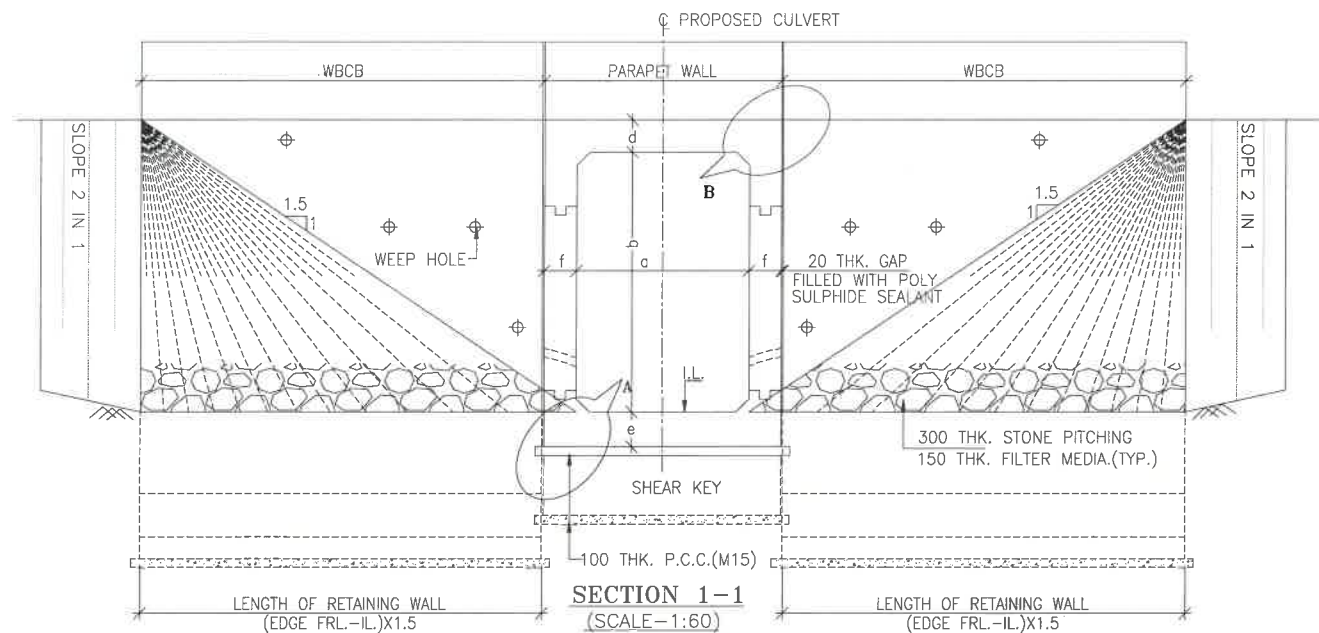
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DATE AUG-2021

DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED
STRUCTURE ENGINEER



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TABLE SHOWING SILENT DIMENSIONS

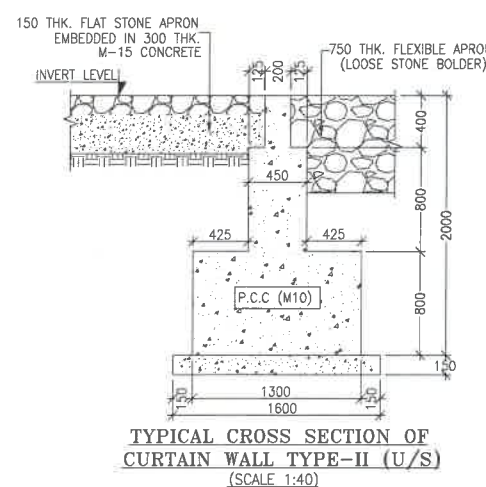
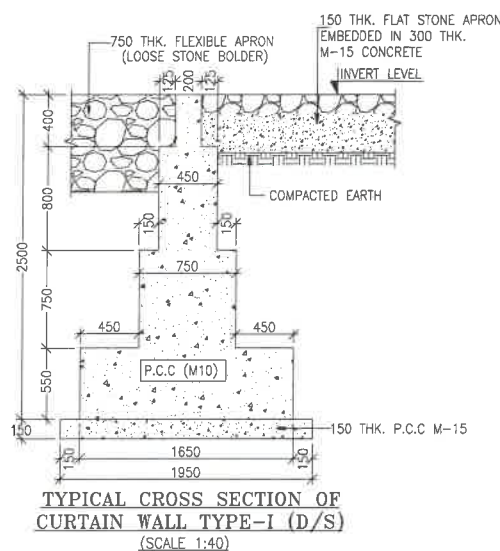
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	30+775	1X2X3	1222.152	1218.322	1218.422	600	TSC-3
②	32+060	1X2X3	1186.075	1182.245	1182.345	600	TSC-3
③	32+460	1X2X3	1171.203	1167.373	1167.473	600	TSC-3

LEGEND:-

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 LVL - LEVEL
 GL - GROUND LEVEL
 IL - INVERT LEVEL
 EQ - EQUAL
 F.P. - FOOTPATH
 U/S - UP STREAM
 D/S - DOWN STREAM
 P.S. - PAVED SHOULDER
 E.S. - EARTHEN SHOULDER



CLIENT :

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EPC CONTRACTOR:

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DESIGN DIRECTOR:

 DESIGN DIRECTOR

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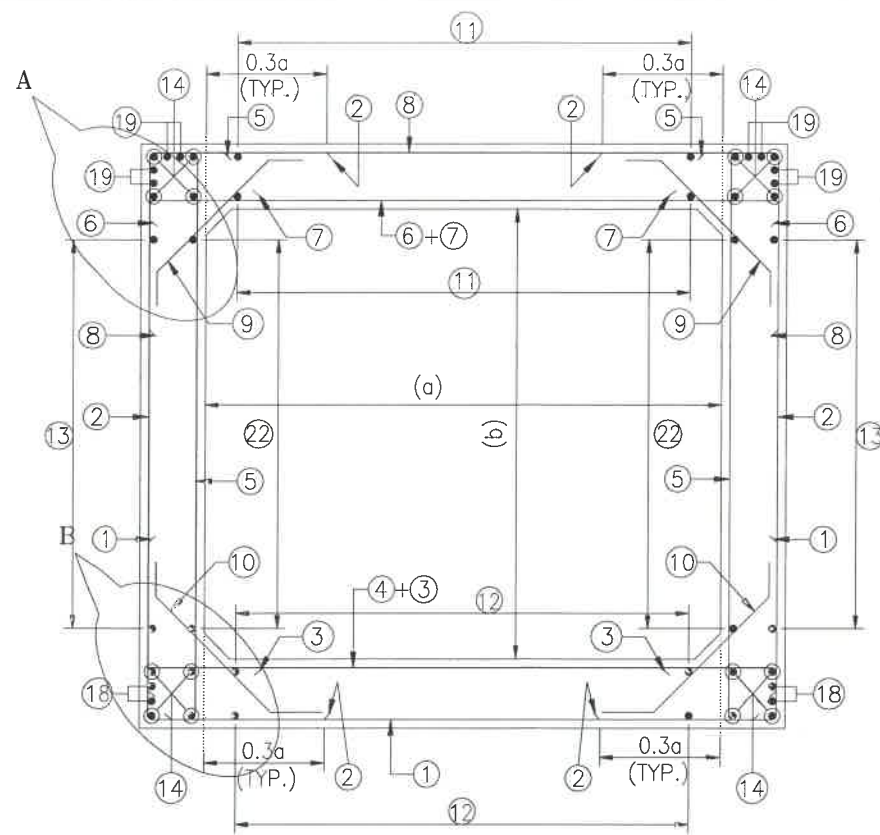
AUTHORITY'S ENGINEER:

 BLOOM L&C & SECSPL

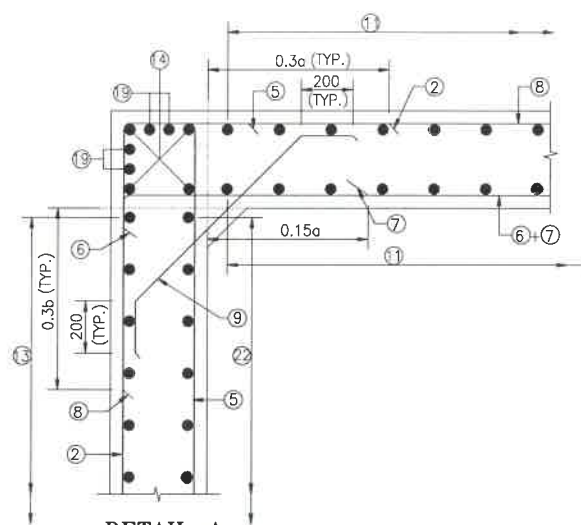
DRAWING SCALE:
 NTS
 PROJECT NAME:-
 WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

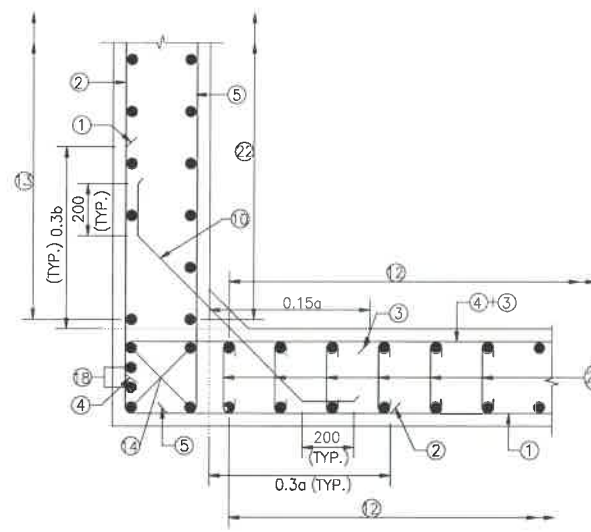
DRG. NO. DD/IMP-JIR/ BOX/GAD/01
 SHEET: 02 OF 02
 REV: R0
 DATE AUG-2021
 DESIGNED: STRUCTURE ENGINEER
 CHECKED: ---
 APPROVED: ---



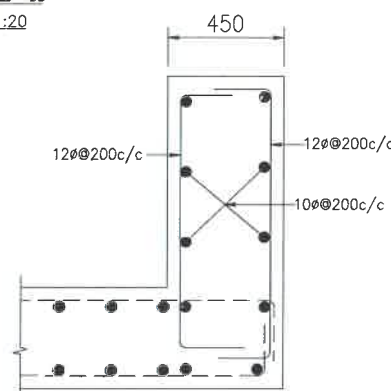
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



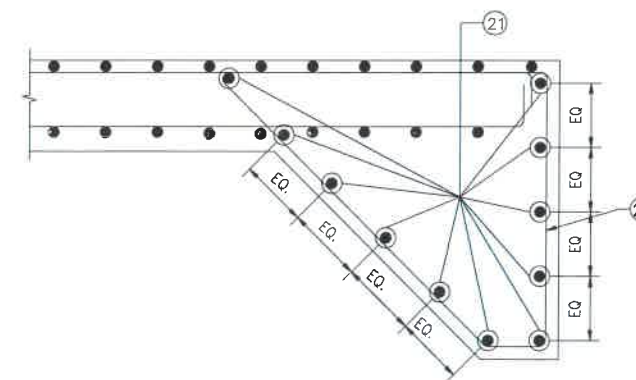
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

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- CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
- ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
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LEGEND :-

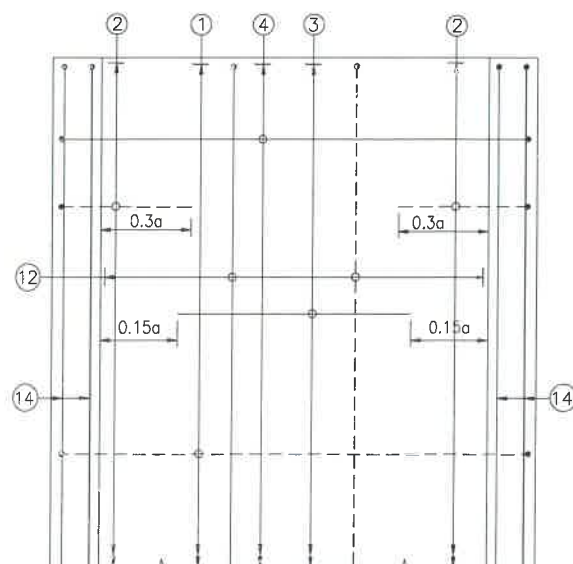
—	TOP FACE BARS/OUTER FACE BARS
- - - - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

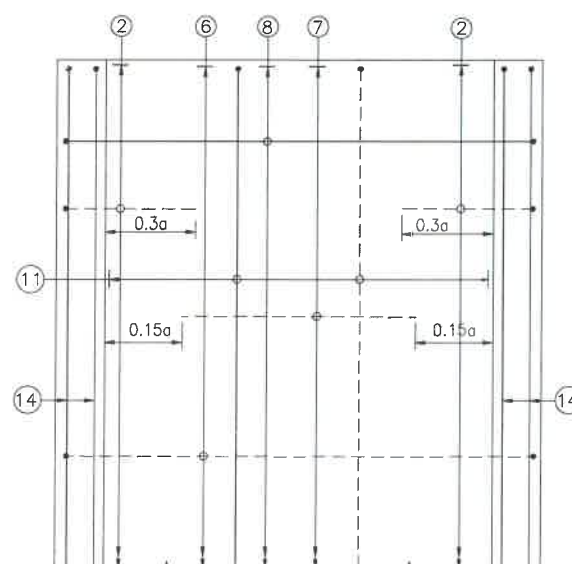
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	—	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	┌─┐	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	300 C/C
⑫	—	10	300 C/C
⑬	—	10	300 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	┌─┐	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	—	10	300 C/C
㉒a	└─┘	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

TRAFFIC DIRECTION →



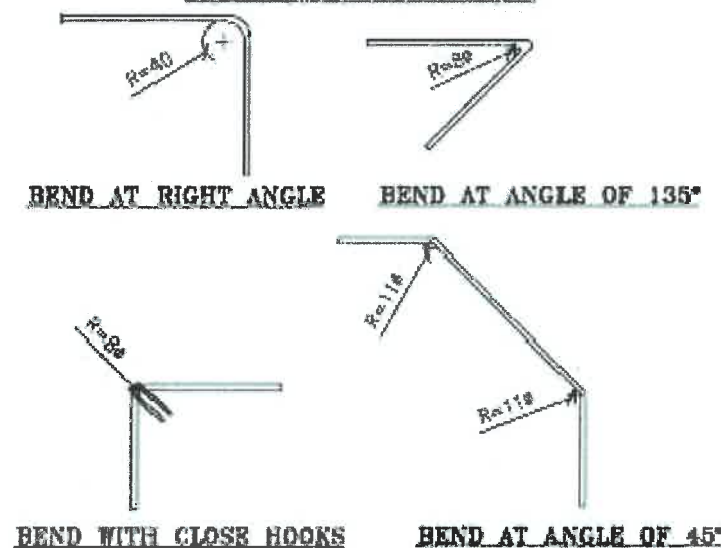
PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

BENDING OF BARS



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



DESIGN DIRECTOR :



PROOF CONSULTANT :



SAFETY CONSULTANT :



AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET :

01 OF 01

REV.

R0

PROJECT NAME:-

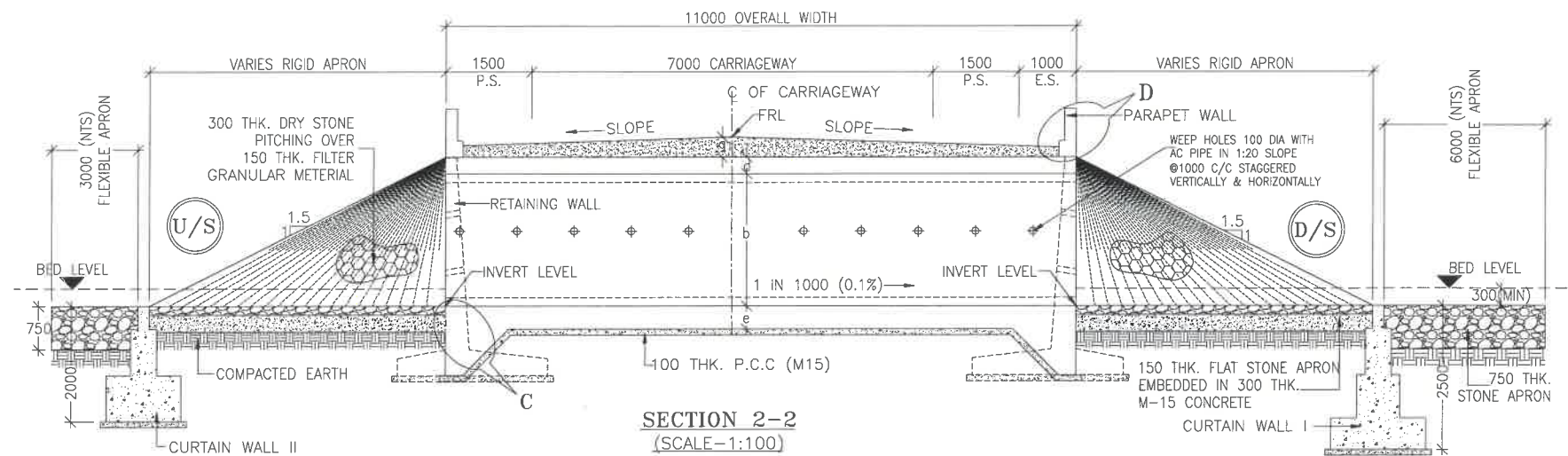
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DATE AUG-2021

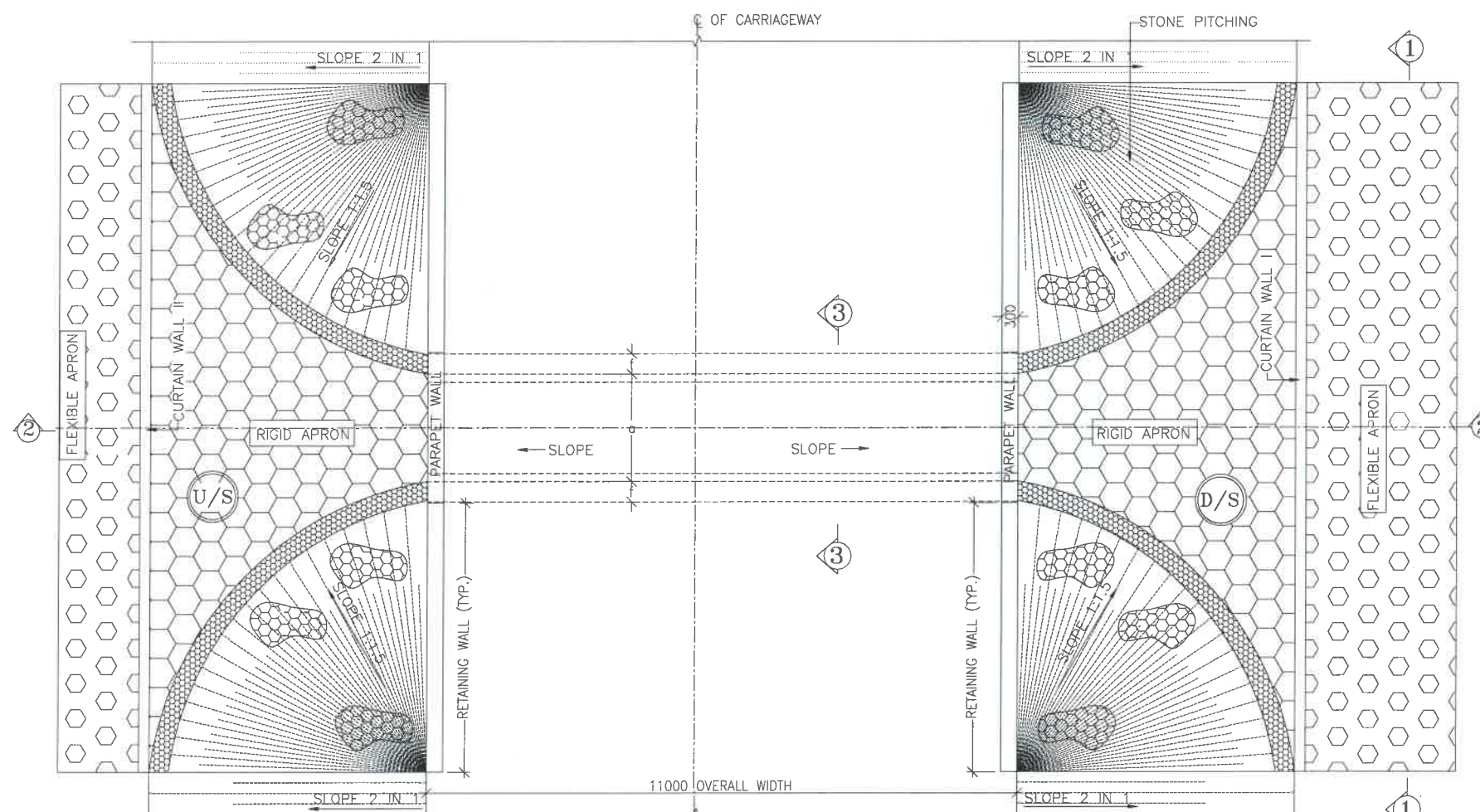
DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

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AUTHORITY ENGINEER :



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NTS

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DRAWING FOR BOX CULVERT

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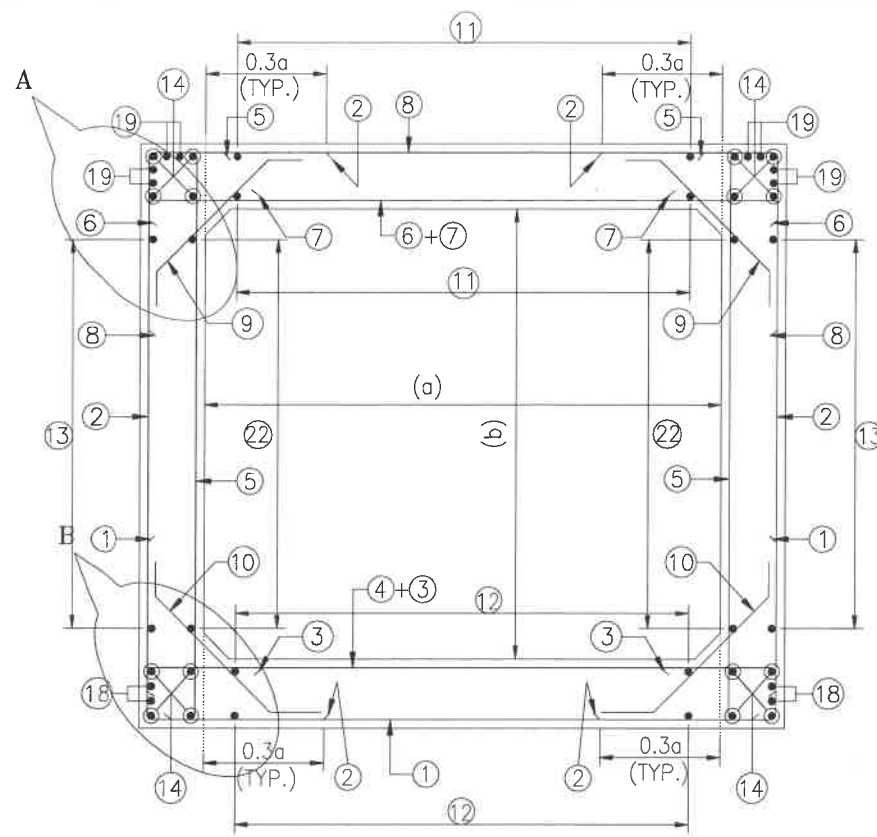
01 OF 02 R0

PROJECT NAME:-

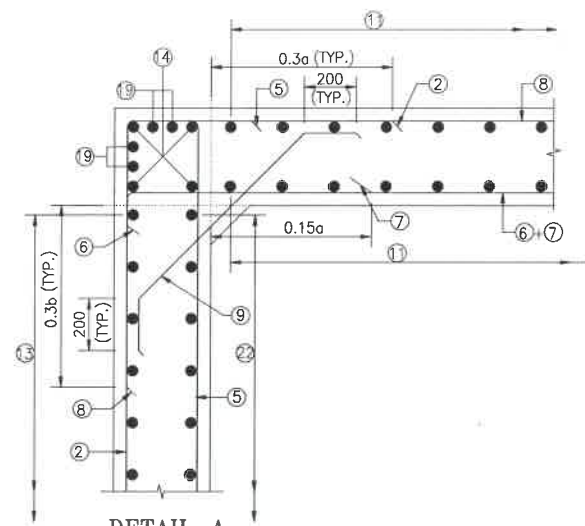
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

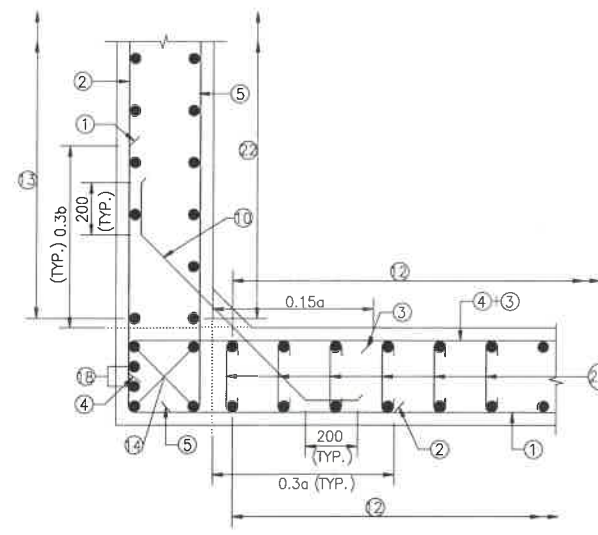
DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



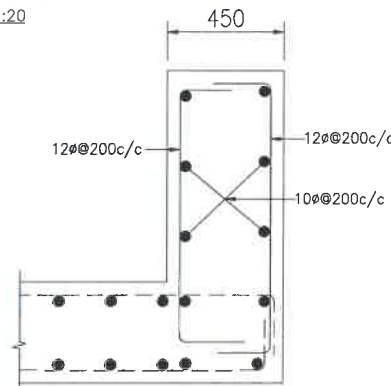
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



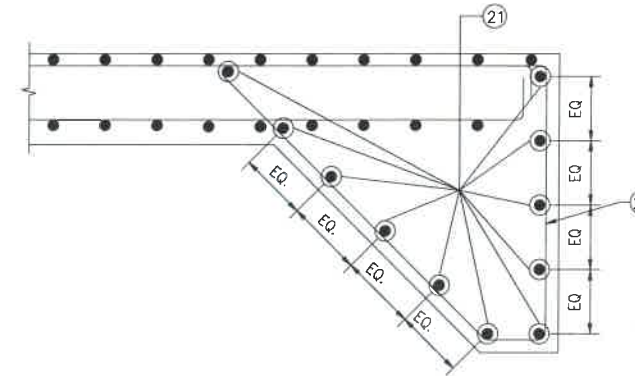
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

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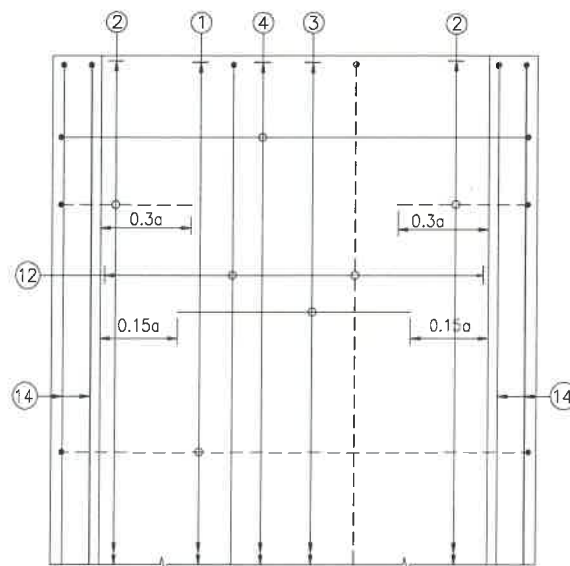
—	TOP FACE BARS/OUTER FACE BARS
- - - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

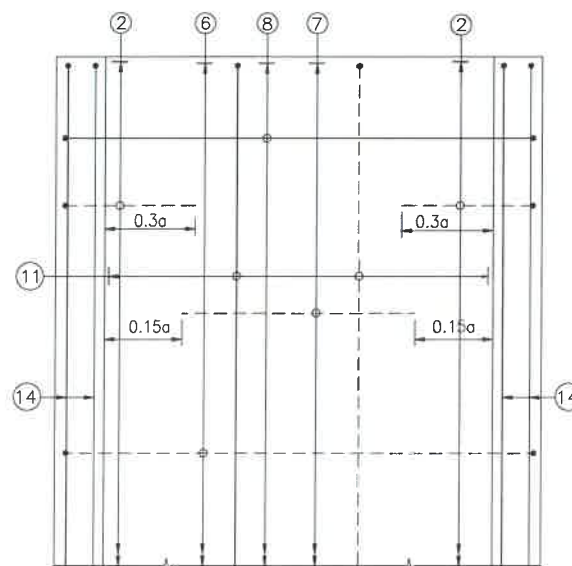
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	┌─┐	12	250 C/C
③	—	12	250 C/C
④	└─┘	12	250 C/C
⑤	┌─┐	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	—	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	┌─┐	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	—	10	300 C/C
⑫	—	10	300 C/C
⑬	—	10	300 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	┌─┐	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	—	10	300 C/C
㉒a	┌─┐	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

← TRAFFIC DIRECTION →



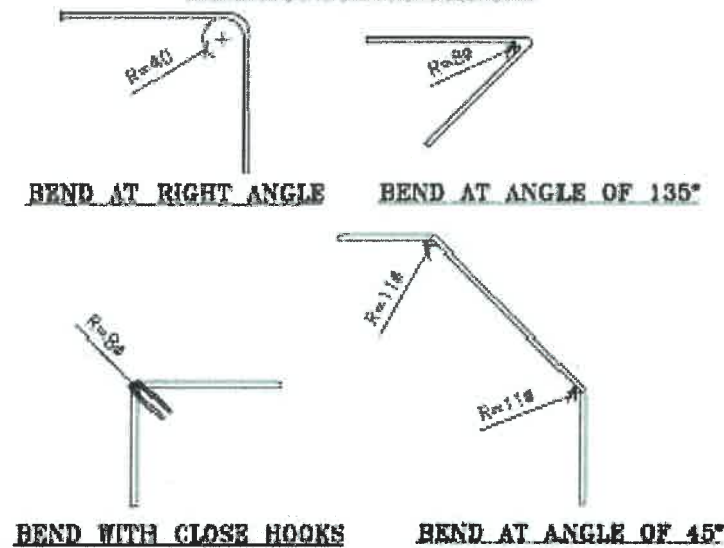
**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

← TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

BENDING OF BARS



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindustan Engineers Pvt. Ltd.
Address: 53/7, 4th Floor, DLF Phase-1,
Gurgaon-Faridabad Bypass, Faridabad, INDIA-122002,
Phone No. 0124-4028681

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan), India. Tel: 0141-2766303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

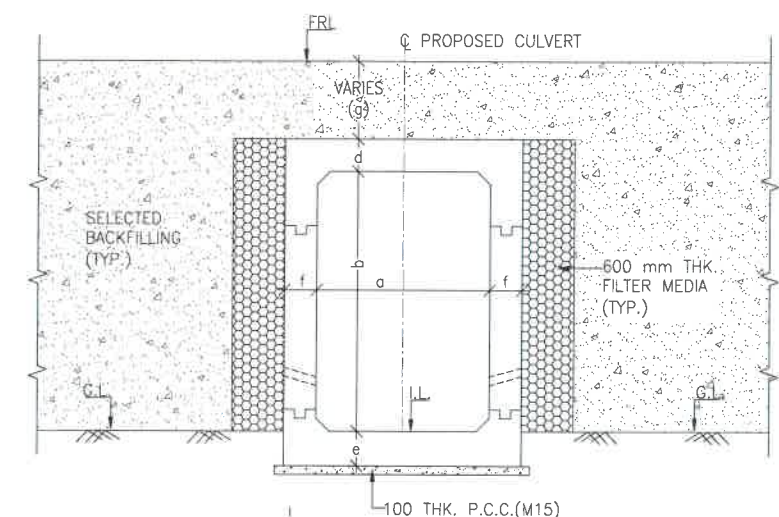
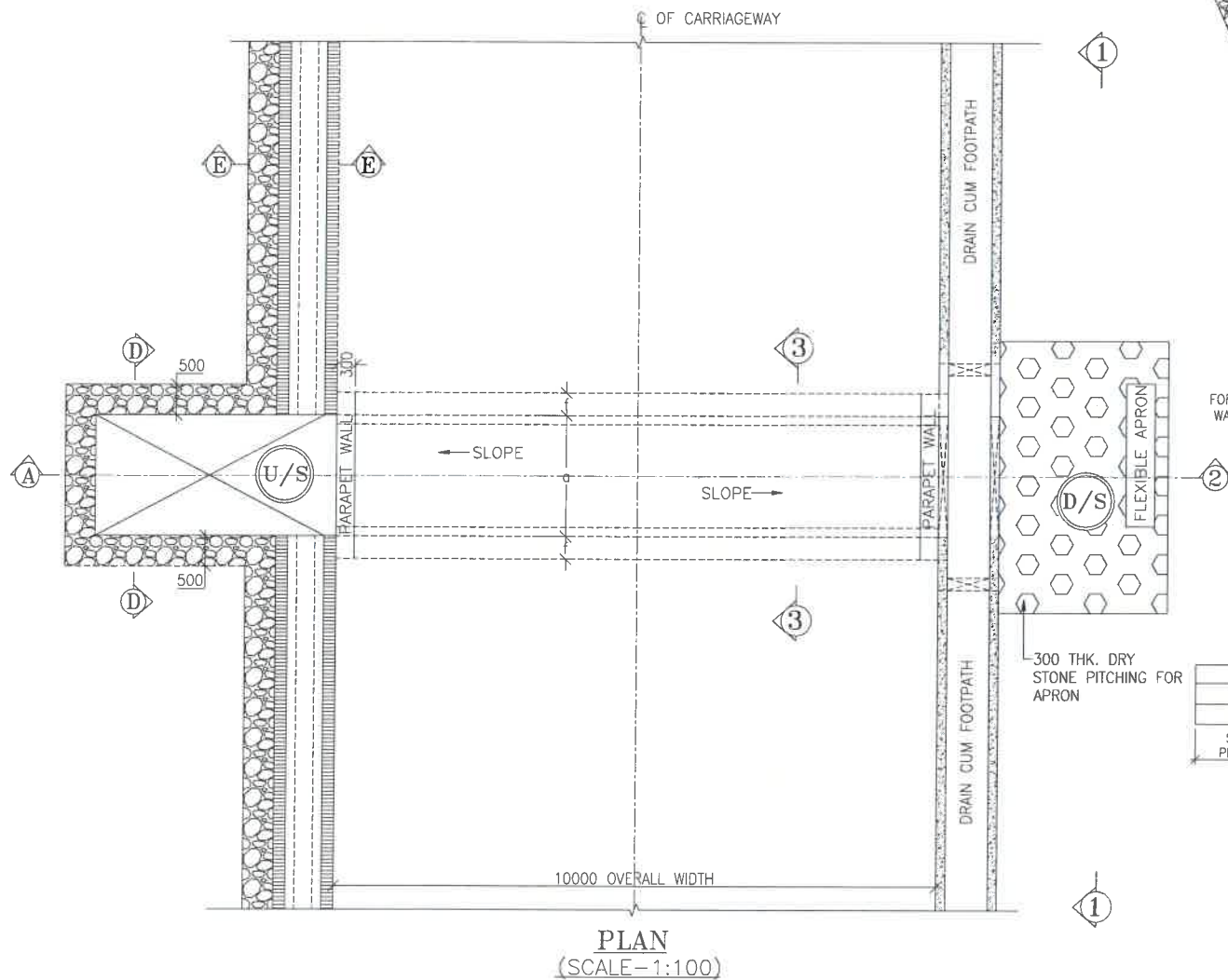
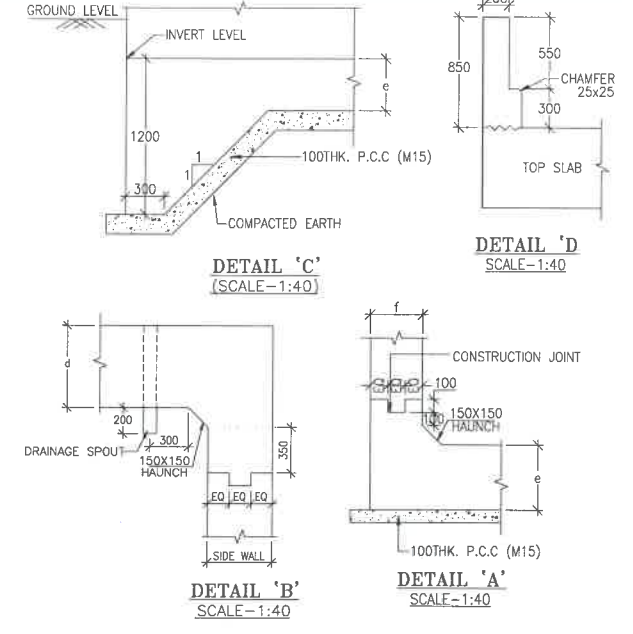
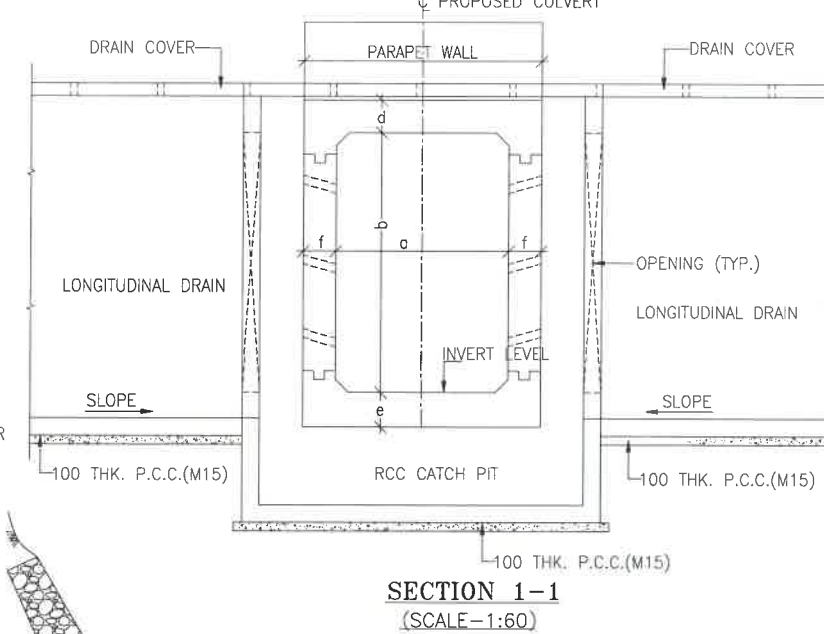
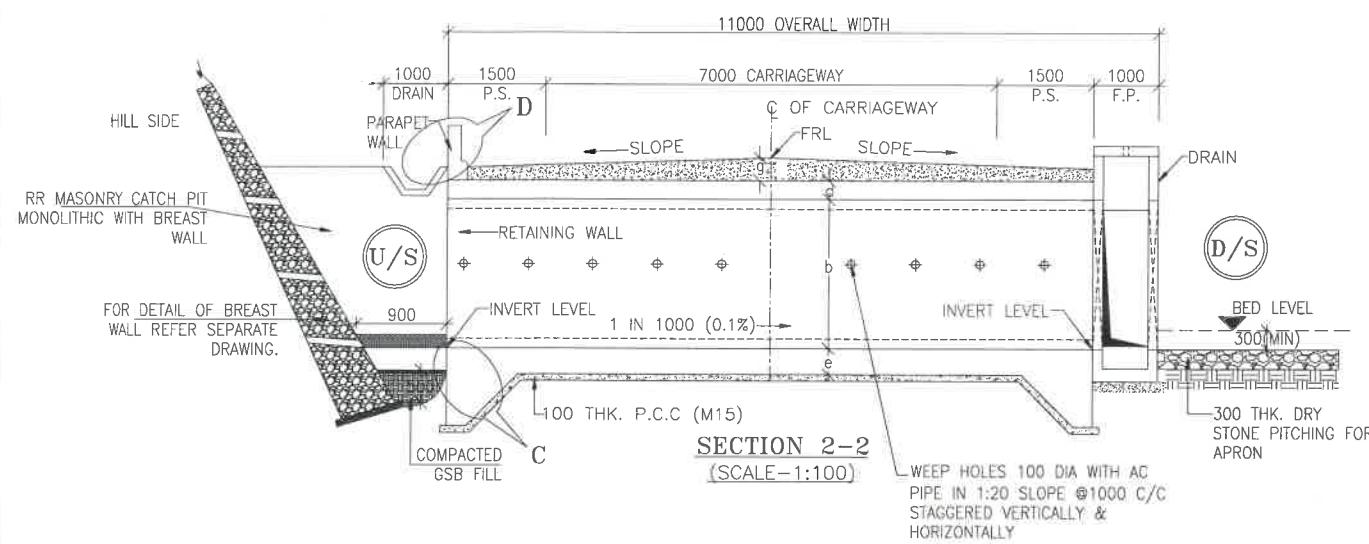
01 OF 01 R0

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
 3. GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - a) RCC BOX.....M30
 - b) RCC RETAINING WALL.....M30
 - c) PCC LEVELLING COURSE.....M15
 - d) PCC CURTAIN WALL.....M15
 - e) PARAPET WALL.....M30
 4. GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
 5. BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M$
 6. COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
 7. FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO 10T/M IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
 8. 60MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC-2014.
 9. ALL THE LEVELS AND CHAINAGES TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
 10. BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
 11. SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X2X3	2000	3000	230	275	275

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	30+982	1X2X3	1214.985	1211.155	1211.255	600	TSC-7

CLIENT :

 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:

 DESIGN DIRECTOR

PROOF CONSULTANT:

 Hindia Engineers Pvt. Ltd.
 Address: 33/76, H Block, DLF Phase-1, Gurgaon-Faridkot Road, Faridkot, INDIA-122002, Phone No.-0124-4028681

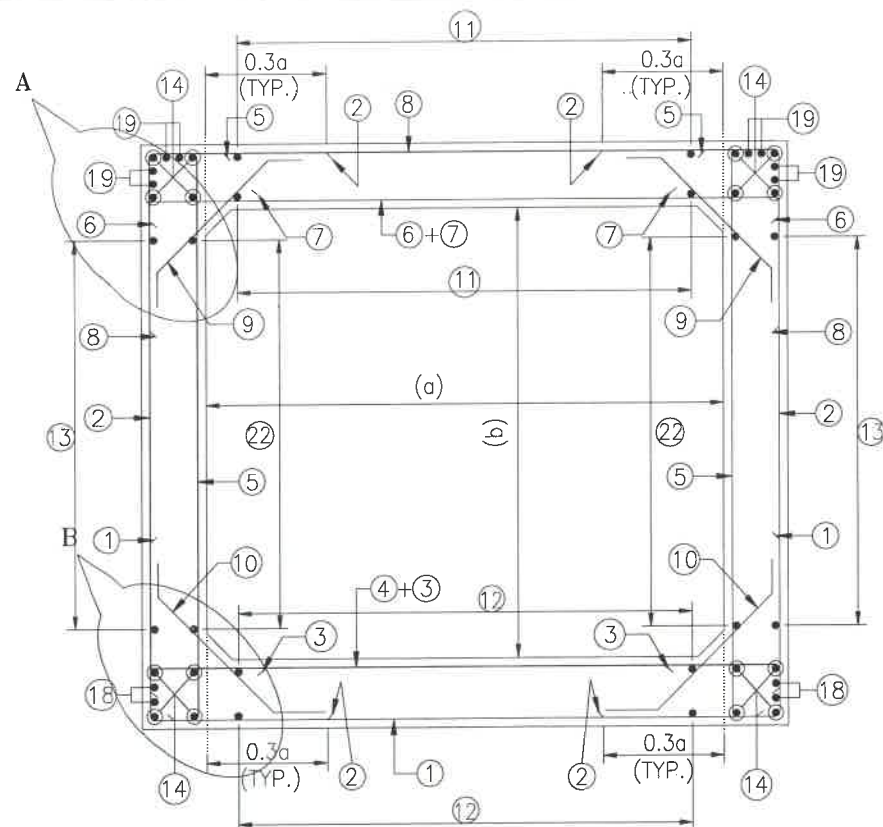
SAFETY CONSULTANT:

