

Ref: AGICL/A.E/PKG-05/2024/322

Date- 12/06/2024

To,
The Authorized Signatory/ Project Manager
M/S KAMAC Engineers Pvt. Ltd.
F0201, City Centre Office Block,
Uttrayon Matigara, Siliguri,
Dist: Darjeeling, West Bengal.
PIN: 734010
E-Mail- kamacengineers.ledobypass@gmail.com

SUB: Strengthening/Improvement to 2- Lane with Paved Shoulder from KM 27+150 (Golai Gaon) to KM 47+628 (Ledo) on existing Dibrugarh to Ledo section with proposed Digboi Bypass (Green Field and Brown Field) (2-Lane+PS) of NH-315 (Old NH-38) in Tinsukia District in the State of Assam on EPC mode. **(Pkg. 5):**
Reg._ Approval of Box Culverts .

- Ref: i) Our letter No. AGICL/AE/PKG-05/2024/219, Dated. 01/05/2024.
ii) Your letter No. KEPL/NHIDCL/D-L/2024/064, Dated. 08/04/2024.
iii) Our letter No. AGICL/AE/PKG-05/2024/116, Dated. 20/03/2024.
iv) Your letter No. KEPL/NHIDCL/D-L/2024/034, Dated. 13/03/2024.

Dear Sir,

The EPC Contractor has re-submitted with compliance the Design & Drawing of Box culvert vide letter dated 08-04-2024 for review and Approval at Ch . 46+009. Ch. 47+ 298 and 47+ 487.

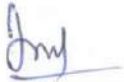
The same has been reviewed & found in order. The EPC contractor has advised to submit 3 sets of Drawing for GFC.

This is for your kind information and further action.

Thanking you and assuring our best services at all times

With Regards

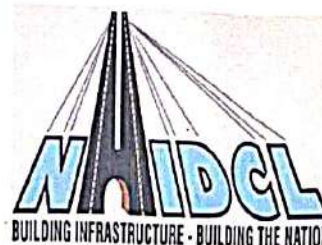
For, Almondz Global Infra Consultant Limited In JV with Ayoleeza Consultant Private Limited.



Pramod Kumar
Team Leader
(Authority Engineer)

Copy to:

- i) GM. (P) PMU, Dibrugarh (Assam) for kind information please.
ii) The Almondz Global infra consultant Ltd, HO, for kind information.

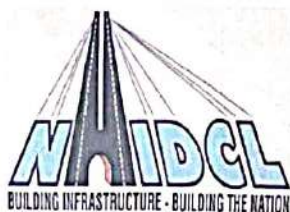


**NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.**

**WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(GOLAI GOAN) TO KM 47+682 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED
MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN
TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-5)**

STRUCTURE DRAWING
BOX CULVERT

CLIENT:



**NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.**

DESIGN CONSULTANT:



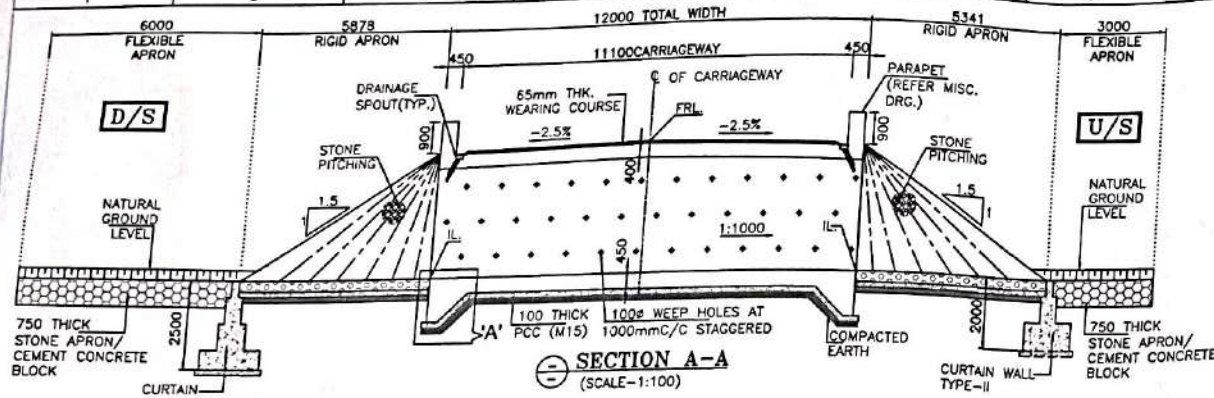
A.V. CONSTRUCTION

**1ST FLOOR, WZ-1240, PALAM EXTENSION,
BOSCO ASHRAM WALI GALI, NEW DELHI 110045**

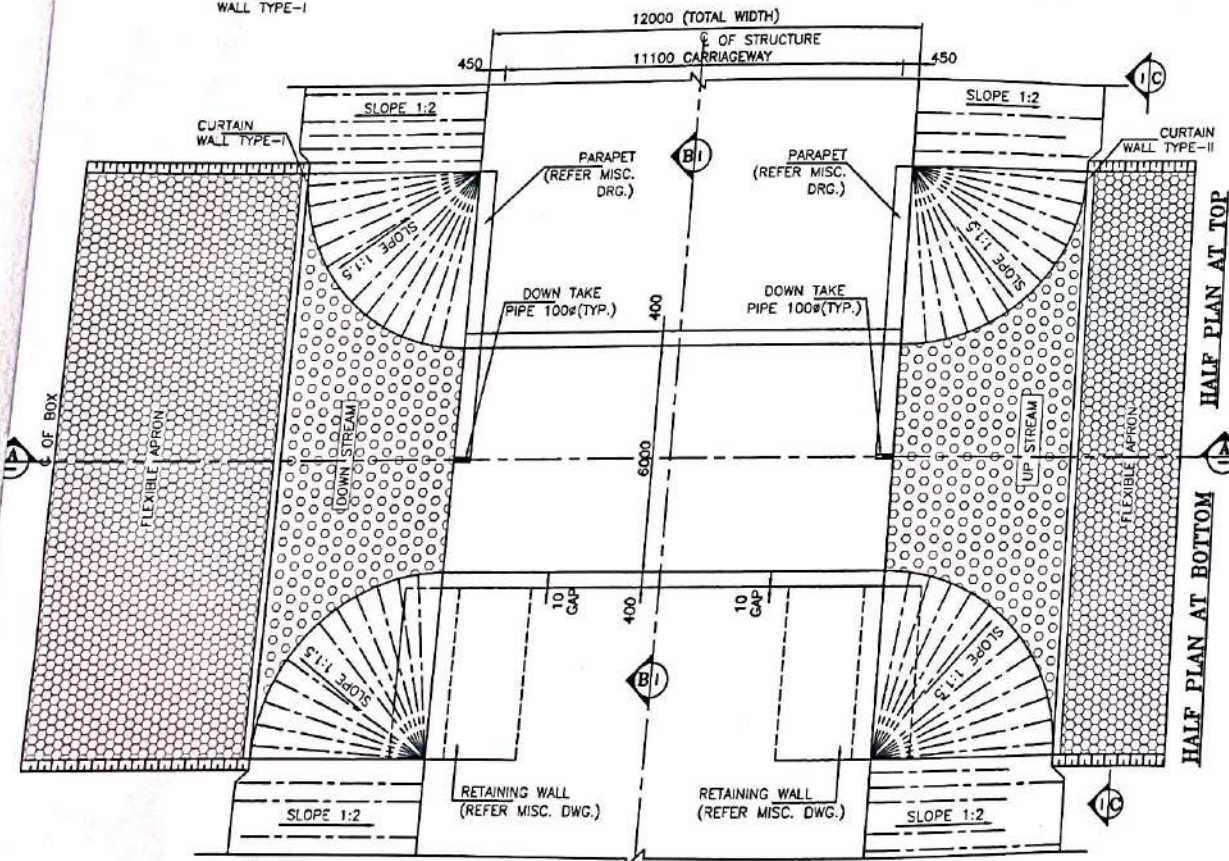


**WINST INFRA SOLUTION
PVT. LTD.**

**OFFICE: F-6, ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA, GHAZIABAD, U.P.-201012**



SECTION A-A
(SCALE=1:100)



PLAN
(SCALE=1:100)

DESCRIPTION	PROPOSED
DESIGN CHN.	32+297
CA.CHN.	32+307
STR. TYPE	BOX
SPAN/DIA	1X6X3m
PROPOSAL	NEW 2 LANE

KEY PLAN

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
32+297	148.501	148.080	145.780	145.772	3.270m	0	0

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500D.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/C IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 8t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL. LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BOX/REINF/32+297/02



Kamac Engineer's (P) Ltd

KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SAIKA, SARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Bosco
Ashram Wali Gail, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE F-8 ISHAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA CHATASAD, U.P-201012

PROJECT:

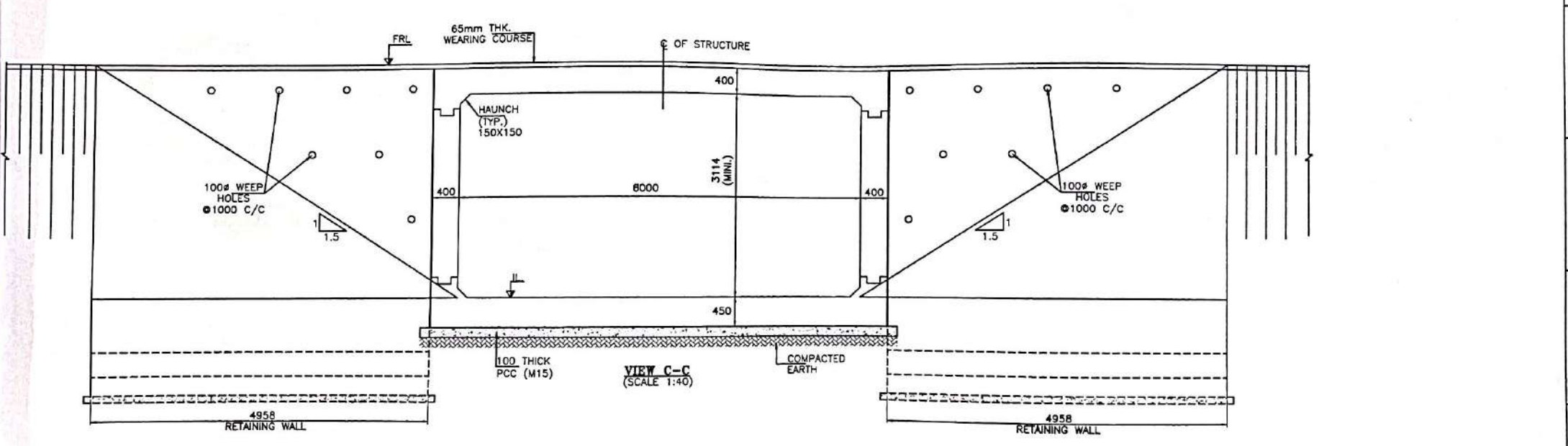
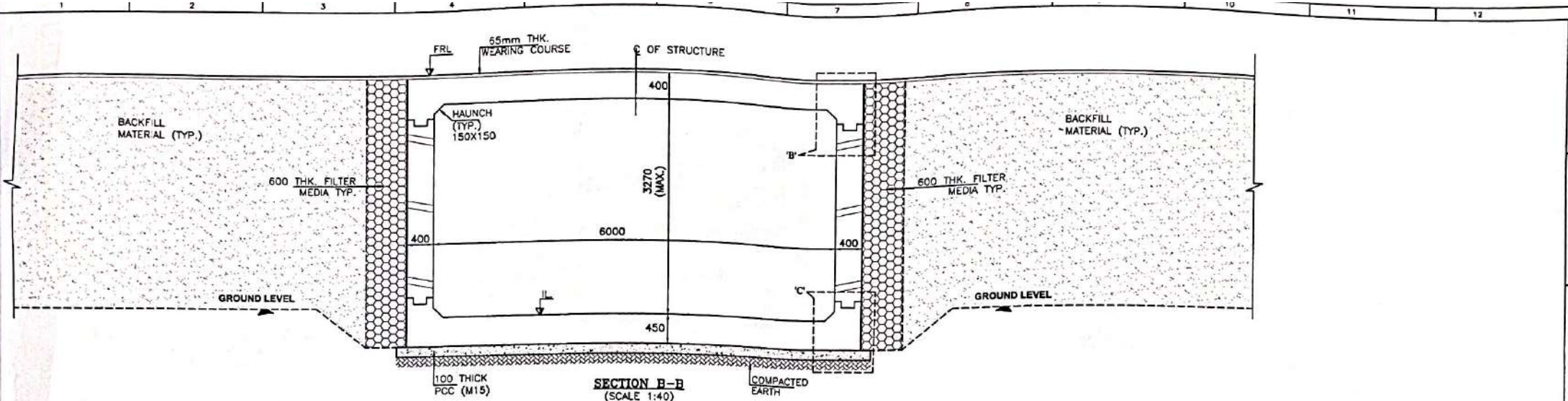
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(DOLAI GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-I)

DRAWING TITLE:-

GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 32+297

Date	Drw	Dwg	Chk	App	Scale	Drawing Status
MAR-2024	W.P.	V.S.	A.B.		NTS	
Project No.	Drawing No.	Sheet No.	Rev			
AVC/NH-38/BOX/AD/32+297/01		01 OF 03	00			

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.



CLIENT:


NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR


KAMAC ENGINEERS PVT. LTD.
 F0201, CITY CENTER OFFICE
 BLOCK, 2ND FLOOR,
 MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED.
 C/O JAYANTA SAIKIA, SARBAJANIN
 NAMGHAR, BORBIL NO.2, DIGBOI,
 TINSUKIA, ASSAM-786171

PROOF CONSULTANT:


CREATIVE ENGINEERING SERVICES
 OFFICE NO: 620, SIGNATURE GLOBAL
 MALL, SECTOR-3,
 VAISHALI, GHAZIABAD, U.P-201010

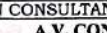
SAFETY CONSULTANT:

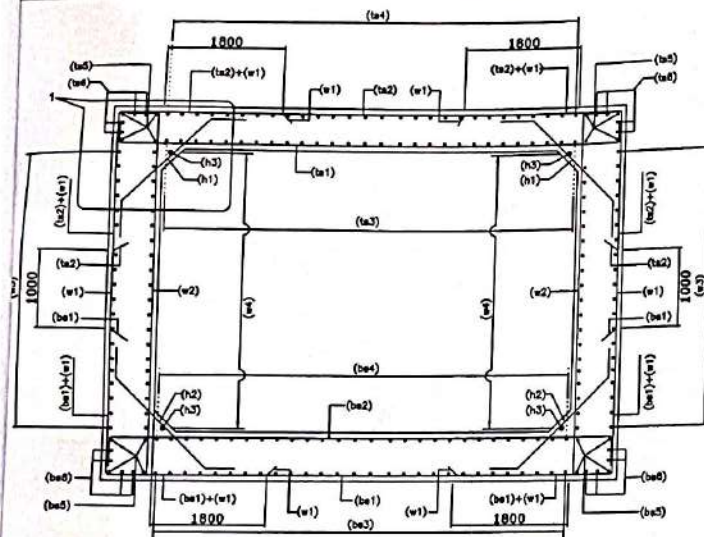

DESIGN AID
 PLOT NO.54, 3rd FLOOR(FRONT),
 MASOODPUR DAIRY FARM,VASANT KUNJ,
 NEW DELHI-110070,

DESIGN CONSULTANT:

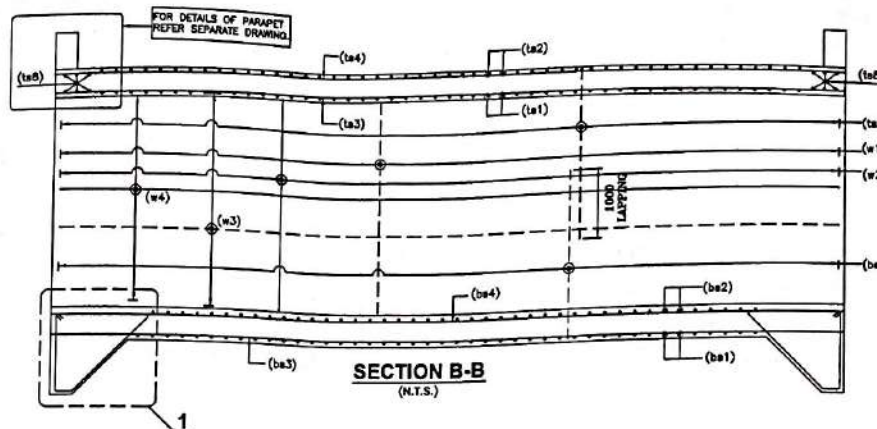

A.V. CONSTRUCTION
 1st Floor, WZ-1240,
 Palam Extension, Bosco
 Ashram Wall Gali, New
 Delhi 110045
Winst Infra Solution Pvt. Ltd.
 OFFICE: FALGHAM CORPORATE
 TOWER, PLOT NO-C-23,SECTOR-13,
 VASU BHIRA GHAT,VARANASI

PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+130 (DOLAJI GOMATI) TO KM 47+482 (LEDO) ON DEBRIGHAT TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-5)									
DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 32+297									
Date	Drw.	Dwg.	Chk.	App.	Scale	Drawing Status			
MAR. 2024	W.P.	V.S.	A.B.		NTS				
Project No.	Drawing No.		Sheet No.				Rev		
	AVC/NH-38/SC/ROAD/32+297/R1		82 OF 83				RO		

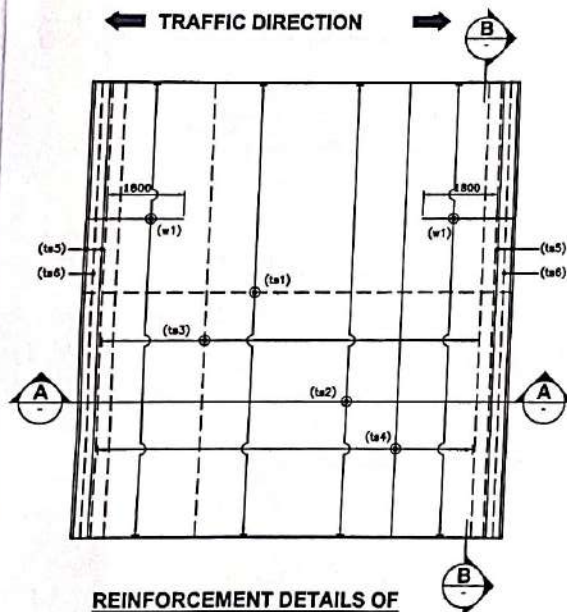
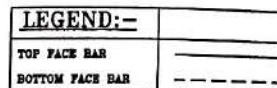
CLIENT:  NADCL MAKING BETTER INFRASTRUCTURE BUILDING THE NATION NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK 2ND FLOOR, MATIGARA 734010		AUTHORITY'S ENGINEER ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKA, SARBAJANIN NAMGHAR, BORBOL NO.2, DIGBOI, TINSUKIA, ASSAM-786171		PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010		SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,		DESIGN CONSULTANT:  A.V. CONSTRUCTION 1 st Floor, WZ-1240, Palam Extension, Boco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO-C-23,SECTOR-13, VASUNDHRA GHAZIABAD, U.P.-201012		PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (JOKAI GORAI) TO KM 47+400 (LEDO) ON DISBURDAH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MOOE (PACKAGE-B)		DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 32+287		<table><tr><th>Date</th><th>Drw.</th><th>Dwg.</th><th>Chk.</th><th>App.</th><th>Scale</th><th>Drawing Status.</th></tr><tr><td>MAR 2024</td><td>W P</td><td>V S</td><td>A B</td><td></td><td>NTS</td><td></td></tr><tr><td>Project No.</td><td colspan="5">AYC/NH-38/BC/GAD/32+287/61</td><td>Sheet No. 83 OF 83</td></tr><tr><td></td><td colspan="5"></td><td>Rev. NO</td></tr></table>		Date	Drw.	Dwg.	Chk.	App.	Scale	Drawing Status.	MAR 2024	W P	V S	A B		NTS		Project No.	AYC/NH-38/BC/GAD/32+287/61					Sheet No. 83 OF 83							Rev. NO
Date	Drw.	Dwg.	Chk.	App.	Scale	Drawing Status.																																							
MAR 2024	W P	V S	A B		NTS																																								
Project No.	AYC/NH-38/BC/GAD/32+287/61					Sheet No. 83 OF 83																																							
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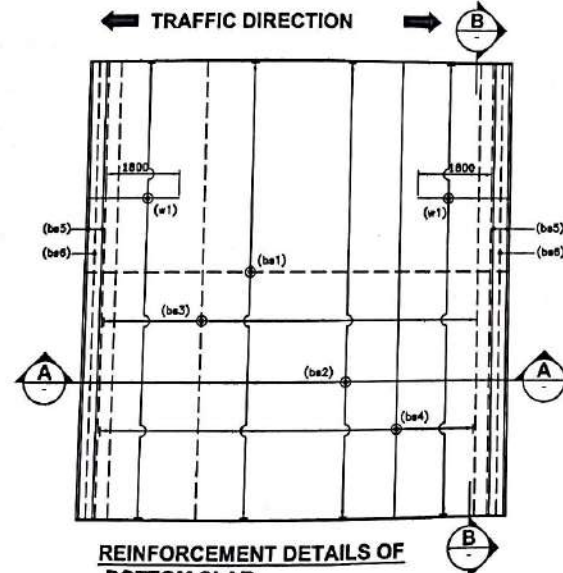
SECTION A-A
(N.T.S.)



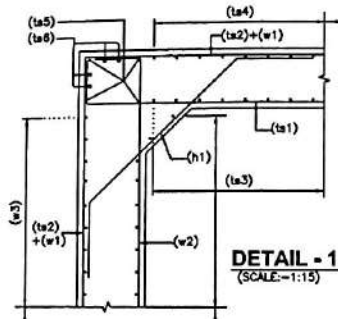
SECTION B-B
(N.T.S.)



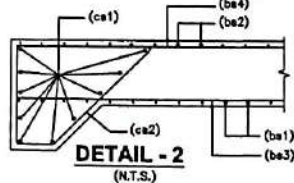
REINFORCEMENT DETAILS OF
TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF
BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

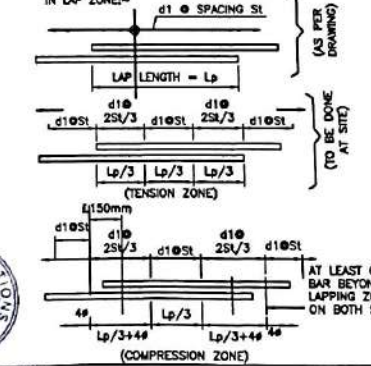
- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/32+297/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		16+10	200
2	ts2		16	200
3	ts3		10	200
4	ts4		12	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	200
8	w2		16	200
9	w3		12	200
10	w4		10	200
11	bs1		16	200
12	bs2		20+10	200
13	bs3		12	200
14	bs4		12	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	200
18	h2		10	200
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFIRMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB - 45mm
 - b) BOTTOM SLAB - 75mm
 - c) SIDE WALL (EARTH SIDE) - 75mm
 - d) SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 50 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE

(COMPRESSION ZONE)

CLIENT:
NHAI
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

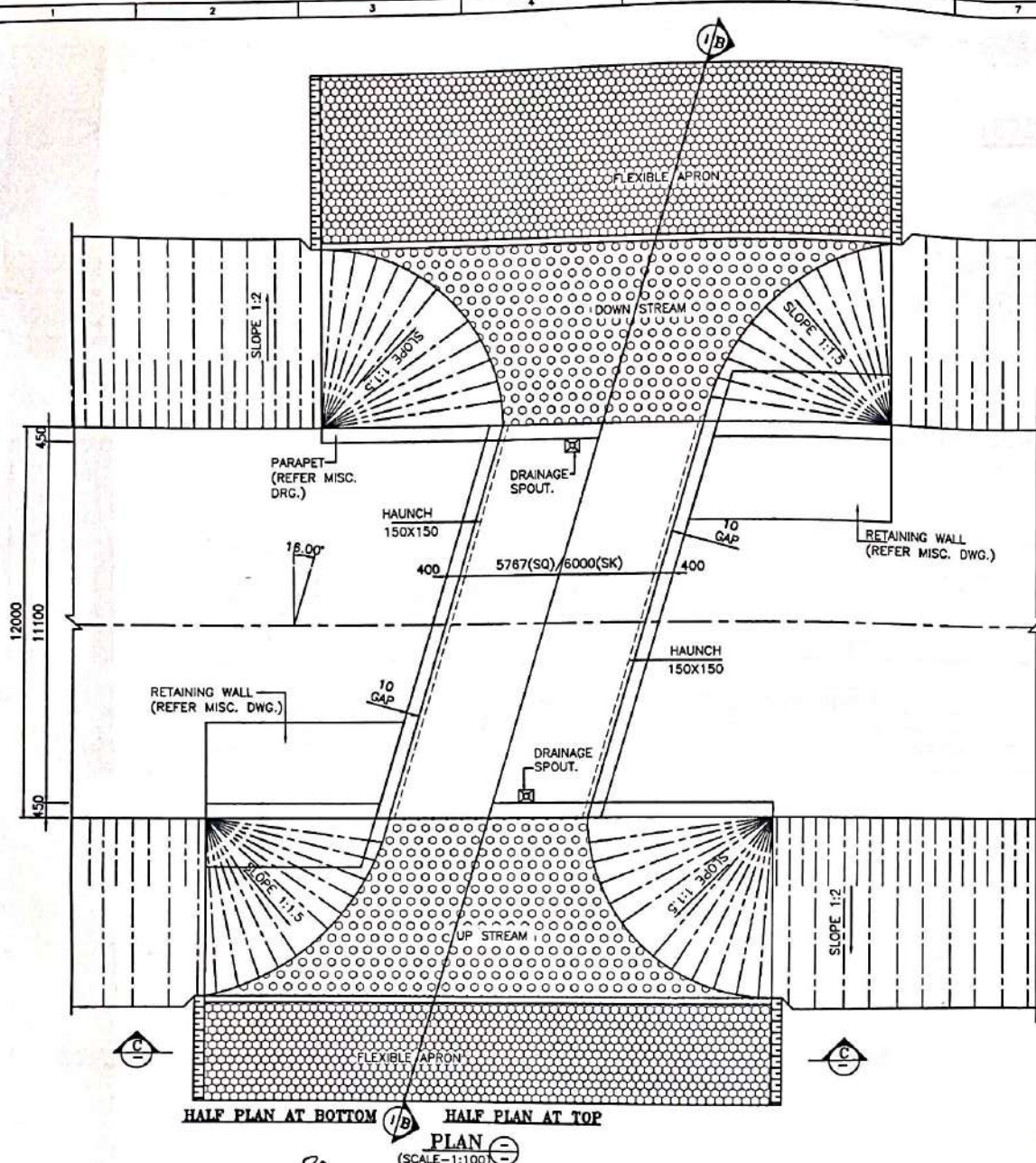
AUTHORITY'S ENGINEER
ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED.
C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171

PROOF CONSULTANT:
DESIGN
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:
DESIGN
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT:
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1st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045
Winst Infra Solution Pvt. Ltd.
OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA GHAZIABAD, U.P.-201012

PROJECT:
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+100 (GOLA GOAN) TO KM 47+00 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-5)
DRAWING TITLE:-
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 32+297
Date: MAR-2024
Drw. W.P.
Proj. No.
Dwg. V.S.
Chk. A.B.
App. NTS
Scale: NTS
Drawing No. AYCNH-38/BOX/REIN/32+297/01
Sheet No. 01 OF 01
Rev. RD



32450

32550

DESCRIPTION	PROPOSED
DESIGN CHN.	32+487
CA.CHN.	32+480
STR.TYPE	BOX
SPAN/DIA	1X8X3m
PROPOSAL	NEW 2 LANE

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
32+487	148.054	142.794	142.484	142.506	3.089m	0	0

KEY PLAN

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b. M15-FOR PCC AND LEVELING COURSE.
c. M30-PARAPET
- GRADE OF STEEL - Fe500D.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
a. ONE LANE, TWO LANE AND THREE LANE OF CLASS A
b. ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
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AS PER IRC78-2014 AND MORTH SPECIFICATION.
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- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

LEGEND:-

- FRL FINISHED ROAD LEVEL
- IL INVERT LEVEL
- LVL. LEVEL
- EGL. EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BOX/REINF./32+487/02



CLIENT:

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT:

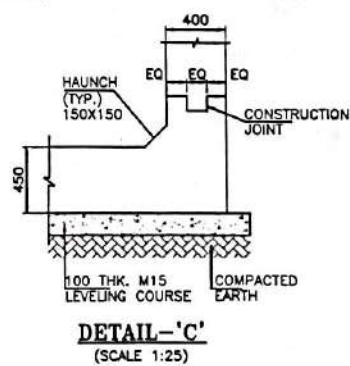
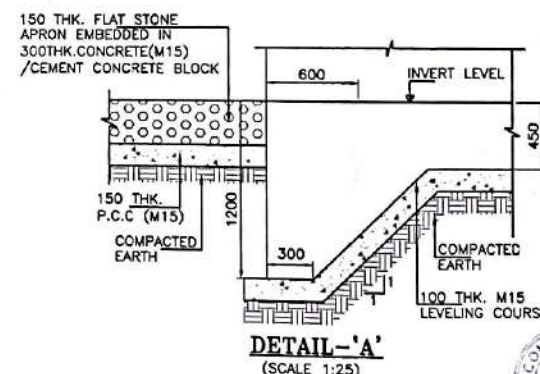
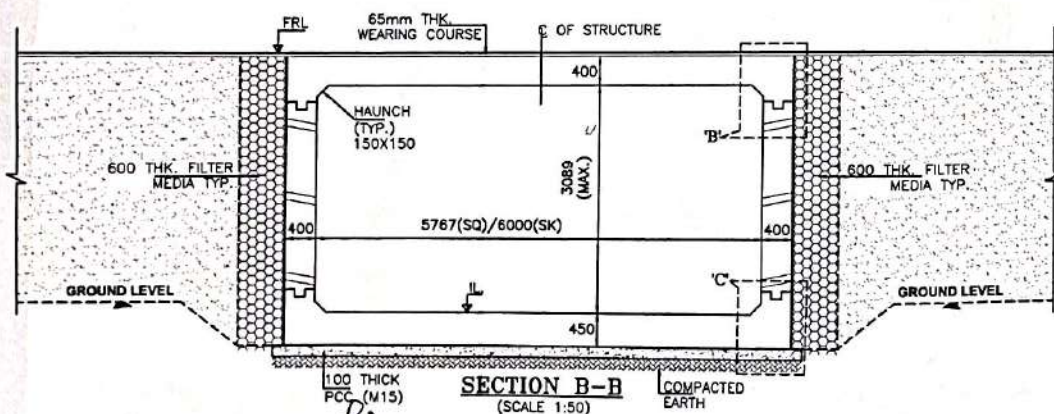
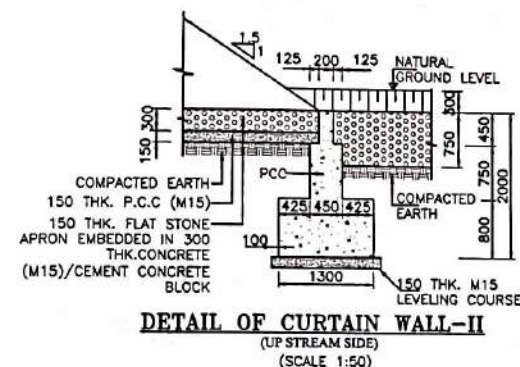
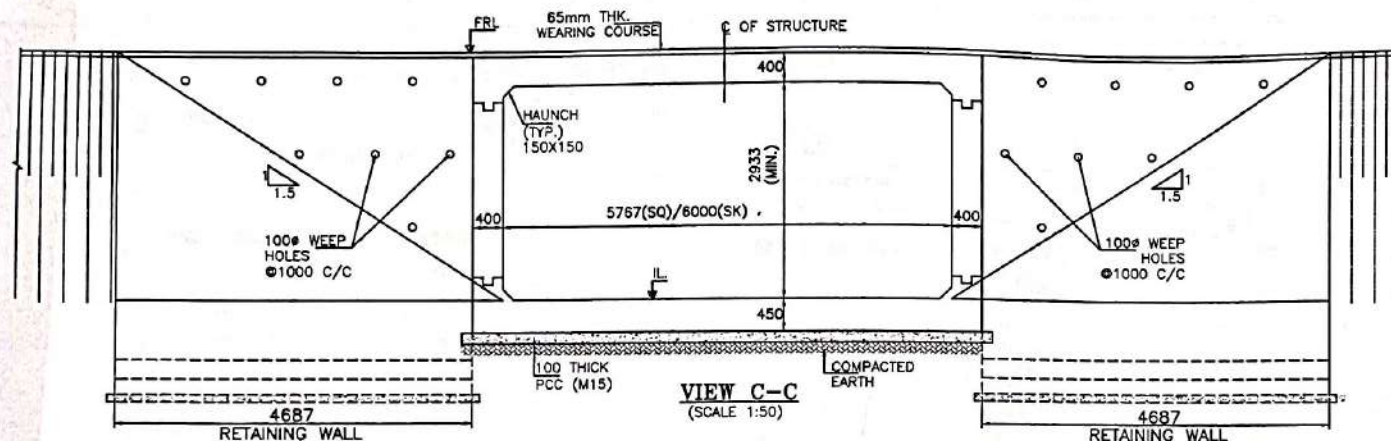
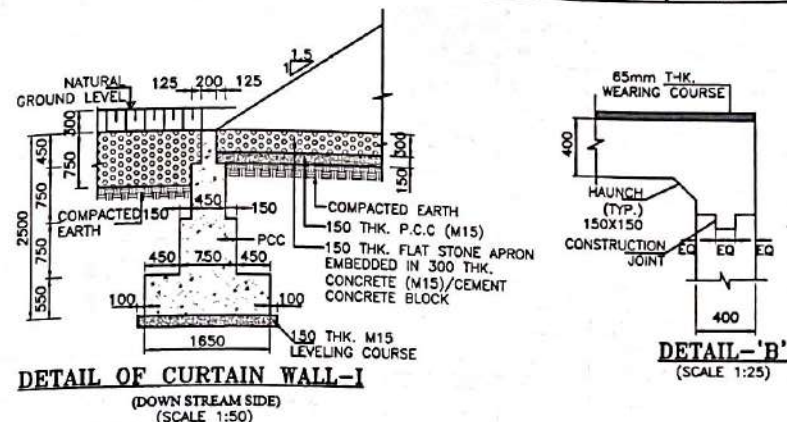
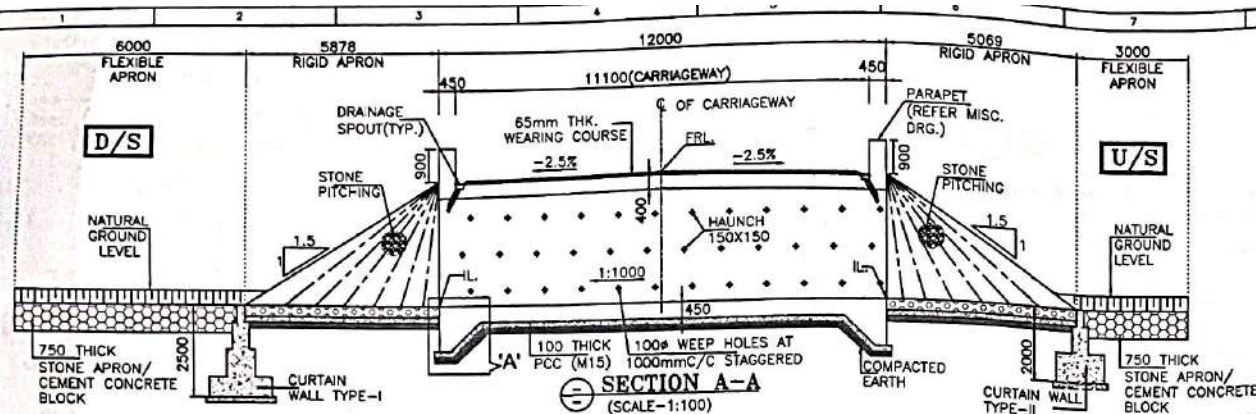
A.V. CONSTRUCTION
1st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045

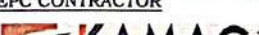
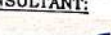
Winst Infra Solution Pvt. Ltd.
OFFICE: F-8, ISHAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA GHAZIABAD, U.P-201012

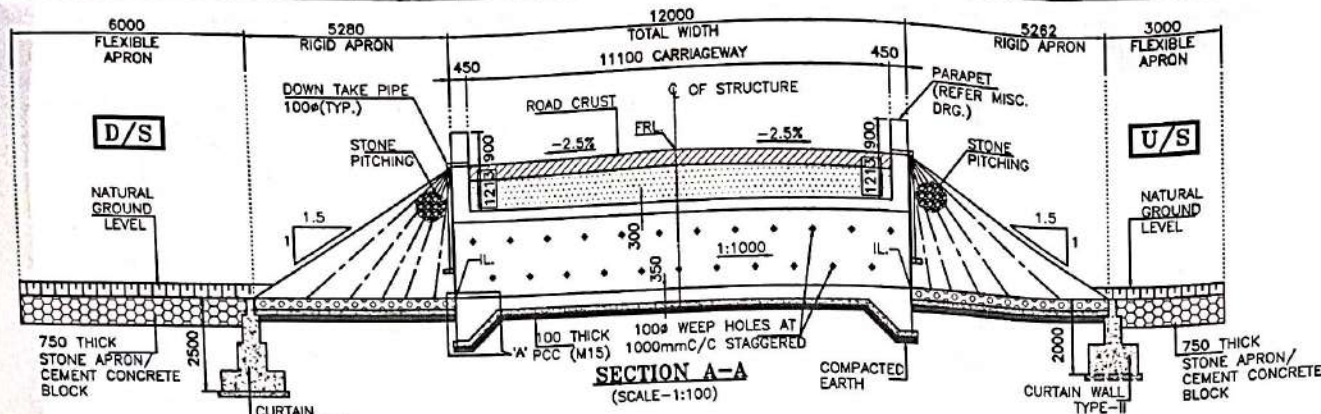
PROJECT:
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+180 (JOLAI GOAN) TO KM 47+482 (LEDO) ON DISBURGARDH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (CLANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-8)

DRAWING TITLE:-
GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 32+487

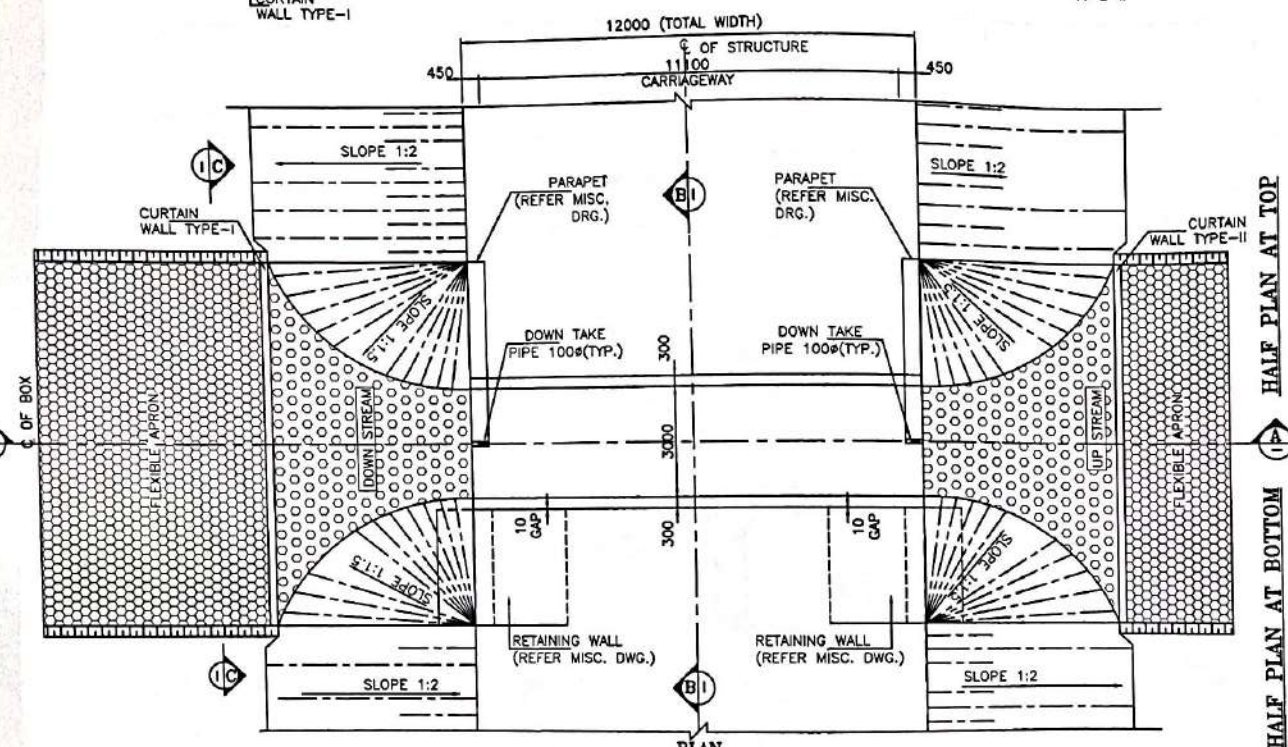
Date	Draw. W.P.	App. V.B	Chk. A.B	App. NTS	Drawing Status
JAN. 2024					
Project No.	AVC/NH-38/BOX/GAD/32+487/01				Sheet No. 1 OF 2
					Rev. RO



CLIENT:		EPC CONTRACTOR:		AUTHORITY'S ENGINEER:		PROOF CONSULTANT:		SAFETY CONSULTANT:		DESIGN CONSULTANT:		PROJECT:	
 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		 KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010		ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171		 CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010		 DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,		 A.V. CONSTRUCTION 1 st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA, GHAZIABAD, U.P.-201012		WIDENING/IMPROVEMENT TO 3-LANE WITH PAVED SHOULDER FROM KM 27+180 (GOLAI GOAN) TO KM 47+482 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARCHEPITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (PLANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-8)	
DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 32+487		Date JAN,2024		Drawn W.P		Desg V.B		Chk A.B		App. NTS		Drawing Status.	
Project No.		Drawing No.		AVC/NH-38/BOX/GAD/32+487/01		Sheet No. 2 OF 2		Rev. RD					



SECTION A-A
(SCALE-1:100)



PLAN
(SCALE-1:100)

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
32+622	145.725	142.361	142.061	142.073	2.012m	1.352m	1.213m

REFERENCE DRAWINGS:-
1. REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./32+622/01

LEGEND:-
FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL. LEVEL
EGL. EXISTING GROUND LEVEL

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
a. M30-FOR RCC BOX CELL STRUCTURE.
b. M15-FOR PCC AND LEVELING COURSE.
c. M30-PARAPET
 - GRADE OF STEEL - Fe 500D.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND WORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 100MM DIA P.V.C. PIPE AT SPACING 1000MM c/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - SBC SHALL BE 8t/m². AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - AS PER NORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

DESCRIPTION	PROPOSED
DESIGN CHN.	32+622
CA.CHN.	32+635
STR. TYPE	BOX
SPAN/ DIA	1X3X2m
PROPOSAL	NEW 2 LANE

KEY PLAN

CLIENT:

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR:

KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

AUTHORITY'S ENGINEER:
ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED.
C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010

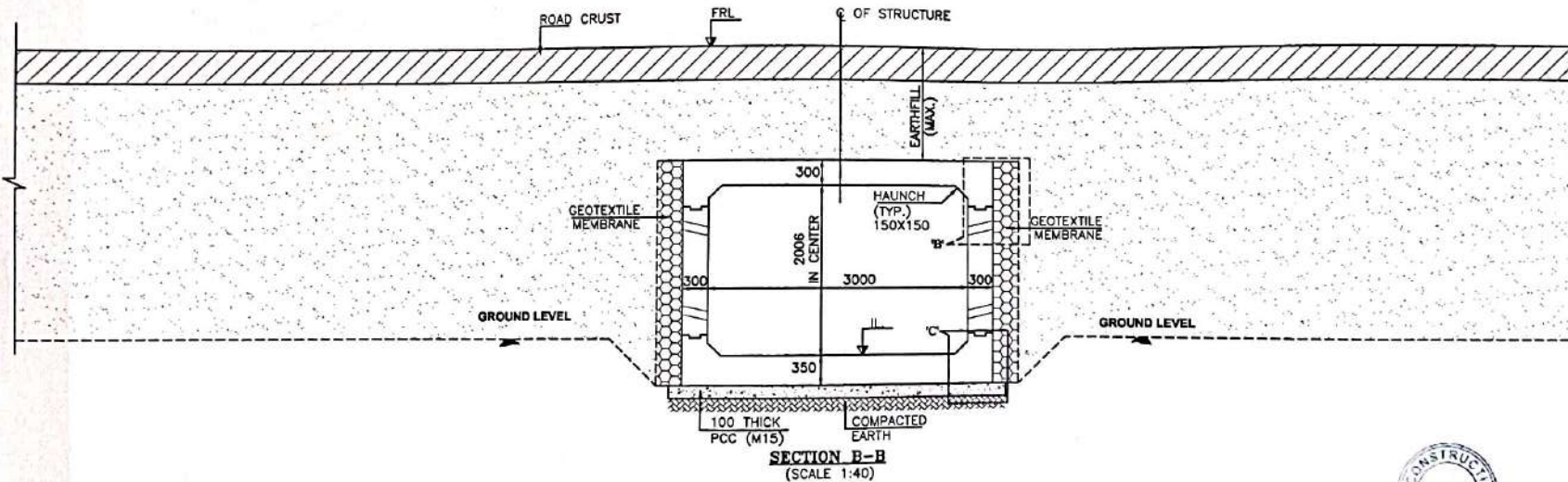
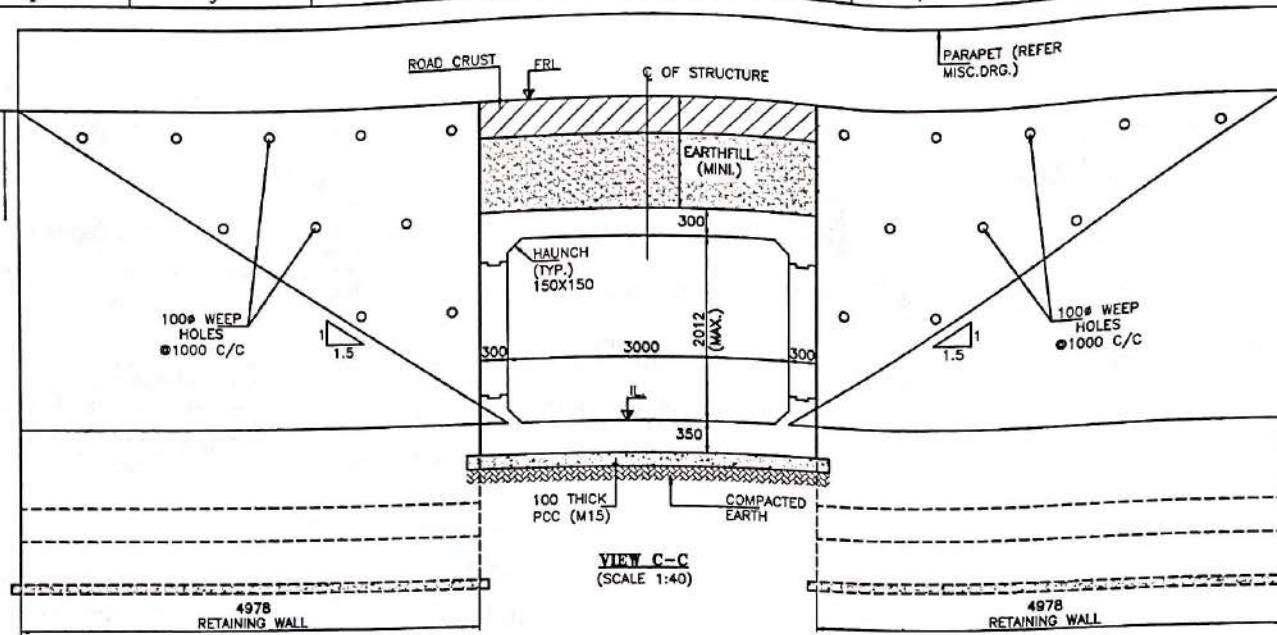
SAFETY CONSULTANT:

DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT:

A.V. CONSTRUCTION
1st Floor, WZ-1240, Palam Extension, Boko Ashram Wall Gali, New Delhi 110045
Winst Infra Solution Pvt. Ltd.
OFFICE F-4, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA GHAZIABAD, U.P-201012

PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (LOCAL DRAIN) TO KM 47+882 (LEDO) ON DISBURGH ROAD TO LEDO SECTION WITH PROPOSED MAROWHETA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-6)	
DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 32+622	
Date: MAR-2024	Drawn: W.P.
Project No.	Drawing No.
Project No.	AVC/NH-38/BC/AD/02+622/01
Project No.	Sheet No.
Project No.	81 OF.