 Antique Buildtech Pvt. Ltd.
 Address: 191, Mohan Nagar, Gurgaon, Haryana, Jalpur-302018 (Rajasthan) Phone No. 0141-2780303 Email : info@antiquebuildtech.com

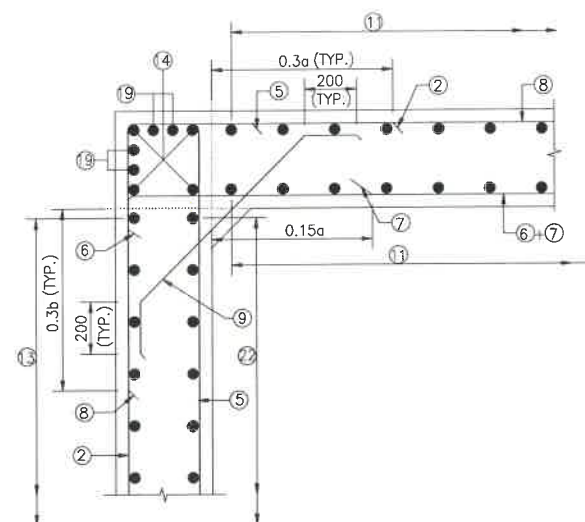
AUTHORITY ENGINEER:

 BLOOM LIC & SBOEPL

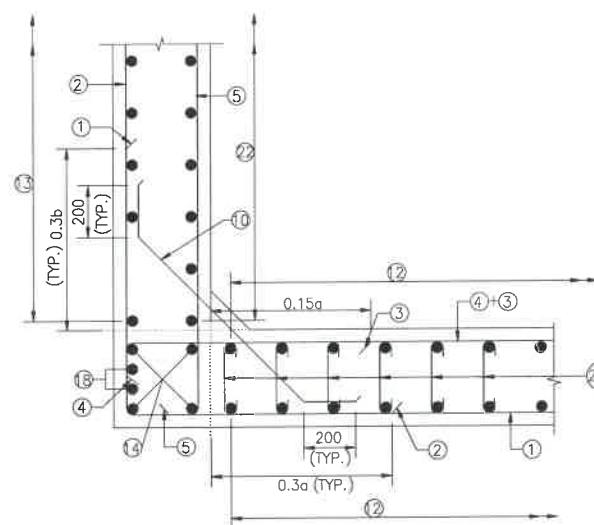
DRAWING SCALE: NTS
 DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT
 DRG. NO. DD/IMP-JIR/ BOX/GAD/01
 SHEET: 01 OF 01
 REV. R0
 PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.
 DATE AUG-2021
 DESIGNED: STRUCTURE ENGINEER
 CHECKED: ---
 APPROVED: ---



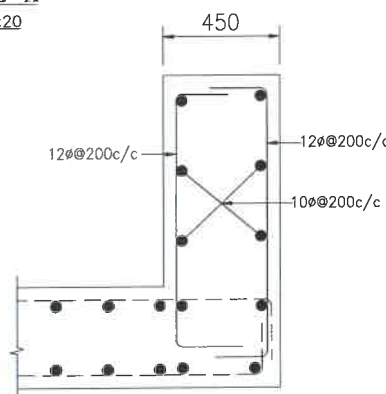
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



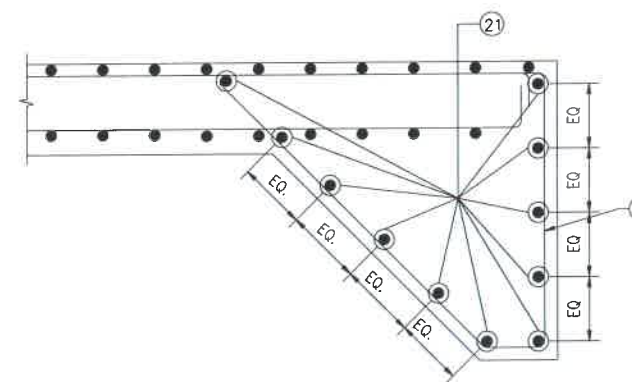
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

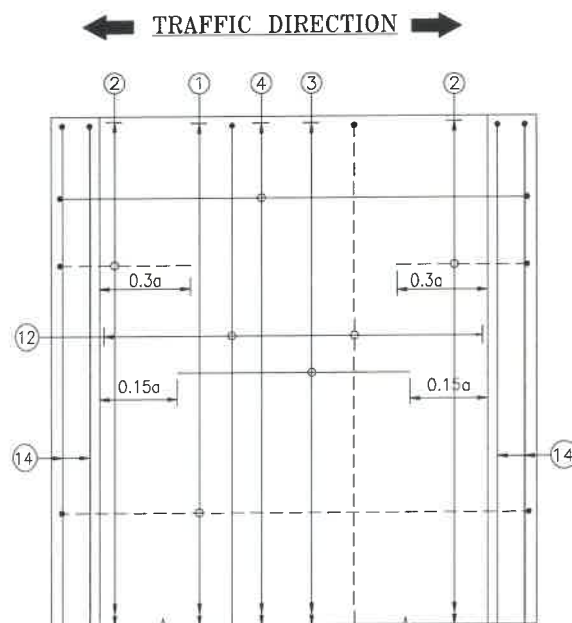
LEGEND :-

—	TOP FACE BARS/OUTER FACE BARS
- - - - -	BOTTOM FACE BARS/INNER FACE BARS

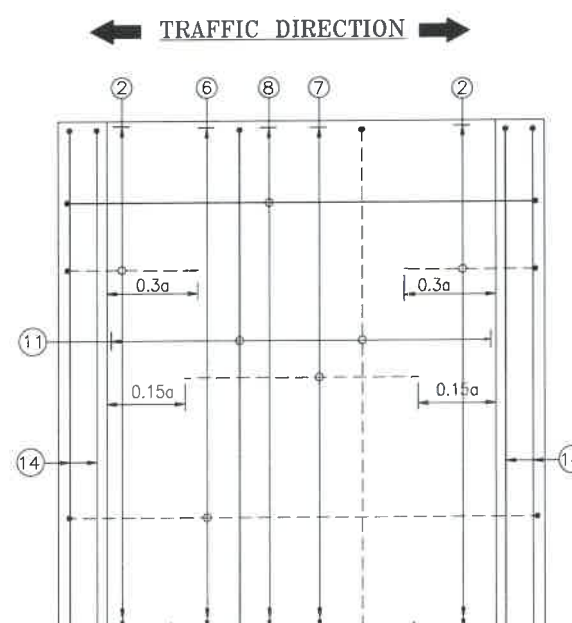
SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

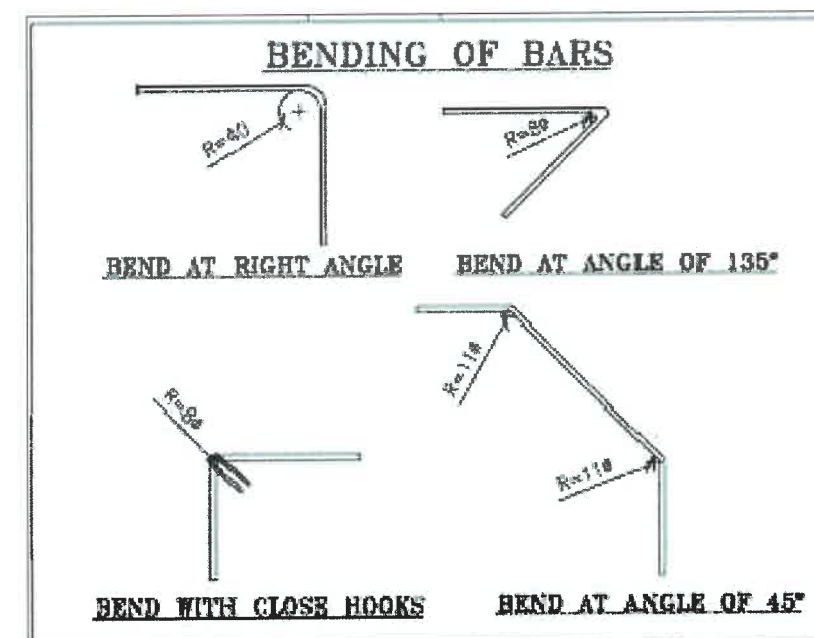
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	250 C/C
②	└─┘	12	250 C/C
③	└─┘	12	250 C/C
④	└─┘	12	250 C/C
⑤	└─┘	12	250 C/C
⑥	└─┘	12	250 C/C
⑦	└─┘	12	250 C/C
⑧	└─┘	12	250 C/C
⑨	└─┘	10	250 C/C
⑩	└─┘	10	250 C/C
⑪	└─┘	10	300 C/C
⑫	└─┘	10	300 C/C
⑬	└─┘	10	300 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	300 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	10	300 C/C
㉒a	└─┘	8DIA.300(LONG. DIRECTION) 500(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	



PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hira Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana, India-122002,
Gurgaon-Faridkot Road Haryana, India-122002,
Phone No.-0124-4026681

SAFETY CONSULTANT:



Antique Bullseye Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana, India-122002,
Jaipur-302018 (Rajasthan) Phone No.-0141-2760303
Email : Info@antiquebullseye.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X2X3

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET:

01OF 01

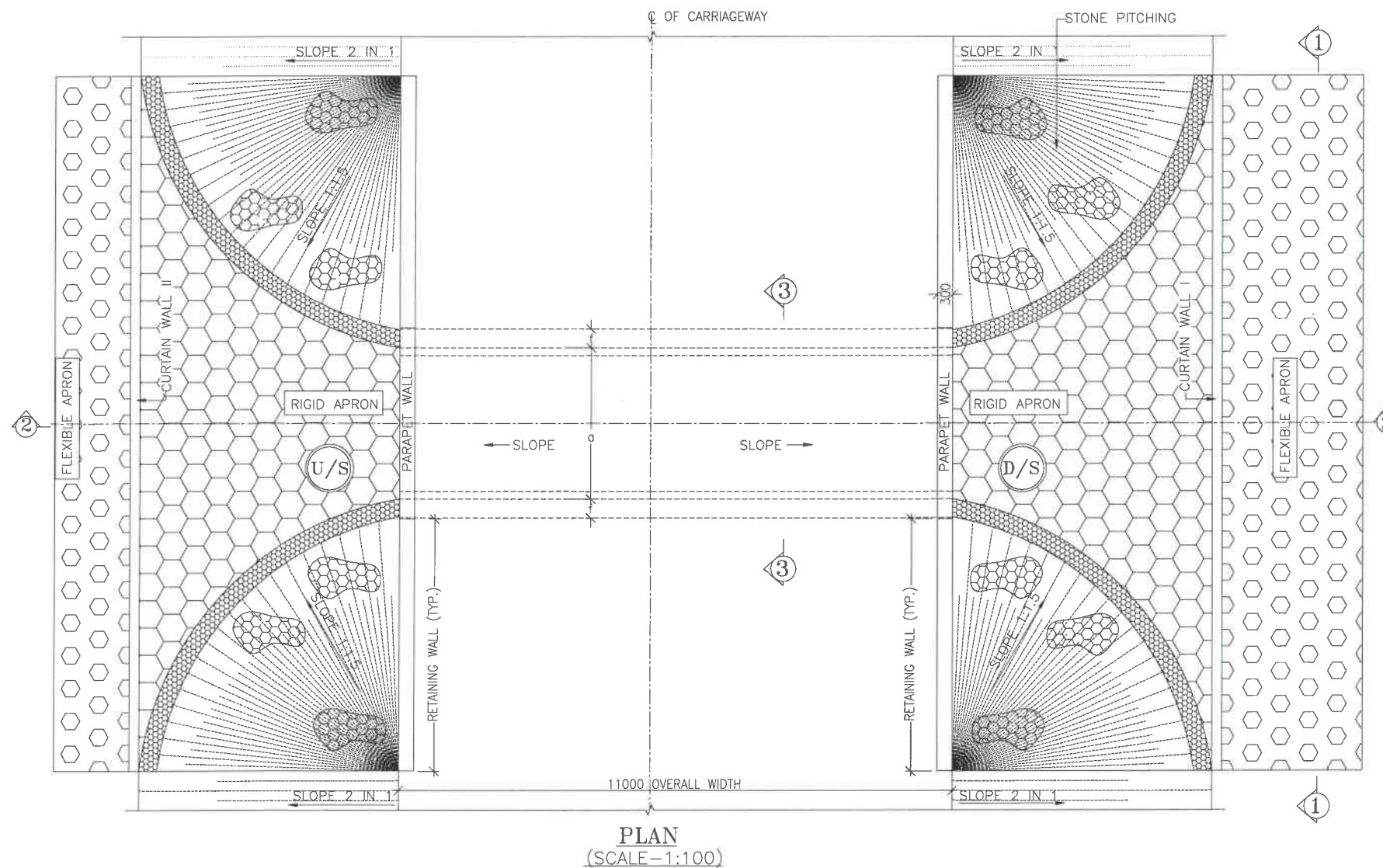
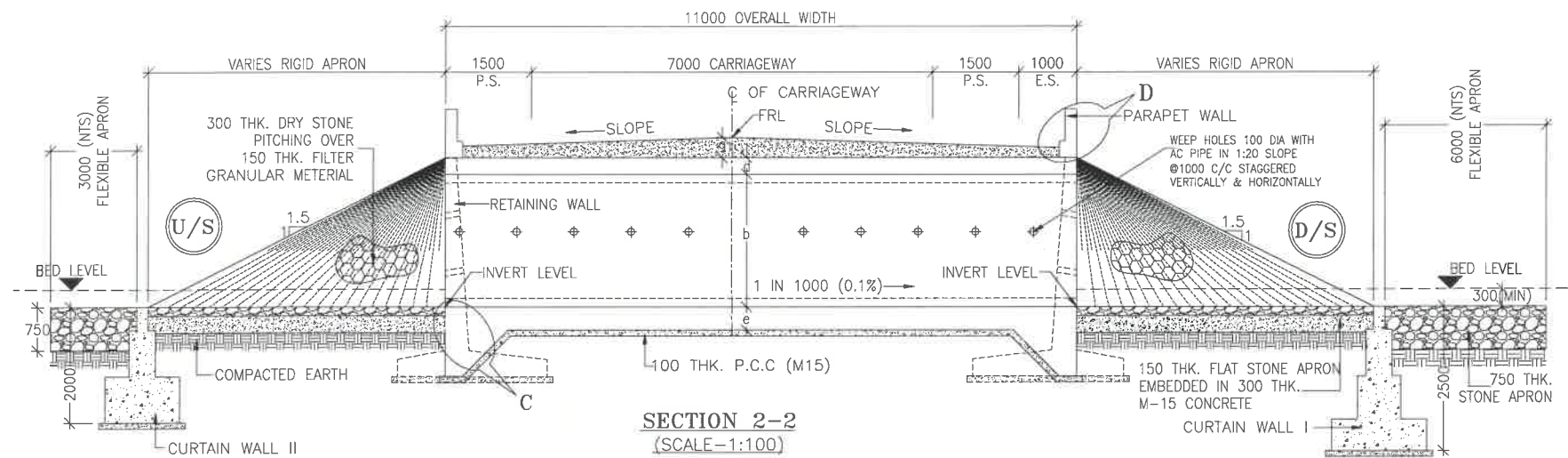
REV.

R0

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---

BOX CULVERT DRAWING _1X3X3



NOTES:-

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 - PARAPET WALL.....M30
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- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hika Engineers Pvt. Ltd.
Address: 607, J Block, DLF Phase-1,
Gurgaon-Faridkot Road Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No. 0141-2780303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

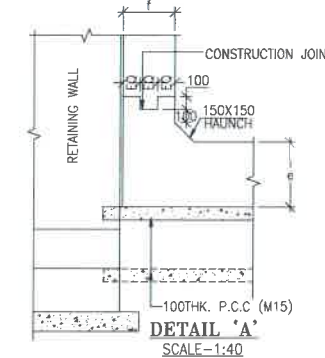
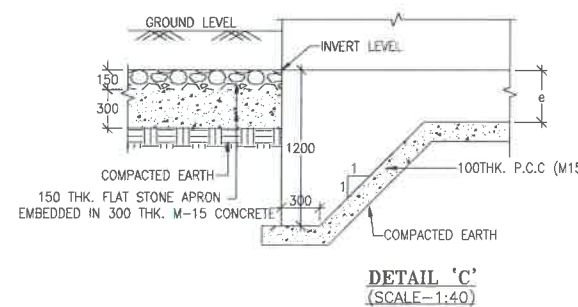
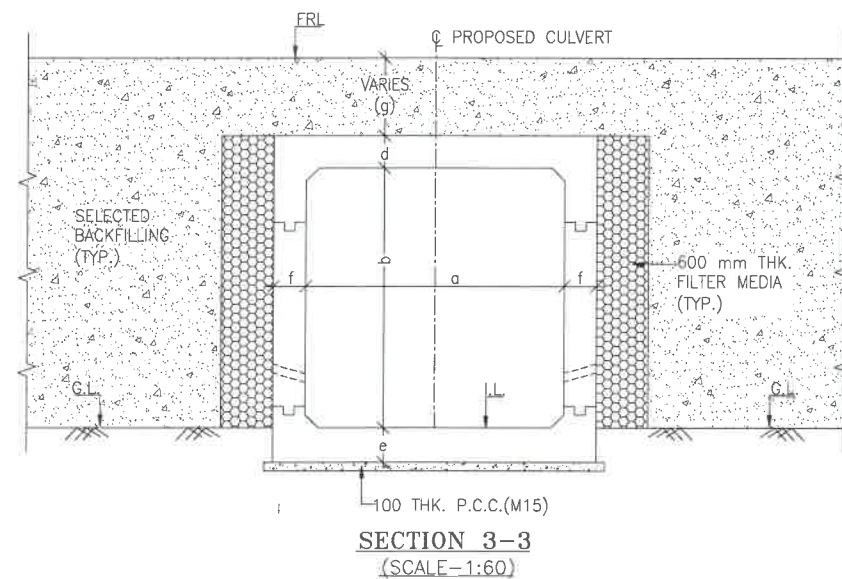
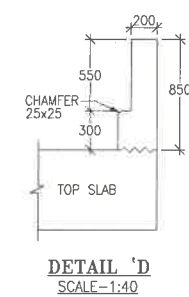
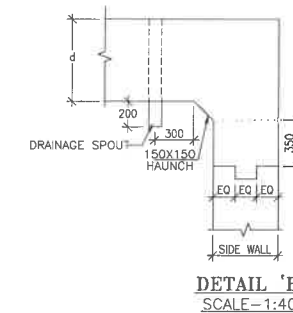
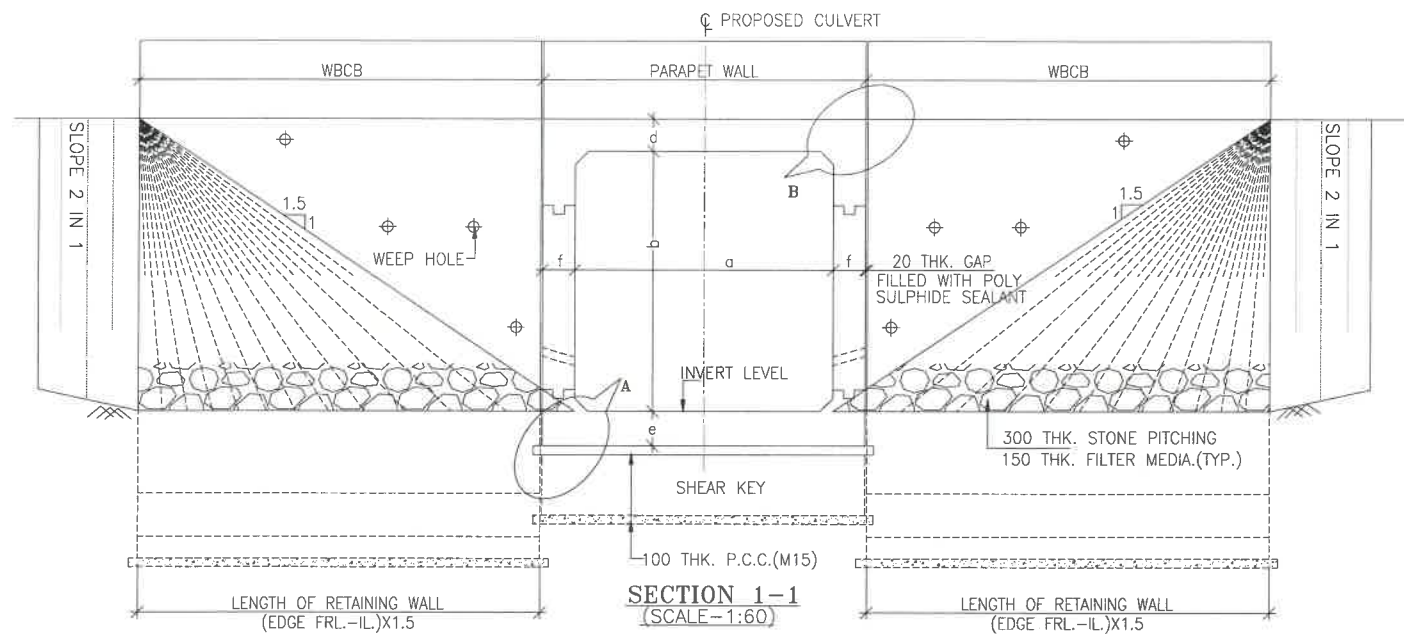
PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



NOTES:-

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- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

TABLE SHOWING SILENT DIMENSIONS

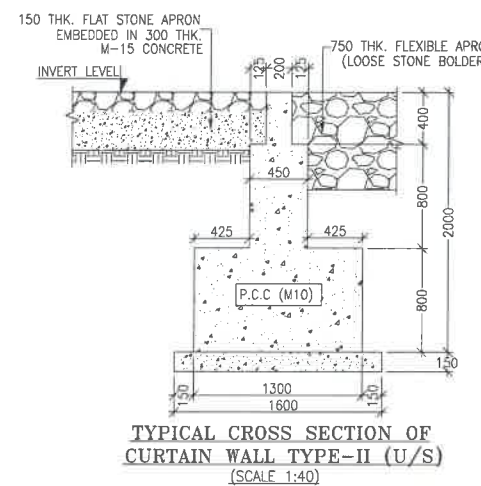
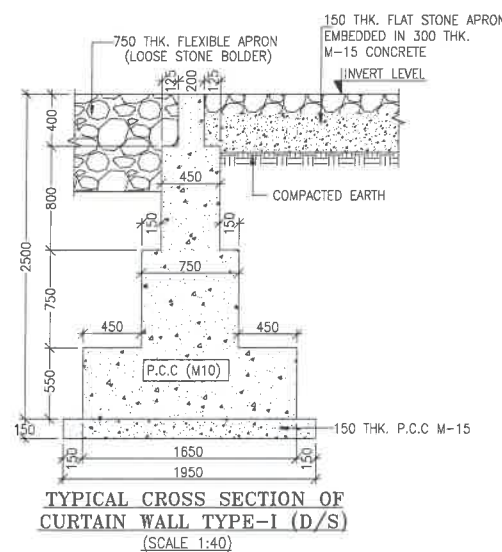
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X3	3000	3000	300	350	350

TABLE-II

S.R. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	28+949	1X3X3	1270.446	1266.546	1266.646	600	TSC-3
②	31+450	1X3X3	1201.418	1197.518	1197.618	600	TSC-3

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



DESIGN DIRECTOR:



PROOF CONSULTANT:



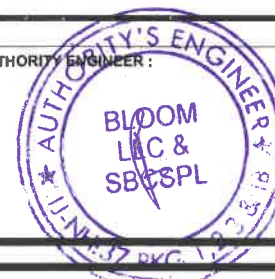
India Engineers Pvt. Ltd.
Address: 31/2, H-Block, DLF Phase-1,
Gurgaon-122002 (Rajasthan) Phone No. 0124-4028681
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No. 0124-3769303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

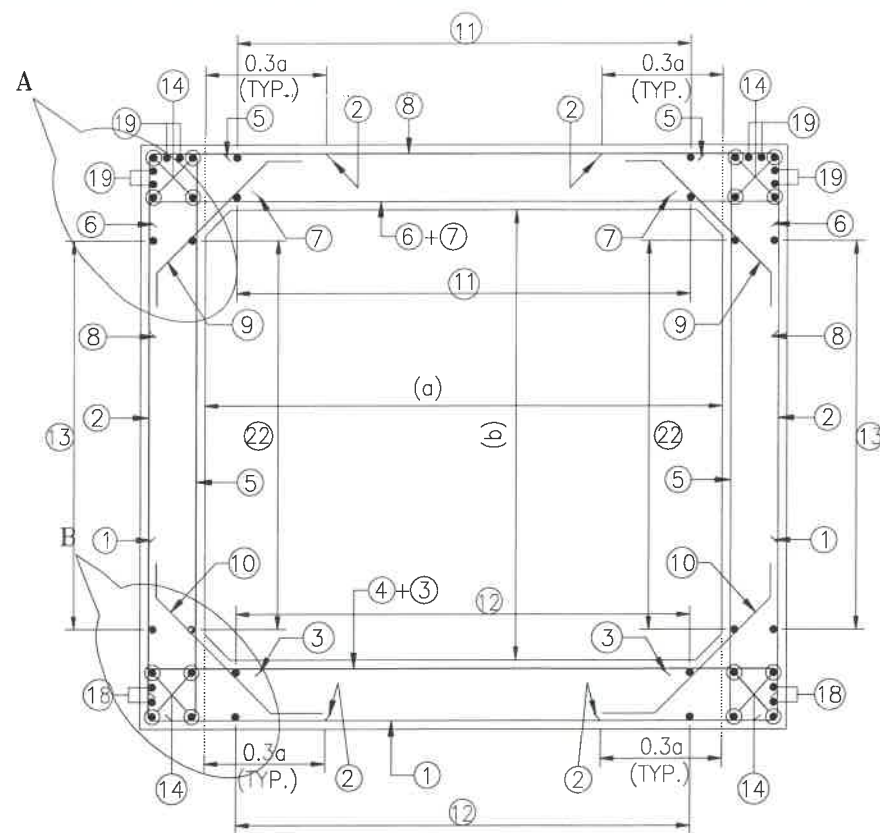
02 OF 02 R0

PROJECT NAME:-

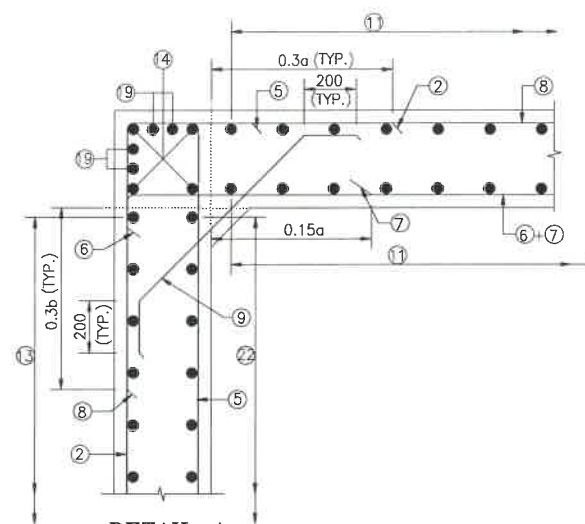
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

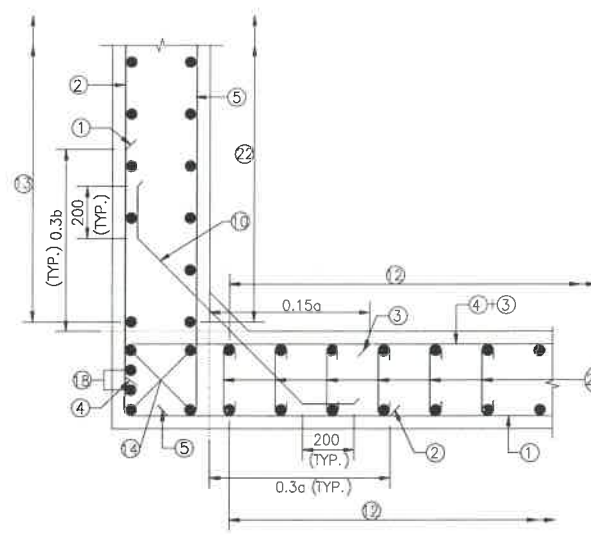
DESIGNED	CHECKED	APPROVED
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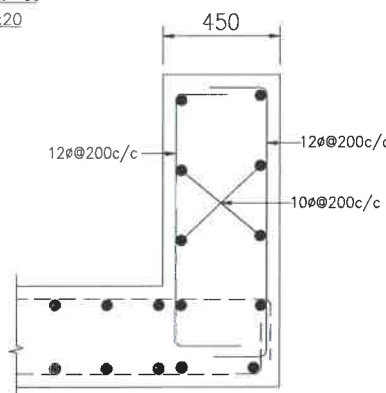
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. A FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

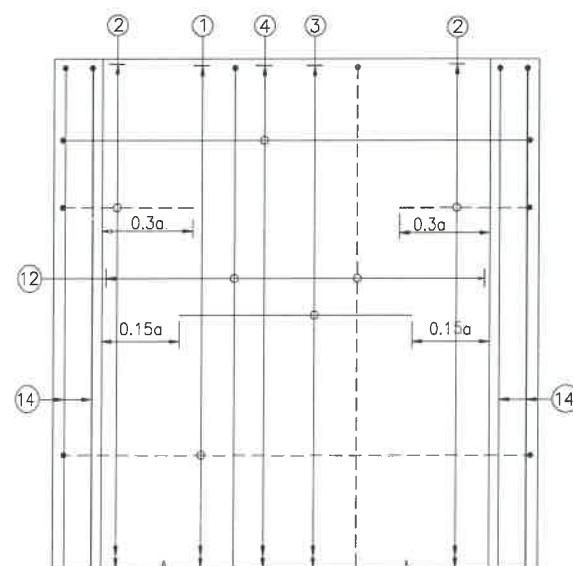
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

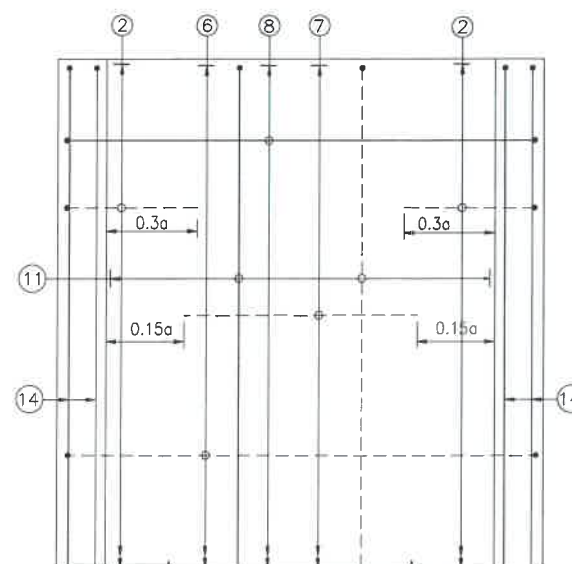
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	200 C/C
②		12	200 C/C
③		12	200 C/C
④		12	200 C/C
⑤		12	225 C/C
⑥		12	200 C/C
⑦		12	200 C/C
⑧		12	200 C/C
⑨		10	200 C/C
⑩		10	200 C/C
⑪		8	250 C/C
⑫		8	275 C/C
⑬		8	275 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	275 C/C
㉑		12	20 NOS.
㉒		8	250 C/C
㉒a		8DIA.275(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b		NOT IN USE	

TRAFFIC DIRECTION →



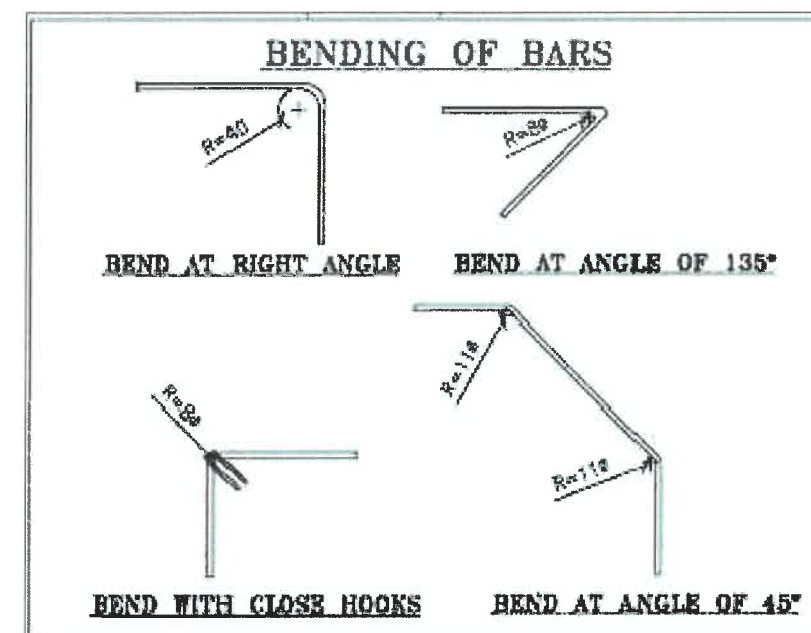
PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

DETAIL OF SHEAR KEY
SCALE : 1:20



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CHM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hingia Engineers Pvt. Ltd.
Address: 117, H-Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



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Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquetech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X3

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

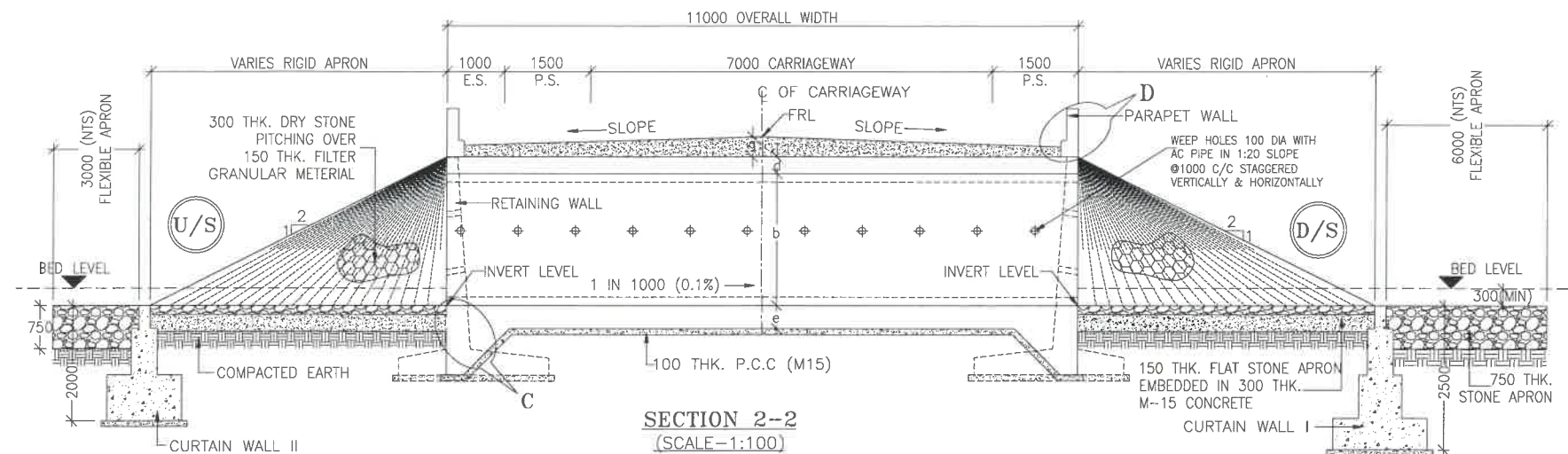
DD/IMP-JIR/ RF/01

SHEET: REV.

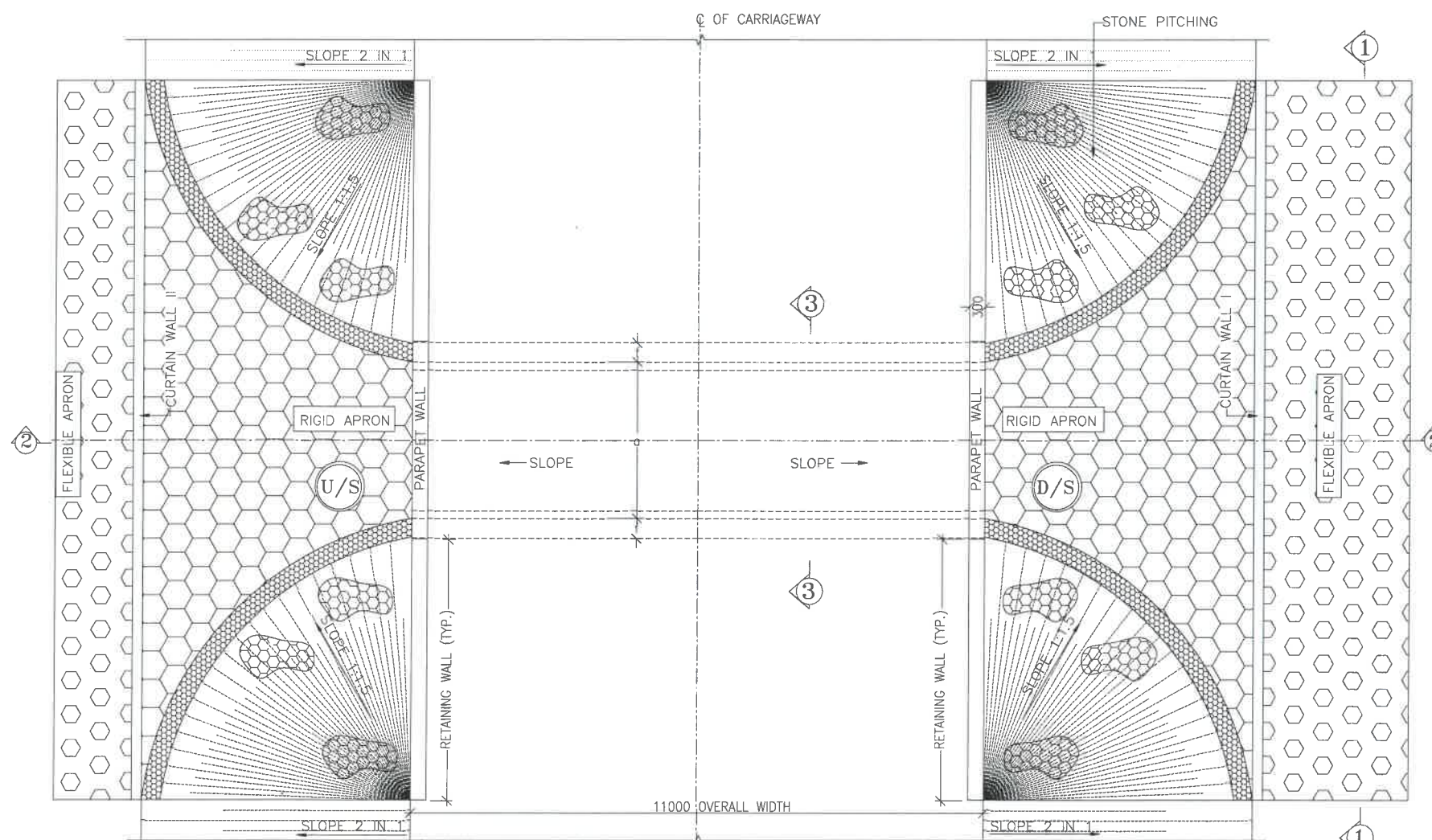
01 OF 01 R0

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED CHECKED APPROVED
STRUCTURE ENGINEER



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.07/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 33/7, Block, DLF Phase-1,
Gurgaon-122002 (Rajasthan) Phone No. 0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

DESIGNED	CHECKED	APPROVED
ENGINEER	---	---

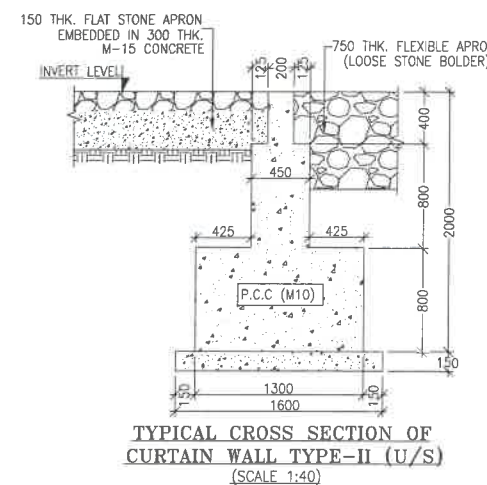
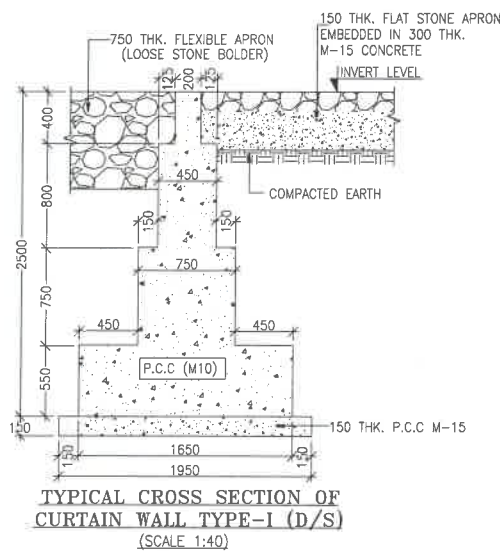
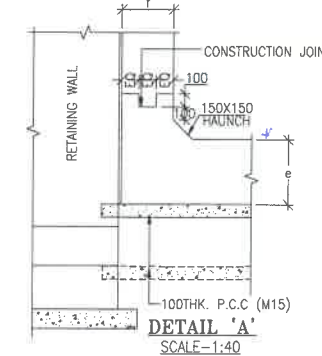
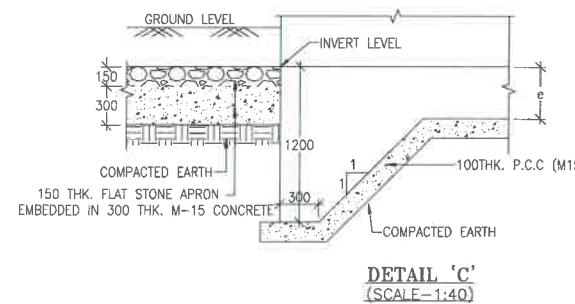
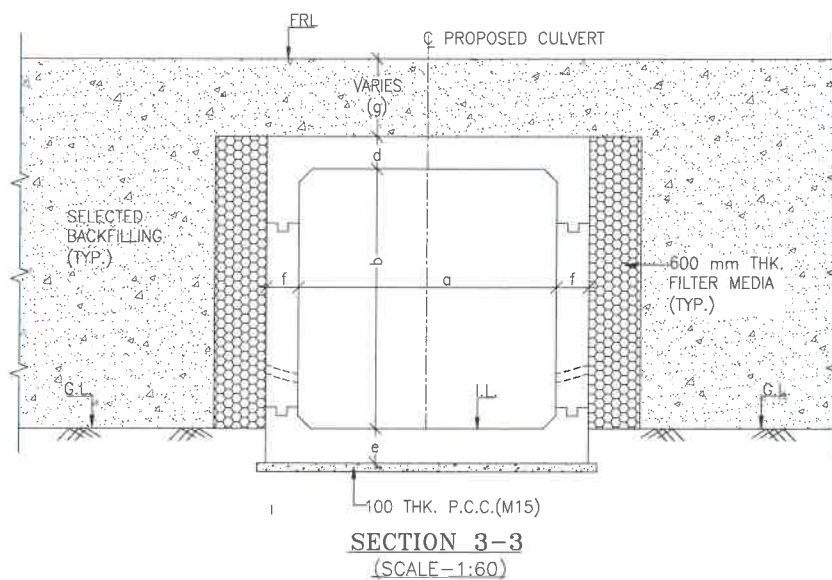
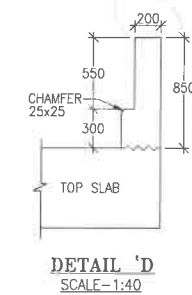
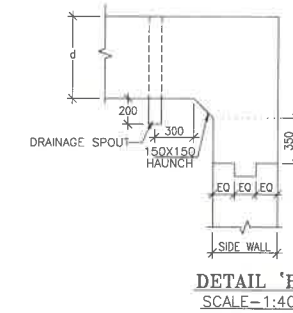
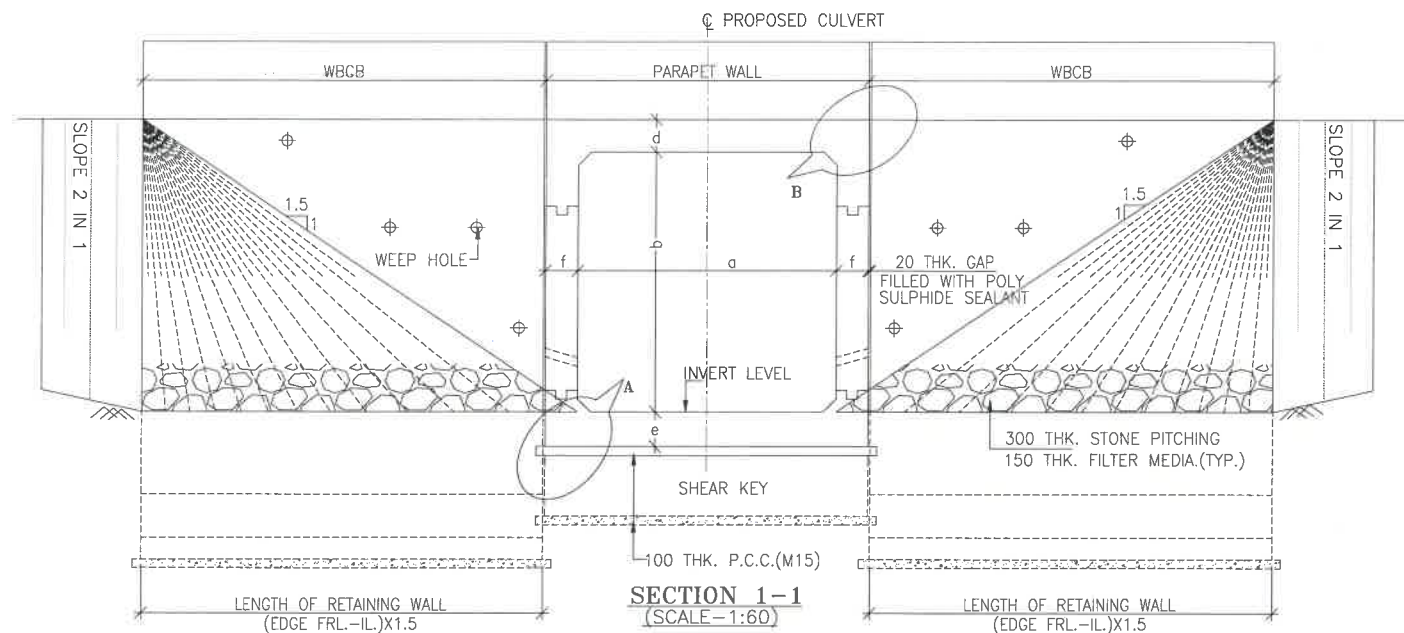