CLIENT:



NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR



AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SAIKIA, SARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:



DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:



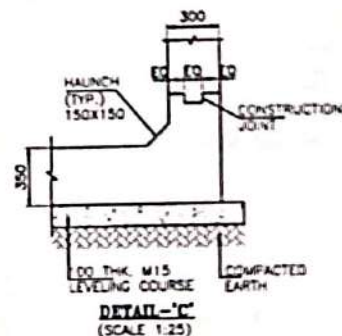
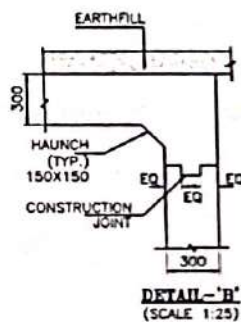
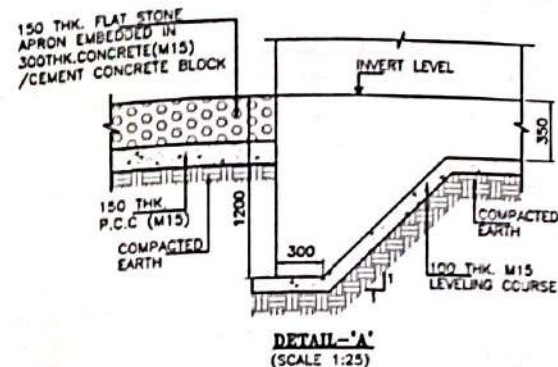
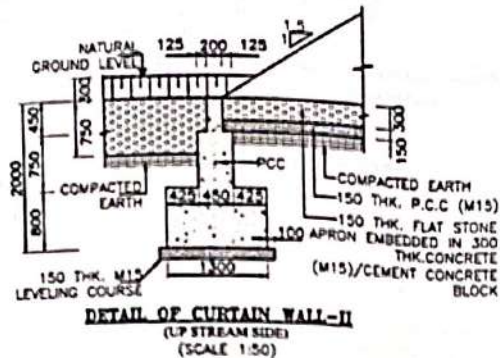
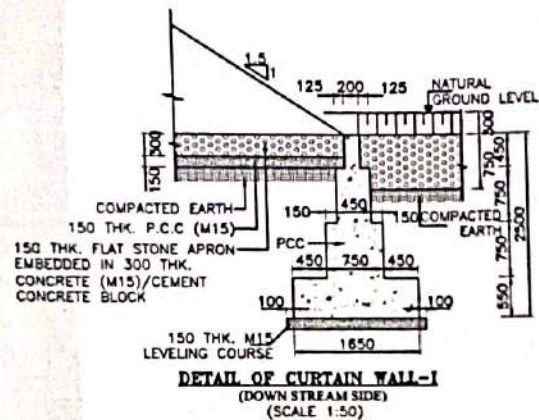
PROJECT:

WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+180
(LOCAL QCAN) TO KM 47+482 (LEDO) ON DISBURGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROOKFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-5)

DRAWING TITLE:

GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 32+422

Date	Drw.	Des.	Chk.	App.	Scale.	Drawing Status.	
MAR 2024	W.P	V.S	A.B		NTS		
Project No.	Drawing No.					Sheet No.	Rev.
	AYC/NH-35/BC/GAD/13+422/01					82 OF 83	R0



CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SARKA, BARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:



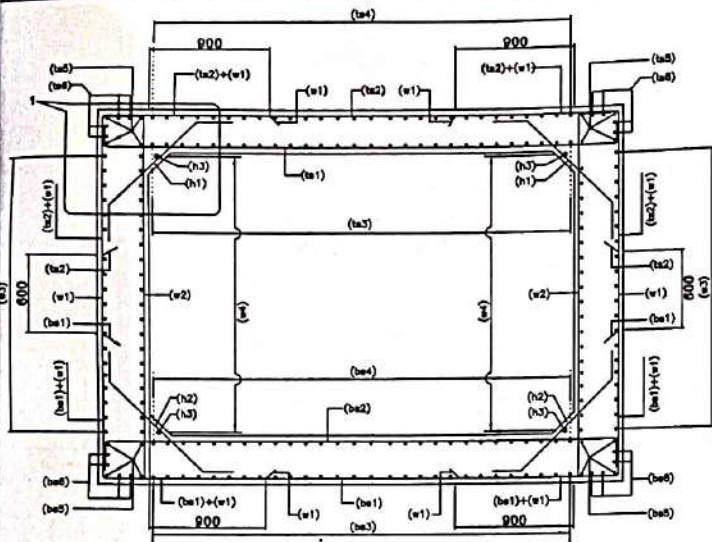
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

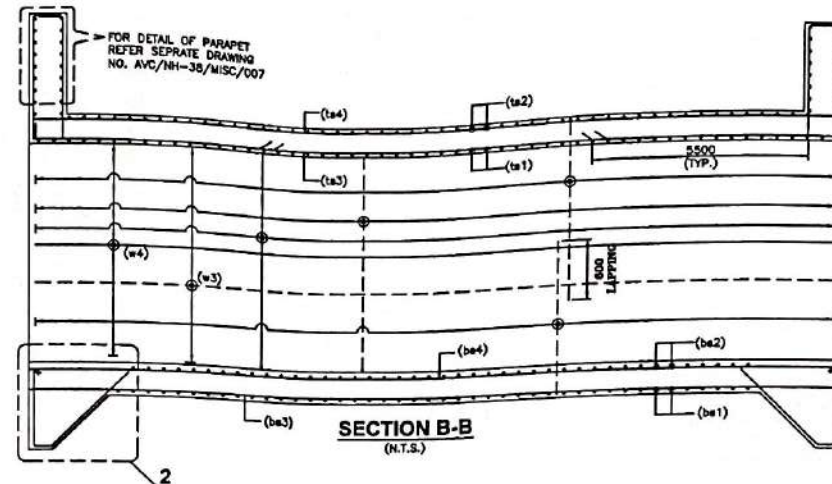


A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Bosco
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution Pvt. Ltd.
OFFICE P-8, BHANU CORPORATE
TOWER, PLOT NO-C-21, SECTOR-13,
VASUKI, GHAZIABAD, U.P.-201017

PROJECT: UPGRADATION OF 3-LANE ROAD WITH PAVED SHOULDER FROM KM 27+100 (JOLAI GOAN) TO KM 47+000 (LEDO) ON DISRUPTION TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B)									
DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAUKAGE 32+623									
Date MAR 2024	Drawn W.P.	Des. V.B.	Chk. A.B.	App. A.B.	Scale NTS	Drawing Status			
Project No.	Drawing No. AVCAH-38/SC/GAD/22-622/01				Sheet No. 05 OF 05	Rev 00			



SECTION A-A
(N.T.S.)

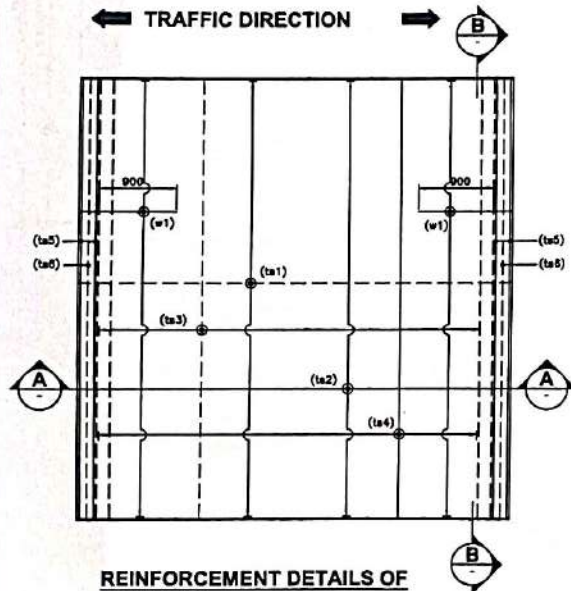


SECTION B-B
(N.T.S.)

LEGEND:-

TOP FACE BAR
BOTTOM FACE BAR

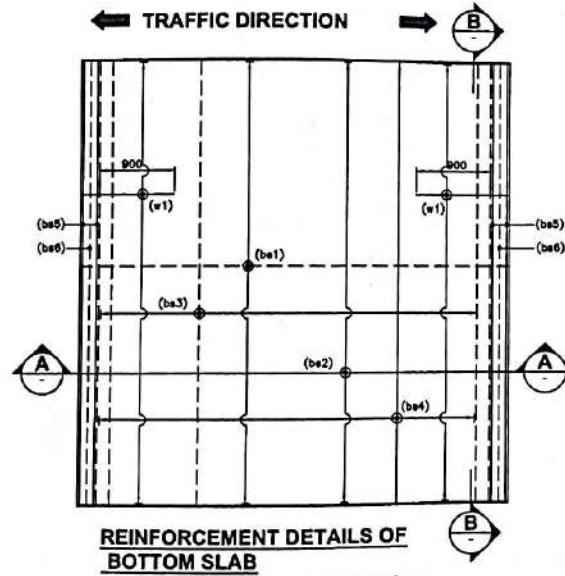
TRAFFIC DIRECTION



REINFORCEMENT DETAILS OF
TOP SLAB

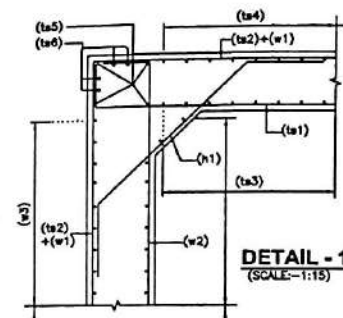
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)

TRAFFIC DIRECTION

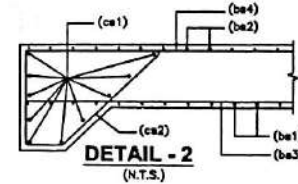


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)



DETAIL - 1
(SCALE-1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/32+622/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		10+10	160
2	ts2		10	160
3	ts3		10	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		12	160
8	w2		12	160
9	w3		10	200
10	w4		8	200
11	bs1		10	160
12	bs2		10+10	160
13	bs3		10	200
14	bs4		10	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200

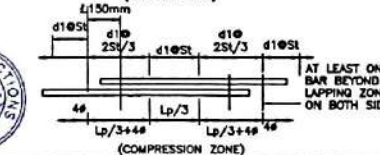
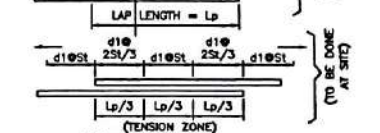
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-

- TOP SLAB - 45mm
- BOTTOM SLAB - 75mm
- SIDE WALL (EARTH SIDE) - 75mm
- SIDE WALL (INNER SIDE) - 45mm

- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5.

LAP LENGTH SHALL NOT BE LESS THAN 55d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE



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Palam Extension, Bosco
Ashram Wall Gail, New
Delhi 110045

Winst Infra Solution
Pvt. Ltd.

OFFICE: F-8, ISHAAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAISHALI, GHAZIABAD, U.P. 201012

PROJECT:
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+50
(DOLAI GOAN) TO KM 47+82 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-2)

DRAWING TITLE:-
REINFORCEMENT DETAIL OF BOX CULVERT
AT CH. 32+622

Date	Drw.	Des.	Chk.	App.	Scale	Drawing Status
MAR.2024	W.P.	V.B.	A.B.		NTS	
Project No.	Drawing No.	AVC/NH-38/BOX/REIN/32+622/01	Sheet No.	01 OF 01	Rev.	RO

CLIENT:



**NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.**

EPC CONTRACTOR



KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

**ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.**

C/O JAYANTA SAIKIA, SARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:

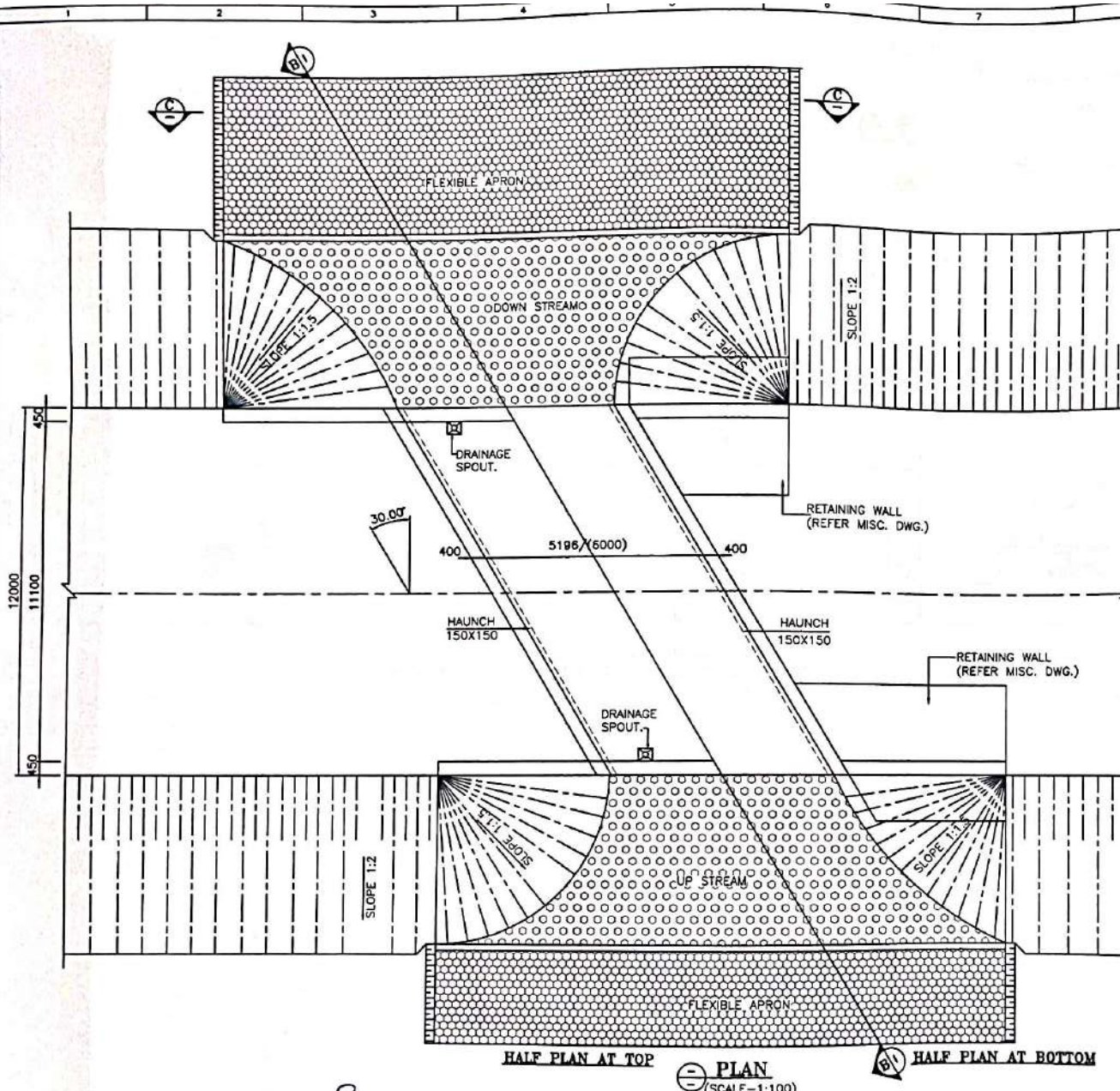


DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:



W.I.S.P.E.



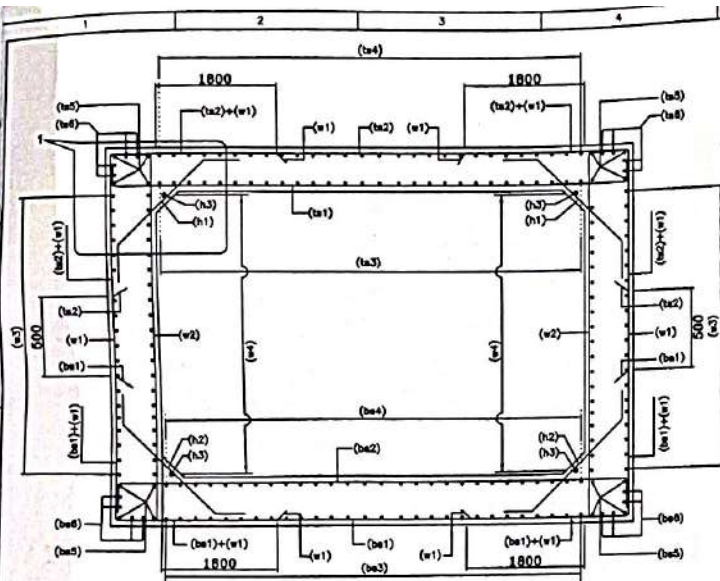
DESCRIPTION	PROPOSED
DESIGN CHN.	34+405
C.A.CHN.	34+428
STR. TYPE	BOX
SPAN/DIA	1X6X1.6m
PROPOSAL	NEW 2 LANE

KEY PLAN

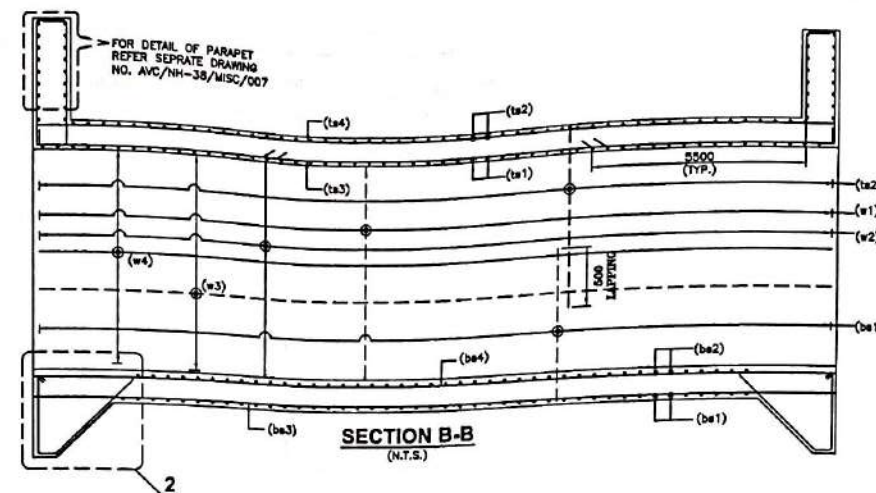
DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
34+405	141.844	139.264	138.976	138.964	1.612m	0.868m	0.729m

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - Fe 500D.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECTED TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - SBC SHALL BE 91/m³ AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOOPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1 st Floor, WZ-1240, Palam Extension, B600 Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-4, ISHAN CORPORATE TOWER, PLOT NO-C-25, SECTOR-13, VASUNDERA GHATIA, U.P-201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+100 (DOLAI GOAN) TO KM 41+00 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B)
DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 34+405						
Date: MAR 2024 Project No:	Draw: W.P Drawing No:	Des: V.B Scale: NTS	Chk: A.B App: NTS	Sheet No: 01 OF 02 Rev: R0	Drawing Status:	



SECTION A-A
(N.T.S.)



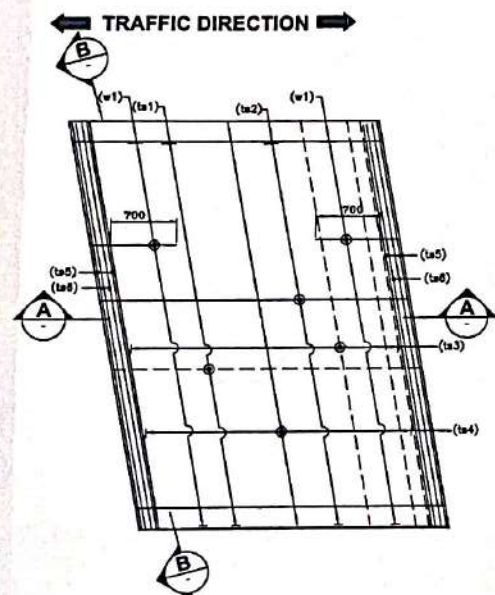
SECTION B-B
(N.T.S.)

LEGEND:-

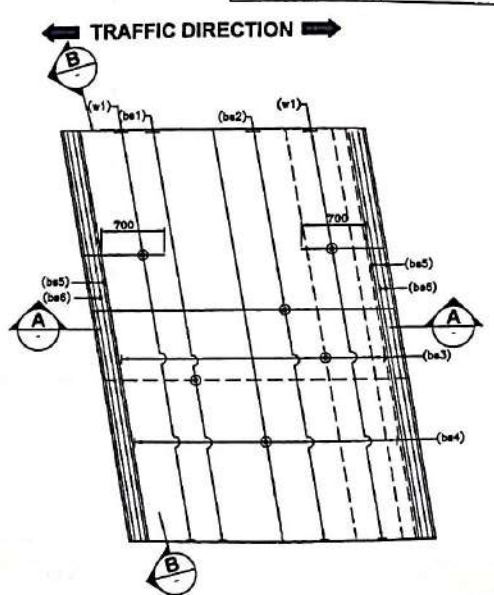
TOP FACE BAR	_____
BOTTOM FACE BAR	-----

BOX REINF. SCHEDULE

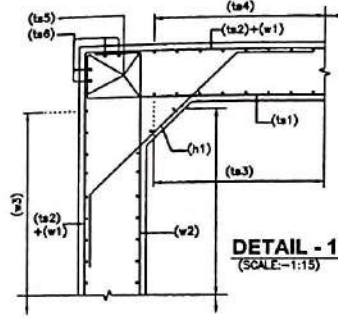
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		16+12	180
2	ts2		16	180
3	ts3		10	180
4	ts4		12	180
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	180
8	w2		12	180
9	w3		12	180
10	w4		10	180
11	bs1		16	180
12	bs2		16+12	180
13	bs3		12	180
14	bs4		10	180
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	180



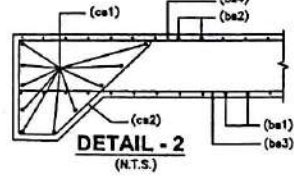
REINFORCEMENT DETAILS OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

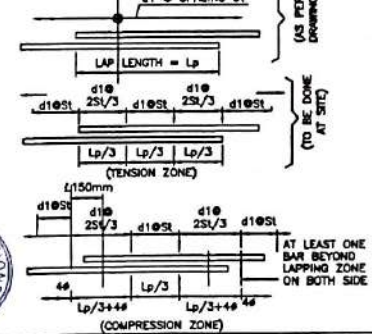
- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

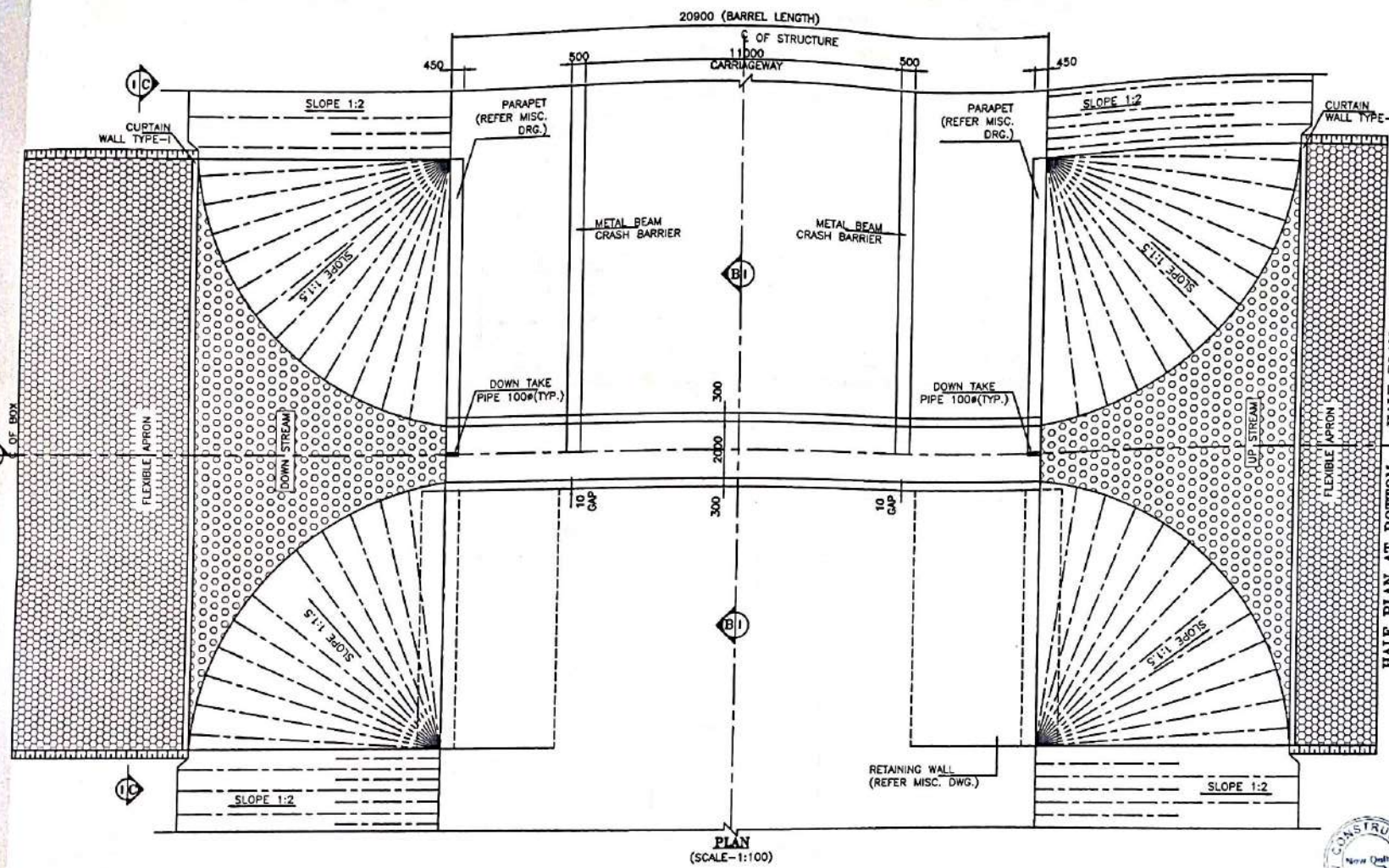
- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/34+405/01

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFIRMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB - 45mm
 - b) BOTTOM SLAB - 75mm
 - c) SIDE WALL (EARTH SIDE) - 75mm
 - d) SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 56d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAKHA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1 st Floor, WZ-1240, Palam Extension, Boreo Ashram Wall Gall, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: P-6, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA CHANDRABAD, U.P-201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLAN GAON) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-8) DRAWING TITLE:- REINFORCEMENT DETAIL OF BOX CULVERT AT CK. 34+405 Date: JAN 2024 Project No.: Drawn By: V.B Checked By: A.B App. By: NTS Scale: NTS Drawing Status: Sheet No. 01 OF 01 Rev. RD
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DESCRIPTION	PROPOSED
DESIGN CHN.	36+010
C.A.CHN.	36+025
STR. TYPE	BOX
SPAN DIA	1X2X3m
PROPOSAL	NEW 2 LANE

35950

36050

KEY PLAN

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - F_o 500D.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 10.100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - 11.SBC SHALL BE 19t/m². AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - 12.AS PER MORTH SECTION-2500,WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY.CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX.CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - 13.CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
36+010	144.890	136.671	136.371	136.392	3.021m	5.198m	2.492m

REFERENCE DRAWINGS:-

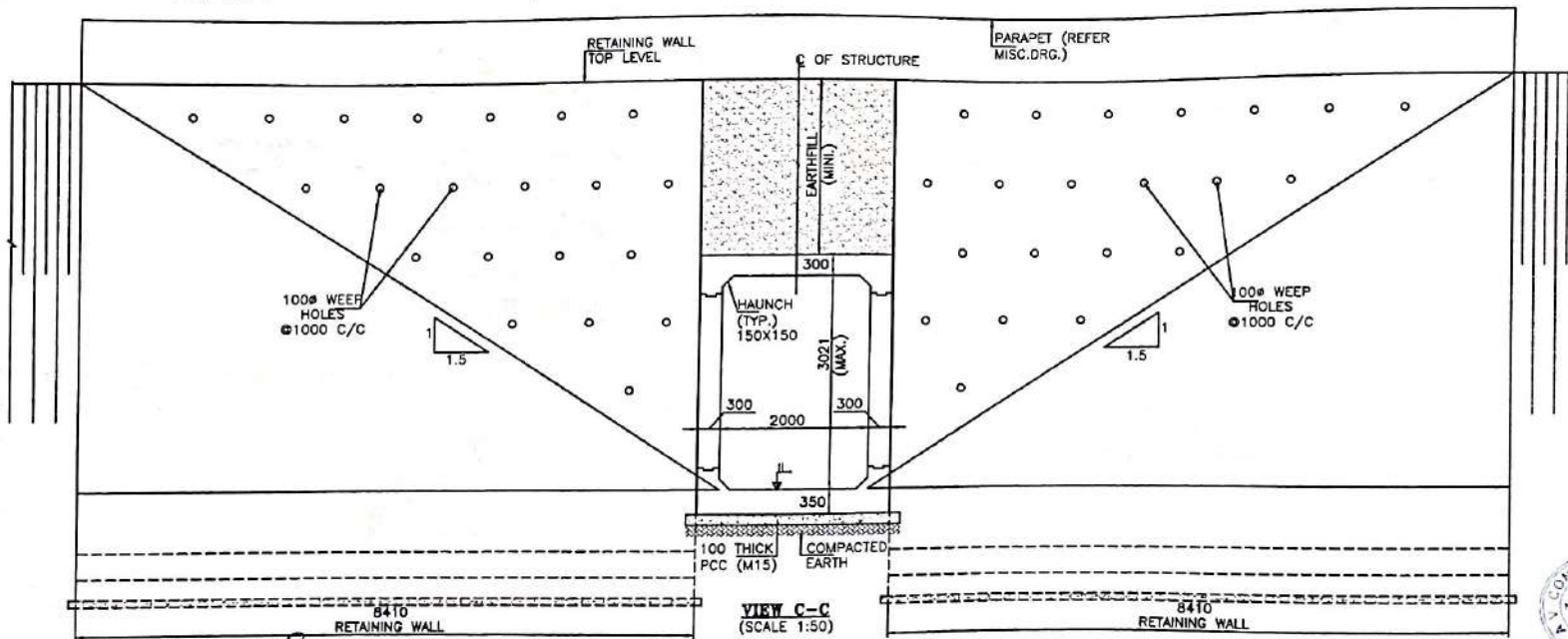
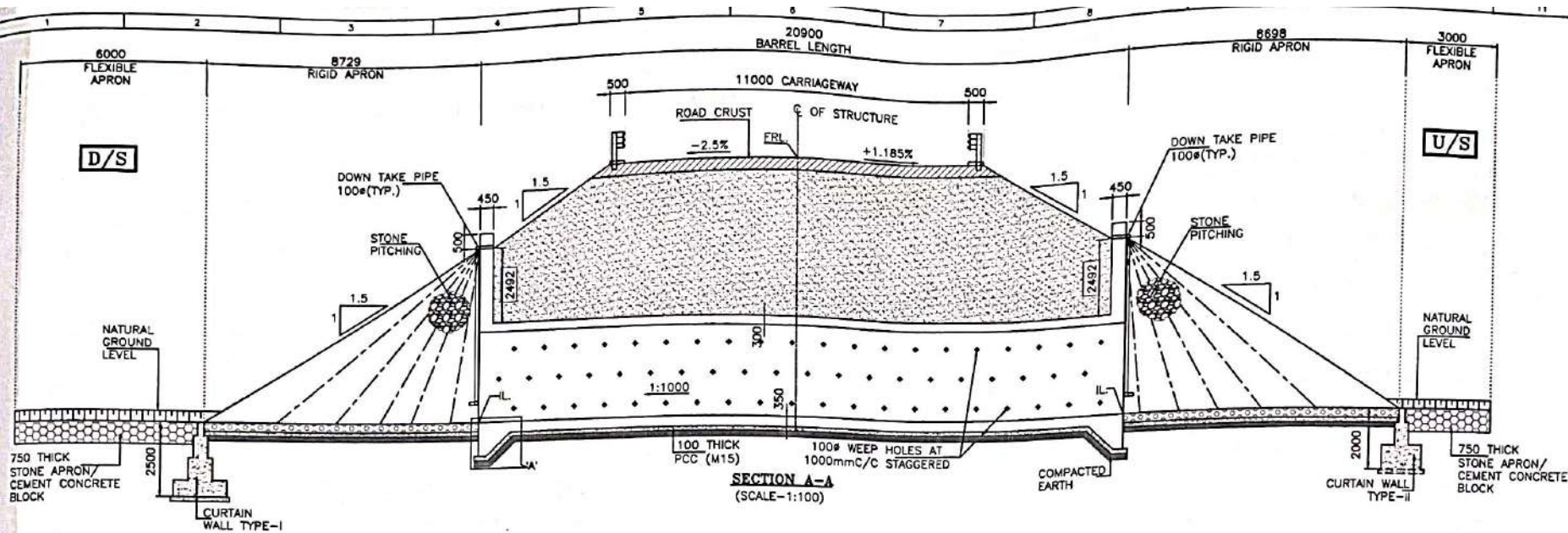
- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./36+010/01

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER SHUNIA	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1 st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE F-4, ISHAN CORPORATE TOWER, PLOT NO-C-23,SECTOR-13, VASUNDHRA GHAZIABAD, U.P-201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+180 (GOLA GOM) TO KM 47+882 (LEDO) ON DHARGUHAH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-02)
	DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 36+010					
Date: MAR-2024 Project No.	Drawn: W.P. Drawing No.	Des: V.B. App: A.B.	Scale: NTS	Drawing Status:	Sheet No. 81 OF 83 Rev. RO	



CLIENT:



NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR

KAMAC
ENGINEERS
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:



DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:



A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Bosco
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE: F-4, ISHAAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA CHANABAD, U.P.201012

PROJECT:

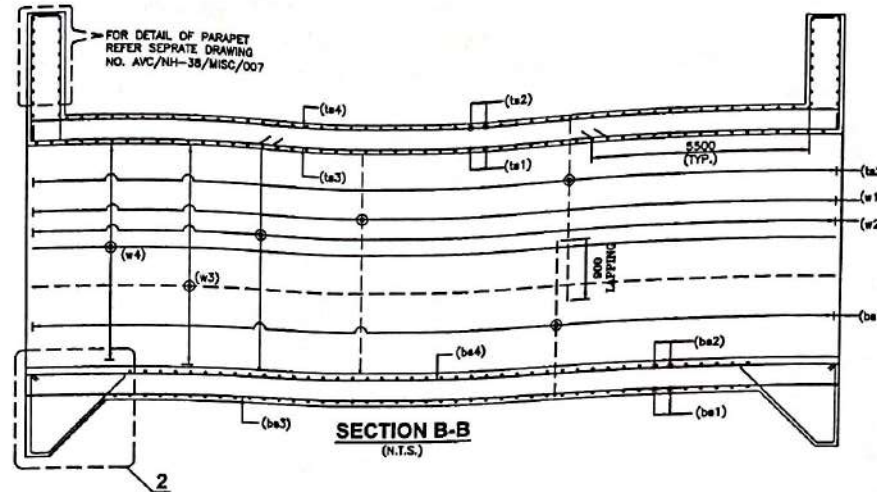
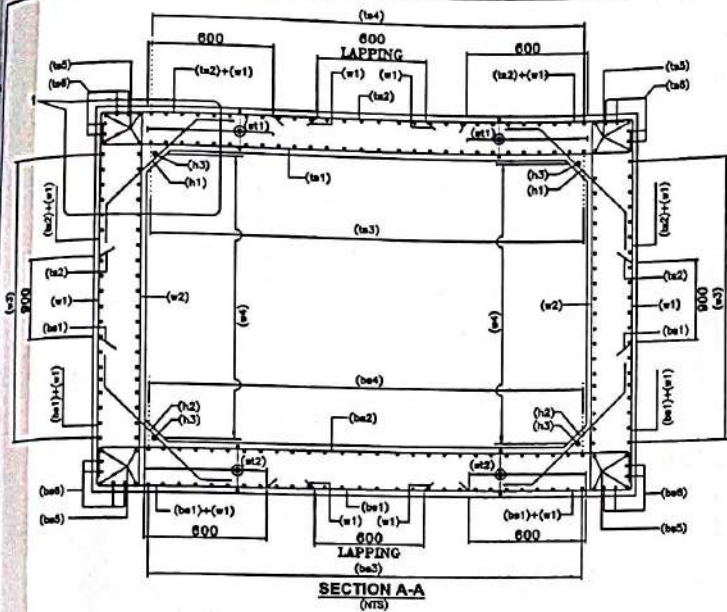
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(DOLAI GOAN) TO KM 47+882 (LEDO) ON DISBURSAH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-B)

DRAWING TITLE:

GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 36+010

Date	Drw.	Dwg.	Chk.	App.	Scale	Drawing Status
MAR 2024	W.P.	V.8	A.B	NTS		
Project No.	Drawing No.	Sheet No.	Rev	RO		
	AVCMH-38/SC/GAD/06+010/01	02 OF 03				

Date MAR.2024	Draw. W.P	Des. V.S	Chk. A.B	App.	Scale. NTS	Drawing Status.	
Project No.	Drawing No. AYC/NH-36/BC/GAD/24-91801					Sheet No. 53 OF 53	Rev RD

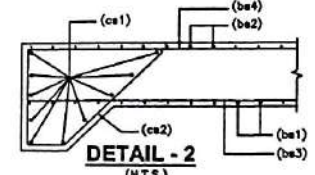
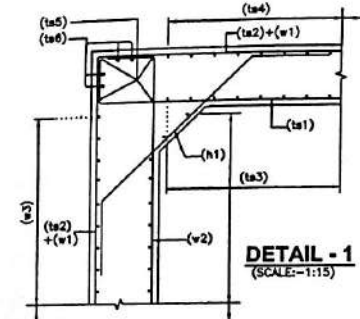
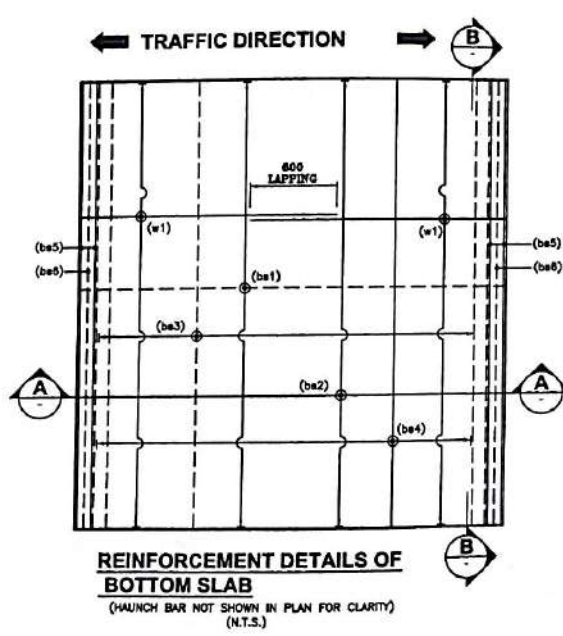
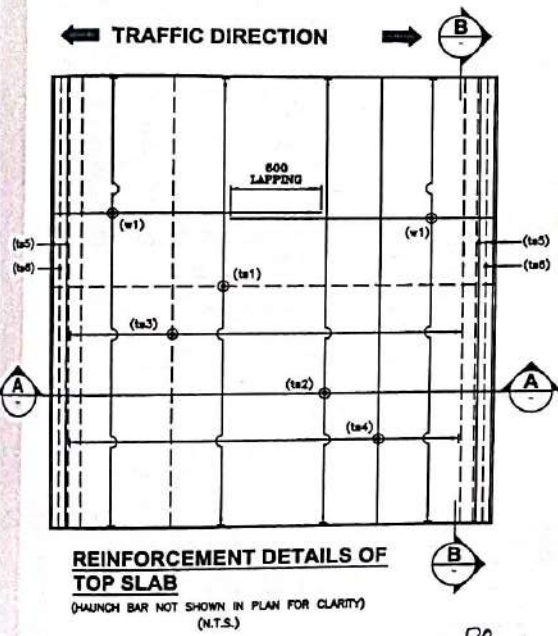


LEGEND:-

TOP FACE BAR	---
BOTTOM FACE BAR	---

BOX REIN. SCHEDULE

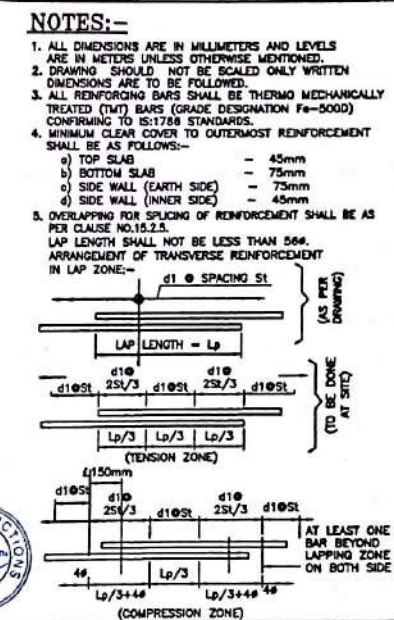
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+10	160
2	ts2		10	160
3	ts3		10	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		12	160
8	w2		12	160
9	w3		10	200
10	w4		10	200
11	bs1		10	160
12	bs2		12+10	160
13	bs3		10	200
14	bs4		10	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		2 LEGGED 10# 200 c/c (L-L) & 160 (T-T) DIRECTION	
23	st2		2 LEGGED 10# 200 c/c (L-L) & 160 (T-T) DIRECTION	



- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40# AS PER IRC-112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING. AVC/NH-38/BOX/QAD/38+010/01



CLIENT:

NHIDCL

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS Pvt.Ltd

KAMAC ENGINEERS PVT.LTD

F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

AUTHORITY'S ENGINEER

Shubia

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES

OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID

PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT:

A.V. CONSTRUCTION

1st Floor, WZ-1240, Palm Extension, Bocco Ashram Wall Gali, New Delhi 110045

Winst Infra Solution Pvt. Ltd.

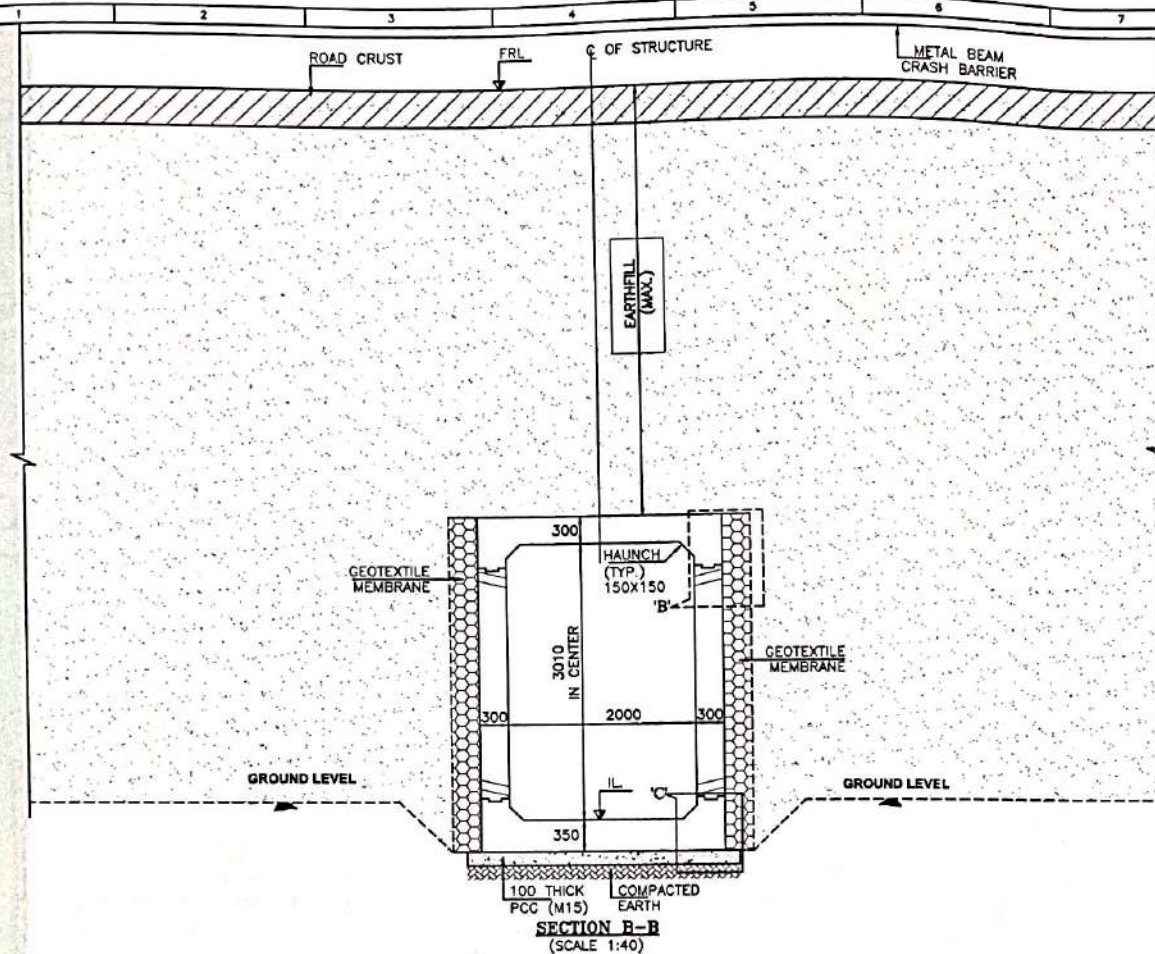
OFFICE: F-8, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA GHAZIABAD, U.P-201212

PROJECT:

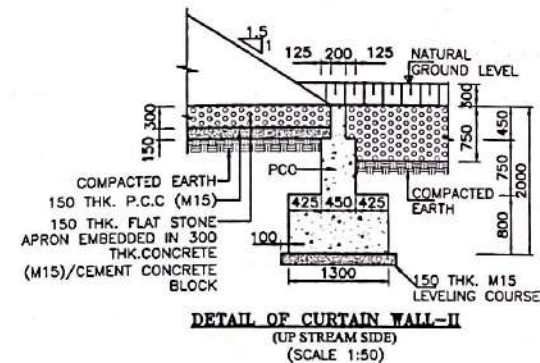
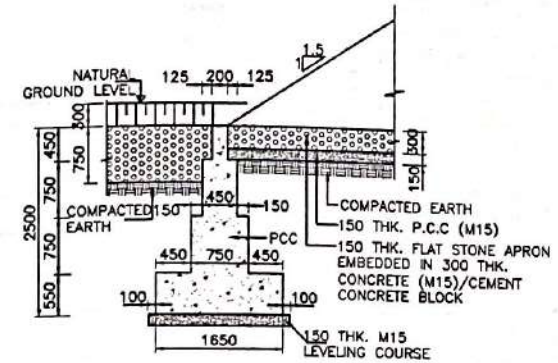
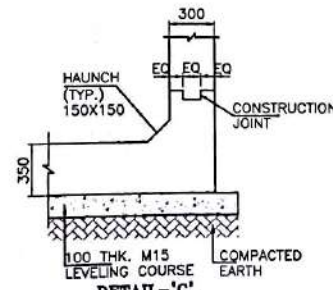
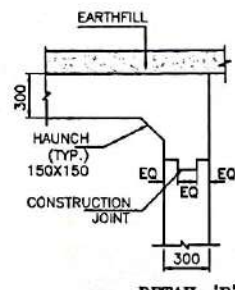
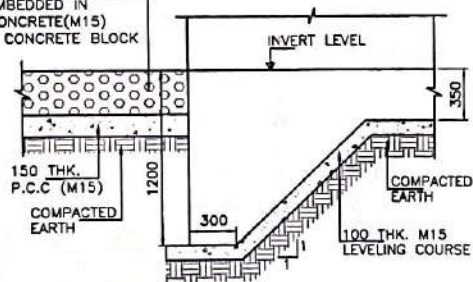
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+100 (GOLLA GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARHATERA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-B)

DRAWING TITLE:- REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 38+018

Date	Drw. W.P	Des. V.S	Chk. A.B	App. NTS	Scale. NTS	Drawing Status.
MAR.2024						
Project No.	Drawing No.	AVC/NH-38/BOX/REIN/38+010/01	Sheet No.	Rev.	01 OF 01	RD



150 THK. FLAT STONE APRON EMBEDDED IN 300THK. CONCRETE (M15)/CEMENT CONCRETE BLOCK



CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR



KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:



DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

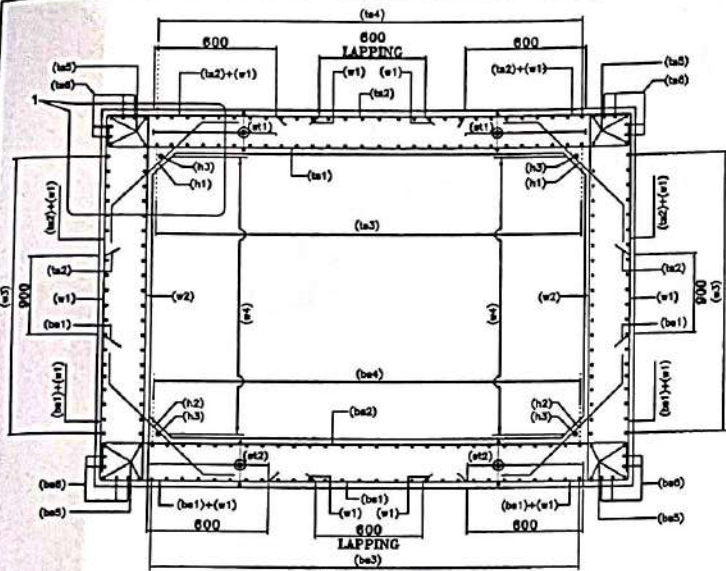


A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Boreo
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE: F-4, ISHAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA GHAZIABAD, U.P-201212

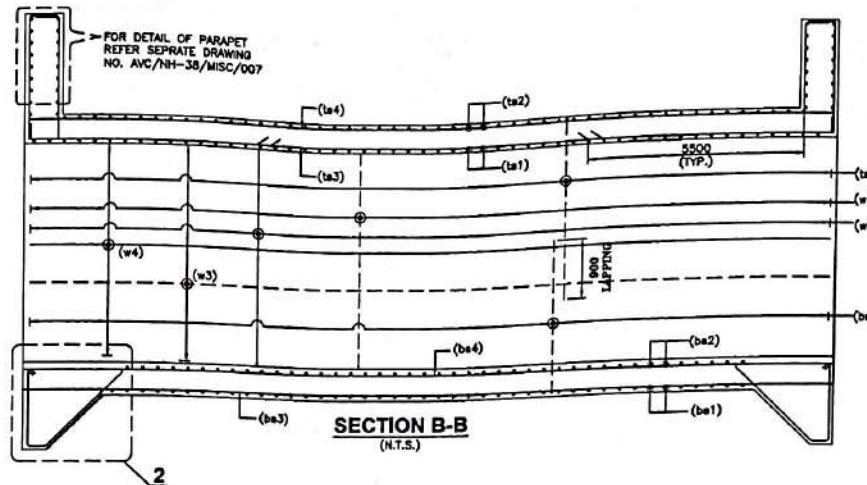
PROJECT:
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+180
(SOLAI GOAN) TO KM 47+462 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-36 IN THIRUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-9)

DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 36+121

Date	Drw.	Des.	Chk.	App.	Scale	Drawing Status
MAR 2024	W.P.	V.S.	A.B.		NTS	
Project No.	Drawing No.	AVC/NH-36/BC/GAD/26+121/61				
		Sheet No.	03 OF 03	Rev.	RD	



SECTION A-A
(N.T.S.)



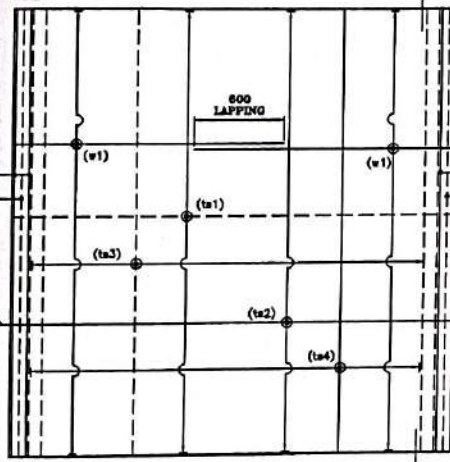
SECTION B-B
(N.T.S.)

LEGEND:-

TOP FACE BAR
BOTTOM FACE BAR

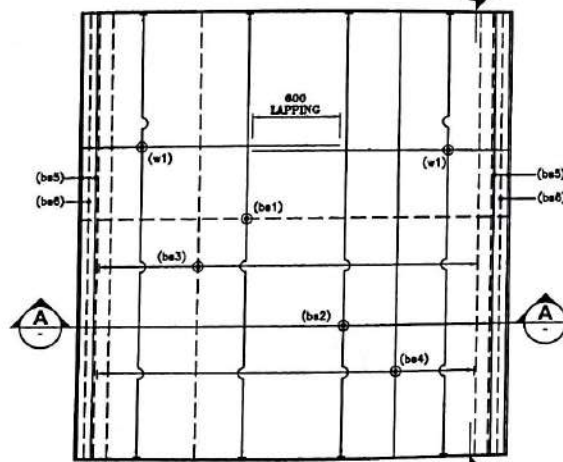
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TRAFFIC DIRECTION



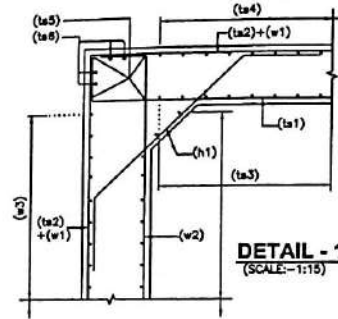
REINFORCEMENT DETAILS OF
TOP SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

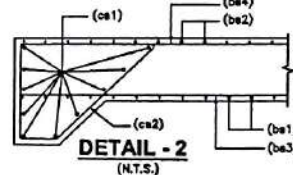


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

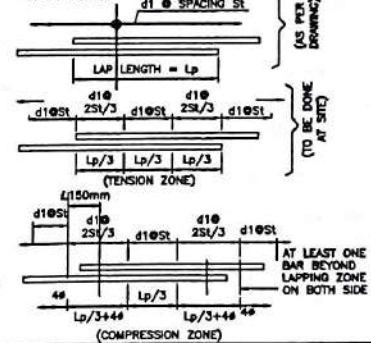
- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/38+121/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+10	160
2	ts2		10	160
3	ts3		10	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		12	160
8	w2		12	160
9	w3		10	200
10	w4		10	200
11	bs1		10	160
12	bs2		12+10	160
13	bs3		10	200
14	bs4		10	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		2 LEGGED 10 ϕ 200 c/c (L-L) & 160 (T-T) DIRECTION	
23	st2		2 LEGGED 10 ϕ 200 c/c (L-L) & 160 (T-T) DIRECTION	

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB - 45mm
 - b) BOTTOM SLAB - 75mm
 - c) SIDE WALL (EARTH SIDE) - 75mm
 - d) SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 36 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



DESIGN CONSULTANT:
A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Boco
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE: P-8, 18MAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA GHAZIABAD, U.P-201212

SAFETY CONSULTANT:
DESIGN
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

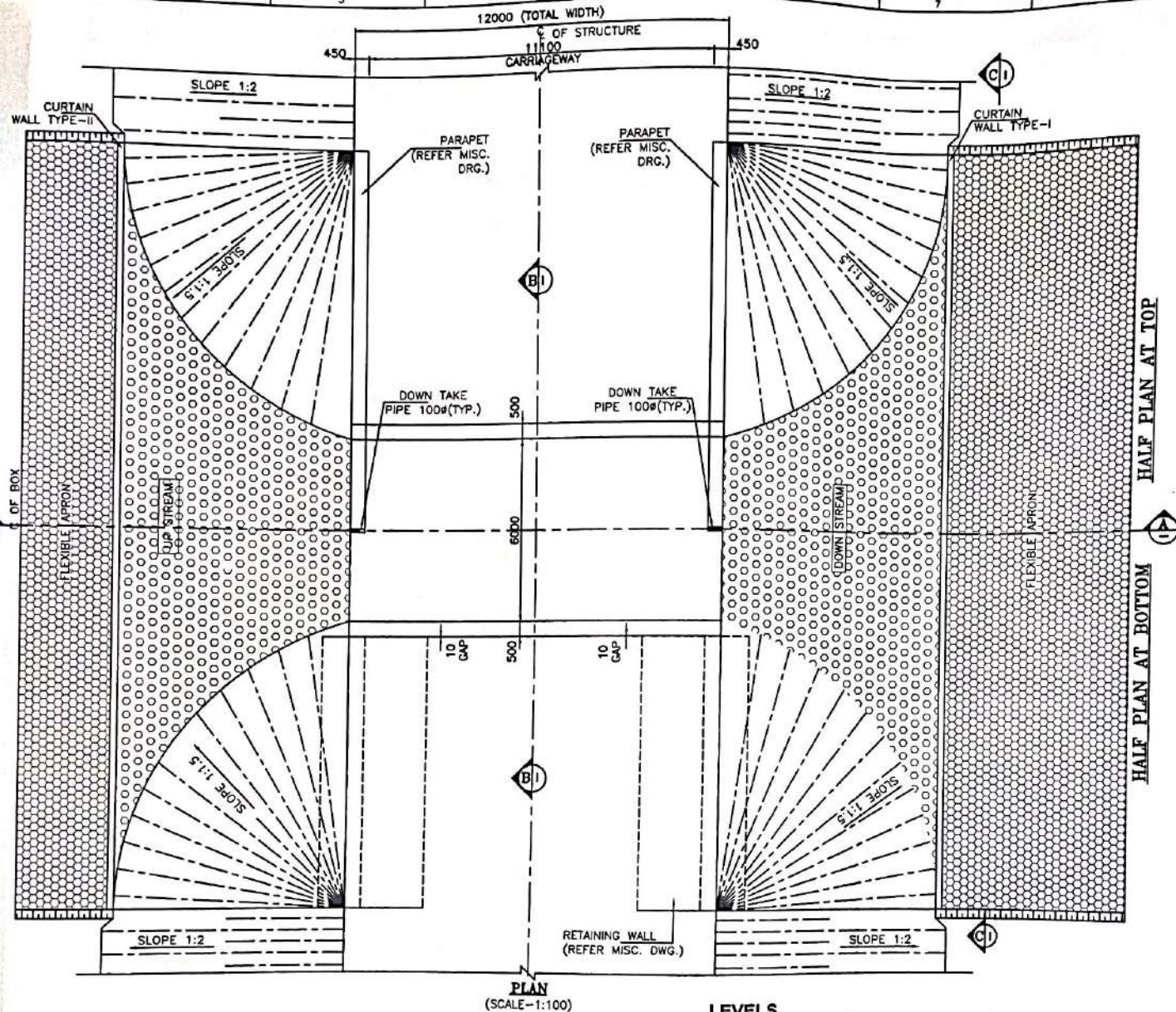
PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

AUTHORITY'S ENGINEER

EPC CONTRACTOR
KAMAC
ENGINEERS
Pvt.Ltd
KAMAC ENGINEERS PVT.LTD
P0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

CLIENT:
NADCL
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

PROJECT:					
WIDENING/IMPROVEMENT TO 3 LANE LAKE WITH PAVED SHOULDER FROM KM 27+150 (ODLA GOM) TO KM 27+450 (LEDO) ON DISBURGH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2 LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-5)					
DRAWING TITLE:					
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 38+121					
Date	Draw.	Des.	Chk.	App.	Drawing Status.
MAR 2024	W.P.	V.B.	A.B.	NTS	
Project No.	Drawing No.	Rev.	Sheet No.	Rev.	
	AVC/NH-38/BOX/REIN/38+121/01		01 OF 01	RO	



42450

DESCRIPTION	PROPOSED
DESIGN CHN.	42+454
CA.CHN.	42+425
STR.TYPE	BOX
SPAN/DIA	1X2X2m
PROPOSAL	NEW 2 LANE

42550

KEY PLAN

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
a. M30-FDR RCC BOX CELL STRUCTURE.
b. M15-FDR PCC AND LEVELING COURSE.
c. M30-PARAPET
- GRADE OF STEEL - F_o 500D.
- THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 8-2017.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION. IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 12t/m². AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
38+421	144.985	137.375	137.090	137.075	6.012m	1.449m	1.310m

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./38+421/01

CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS Pvt.Ltd
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SAIKIA, SARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:



DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

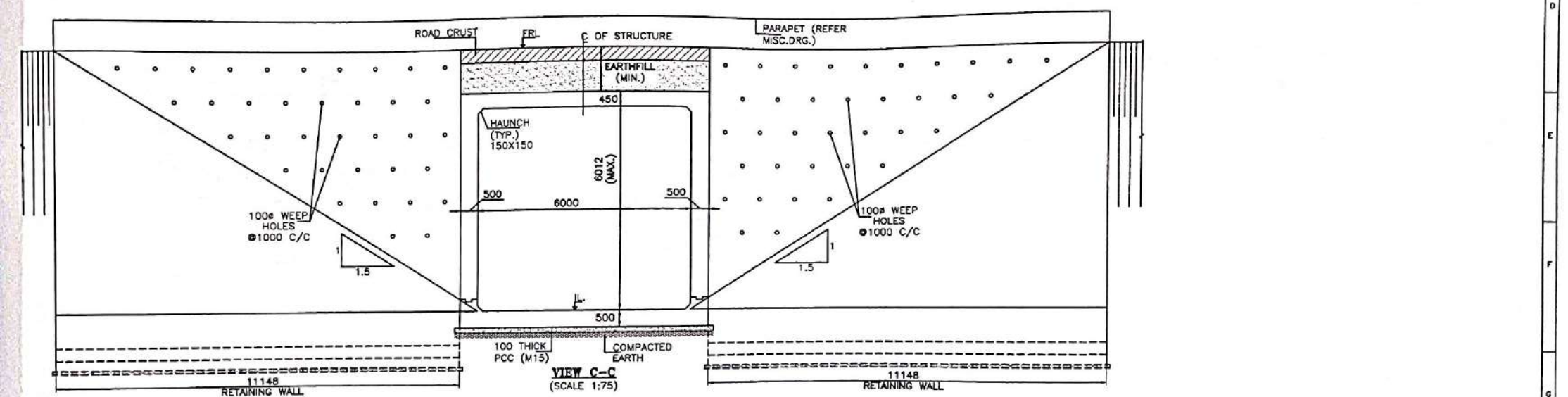
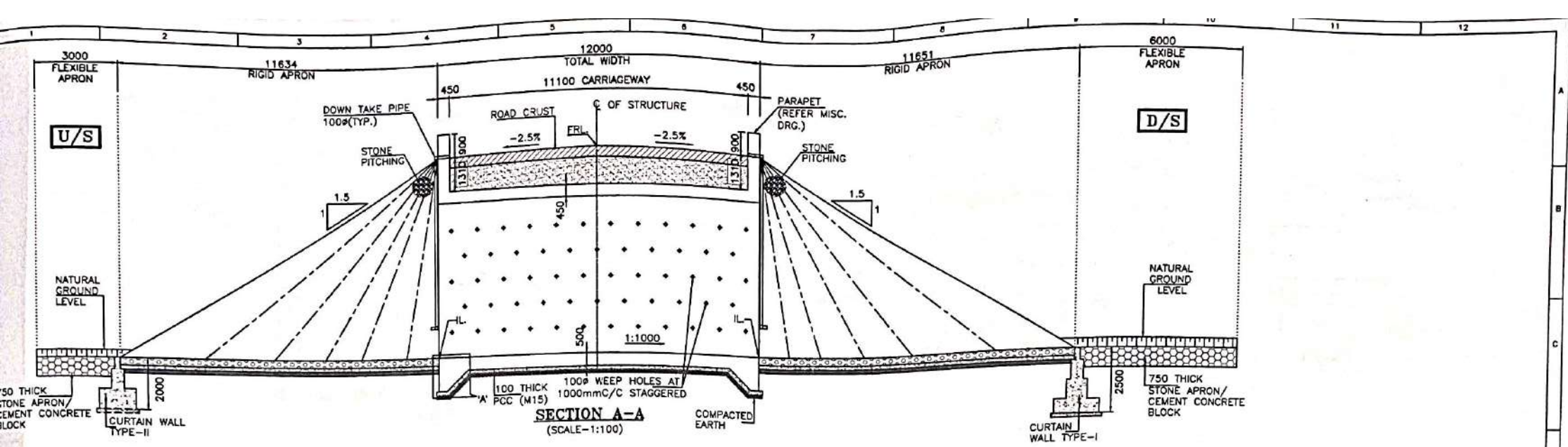
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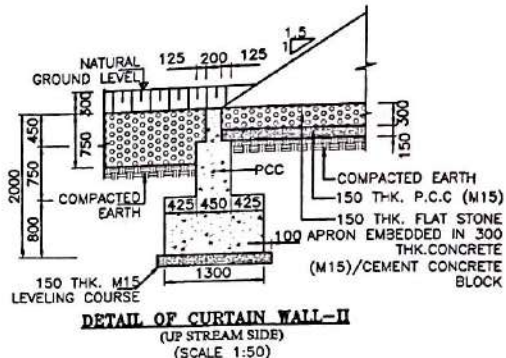
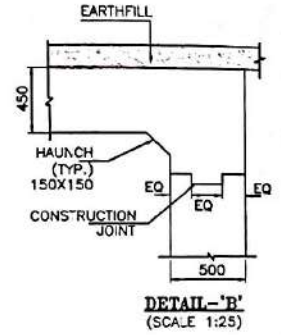
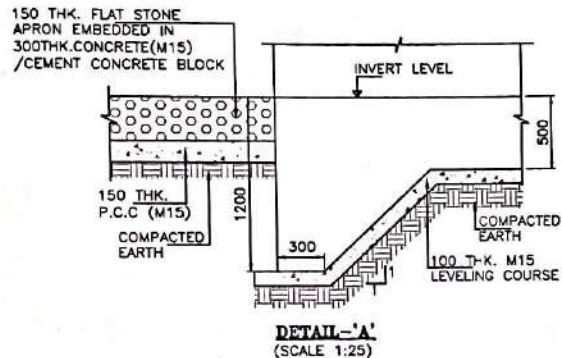
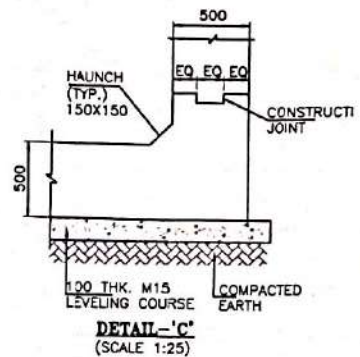
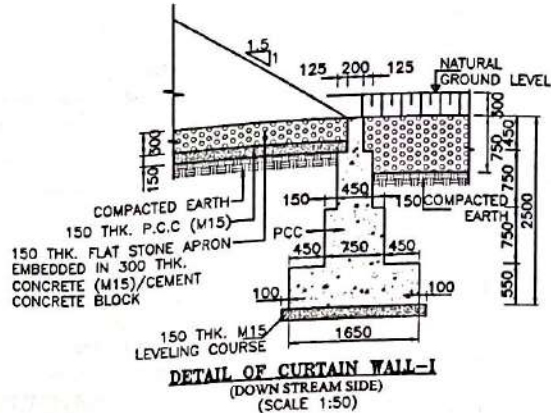
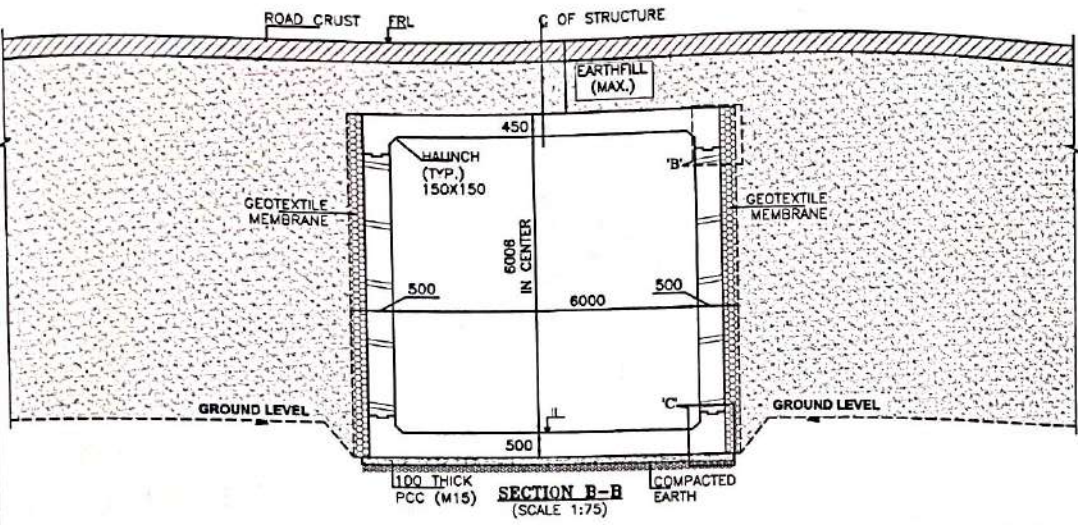
A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Boco
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE: F-8, BHANU CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA, GHAZIABAD, U.P-201012

PROJECT: WIDENING/IMPROVEMENT TO 2 LANE LANE WITH PAVED SHOULDER FROM KM 27+180 (LOCAL GOAN) TO KM 47+482 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B)

DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 38+421									
Date	Drw	W.P	Dwg	Chk	App	Scale	Drawing No.	Sheet No.	Rev
MAR 2024			V.B	A.B		NTS		81 OF 83	RO
Project No.	AYC/NH-38/BC/GAD/38+421/01								



CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT:  A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Boco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE P-8, 18th AN ANCORPORATE TOWER, PLOT NO-0-23, SECTOR-13, VASUNDHRA, GHAZIABAD, U.P-201312	PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 37+180 (GOLAI OAH) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARCHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (LANE-IPS) OF NH-38 IN TIBETIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 36+431 <table border="1"> <tr> <th>Date</th><th>Drw.</th><th>Dep.</th><th>Chk.</th><th>App.</th><th>Scale</th><th>Drawing Status</th></tr> <tr> <td>MAR. 2024</td><td>W.P</td><td>V.S</td><td>A.B</td><td></td><td>NTS</td><td></td></tr> <tr> <td>Project No.</td><td>Drawing No.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td></td><td>AVCNH-38/B/C/GAD/36+431/01</td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Sheet No.</td><td>02 OF 03</td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Rev.</td><td>RO</td><td></td><td></td><td></td><td></td><td></td></tr> </table>	Date	Drw.	Dep.	Chk.	App.	Scale	Drawing Status	MAR. 2024	W.P	V.S	A.B		NTS		Project No.	Drawing No.							AVCNH-38/B/C/GAD/36+431/01						Sheet No.	02 OF 03						Rev.	RO					
Date	Drw.	Dep.	Chk.	App.	Scale	Drawing Status																																										
MAR. 2024	W.P	V.S	A.B		NTS																																											
Project No.	Drawing No.																																															
	AVCNH-38/B/C/GAD/36+431/01																																															
Sheet No.	02 OF 03																																															
Rev.	RO																																															



CLIENT:
NHIDCL
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

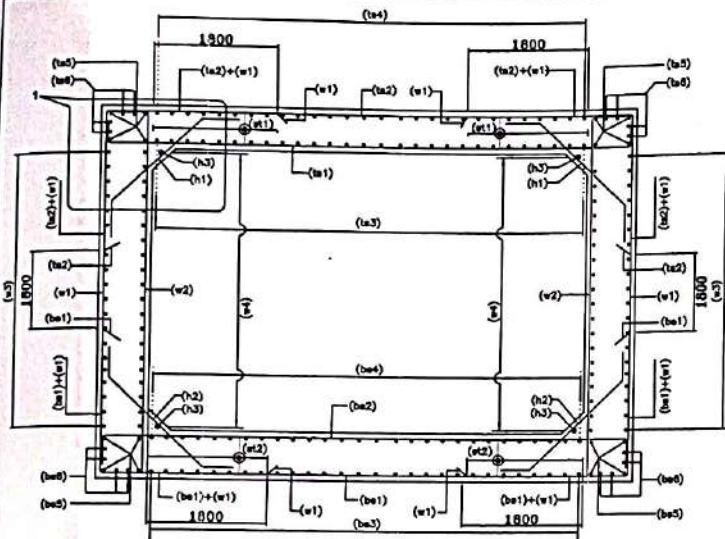
AUTHORITY'S ENGINEER
**ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.**
C/O JAYANTA SAKIA, SARBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

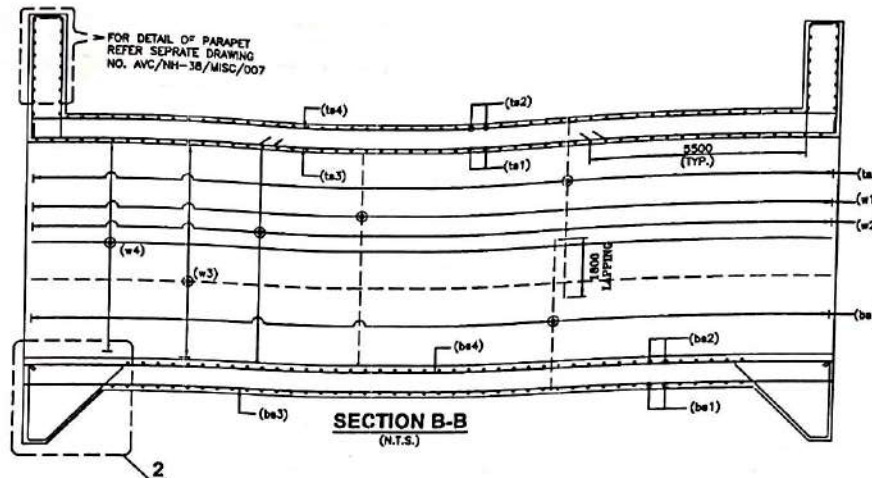
SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Bosco
Ashram Wall Gali, New
Delhi 110045
**Winst Infra Solution
Pvt. Ltd.**
OFFICE: F-8, ISHAAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA GHAZIABAD, U.P-201312

PROJECT:
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(GOLAN GOAN) TO KM 47+682 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-36 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-9)
DRAWING TITLE:-
GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 36+421
Date: MAR.2024
Project No.:
Dw. W.P. V.B. Chk. A.B. App. Scale: NTS
Drawing No.: AVCNH-36/EC/GAD/36-421/61
Sheet No.: 09 OF 93
Rev. RO



SECTION A-A
(N.T.S.)

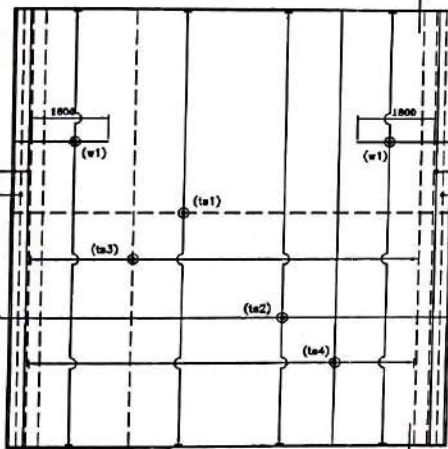


SECTION B-B
(N.T.S.)

LEGEND:-	
TOP FACE BAR	---
BOTTOM FACE BAR	---

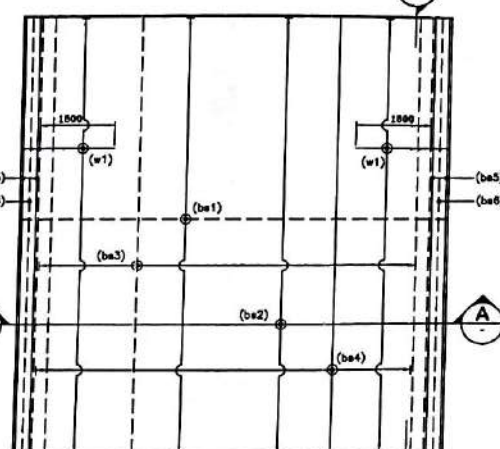
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TRAFFIC DIRECTION



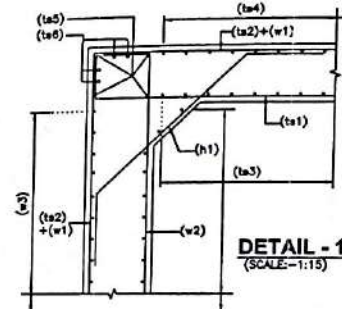
REINFORCEMENT DETAILS OF
TOP SLAB

(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

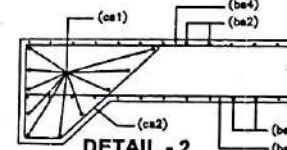


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE: 1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR $ts1$ & $ts2$ IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/QAD/38+421/01

BOX REINF. SCHEDULE

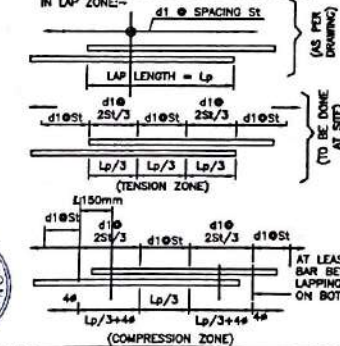
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		20+12	150
2	ts2		16	150
3	ts3		12	150
4	ts4		12	150
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	150
8	w2		16	150
9	w3		12	150
10	w4		10	150
11	bs1		16	150
12	bs2		20+12	150
13	bs3		12	150
14	bs4		12	150
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	150
18	h2		10	150
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	150
22	st1		8	150 c/c (L-L) 150 c/c (T-T) DIRECTION
23	st2		12	150 c/c (L-L) 150 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-

- TOP SLAB = 45mm
- BOTTOM SLAB = 75mm
- SIDE WALL (EARTH SIDE) = 75mm
- SIDE WALL (INNER SIDE) = 45mm

- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 5 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE



DESIGN CONSULTANT:

A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Boco
Ashram Waji Gali, New
Delhi 110045

Winst Infra Solution
Pvt. Ltd.