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X3	3000	3000	300	350	350

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	32+832	1X3X3	1159.135	1155.235	1155.335	600	TSC-4

NOTES:-

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LEGEND:-

FRL	—	FINISHED ROAD LEVEL
LVL	—	LEVEL
GL	—	GROUND LEVEL
IL	—	INVERT LEVEL
EQ	—	EQUAL
F.P.	—	FOOTPATH
U/S	—	UP STREAM
D/S	—	DOWN STREAM
P.S.	—	PAVED SHOULDER
E.S.	—	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



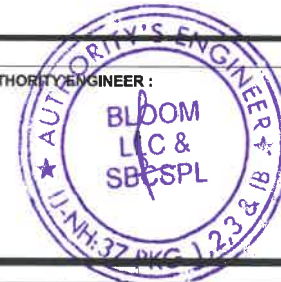
Hindia Engineers Pvt. Ltd.
Address: 337, H Block, Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT :



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Address: 191, Mohan Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) Phone no. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

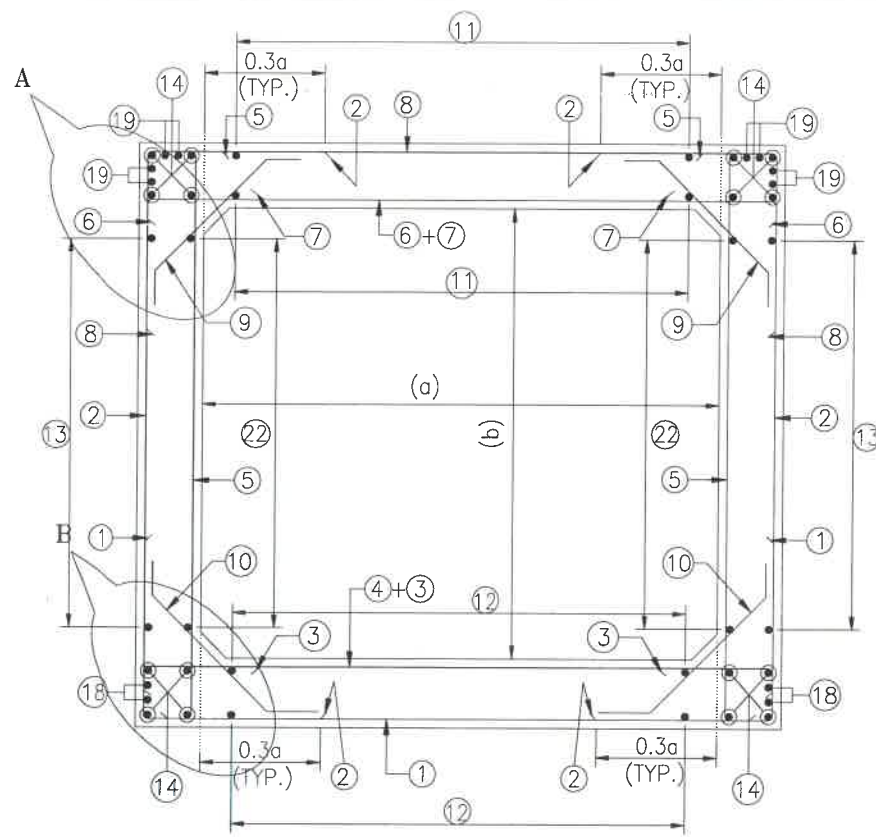
02 OF 02 R0

PROJECT NAME:-

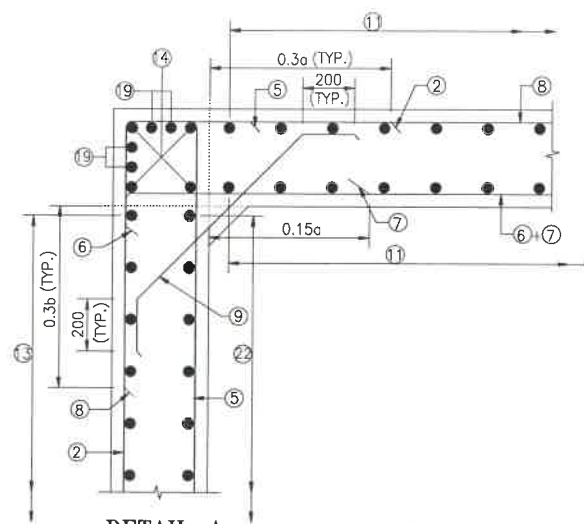
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DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN

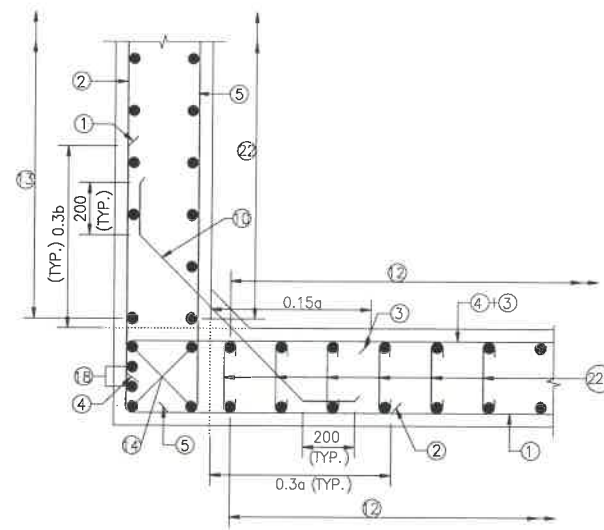
DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



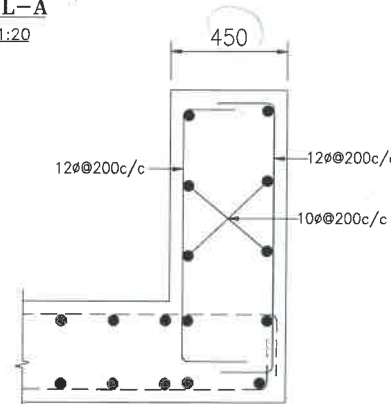
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
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LEGEND :-

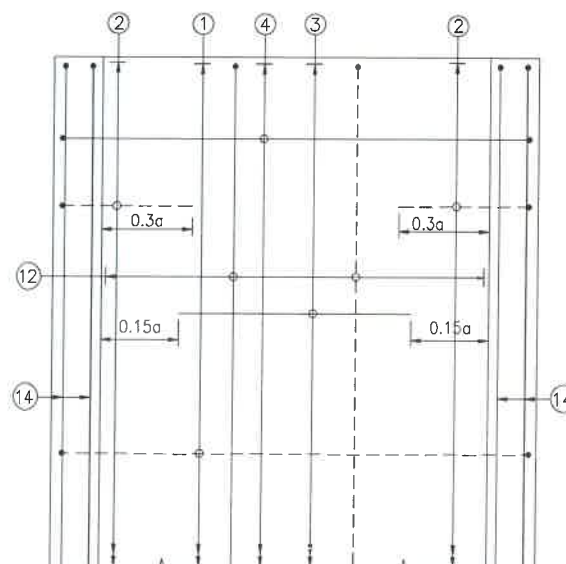
————	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

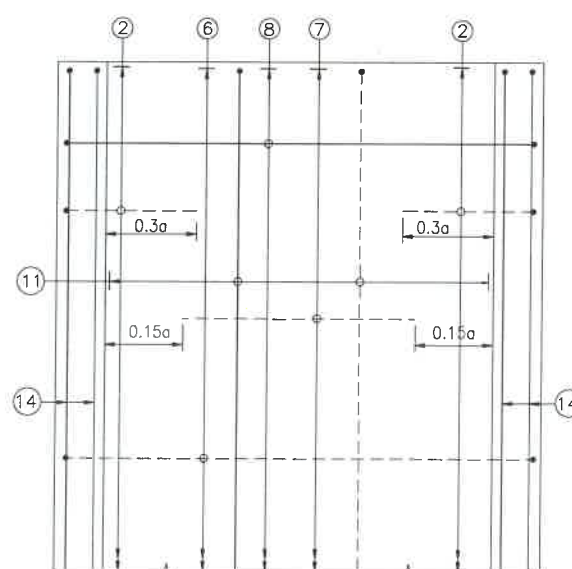
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	200 C/C
②		12	200 C/C
③		12	200 C/C
④		12	200 C/C
⑤		12	225 C/C
⑥		12	200 C/C
⑦		12	200 C/C
⑧		12	200 C/C
⑨		10	200 C/C
⑩		10	200 C/C
⑪		8	250 C/C
⑫		8	275 C/C
⑬		8	275 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	275 C/C
㉑		12	20 NOS.
㉒		8	250 C/C
㉒a		8DIA.275(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b		NOT IN USE	

← TRAFFIC DIRECTION →



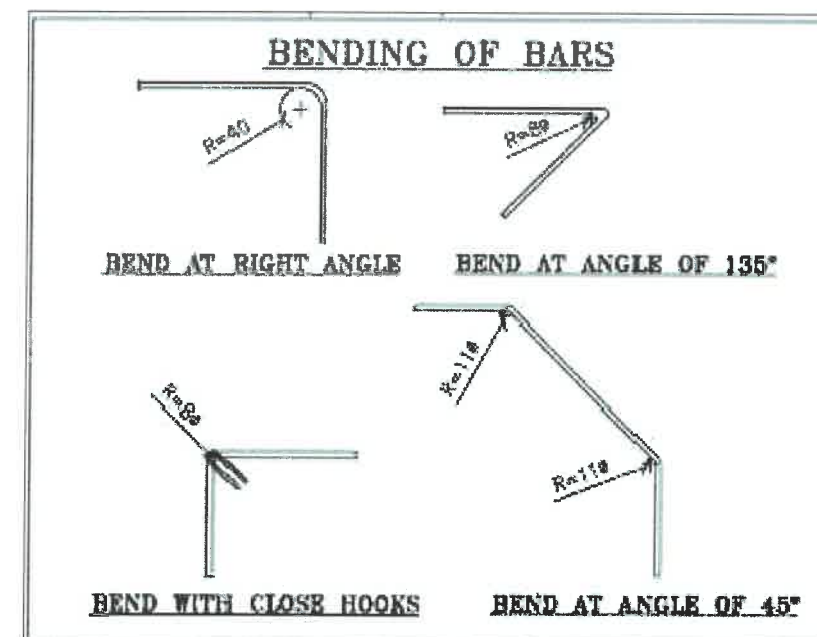
PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

← TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

DETAIL OF SHEAR KEY
SCALE : 1:20



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



"CMM"
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



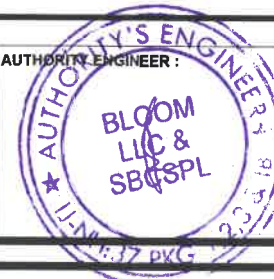
Hindia Engineers Pvt. Ltd.
Address: 2nd, 1st Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
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SAFETY CONSULTANT:



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Address: 191, Mohan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2766303
Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X3

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
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DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

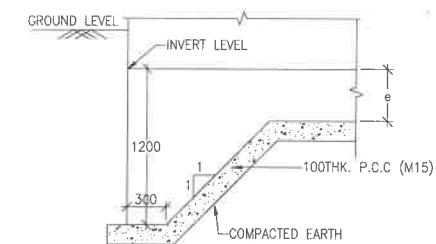
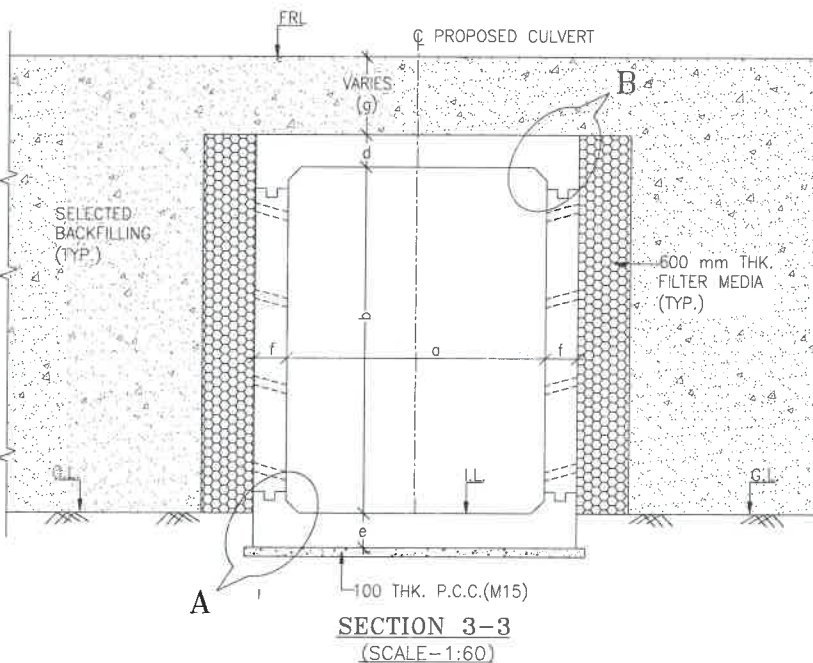
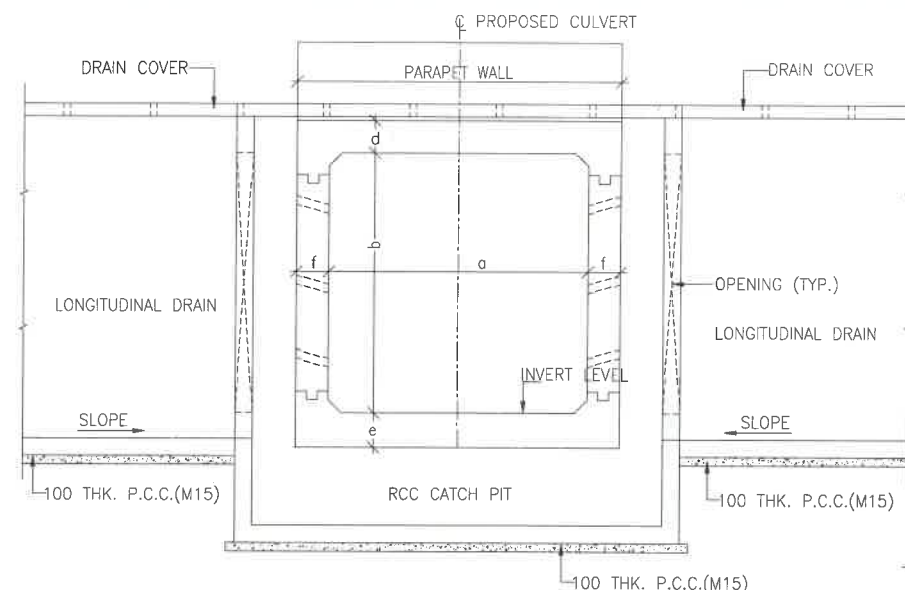
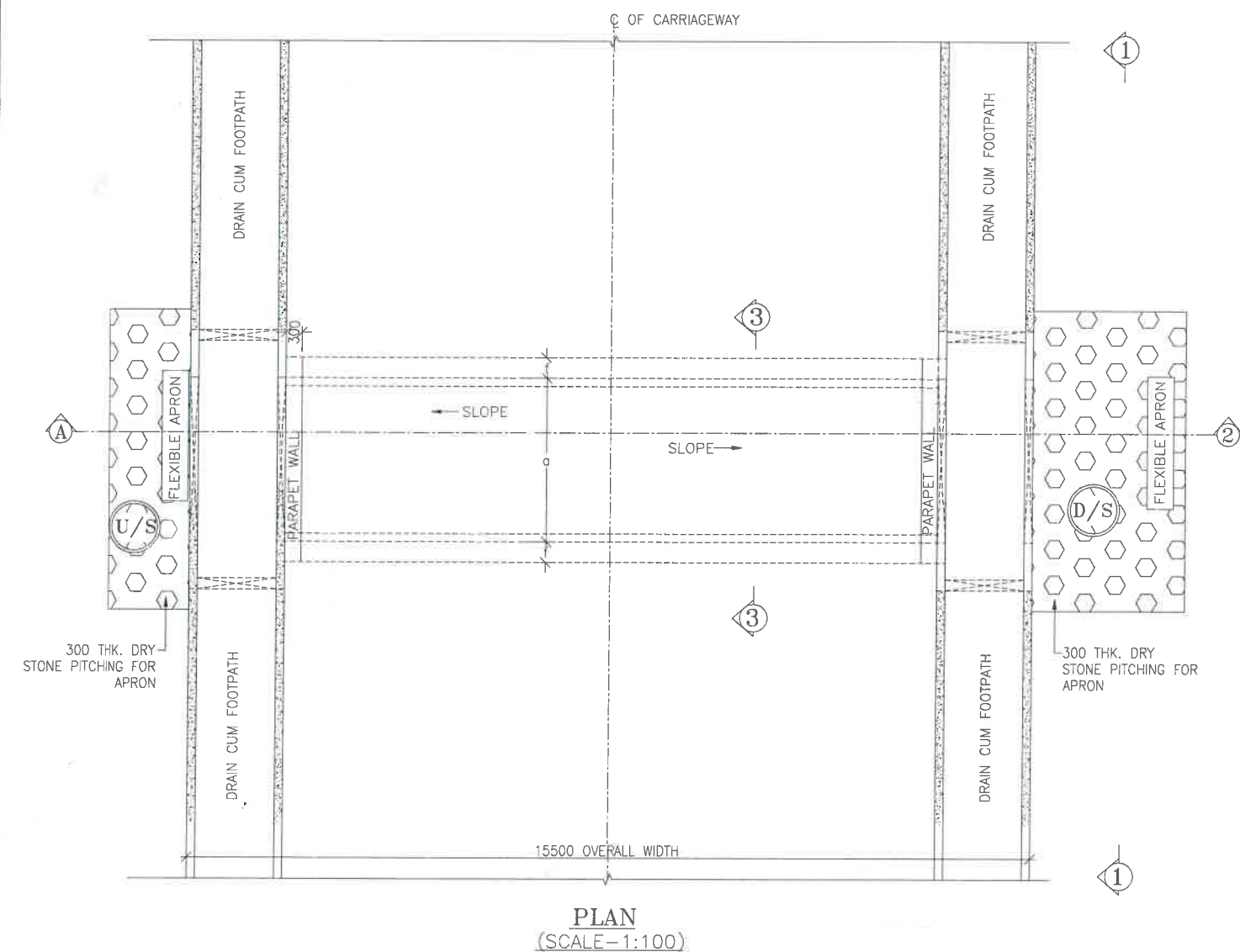
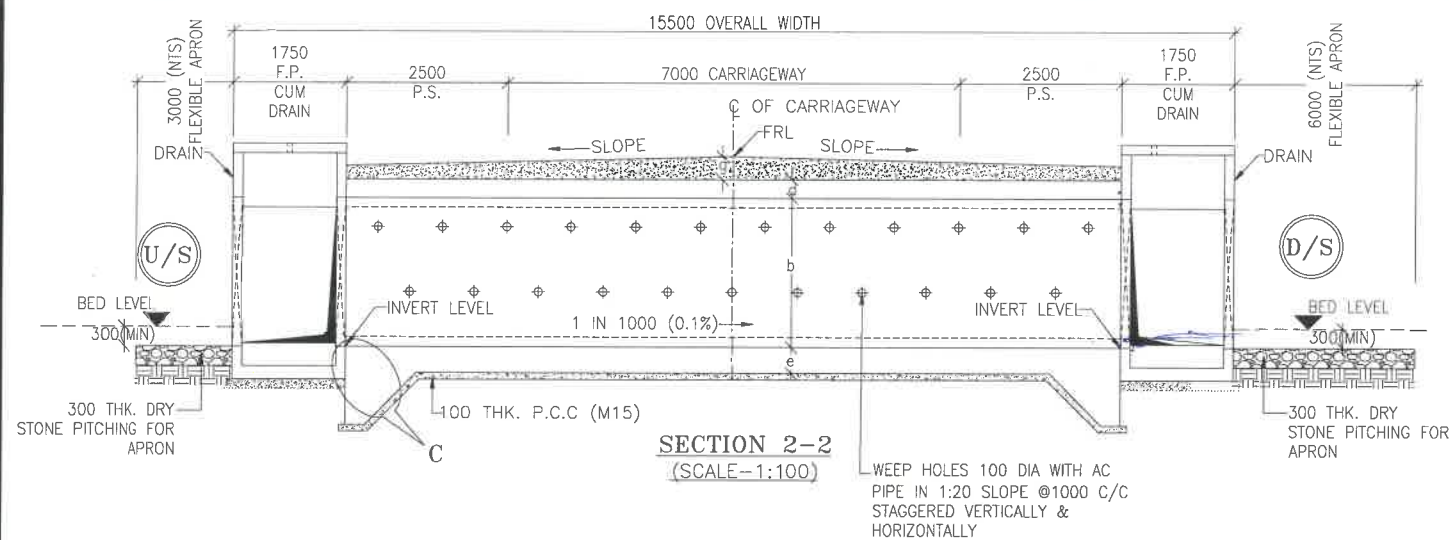
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DATE AUG-2021

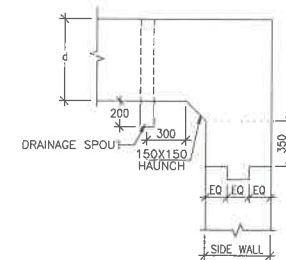
DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER

BOX CULVERT DRAWING_1X3X4



DETAIL 'C'
(SCALE-1:40)



DETAIL 'B'
(SCALE-1:40)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	16+530	1X3X4	807.956	803.056	803.156	600	TSC-1

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



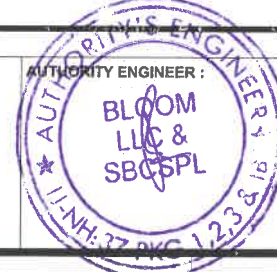
Hindia Engineers Pvt. Ltd.
Address: 33/79H Street, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No. 0124-4028681

SAFETY CONSULTANT:



Antique Engineering Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiqueengg.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 01 R0

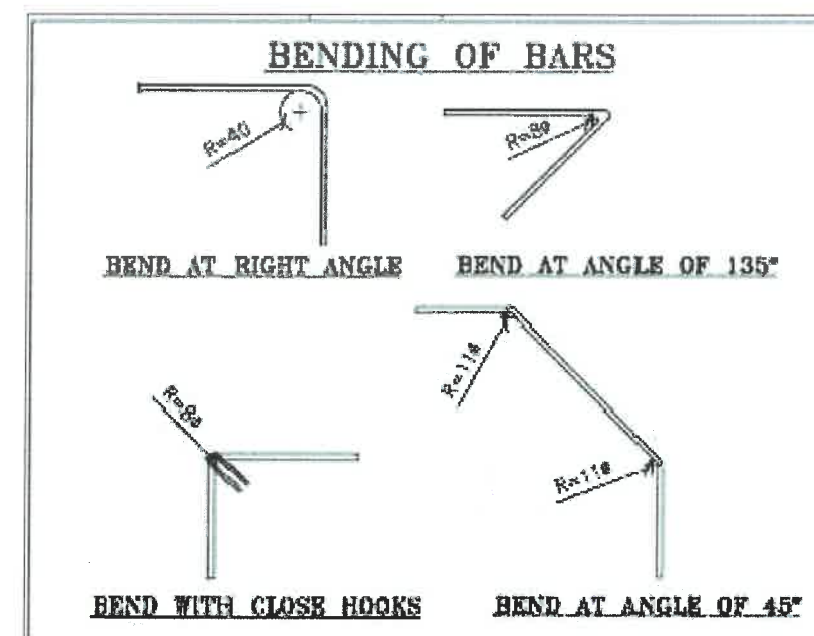
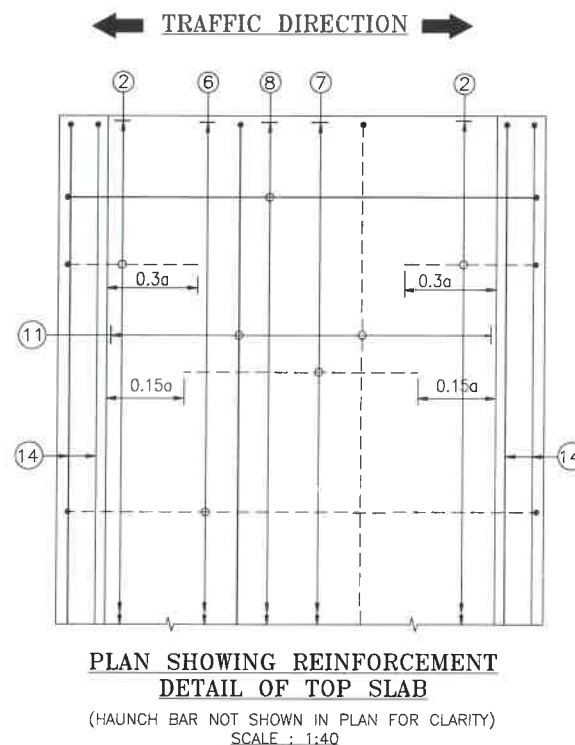
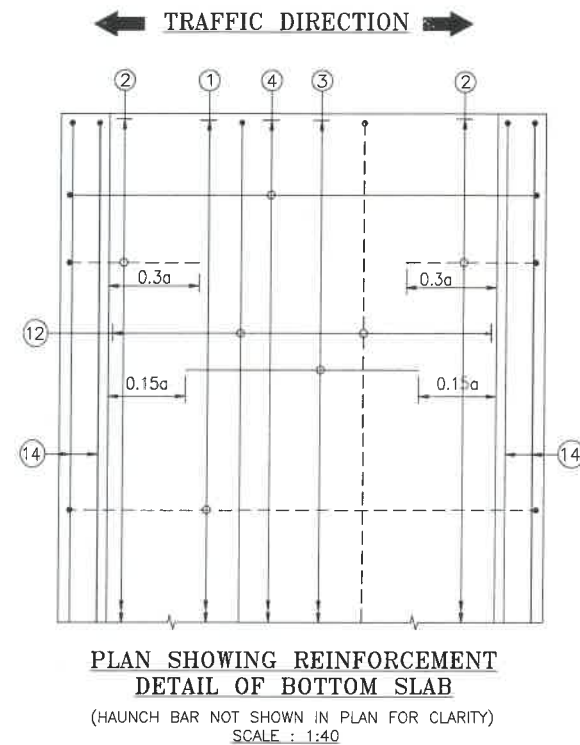
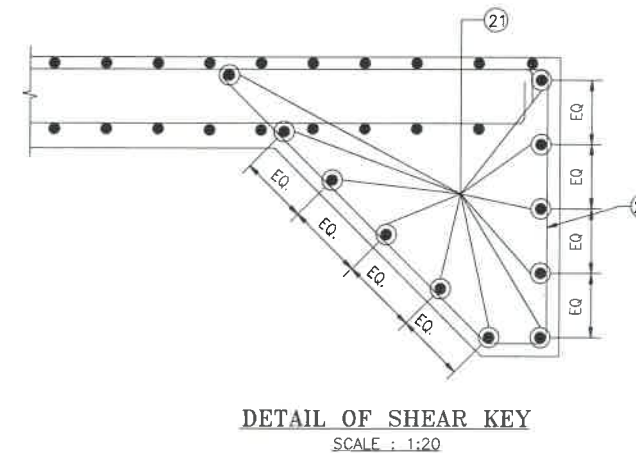
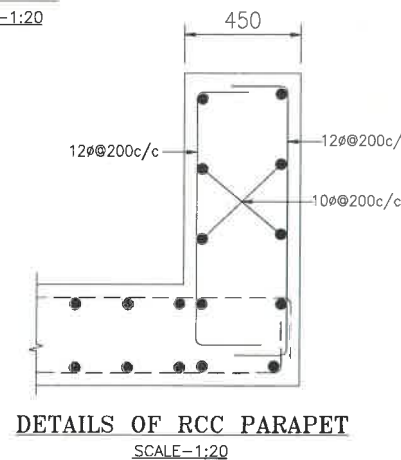
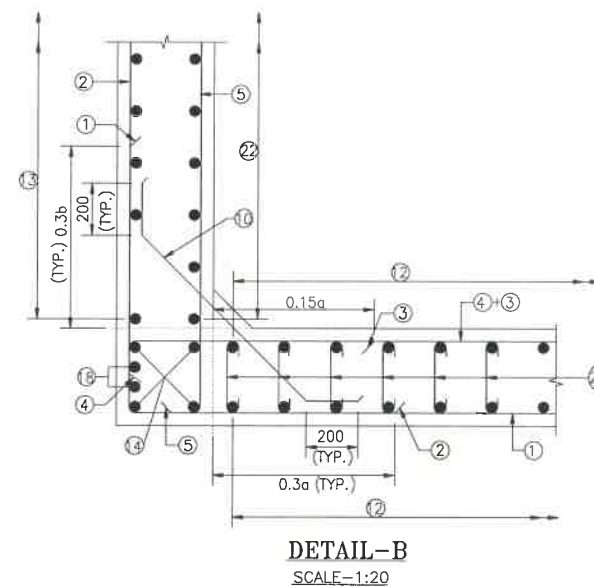
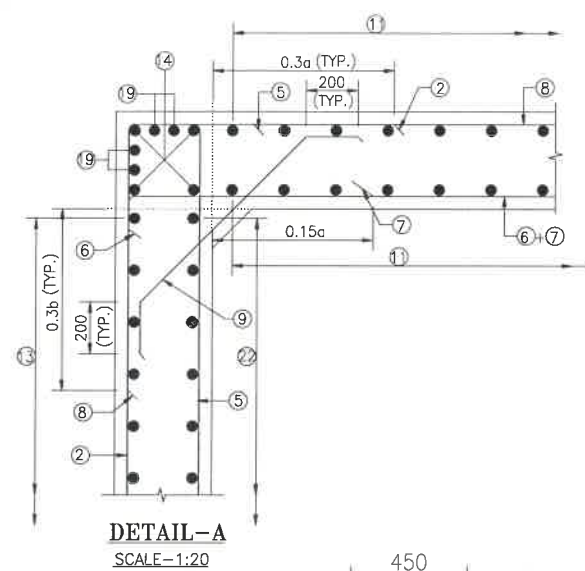
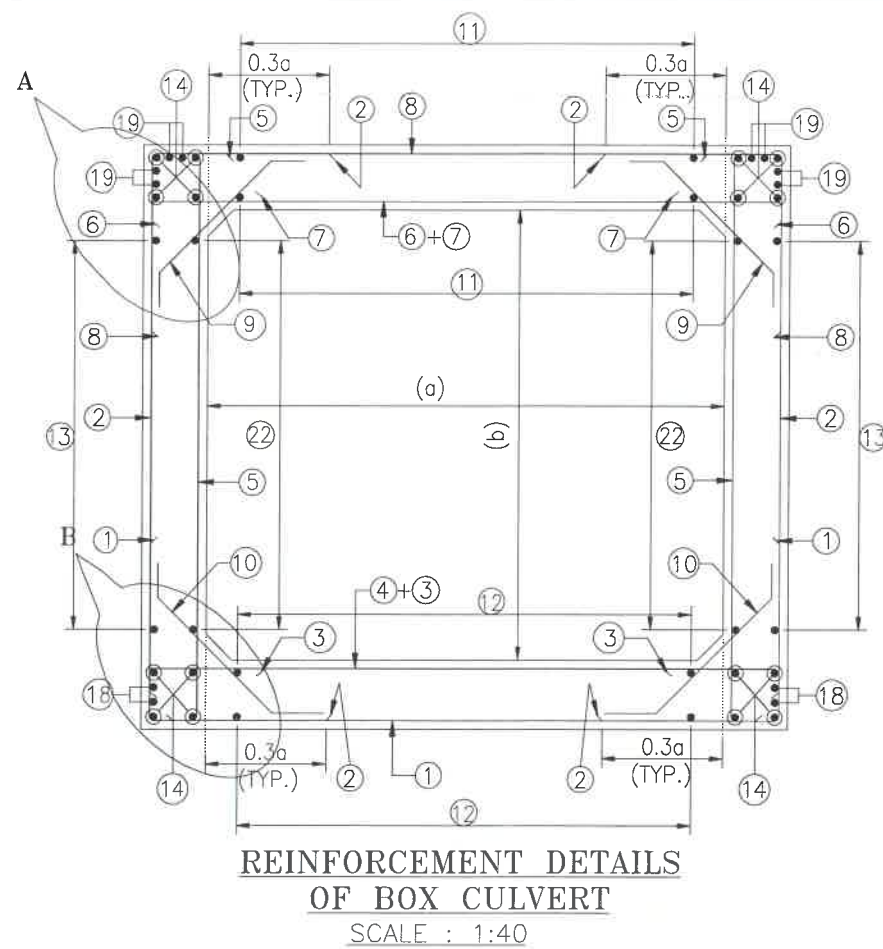
PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

DESIGNED CHECKED APPROVED

STRUCTURE ENGINEER



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	—	16	200 C/C
②	—	12	180 C/C
③	—	12	200 C/C
④	—	12	200 C/C
⑤	—	12	180 C/C
⑥	—	12	180 C/C
⑦	—	12	180 C/C
⑧	—	12	180 C/C
⑨	—	10	180 C/C
⑩	—	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	—	NOT IN USE	NOT IN USE
⑯	—	NOT IN USE	NOT IN USE
⑰	—	NOT IN USE	NOT IN USE
⑱	—	10	4 NOS.
⑲	—	10	8 NOS.
⑳	—	12	200 C/C
㉑	—	12	20 NOS.
㉒	—	8	270 C/C
㉒a	—	8DIA.200(LONG: DIRECTION) 400(TRANS. DIRECTION)	
㉒b	—	NOT IN USE	

CLIENT :

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

CM&M Infra Projects Ltd.
M/S. CM&M INFRA PROJECTS LTD.

DESIGN DIRECTOR:

DESIGN DIRECTOR

PROOF CONSULTANT:

Hindia Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:

Antique Bulldtech Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

AUTHORITY ENGINEER:

BLOOM LC & SCSPL

DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS OF BOX CULVERT FOR 1X3X4

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

DATE AUG-2021

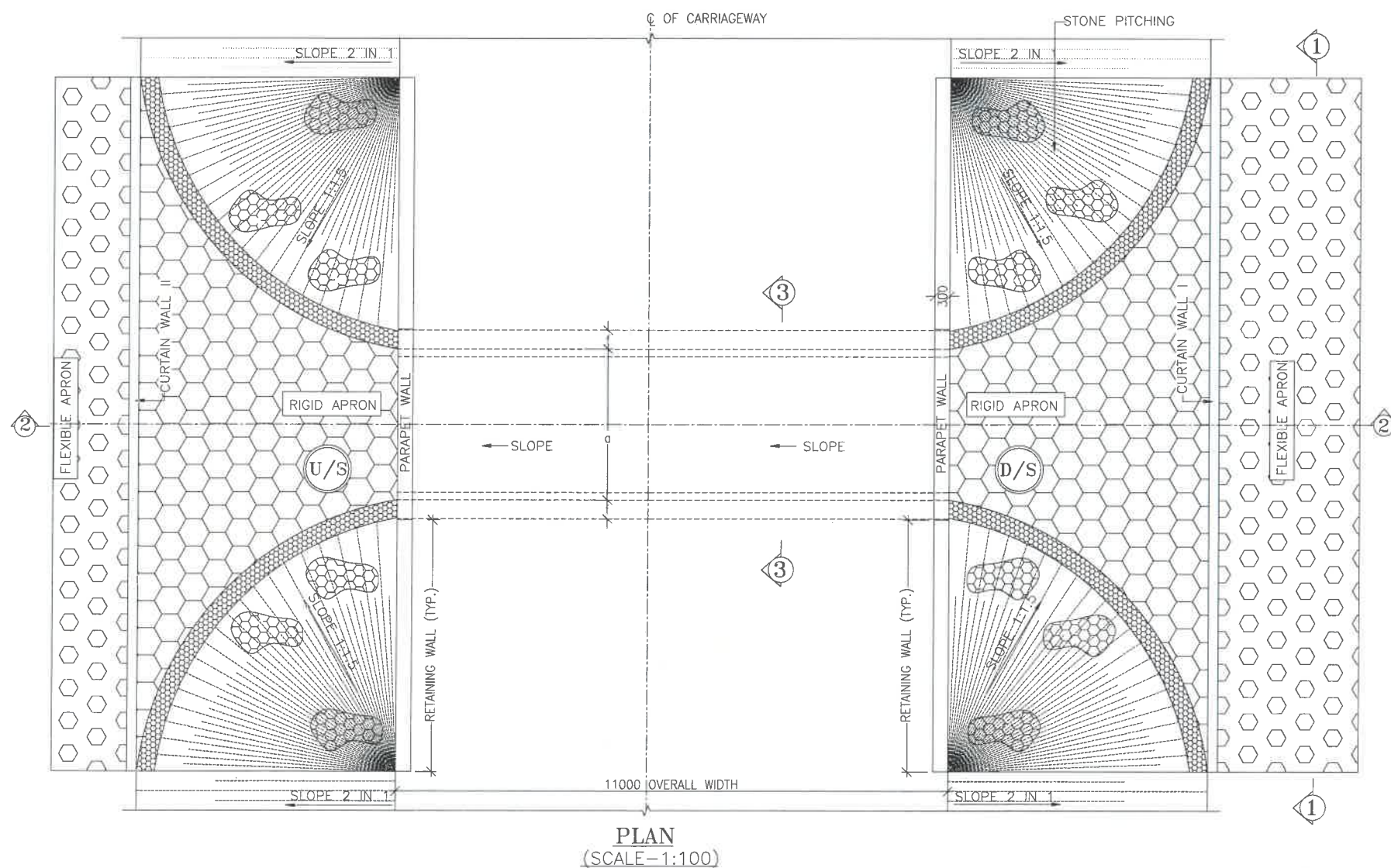
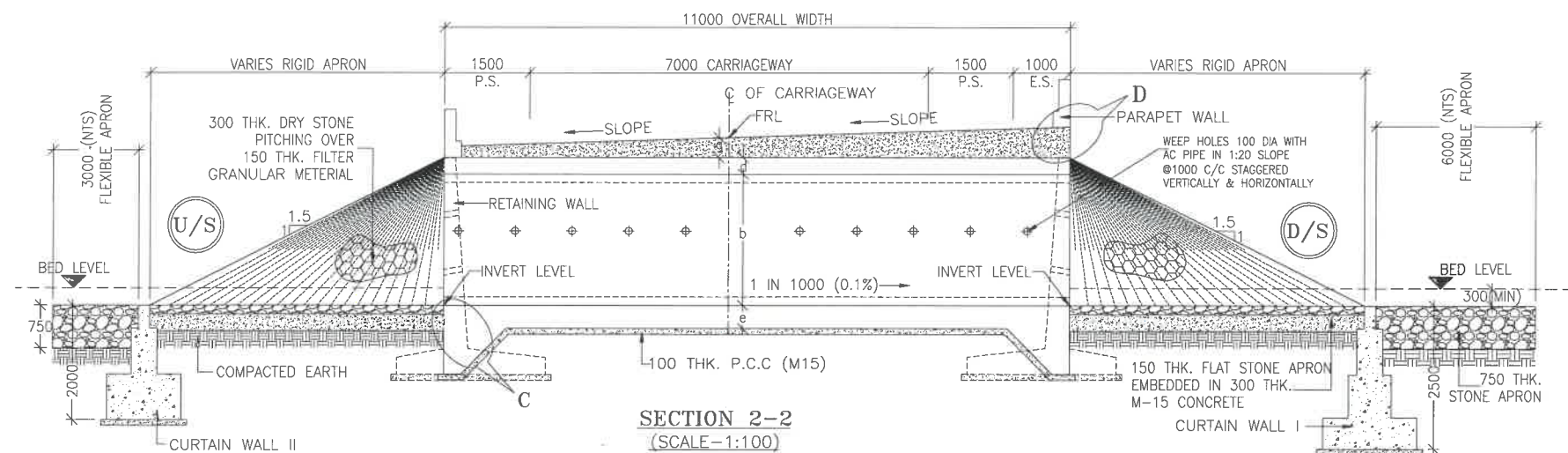
NAVEEN

DESIGNED

STRUCTURE ENGINEER

CHECKED

APPROVED



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- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
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LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



DESIGN DIRECTOR:



PROOF CONSULTANT:



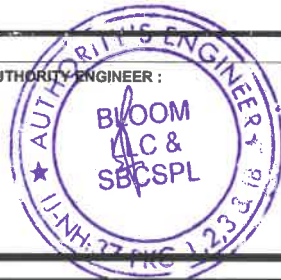
Hindia Engineers Pvt. Ltd.
Address: 33/7, H-Block, D.F. Ph. 33,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

01 OF 02

REV.