OFFICE: F-4, ISHAAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA CHANABAD, U.P. 201212

PROJECT:

WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+100 (GOLLA DUKKI) TO KM 27+482 (LEDC) ON DISBURGMENT TO LEDC SECTION WITH PROPOSED MAROHERITA & LEDC BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3)

DRAWING TITLE:- REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 38+421

Date	Drawn	Check	Appr.	Scale	Drawing Status
JAN.2024	W.P.	V.B.	A.B.	NTS	
Project No.	Drawing No.	Sheet No.	Rev		
	AVC/NH-38/BOX/REIN/38+421/01	01 OF 01	RD		

CLIENT:



NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR

KAMAC
ENGINEERS
Pvt. Ltd.
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

PROOF CONSULTANT:

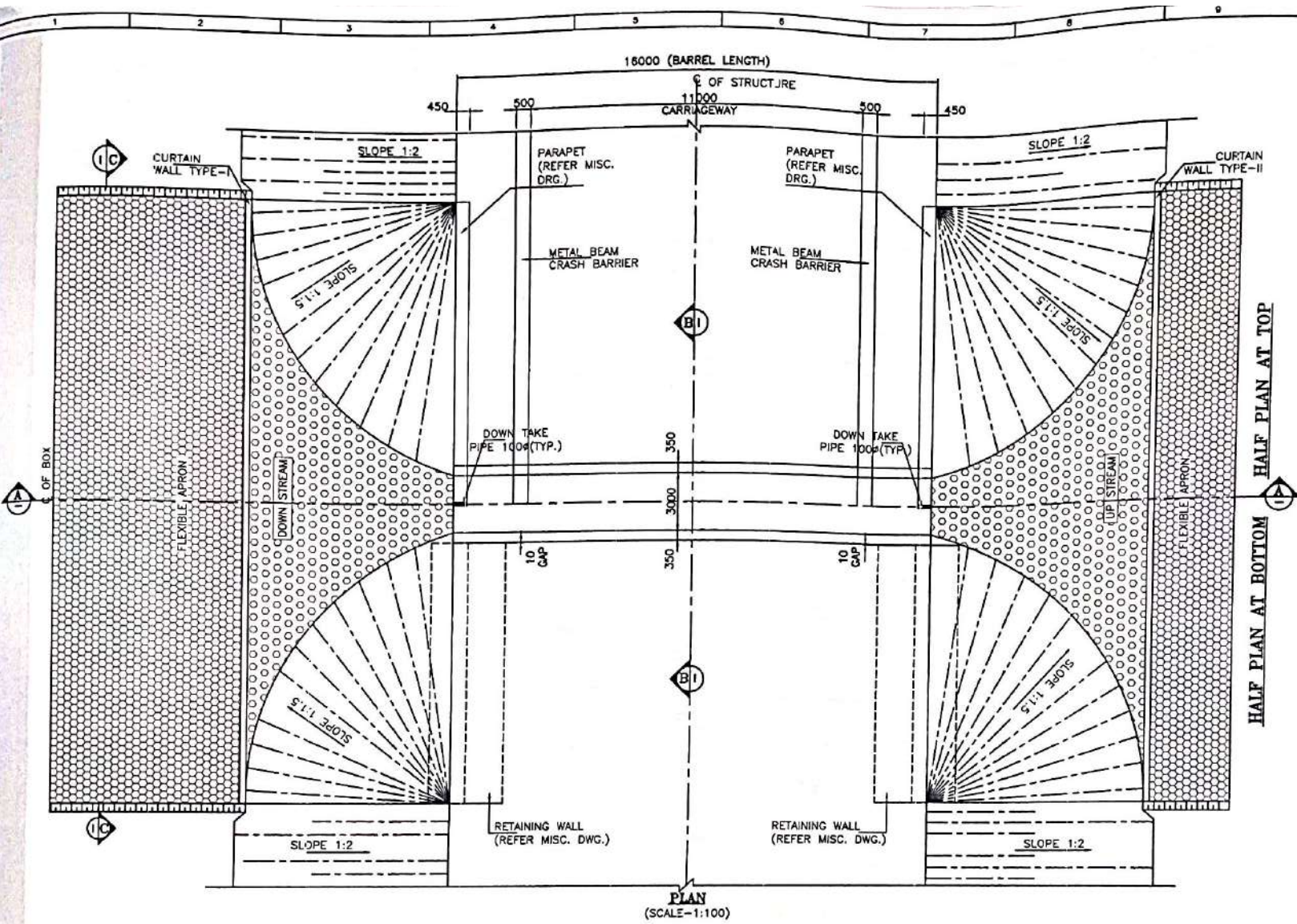
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P.201010

SAFETY CONSULTANT:

DESIGN
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

A.V. CONSTRUCTION
1st Floor, WZ-1240,
Palam Extension, Boco
Ashram Waji Gali, New
Delhi 110045



DESCRIPTION	PROPOSED
DESIGN CHN.	36+673
C.A.CHN.	36+680
STR. TYPE	BOX
SPAN/ DIA	1X3X4m
PROPOSAL	NEW 2 LANE



- LEGEND:-**
- FPL FINISHED ROAD LEVEL
 - IL INVERT LEVEL
 - LVL. LEVEL
 - EGL. EXISTING GROUND LEVEL
- FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - a. M30-FOR RCC BOX CELL STRUCTURE.
 - b. M15-FOR PCC AND LEVELING COURSE.
 - c. M30-PARAPET
 - GRADE OF STEEL - Fe 5000.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - SBC SHALL BE 16t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

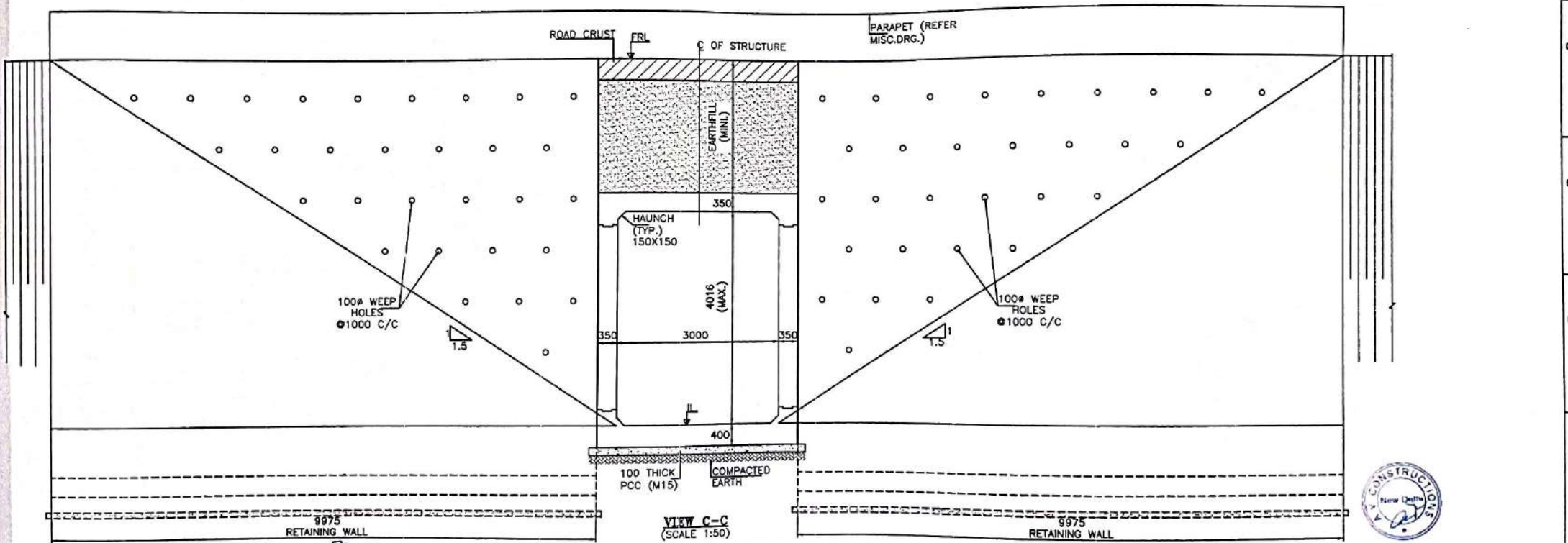
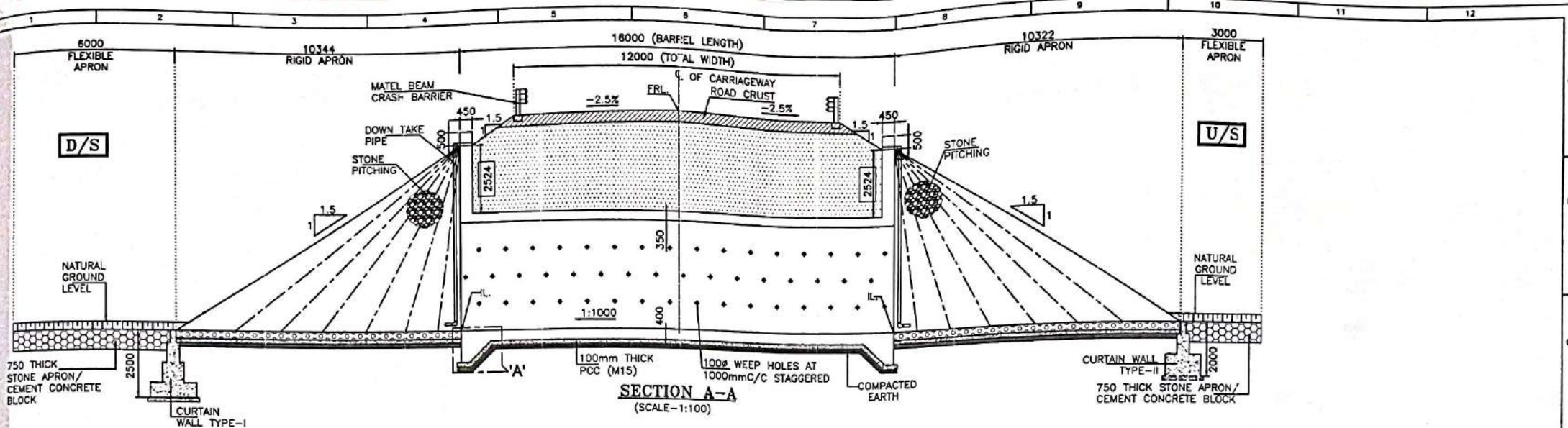
LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
36+673	145.408	137.635	137.335	137.351	4.016m	3.707m	2.524m

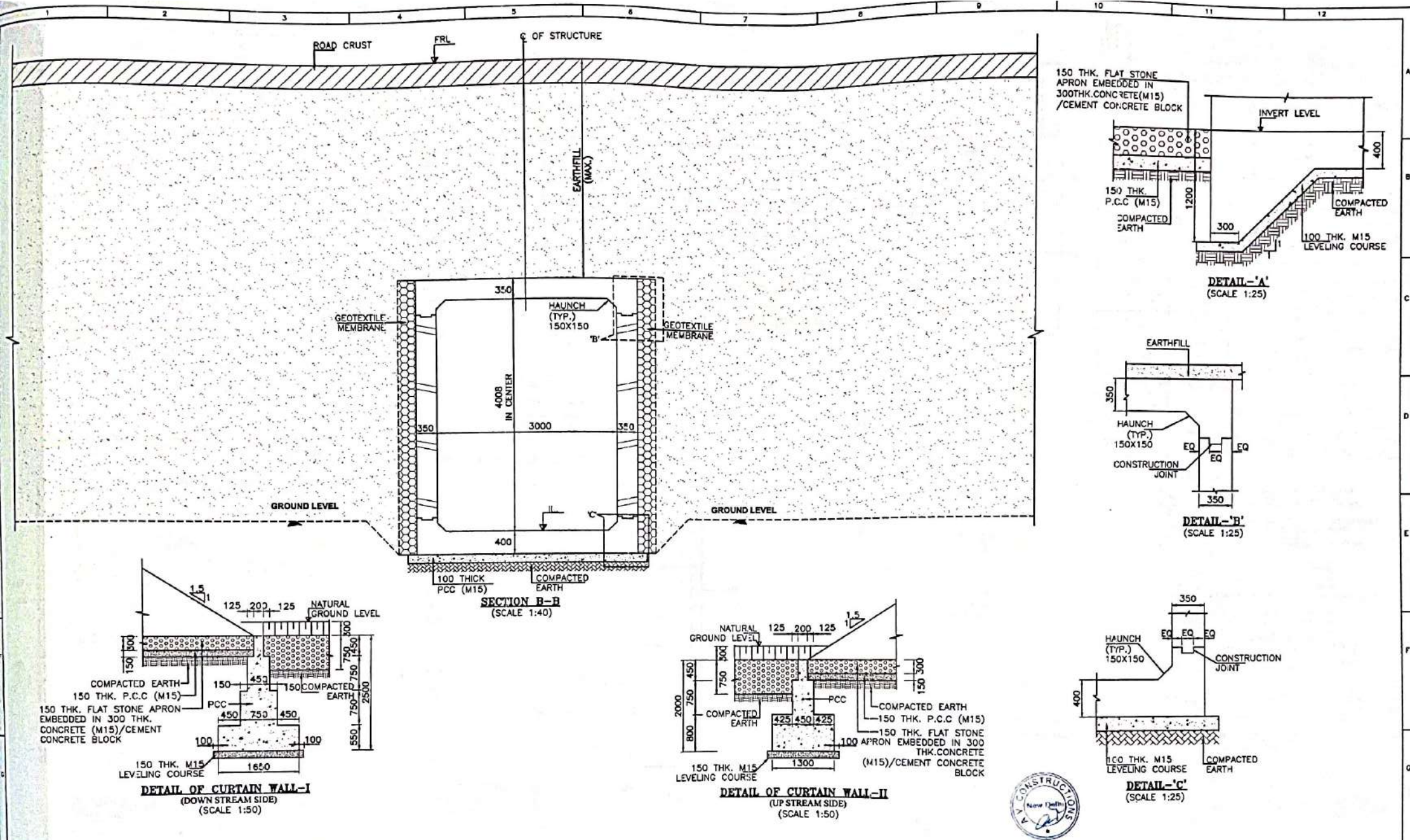
REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./36+673/01

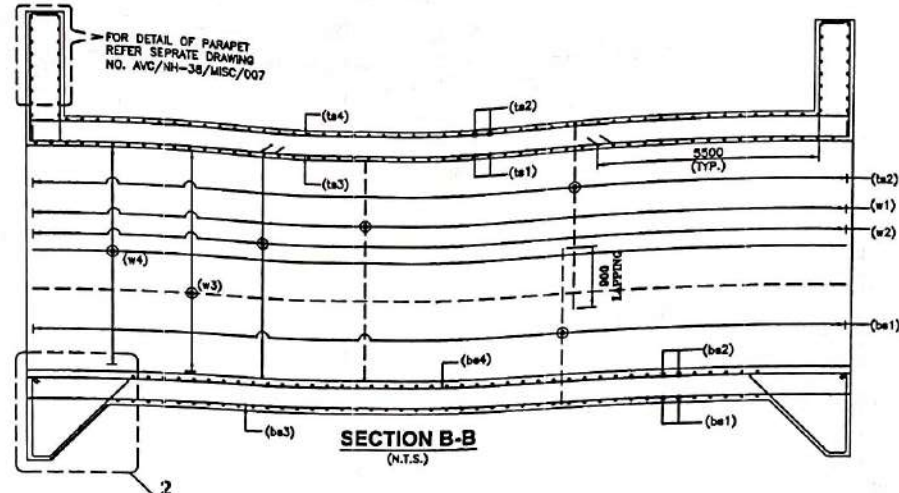
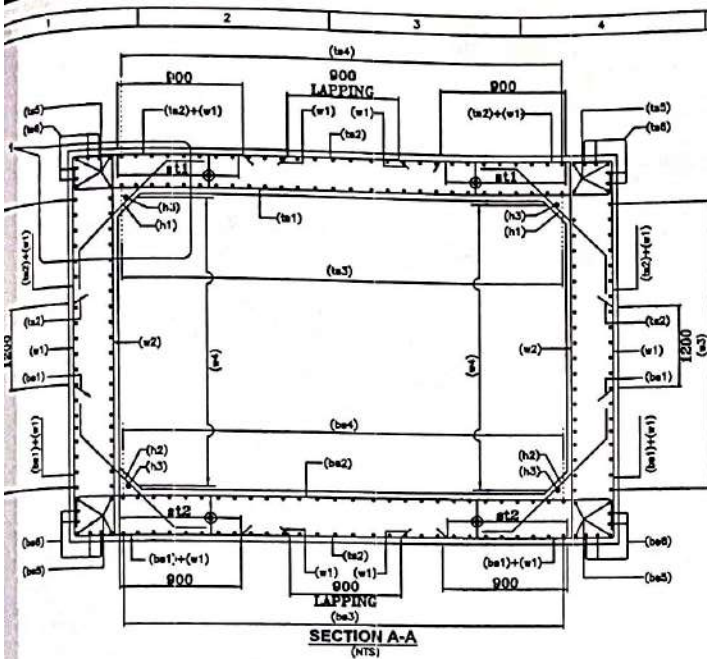
CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Boco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE F-1, BHAW CORPORATE TOWER, PLOT NO-C-23, SECTOR 13, VASUNDHRA GHAZIABAD, U.P.-201012	PROJECT: WIDENING/IMPROVEMENT TO 2 LANE WITH RAISED SHOULDER FROM KM 27+00 (GOLA GOAN) TO KM 47+00 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED NAROWER IN A LEDO BYPASS (BROWN FIELD AND GREEN FIELD) (2 LANE +PS) OF NH-38 IN TINSUKA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACAGE-6)
						DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 36+673
Date: MAR-2024 Project No.		Drw. W.P. V.S. Deg. V.S. Chk. A.B. App. NTS Scale.		Drawing Status. Sheet No. 81 OF 93 Rev. RD		



CLIENT: NADCL NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKIA, SARBAJANIN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110045	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-8, ISHAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASINDHRA GHAZIABAD, U.P-201212	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+100 (GOLAI GOAN) TO KM 47+882 (LEDO) ON DISBURGARY TO LEDO SECTION WITH PROPOSED MARHOMETA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (PLAN-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-8) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 36+473 <table border="1"> <tr> <th>Date</th> <th>Drw. W.P.</th> <th>Dsg. V.B.</th> <th>Chk. A.B.</th> <th>App. NTS</th> <th>Scale</th> <th>Drawing Status</th> </tr> <tr> <td>MAR.2024</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Project No.</th> <th>Drawing No.</th> <th>Sheet No.</th> <th>Rev.</th> <th>RD</th> <th></th> <th></th> </tr> <tr> <td></td> <td>AVC/NH-38/BC/GAD/36+473/01</td> <td>82 OF 93</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Date	Drw. W.P.	Dsg. V.B.	Chk. A.B.	App. NTS	Scale	Drawing Status	MAR.2024							Project No.	Drawing No.	Sheet No.	Rev.	RD				AVC/NH-38/BC/GAD/36+473/01	82 OF 93				
Date	Drw. W.P.	Dsg. V.B.	Chk. A.B.	App. NTS	Scale	Drawing Status																												
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	AVC/NH-38/BC/GAD/36+473/01	82 OF 93																																

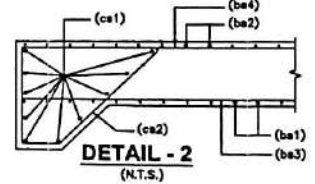
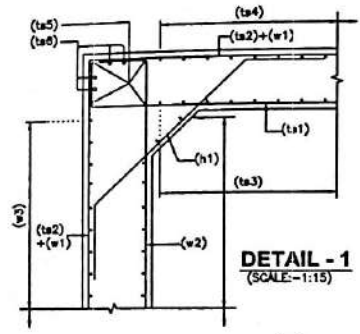
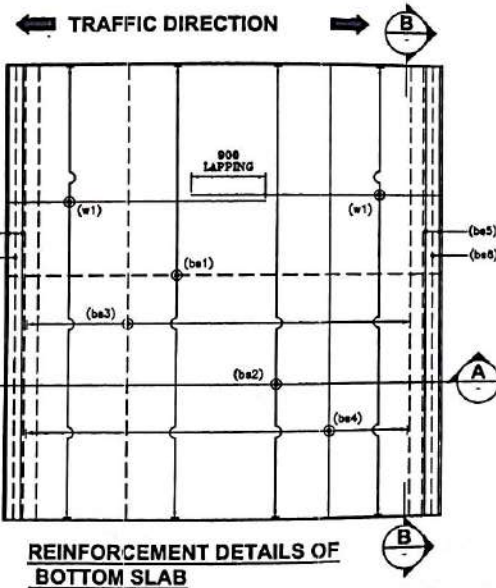
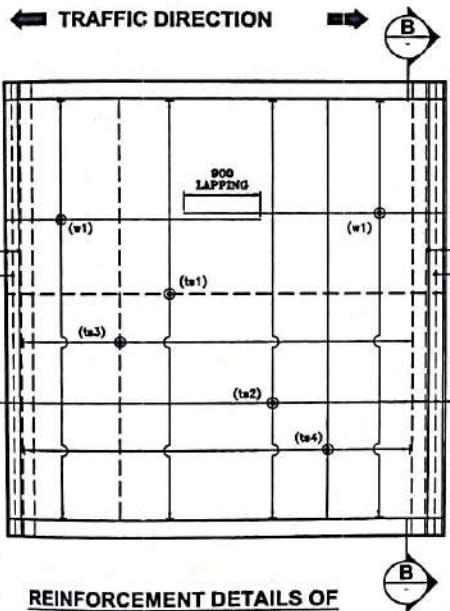


CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734019	AUTHORITY'S ENGINEER ALMONDZ GLOBAL INFRA CONSULTANT LIMITED IN JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED. C/O JAYANTA SAIKA, SARBAJANIN NANGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM VASANT KUNJ, NEW DELHI-110045	DESIGN CONSULTANT:  A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Boco Ashram Well Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA, GHAZIABAD, U.P-201212	PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAI GOAN) TO KM 47+462 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE.(PACKAGE-8) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 58+873 <table border="1"> <thead> <tr> <th>Date</th> <th>Drw. W.P.</th> <th>Des. V.S.</th> <th>Chk. A.B.</th> <th>App. NTS</th> <th>Scale</th> <th>Drawing Status</th> </tr> </thead> <tbody> <tr> <td>MAR.2024</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Project No. Drawing No. Sheet No. Rev. AVC/NH-38/BC/IGAD/06-473/01 83 OF 83 RO	Date	Drw. W.P.	Des. V.S.	Chk. A.B.	App. NTS	Scale	Drawing Status	MAR.2024						
Date	Drw. W.P.	Des. V.S.	Chk. A.B.	App. NTS	Scale	Drawing Status														
MAR.2024																				



LEGEND:-

TOP FACE BAR	—
BOTTOM FACE BAR	- - -



- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IRC:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

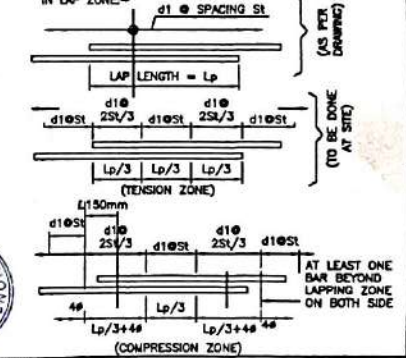
- GENERAL ARRANGEMENT DRAWING, AVC/NH-38/BOX/QAD/35+673/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+10	160
2	ts2		12	160
3	ts3		10	180
4	ts4		10	180
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	160
8	w2		16	160
9	w3		10	180
10	w4		10	180
11	bs1		12	160
12	bs2		12+12	160
13	bs3		10	180
14	bs4		10	180
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	180
22	st1		LINK BAR 10# 180 c/c (L-L) & 160 (T-T) DIRECTION	
23	st2		LINK BAR 12# 180 c/c (L-L) & 160 (T-T) DIRECTION	

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm
- OVERLAPPING FOR SPlicing OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 50d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm



CLIENT:

NADCL

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS

KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH AYOLEEZA
CONSULTANT PRIVATE LIMITED.

C/O JAYANTA SAIKIA, SAIRBAJANIN
NAMGHAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES

OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID

PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

A.V. CONSTRUCTION

1st Floor, WZ-1240,
Palam Extension, Boco
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Delhi 110045

Winst Infra Solution

Pvt. Ltd.
OFFICE: F-4, ISHAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA, GHAZIABAD, U.P-201012

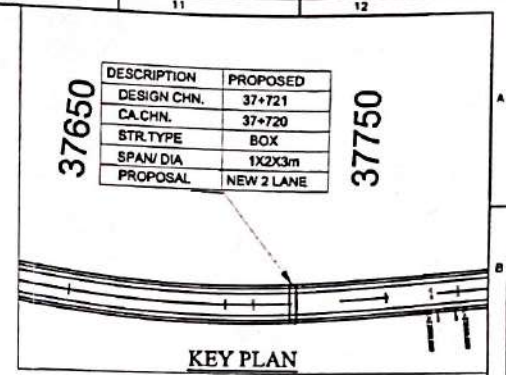
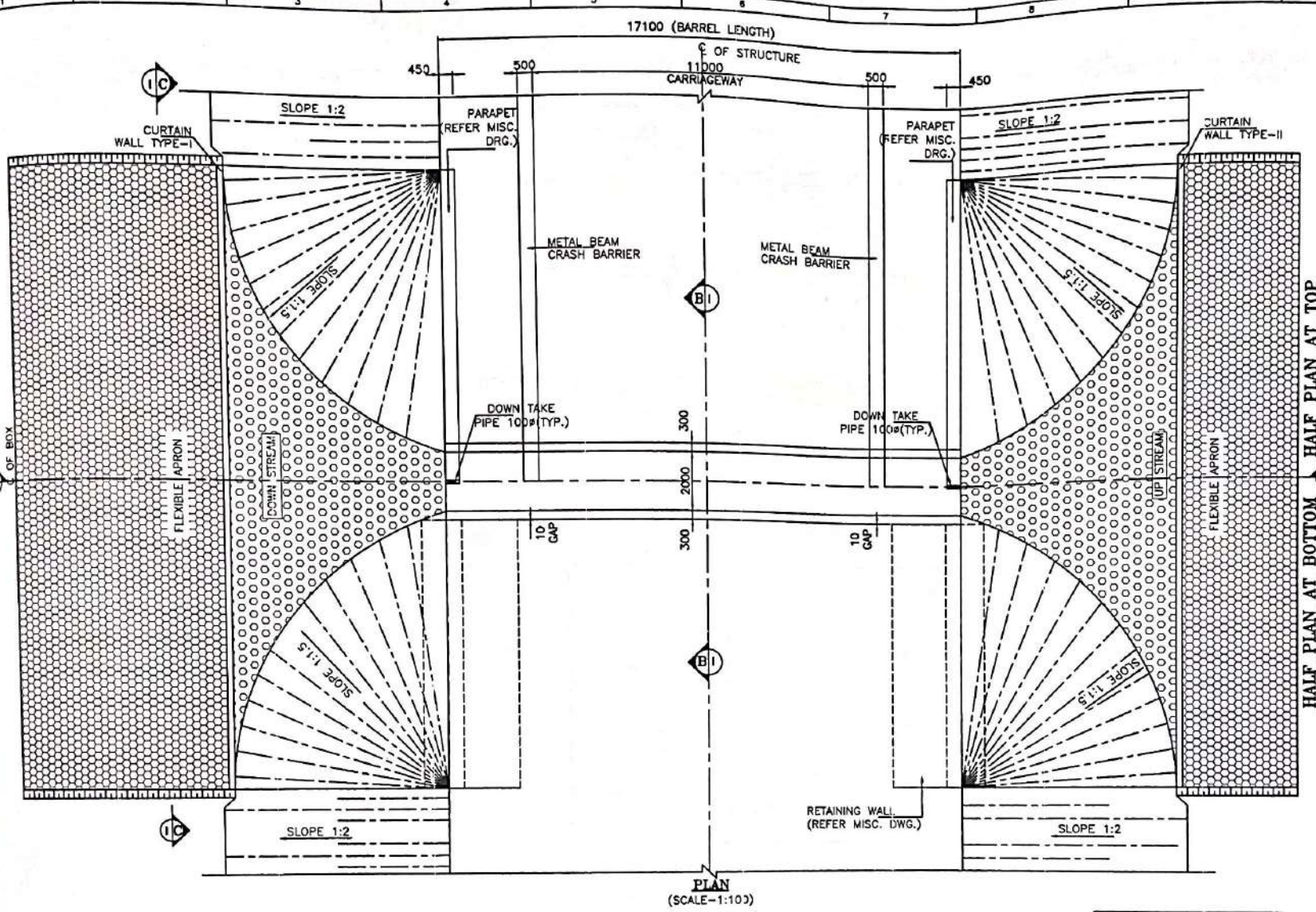
PROJECT:

WIDENING&IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(GOLA GOAN) TO KM 47+852 (LEDO) ON DIBRUGAHAT TO LEDO SECTION WITH
PROPOSED MAROHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-6)

DRAWING TITLE:-

REINFORCEMENT DETAIL OF BOX CULVERT
AT CH. 38+673

Date	Drw.	Dwg.	Chk.	App.	Scale	Drawing Status
MAR. 2024	W.P	V.B	A.B		NTS	
Project No.	Drawing No.	AVC/NH-38/BOX/REIN.08+473/01				Sheet No. 01 OF 01
						Rev. RD



- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - F_o 500D.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 8-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND NORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 10.100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - 11.SBC SHALL BE 18t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - 12.AS PER NORTH SECTION-2500,WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY.CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX.CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - 13.CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTH'FILL (MIN.)
			LHS	RHS			
37+721	145.255	139.051	138.751	138.768	3.017 m	3.187m	1.453m

REFERENCE DRAWINGS:-
 1. REINFORCEMENT DETAIL OF BOX CULVERT
 AVC/NH-38/BC/REINF./37+721/01



LEGEND:-
 FRL FINISHED ROAD LEVEL
 IL INVERT LEVEL
 LVL. LEVEL
 EGL. EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

CLIENT:

 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS PVT.LTD
 F0201, CITY CENTER OFFICE
 BLOCK, 2ND FLOOR,
 MATIGARA 734010

AUTHORITY'S ENGINEER

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
 OFFICE NO. 620, SIGNATURE GLOBAL
 MALL, SECTOR-3,
 VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID
 PLOT NO.54, 3rd FLOOR(FRONT),
 MASOODPUR DAIRY FARM,VASANT KUNJ,
 NEW DELHI-110070,

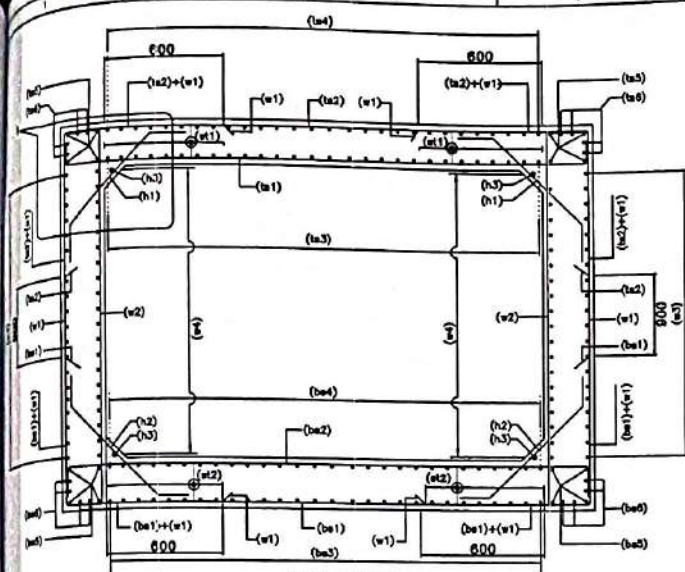
DESIGN CONSULTANT:

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 1st Floor, WZ-1240,
 Palam Extension, Bosco
 Ashram Wall Gali, New
 Delhi 110045
Winst Infra Solution Pvt. Ltd.
 OFFICE F-4, ISHAN CORPORATE
 TOWER, PLOT NO-C-23,SECTOR-13,
 VASUNDHRA GHAZIABAD, U.P-201212

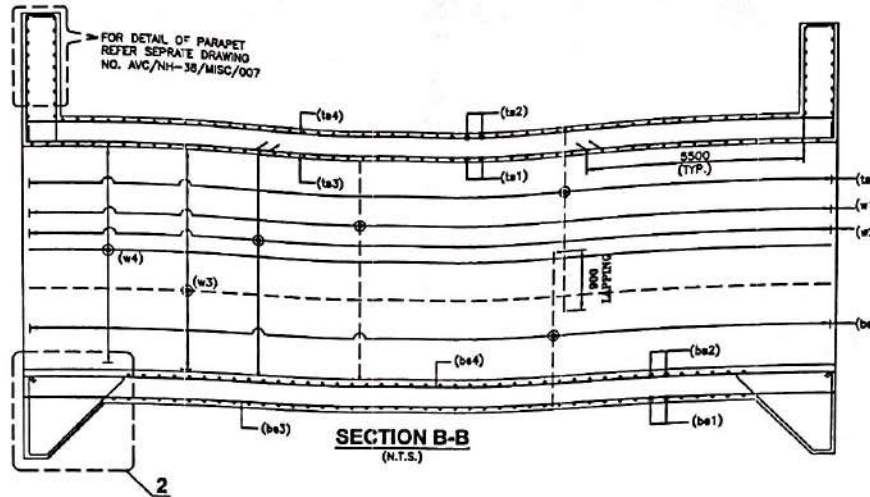
PROJECT:
 WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLA SONO) TO KM 47+00 (LEDO) ON DIBRUGARH-TO LEDO SECTION WITH PROPOSED BANGHATA & LEDO BYPASS (BROWN FELD AND GREEN FELD). (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE. (PACKAGE-4)

DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 37+721

Date	Drw. W.P.	Des. V.B.	Chk. A.B.	App. NTS	Scale	Drawing Status
MAR-2024						
Project No.	Drawing No.	AVCN-38/BC/GAD/37+721/01	Sheet No.	81 OF 83	Rev.	RO



SECTION A-A
(N.T.S.)



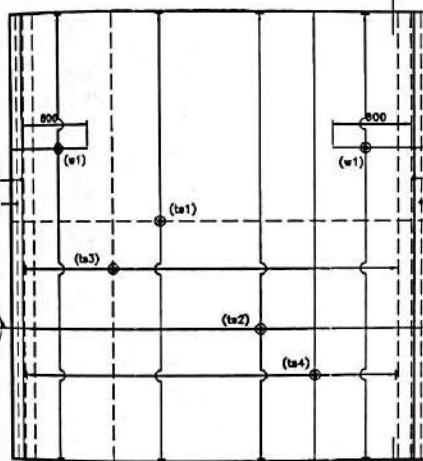
SECTION B-B
(N.T.S.)

LEGEND:-

TOP FACE BAR	_____
BOTTOM FACE BAR	_____

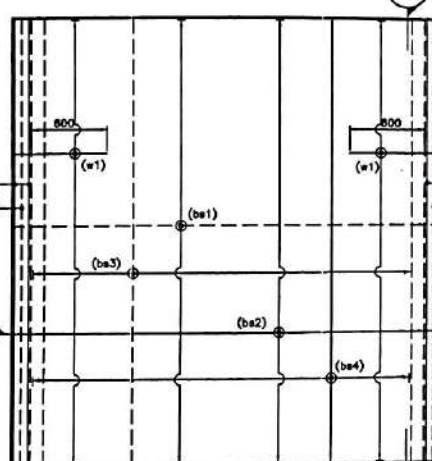
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TRAFFIC DIRECTION →



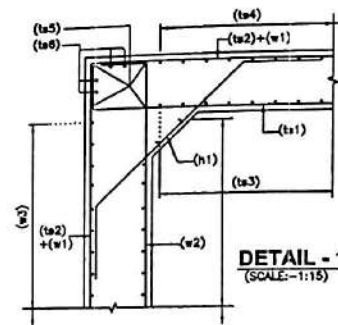
REINFORCEMENT DETAILS OF
TOP SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

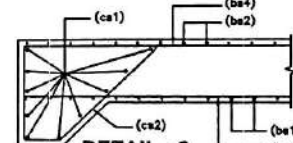


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC-112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR: ba1 & ta2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

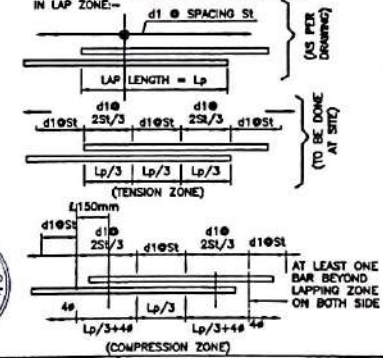
- GENERAL ARRANGEMENT DRAWING, AVC/NH-38/BOX/QAD/37+721/01

BOX REINF. SCHEDULE

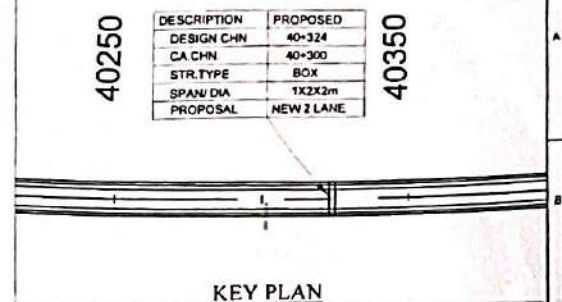
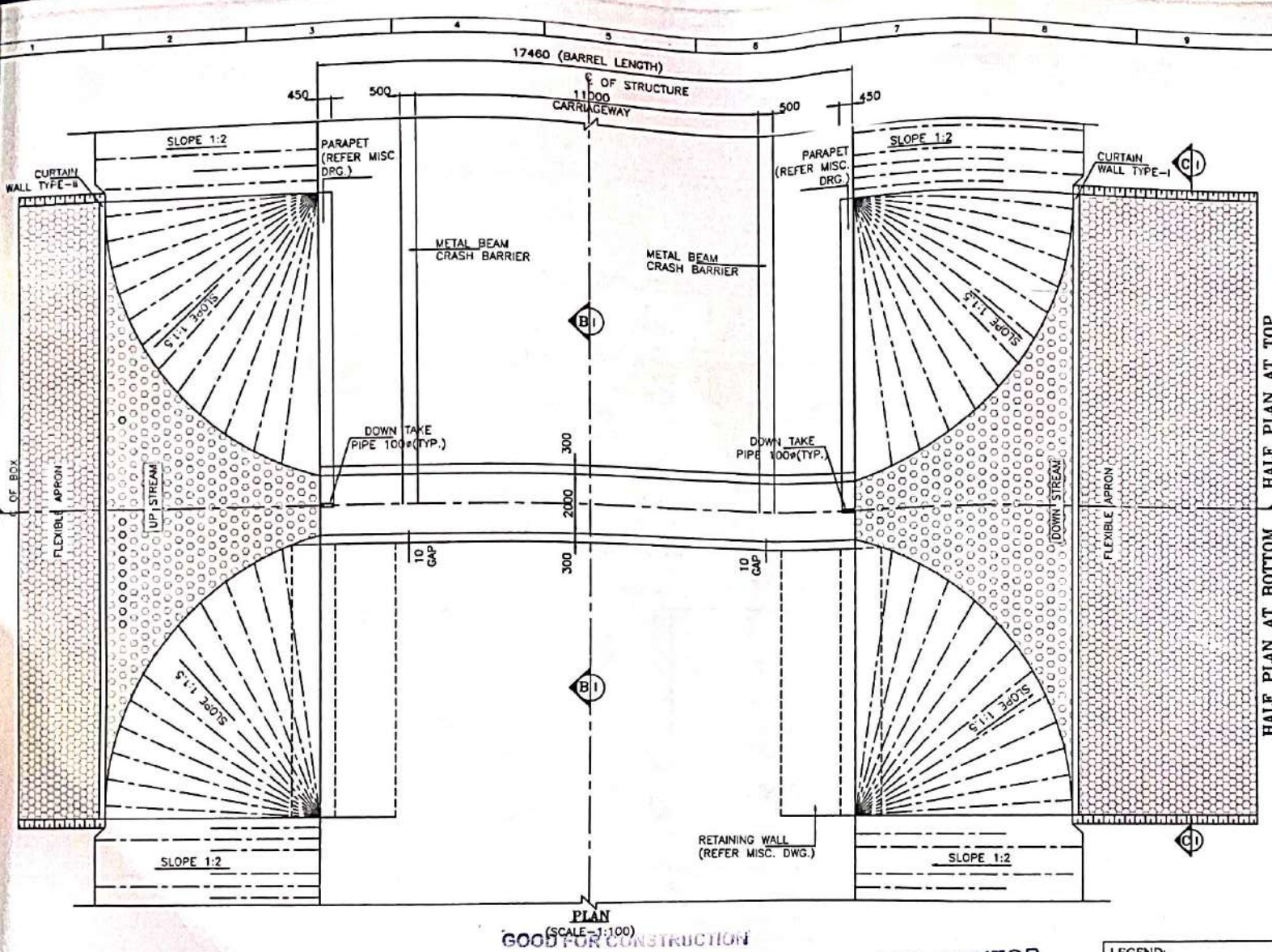
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ta1		12	160
2	ta2		10	160
3	ta3		8	200
4	ta4		10	200
5	ta5		12	2x4 Nos.
6	ta6		12	2x4 Nos.
7	w1		12	160
8	w2		12	160
9	w3		10	200
10	w4		8	200
11	bs1		10	160
12	bs2		10+10	160
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	ca1		12	10 Nos.
21	ca2		10	200
22	st1		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION
23	st2		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS-1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - TOP SLAB - 45mm
 - BOTTOM SLAB - 75mm
 - SIDE WALL (EARTH SIDE) - 75mm
 - SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 50 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



NADCL NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 610, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Bosco Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE F4, ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA, GHAZIABAD, U.P-201212	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+180 (GOLAN GOAN) TO KM 47+482 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED BANGHARATA & LEDO BYPASS (BIRCHFIELD AND GREEN FIELD) (PLAN+RS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-2) DRAWING TITLE: REINFORCEMENT DETAIL OF BOX CULVERT AT CH.37+721 Date: MAR 2024 Project No.: Dw. No.: W.P. No.: Dwg. No.: V.B. No.: Chk. No.: A.B. No.: App. No.: Scale: NTS Drawing Status: Sheet No. 01 OF 01 Rev. RD
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- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - Fw 500.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECTED TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - SBC SHALL BE 16t/m². AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - AS PER NORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
 - CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
40+324	146.582	140.760	140.477	140.460	2.017 m	3.805m	2.135m

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

REFERENCE DRAWINGS:-

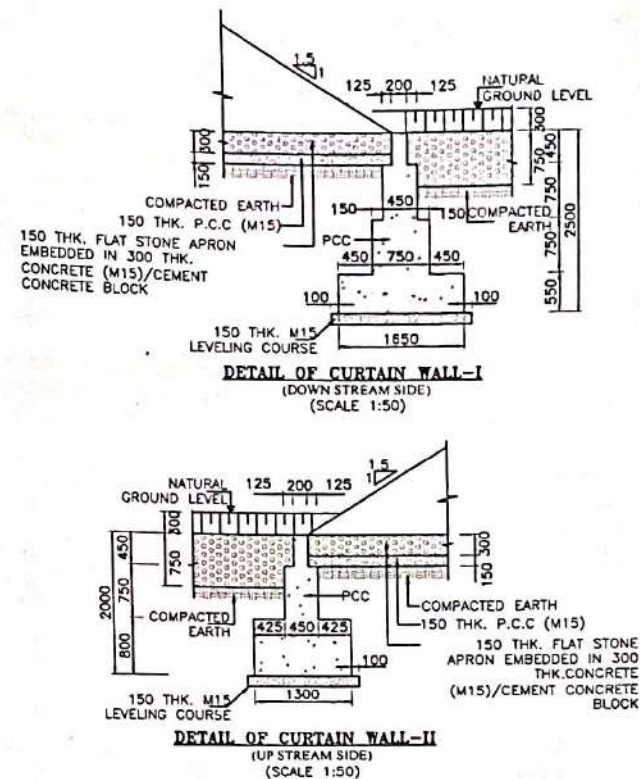
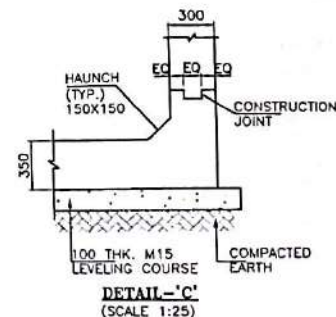
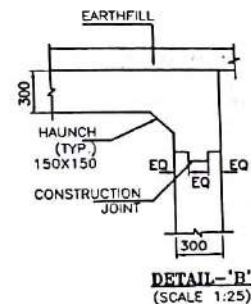
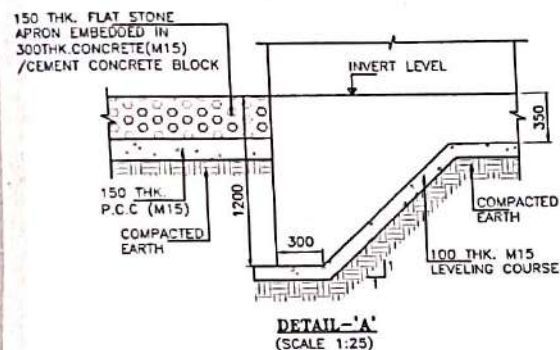
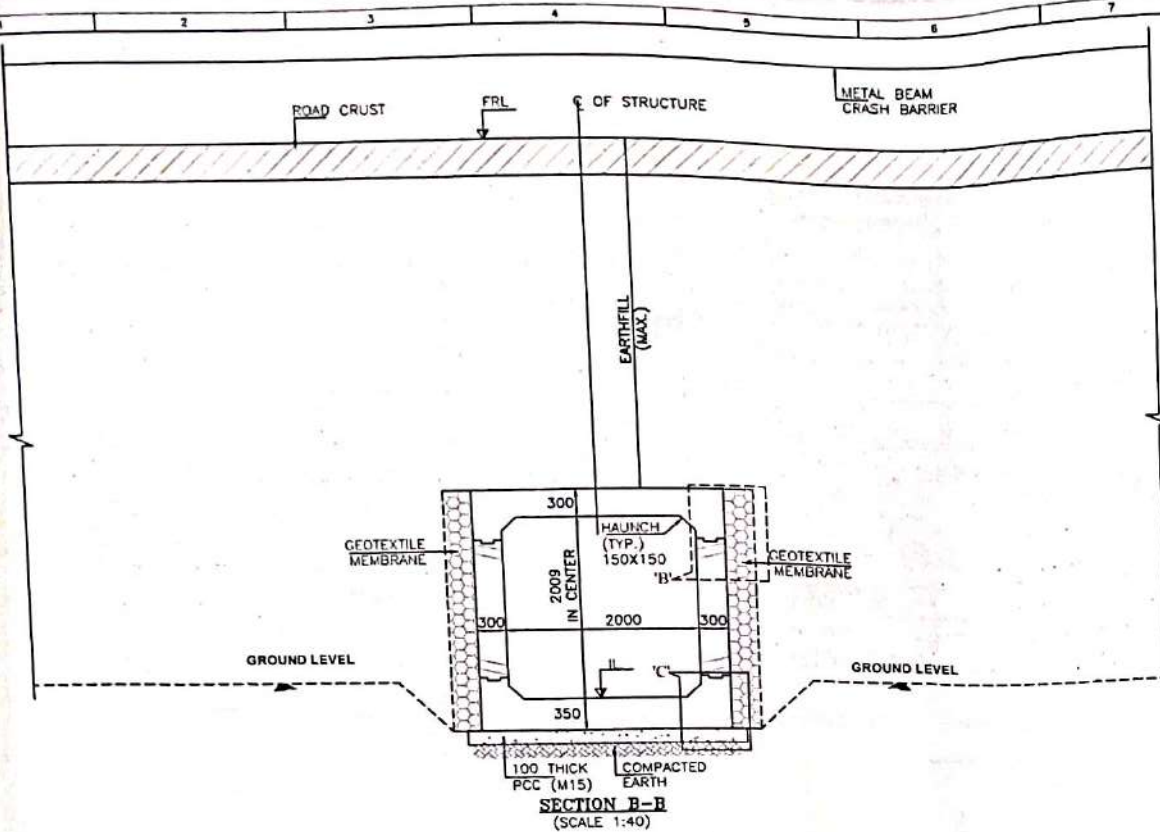
- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./40+324/01

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ALMOHAMED ALFARAFI INFRA CONSULTANT LI. UTA / P.O. BOX 10000, ELZA CONSULTING PRIVATE LIMITED. C/O. ALI ALI, SARBAJANIN NAGHAR, GORBIL NO.2, DIGBOI, TINJUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: F-8 ISHAAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VAISHALI, GHAZIABAD, U.P-201010	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 37+150 (OOLA GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGINAL RITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE II) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 40+324 <table border="1"> <thead> <tr> <th>Date</th> <th>Drawn By</th> <th>Checked By</th> <th>Appr. By</th> <th>Scale</th> <th>Drawing Status</th> </tr> </thead> <tbody> <tr> <td>JAN 2024</td> <td>VS</td> <td>AH</td> <td>NTN</td> <td></td> <td></td> </tr> </tbody> </table> Project No. Drawing No. Sheet No. 01 OF 03	Date	Drawn By	Checked By	Appr. By	Scale	Drawing Status	JAN 2024	VS	AH	NTN		
	Date	Drawn By	Checked By	Appr. By	Scale	Drawing Status												
JAN 2024	VS	AH	NTN															
AVC/NH-38/BC/GAD/40+324/01						Rev. NO												



GOOD FOR CONSTRUCTION

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID INFRA DELHI

DESIGN CONSULTANT
A. CONSTRUCTION
Floor, WZ-12
Phase Extension, B-20
Ashok Vihar, Delhi-110029
Winst Infra Solution Pvt. Ltd.
OFFICE: F-4, ISHAN CORPORATE TOWER, PLOT NO. C-23 SECTOR-13, VAISHALI, GHAZIABAD, U.P.-201012

CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

AUTHORITY'S ENGINEER

ALMONDZ GLOBAL INFRA CONSULTANT LIMITED
INVESTMENT & INFRASTRUCTURE CONSULTANTS
C/O. SANTASANKAR SARKARJANN NARAYAN GURU NO. 2 DIGBARI, TINSUKI, ASSAM-786171

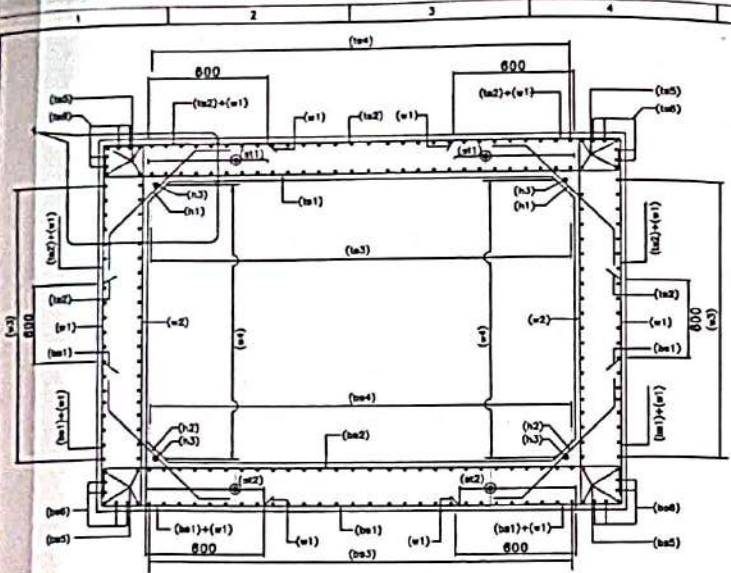
PROOF CONSULTANT

CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010.

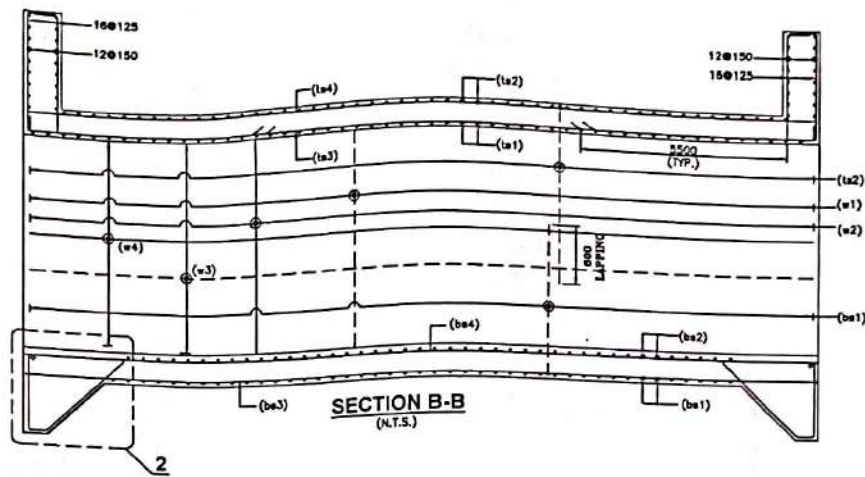
SAFETY CONSULTANT:

DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.

PROJECT									
WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAI GOAN) TO KM 47+682 (LEDO) ON DISRUPTIVE TO LEDO SECTION WITH BRIDGES/ MARCHEPITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKI DISTRICT IN THE STATE OF ASSAM ON EPC (MODE (PACKAGE 5))									
DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 48+324									
Date	Drawn	Checked	Appr.	Scale	Drawing Station				
JAN. 2024	W.P.	V.S.	A.D.	NTS					
Project No.	Drawing No.				Sheet No.	Rev.			
	AVCR04-38/BC/GAD48+324/01				02 OF 03	HU			



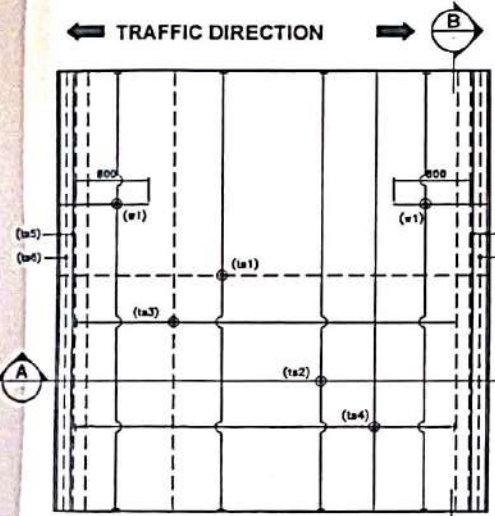
SECTION A-A
(N.T.S.)



SECTION B-B
(N.T.S.)

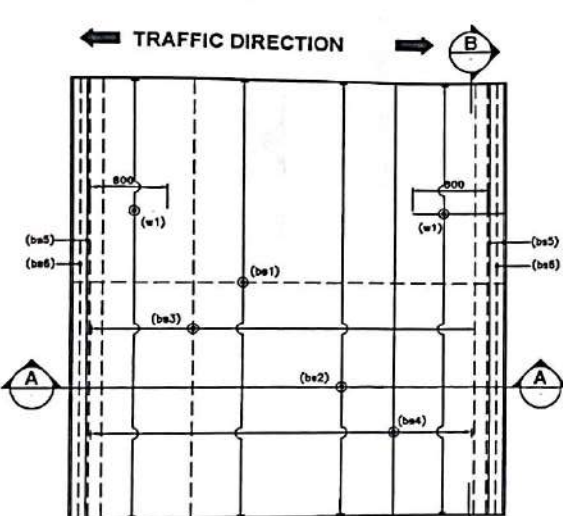
LEGEND:-

TOP FACE BAR	_____
BOTTOM FACE BAR	_____



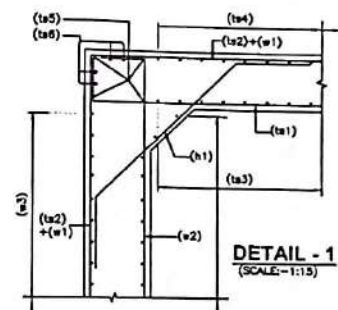
REINFORCEMENT DETAILS OF
TOP SLAB

(WALCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

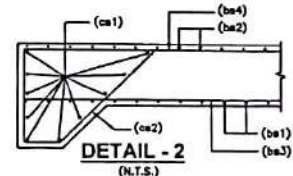


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(WALCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE=1:15)



DETAIL - 2
(N.T.S.)

6. ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC111.
7. FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
8. CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
9. BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOWED AT THE TIME OF EXECUTION. IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

SAFETY AU
(As per Article 10.1 of EPC)

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
2. BOX/BOX/GAD/40+324/01

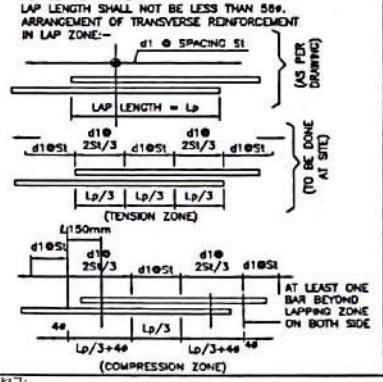
BOX REINF. SCHEDULE

SL.NO	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	160
2	ts2		10	160
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	160
8	w2		10	160
9	w3		10	200
10	w4		8	200
11	bs1		10	160
12	bs2		10+8	160
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION
23	st2		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION

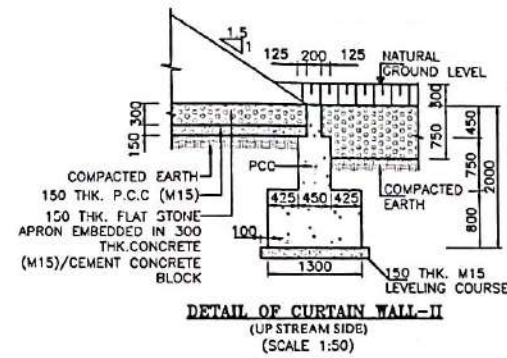
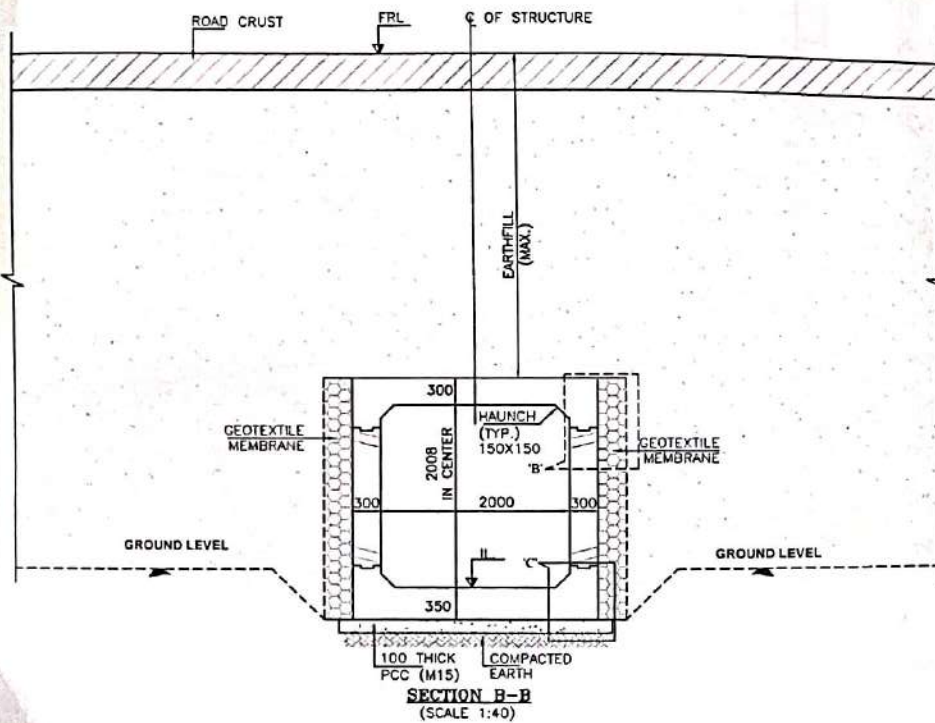
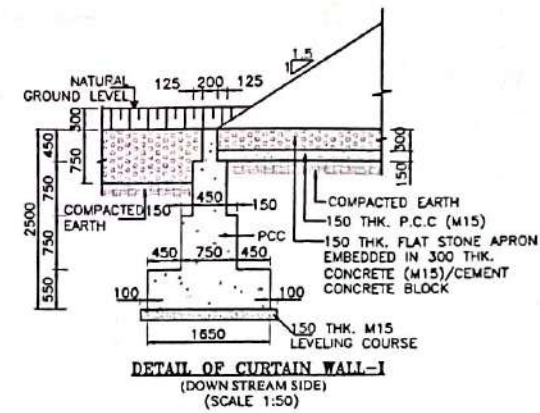
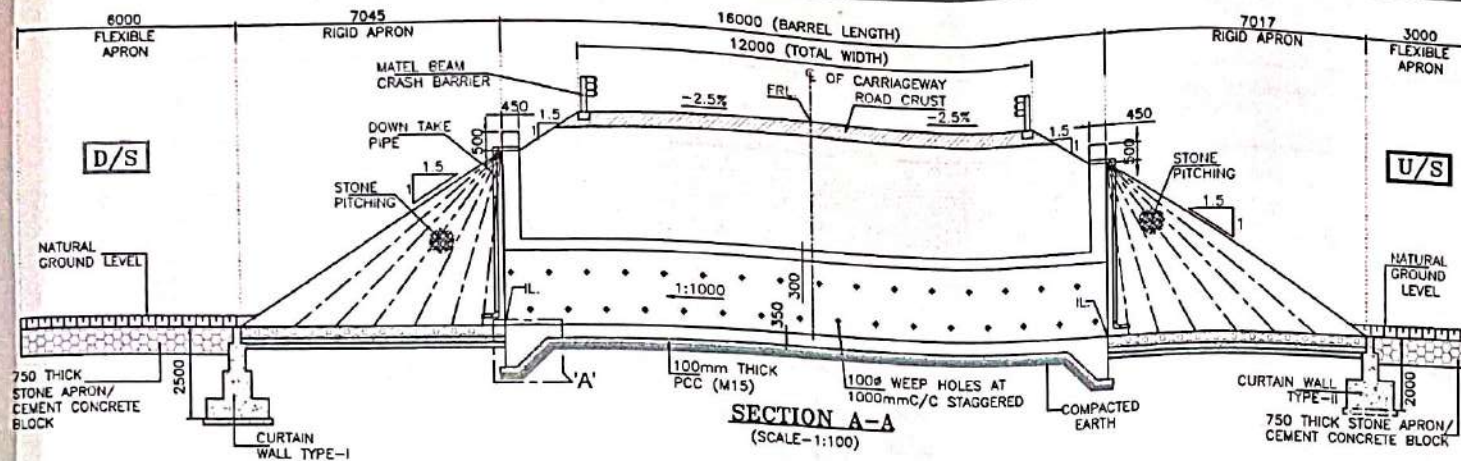
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1789 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm

- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.13.2.3. LAP LENGTH SHALL NOT BE LESS THAN 50 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENGINEER: ALMOND CONSULTANTS PRIVATE LIMITED C/O JALANTA AGENCY, SARBAJANIN NAGAR, GORANAGAR, DISTRICT, TINSUKIA, ASSAM-786117	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO-C-23,SECTOR-13, VAISHALI, GHAZIABAD, U.P.-201012	PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+158 (DOLM ROAD) TO KM 27+482 (LEON) ON DURGAMCHAUH TO LEON SECTION WITH PROPOSED MARGHERITA & LEON BYPASS (SHOWING FIELD) AND GREEN FIELD (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE B)
AWARDING TITLE: REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 40+324						
Date JAN.2024	Draw. W.P.	Des. V.S.	L.A. A.B.	App. S.K.	Sign. M.S.	Drawing Status. Project No. Drawing No. AVCNH-38/03/REIN-40+324/01
Sheet No. 81 OF 81						Rev 00

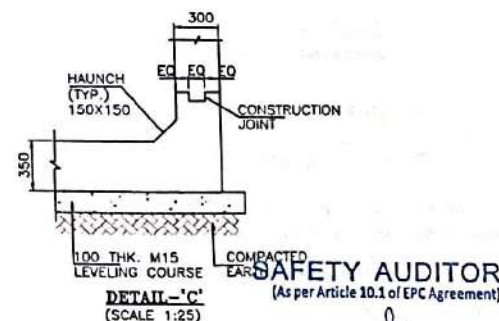
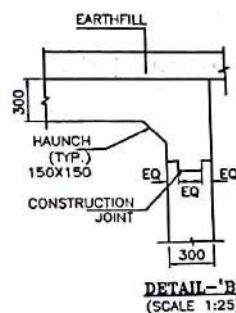
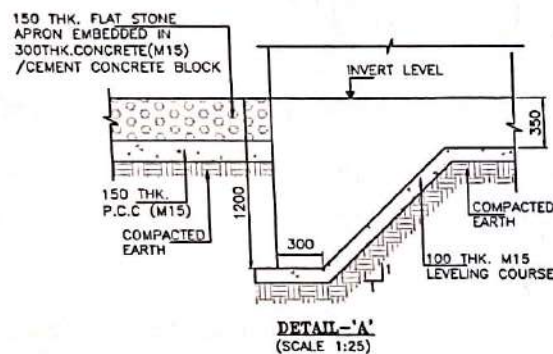
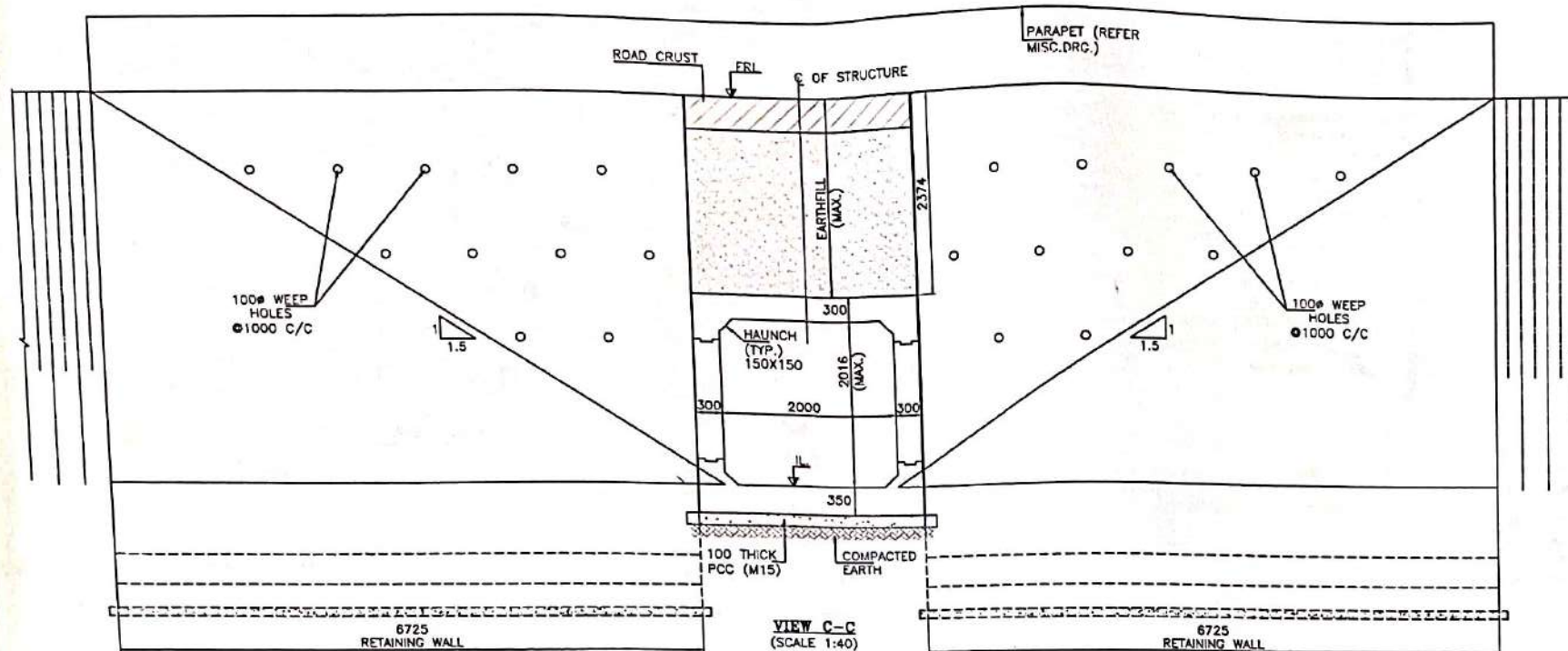


SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

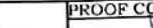
DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMONDE CONSULTANTS LIMITED C/O JAYANTA SARKAR, 2ND FLOOR, TINSUKIA, ASSAM 786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GUJARAT, U.P. 201010	SAFETY CONSULTANT: DESIGN AID PLOT NO 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: F-4, ISHAN CORPORATE TOWER, PLOT NO-23, SECTOR-13, VASANT KUNJ, NEW DELHI-110012	PROJECT: WIDENING IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLA GOAN) TO KM 47+882 (LEDO) ON DISBURSAH TO LEDO SECTION WITH PROPOSED MARCHERITA & LEDO BYPASS (BISHWANATH & GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 1) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 41+022 <table border="1"> <tr> <th>Date</th> <th>Drawn</th> <th>Eng.</th> <th>Chk.</th> <th>Appr.</th> <th>Scale</th> <th>Drawing Status</th> </tr> <tr> <td>JAN 2024</td> <td>W.P.</td> <td>V.S.</td> <td>A.B.</td> <td>NTS</td> <td></td> <td></td> </tr> <tr> <td>Version No.</td> <td>Drawing No.</td> <td colspan="4">AVG/NH-38/BC/IGAD/1-022/01</td> <td>Sheet No. 82 OF 83</td> </tr> </table>	Date	Drawn	Eng.	Chk.	Appr.	Scale	Drawing Status	JAN 2024	W.P.	V.S.	A.B.	NTS			Version No.	Drawing No.	AVG/NH-38/BC/IGAD/1-022/01				Sheet No. 82 OF 83
Date	Drawn	Eng.	Chk.	Appr.	Scale	Drawing Status																					
JAN 2024	W.P.	V.S.	A.B.	NTS																							
Version No.	Drawing No.	AVG/NH-38/BC/IGAD/1-022/01				Sheet No. 82 OF 83																					

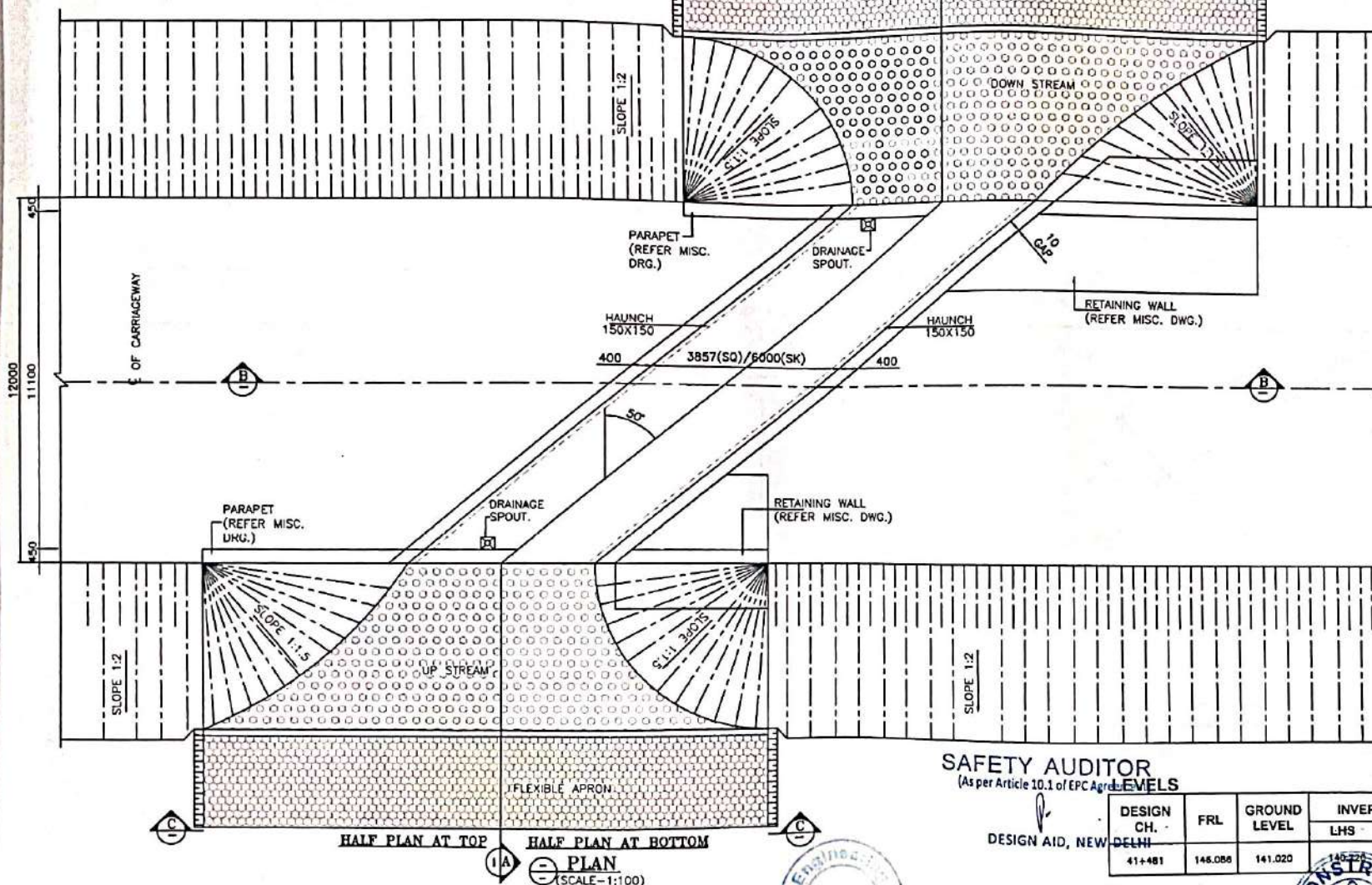


DESIGN AID, NEW DELHI

CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR:  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER:  ALMOND INFRASTRUCTURE CONSULTANT LIMITED C/O. ATAL BISHARIA, BARBAJANI, NANGHAR, BOPH-NO.2, DGBCL, INSURIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO. 430, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT:  A.V. INFRASTRUCTURE Plot No. WZ-1240, Palam Extension, Block Ashram Wall Gali, New Delhi-110085 Winst Infra Solution Pvt. Ltd. OFFICE P-8, UMAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUNDHRA CHANDIGARH, U.P-201012	PROJECT: WIDENING/IMPROVEMENT TO 3 LANE LANE WITH PAVED SHOULDER FROM KM 37+183 (GOLAI GOM) TO KM 47+852 (LEDO) ON DISBURGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (LANE+PS) OF NH-38 IN TEZEPUR DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 41+022 <table><tr><td>Date</td><td>Drawn</td><td>Checked</td><td>Appr.</td><td>Scale</td><td>Drawing Status</td></tr><tr><td>JAN-2024</td><td>W.P</td><td>V.S</td><td>A.B</td><td>MTS</td><td></td></tr><tr><td>Project No:</td><td>Drawing No.</td><td>Sheet No.</td><td>Rev.</td><td></td><td></td></tr><tr><td></td><td>AVC/NH-38/BC/GADH1-023/01</td><td>83 OF 83</td><td>NO</td><td></td><td></td></tr></table>	Date	Drawn	Checked	Appr.	Scale	Drawing Status	JAN-2024	W.P	V.S	A.B	MTS		Project No:	Drawing No.	Sheet No.	Rev.				AVC/NH-38/BC/GADH1-023/01	83 OF 83	NO		
Date	Drawn	Checked	Appr.	Scale	Drawing Status																									
JAN-2024	W.P	V.S	A.B	MTS																										
Project No:	Drawing No.	Sheet No.	Rev.																											
	AVC/NH-38/BC/GADH1-023/01	83 OF 83	NO																											

LEGEND:-
 FRL FINISHED ROAD LEVEL
 IL INVERT LEVEL
 LVL. LEVEL
 FGL. EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.



GOOD FOR CONSTRUCTION

REFERENCE DRAWINGS:-
 1. REINFORCEMENT DETAIL OF BOX CULVERT
 AVC/NH-38/BOX/REINF./41+481/02

SAFETY AUDITOR
 (As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
41+481	146.086	141.020	145.754	140.732	4.012m	0.954m	0.815m

HALF PLAN AT TOP HALF PLAN AT BOTTOM

PLAN
 (SCALE=1:100)

CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR

KAMAC
 KAMAC ENGINEERS PVT.LTD
 F0201, CITY CENTER OFFICE
 BLOCK, 2ND FLOOR,
 MATIGARA 734010

AUTHORITY'S ENGINEER

ALMOND GLOBAL INFRA CONSULTANT
 LIMITED, JY. KHAN AVULIYA
 CONSULTANT PRIVATE LIMITED.
 C/O JAYANTA SANKU SARDANAN
 NAMO FAR, BOREWELL 2, D/BOI
 TUNSLUKIA, ASSAM-786171

PROOF CONSULTANT

CREATIVE ENGINEERING SERVICES
 OFFICE NO: 620, SIGNATURE GLOBAL
 MALL, SECTOR-3,
 VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN
 DESIGN AID
 PLOT NO.54, 3rd FLOOR(FRONT).
 MASOODPUR DAIRY FARM, VASANT KUNJ,
 NEW DELHI-110070.

DESIGN CONSULTANT

Winst Infra Solution
 Pvt. Ltd.
 OFFICE P-8, ISHAAN CORPORATE
 TOWER, PLOT NO-23, SECTOR-13,
 VASANT KUNJ, NEW DELHI-110017

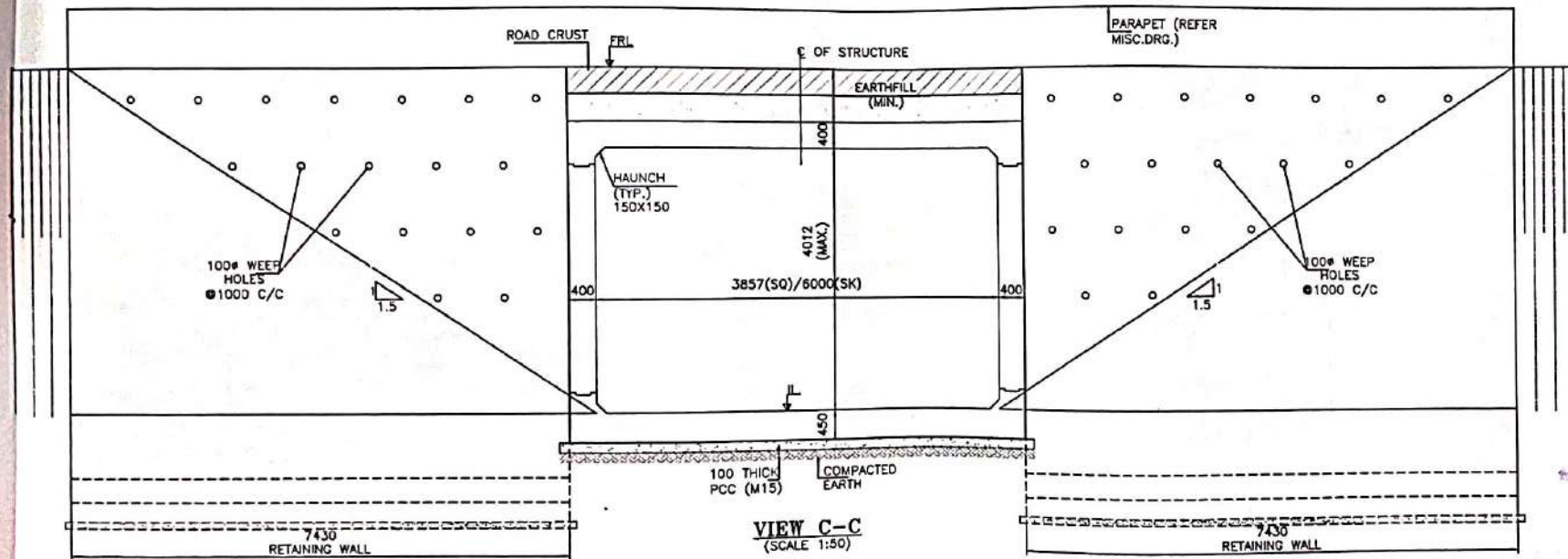
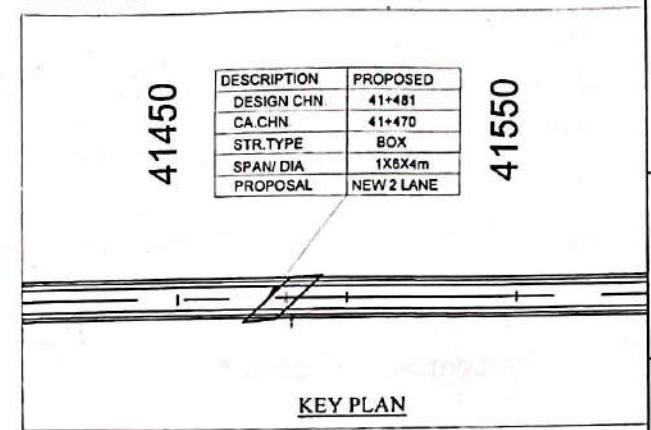
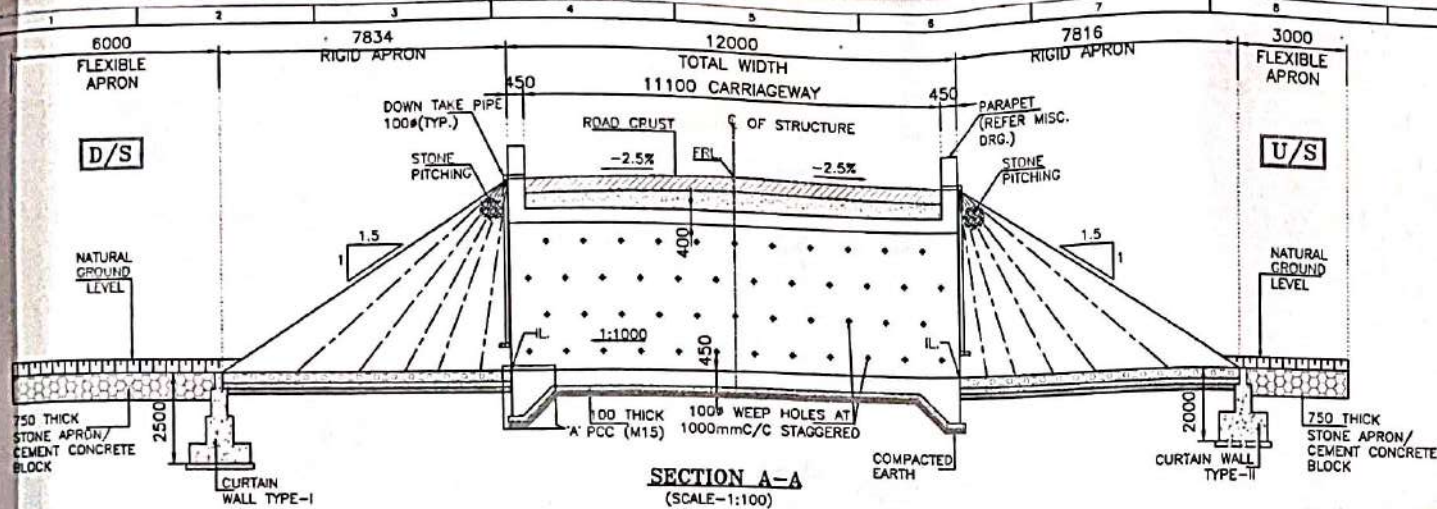
PROJECT:

WIDENING/IMPROVEMENT TO 2 LANE LANE WITH PAVED SHOULDER FROM KM 37+180 (LOCAL DRAIN) TO KM 47+862 (SEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MAROHERETA & LEDO BYPASS (BROWFIELD AND GREEN FIELD) (2 LANE+PS) OF NH-38 IN THIRUVA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE B)

DRAWING TITLE:-

GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 41+481

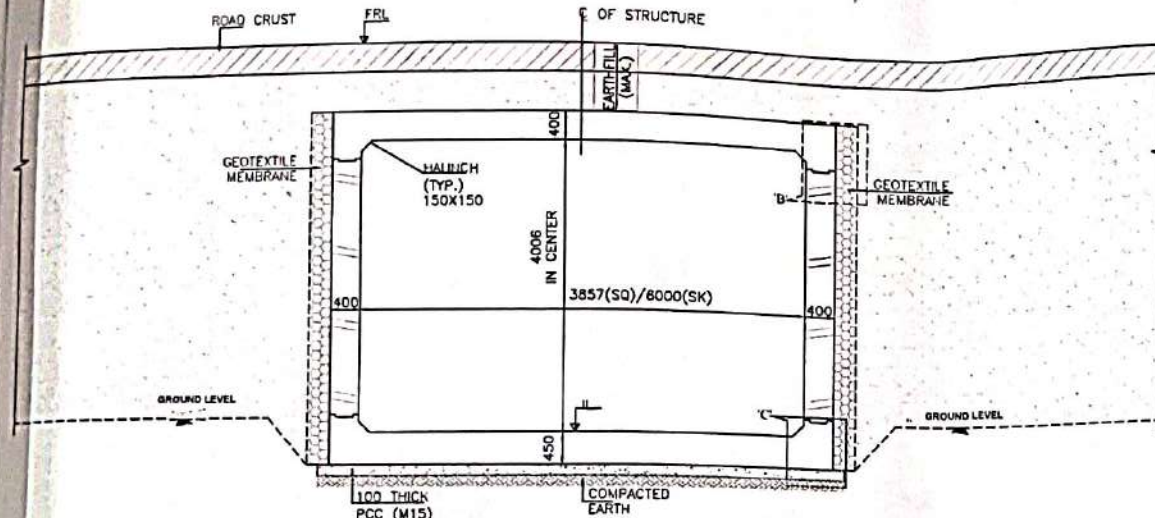
Date	Drw.	Eng.	Chk.	App.	Rev.	Drawing Status
JAN. 2024	W.P.	V.S.	A.B.		NTS	
Project No.	Drawing No.					Sheet No.
	AVC/NH-38/BOX/REINF./41+481/02					1 OF 3
						NO