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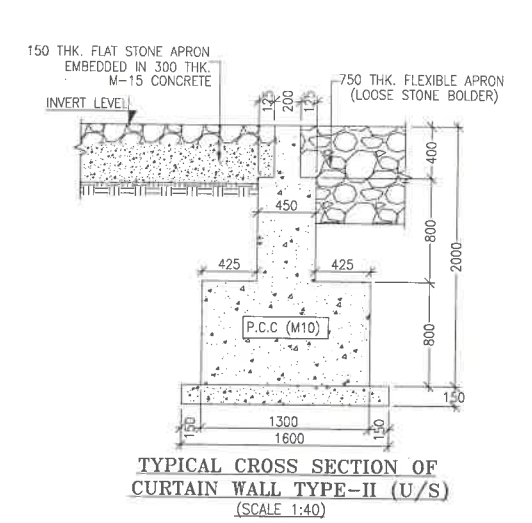
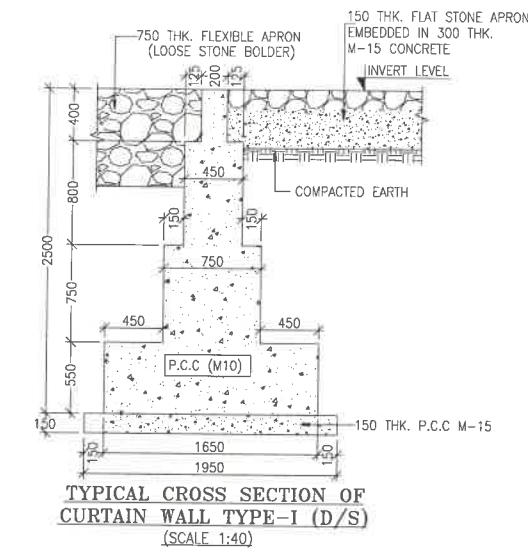
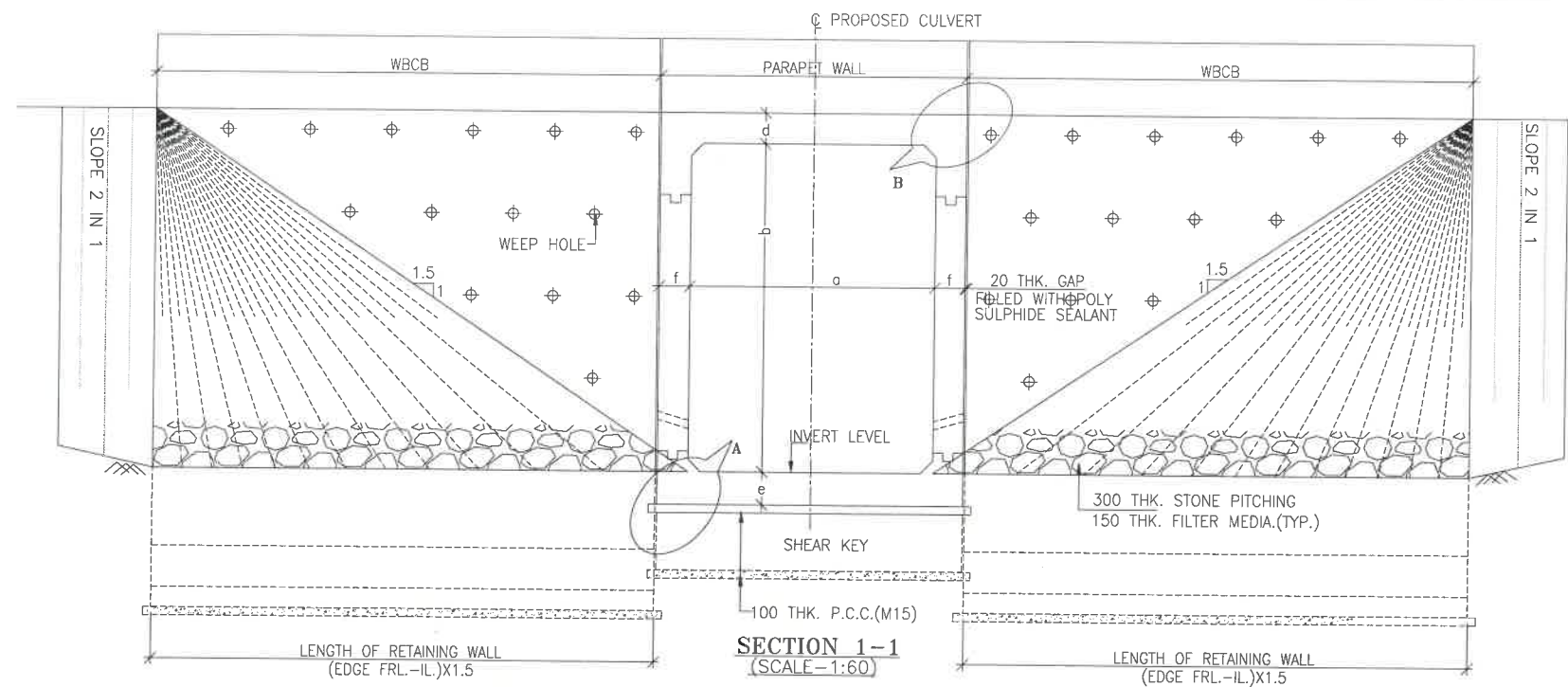
PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
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PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

NAVEEN

DESIGNED	CHECKED	APPROVED
ENGINEER	---	---



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LEGEND:-

FRL - FINISHED ROAD LEVEL
LVL - LEVEL
GL - GROUND LEVEL
IL - INVERT LEVEL
EQ - EQUAL
F.P. - FOOTPATH
U/S - UP STREAM
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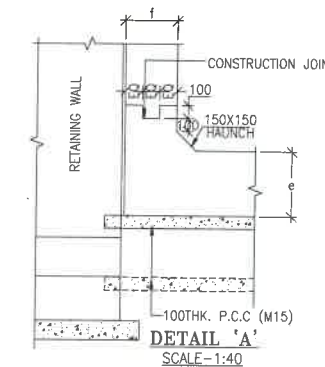
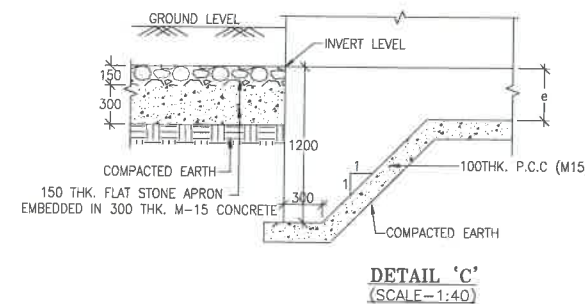
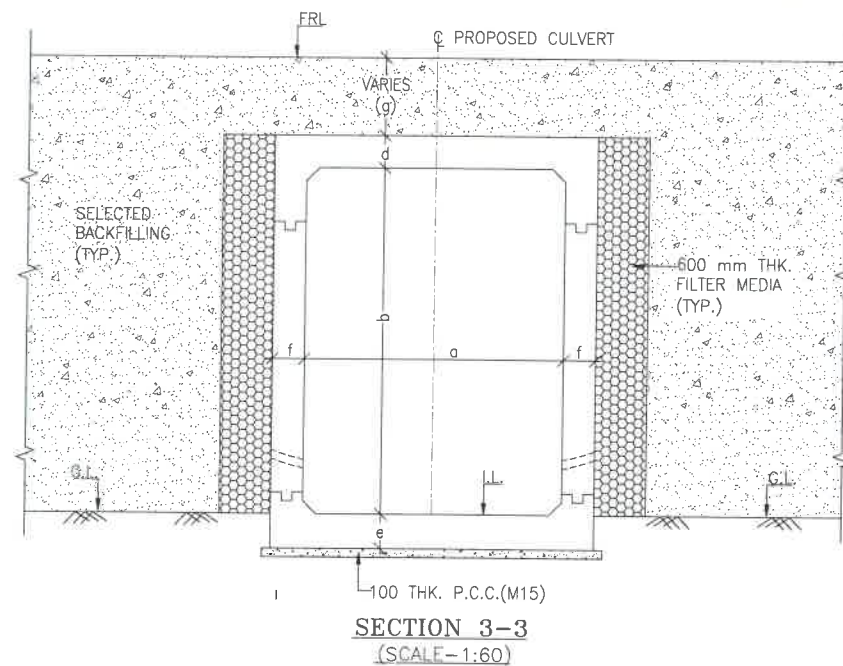
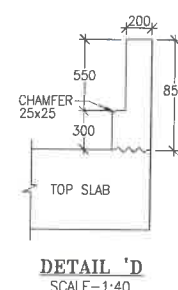
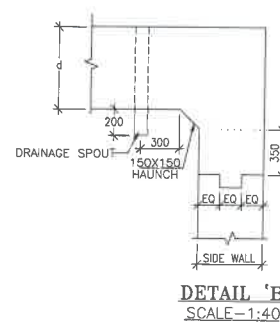
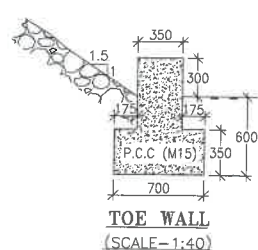


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	19+619	1X3X4	945.370	940.470	940.570	600	TSC-3
②	23+195	1X3X4	1094.111	1089.211	1089.311	600	TSC-3
③	23+410	1X3X4	1099.245	1094.345	1094.445	600	TSC-3
④	25+381	1X3X4	1144.360	1139.460	1139.560	600	TSC-3
⑤	26+074	1X3X4	1172.439	1167.539	1167.639	600	TSC-3
⑥	27+150	1X3X4	1220.514	1215.614	1215.714	600	TSC-3



CLIENT :
NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:
M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:
DESIGN DIRECTOR

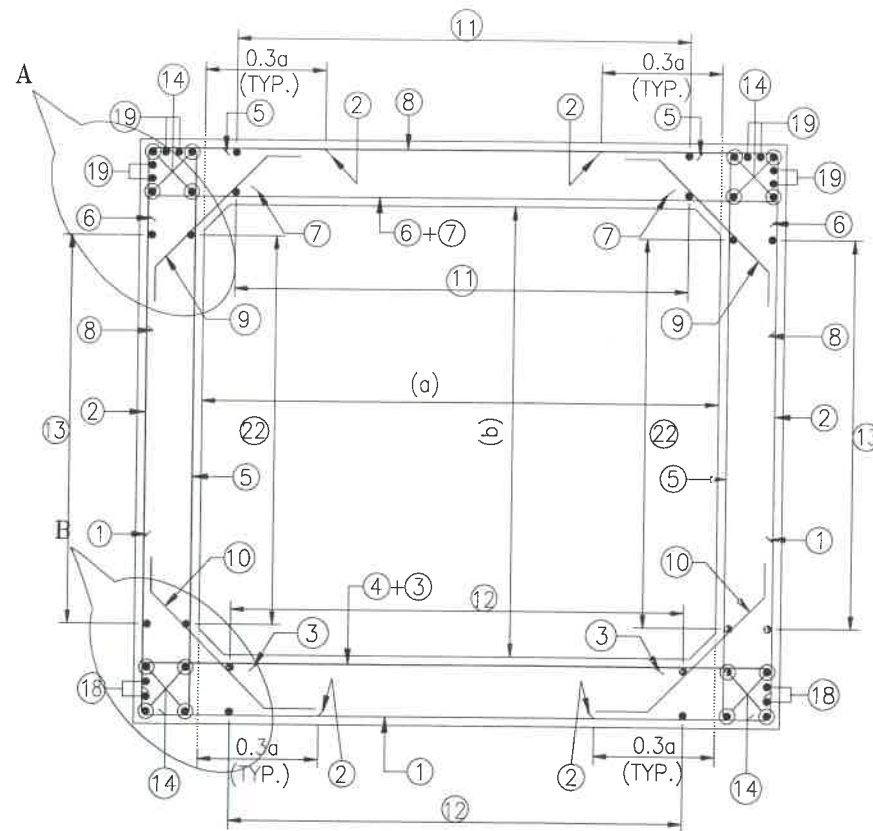
PROOF CONSULTANT:
India Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana, INDIA-122002,
Gurgaon, Haryana Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:
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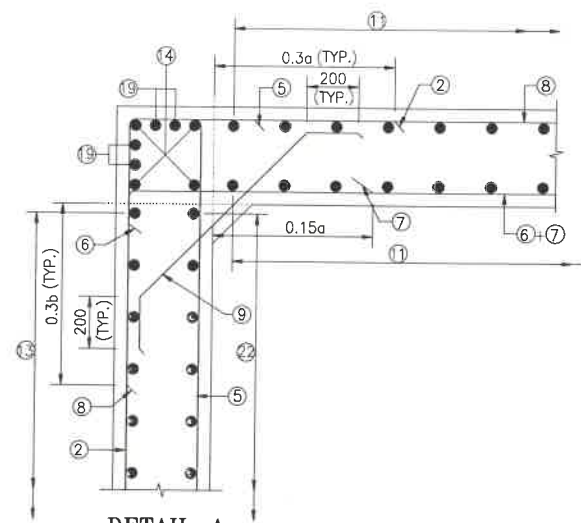
AUTHORITY ENGINEER:
BLOOM L&C & SBCSPL
U.NH.37 PKG. 1233

DRAWING SCALE:
NTS
DRAWING TITLE:
TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT
PROJECT NAME:-
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
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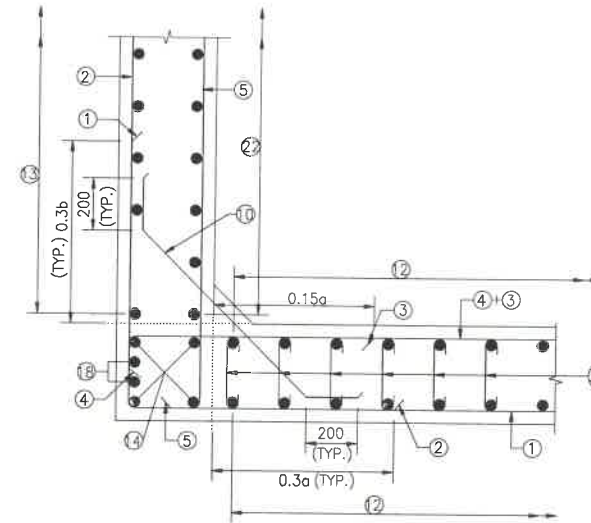
DRG. NO.
DD/IMP-JIR/ BOX/GAD/01
SHEET:
02 OF 02
REV.
R0
DATE AUG-2021
DESIGNED
STRUCTURE
ENGINEER
NAVEN
CHECKED
APPROVED



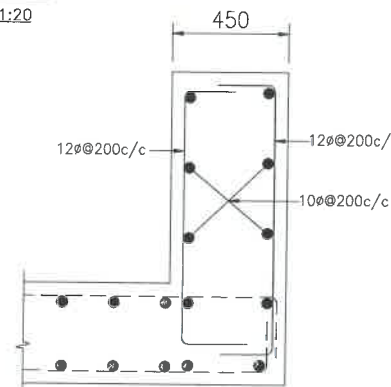
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



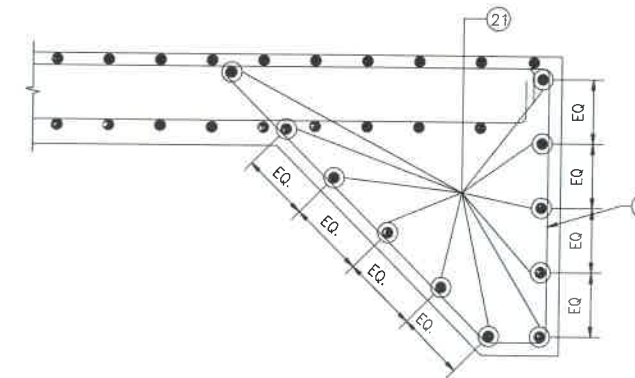
DETAIL-A
SCALE-1:20



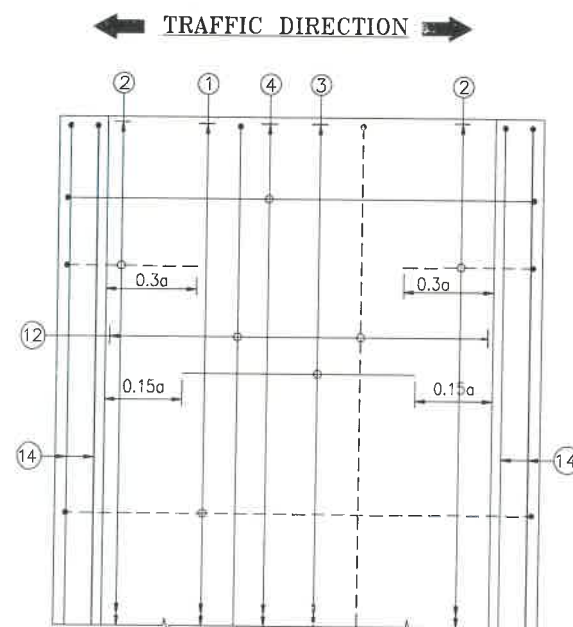
DETAIL-B
SCALE-1:20



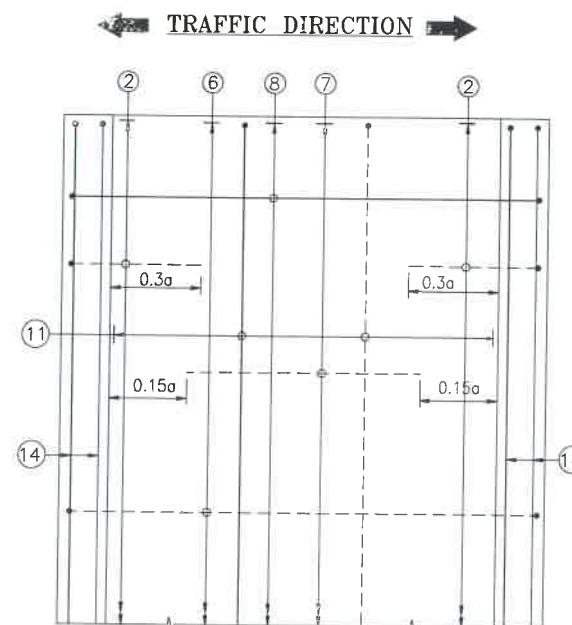
DETAILS OF RCC PARAPET
SCALE-1:20



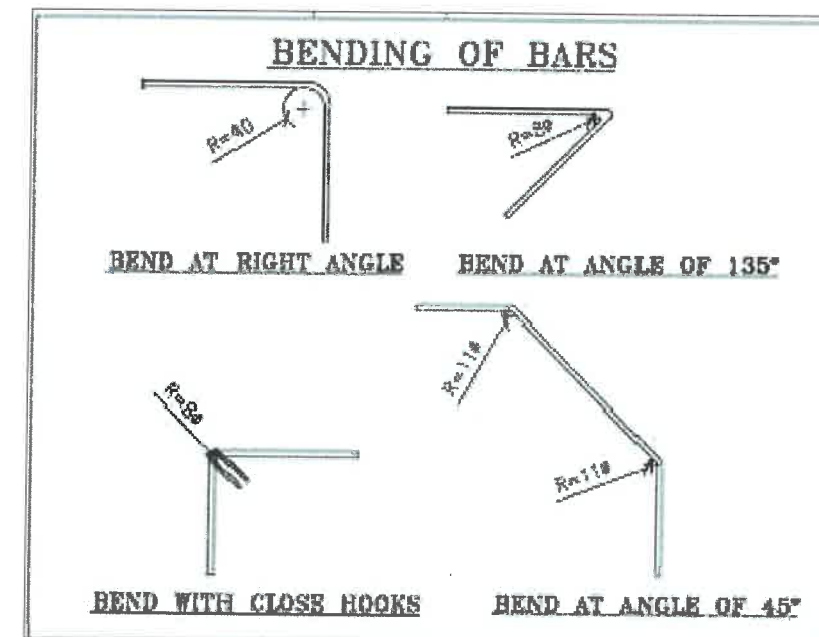
DETAIL OF SHEAR KEY
SCALE : 1:20



**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

	TOP FACE BARS/OUTER FACE BARS
	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①		16	200 C/C
②		12	180 C/C
③		12	200 C/C
④		12	200 C/C
⑤		12	180 C/C
⑥		12	180 C/C
⑦		12	180 C/C
⑧		12	180 C/C
⑨		10	180 C/C
⑩		10	180 C/C
⑪		8	225 C/C
⑫		8	200 C/C
⑬		8	200 C/C
⑭		10	12 NOS.
⑮		NOT IN USE	NOT IN USE
⑯		NOT IN USE	NOT IN USE
⑰		NOT IN USE	NOT IN USE
⑱		10	4 NOS.
⑲		10	8 NOS.
⑳		12	200 C/C
㉑		12	20 NOS.
㉒		8	270 C/C
㉒a		8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b		NOT IN USE	

CLIENT :

NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR:

DESIGN DIRECTOR

PROOF CONSULTANT:

Hindco Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-I,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:

Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-I,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

AUTHORITY ENGINEER :

**BLOOM
LIC &
SBO/SPL**

DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

DATE AUG-2021

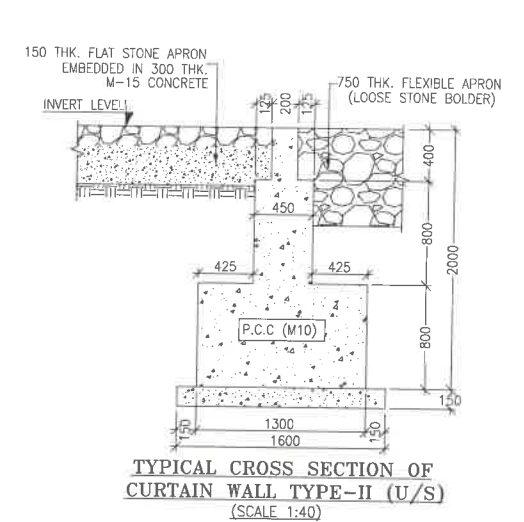
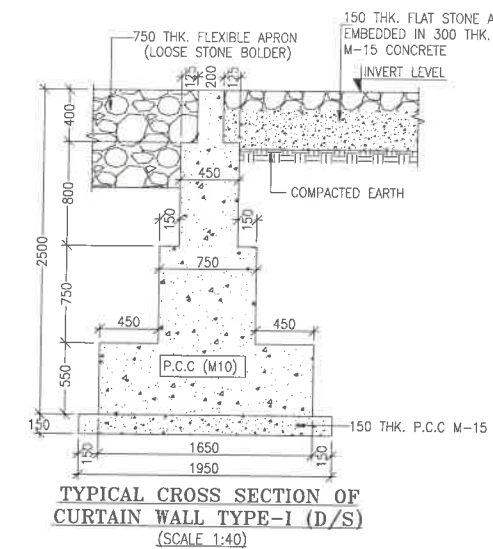
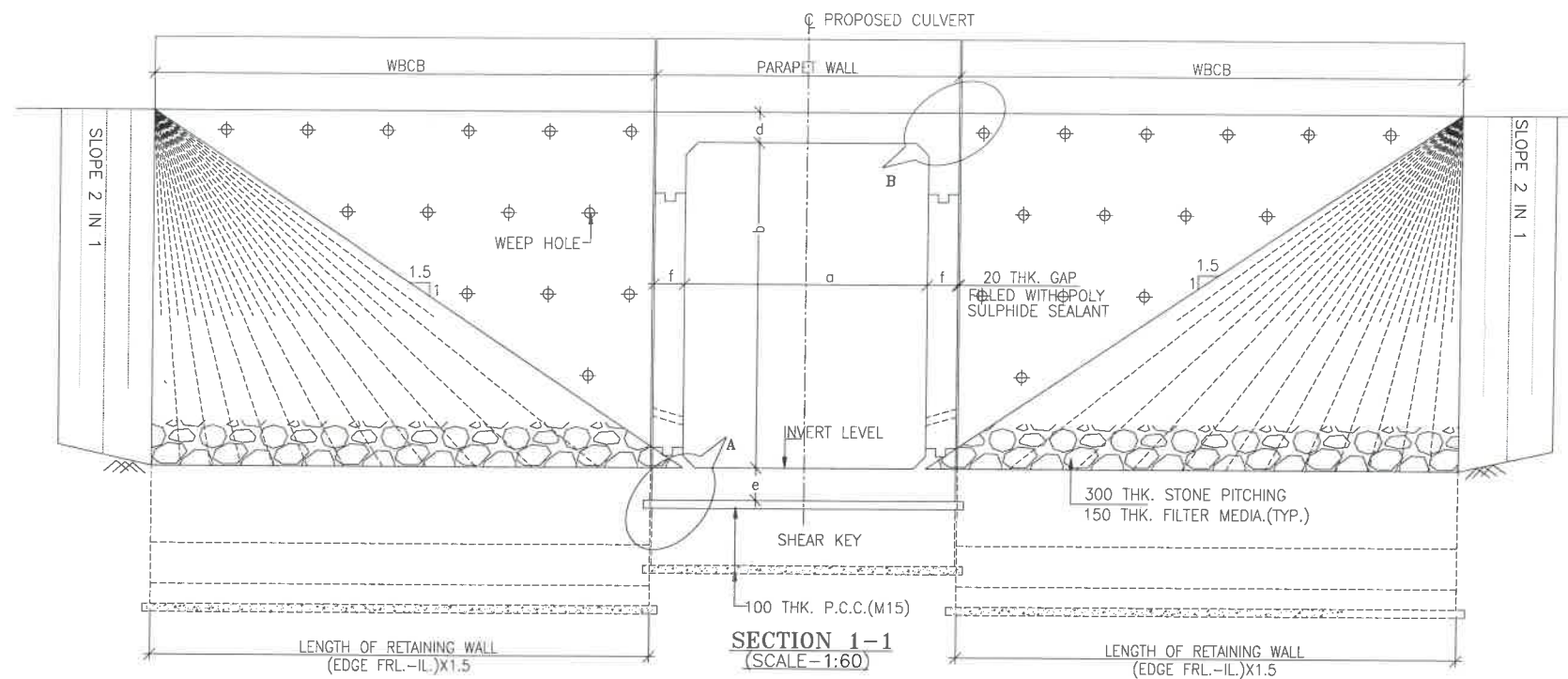
DESIGNED

STRUCTURE
ENGINEER

NAVEN

CHECKED

APPROVED



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.07/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO 10T/M² IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER BOARD SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

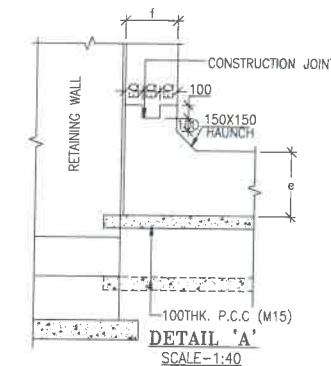
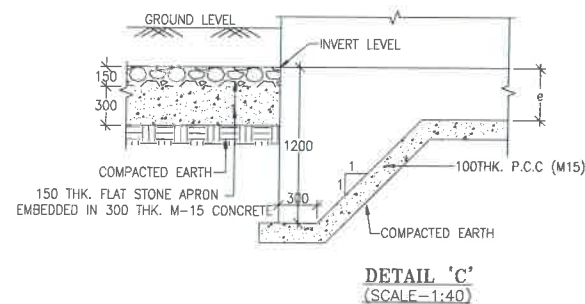
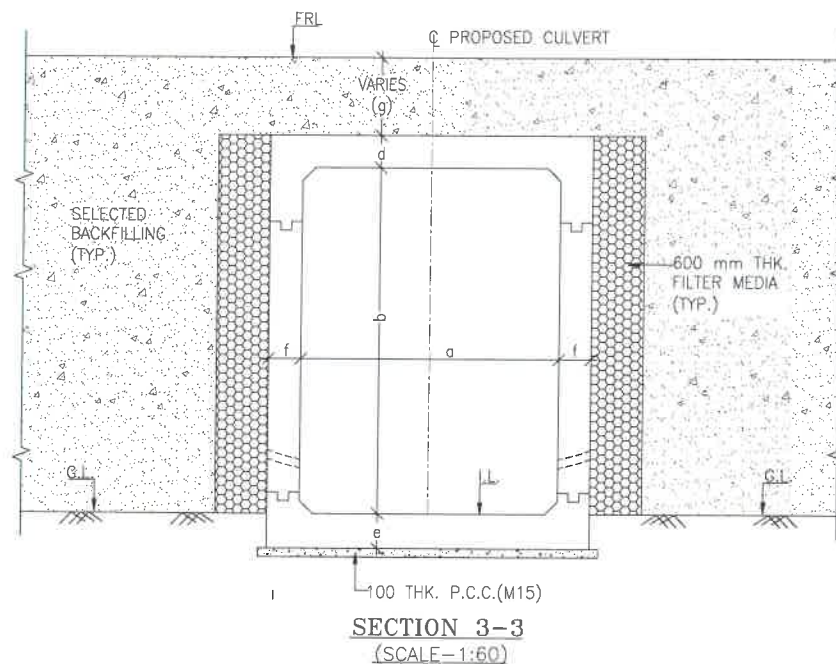


TABLE SHOWING SILENT DIMENSIONS

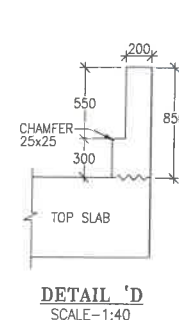
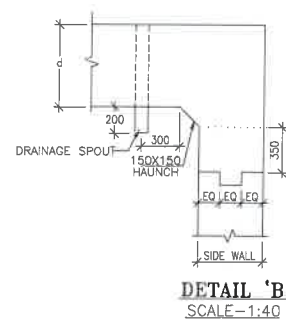
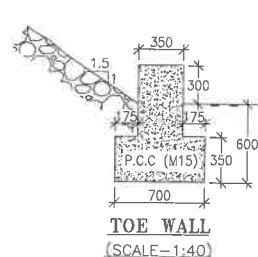
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE -II

S.R. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	18+564	1X3X4	896.748	891.848	891.948	600	TSC-3
②	19+955	1X3X4	962.299	957.399	957.499	600	TSC-3
③	20+254	1X3X4	978.255	973.355	973.455	600	TSC-3
④	24+836	1X3X4	1143.142	1138.242	1138.342	600	TSC-3
⑤	27+893	1X3X4	1254.061	1249.161	1249.261	600	TSC-3

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER




CLIENT :

 NATIONAL HIGHWAYS & INFRASTRUCTURE
 DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 M/S. CMR INFRA PROJECTS LTD.

DESIGN DIRECTOR:


PROOF CONSULTANT:

 Hindia Engineers Pvt. Ltd.
 Address: 107, Mohan Nagar, Gurgaon, Haryana, India-122002,
 Gurgaon-Faridabad Road Haryana, INDIA-122002,
 Phone No.-0124-4028881

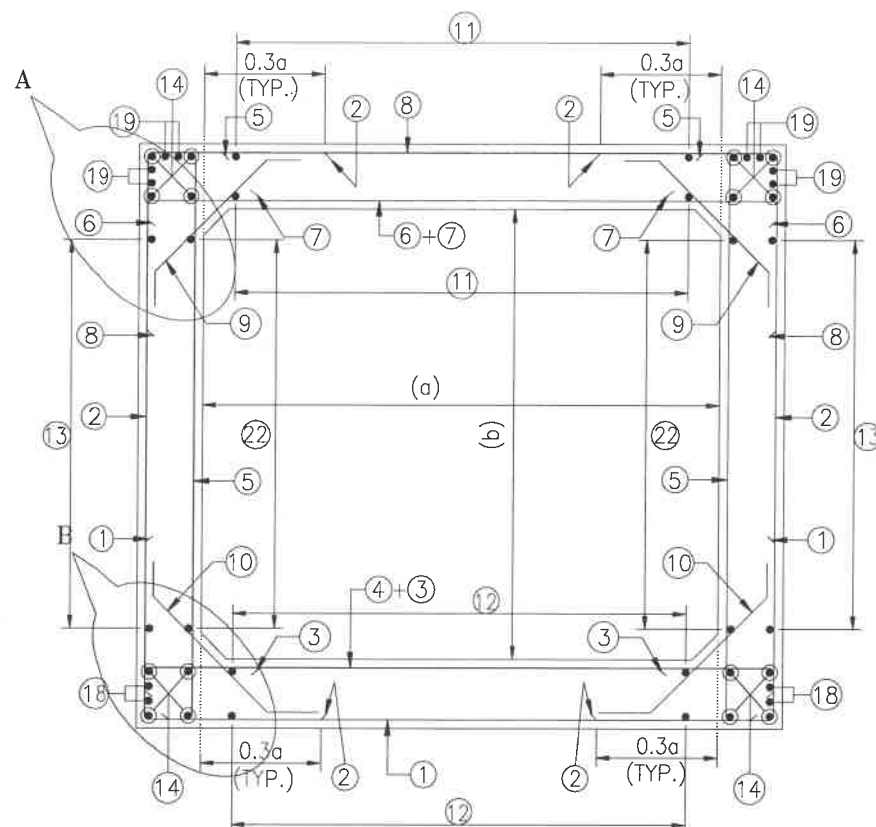
SAFETY CONSULTANT:

 Antique Buildtech Pvt. Ltd.
 Address: 191, Mohan Nagar, Gurgaon, Haryana, India-122002,
 Jalpur-302018 (Rajasthan) Phone No. 0141-2780303
 Email : Info@antiquebuildtech.com

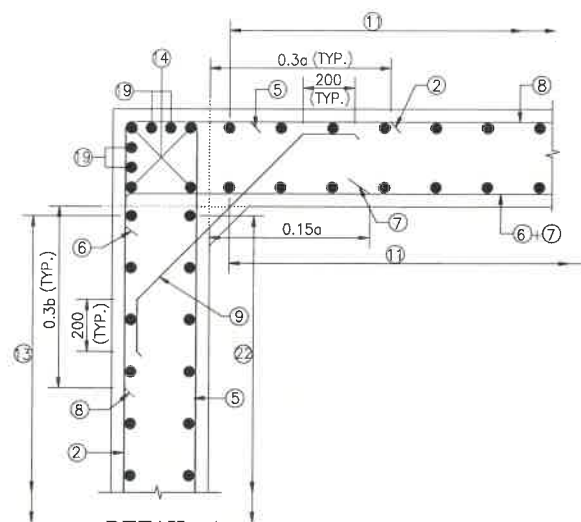
AUTHORITY'S ENGINEER


DRAWING SCALE:
 NTS
 DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT
 DRAWING FOR BOX CULVERT
 PROJECT NAME:-
 WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
 SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
 LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
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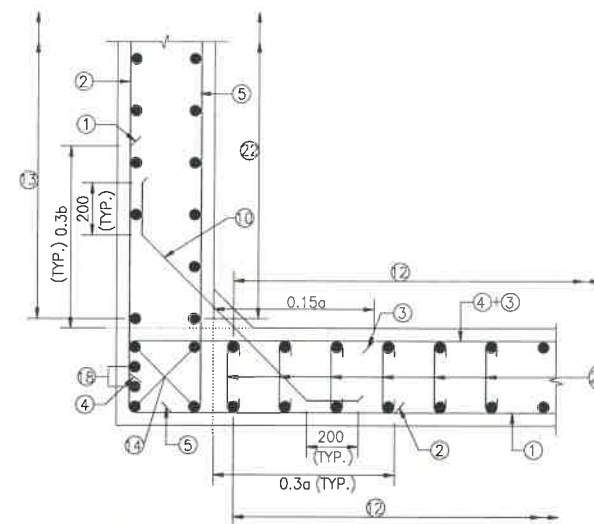
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 DD/IMP-JIR/ BOX/GAD/01
 SHEET:
 02 OF 02
 REV.
 R0
 DATE AUG-2021
 DESIGNED
 CHECKED
 APPROVED
 STRUCTURE
 ENGINEER



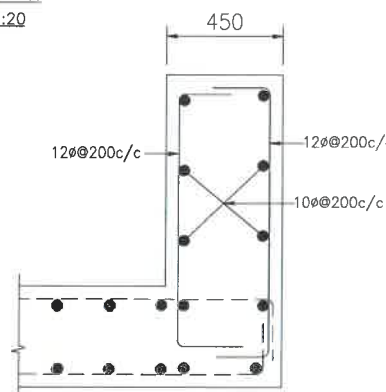
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



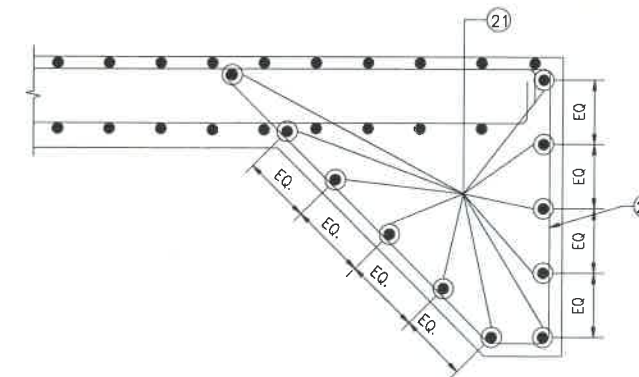
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

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3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
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8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

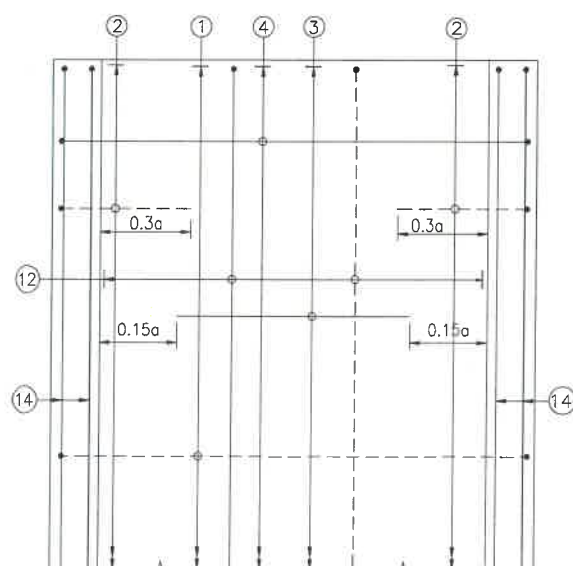
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

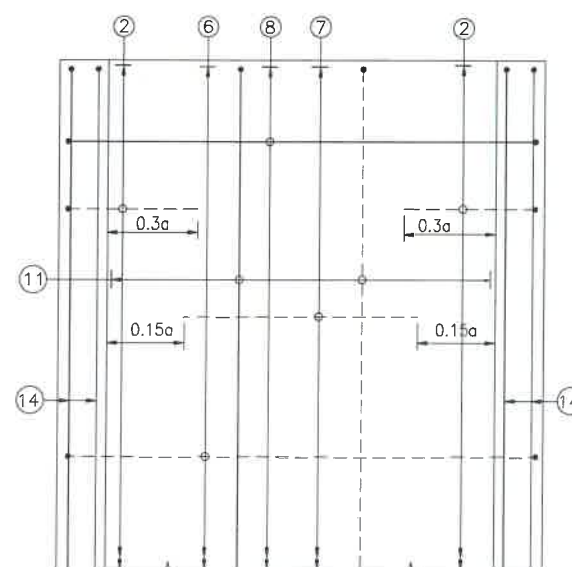
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	200 C/C
②	└─┘	12	180 C/C
③	└─┘	12	200 C/C
④	└─┘	12	200 C/C
⑤	└─┘	12	180 C/C
⑥	└─┘	12	180 C/C
⑦	└─┘	12	180 C/C
⑧	└─┘	12	180 C/C
⑨	└─┘	10	180 C/C
⑩	└─┘	10	180 C/C
⑪	└─┘	8	225 C/C
⑫	└─┘	8	200 C/C
⑬	└─┘	8	200 C/C
⑭	└─┘	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	└─┘	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	200 C/C
㉑	└─┘	12	20 NOS.
㉒	└─┘	8	270 C/C
㉓	└─┘	8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉔	└─┘	NOT IN USE	

TRAFFIC DIRECTION →

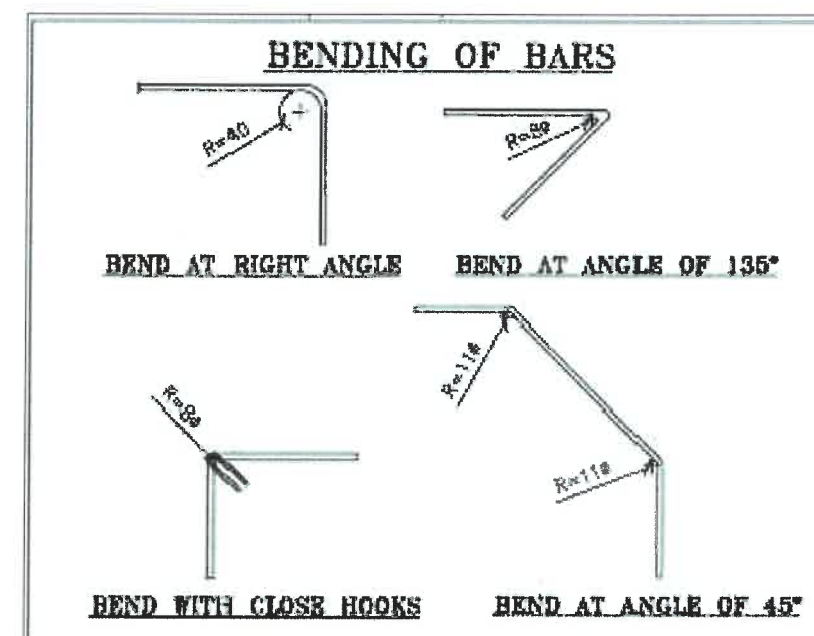


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hinda Engineers Pvt. Ltd.
Address: 312, H-Block, DLF Phase-1,
Gurgaon-Faridkot Road, Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 191, Main Road, Durgapura Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

DATE AUG-2021

NAMEEN

DESIGNED

CHECKED

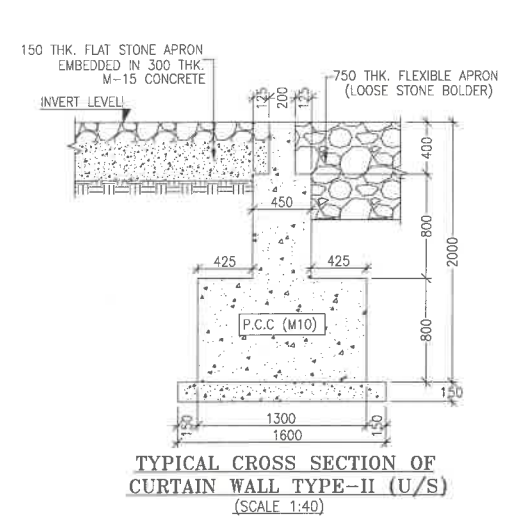
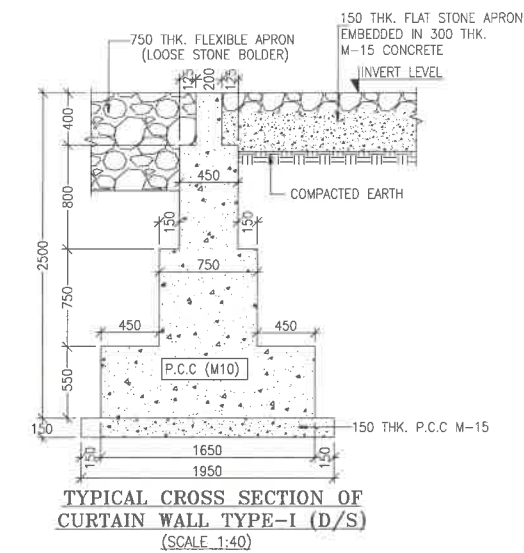
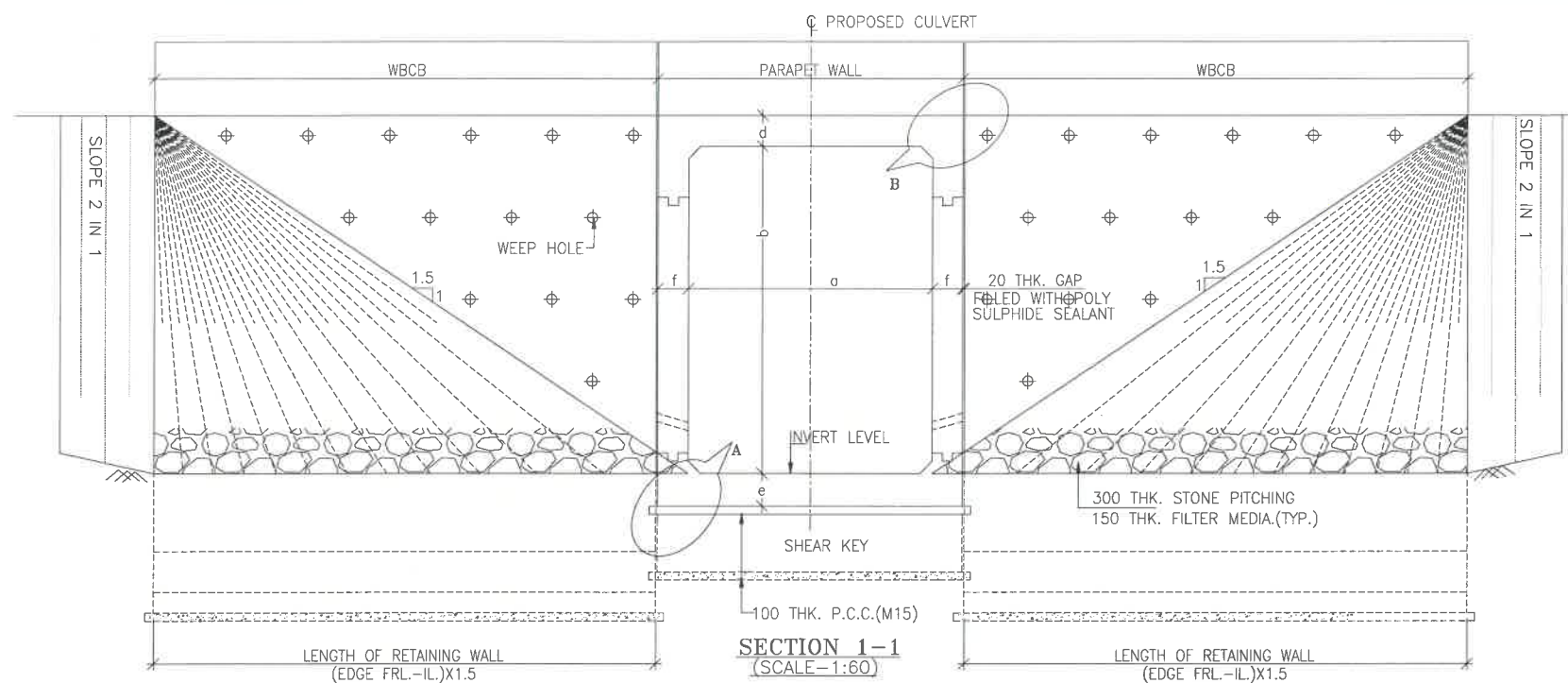
APPROVED

STRUCTURE
ENGINEER



1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHANGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
3. GRADE OF CONCRETE FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS:
 - a) RCC BOX.....M30
 - b) RCC RETAINING WALL.....M30
 - c) PCC LEVELLING COURSE.....M15
 - d) PCC CURTAIN WALL.....M15
 - e) PARAPET WALL.....M30
4. GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
5. BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
6. COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
7. FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
8. 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
9. ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
10. BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
11. SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



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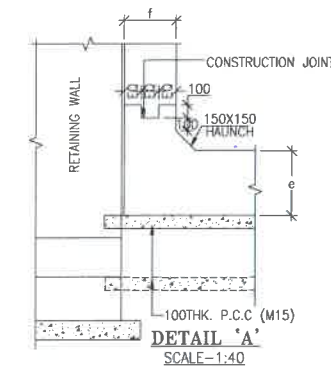
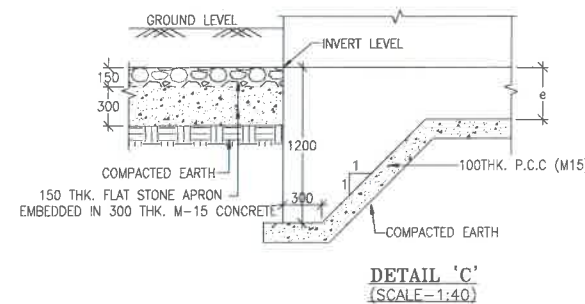
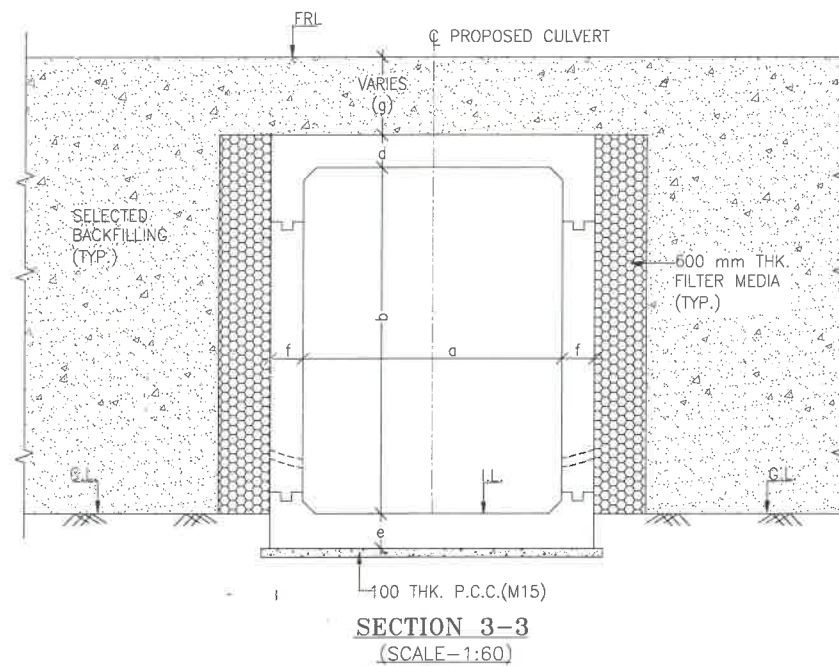


TABLE SHOWING SILENT DIMENSIONS

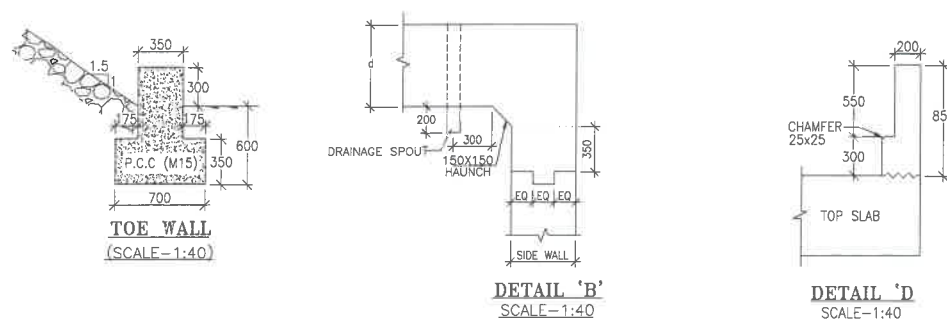
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	21+562	1X3X4	1029.202	1024.302	1024.402	600	TSC-3A

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER



CLIENT :

 NATIONAL HIGHWAYS & INFRASTRUCTURE
 DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 "CMM"
 M/S. CMM INFRA PROJECTS LTD.