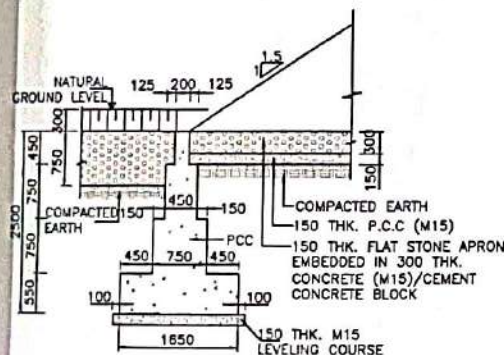
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

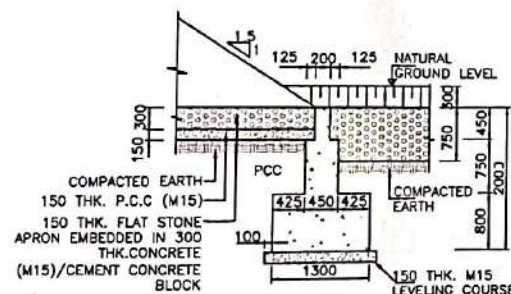
CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMONDZ GLOBAL INFRA CONSULTANT LIMITED AND WITH AYOUB REZA CONSULTANTS PRIVATE LIMITED. CO-1 JAYPRA SIKHA (A5) NAMGHAIR, MORBI NO.2, DIGLOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT). MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTORS 1st Floor, WZ-1240, Palam Extn. Rd., Besco Ashram Walk G38, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE P-4, 8th FLOOR CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUDHRA CHAURAB, U.P-201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAI GOAN) TO KM 47+882 (LEDO) ON DISBURGMENT TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 41+481 <table border="1"> <tr> <td>Date</td> <td>Draw</td> <td>Des</td> <td>Chk</td> <td>App</td> <td>Scale</td> <td>Drawing Status</td> </tr> <tr> <td>JAN 2024</td> <td>W.P</td> <td>V.S</td> <td>A.B</td> <td></td> <td>MTS</td> <td></td> </tr> <tr> <td>Project No.</td> <td>Drawing No.</td> <td colspan="4">Sheet No.</td> <td>Rev</td> </tr> <tr> <td></td> <td></td> <td colspan="4">1 OF 3</td> <td>RD</td> </tr> </table>	Date	Draw	Des	Chk	App	Scale	Drawing Status	JAN 2024	W.P	V.S	A.B		MTS		Project No.	Drawing No.	Sheet No.				Rev			1 OF 3				RD
Date	Draw	Des	Chk	App	Scale	Drawing Status																												
JAN 2024	W.P	V.S	A.B		MTS																													
Project No.	Drawing No.	Sheet No.				Rev																												
		1 OF 3				RD																												



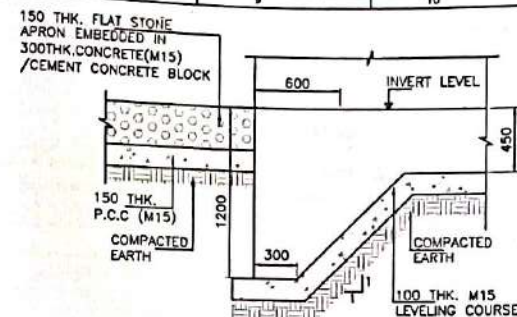
SECTION B-B
(SCALE 1:50)



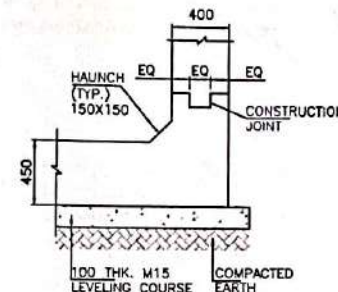
DETAIL OF CURTAIN WALL-I
(DOWN STREAM SIDE)
(SCALE 1:50)



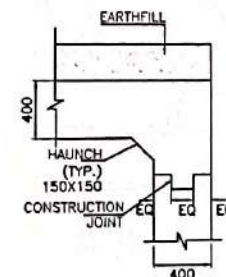
DETAIL OF CURTAIN WALL-II
(UP STREAM SIDE)
(SCALE 1:50)



DETAIL-A'
(SCALE 1:25)



DETAIL-C'
(SCALE 1:25)



DETAIL-B'
(SCALE 1:25)

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
a. M30-FOR RCC BOX CELL STRUCTURE.
b. M15-FOR PCC AND LEVELING COURSE.
c. M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
a. ONE LANE, TWO LANE AND THREE LANE OF CLASS A
b. ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECTED TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC 78-2014.
- 150MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 10t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

GOOD FOR CONSTRUCTION

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER
ALMONDZ CONSULTANT
LIMITED IN PVT. LTD.
CONSULTANT PRIVATE LIMITED.
C/O VANTANA SAKIA, SARBAJANIN
NANGHAR, BORBI NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 430, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U P-201010

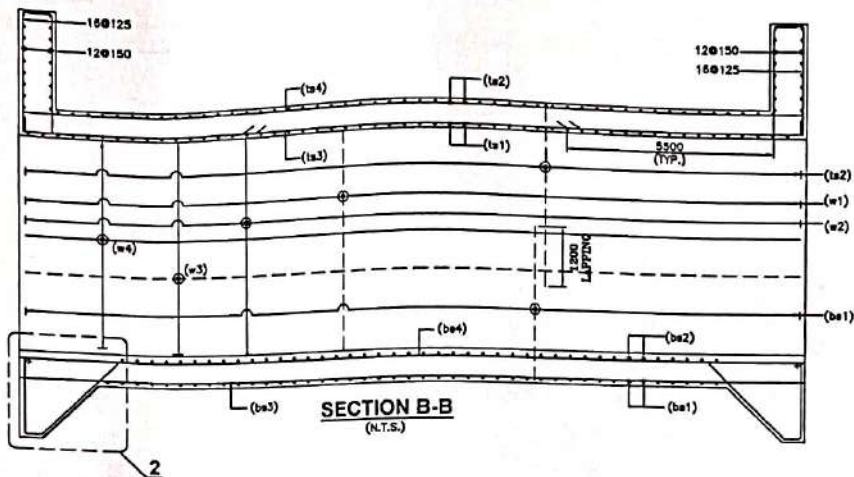
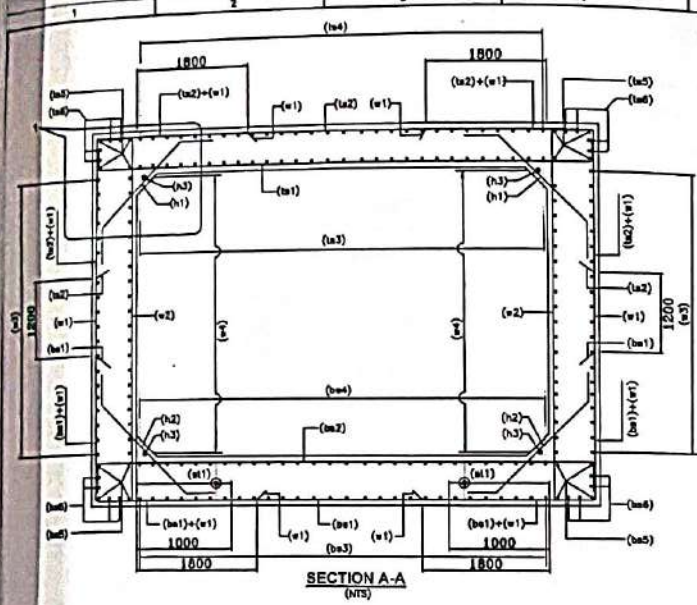
SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE F-4, BHANU CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASANT VIHAR, CHANDIGARH, U.P-201017

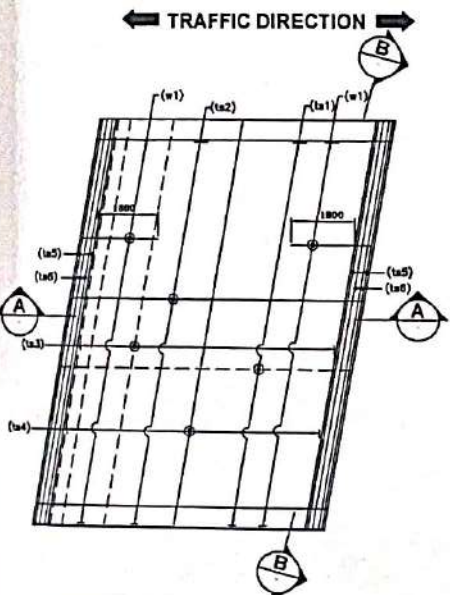
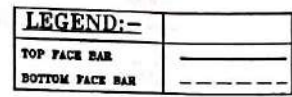
PROJECT:
IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27-150
(JOLAN GOMAT TO KM 47+882 (LEDO)) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD).
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE II)

DRAWING TITLE:
GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 41+481

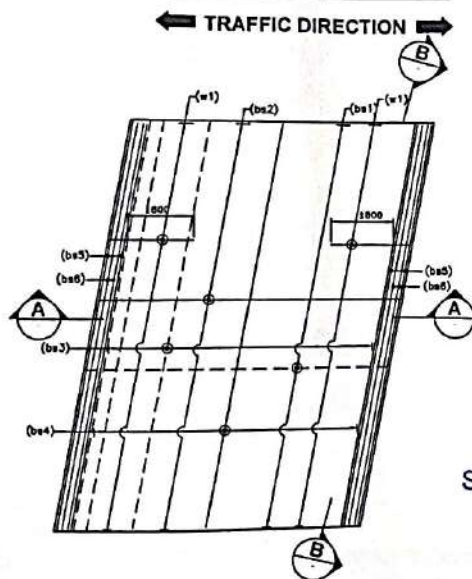
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JAN-2024	W.P.	V.S.	A.B.	MTS	
Project No.	Drawing No.	Sheet No.	Rev.		
	AVC/NH-38/BOX/CAD/41+481/1	3 OF 3	RO		



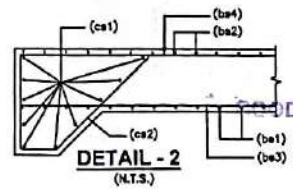
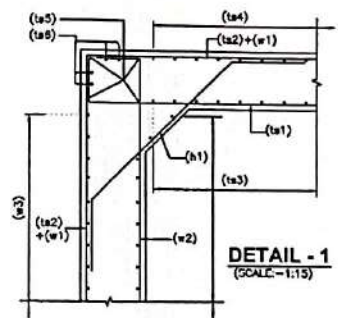
BOX REIN. SCHEDULE				
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		20+8	180
2	ts2		16	180
3	ts3		12	200
4	ts4		12	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	180
8	w2		16	180
9	w3		12	200
10	w4		10	200
11	bs1		16	180
12	bs2		20+10	180
13	bs3		12	200
14	bs4		12	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 180 c/c (T-T) DIRECTION



REINFORCEMENT DETAILS OF TOP SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF BOTTOM SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



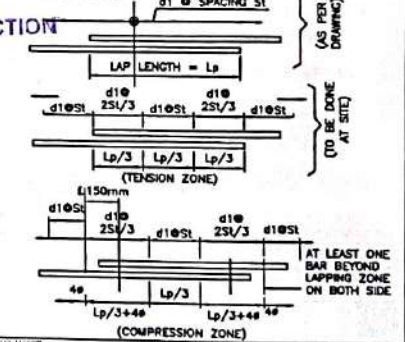
8. ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IRC:112.
9. UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
10. CENTER LINE OF OVERLAPPING BAR bs1 & bs2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
11. BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/414-481/01

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
a) TOP SLAB - 45mm
b) BOTTOM SLAB - 75mm
c) SIDE WALL (EARTH SIDE) - 75mm
d) SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.3.
LAP LENGTH SHALL NOT BE LESS THAN 50 ϕ .
ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



SAFETY AUDIT
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/414-481/01



CLIENT:
NADRA
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

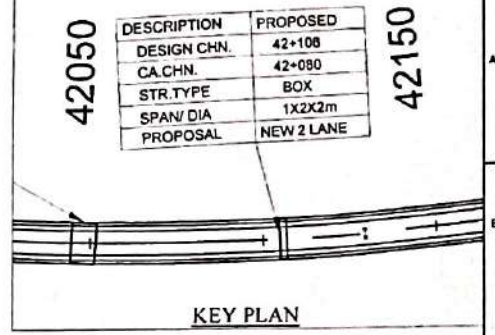
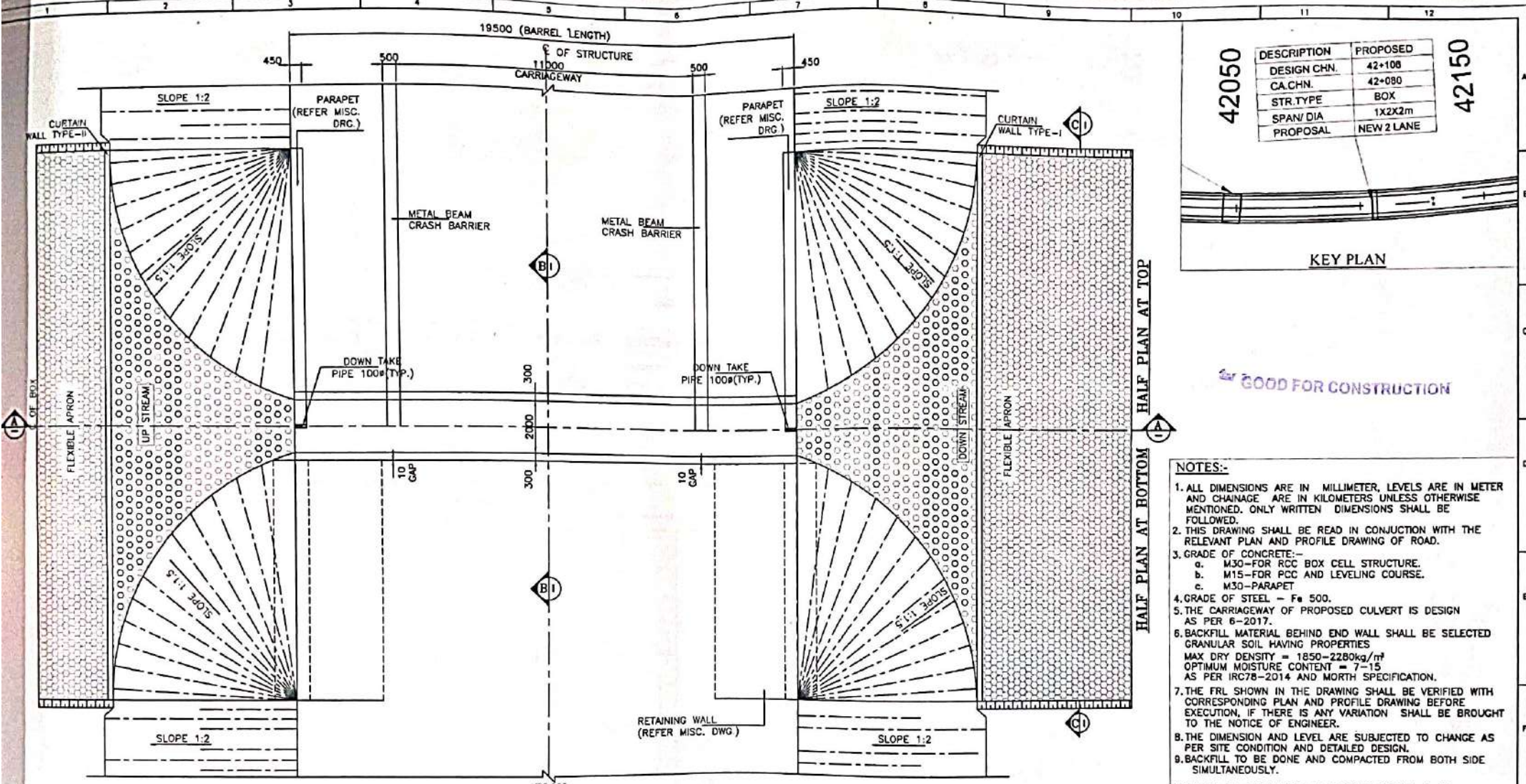
AUTHORITY'S ENGINEER
ALMOND, S. BARTHA CONSULTANT LIMITED, IN JV WITH AYILEEZA CONSULTANT PRIVATE LIMITED.
C/O JAYANTA SAIKIA, BARAJANAN NAMGHAR, BORBIL NO.2, DIGBOI, TINSUKIA, ASSAM-786171

PROOF CONSULTANT
CREATIVE ENGINEERING SERVICES
OFFICE NO. 630, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOOPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT
A.V. CONSTRUCTION
1st Floor, WZ-1010, Palam Extension, D-20 Ashram Wall Gali, New Delhi 110045
Winst Infra Solution Pvt. Ltd.
OFFICE P-8, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASINDHRA, GHAZIABAD, U.P-201012

PROJECT:
WIDENING/IMPROVEMENT TO 2 LANE LANE WITH PAVED SHOULDER FROM KM 27+180 (DOLAI GOM) TO KM 27+425 (LEDO) ON DISBURGMENT TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS BURNINGFIELD AND GREEN FIELD (LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 5)
DRAWING TITLE:
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 41-481
Date: JAN 2024
Drawn: W.P.
Checked: V.S.
Appr: A.B.
Scale: NTS
Drawing No.: AVC/NH-38/BOX/REIN/41-481/01
Sheet No.: 01 OF 01
Rev: RD



- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - F₈ 500.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 10.100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - 11.SBC SHALL BE 18t/m². AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - 12.AS PER NORTH SECTION-2500.WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY.CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX.CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE. CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
42+108	147.277	140.692	140.411	140.392	2.019 m	4.566m	2.320m

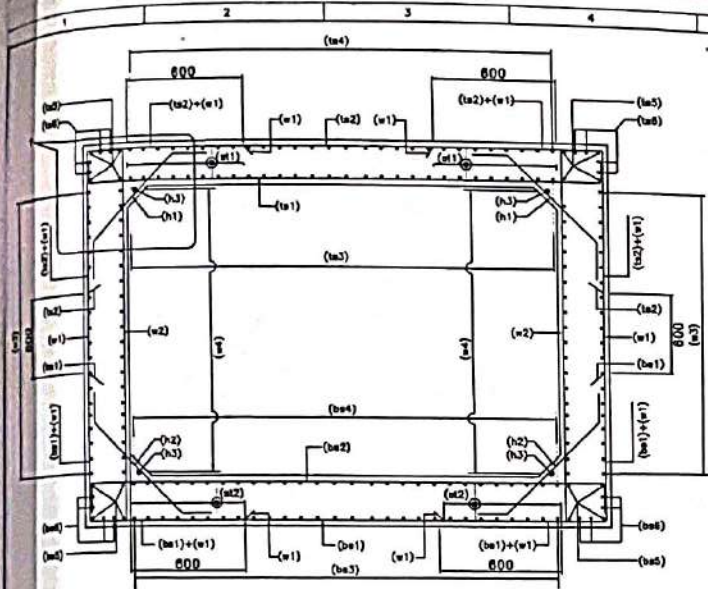
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

REFERENCE DRAWING IN AID, NEW DELHI
1. REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./42+108/01

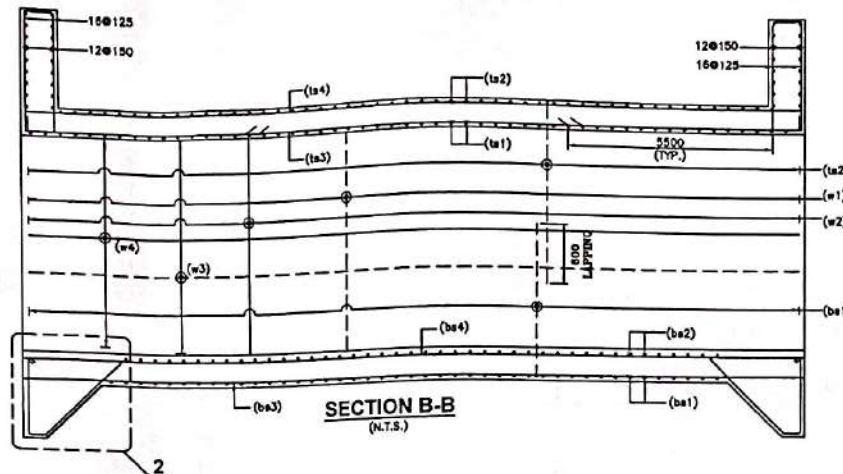
LEGEND:-
FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMONDZ CONSULTANTS LIMITED CONSULTANTS PVT. LTD. C-17, WINDY GARDEN, SARBAJANIN NANGYAN BORIL NO.2, DIOGOI, INSUKA, ASSAM-786001	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL, MALLI, SECTOR-3, VAISHALI, GHIAZIABAD, U.P.-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Ashram Wini Col New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE # 8, ISHAAN CORPORATE TOWER, PLOT NO-C-33,SECTOR-13, VASUKI, CHANDEL ROAD, U.P. 201012	PROJECT: WIDENING&IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27-185 (DOLAI GAON) TO KM 47-862 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN THILUKA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAPRADE 42+108 <table border="1"> <thead> <tr> <th>Date</th> <th>Drawn</th> <th>Thw</th> <th>Chk</th> <th>App</th> <th>Stds</th> <th>Issued</th> <th>Drawing Status</th> </tr> <tr> <th>Jan 2024</th> <th>W.P.</th> <th>V.S.</th> <th>A.B</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Project No.</td> <td colspan="2">Drawing No.</td> <td colspan="2">Sheet No.</td> <td colspan="3">Rev</td> </tr> <tr> <td></td> <td colspan="2">AVC/NH-38/BC/SADN-1/108/01</td> <td colspan="2">81 OF 83</td> <td colspan="3">00</td> </tr> </tbody> </table>	Date	Drawn	Thw	Chk	App	Stds	Issued	Drawing Status	Jan 2024	W.P.	V.S.	A.B					Project No.	Drawing No.		Sheet No.		Rev				AVC/NH-38/BC/SADN-1/108/01		81 OF 83		00		
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Jan 2024	W.P.	V.S.	A.B																																			
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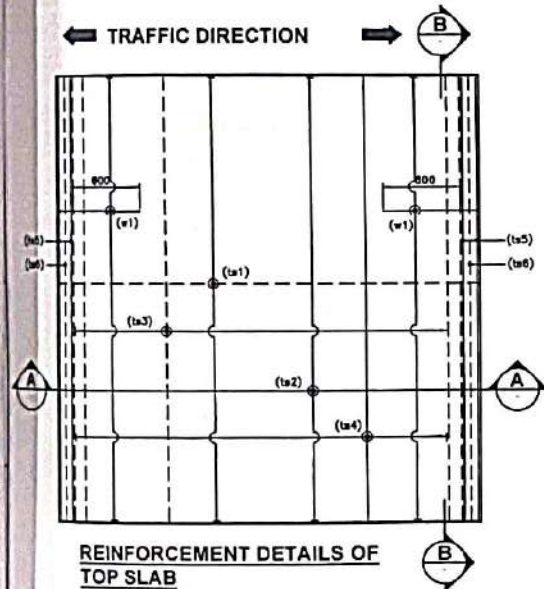
SECTION A-A
(N.T.S.)



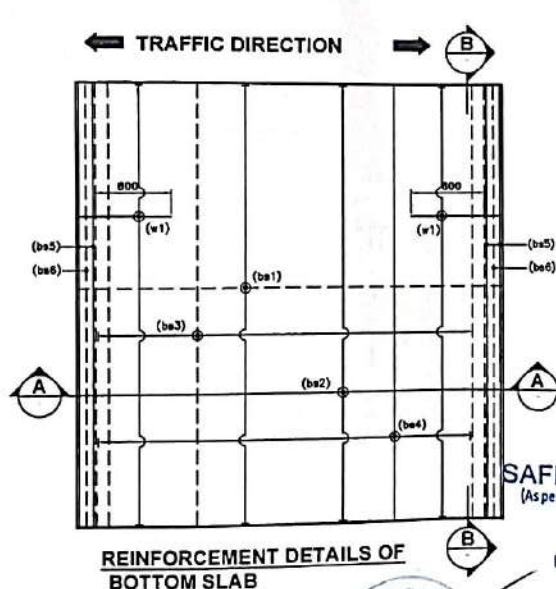
SECTION B-B
(N.T.S.)

LEGEND:-

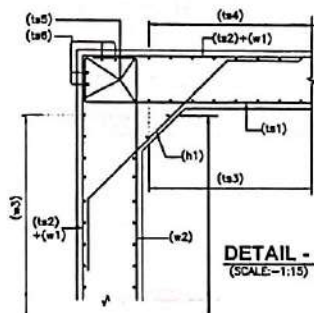
TOP FACE BAR	_____
BOTTOM FACE BAR	-----



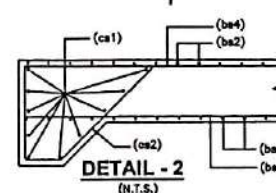
REINFORCEMENT DETAILS OF
TOP SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF
BOTTOM SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE=1:15)



DETAIL - 2
(N.T.S.)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40 ϕ AS PER IS:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs_1 & bs_2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING.
AVG/NH-38/BOX/GAD/42+108/01

BOX REINF. SCHEDULE

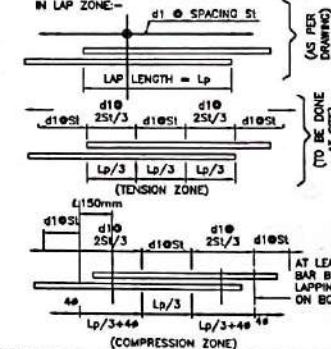
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+8	150
2	ts2		10	150
3	ts3		10	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	150
8	w2		12	150
9	w3		10	200
10	w4		8	200
11	bs1		10	150
12	bs2		12+10	150
13	bs3		10	200
14	bs4		10	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	150
18	h2		10	150
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		10	200 c/c (L-L) 150 c/c (T-T) DIRECTION
23	st2		10	200 c/c (L-L) 150 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-

- a) TOP SLAB - 45mm
- b) BOTTOM SLAB - 75mm
- c) SIDE WALL (EARTH SIDE) - 75mm
- d) SIDE WALL (INNER SIDE) - 45mm

- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 50 ϕ . ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-

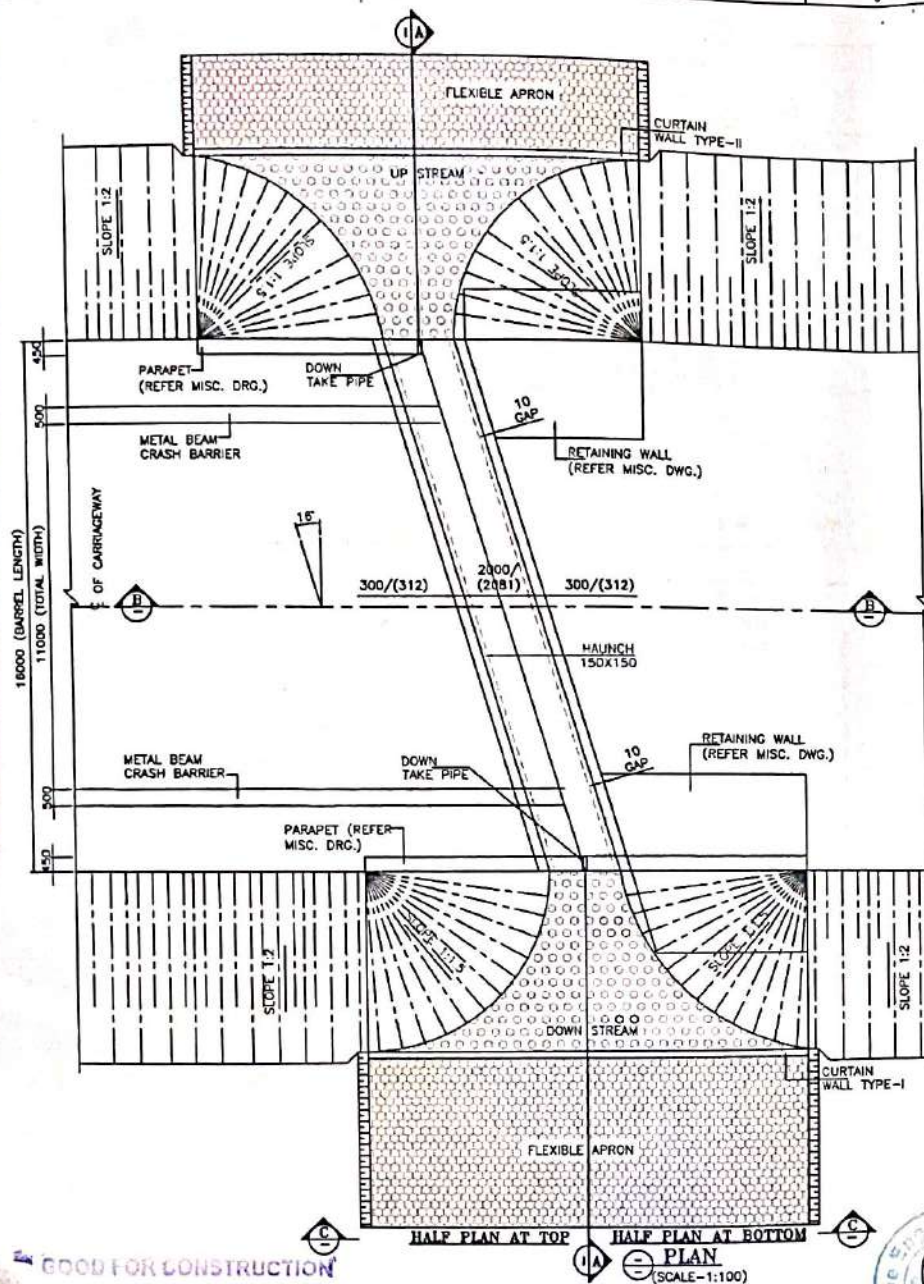


(AS PER DRAWING)
(TO BE DONE AT SITE)

AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY SUPERVISOR ALMONDE GLOBAL INFRA CONSULTANT LIMITED INDIA PVT.LTD. CONSULTANT PRIVATE LIMITED. CO. JAYANTA SARKAR, SARGAJAIN NAKHAR, BORIBL NO.2, DIGBOI, TINSUKIA, ASSAM-788171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI 110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, WZ-1240, Palam Extension, Buzco Ashram Wall Gali, Now Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-8, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VILLAGE CHANDEL, U.P-201017	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOA) TO KM 47+882 (LED) ON DISBURSE TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (SHOWN FIELD AND GREEN FIELD) (2-LANE-1PH) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 5) DRAWING TITLE: REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 42+108 <table border="1"> <tr> <th>Date</th> <th>Drw. W.P.</th> <th>Des. V.S.</th> <th>Chk. A.B.</th> <th>App. NTS</th> <th>Scale</th> <th>Drawing Status</th> </tr> <tr> <td>JAN 2024</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Project No.</td> <td>Drawing No.</td> <td>AVC/NH-38/BOX/REIN/42+108/01</td> <td>Sheet No.</td> <td>91 OF 91</td> <td>Rev.</td> <td>RD</td> </tr> </table>	Date	Drw. W.P.	Des. V.S.	Chk. A.B.	App. NTS	Scale	Drawing Status	JAN 2024							Project No.	Drawing No.	AVC/NH-38/BOX/REIN/42+108/01	Sheet No.	91 OF 91	Rev.	RD
Date	Drw. W.P.	Des. V.S.	Chk. A.B.	App. NTS	Scale	Drawing Status																					
JAN 2024																											
Project No.	Drawing No.	AVC/NH-38/BOX/REIN/42+108/01	Sheet No.	91 OF 91	Rev.	RD																					

16000 (BARREL LENGTH)
11000 (TOTAL WIDTH)



42350

DESCRIPTION	PROPOSED
DESIGN CHN	42+378
CA.CHN.	42+380
STR TYPE	BOX
SPAN/DIA	1X2X2m
PROPOSAL	NEW 2 LANE

42450

KEY PLAN

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
42+378	145.850	140.585	140.297	140.285	2.016m	3.049m	1.863m

LEGEND:-
FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
a. M30-FOR RCC BOX CELL STRUCTURE.
b. M15-FOR PCC AND LEVELING COURSE.
c. M30-PARAPET
- GRADE OF STEEL - F8000.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
a. ONE LANE, TWO LANE AND THREE LANE OF CLASS A
b. ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERN.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY - 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK, FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 8 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 14t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED EXPOSURE CONDITION IS MODERATE.

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWINGS:-
1. REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BOX/REIN/42+378/02

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:

DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

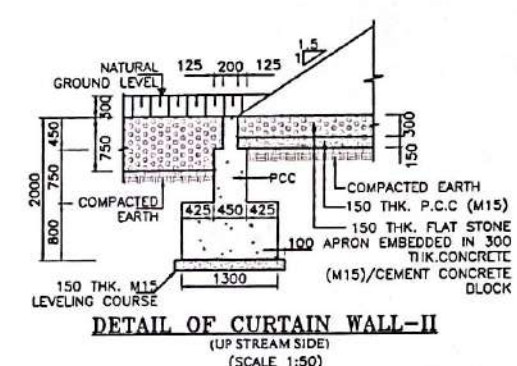
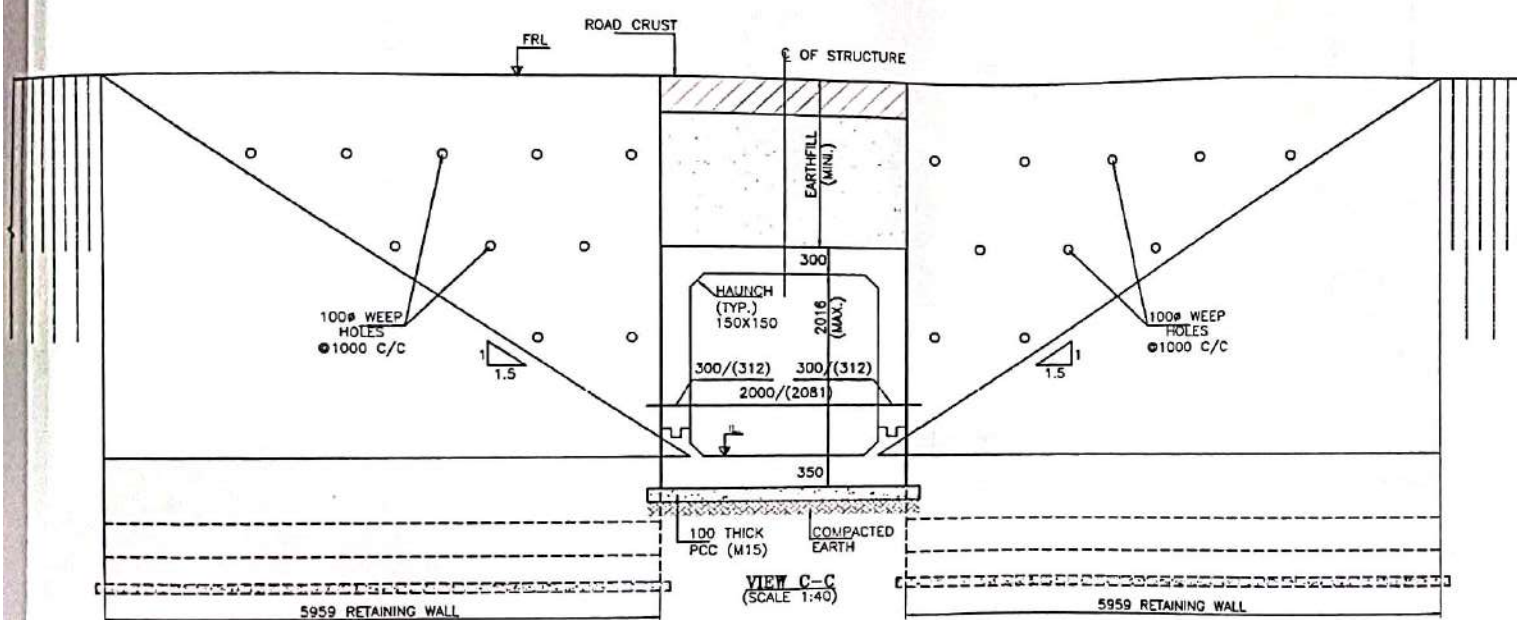
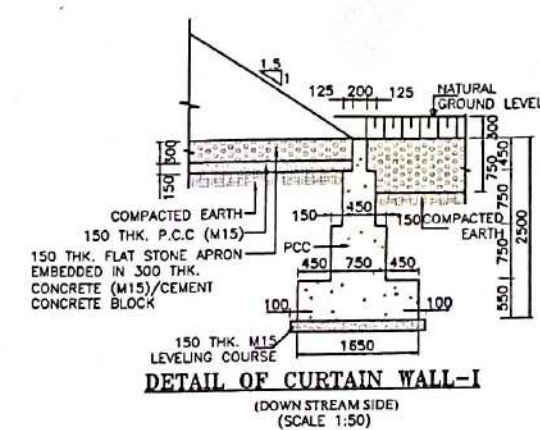
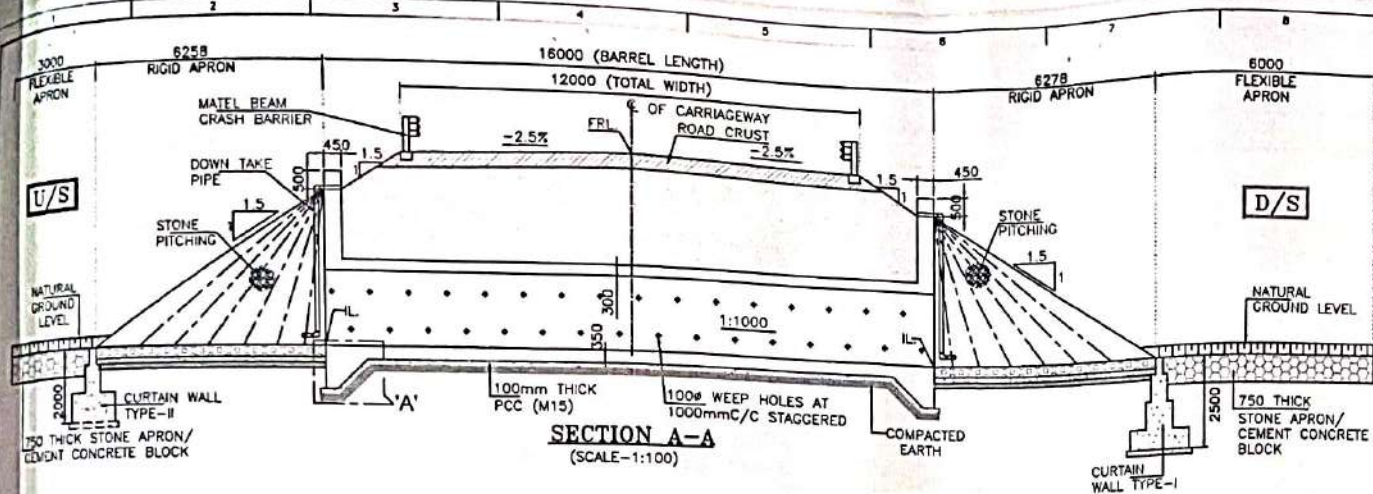
Winst Infra Solution Pvt. Ltd.
OFFICE: F-4, 18th ANN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VASUNDHRA CHS-38/02, U.P.-201012

GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 42+378						
Date	Drawn	Checked	Appr.	Scale	Drawing No.	Sheet No.
JAN/2024	V.S.	A.B.		NTS	AVG/NH-38/BOX/GADH/2-378/01	91 OF 92
Project No.	Drawing No.					Rev.
						RO

EPC CONTRACTOR
KAMAC ENGINEERS
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER
ALMOND C. GUPTA INFRA CONSULTANT
LIMITED IN JV WITH ARDDEEZA
CONSULTANT PRIVATE LIMITED.
Engineer
C/O JAYANTA SANKAR SARKAR JAIN
NANGHAR, BORBI, NO.2/DIGBOI,
TINSUKIA, ASSAM-786171

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

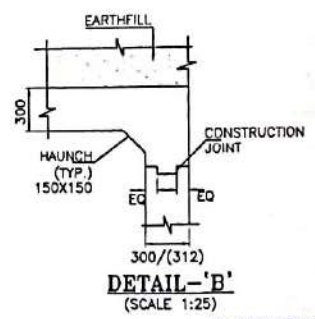
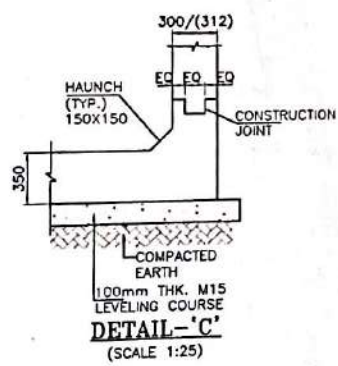
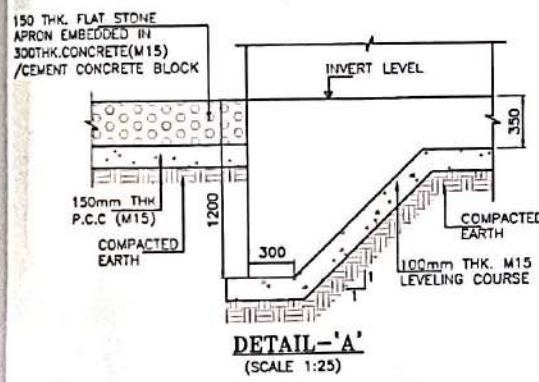
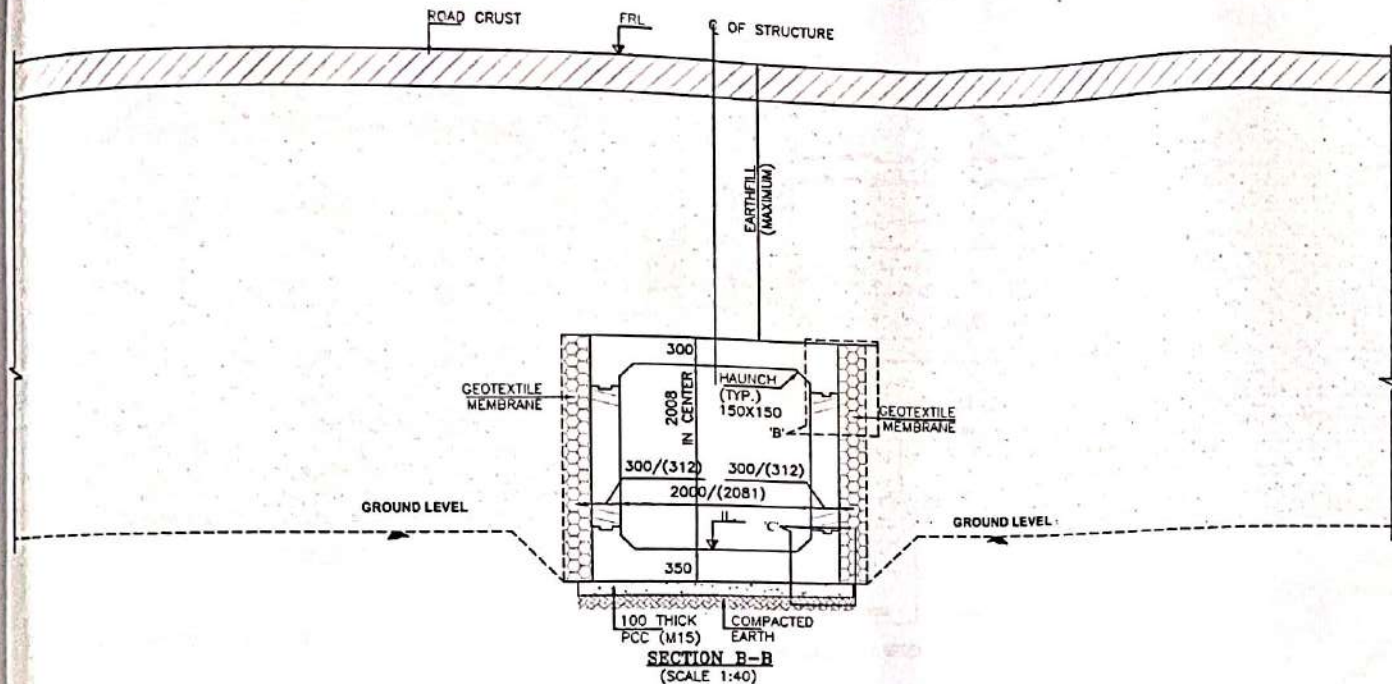


SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMOND CONSULTANTS CONSULTANT LIMITED C/O JAYANTA BROS. & SONS, JAIN NAGHAR, BORSA, 802 DIOBRI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-1, VAISHALI, GHAZIABAD, U.P. 201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070.	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: F-4, ISHAAN CORPORATE TOWER, PLOT NO-C-33,SECTOR-13, VASIBHADRA GHAZIABAD, U.P. 201012	PROJECT: WIDENING/IMPROVEMENT TO 2 LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLA GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHARIAGA 42+378 <table border="1"> <thead> <tr> <th>Date</th> <th>Drw. W.P.</th> <th>Eng. V.S.</th> <th>Chk. A.U.</th> <th>App. NTS</th> <th>Scale</th> <th>Drawing Status</th> </tr> </thead> <tbody> <tr> <td>JAN 2024</td> <td></td> <td></td> <td></td> <td></td> <td>NTS</td> <td></td> </tr> <tr> <td>Project No.</td> <td>Drawing No.</td> <td>AVC/NH-38/BC/GAD/42+378/01</td> <td>Sheet No.</td> <td>02 OF 03</td> <td>Rev.</td> <td>RO</td> </tr> </tbody> </table>	Date	Drw. W.P.	Eng. V.S.	Chk. A.U.	App. NTS	Scale	Drawing Status	JAN 2024					NTS		Project No.	Drawing No.	AVC/NH-38/BC/GAD/42+378/01	Sheet No.	02 OF 03	Rev.	RO
Date	Drw. W.P.	Eng. V.S.	Chk. A.U.	App. NTS	Scale	Drawing Status																					
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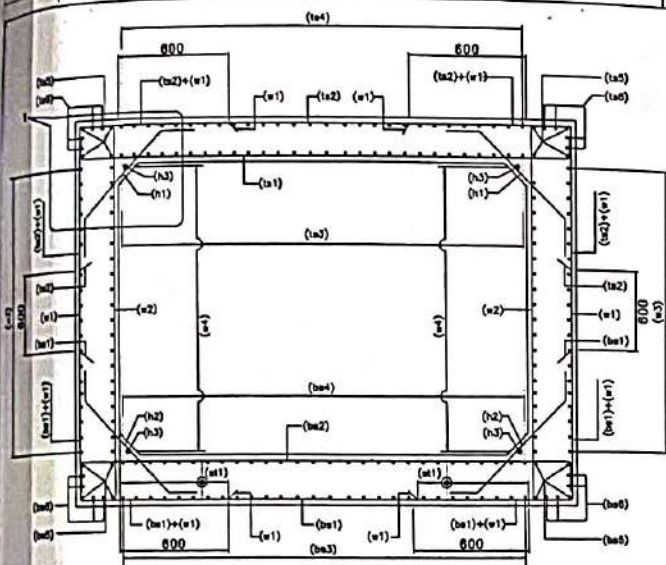


GOOD FOR CONSTRUCTION

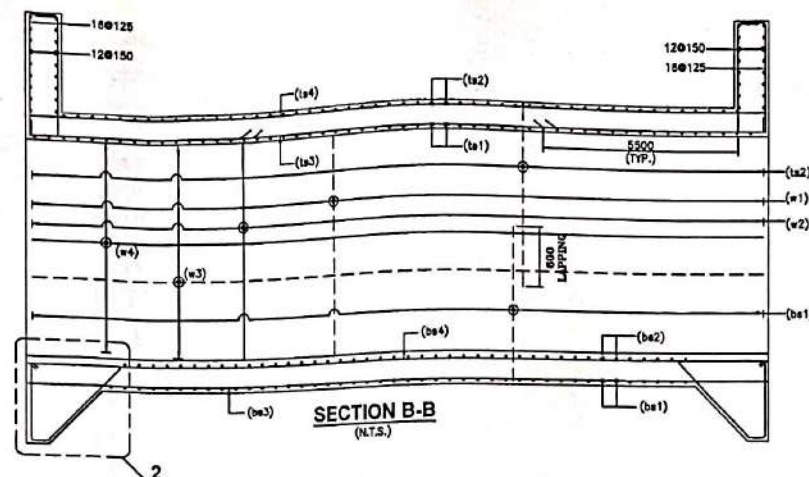
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENCOUNTERED ALMONDE GLOBAL INFRA CONSULTANT LIMITED (IN JV WITH) KOCERZA CONSULTANT PRIVATE LIMITED. CO. VAYANAR SAKA, SARBANJAN NANGHAR, BPHIL NO. 31, DIBBO, TINSUKI, ASSAM-781171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 630, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO. 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st Floor, W22-140, Palm Extension, Bosco, Ashram Wall Gali, New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-4, BHANU CORPORATE TOWER, PLOT NO-23, SECTOR-13, VASANT KUNJ, NEW DELHI-110017	GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHARNAGA 42+378 <table border="1"> <tr> <th>Date</th><th>Drw.</th><th>Usg.</th><th>Chk.</th><th>App.</th><th>Scale</th><th>Drawing Status</th></tr> <tr> <td>JAN 2024</td><td>W.P.</td><td>V.S.</td><td>A.B.</td><td>NTS</td><td></td><td></td></tr> <tr> <td>Project No.</td><td>Drawing No.</td><td>Sheet No.</td><td>Rev.</td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td>AVC/IN-38/BC/GAD/42+378/01</td><td>05 OF 03</td><td></td><td></td><td></td></tr> </table>	Date	Drw.	Usg.	Chk.	App.	Scale	Drawing Status	JAN 2024	W.P.	V.S.	A.B.	NTS			Project No.	Drawing No.	Sheet No.	Rev.						AVC/IN-38/BC/GAD/42+378/01	05 OF 03			
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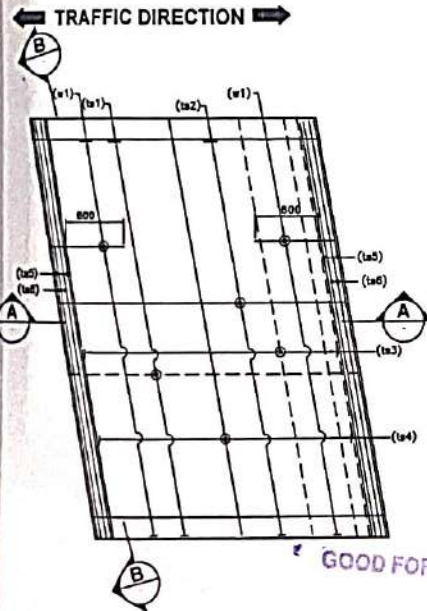
SECTION A-A
(N.T.S.)



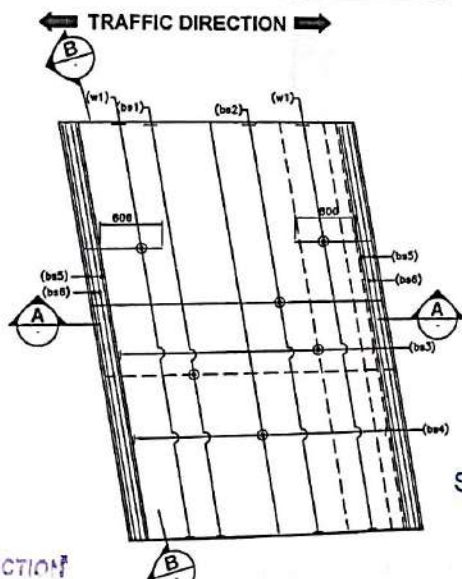
SECTION B-B
(N.T.S.)

LEGEND:-

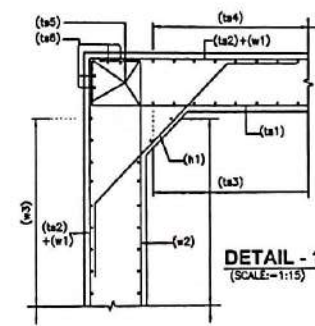
TOP FACE BAR	———
BOTTOM FACE BAR	-----



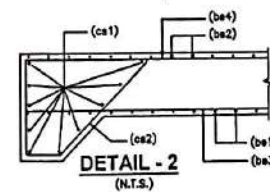
REINFORCEMENT DETAILS OF TOP SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF BOTTOM SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE: 1:15)



DETAIL - 2
(N.T.S.)

SAFETY AUDIT
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/CAD/42+378/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	170
2	ts2		10	170
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	170
8	w2		10	170
9	w3		10	200
10	w4		8	200
11	bs1		10	170
12	bs2		10+8	170
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	170
18	h2		10	170
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 170 c/c (T-T) DIRECTION

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
4. MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB - 45mm
 - b) BOTTOM SLAB - 75mm
 - c) SIDE WALL (EARTH SIDE) - 75mm
 - d) SIDE WALL (INNER SIDE) - 45mm
5. OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.3. LAP LENGTH SHALL NOT BE LESS THAN 66d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-
 - (TENSION ZONE)
 - (COMPRESSION ZONE)

CLIENT:
NH&IDCL
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

AUTHORITY'S ENGINEER
ALNOUD GLOBAL INFRA CONSULTANT
ALNOUD GLOBAL INFRA CONSULTANT LIMITED, P.O. BOX 102, SIGBOI, KUSUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,

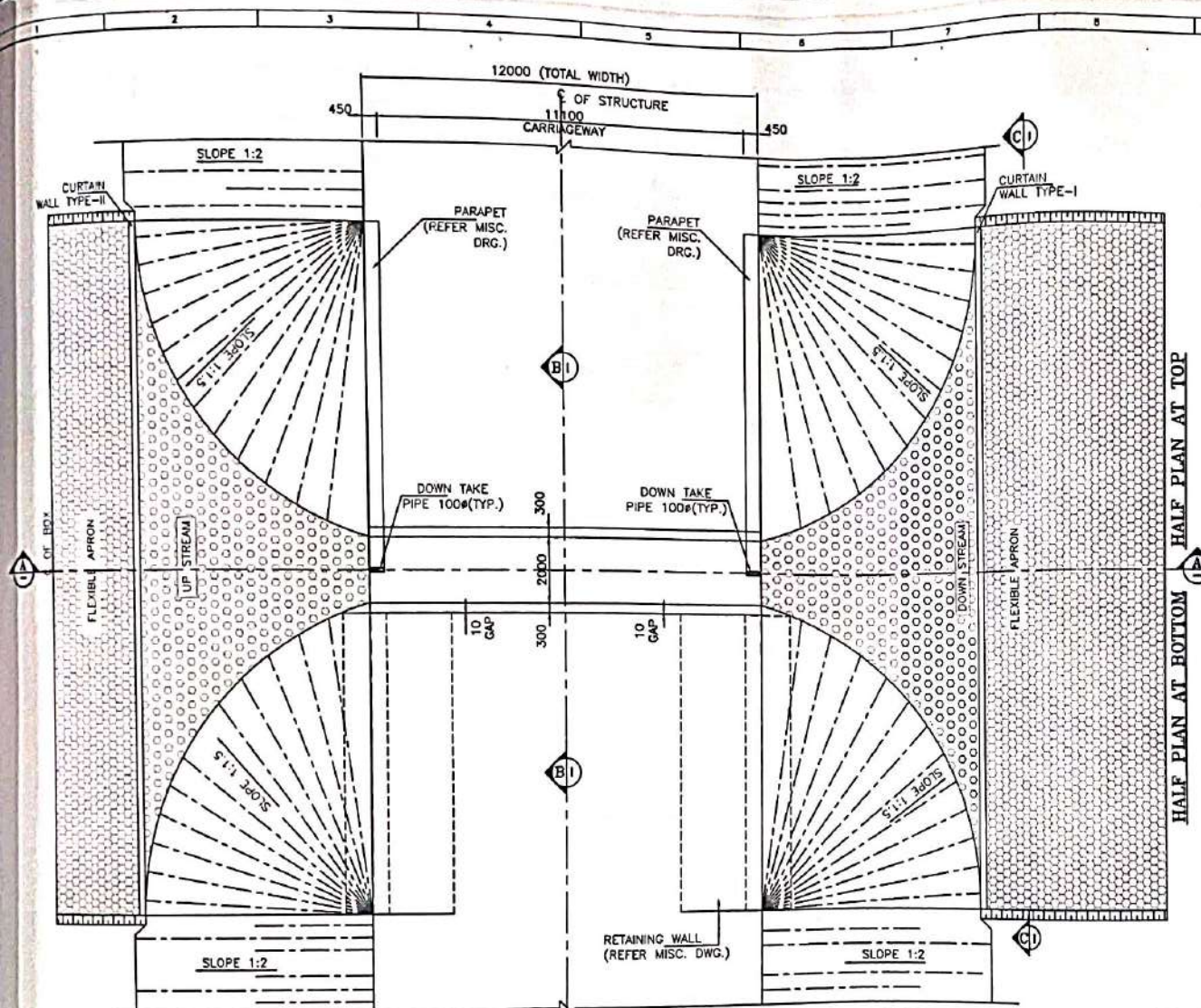
DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE F-8 BHANU CORPORATE TOWER, PLOT NO-C-23 SECTOR-13, VASHTI PHASE-2, NEW DELHI-110017

PROJECT:
WIDENING/IMPROVEMENT TO 3 LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (LOCAL ROAD) TO KM 41+88 LEDO, ON DELHARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (LANE+PS) OF NH-38 IN THIRUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE II)

REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 42+378

Date	Drawn	Check	Appr.	Scale	Drawing Status
JAN, 2024	W.P.	V.S.	A.T.	N.T.S.	

Project No. _____ Drawing No. _____ Sheet No. 01 OF 01 Rev. 00



10		11		12	
42450				42550	
					
DESCRIPTION		PROPOSED			
DESIGN CHN		42+454			
CA CHN		42+425			
STR TYPE		BOX			
SPAWN DIA		1X2X2m			
PROPOSAL		NEW 2 LANE			
KEY PLAN					

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
 - GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
 - GRADE OF STEEL - Fe 500.
 - THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
 - BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
 - THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
 - THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
 - BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
 - 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
 - SBC SHALL BE 13t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
 - AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE. CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED AS PER SITE.

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTHFILL (MAX.)	EARTHFILL (MIN.)
			LHS	RHS			
42+454	145.753	141.200	140.912	140.900	2.012m	2.541m	2.391m

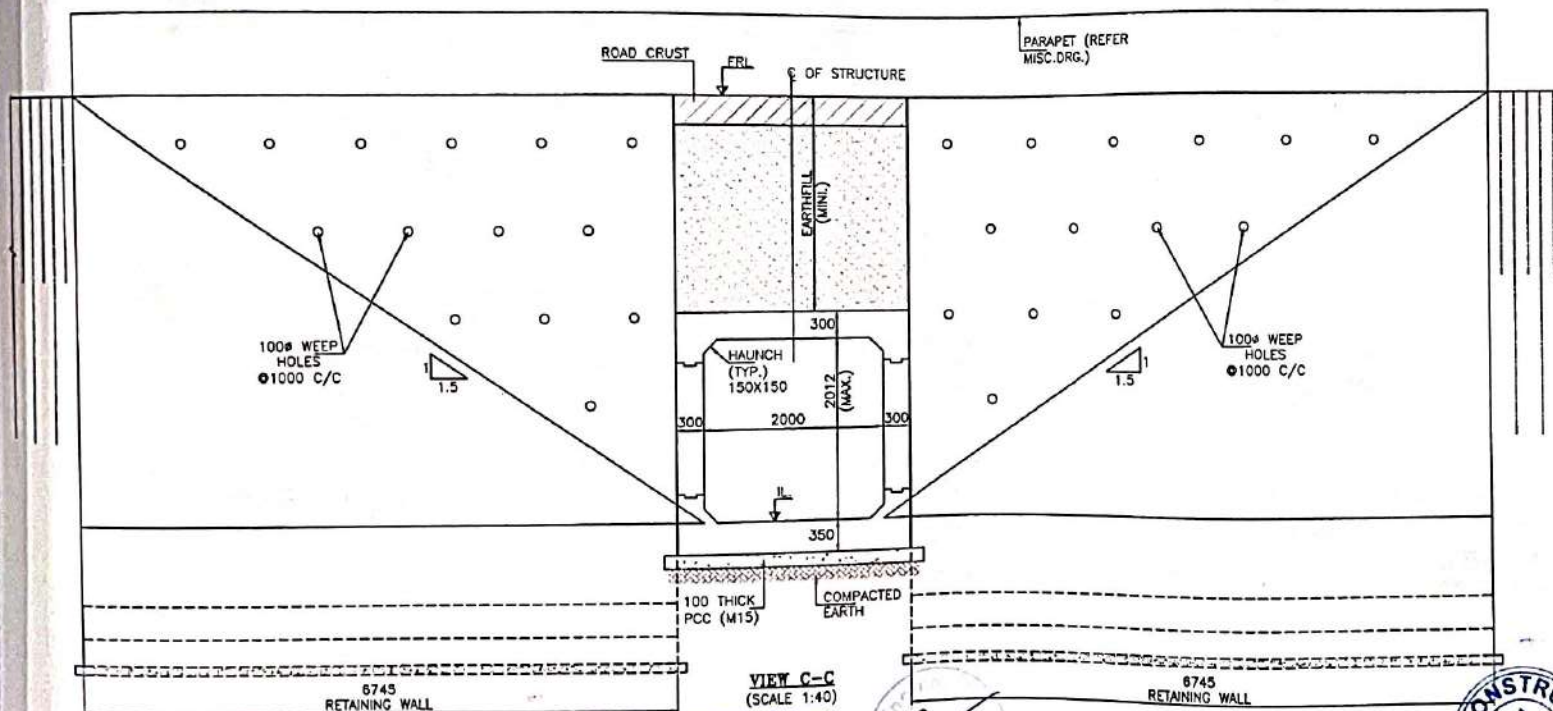
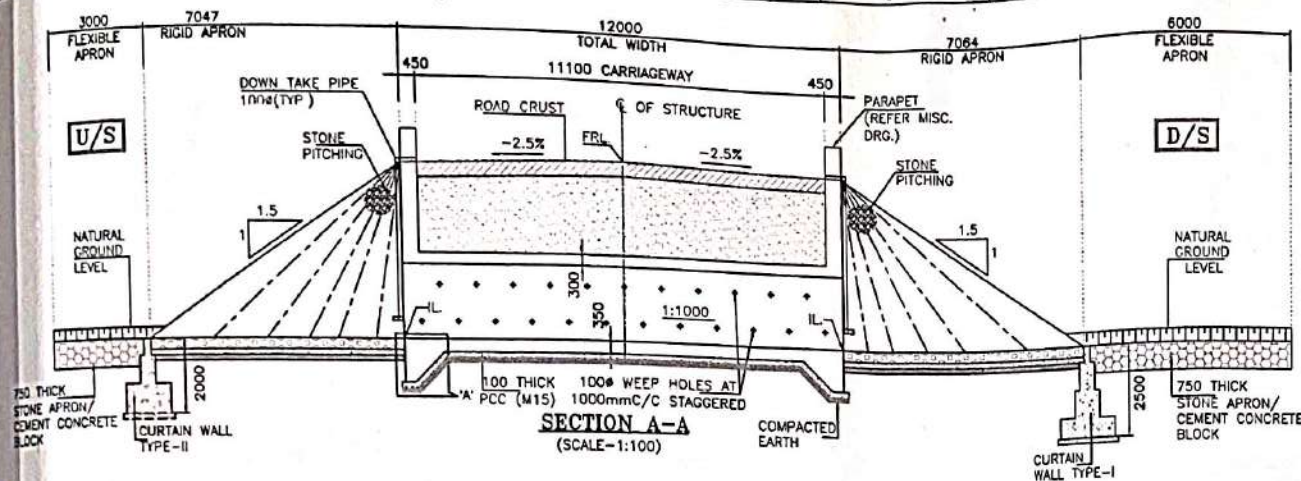
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

REFERENCE DRAWINGS:-
1. REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF/42+454/01

LEGEND:-
FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

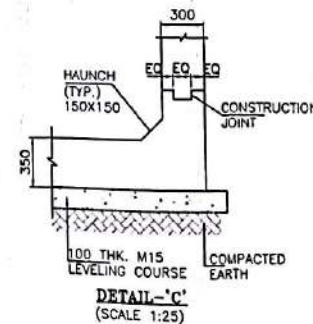
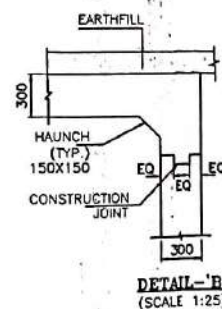
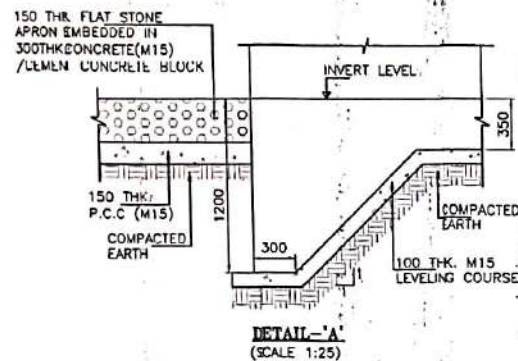
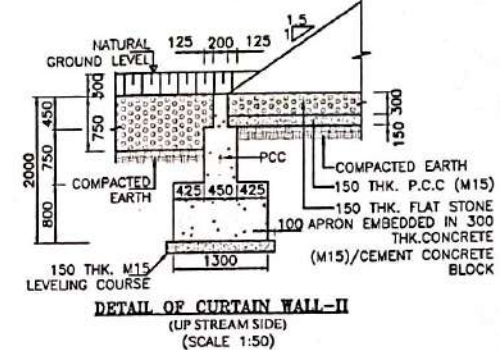
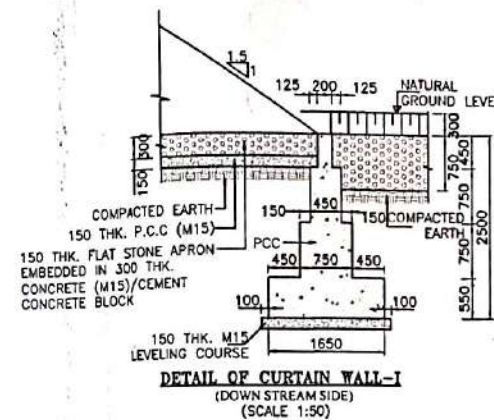
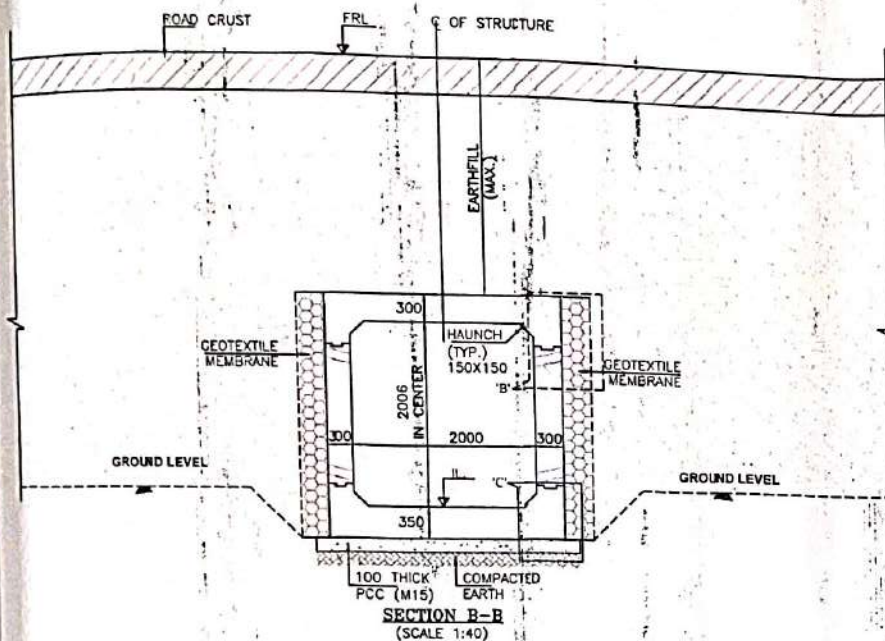
 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENGINEER ALMONDZ... C/O JAYANTA BANIK, SARABANIN NAMOHAR, DOBIL NO.2, DOBOL TINSUKIA, ASSAM-786171	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN DESIGN AID PLOT NO 54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: F-8, 18TH AN CORPORATE TOWER, PLOT NO-G-23 SECTOR-13, VASUDEHIA, GHAZIABAD, U.P-201002	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLAH GOAN) TO KM 47+882 (LEDO) ON DISBURGMENT TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWN FIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B)
	DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 42+454					



SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

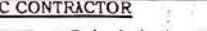
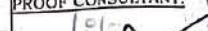
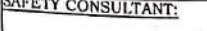
CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR: KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER: ALMOND PASTORAL CONSULTANTS LIMITED IN A/100 HAYDEETZA CONSULTANTS PRIVATE LIMITED. (D/O LEO SODER) C/O. JAYANTA SARKAR, SARAJAN NARAYAN, BORAIL NO. 2, DIGBAIL, TINSUKIA, ASSAM-786172	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 630, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE P.A. BHANU CORPORATE TOWER, PLOT NO.C-23, SECTOR-13, VASUKI, GHAZIABAD, U.P.-201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLAI GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWINGS FOR BOX CULVERT AT CHAINAGE 42+454 <table border="1"> <tr> <td>Date</td><td>Drw.</td><td>Use</td><td>Chk.</td><td>App.</td><td>Scale</td><td>Drawing Status</td></tr> <tr> <td>JAN.2024</td><td>W.P</td><td>VS</td><td>AB</td><td></td><td>NTS</td><td></td></tr> <tr> <td>Project No.</td><td>Drawing No.</td><td></td><td></td><td></td><td></td><td>Sheet No. 82 OF 82</td></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td>Rev. RD</td></tr> </table> AVC/NH-38/BO/GADI42+454/01	Date	Drw.	Use	Chk.	App.	Scale	Drawing Status	JAN.2024	W.P	VS	AB		NTS		Project No.	Drawing No.					Sheet No. 82 OF 82							Rev. RD
Date	Drw.	Use	Chk.	App.	Scale	Drawing Status																												
JAN.2024	W.P	VS	AB		NTS																													
Project No.	Drawing No.					Sheet No. 82 OF 82																												
						Rev. RD																												

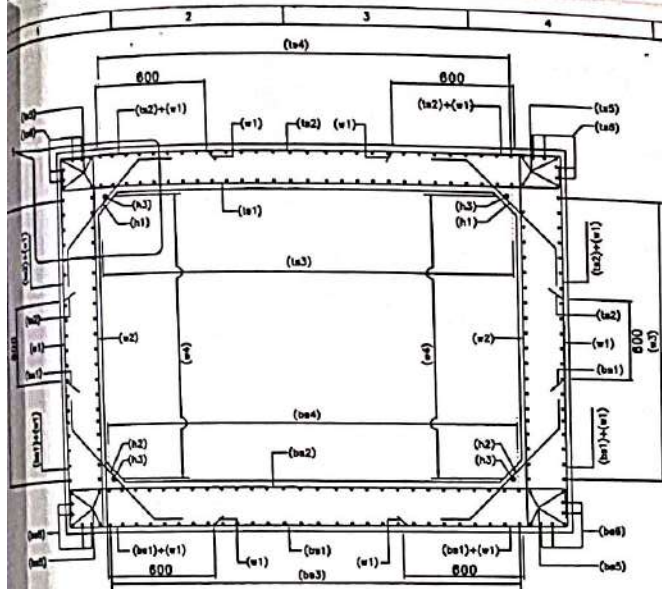


SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

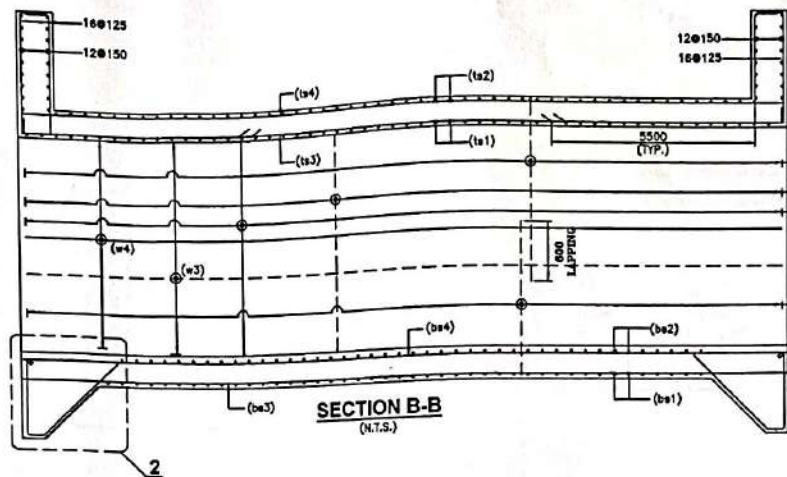
DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

CLIENT:  NADRA NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR:  KAMAC KAMAC ENGINEERS PVT.LTD F0201, QTY CENTER OFFICE - BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER:  ALMONDZ GLOAM INFRA CONSULTANT LIMITED (INDIA) PRIVATE LIMITED. 100, Ledo Sector, Q/O JAYANAGAR, BORBIL NO.2, D/5BOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO 54, 3RD FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT:  A.V. CONSTRUCTION Pvt. WZ-1240 Palani, Extension, Bongo Ashram West, Gali New Delhi 110045 Winst Infra Solution Pvt. Ltd. OFFICE: F-4, ISHAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VAISHALI, GHAZIABAD, U.P.201012	PROJECT: WIDENING IMPROVEMENT TO 2-LANE LANE WITH PAVED S-HOLDER FROM KM 27-150 (GOAL GOAN) TO KM 47-882 (LEDO) ON DIBRUGAH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 424+454 <table><tr><td>Date</td><td>Drawn</td><td>Des.</td><td>Chk.</td><td>Appr.</td><td>Scale</td><td>Drawing Status</td></tr><tr><td>JAN 2024</td><td>W.P.</td><td>V.S.</td><td>A.B.</td><td>NTS</td><td></td><td></td></tr><tr><td>Project No.</td><td>Drawing No.</td><td>Sheet No.</td><td>Rev.</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>AVC/NH-38/BC/GA/DN3-454/01</td><td>63 OF 63</td><td>RD</td><td></td><td></td></tr></table>	Date	Drawn	Des.	Chk.	Appr.	Scale	Drawing Status	JAN 2024	W.P.	V.S.	A.B.	NTS			Project No.	Drawing No.	Sheet No.	Rev.						AVC/NH-38/BC/GA/DN3-454/01	63 OF 63	RD		
Date	Drawn	Des.	Chk.	Appr.	Scale	Drawing Status																												
JAN 2024	W.P.	V.S.	A.B.	NTS																														
Project No.	Drawing No.	Sheet No.	Rev.																															
		AVC/NH-38/BC/GA/DN3-454/01	63 OF 63	RD																														



SECTION A-A
(N.T.S.)



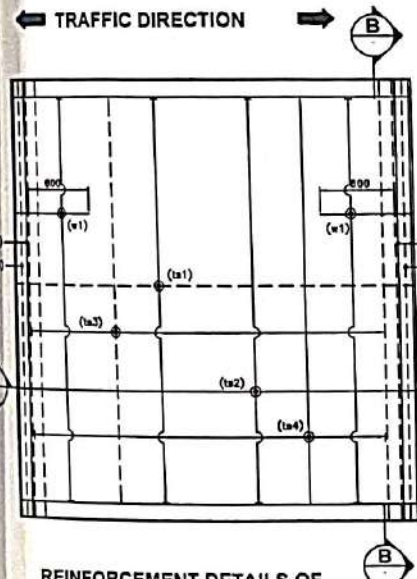
SECTION B-B
(N.T.S.)

LEGEND:-

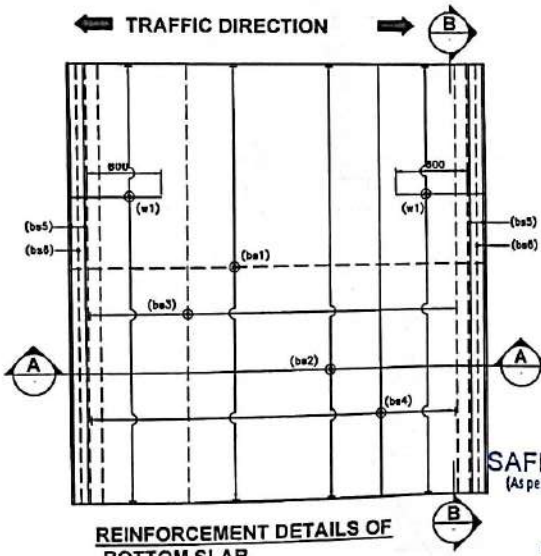
TOP FACE BAR	———
BOTTOM FACE BAR	-----

BOX REIN. SCHEDULE

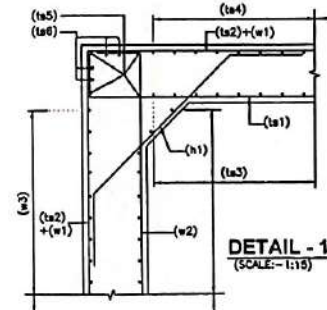
SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	180
2	ts2		10	180
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
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10	w4		8	200
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12	bs2		10+8	180
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200



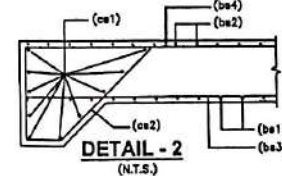
REINFORCEMENT DETAILS OF
TOP SLAB
(MAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF
BOTTOM SLAB
(MAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE: 1:15)



DETAIL - 2
(N.T.S.)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB - 45mm
 - b) BOTTOM SLAB - 75mm
 - c) SIDE WALL (EARTH SIDE) - 75mm
 - d) SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 55φ. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

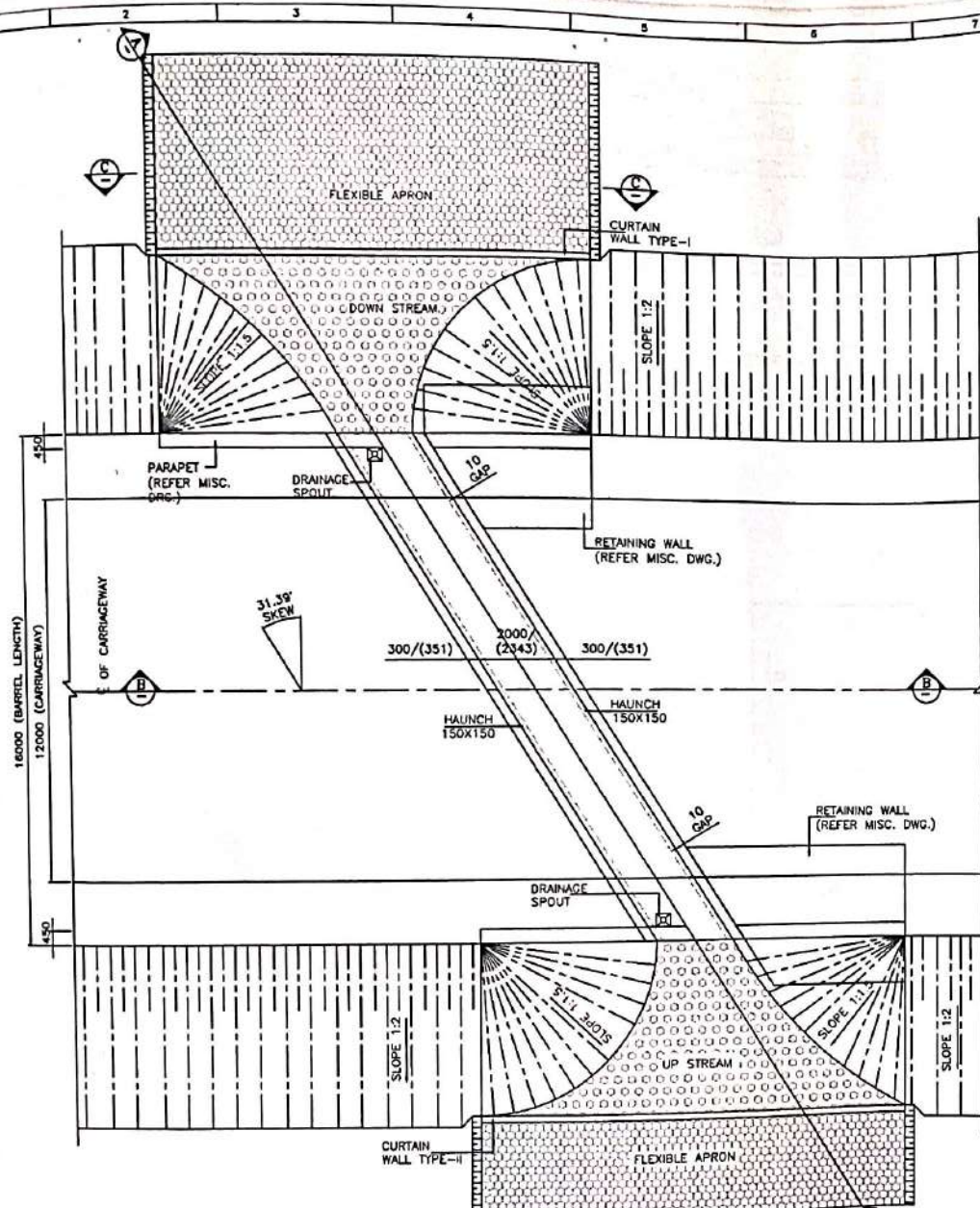
- GENERAL ARRANGEMENT DRAWING. AYC/NH-38/BOX/CAD/42+454/01

CONSTRUCTION

A.V. CONSTRUCTION
1st FLOOR, WZ-1040,
Palam Extension, New
Delhi 110045

Winst Infra Solution Pvt. Ltd.
OFFICE: F-4, INDIAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VIGYANPURA, GURGAON, U.P-201012

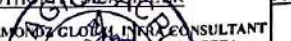
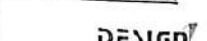
CLIENT: NADRA NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMOTUZ GLOBAL INFRA CONSULTANT LIMITED, 601/602, 6TH FLOOR, CONSULTANTS PRIVATE LIMITED, D-1, Leda Section, GO JAYANTISARAI, SURBAJANIN NAGHAR, BORER, NO.2, D/BOI, TINSUKIA, ASSAM-786771	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO: 630, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT: DESIGN DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: A.V. CONSTRUCTION 1st FLOOR, WZ-1040, Palam Extension, New Delhi 110045	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLAI GOAN) TO KM 47+445 (LEDO ON DISBURSAH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS BROADFIELD AND GREEN FIELD) (2-LANE-PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-1) DRAWING TITLE:- REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 42+454 <table border="1"> <tr> <th>Date</th> <th>Drw.</th> <th>Des.</th> <th>Chk.</th> <th>App.</th> <th>Scale</th> <th>Drawing Status</th> </tr> <tr> <td>JAN 2024</td> <td>W.P.</td> <td>V.S.</td> <td>A.B.</td> <td></td> <td>N.T.S.</td> <td></td> </tr> <tr> <td>Project No.</td> <td>Drawing No.</td> <td colspan="2">AVC/NH-38/BOX/REIN/42+454/01</td> <td>Sheet No.</td> <td colspan="2">81 OF 01</td> </tr> <tr> <td></td> <td></td> <td colspan="2"></td> <td></td> <td colspan="2">RR</td> </tr> </table>	Date	Drw.	Des.	Chk.	App.	Scale	Drawing Status	JAN 2024	W.P.	V.S.	A.B.		N.T.S.		Project No.	Drawing No.	AVC/NH-38/BOX/REIN/42+454/01		Sheet No.	81 OF 01							RR	
Date	Drw.	Des.	Chk.	App.	Scale	Drawing Status																												
JAN 2024	W.P.	V.S.	A.B.		N.T.S.																													
Project No.	Drawing No.	AVC/NH-38/BOX/REIN/42+454/01		Sheet No.	81 OF 01																													
					RR																													



HALF PLAN AT TOP & HALF PLAN AT BOTTOM

GOOD FOR CONSTRUCTION

PLAN
(SCALE=1:100)

 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENGINEER  ALMOND GLOBAL INFRA CONSULTANT LIMITED (A JV WITH AYOLEEZA CONSULTANT PRIVATE LIMITED). 20 JAYAPATI SAHAI SARMA ANAN NAGAR, BORDO NO.2, T. GBOI, TINSUKIA, ASSAM 781171	PROOF CONSULTANT  CREATIVE ENGINEERING SERVICES OFFICE NO. 630, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT  DESIGN AID PLOT NO.54, 3RD FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT  Winst Infra Solution Pvt. Ltd. OFFICE: F-4, BHANU CORPORATE TOWER, PLOT NO-5, SECTOR-13, VAISHALI, GHAZIABAD, U.P-201012	REMARKS: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27-150 (DOLA GOAN) TO KM 47+652 (LEDO) ON DISBURGMENT TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (GLAND-78) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 42+970 <table><tr><th>Date</th><th>Drawn</th><th>Check</th><th>Appr.</th><th>Scale</th><th>Rev.</th><th>Drawn</th><th>Rev.</th></tr><tr><td>JAN-2024</td><td>W.P.</td><td>V.S.</td><td>A.B.</td><td>RTS</td><td></td><td>01 OF 03</td><td>01</td></tr><tr><td>Project No.</td><td>Drawing No.</td><td>Sheet No.</td><td>Rev.</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>AVC/NH-38/BC/IGAD/42+970/01</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Date	Drawn	Check	Appr.	Scale	Rev.	Drawn	Rev.	JAN-2024	W.P.	V.S.	A.B.	RTS		01 OF 03	01	Project No.	Drawing No.	Sheet No.	Rev.						AVC/NH-38/BC/IGAD/42+970/01						
Date	Drawn	Check	Appr.	Scale	Rev.	Drawn	Rev.																															
JAN-2024	W.P.	V.S.	A.B.	RTS		01 OF 03	01																															
Project No.	Drawing No.	Sheet No.	Rev.																																			
	AVC/NH-38/BC/IGAD/42+970/01																																					