DESIGN DIRECTOR:


PROOF CONSULTANT:

 Hindia Engineers Pvt. Ltd.
 Address: 13/7, Block, DLF Phase-1,
 Gurgaon-Pandara Road Haryana, INDIA-122002,
 Phone No.-0124-4026881

SAFETY CONSULTANT:

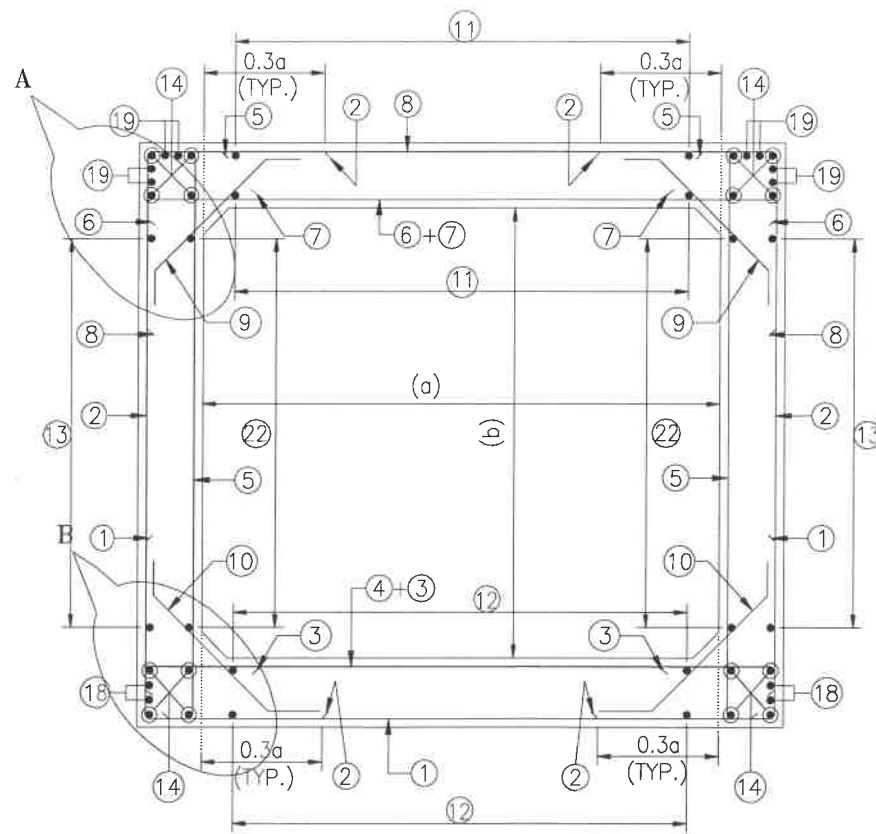
 Antique Engineering Pvt. Ltd.
 Address: 191, 1st Floor, Kirti Nagar Byepass,
 Jaipur-302018 (Rajasthan) India. No. 0141-2780303
 Email : info@antiqueengg.com

AUTHORITY ENGINEER:


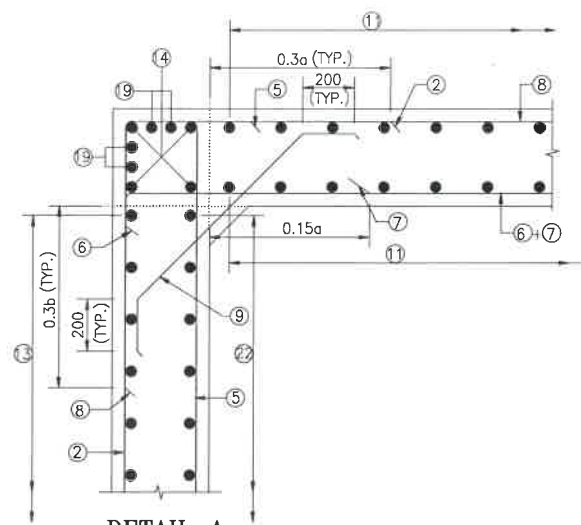
DRAWING SCALE:
 NTS
 PROJECT NAME:-
 WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
 SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
 LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
 PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT
 DRAWING FOR BOX CULVERT

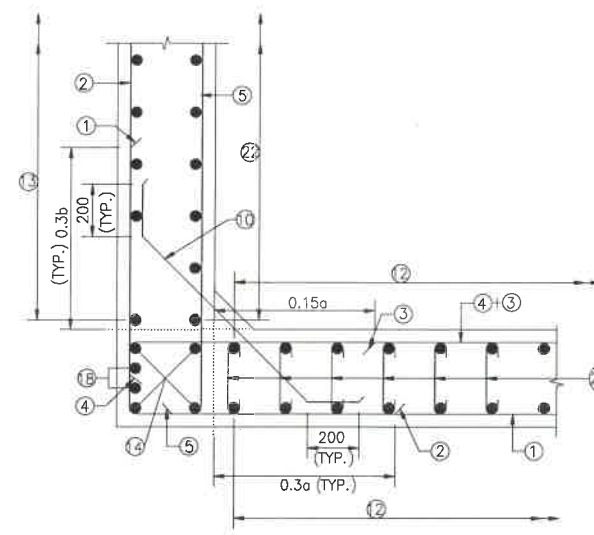
DRG. NO.
 DD/IMP-JIR/ BOX/GAD/01
 SHEET: 02 OF 02
 REV. R0
 DATE AUG-2021
 NAVEEN
 DESIGNED: STRUCTURE ENGINEER
 CHECKED: ---
 APPROVED: ---



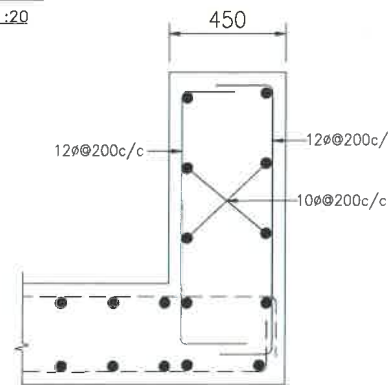
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

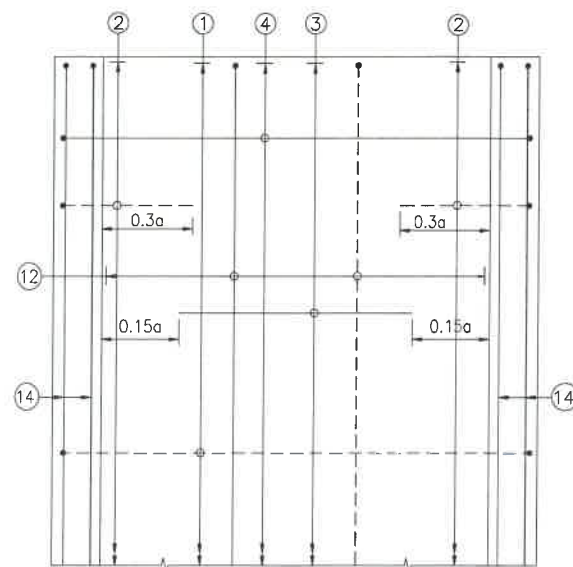
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

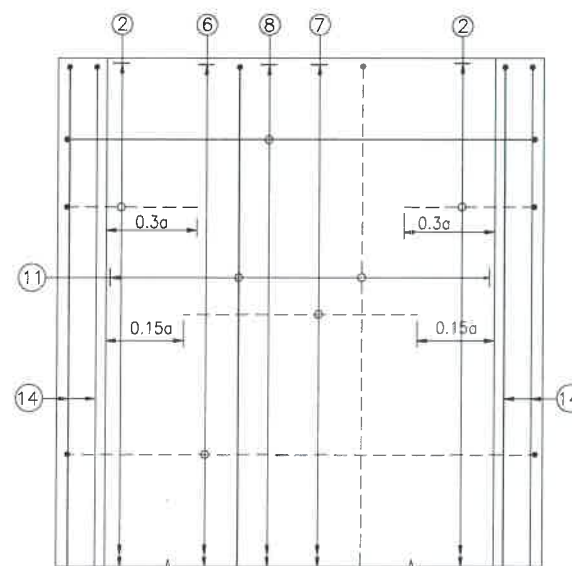
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	200 C/C
②	┌─┐	12	180 C/C
③	—	12	200 C/C
④	└─┘	12	200 C/C
⑤	┌─┐	12	180 C/C
⑥	└─┘	12	180 C/C
⑦	—	12	180 C/C
⑧	└─┘	12	180 C/C
⑨	┌─┐	10	180 C/C
⑩	└─┘	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	┌─┐	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	200 C/C
㉑	┌─┐	12	20 NOS.
㉒	—	8	270 C/C
㉒a	┌─┐	8DIA.200(LONG. DIRECTION)	400(TRANS. DIRECTION)
㉒b	└─┘	NOT IN USE	NOT IN USE

TRAFFIC DIRECTION →



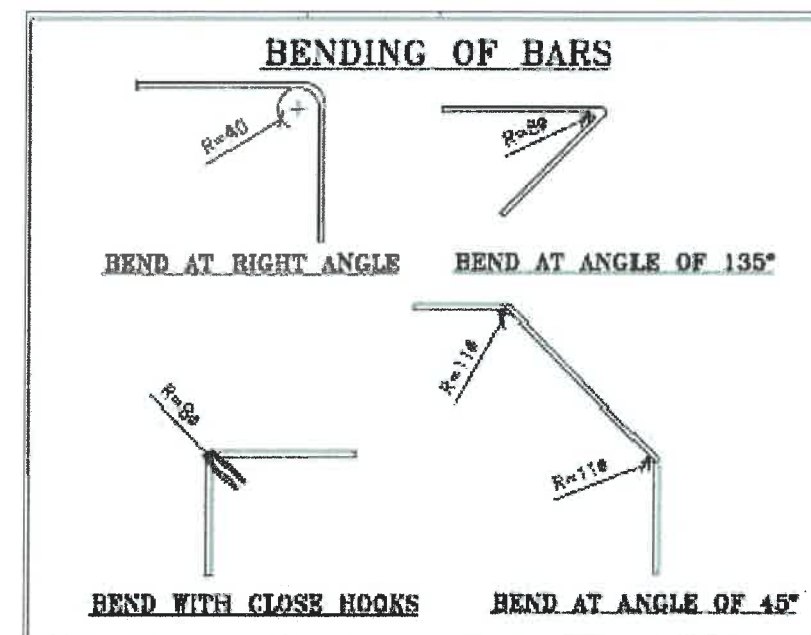
**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

DETAIL OF SHEAR KEY
SCALE : 1:20



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindia Engineers Pvt. Ltd.
Address: 337, Gurgaon Road, Phase-1,
Gurgaon-Faridabad Road, Gurgaon, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Tech Pvt. Ltd.
Address: 191, Noida, Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antique-tech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DATE AUG-2021

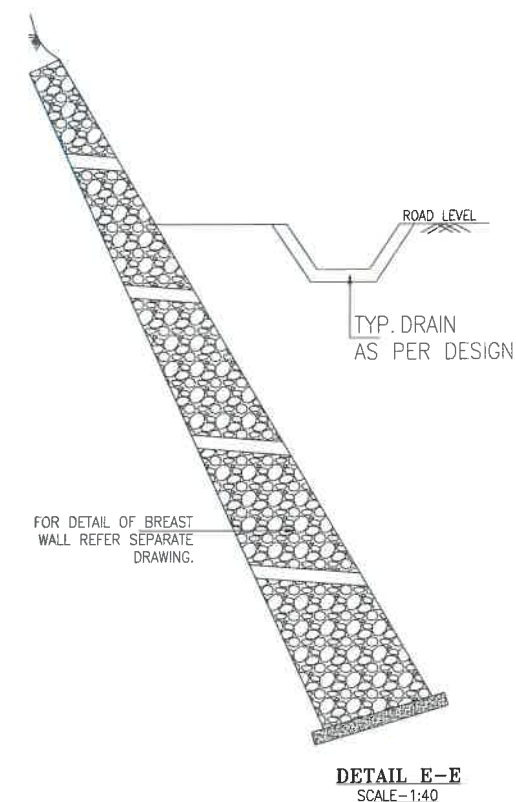
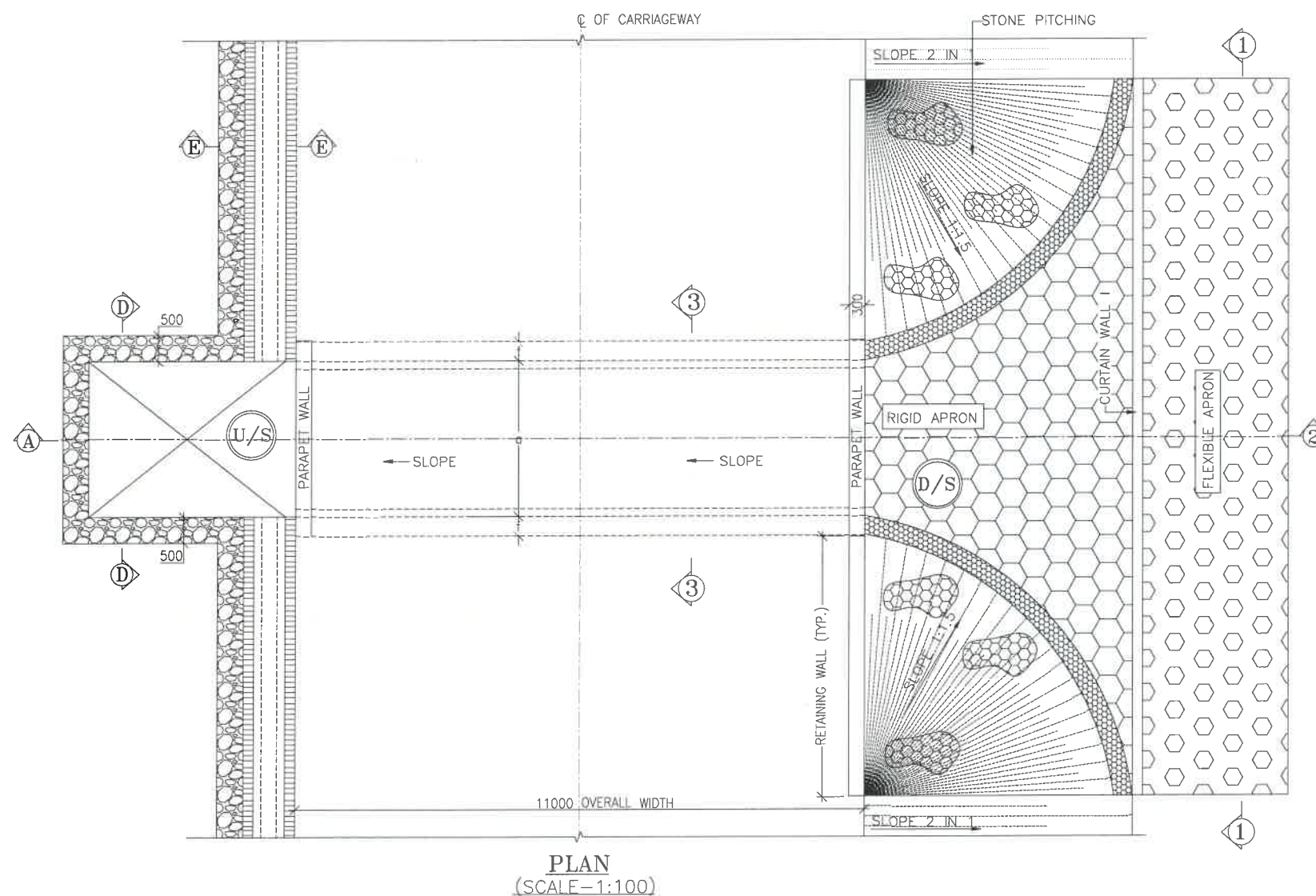
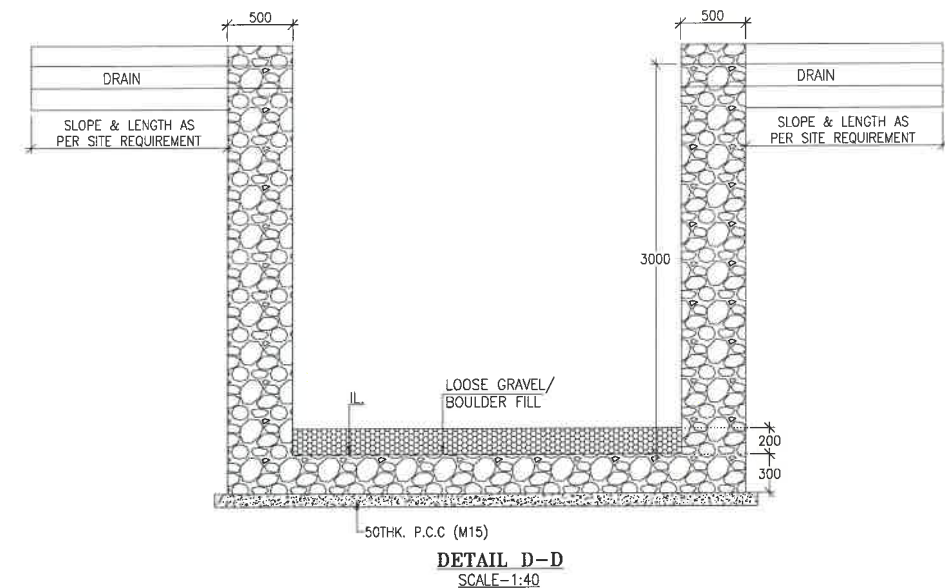
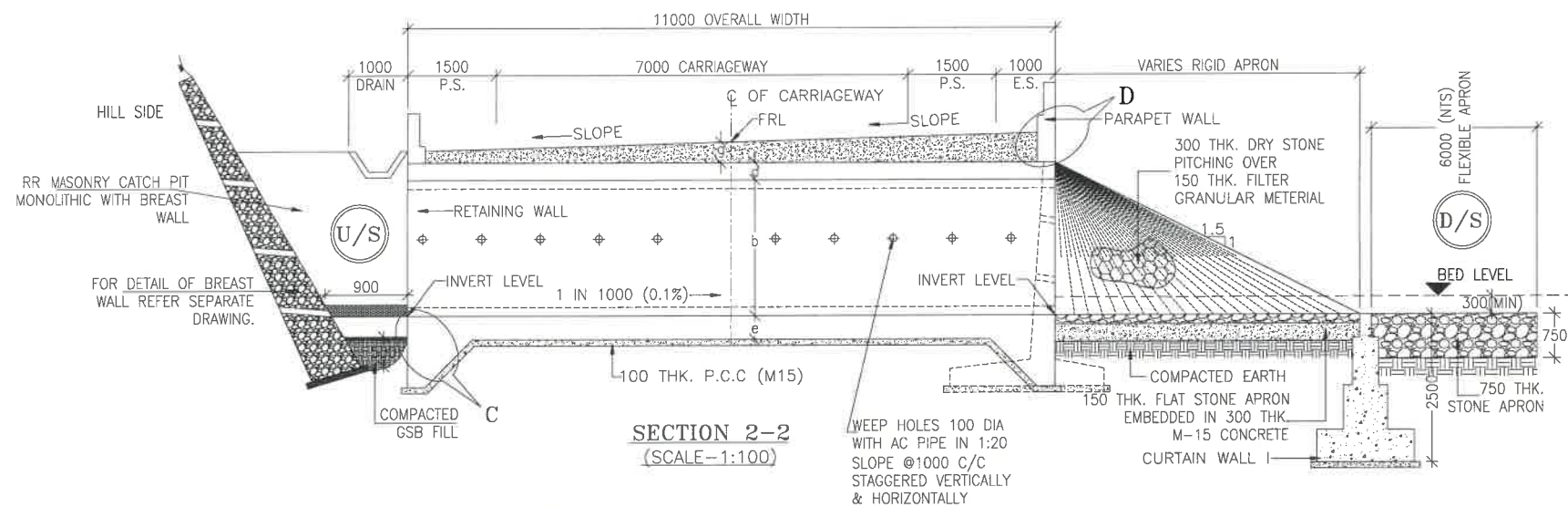
NAVEEN

DESIGNED

STRUCTURE ENGINEER

CHECKED

APPROVED



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR:



**"CMM"
M/S. CMM INFRA PROJECTS LTD.**

DESIGN DIRECTOR:



PROOF CONSULTANT:



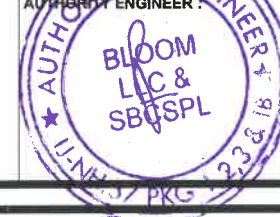
Hindia Engineers Pvt. Ltd.
Address: 337, H. Block, P.F. Phase-1,
Gurgaon-Faridabad Road, Faridabad, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Builders Pvt. Ltd.
Address: 191, Gurgaon Road, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : Info@antiquebuilders.com

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT**

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

01 OF 02

REV.

R0

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

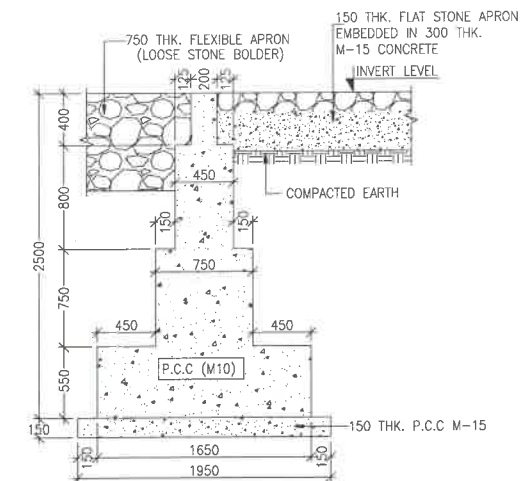
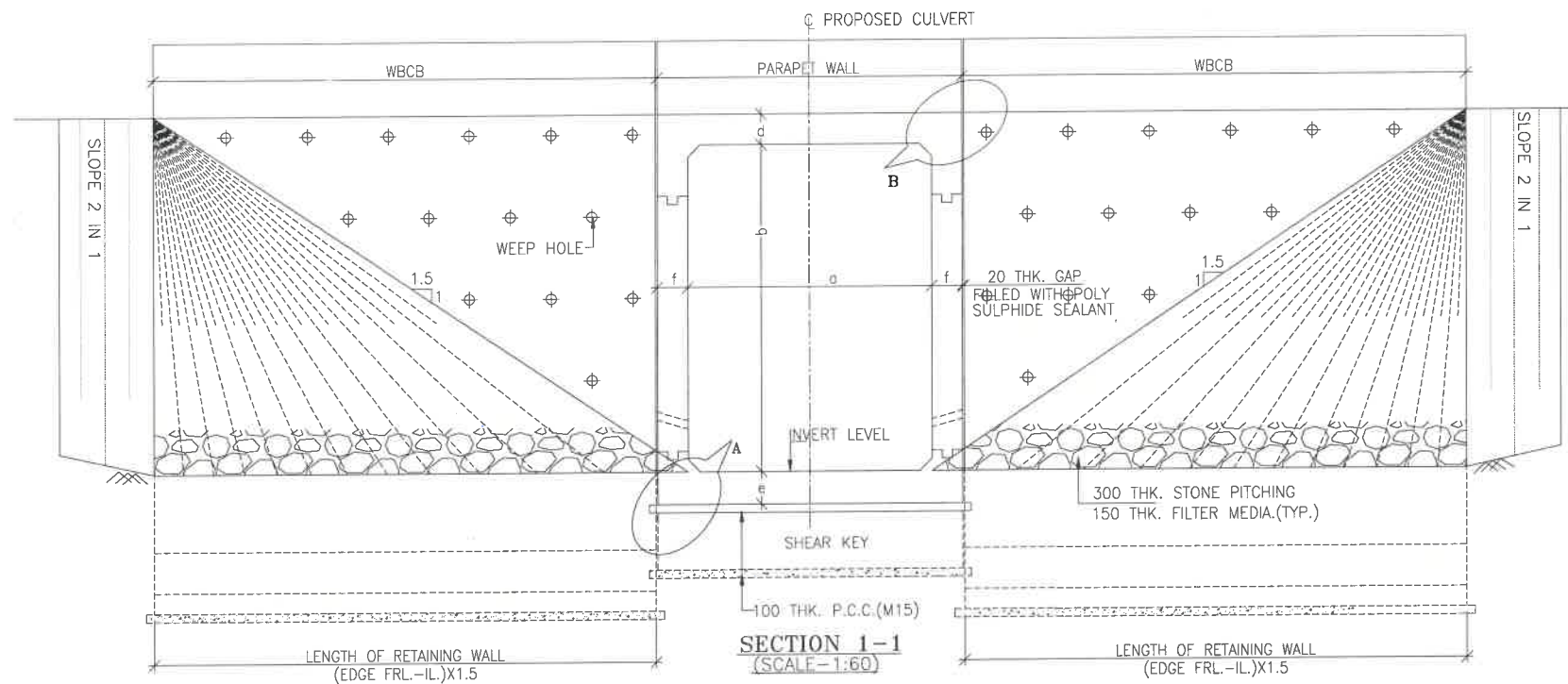
DATE AUG-2021

NAVEEN

DESIGNED
STRUCTURE
ENGINEER

CHECKED

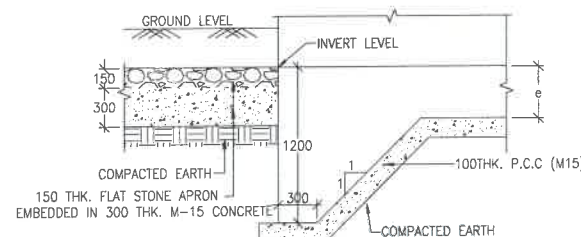
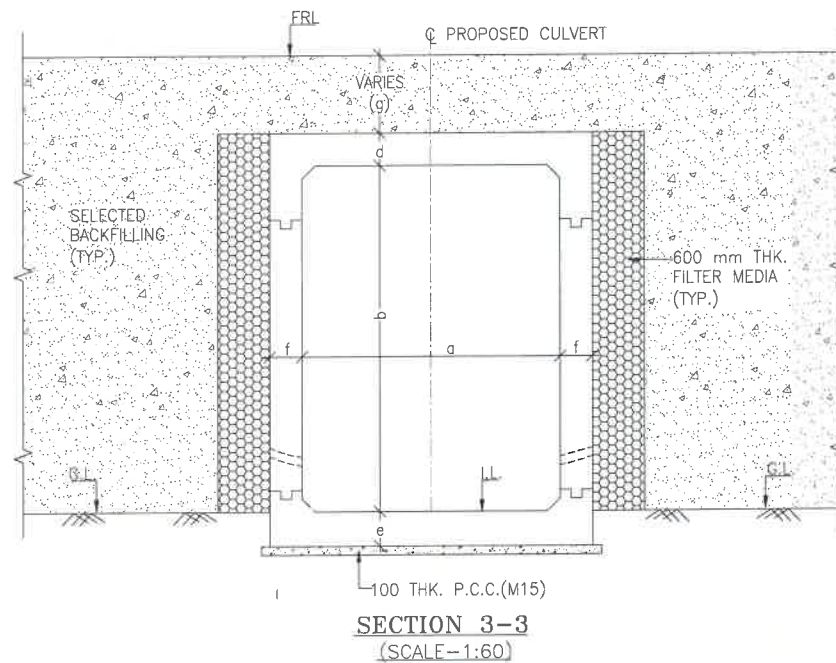
APPROVED



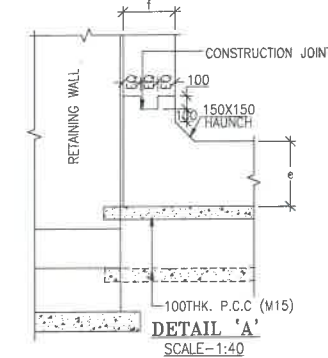
TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-I (D/S)
(SCALE 1:40)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY



DETAIL 'C'
(SCALE-1:40)



DETAIL 'A'
(SCALE-1:40)

TABLE SHOWING SILENT DIMENSIONS

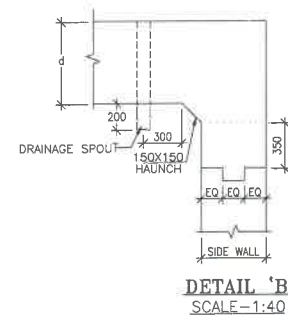
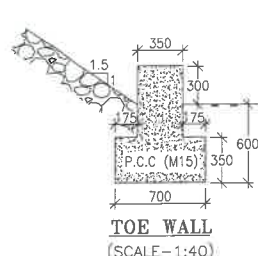
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE -II

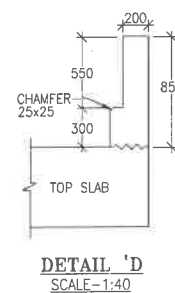
S.R. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	22+045	1X3X4	1054.157	1049.257	1049.357	600	TSC-5
②	22+257	1X3X4	1065.843	1060.943	1061.043	600	TSC-5
③	22+516	1X3X4	1074.564	1069.664	1069.764	600	TSC-5

LEGEND:-

FRL	—	FINISHED ROAD LEVEL
LVL	—	LEVEL
GL	—	GROUND LEVEL
IL	—	INVERT LEVEL
EQ	—	EQUAL
F.P.	—	FOOTPATH
U/S	—	UP STREAM
D/S	—	DOWN STREAM
P.S.	—	PAVED SHOULDER
E.S.	—	EARTHEN SHOULDER



DETAIL 'B'
(SCALE-1:40)



DETAIL 'D'
(SCALE-1:40)

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



"CMM"
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana, India-122002,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana, India-122002,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET:

02 OF 02

REV.

R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

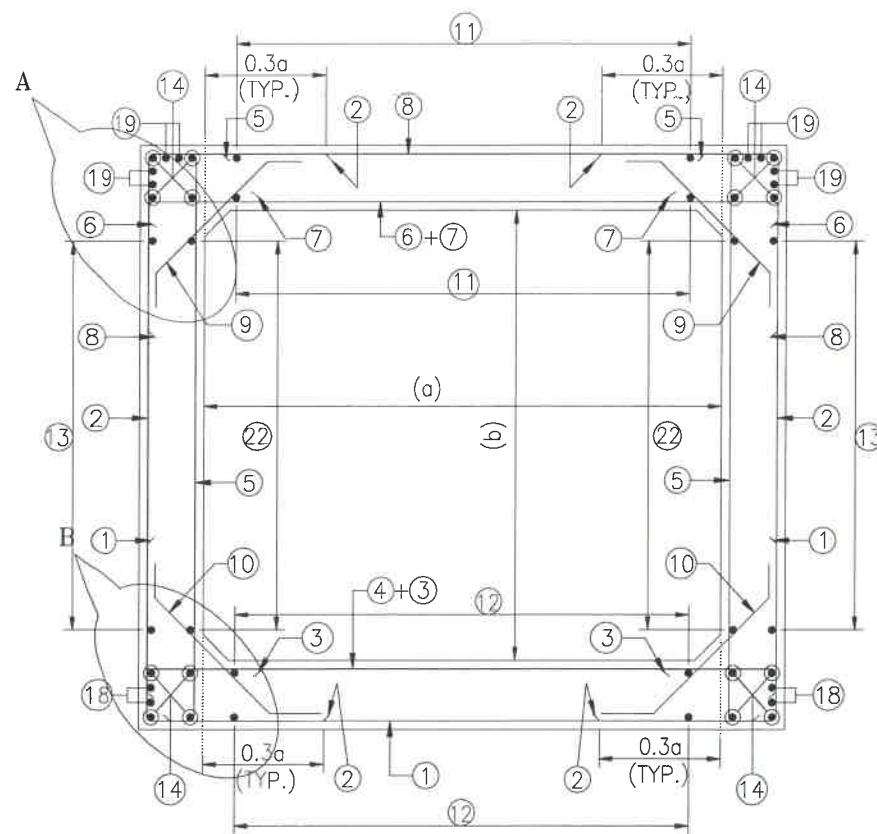
DATE AUG-2021

NAVEEN

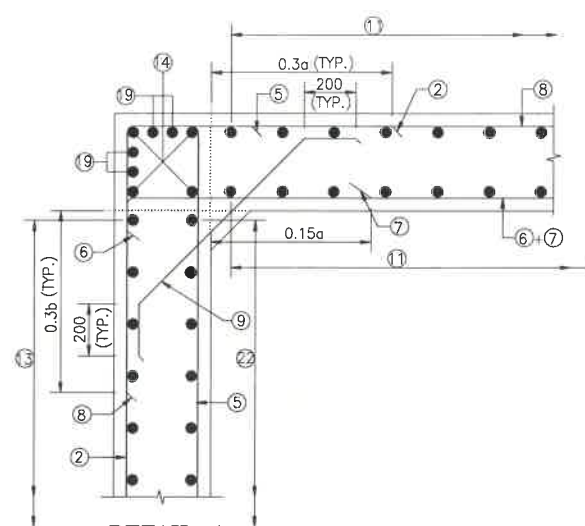
DESIGNED
STRUCTURE
ENGINEER

CHECKED

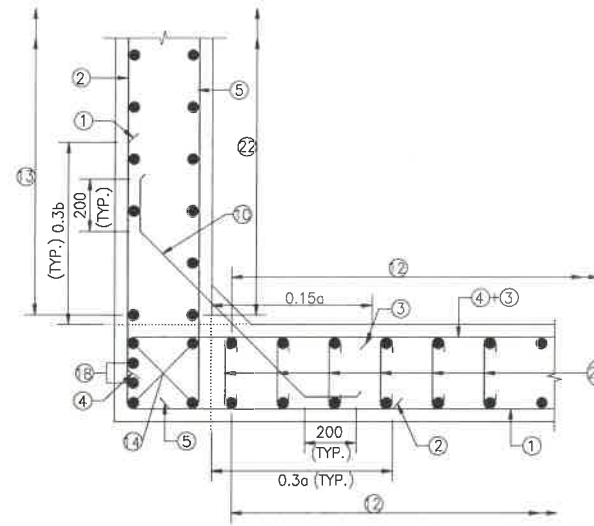
APPROVED



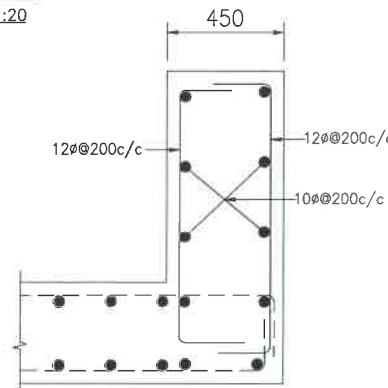
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



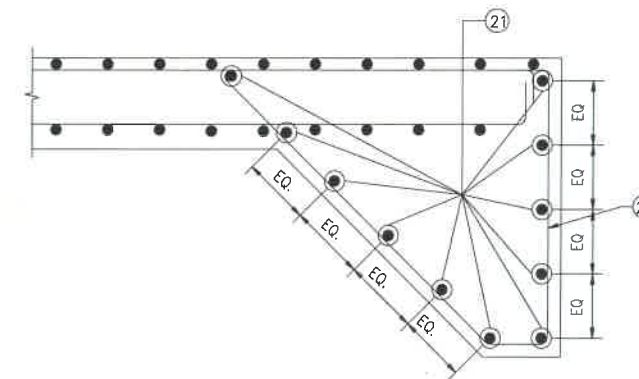
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
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6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

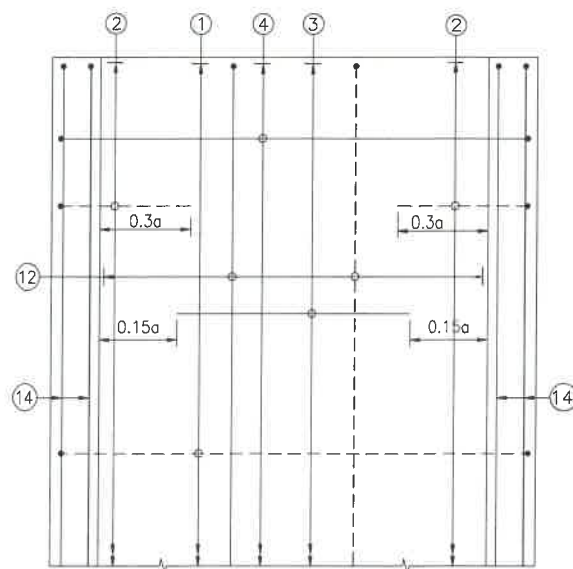
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

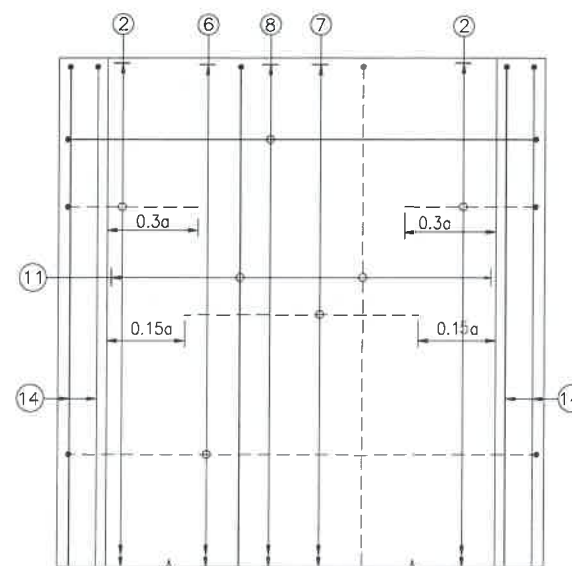
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	—	16	200 C/C
②	—	12	180 C/C
③	—	12	200 C/C
④	—	12	200 C/C
⑤	—	12	180 C/C
⑥	—	12	180 C/C
⑦	—	12	180 C/C
⑧	—	12	180 C/C
⑨	—	10	180 C/C
⑩	—	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	—	NOT IN USE	NOT IN USE
⑯	—	NOT IN USE	NOT IN USE
⑰	—	NOT IN USE	NOT IN USE
⑱	—	10	4 NOS.
⑲	—	10	8 NOS.
⑳	—	12	200 C/C
㉑	—	12	20 NOS.
㉒	—	8	270 C/C
㉒a	—	8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b	—	NOT IN USE	

TRAFFIC DIRECTION



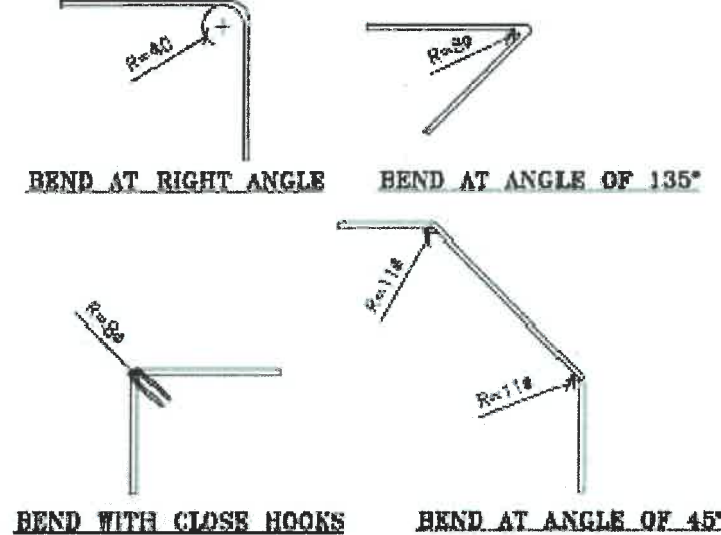
PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

BENDING OF BARS



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hinda Engineers Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-122002 (Haryana) India. Phone No. 0124-4028881

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, DLF Phase-1,
Gurgaon-122002 (Haryana) India. Phone No. 0124-4028881

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.540 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DRG. NO.

DD/IMP-JIR/ RF/01

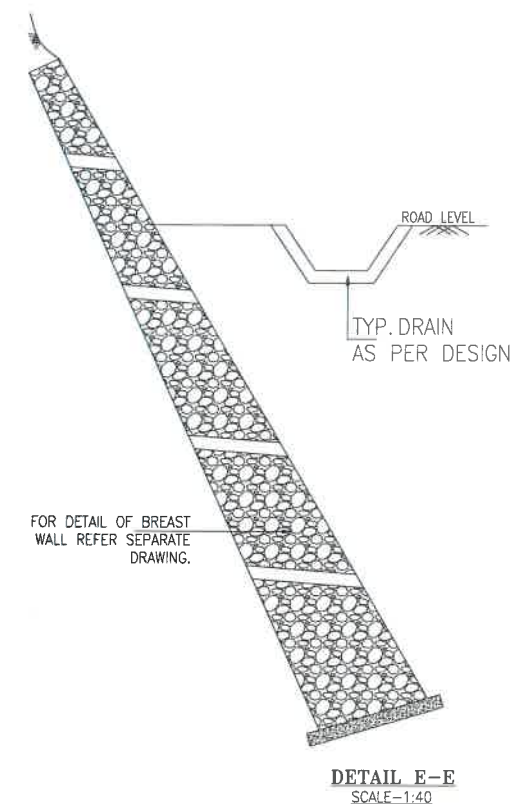
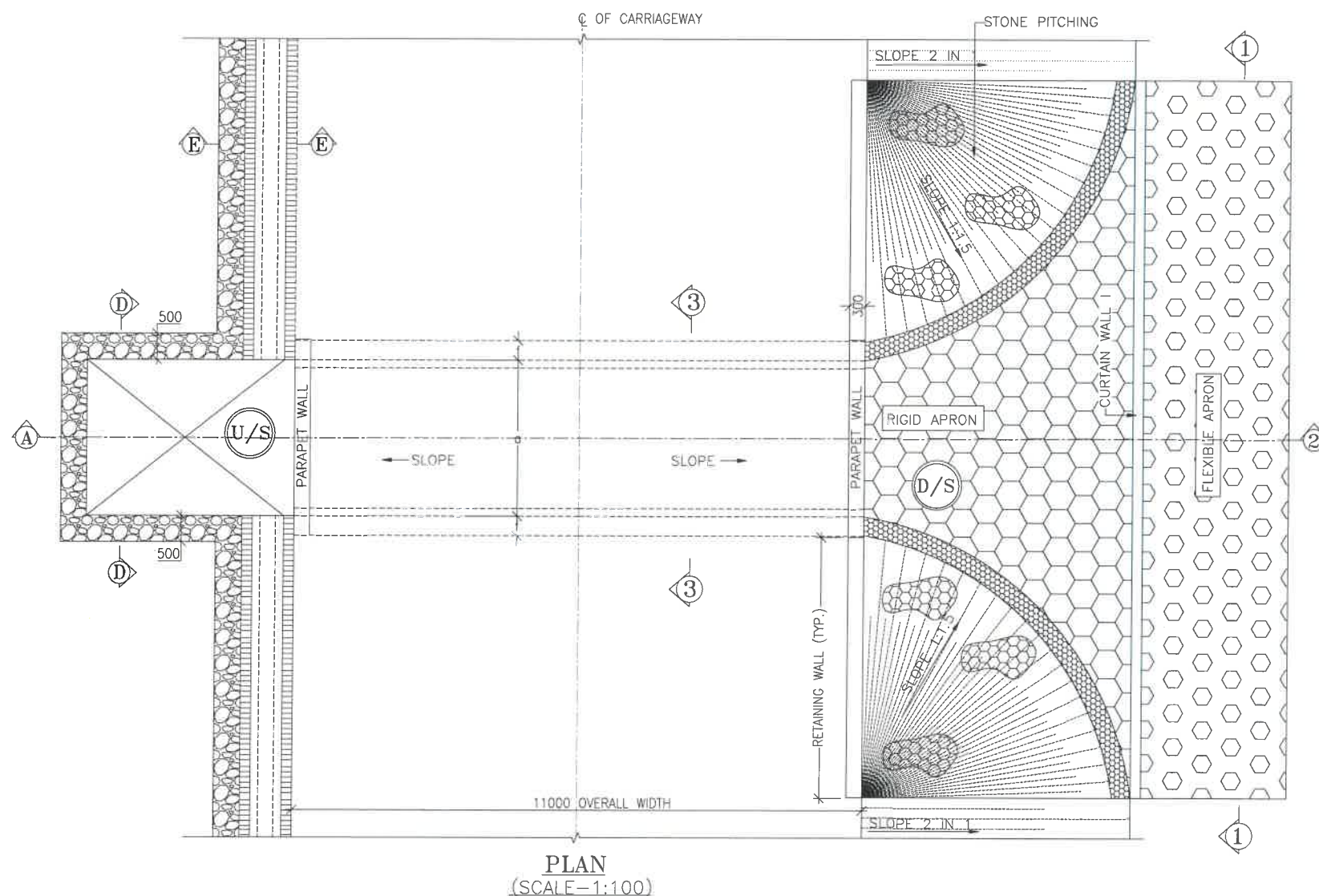
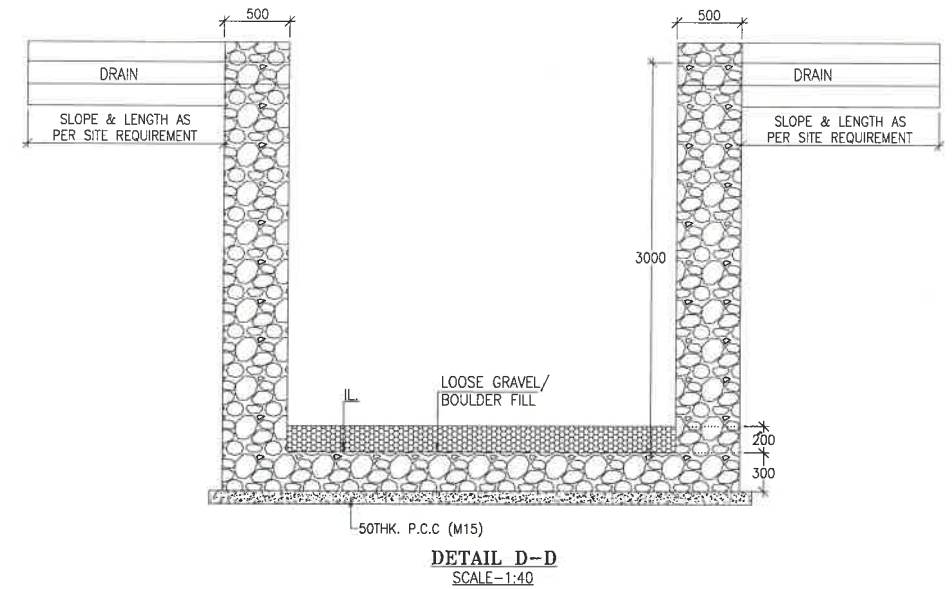
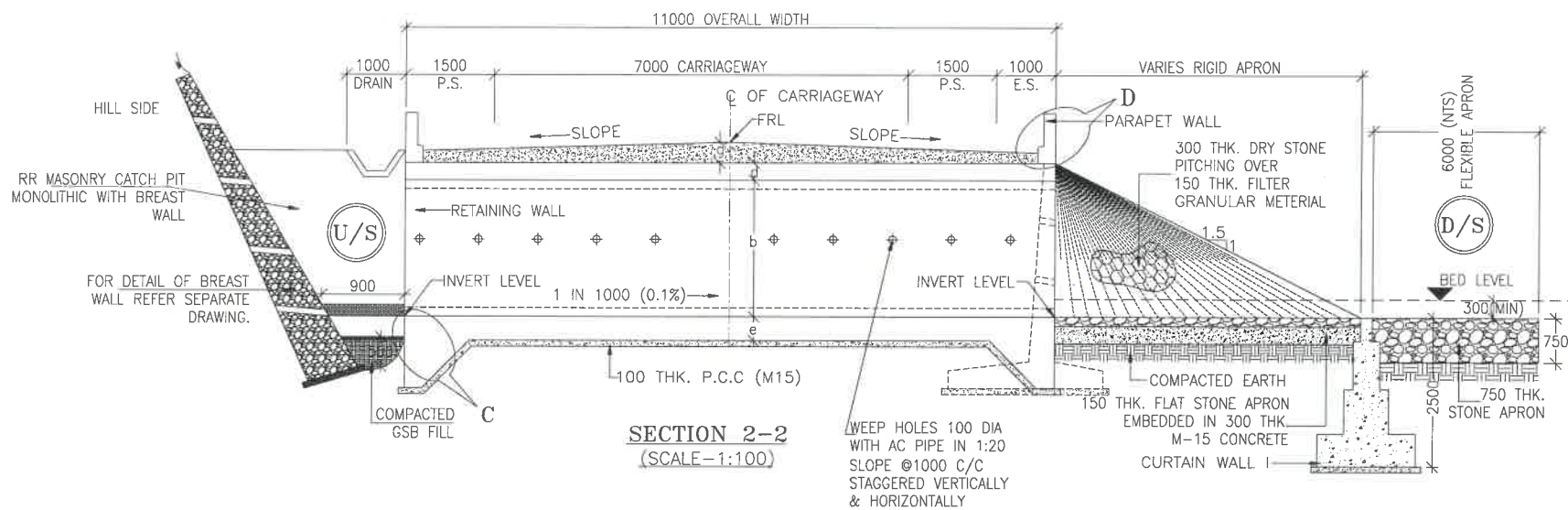
SHEET: REV.

01 OF 01 R0

DATE AUG-2021

NAVEEN

DESIGNED	CHECKED	APPROVED
ENGINEER	---	---



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



M/S. CMM INERAPROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



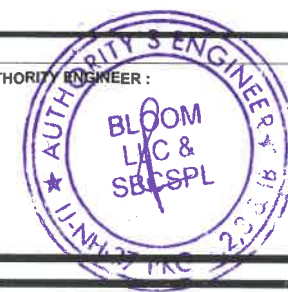
Hinda Engineers Pvt. Ltd.
Address: 307, H-Block, DLF Phase-1,
Gurgaon-Faridkot Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Builders Pvt. Ltd.
Address: 191, Main Road, Gurgaon Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuilders.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
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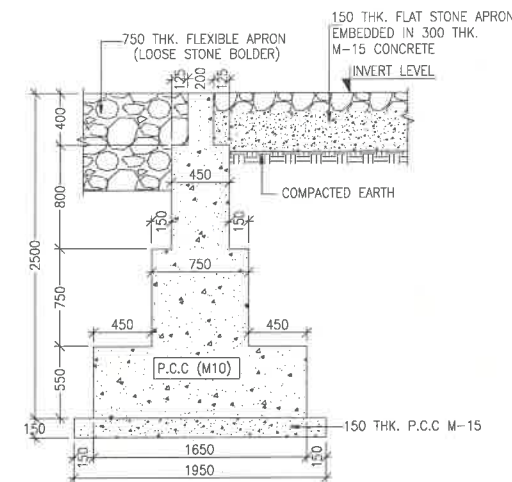
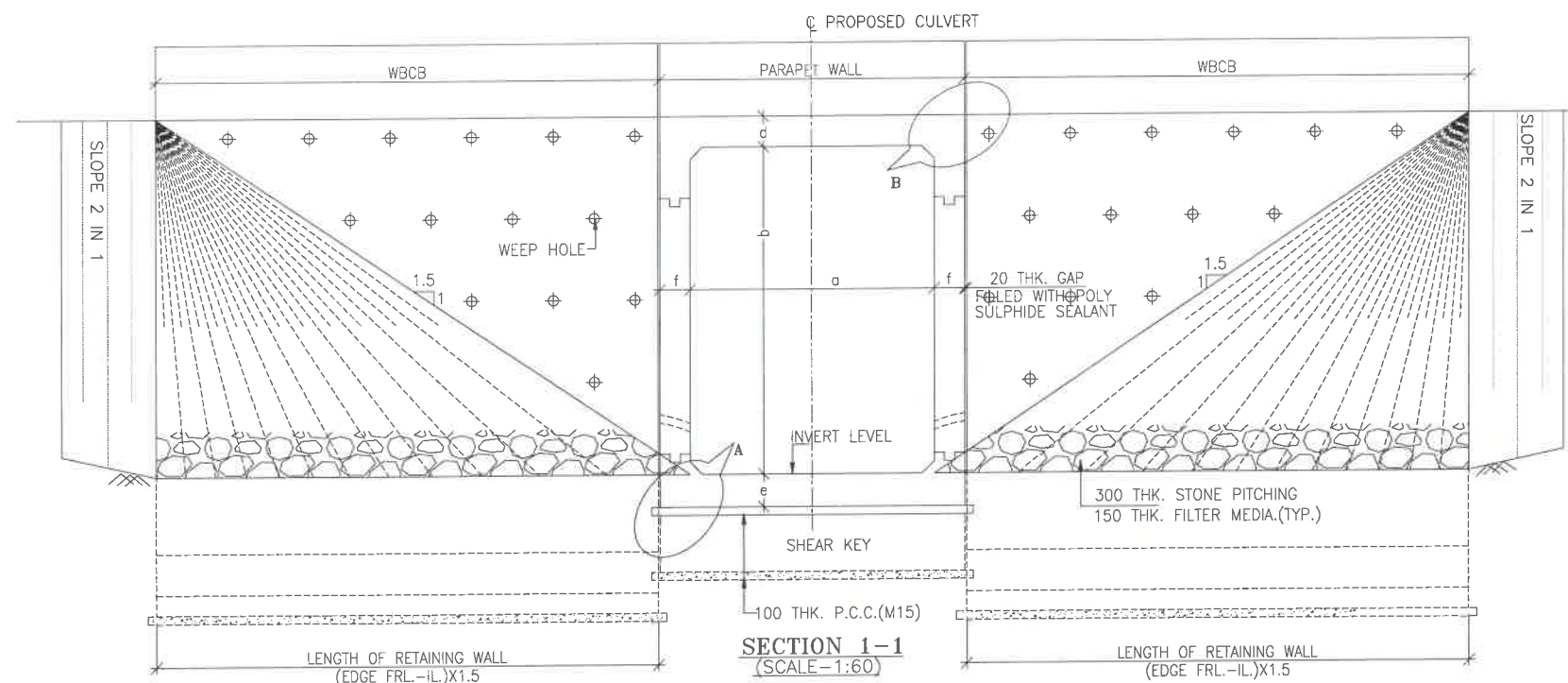
DATE AUG-2021

NAVEEN

DESIGNED
STRUCTURE
ENGINEER

CHECKED

APPROVED



TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-I (D/S)
(SCALE 1:40)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

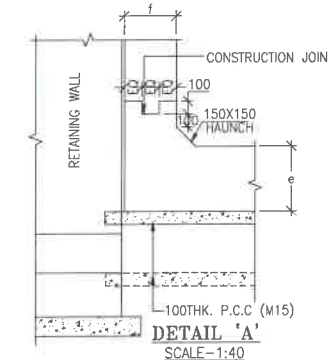
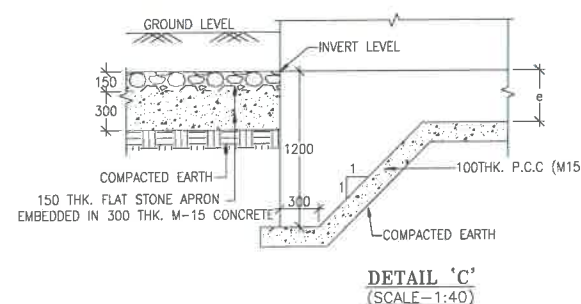
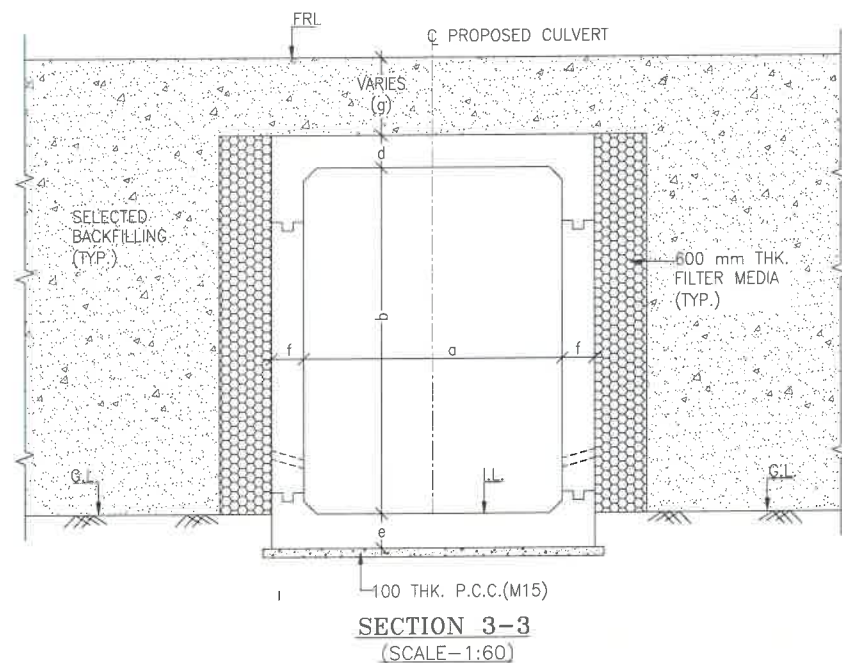


TABLE SHOWING SILENT DIMENSIONS

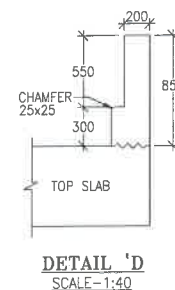
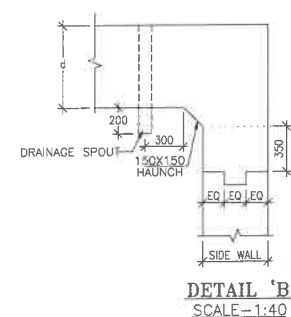
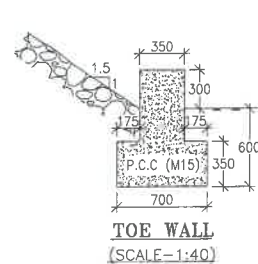
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	21+562	1X3X4	1029.202	1024.302	1024.402	600	TSC-5

LEGEND:-

FRL	—	FINISHED ROAD LEVEL
LVL	—	LEVEL
GL	—	GROUND LEVEL
IL	—	INVERT LEVEL
EQ	—	EQUAL
F.P.	—	FOOTPATH
U/S	—	UP STREAM
D/S	—	DOWN STREAM
P.S.	—	PAVED SHOULDER
E.S.	—	EARTHEN SHOULDER



CLIENT :
NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:
CMM INFRA PROJECTS LTD.
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:
DESIGN DIRECTOR

PROOF CONSULTANT:
Hindia Engineering Pvt. Ltd.
Address: 101, Mohan Nagar, Gurgaon, Haryana, India-122002, Phone No. 0124-4028661

SAFETY CONSULTANT:
Antique Buildtech Pvt. Ltd.
Address: 101, Mohan Nagar, Gurgaon, Haryana, India-122002, Email: info@antiquebuildtech.com

AUTHORITY ENGINEER:
BLOOM LCC & SBCSPL

DRAWING SCALE:
NTS

DRAWING TITLE:
**TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT**

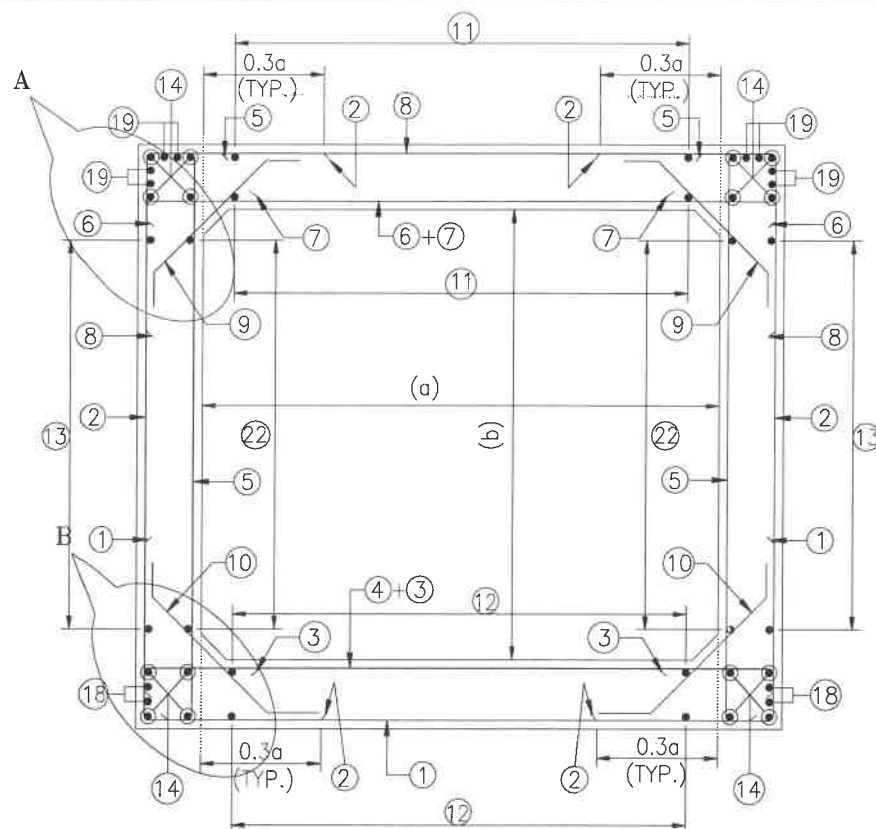
DRG. NO.
DD/IMP-JIR/ BOX/GAD/01

SHEET: **02 OF 02**
REV. **R0**

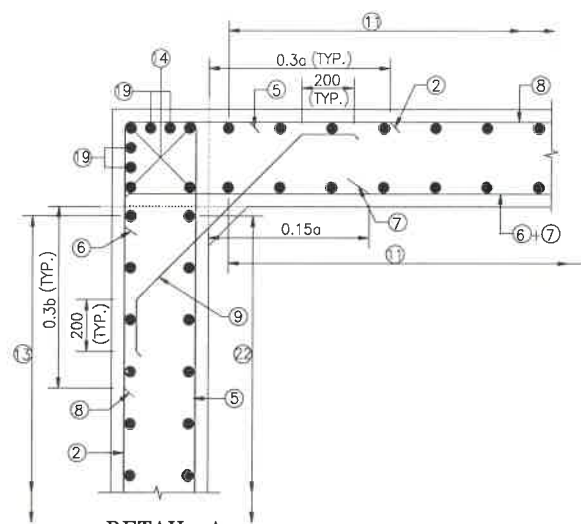
PROJECT NAME:-
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE **AUG-2021**
DESIGNED
STRUCTURE ENGINEER
CHECKED

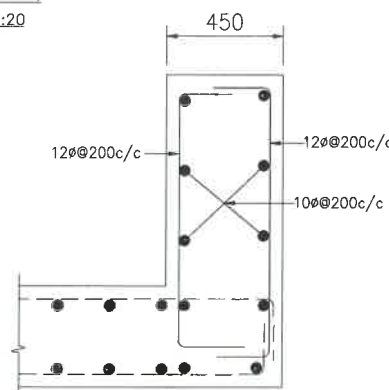
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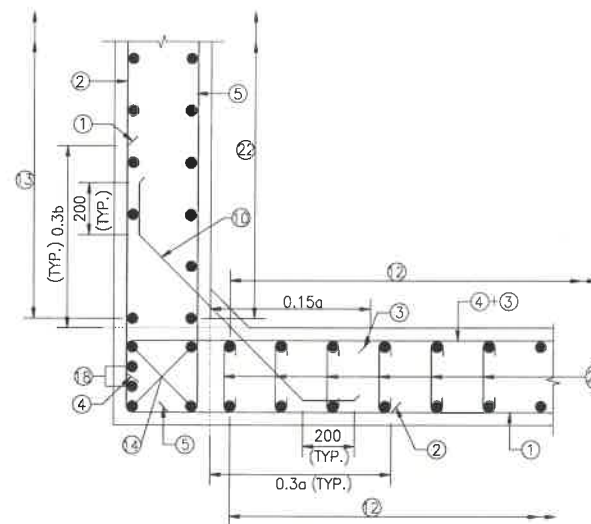
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



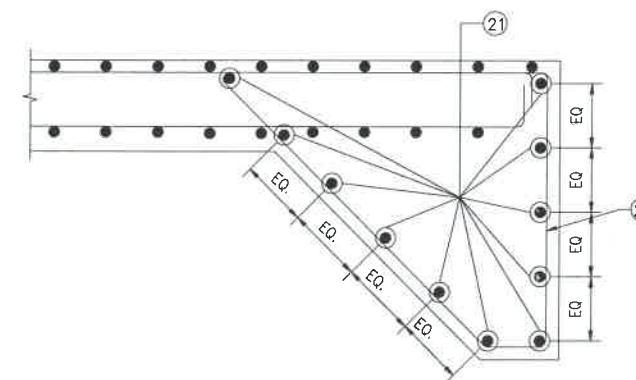
DETAIL-A
SCALE: 1:20



DETAILS OF RCC PARAPET
SCALE: 1:20



DETAIL-B
SCALE: 1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

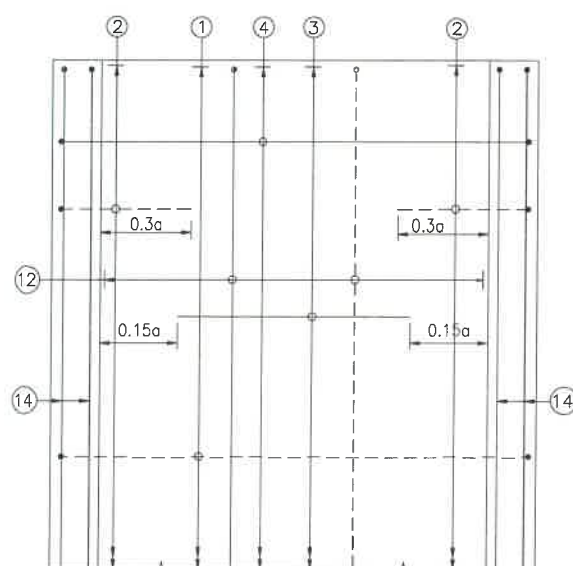
———	TOP FACE BARS/OUTER FACE BARS
-----	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

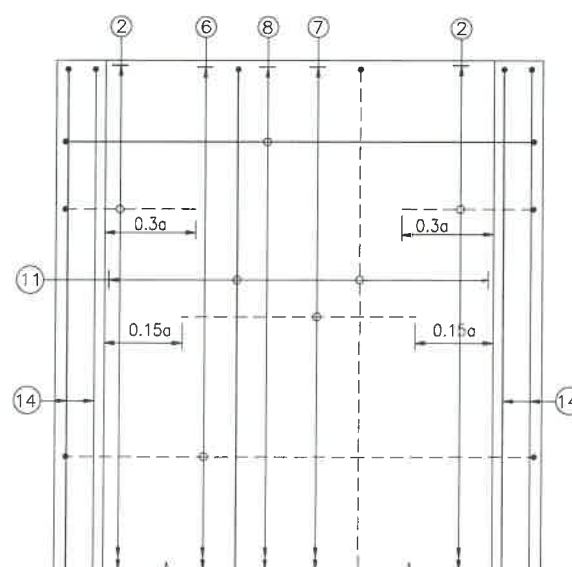
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	200 C/C
②	┌─┐	12	180 C/C
③	—	12	200 C/C
④	└─┘	12	200 C/C
⑤	┌─┐	12	180 C/C
⑥	└─┘	12	180 C/C
⑦	—	12	180 C/C
⑧	└─┘	12	180 C/C
⑨	┌─┐	10	180 C/C
⑩	└─┘	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	┌─┐	10	8 NOS.
⑳	└─┘	12	200 C/C
㉑	└─┘	12	20 NOS.
㉒	—	8	270 C/C
㉓	└─┘	8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉔	└─┘	NOT IN USE	

← TRAFFIC DIRECTION →

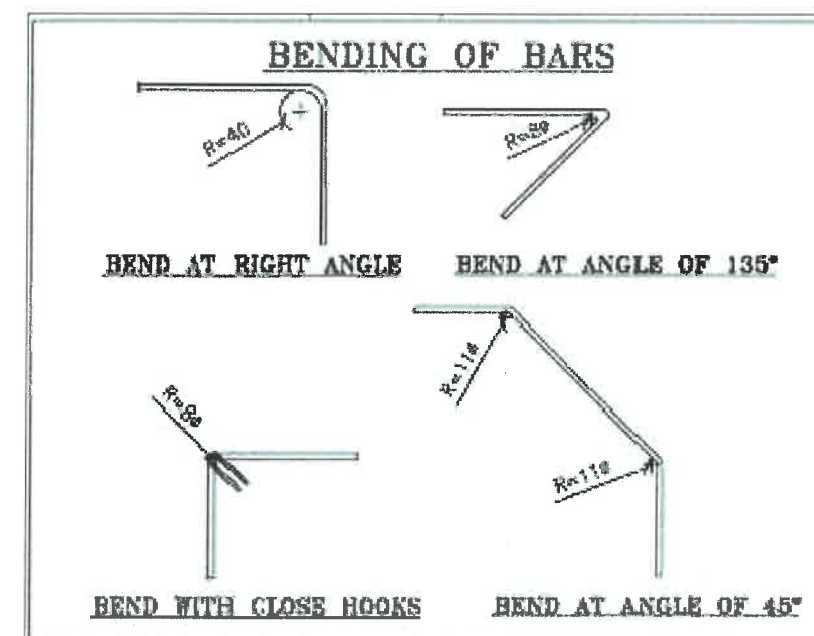


**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

← TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR :



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



Hindia Engineers Pvt. Ltd.
Address: 101, Main Building, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Build Tech Pvt. Ltd.
Address: 101, Main Building, Gurgaon Byepass,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : Info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

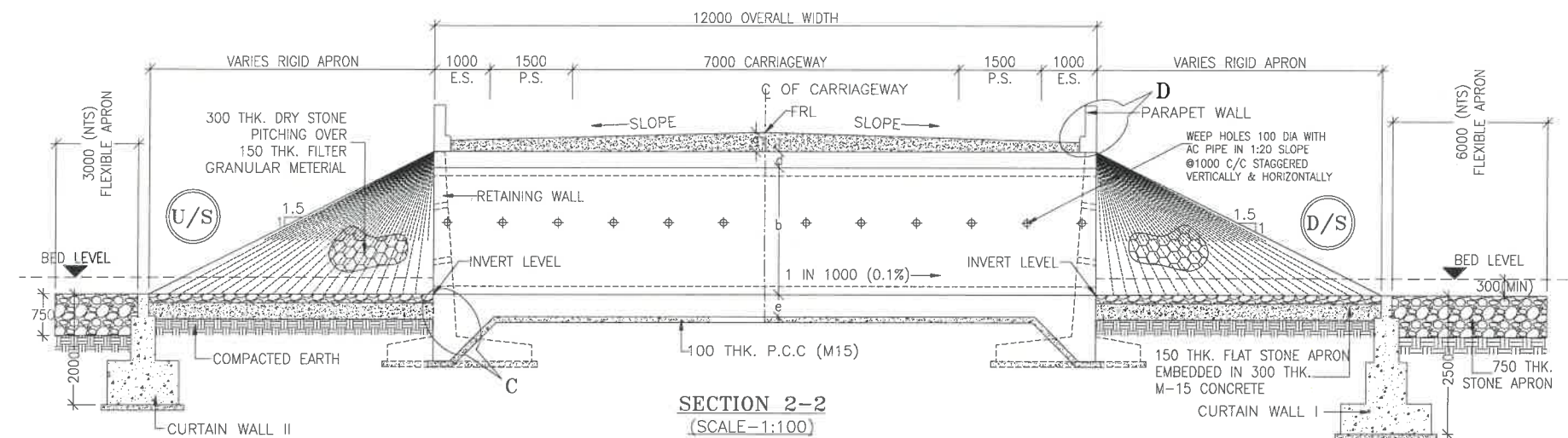
PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH-17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

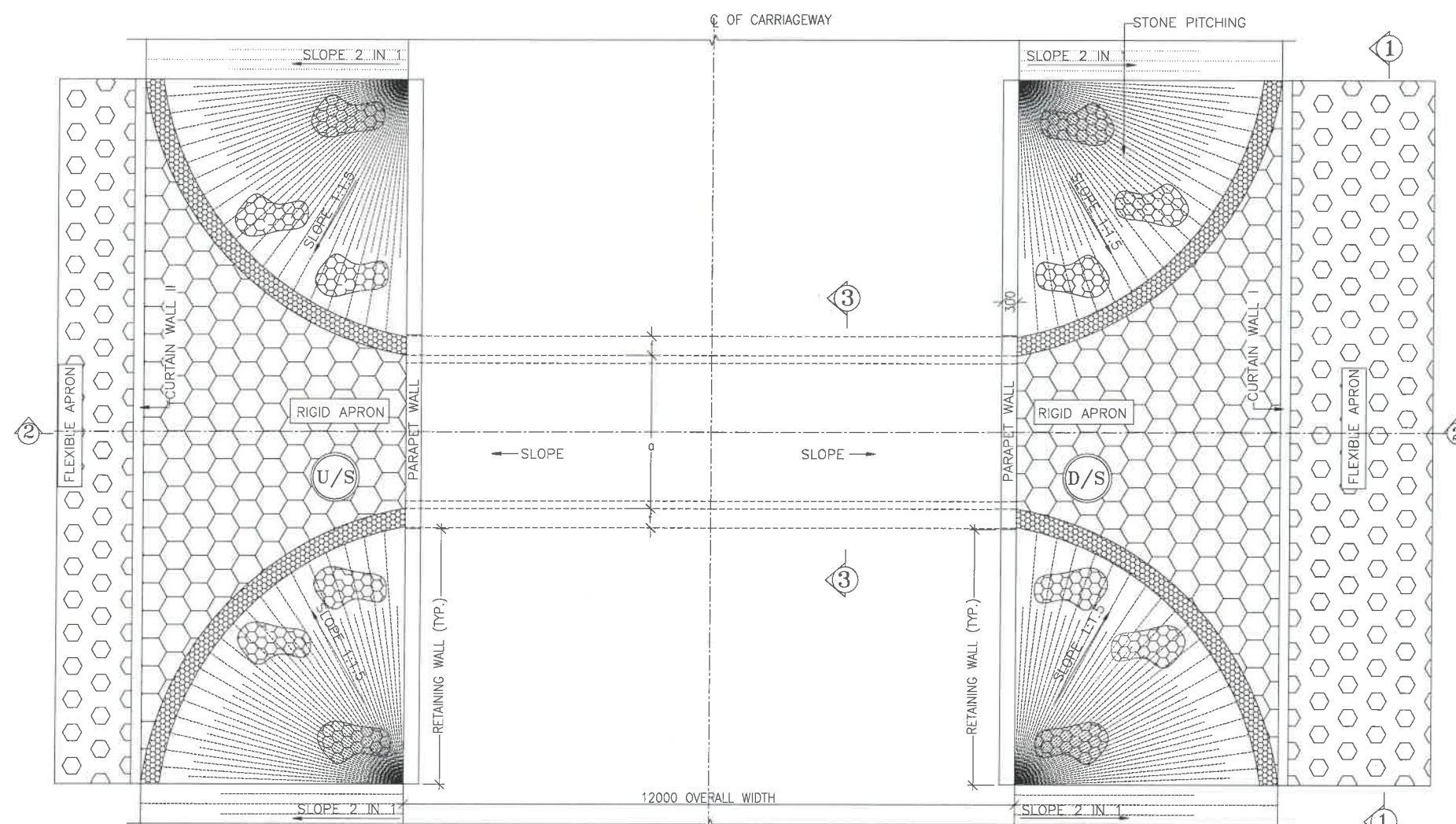
DATE AUG-2021

NAVEEN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

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LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
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EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:



"CMM"
M/S. CMM INFRASTRUCTURE PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



Hindia Engineers Pvt. Ltd.
Address: 6071, H Block, DLF Phase-1,
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Address: 191, Acharya Jagadish Chandra Bose Road,
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Email : info@antiquebuildtech.com

AUTHORITY'S ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

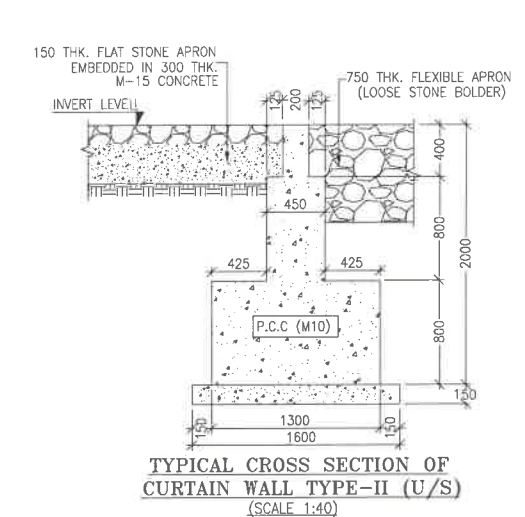
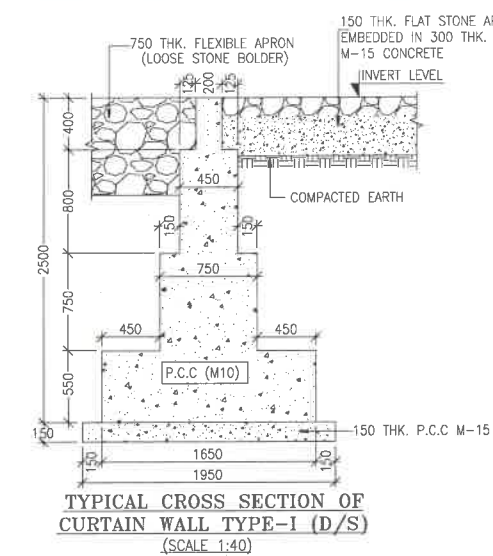
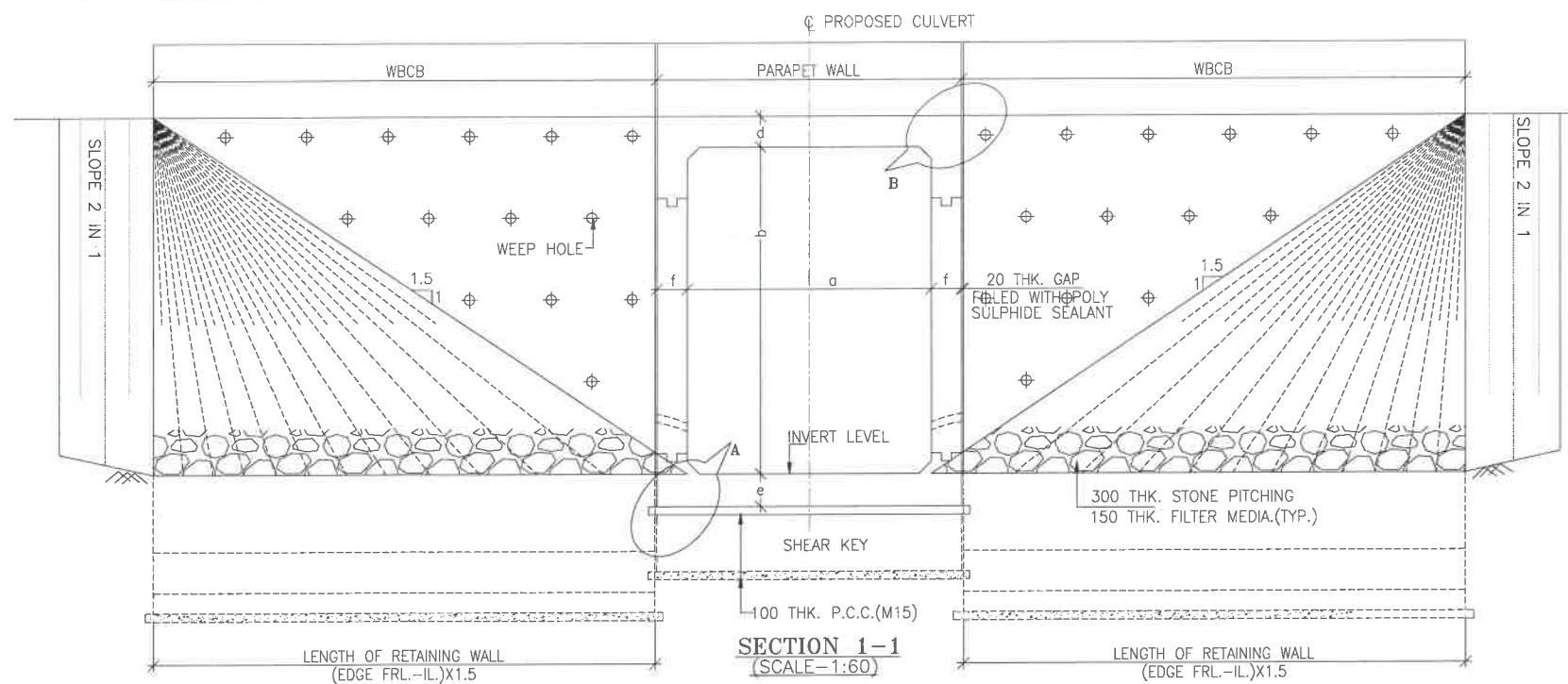
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PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

NAVEEN

DESIGNED	CHECKED	APPROVED
STRUCTURE ENGINEER	---	---



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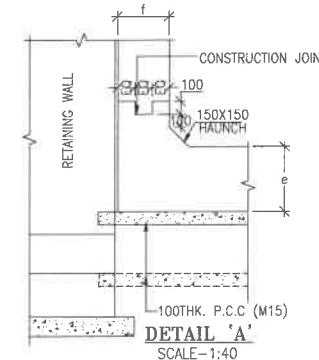
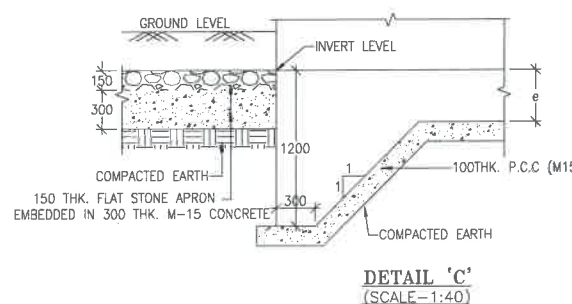
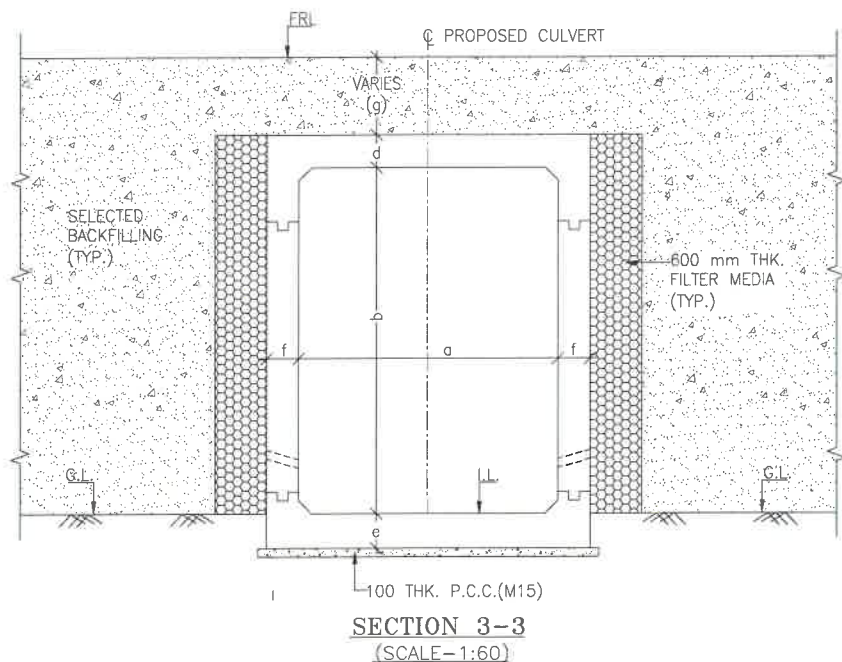


TABLE SHOWING SILENT DIMENSIONS

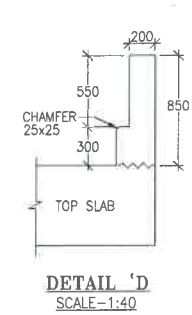
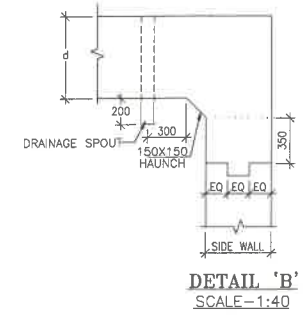
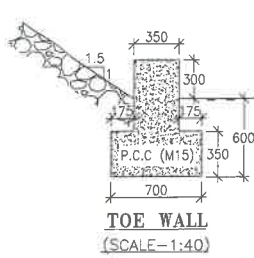
BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE-II

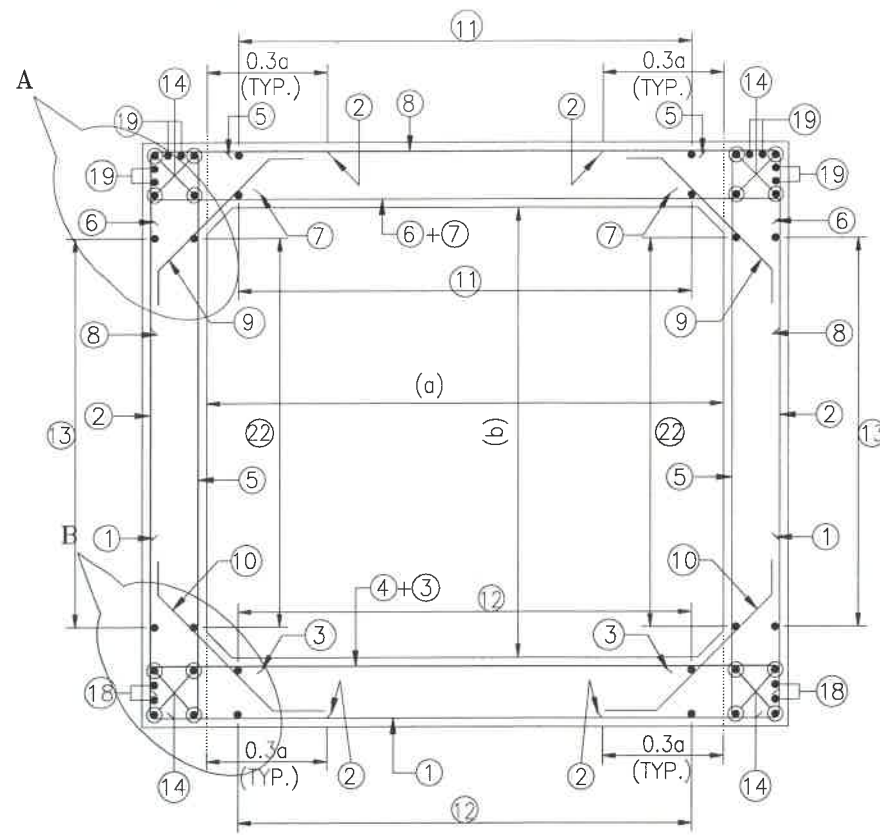
SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	17+248	1X3X4	840.920	836.020	836.120	600	TSC-8

LEGEND:-

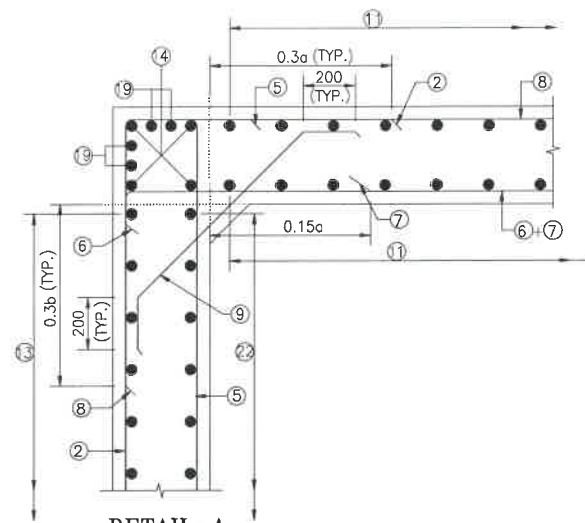
- FRL - FINISHED ROAD LEVEL
- LVL - LEVEL
- GL - GROUND LEVEL
- IL - INVERT LEVEL
- EQ - EQUAL
- F.P. - FOOTPATH
- U/S - UP STREAM
- D/S - DOWN STREAM
- P.S. - PAVED SHOULDER
- E.S. - EARTHEN SHOULDER



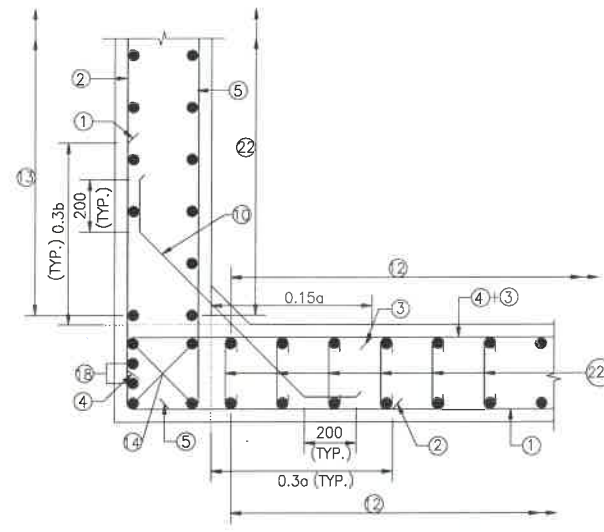
CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR: M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: DESIGN DIRECTOR	PROOF CONSULTANT: Hindia Engineers Pvt. Ltd. Address: 197, 1st Floor, DLF Phase-1, Gurgaon-Faridabad Road Haryana, INDIA-122002, Phone No. 0124-4028681	SAFETY CONSULTANT: Antique Buildtech Pvt. Ltd. Address: 197, 1st Floor, DLF Phase-1, Gurgaon-Faridabad Road Haryana, INDIA-122002, Phone No. 0124-4028681	AUTHORITY ENGINEER: BLOOM LIC & SCSPL	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: 02 OF 02	REV. R0		
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.								DATE AUG-2021	NAVEEN	DESIGNED STRUCTURE ENGINEER	CHECKED ---	APPROVED ---



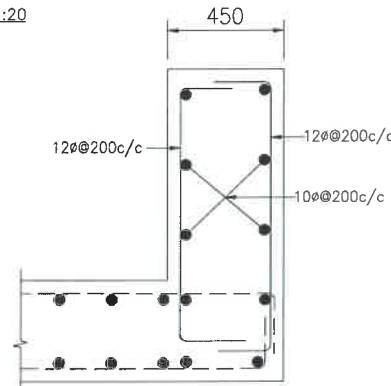
**REINFORCEMENT DETAILS
OF BOX CULVERT**
SCALE : 1:40



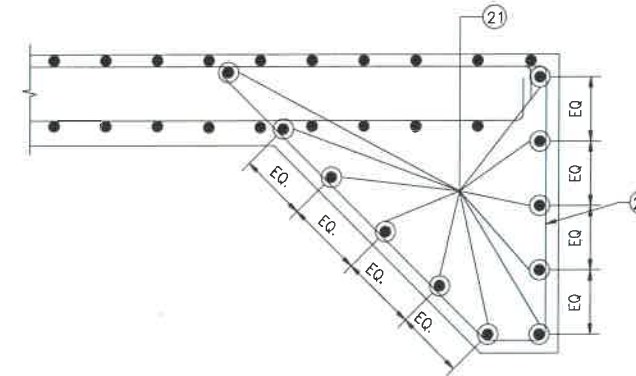
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
- ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
- JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
- FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

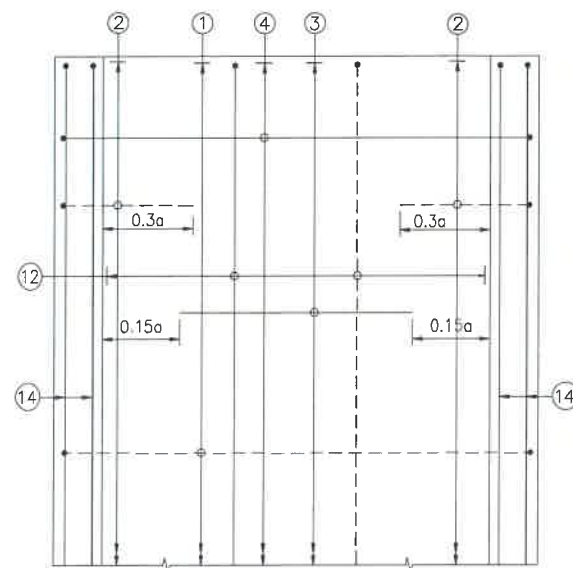
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

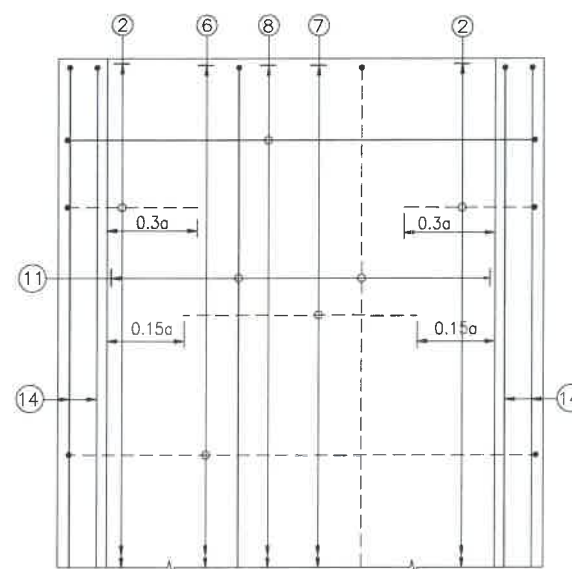
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	└─┘	16	200 C/C
②	┌─┐	12	180 C/C
③	—	12	200 C/C
④	└─┘	12	200 C/C
⑤	┌─┐	12	180 C/C
⑥	└─┘	12	180 C/C
⑦	—	12	180 C/C
⑧	└─┘	12	180 C/C
⑨	┌─┐	10	180 C/C
⑩	└─┘	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	└─┘	NOT IN USE	NOT IN USE
⑯	┌─┐	NOT IN USE	NOT IN USE
⑰	└─┘	NOT IN USE	NOT IN USE
⑱	└─┘	10	4 NOS.
⑲	└─┘	10	8 NOS.
⑳	└─┘	12	200 C/C
㉑	└─┘	12	20 NOS.
㉒	—	8	270 C/C
㉒a	┌─┐	8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b	└─┘	NOT IN USE	

TRAFFIC DIRECTION →

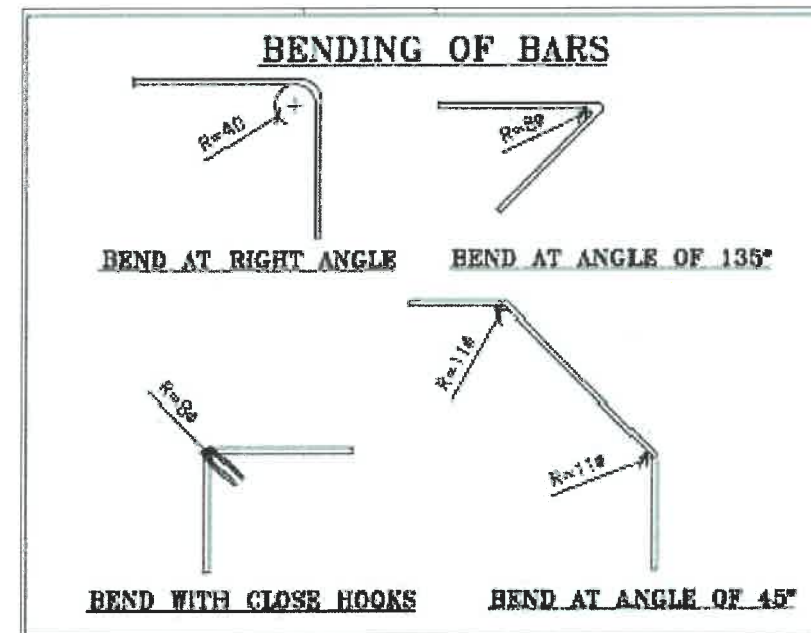


**PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



**PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB**
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD**

EPC CONTRACTOR:



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



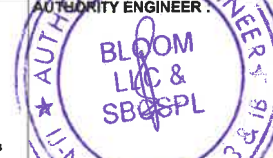
Hindia Engineers Pvt. Ltd.
Address: 33/7, Phase-1,
Gurgaon-Faridabad Road, INDIA-122002,
Phone No.-0124-4028661

SAFETY CONSULTANT:



Antique Engineers Pvt. Ltd.
Address: 191, Naga Nagar, Gurgaon Bypass,
Jalpur-302018 (Rajasthan) India. Ph. 0141-2780303
Email : info@antiqueengineers.com

AUTHORITY ENGINEER:



DRAWING SCALE:

NTS

DRAWING TITLE:

**TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4**

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

PROJECT NAME:-

**WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.**

DATE AUG-2021

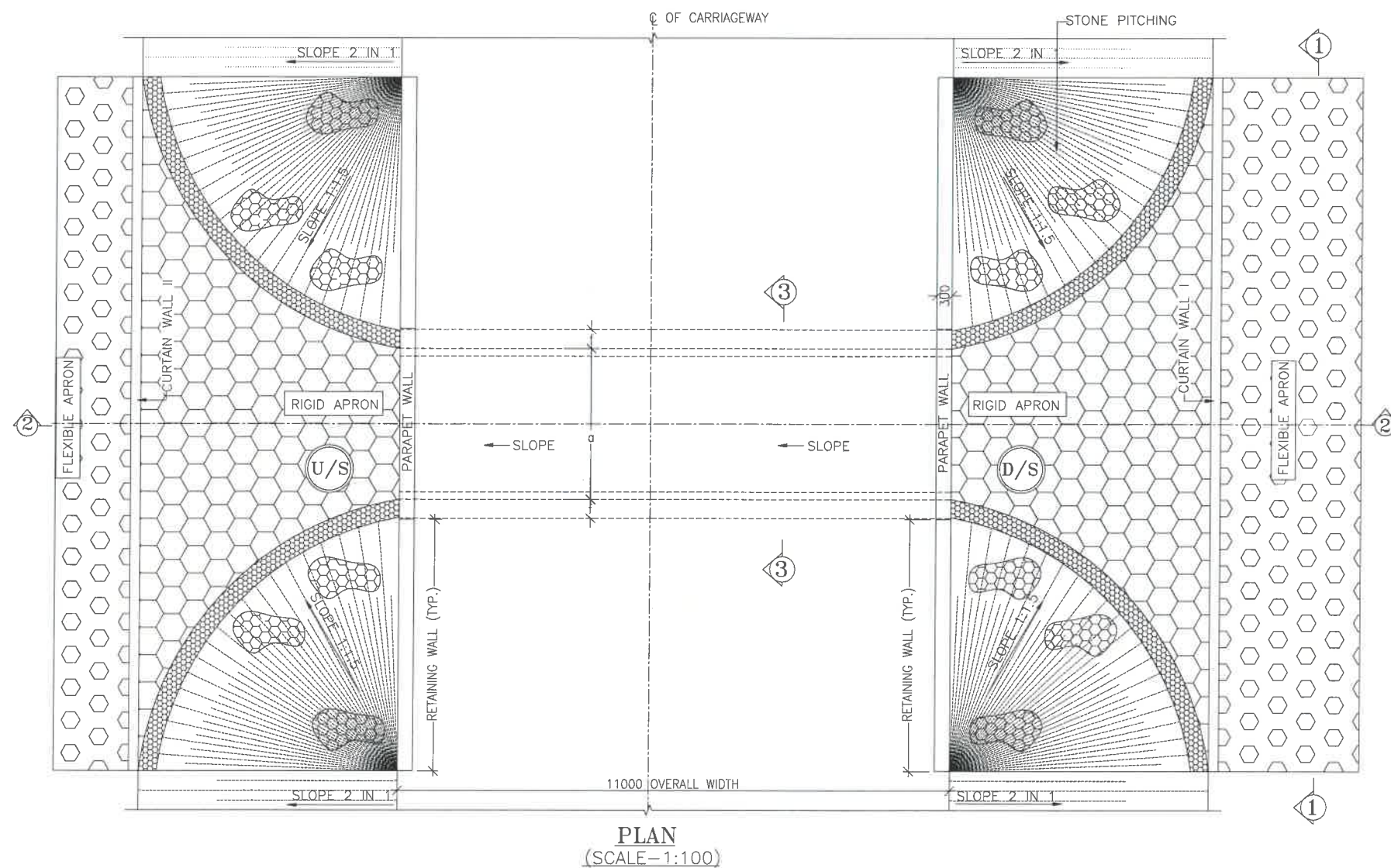
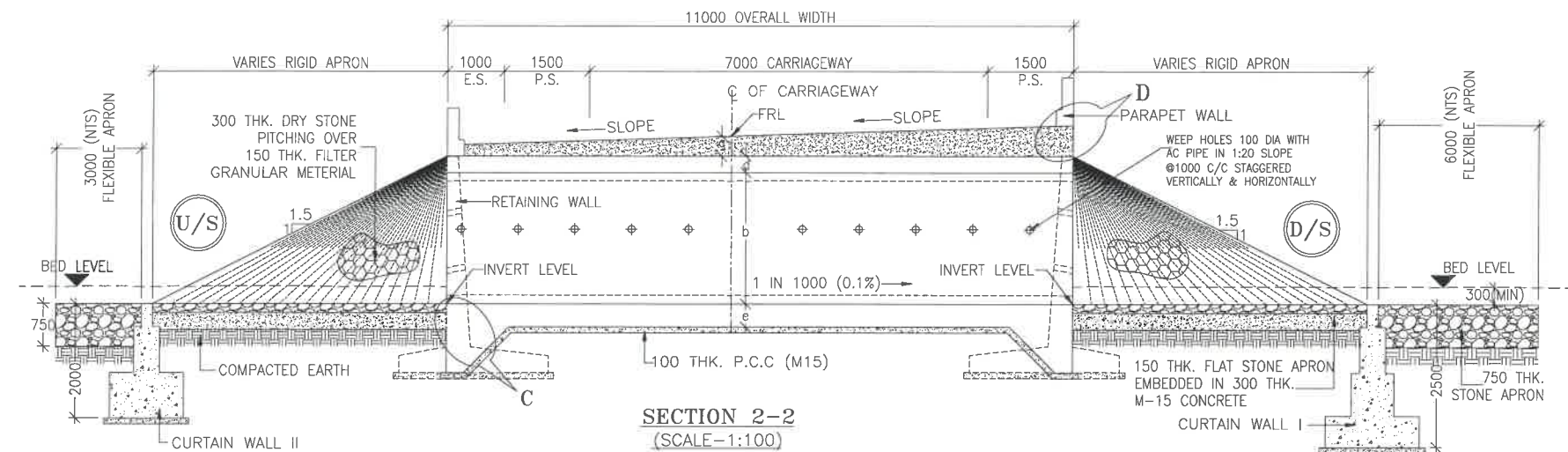
NAVEEN

DESIGNED

STRUCTURE
ENGINEER

CHECKED

APPROVED



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO 10T/M² IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR



M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROOF CONSULTANT:



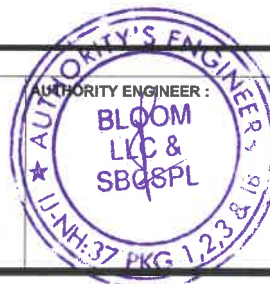
Hindia Engineers Pvt. Ltd.
Address: 3087, 1st Floor, DLF Phase-1,
Gurgaon-Faridkot Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT:



Antique Buildtech Pvt. Ltd.
Address: 191, Noida Bypass, Noida Bypass,
Jaipur-302018 (Rajasthan), Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL GENERAL ARRANGEMENT
DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

01 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

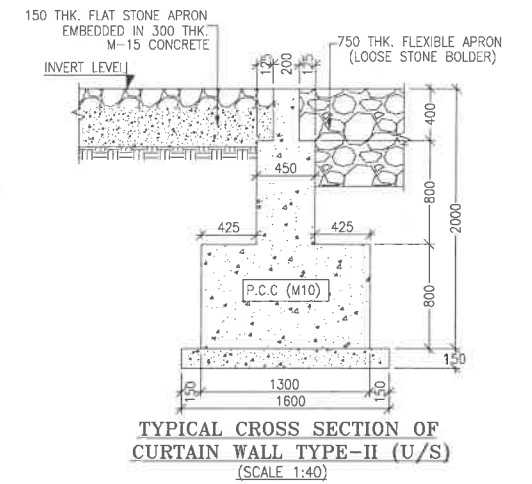
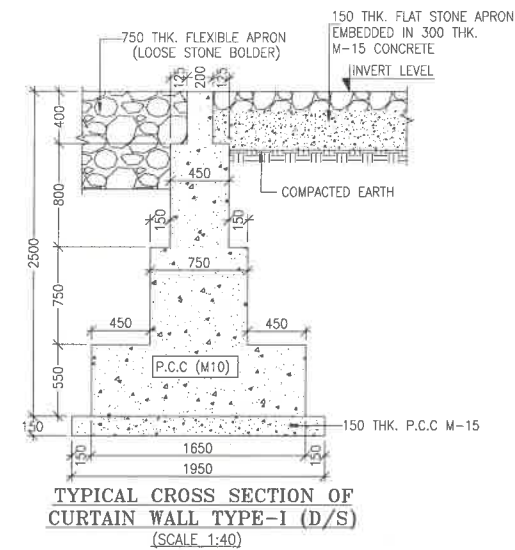
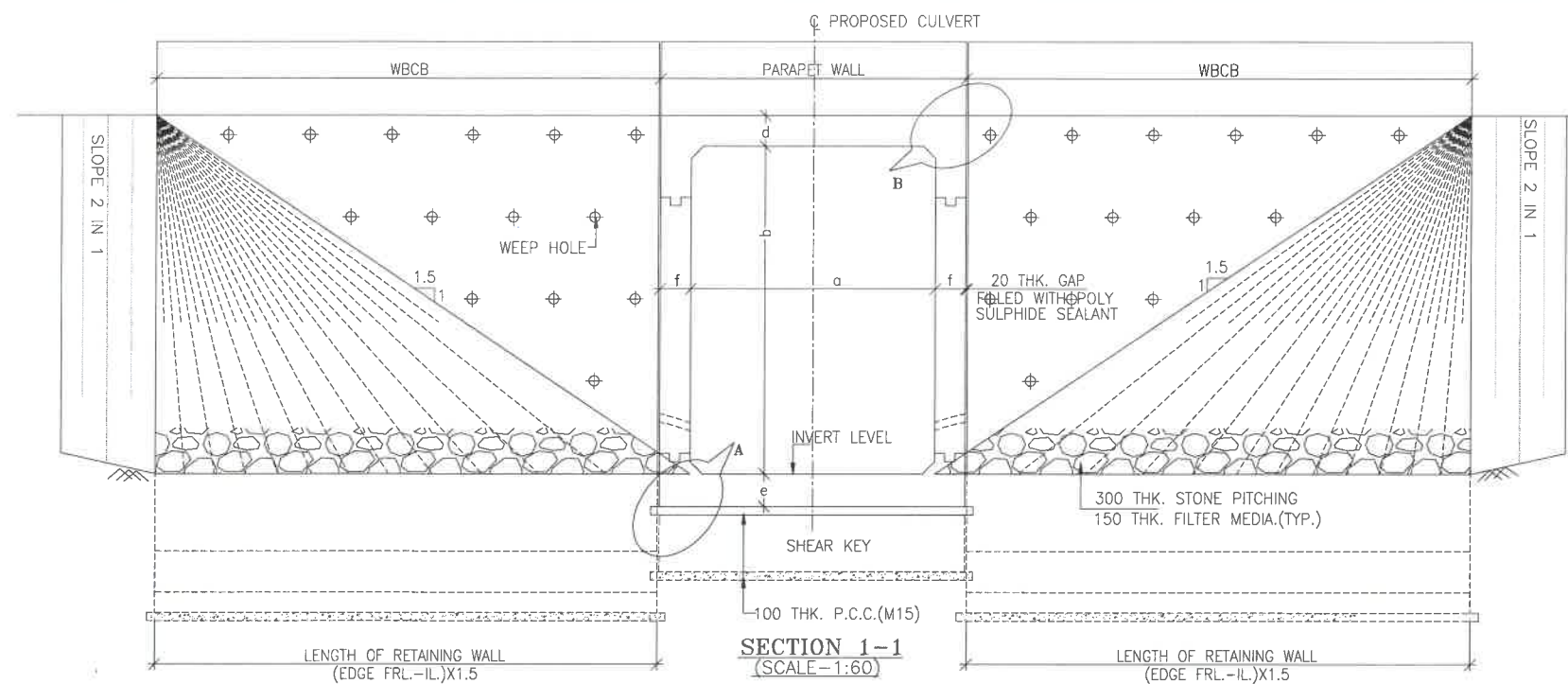
NAVEEN

DESIGNED

STRUCTURE
ENGINEER

CHECKED

APPROVED



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
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 - PARAPET WALL.....M30
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- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	FINISHED ROAD LEVEL
LVL	LEVEL
GL	GROUND LEVEL
IL	INVERT LEVEL
EQ	EQUAL
F.P.	FOOTPATH
U/S	UP STREAM
D/S	DOWN STREAM
P.S.	PAVED SHOULDER
E.S.	EARTHEN SHOULDER

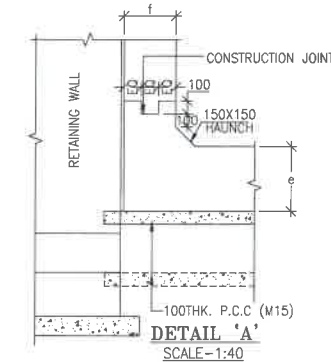
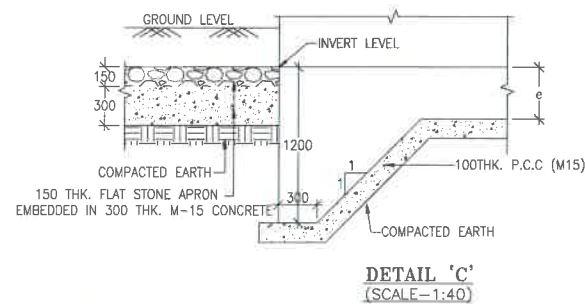
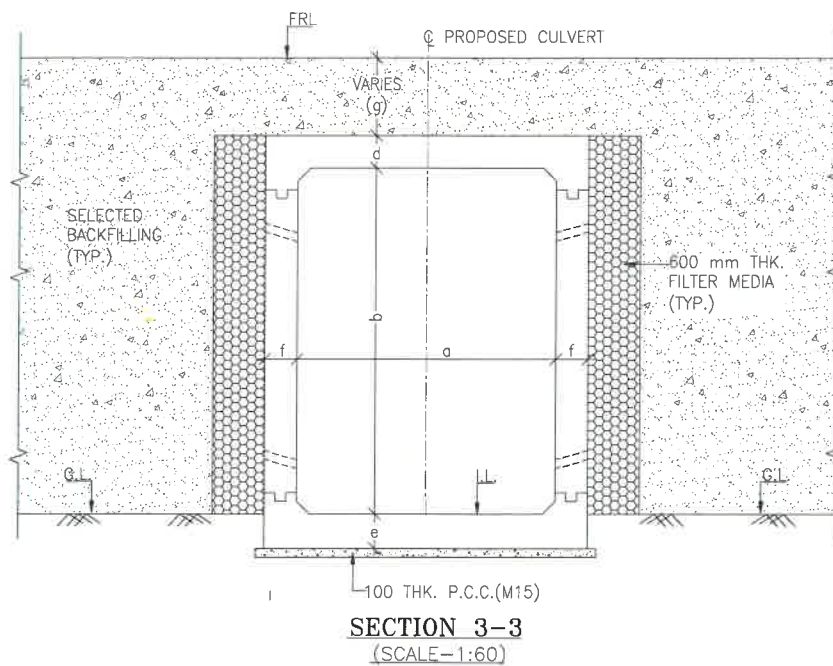
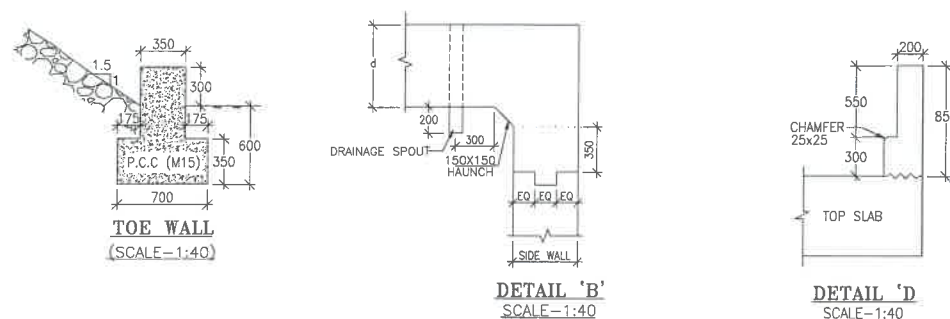


TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X3X4	3000	4000	300	350	350

TABLE-II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	29+501	1X3X4	1255.323	1250.423	1250.523	600	TSC-4



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRAPROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



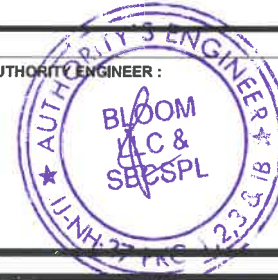
Hindia Engineers Pvt. Ltd.
Address: 1/7, Block, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028881

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar Gopabara Bypass,
Jaipur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT

DRG. NO.

DD/IMP-JIR/ BOX/GAD/01

SHEET: REV.

02 OF 02 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

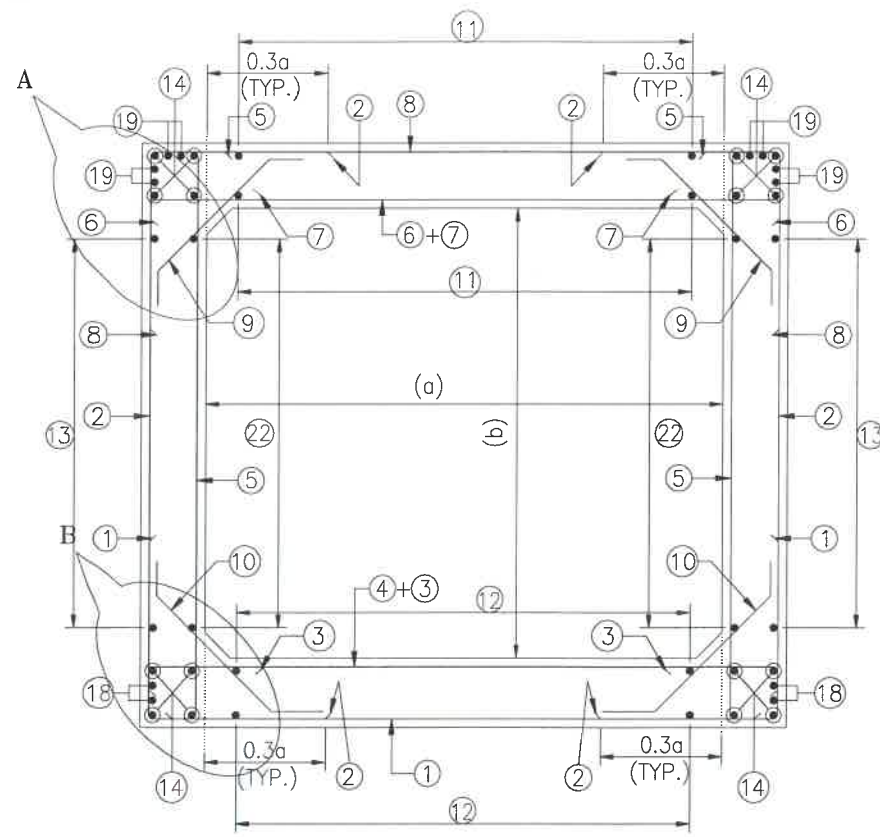
NAVEEN

DESIGNED

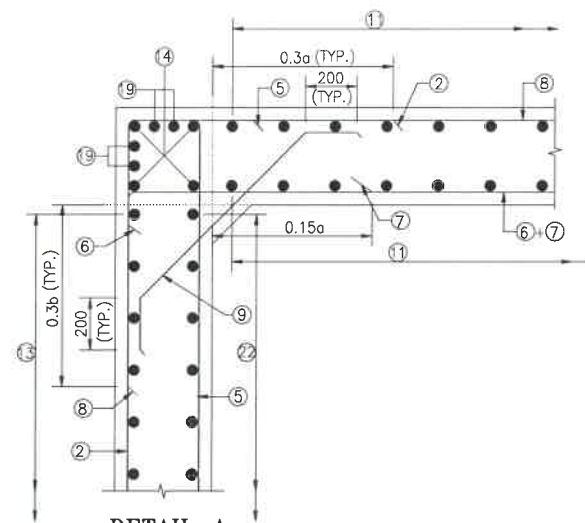
STRUCTURE ENGINEER

CHECKED

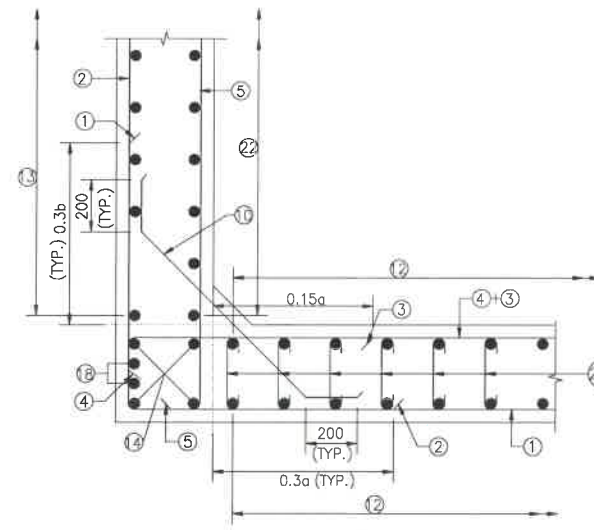
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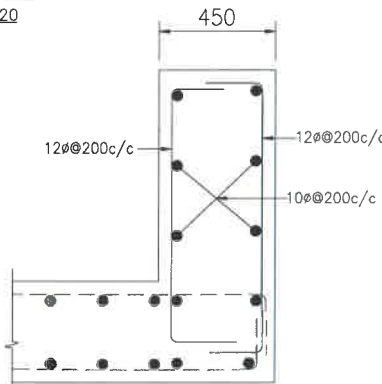
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



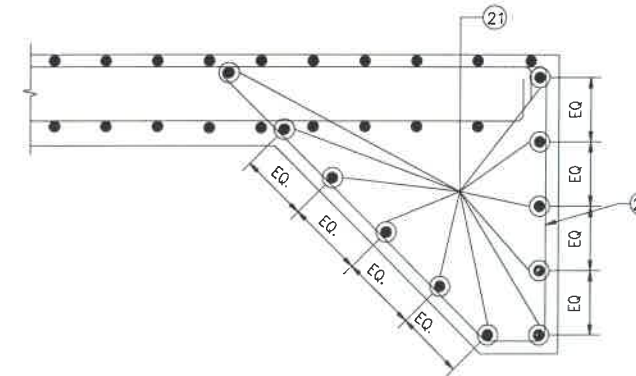
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

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LEGEND :-

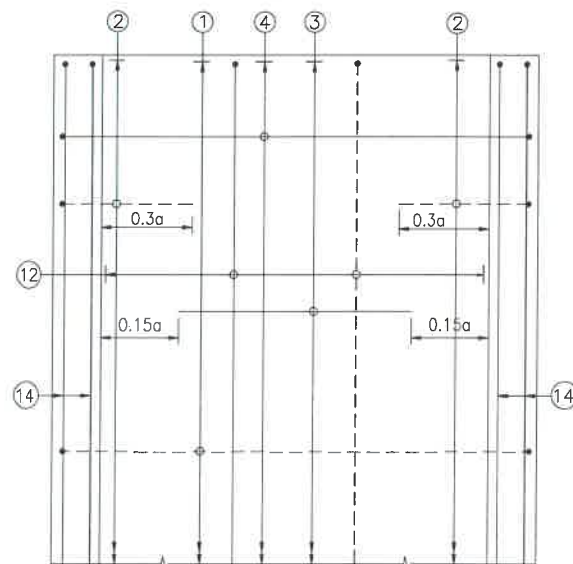
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

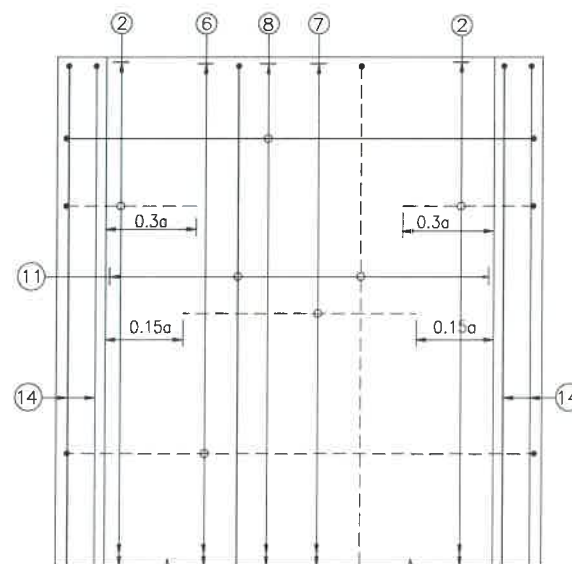
BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	—	16	200 C/C
②	—	12	180 C/C
③	—	12	200 C/C
④	—	12	200 C/C
⑤	—	12	180 C/C
⑥	—	12	180 C/C
⑦	—	12	180 C/C
⑧	—	12	180 C/C
⑨	—	10	180 C/C
⑩	—	10	180 C/C
⑪	—	8	225 C/C
⑫	—	8	200 C/C
⑬	—	8	200 C/C
⑭	—	10	12 NOS.
⑮	—	NOT IN USE	NOT IN USE
⑯	—	NOT IN USE	NOT IN USE
⑰	—	NOT IN USE	NOT IN USE
⑱	—	10	4 NOS.
⑲	—	10	8 NOS.
⑳	—	12	200 C/C
㉑	—	12	20 NOS.
㉒	—	8	270 C/C
㉒a	—	8DIA.200(LONG. DIRECTION) 400(TRANS. DIRECTION)	
㉒b	—	NOT IN USE	

TRAFFIC DIRECTION →

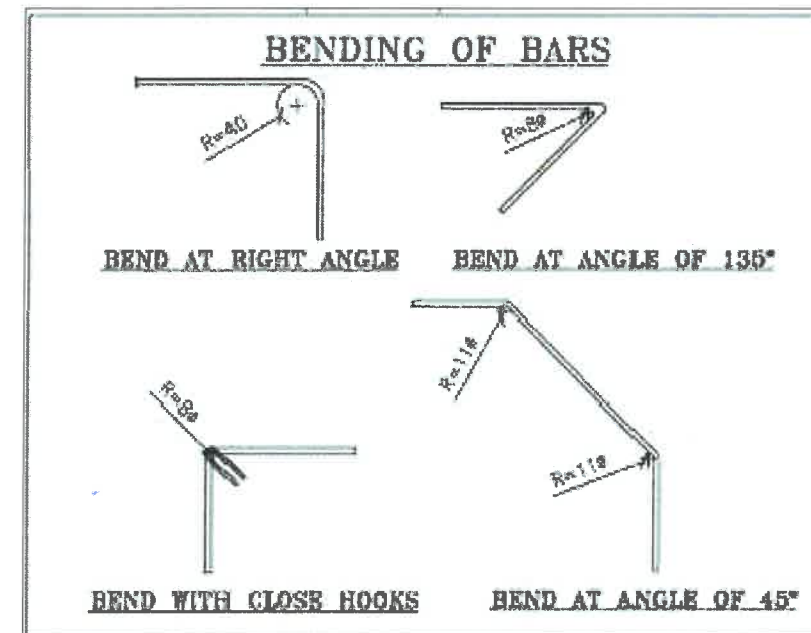


PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR :



M/S. CMM INFRASTRUCTURE PROJECTS LTD.

DESIGN DIRECTOR :



PROOF CONSULTANT :



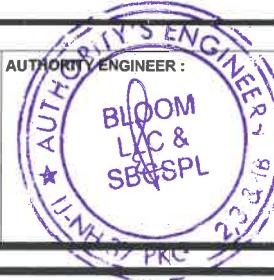
Hinda Engineers Pvt. Ltd.
Address: 101, Main Road, DLF Phase-1,
Gurgaon-Faridabad Road Haryana, INDIA-122002,
Phone No.-0124-4028681

SAFETY CONSULTANT :



Antique Buildtech Pvt. Ltd.
Address: 101, Main Road, DLF Phase-1,
Jaipur-302018 (Rajasthan) Phone No. 0141-3780303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER :



DRAWING SCALE :

NTS

DRAWING TITLE :

TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X3X4

DRG. NO.

DD/IMP-JIR/ RF/01

SHEET: REV.

01 OF 01 R0

PROJECT NAME:-

WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021

NAVEEN

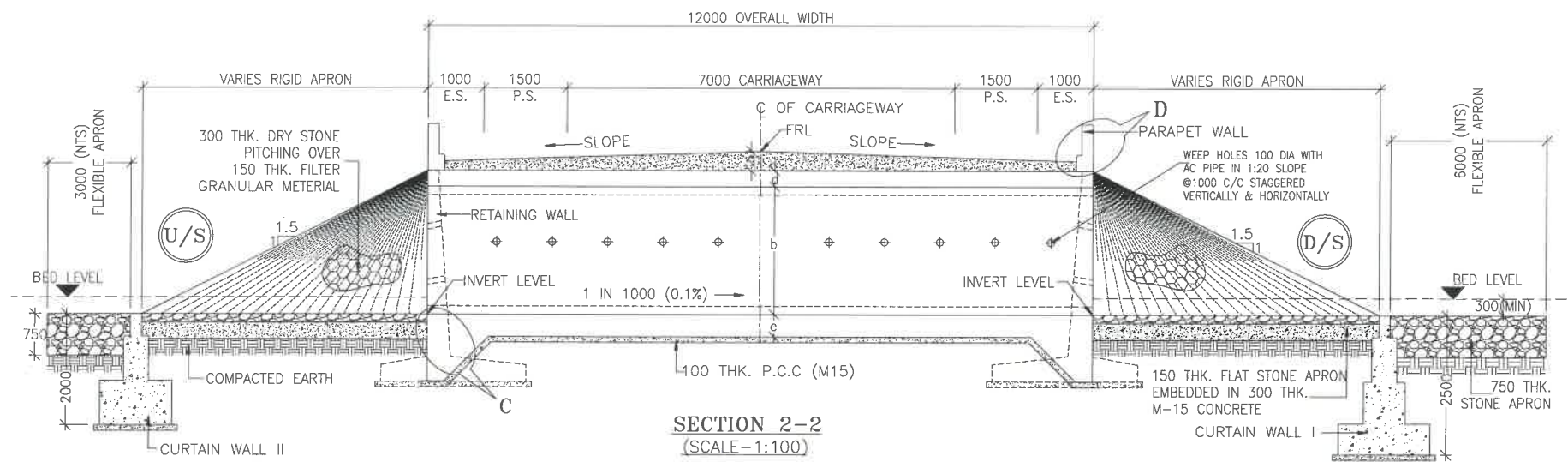
DESIGNED

STRUCTURE ENGINEER

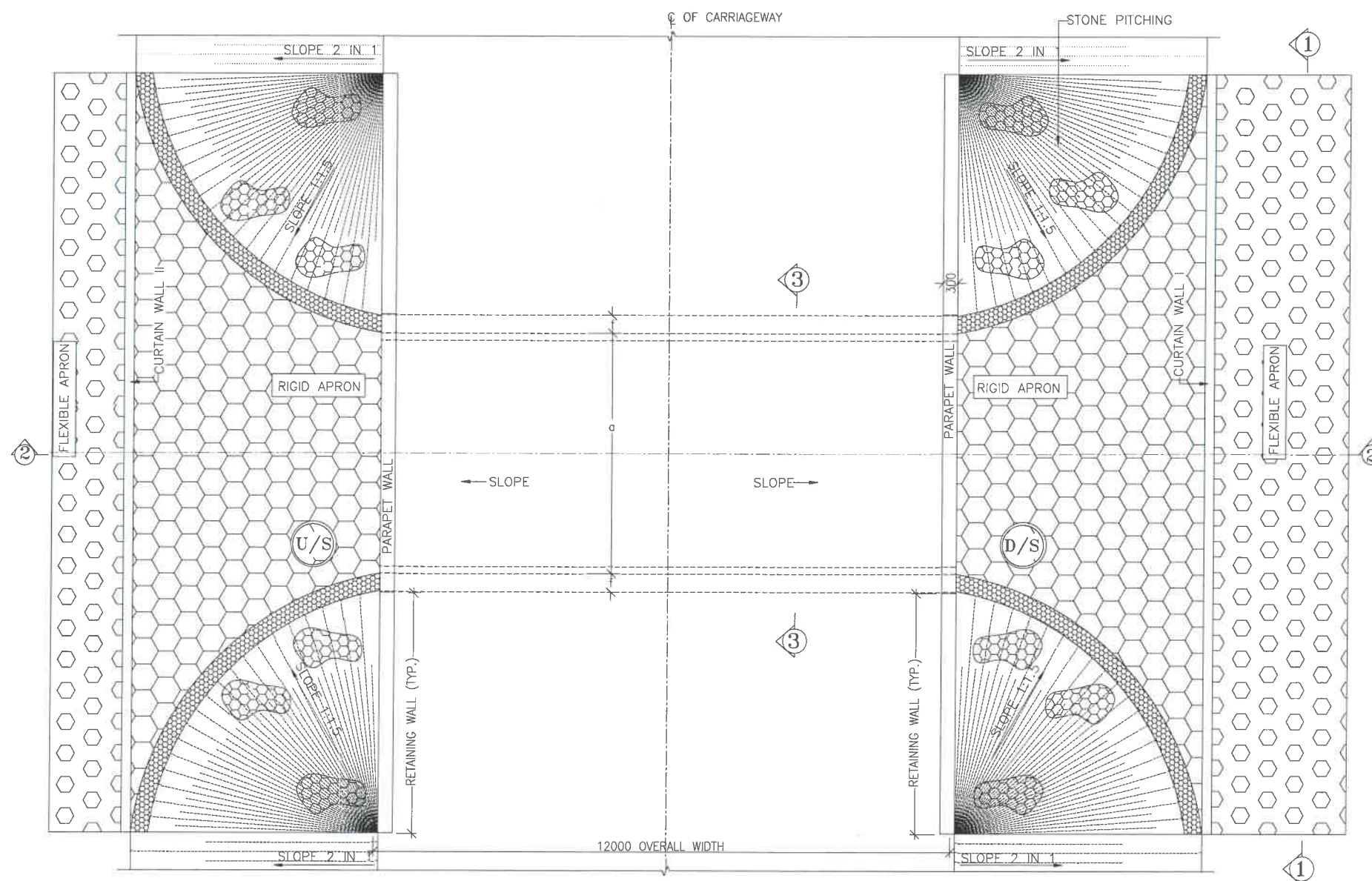
CHECKED

APPROVED

BOX CULVERT DRAWING _1X5X3



SECTION 2-2
(SCALE-1:100)



PLAN
(SCALE-1:100)

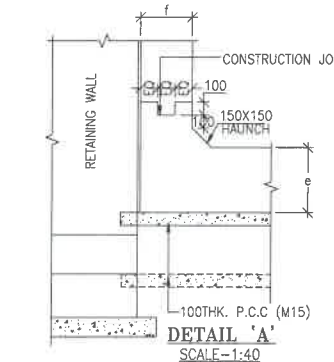
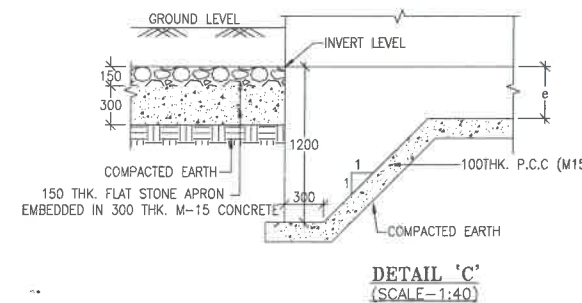
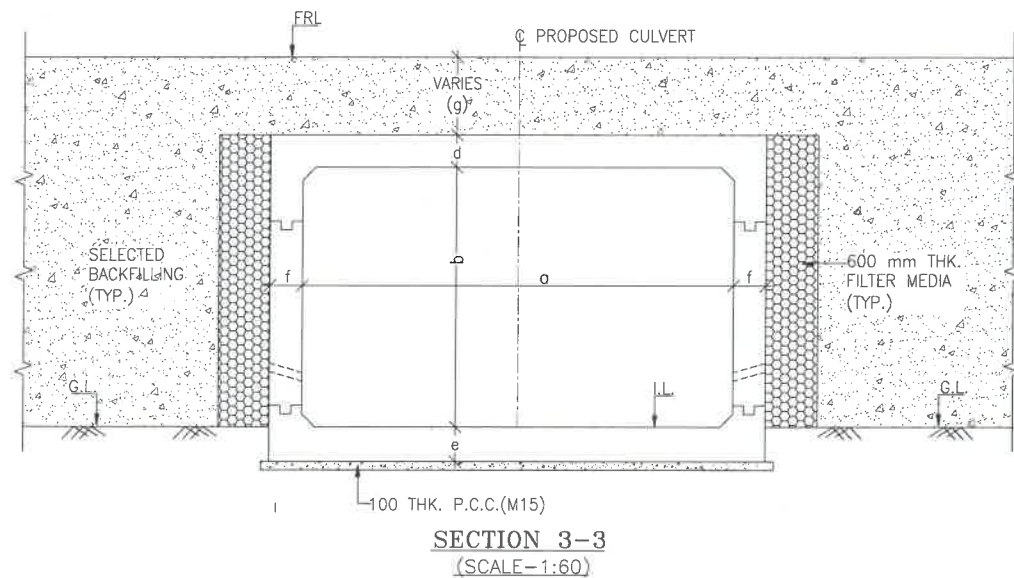
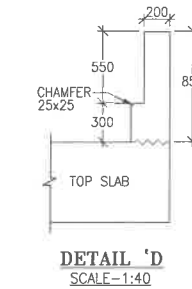
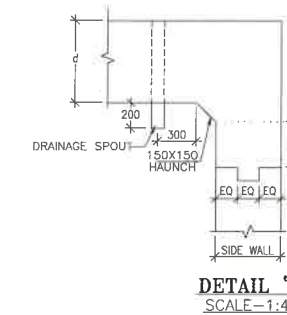
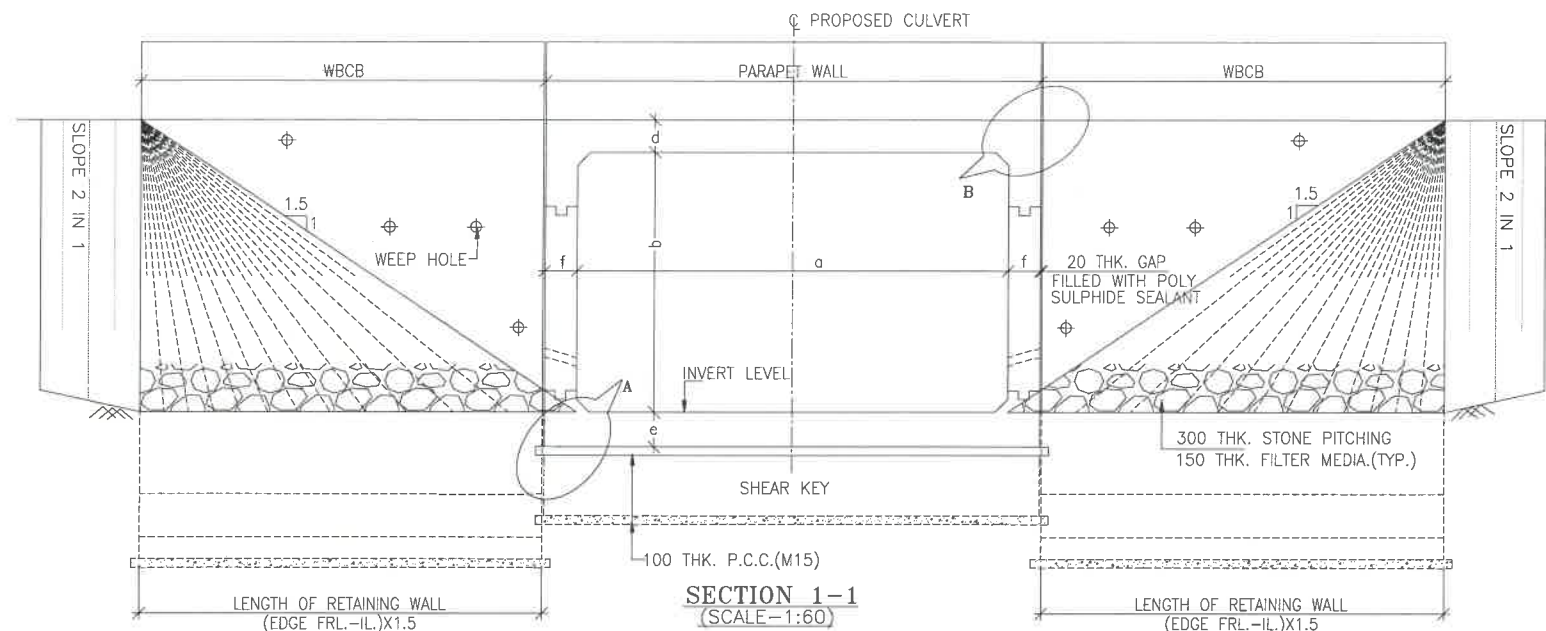
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
3. GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
a) RCC BOX.....M30
b) RCC RETAINING WALL.....M30
c) PCC LEVELLING COURSE.....M15
d) PCC CURTAIN WALL.....M15
e) PARAPET WALL.....M30
4. GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
5. BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.0T/M^3$
6. COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
7. FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
8. 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IRC-78-2014.
9. ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
10. BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
11. SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR: M/S. CMM INFRA PROJECTS LTD.	DESIGN DIRECTOR: 	PROOF CONSULTANT: Hindus Engineers Pvt. Ltd. Address: 1st Floor, DLF Phase-1, Gurgaon-Faridkot Road, Haryana, INDIA-122002, Phone No.-0124-4028681	SAFETY CONSULTANT: Antique Buildtech Pvt. Ltd. Address: 1st Floor, Gopalpura Bypass, Jaipur-302018 (Rajasthan) Phone No. 0141-2760303 Email : info@antiquebuildtech.com	AUTHORITY'S ENGINEER: BLOOM LLC & SBOSPL	DRAWING SCALE: NTS	DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT	DRG. NO. DD/IMP-JIR/ BOX/GAD/01	SHEET: 01 OF 02	REV. R0
PROJECT NAME:- WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL LENGTH=17.180 KM) (PG-2) IN THE STATE OF MANIPUR ON ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC) MODE.						DATE AUG-2021 DRAWN STRUCTURE DRAFTSMAN DESIGNED CHECKED APPROVED				



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ROAD PLAN AND PROFILE DRAWING.
- GRADE OF CONCRETE FOR VARIES ELEMENTS SHALL BE AS FOLLOWS:
 - RCC BOX.....M30
 - RCC RETAINING WALL.....M30
 - PCC LEVELLING COURSE.....M15
 - PCC CURTAIN WALL.....M15
 - PARAPET WALL.....M30
- GRADE OF STEEL SHALL BE Fe-500 (H.Y.S.D. REBAR CONFORMING TO IS-1786)
- BACK FILLING BEHIND THE STRUCTURE SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC:78-2014 HAVING PROPERTIES $\phi < 30^\circ$, $C=0$, $\gamma = 2.01/M^3$
- COMPRESSIBLE FILLER BOARD SHALL BE PROVIDED IN ALL EXPANSION GAPS AND SEALED WITH POLY-SULPHIDE SEALANT.
- FOUNDATION OF BOX SHALL BE PLACED OVER A FIRM STRATA HAVING BEARING CAPACITY EQUAL TO $10T/M^2$ IN GENERAL. IF THE MATERIAL ENCOUNTERED IS SOFT, SPONZY OR OTHER UNSUITABLE SOIL, SUCH UNSUITABLE MATERIAL SHALL BE TOTALLY REMOVED TO SUCH DEPTH, WIDTH & LENGTH, AS DIRECTED BY THE ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL & THOROUGHLY COMPACTED UP TO THE SPECIFIED LEVEL.
- 600MM THICK FILTER MEDIA SHALL BE PROVIDED BEHIND SIDE WALLS AND WING WALLS AS PER IR:78-2014.
- ALL THE LEVELS AND CAMBERS TO BE VERIFIED WITH RESPECT TO PLAN & PROFILE DRAWINGS BEFORE EXCAVATION. ANY DISCREPANCY NOTED SHOULD BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- BACK FILLING BEHIND WALLS SHALL BE DONE SIMULTANEOUSLY ON EITHER SIDE OF THE STRUCTURE WITH HEIGHT DIFFERENCE NOT MORE THAN 1.0M. BACK FILLING SHALL BE DONE ONLY AFTER THE TOP SLAB IS CONCRETED AND CURED FOR 14 DAYS.
- SPRADING & COMPACTED OF SAND WILL BE DONE IN ACCORDANCE WITH CLAUSE 401.3.2 OF SPECIFICATION FOR ROAD & BRIDGE WORKS BY MINISTRY OF ROAD TRANSPORT & HIGHWAY

LEGEND:-

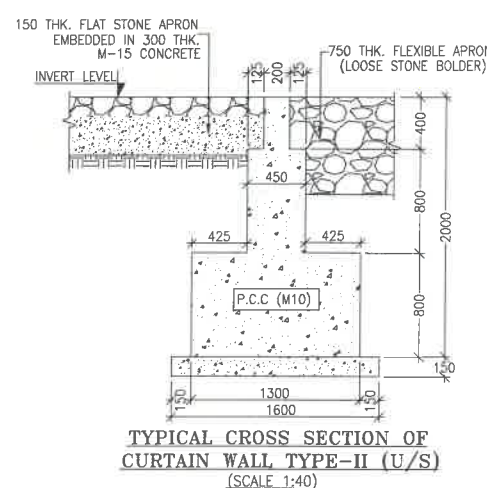
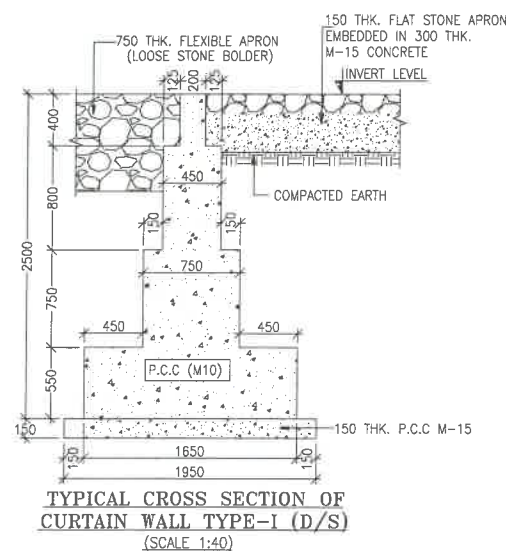
FRL	-	FINISHED ROAD LEVEL
LVL	-	LEVEL
GL	-	GROUND LEVEL
IL	-	INVERT LEVEL
EQ	-	EQUAL
F.P.	-	FOOTPATH
U/S	-	UP STREAM
D/S	-	DOWN STREAM
P.S.	-	PAVED SHOULDER
E.S.	-	EARTHEN SHOULDER

TABLE SHOWING SILENT DIMENSIONS

BOX CELL DESIGNATION	a (mm)	b (mm)	d (mm)	e (mm)	f (mm)
1X5X3	5000	3000	325	375	375

TABLE -II

SR. NO.	DESIGN CH.	SPAN	FRL	IL DS	IL US	CUSHION(g) IN MM	TCS
①	16+119	1X5X3	796.102	792.177	792.277	600	TSC-2



CLIENT :

 NATIONAL HIGHWAYS & INFRASTRUCTURE
 DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:

 M/S. CMM INERAPROJECTS LTD.


DESIGN DIRECTOR:


PROOF CONSULTANT:

 Hindia Engineers Pvt. Ltd.
 Address: 191, Mohan Nagar, DLF Phase-1,
 Gurgaon-Faridabad Road Haryana, INDIA-122002,
 Phone No.-0124-4028681

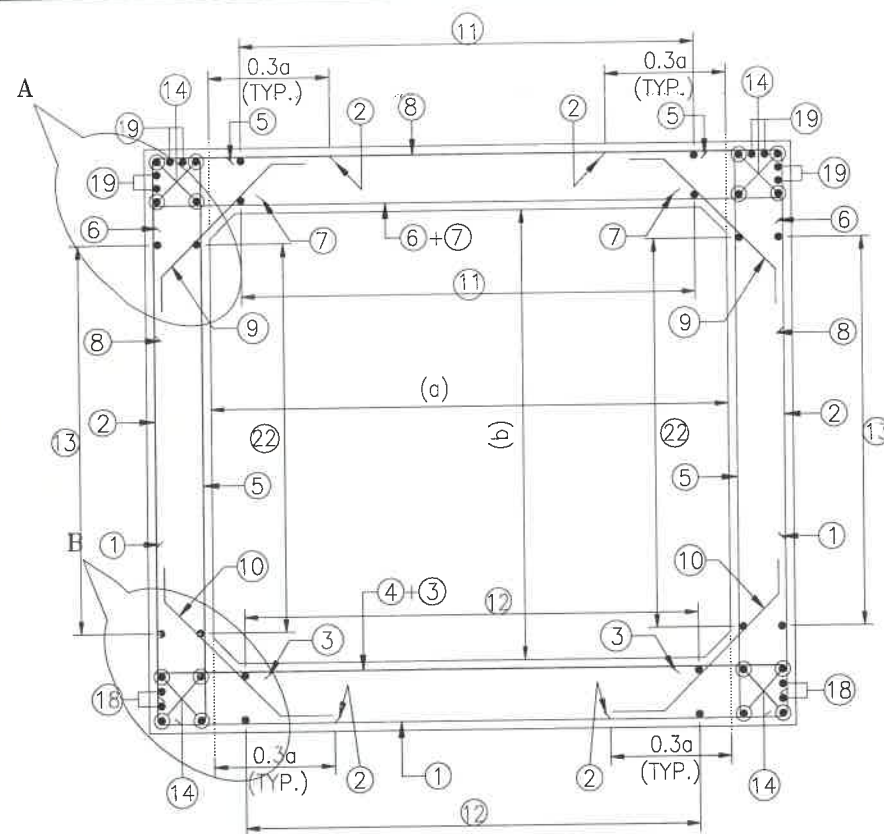
SAFETY CONSULTANT:

 Antique Buildtech Pvt. Ltd.
 Address: 191, Mohan Nagar, DLF Phase-1,
 Gurgaon-Faridabad Road Haryana, INDIA-122002,
 Phone No.-0124-4028681

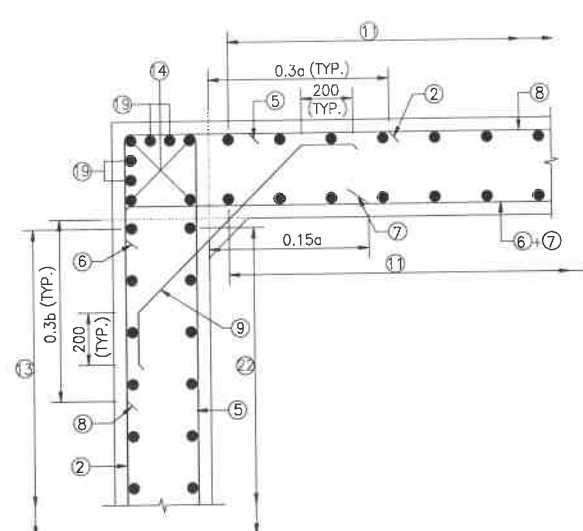
AUTHORITY ENGINEER:


DRAWING SCALE:
 NTS
 DRAWING TITLE:
 TYPICAL GENERAL ARRANGEMENT
 DRAWING FOR BOX CULVERT
 PROJECT NAME:-
 WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
 SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
 LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
 PROCUREMENT & CONSTRUCTION (EPC) MODE.

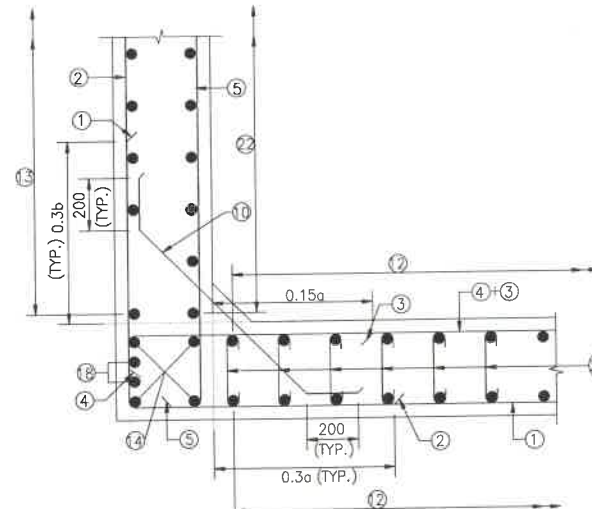
DRG. NO.
 DD/IMP-JIR/ BOX/GAD/01
 SHEET: 02 OF 02
 REV. R0
 DATE AUG-2021
 DESIGNED
 CHECKED
 APPROVED
 STRUCTURE ENGINEER



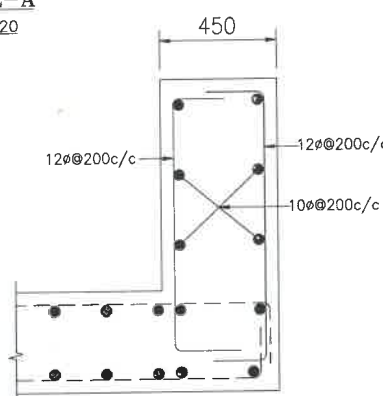
REINFORCEMENT DETAILS
OF BOX CULVERT
SCALE : 1:40



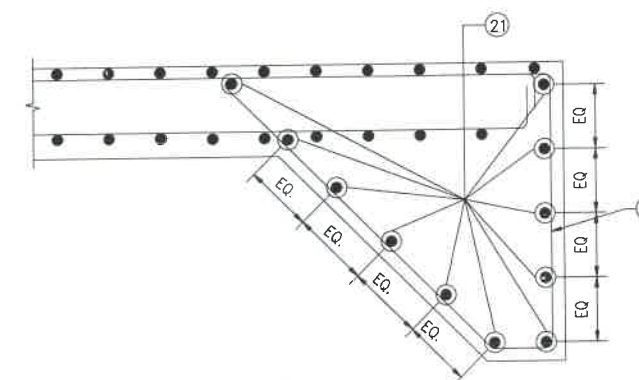
DETAIL-A
SCALE-1:20



DETAIL-B
SCALE-1:20



DETAILS OF RCC PARAPET
SCALE-1:20



DETAIL OF SHEAR KEY
SCALE : 1:20

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 75mm AT EARTHEN SIDE AND 40mm AT OTHER SIDE.
4. ALL REINFORCEMENT BARS SHALL BE H.Y.S.D BARS HAVING SPECIFIED MINIMUM 0.2% PROOF STRESS OF 500MPa CONFORMING TO IS:1786.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BAR SHALL BE 50 X DIA. OF BAR.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT GENERAL ARRANGEMENT DRAWINGS.
7. JOINT OR LAPPING OF BARS SHALL BE SUITABLE STAGGERED AS PER CLAUSE 304-6 OF IRC: 112.
8. FULL SCALE ELEVATION OF THE BARS SHALL BE LINED OUT ON A PLAIN PLASTERED FLOOR TO THE DIMENSIONS SHOWN ON THE DRAWING SO AS TO GET CORRECT CLEARANCE BETWEEN DIFFERENT BARS AND THEN THE BARS SHALL BE BENT TO PROPER SHAPE.

LEGEND :-

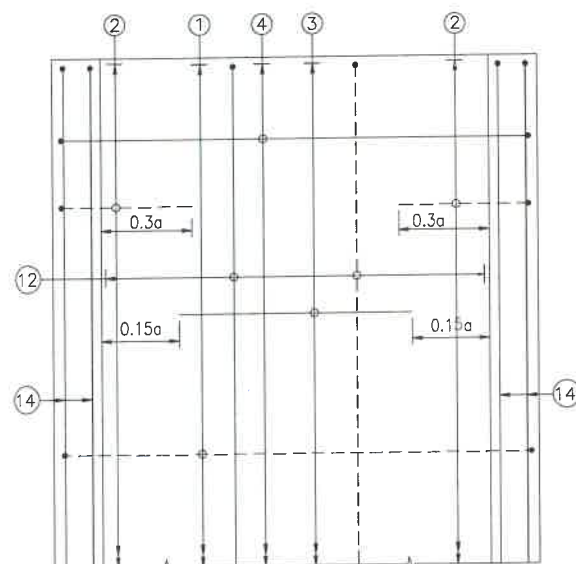
—	TOP FACE BARS/OUTER FACE BARS
- - -	BOTTOM FACE BARS/INNER FACE BARS

SCHEDULE OF REINFORCEMENT

(SUBJECT TO SITE CHECK)

BAR MARK	SHAPE	BAR DIA.	SPACING/Nos.
①	—	16	200 C/C
②	—	16	200 C/C
③	—	16	200 C/C
④	—	16	200 C/C
⑤	—	12	200 C/C
⑥	—	12	200 C/C
⑦	—	16	200 C/C
⑧	—	12	200 C/C
⑨	—	10	200 C/C
⑩	—	10	200 C/C
⑪	—	10	200 C/C
⑫	—	10	200 C/C
⑬	—	10	200 C/C
⑭	—	10	12 NOS.
⑮	—	NOT IN USE	NOT IN USE
⑯	—	NOT IN USE	NOT IN USE
⑰	—	NOT IN USE	NOT IN USE
⑱	—	10	4 NOS.
⑲	—	10	8 NOS.
⑳	—	12	200 C/C
㉑	—	12	20 NOS.
㉒	—	8	200 C/C
㉓	—	10DIA.400(LONG. DIRECTION) 200(TRANS. DIRECTION)	

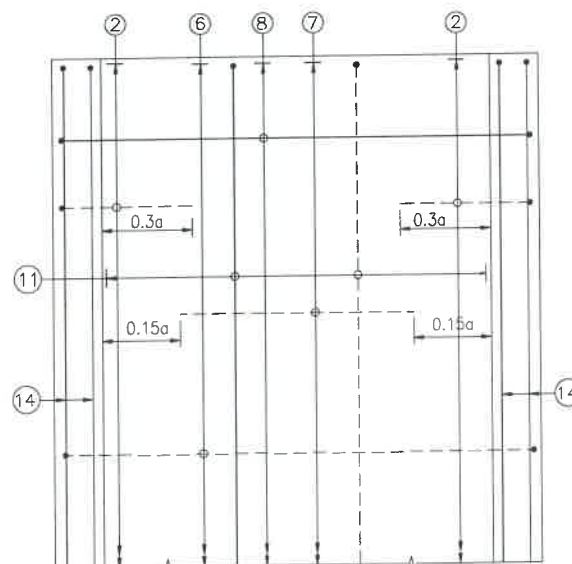
TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF BOTTOM SLAB

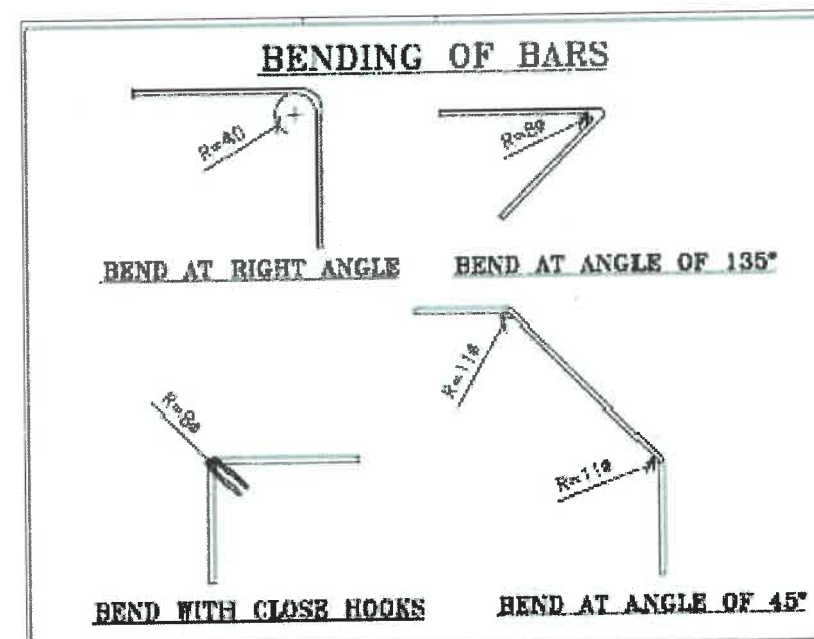
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40

TRAFFIC DIRECTION →



PLAN SHOWING REINFORCEMENT
DETAIL OF TOP SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
SCALE : 1:40



CLIENT :
NHAI
NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD

EPC CONTRACTOR:
M/S. CMM INFRA PROJECTS LTD.

DESIGN DIRECTOR:

DESIGN DIRECTOR

PROOF CONSULTANT:

Hindia Engineers Pvt. Ltd.
Address: 337, Mohan Nagar, Gurgaon, Haryana-122002,
Gurgaon-Faridabad Road, Gurgaon, Haryana-122002,
Phone No.-0124-4028801

SAFETY CONSULTANT:

Antique Buildtech Pvt. Ltd.
Address: 191, Mohan Nagar, Gurgaon, Haryana-122002,
Jalpur-302018 (Rajasthan) Phone No. 0141-2760303
Email : info@antiquebuildtech.com

AUTHORITY ENGINEER:

BLOOM LC & SBCSPL
U.N.H.37 PKG 1.23 &

DRAWING SCALE:
NTS

DRAWING TITLE:
TYPICAL REINFORCEMENT DETAILS
OF BOX CULVERT FOR 1X5X3

DRG. NO.
DD/IMP-JIR/ RF/01

SHEET:
01 OF 01
REV.
R0

PROJECT NAME:-

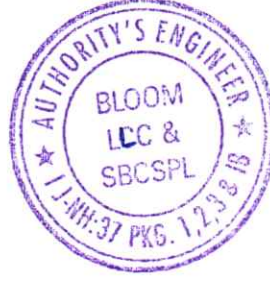
WIDENING TO 2 (TWO) LANE WITH PAVED SHOULDER OF IMPHAL TO JIRIBAM
SECTION OF NH-37 FROM DESIGN CHAINAGE 15.940 KM TO 33.120 KM (TOTAL
LENGTH=17.180 KM) (PKG-2) IN THE STATE OF MANIPUR ON ENGINEERING,
PROCUREMENT & CONSTRUCTION (EPC) MODE.

DATE AUG-2021
DESIGNED
STRUCTURE ENGINEER
DRAWN
STRUCTURE DRAFTSMAN
CHECKED
APPROVED

Bloom-SBCSPL/2106/538

Date: 03.09.2022

To,
M/s CMM Infra projects Ltd.
108, Shalimar Corporate Centre, 8-B,
South Tukoganj, Indore (M/P) – 452001
Email: cmm.manipur@gmail.com
Ph: +918459523681, 8415902349



Sub: Consultancy services for Authority's Engineer for Supervision of:

Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 15.940 km to 33.120 Km (Total length=17.180 Km) (PKG-2) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode. **Reg: Approval of CC drain (M15 Grade)**

Dear Sir,

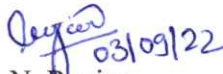
With ref. to the above cited matter, Authority Engineer gone through the submitted drawing of CC drain the observations as below:

- (1) In the contract agreement of schedule-B, Road side drain you have to construct R.R. masonry Trapezoidal Drain of Length-11453 mtr.
- (2) Instead of R.R. masonry Trapezoidal drain, Typical section of CC drain to be constructed in this project highway.
- (3) Authority Engineer reviewed the typical section of CC drain are found generally in order as per IRC: SP:84-1998.

In the view of all Authority Engineer recommended for change R.R. masonry to CC drain with M15 Grade of concrete with undertaking given from your end such that in future you are not calming any COS as per Contract agreement Article-13.

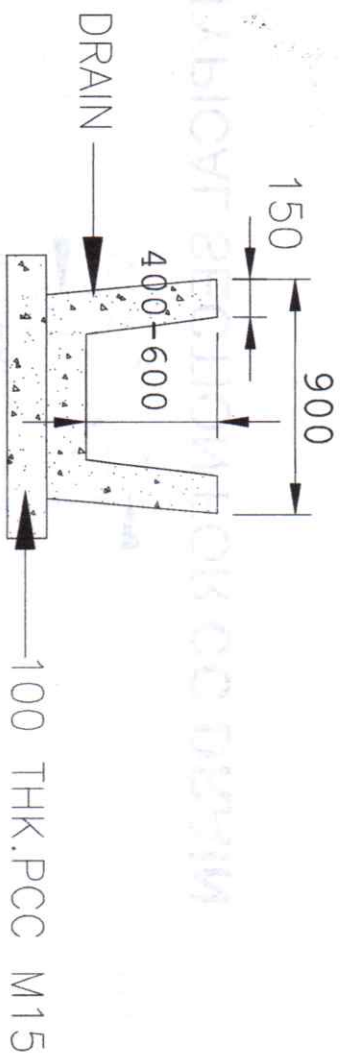
This is for your information and record please.

With Best Regards,
For, Bloom Companies LLC(Bloom) in Association
With Shree Bhawani Consultancy Services Pvt. Ltd.


L.N. Ranjan
(Team Leader)
Authority's Engineer
IJ-NH:37 Pkg. 1,2,3 & IB

Copy to:

1. General Manager PMU-Noney, Manipur for kind information.
2. SBCSPL H.O. Bhopal (M.P) for kind information.



TYPICAL SECTION FOR CC DRAIN



- NOTES:
1. All dimensions are in mm unless specified.
 2. Grade of Concrete is to be M15
 3. Design as per IRC SP 48:1998

CLIENT:

NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD



EPC CONTRACTOR:



CHM
CHM INFRA PROJECTS LTD.

DESIGN DIRECTOR:



PROJECT CONSULTANT:



Hindustan Engineering Pvt. Ltd.
Pune, Maharashtra

SAFETY CONSULTANT:



Ardhya Builders Pvt. Ltd.
Pune, Maharashtra

AUTHORITY ENGINEER:

M/s Bloom Companies LLC
In Association With
Sri Bhavani Consultancy
Services Pvt Ltd

DRAWING SCALE:

NTS

DRAWING TITLE:

TYPICAL DETAILS OF
CC Drain (M15)

DRG. NO.

HEP/STB/RM/001

SHEET:

01 OF 01

REV.

RD

DATE:

JUL-2021

DESIGNED

MAHEEN

CHECKED

APPROVED

DESIGNED

MAHEEN

CHECKED

APPROVED

Bloom-SBCSPL/2106/327

Date: 05th May, 2022

To,
CMM Infraproject Ltd,
108, Salimar Corporate Centre,
8-B South Tukoganj,
Indore-452001
Madhya Pradesh
E-mail: cmm.kmundra@gmail.com

Sub: Consultancy services for Authority's Engineer for Supervision of:
Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 3.275 km to 15.940 Km (Total length=12.665 Km) (PKG-1) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode. **Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 15.940 km to 33.120 Km (Total length=17.180 Km) (PKG-2) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode.** Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 33.000 km to 66.390 Km (Existing Chainage from km 33.395 to km 67.496) (PKG-III) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode. Construction of 4-Lane Bridge over Irang River on Imphal- Jiribam road section (95.500Km) NH- 37 (Old NH-53) in the State of Manipur on EPC mode

Reg: Approval Drawing of Breast wall (Plum concrete)

Ref: CMM/IJ/NH-37/21-22/90 on dated: 27.04.2022

Dear Sir,

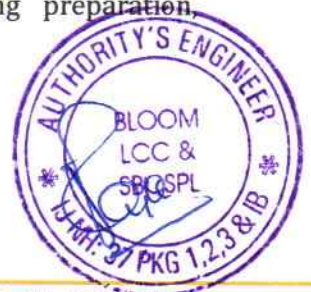
This is in reference to your letter cited above requesting drawing approval of Breast wall for Plum concrete. The submitted Breast wall drawing checked and reviewed as per IRC SP :48-1998 specification found satisfactory and approved.

Precaution required during production of concrete at site.

1. conducted jointly trial of Plum mix design at site laboratory in presence of Authority's Engineer representative at site Laboratory.
2. The specified Stone size shall be always kept as per mention drawing.
3. The specified water/cement ratio shall be always kept constant as per mentioned value suitable adjustment shall also be apply due to variation in moisture content.
4. The gradation of Coarse and Fine aggregate should be checked as per frequency to ensure that the specified gradation is maintained as per MoRT&H specification.
5. Plum Concrete mix should be uniform and homogeneous during preparation, transportation and placing.

This is for your kind information and favorable action as early as possible.

Assuring you the best of our Services at all the times.



With Best Regards,
For, Bloom Companies LLC(Bloom) in Association
With Shree Bhawani Consultancy Services Pvt. Ltd.



05/05/2022

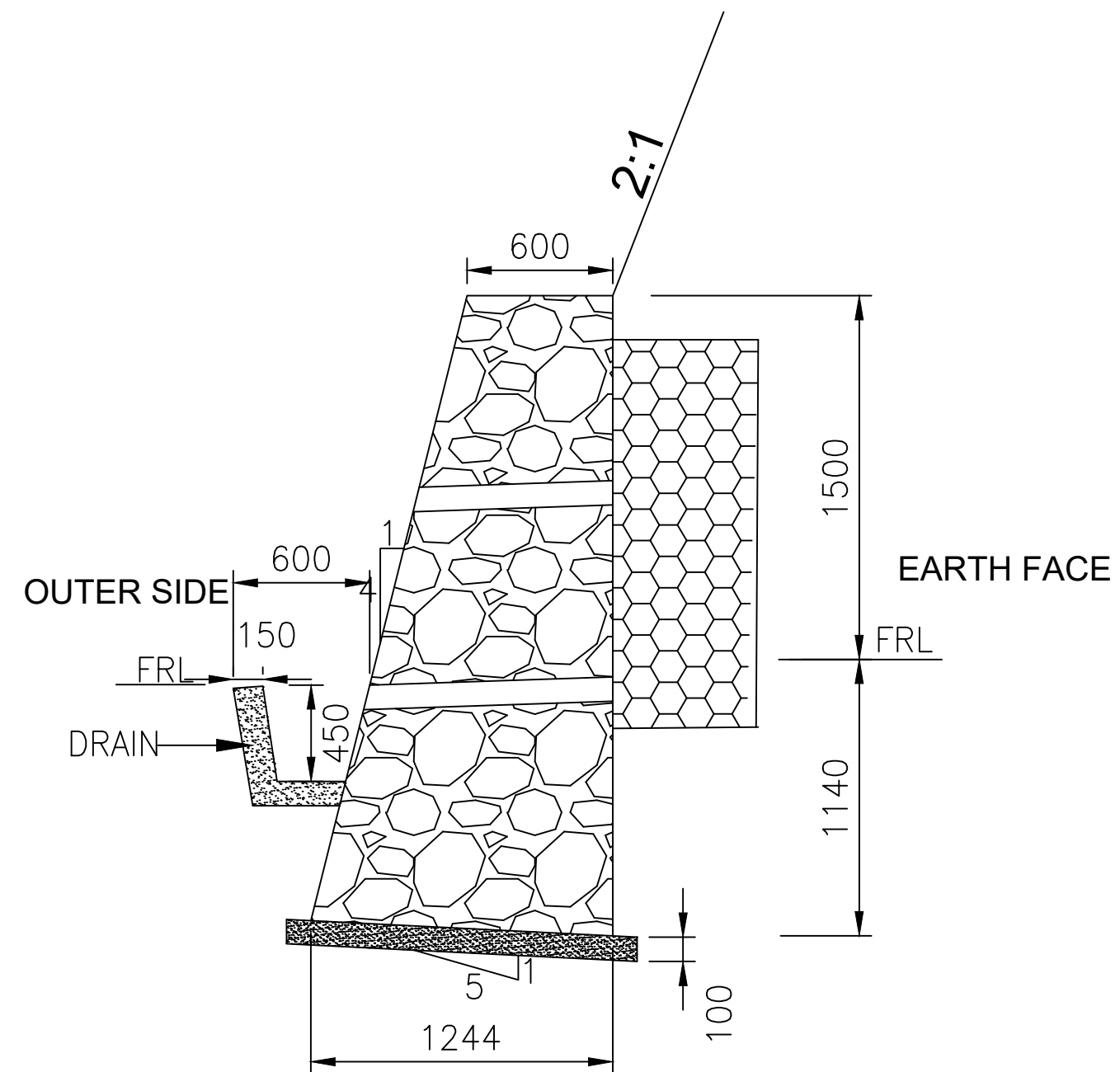
Authorized Signatory,
Jagadish Rajkhowa
Acting Team Leader
Acting Team Leader
Authority's Engineer
IJ-NH: 37 Pkg 1 2,3 & 1b



Encl: Breast wall Drawing (Plum concrete)

Copy:

- 1- Deputy General Manager PMU-Noney Imphal for Kind Information.



Plum Concrete 1.5m high
All dimension in 'mm'

NOTES:

1. All dimensions are in mm unless specified.
2. Weep holes of 100 mm dia. opening shall be provided at 1000 m interval and should be staggered both horizontally and vertically.
3. 600mm width of filter media composed of good quality stones (50-100mm) shall be provided.
4. A separation gap of 50-100mm shall be provided at maximum of 8m length of wall. Also gaps shall be provided at bends and junctions.
5. The wall shall be properly cured for a minimum of two weeks to attain good bonding strength.
6. The size of stone Plums may be from 150-300 mm. The maximum dimension of these stones or Plums shall not exceed 1/3RD the least dimension of the member.
7. Plum Concrete 1:2:4 (1 cement: 2 Sand : 4 Graded stone aggregate 40mm nominal size) with 50% Plums.
8. Breast wall design as per IRC SP 48:1998.

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD	EPC CONTRACTOR:  "CMM" M/S. CMM INFRAPROJECTS LTD.	DESIGN DIRECTOR: 	PROOF CONSULTANT:  Hindia Engineers Pvt. Ltd. Address: 337/4, Block-2, Phase-1, Gurgaon-Faridabad Road Haryana, INDIA-122002, Phone No.-0124-4028681	SAFETY CONSULTANT:  Antique Buildtech Pvt. Ltd. Address: 191, Mohan Nagar, Gopalpura Bypass, Jaipur-302018 (Rajasthan) Phone No. 0141-2760303 Email : info@antiquebuildtech.com	AUTHORITY ENGINEER : M/s Bloom Companies LLC In Association With Shri Bhavani Consultancy Servico Pvt. Ltd	DRAWING SCALE: NTS PROJECT NAME:- Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH-37 from Design Chainage 13.940 km sa 33.120 Km (Total length-17.180 Km) (PKG-2) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode,	DRAWING TITLE: TYPICAL DETAIL OF BREAST WALL (PLUM CONCRETE)	DRG. NO. HEPL/STR/RRM/001 DATE - JUL.-2021 DESIGNED Highway Engineering	SHEET: 01 OF 01 REV. R0 APPROVED ---
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