42950

DESCRIPTION	PROPOSED
DESIGN CHN.	42+970
CA.CHN.	43+000
STR.TYPE	BOX
SPAN DIA	1X2X2m
PROPOSAL	NEW 2 LANE

43050

KEY PLAN

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
42+970	148.155	141.108	140.808	140.820	2.018m	3.031m	1.847m

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

NOTES:-

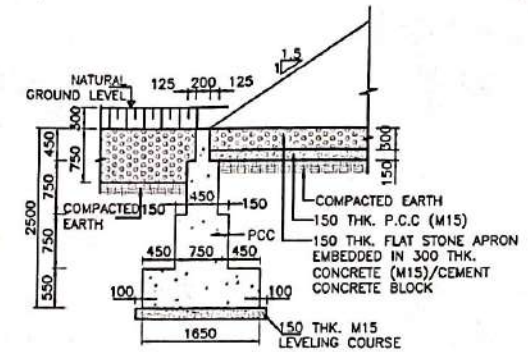
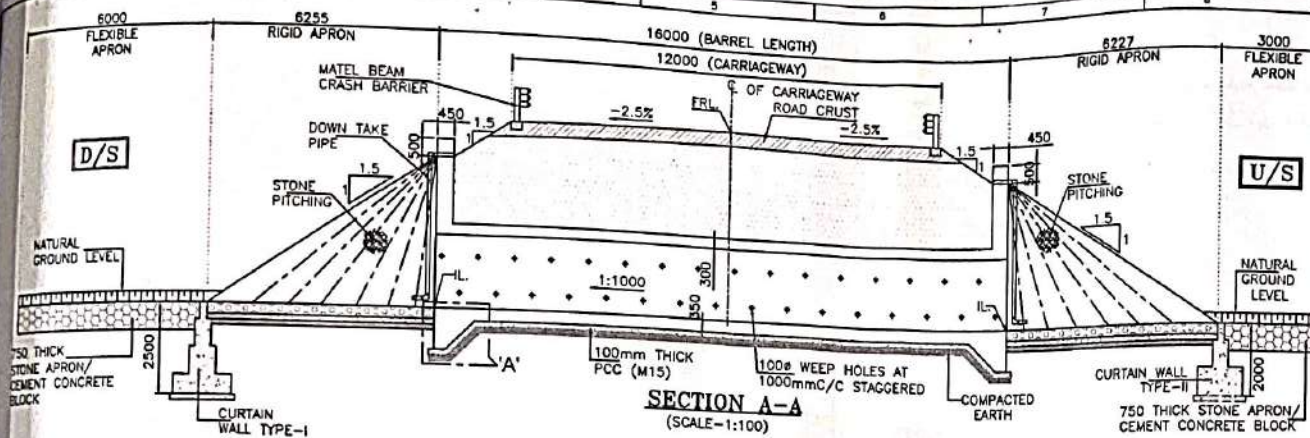
- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION. IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 8 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/C IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 14t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

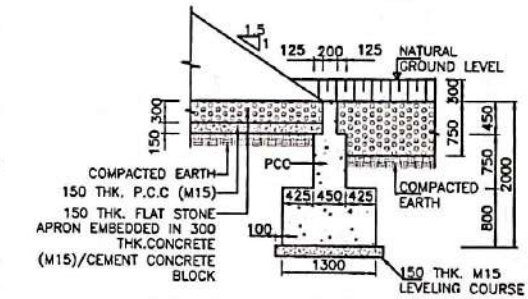
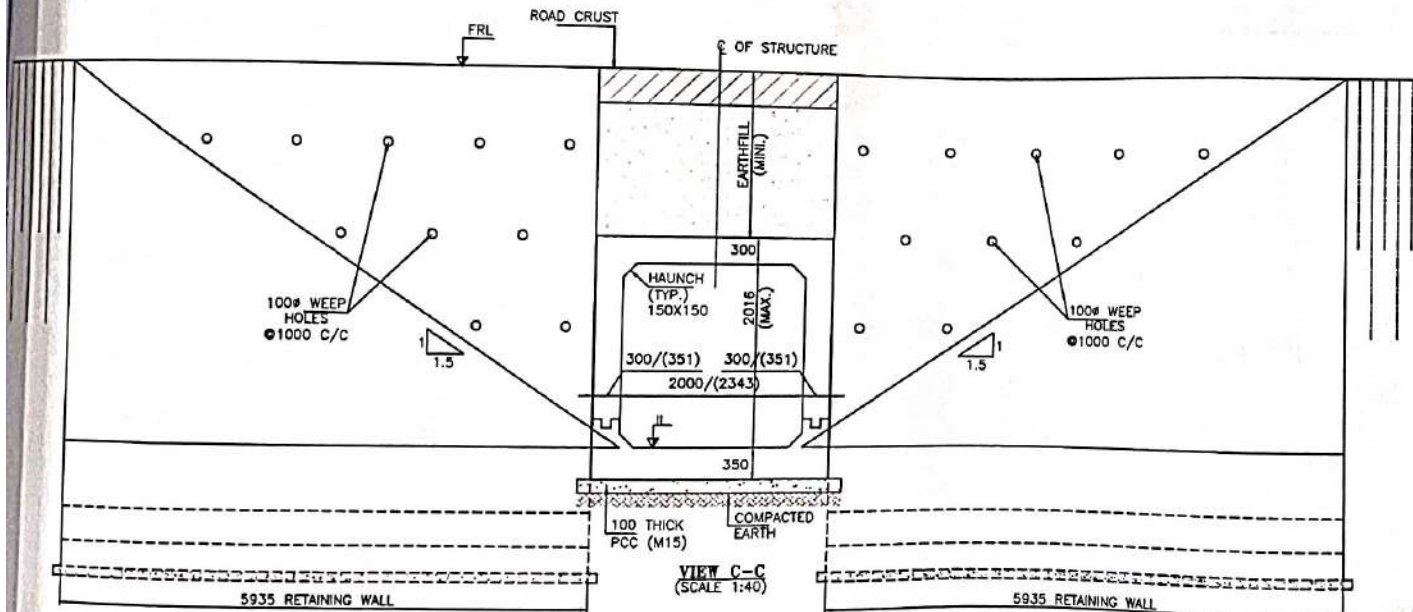
DESIGN AID, NEW DELHI

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BOX/REIN/42+970/01



DETAIL OF CURTAIN WALL-I
(DOWN STREAM SIDE)
(SCALE 1:50)



DETAIL OF CURTAIN WALL-II
(UP STREAM SIDE)
(SCALE 1:50)

GOOD FOR CONSTRUCTION

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

NADCL
NATIONAL HIGHWAYS &
STRUCTURE DEVELOPMENT
CORPORATION LTD.

KAMAC ENGINEERS PVT. LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

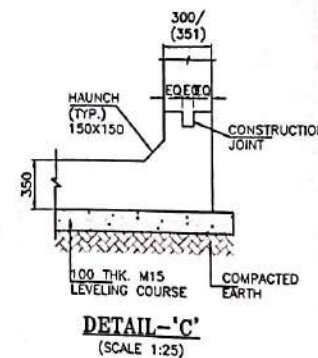
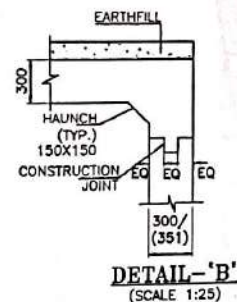
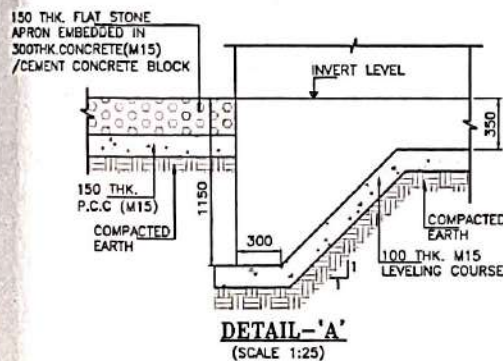
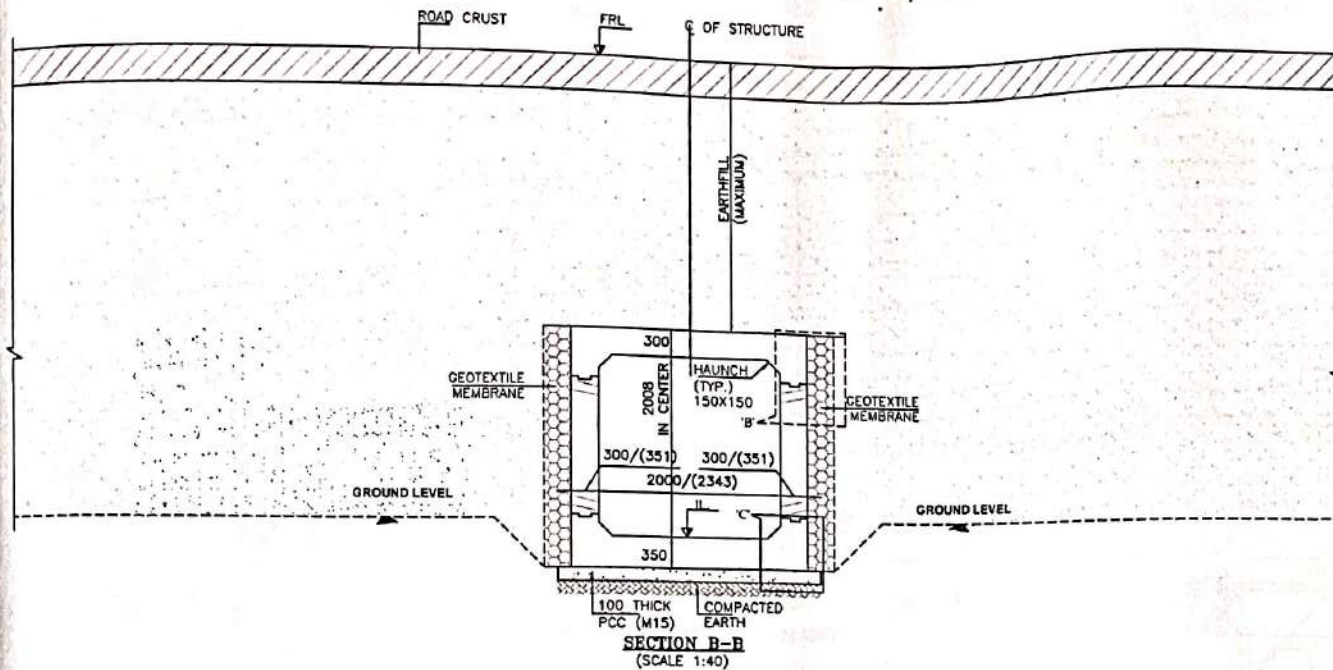
AUTHORITY'S ENGINEER
ALMOND & SONS CONSULTANTS
PRIVATE LIMITED
CO-OP. BLDG. SECTOR-3, DIGLOI,
TINSUKIA, ASSAM-786117

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution
Pvt. Ltd.
OFFICE: F&B BHANU CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAIDYANATHA CHAUNDA, U.P-201012

DRAWING TITLE					
GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 42+970					
Date	Drawn	Eng.	Chk.	App.	Rev.
JAN 2024	W.P.	V.S.	A.B.	NTS	
Project No.	Drawing No.	Sheet No.	Rev.		
	AVCMH-38/DC/04018-87001	82 OF 83	RO		



SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

CLIENT:

NADCA
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER
ALMONDI GEOTECHNICAL CONSULTANT
LIMITED, 100/101, HANSA LEEZA
CONSULTANTS PRIVATE LIMITED,
Engineer (Section)
G-10, ANAND SAHAI SARBAJANIN
NAMSARH (GATE NO. 2, DGBOL,
*TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
WAISHALI, GHAZIABAD, U.P.-201010

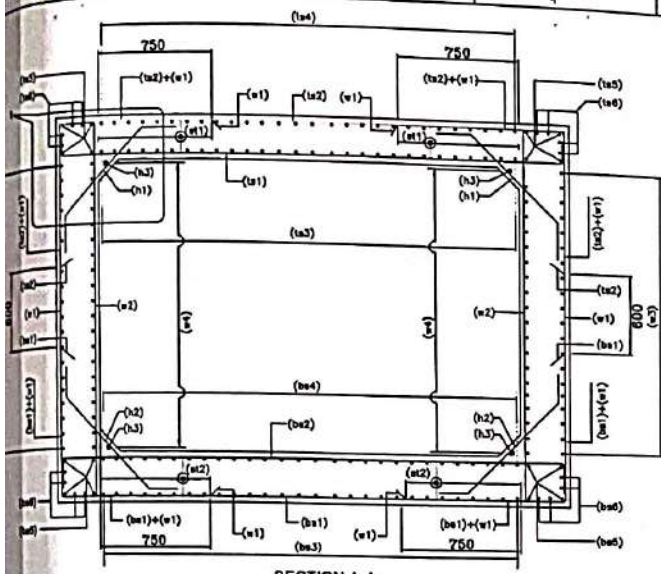
SAFETY CONSULTANT:

DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070.

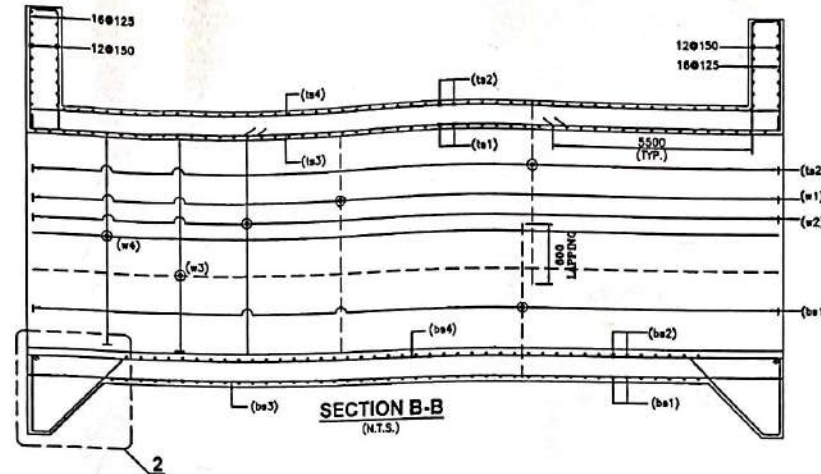
DESIGN CONSULTANT:

AVCONSTRUCTION
1st Floor, W-2, Sector-3,
Patam Extension, Bosco
Ashram, Wazirpur, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE: P-4, BHANU CORPORATE
TOWER, PLOT NO-C-22, SECTOR-13,
VINDHYAPRA CHA, GURGAON, U.P.-201017

PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAN GOAN) TO KM 47+982 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 5)									
DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 42+970									
Date JAN-2024	Dwg. W.P	Dwg. V.S	Chk. A.B	App. NTS	Scale:	Drawing Status:			
Project No.	Drawing No.				Sheet No.				Rev.
	AVC/NH-48/BC/GAD/42+970/01				02 OF 03				NO



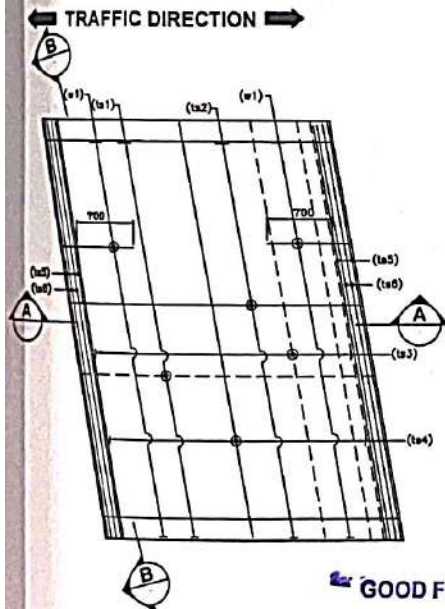
SECTION A-A
(N.T.S.)



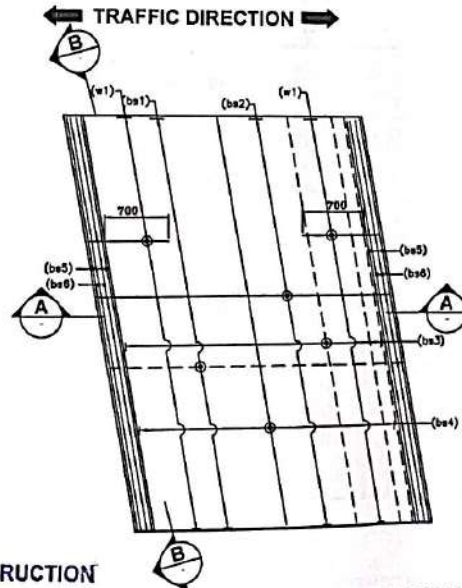
SECTION B-B
(N.T.S.)

LEGEND:-

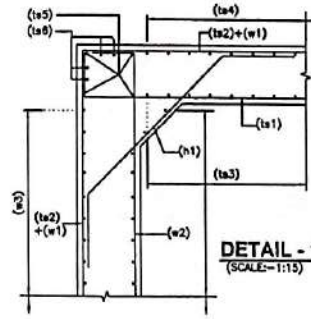
TOP FACE BAR	———
BOTTOM FACE BAR	-----



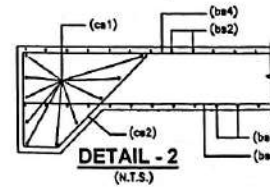
REINFORCEMENT DETAILS OF TOP SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF BOTTOM SLAB
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE=1:15)



DETAIL - 2
(N.T.S.)

SAFETY AUDIT

(As per Article 10.1 of EPC Agreement)

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IS:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- THE LINE OF OVERLAPPING BAR bs1 & bs2 IN WALL & HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

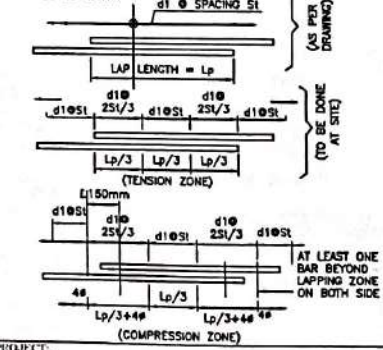
- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/QAD/42+970/01

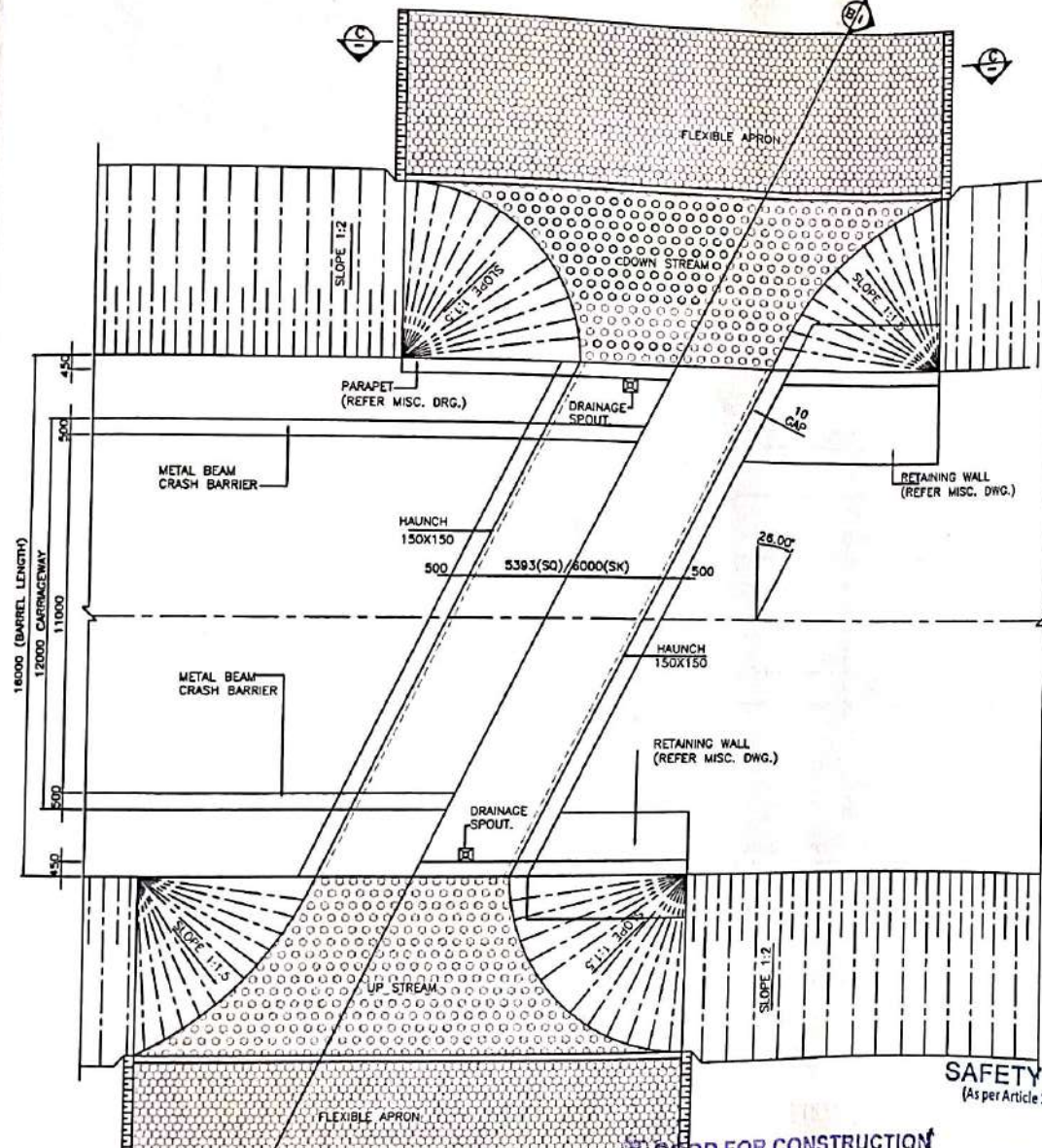
BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	160
2	ts2		10	160
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	160
8	w2		10	160
9	w3		10	200
10	w4		8	200
11	bs1		10	160
12	bs2		10+10	160
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	160
18	h2		10	160
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION
23	st2		8	200 c/c (L-L) 160 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm
- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 55d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-

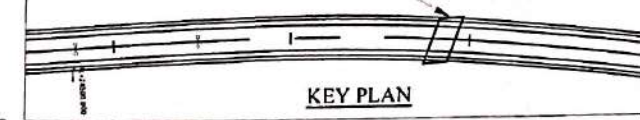




43550

DESCRIPTION	PROPOSED
DESIGN CHN.	43+643
CA.CHN.	43+625
STR. TYPE	BOX
SPAN/DIA	1X8X4m
PROPOSAL	NEW 2 LANE

43650



LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
43+843	147.431	142.472	142.172	172.184	4.012m	2.697m	1.178m

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY - 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15%
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION. IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 800MM THICK, FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 8 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 13t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE, ECONOMICALLY CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- EXPOSURE CONDITION IS MODERATE.

LEGEND:-

FRL FINISHED ROAD LEVEL
 IL INVERT LEVEL
 LVL LEVEL
 EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

SAFETY AUDITOR
 (As per Article 10.1 of EPC Agreement)

REFERENCE DRAWINGS:-

DESIGN AID, NEW DELHI (REINFORCEMENT DETAIL OF BOX CULVERT)
 A/C/NH-30/BOX/REINF./43+643/01

HALF PLAN AT TOP (b) PLAN HALF PLAN AT BOTTOM
 (SCALE=1:100)

ADDA
 ADDITIONAL HIGHWAYS &
 STRUCTURE DEVELOPMENT
 CORPORATION LTD.

KAMAC ENGINEERS PVT. LTD.
 F0201, CITY CENTER OFFICE
 BLOCK, 2ND FLOOR,
 MATIGARA 734010

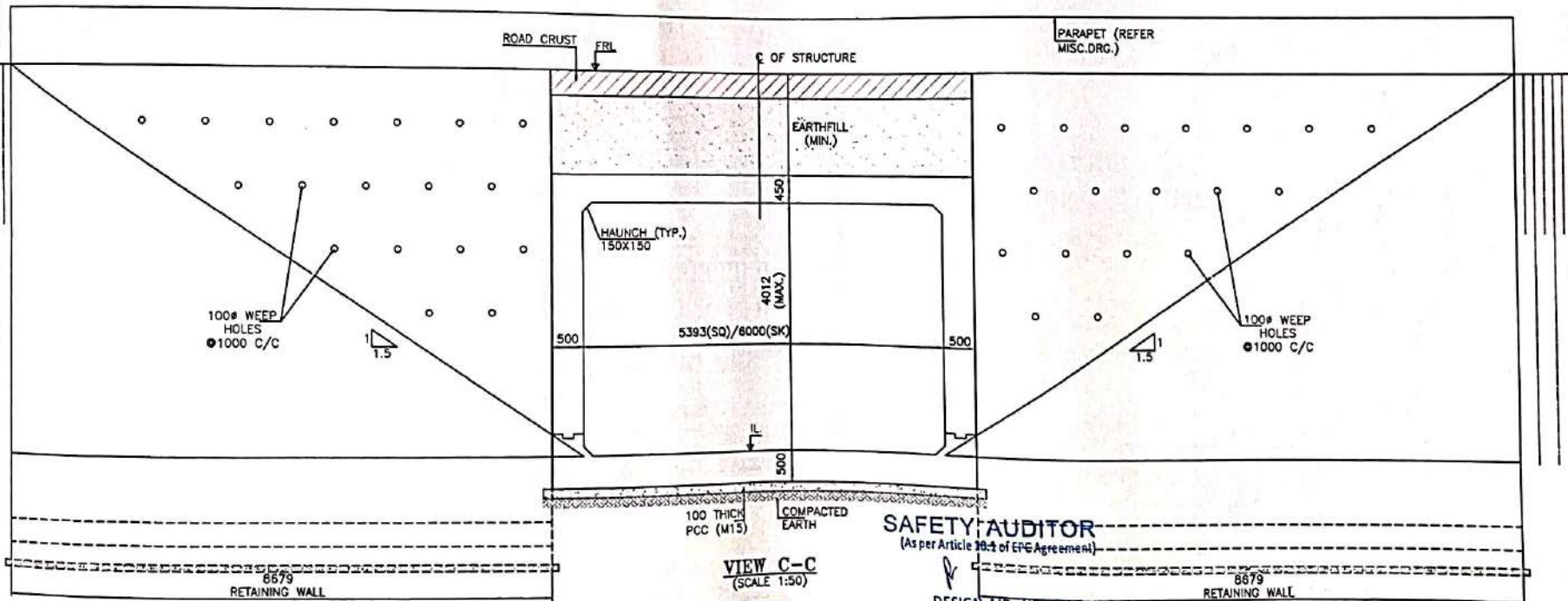
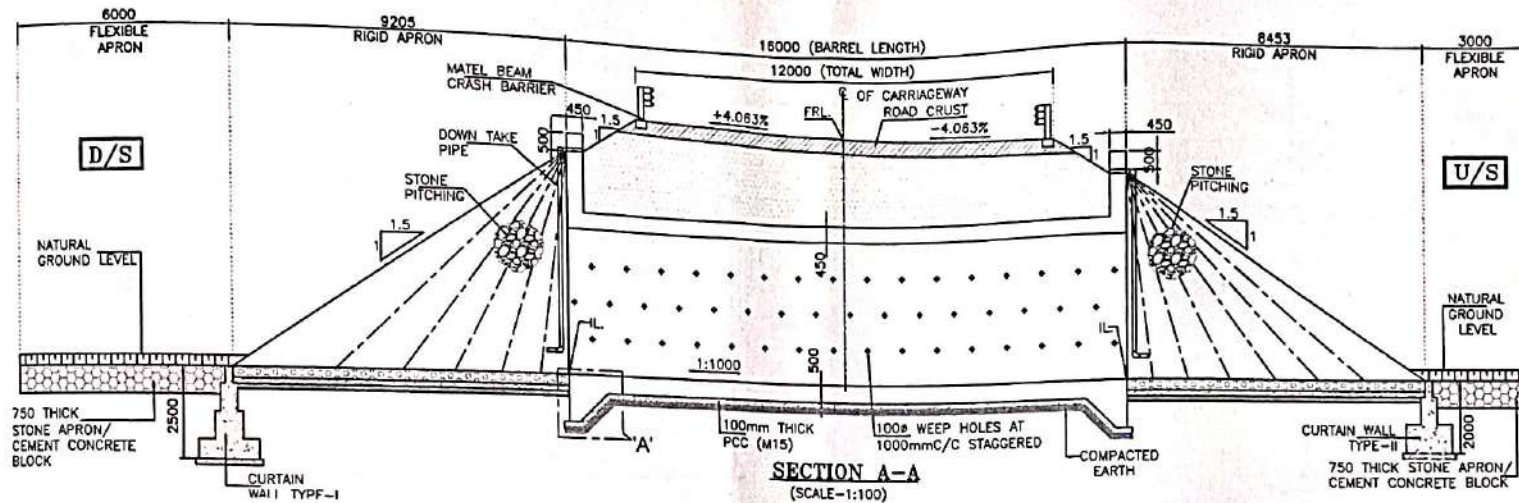
ALMOSHA CONSULTANT
 LIMITED IN PARTNERSHIP
 CONSULTANTS IN CIVIL, ELECTRICAL,
 MECHANICAL & SANITARY ENGINEERING
 1/3 JAYAPRAKASH BARBAJANIN
 NAMGHAR, BORBI NO.2, HIGBOI,
 TINSUKIA, ASSAM-781171

PROOF CONSULTANT
CREATIVE ENGINEERING SERVICES
 OFFICE NO. 620, SIGNATURE GLOBAL
 MALL, SECTOR-3,
 VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:
DESIGN AID
 PLOT NO.54, 3rd FLOOR(FRONT),
 MASOODPUR DAIRY FARM, VASANT KUNJ,
 NEW DELHI-110070,

DESIGN CONSULTANT
Winst Infra Solution Pvt. Ltd.
 OFFICE F-4, BHUJAN CORPORATE
 TOWER, PLOT NO-C-23, SECTOR-13,
 VASAGHAT, GHAZIABAD, U.P.-201012

PROJECT
 WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
 (GOLU GOAN) TO KM 47+082 (LEDO) ON DIBRUGARH-TO LEDO SECTION WITH
 PROPOSED MARGHERITA & LEDO BYPASS (BROWN FIELD AND GREEN FIELD)
 (2-LANE-P&B OF NH-38 IN THE MURGA DISTRICT IN THE STATE OF ASSAM ON EPC
 MODE (PACKAGE-5))
DRAWING TITLE:-
 GENERAL ARRANGEMENT DRAWING FOR
 BOX CULVERT AT CHAINAGE 43+643
Date JAN 2024 **Drw.** W.P. **Des.** V.S. **Chk.** A.B. **Appr.** R.T.S. **Scale** 1/15 **Drawing Station**
Project No. **Drawing No.** **Sheet No.** **Rev.**



SAFETY AUDITOR
(As per Article 30.3 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

NADCL
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S APPROVAL
ALMOND CONSULTANTS
LIMITED IN ASSAM
CONSULTANTS PRIVATE LIMITED.
D/O. 1900 SECTION
C/O. JAYANIPUR, BARBAJANIN
NANGHAR, BORBIL N/2, DISBOL,
TINSUKIA, ASSAM-786111

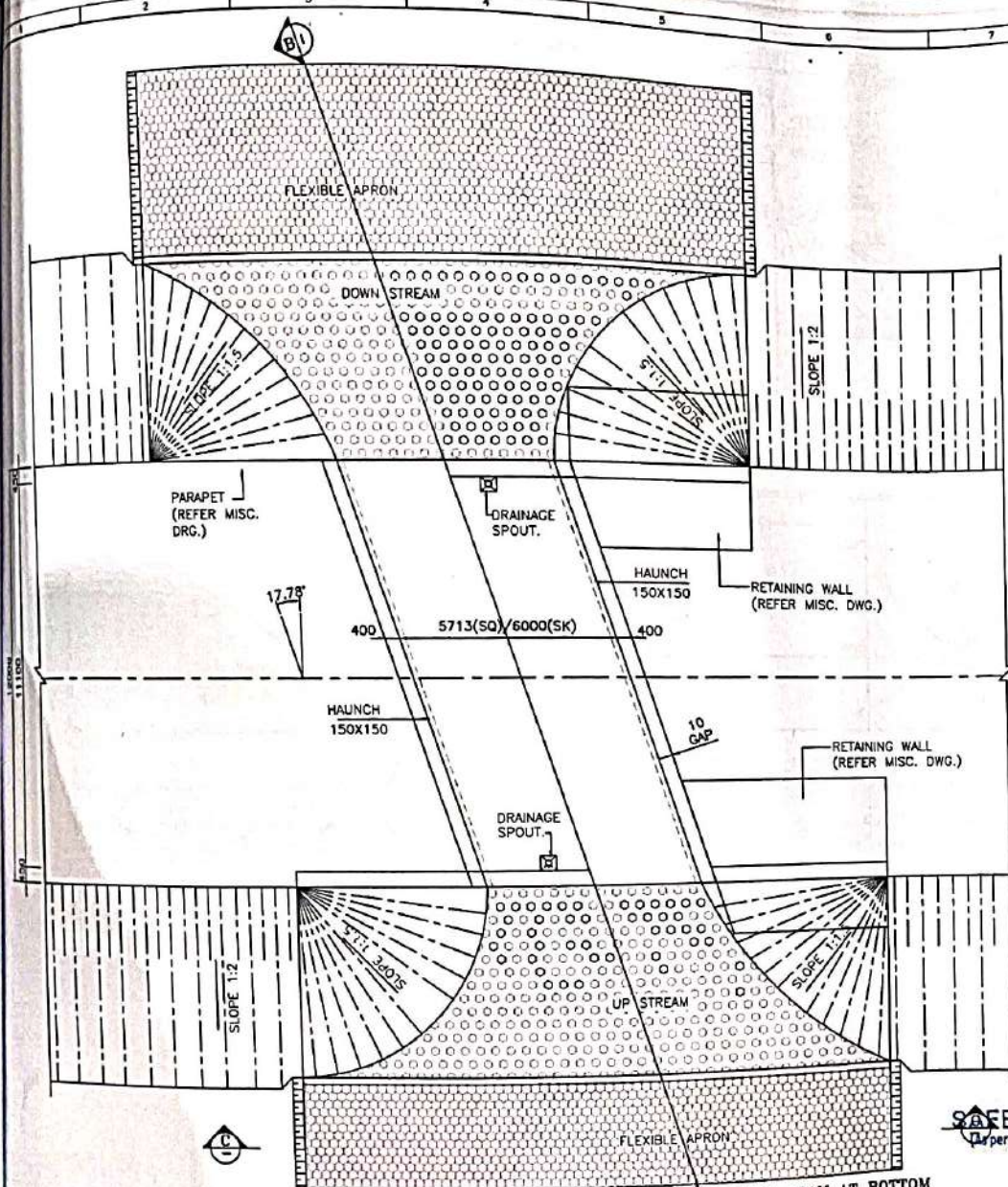
PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, CHHATTAAGAD, U P-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE: F-8 ISHAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAISHALI CHHATTAAGAD, U P-201012

DRAWING TITLE:
GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 43+643

Date	Drawn	Checked	Appr.	Scale	Sheet No.	Rev.
JAN 2024	W B	V S	A B	MTS	2 OF 3	NS



HALF PLAN AT TOP
HALF PLAN AT BOTTOM

PLAN
(SCALE-1:100)

GOOD FOR CONSTRUCTION

44050

44150

DESCRIPTION	PROPOSED
DESIGN CHN.	44+070
CA.CHN.	44+065
STR.TYPE	BOX
SPAN/DIA	1X6X3m
PROPOSAL	NEW 2 LANE

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
44+070	148.576	143.249	142.949	142.961	3.158m	0	0

KEY PLAN

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECTED TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK, FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC 78-2014.
- 150MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 12.100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 8t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE. CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE. THE EXPOSURE CONDITION IS MODERATE.

LEGEND:-

- FRL FINISHED ROAD LEVEL
- IL INVERT LEVEL
- LVL. LEVEL
- EGL. EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVG/NH-38/BOX/REINF/44+070/01



NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

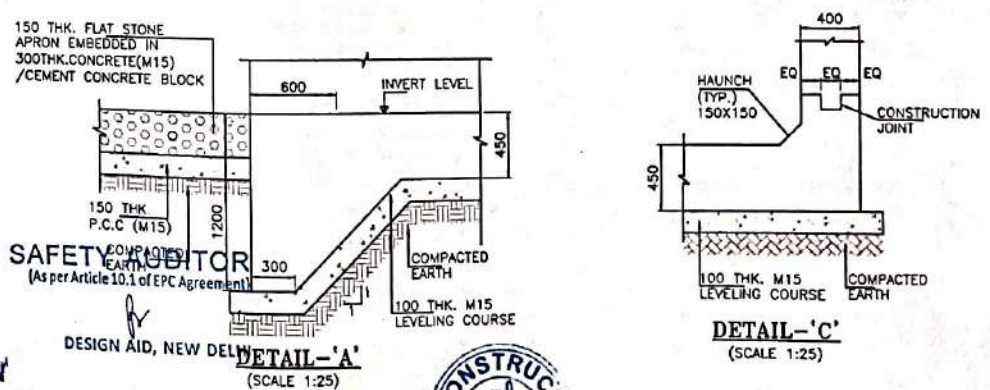
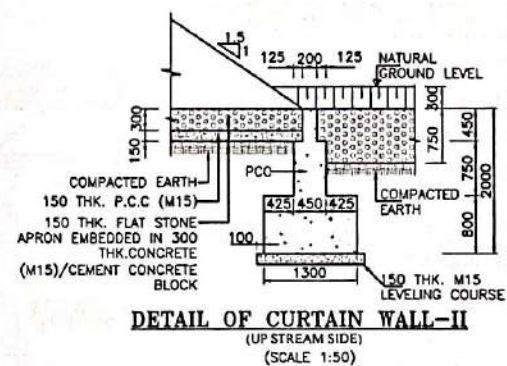
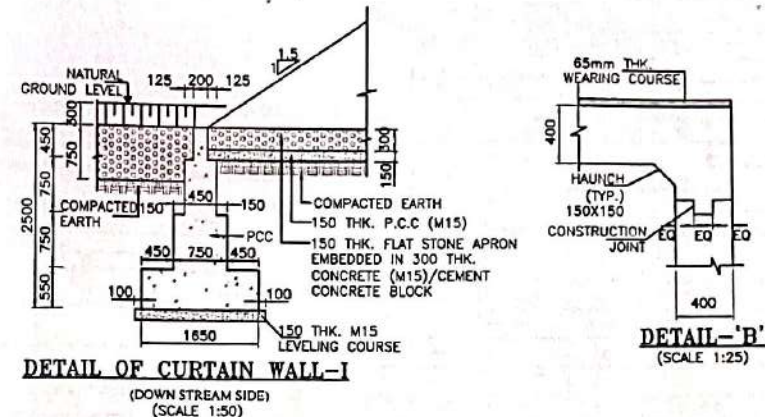
ALMOKED CONSULTANTS
CONSULTANT
UNITED INDIAN ENGINEERS CONSULTANT PRIVATE LIMITED.
C/O JAYANTANIKIA, SARBA ANIN NAMSHAR, BORBI, NO.2, DGBOI, TINSUKIA, ASSAM-781171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL, MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,

DESIGN CONSULTANT:
A. CONSTRUCTION
Palaik, Sector-10, Bisco Ashram Wall Gali, New Delhi 110045
Winst Infra Solution Pvt. Ltd.
OFFICE: F-8, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASANT KUNJ, GHAZIABAD, U.P.-201012

GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 44+070									
Date: JAN 2024	Drawn: W.P.	Check: V.S.	Appr: A.B.	Scale: NTS	Drawing Status: 1 OF 2				
Project No:	Drawing No: AVGNH-38/BOX/GA/44+070/01				Sheet No: 1 OF 2				



(COMPRESSION ZONE)							
PROJECT							
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 37-150 (DOLA GOAN) TO KM 47-582 (LEDO) ON DUBRIGAU TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD (2-LANE+PS) OF NH-38 IN THIRUVA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3)							
DRAWING TITLE							
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 44+878							
Date	Draw	Eng	Chk.	App.	Scale	Drawing Status	
JAN. 2024	W. P.	V. S.	A. R.		MTS		
Project No	Drawing No.					Sheet No.	Rev.
	AVGNH-38/BOX/REIN/44+87801					01 OF 01	RD

44450

DESCRIPTION	PROPOSED
DESIGN CHN.	44+526
CA.CHN.	44+515
STR.TYPE	BOX
SPAN/DIA	1X6X4m
PROPOSAL	NEW 2 LANE

44550

KEY PLAN

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
44+526	147.431	142.472	142.172	172.184	4.012m	0.847m	0.708m

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = 1850-2280kg/m³
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 800MM THICK. FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/c IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 10t/m², AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF Boulders ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL. LEVEL
EGL. EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

REFERENCE DRAWINGS:-

REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BOX/REINF./44+526

DESIGN AID, NEW

SAFETY CONSULTANT:

DESIGN

DESIGN AID

PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

Winst Infra Solution Pvt. Ltd.
OFFICE: P-4 ISHAN CORPORATE
TOWER, PLOT NO-C-23 SECTOR-13,
VAISHALI, GHAZIABAD, U.P.-201012

Winst Infra Solution Pvt. Ltd.
OFFICE: P-4 ISHAN CORPORATE
TOWER, PLOT NO-C-23 SECTOR-13,
VAISHALI, GHAZIABAD, U.P.-201012

PROJECT:					DRAWING TITLE:				
WIDENING/IMPROVEMENT TO 2 LANE WITH PAVED SHOULDER FROM RM 27-150 (LOCAL ROAD) TO RM 47-482 (LEDO) ON DHRUGARH TO LEDO SECTION WITH PROPOSED MARCHERITA & LEDO BYPASS (BROWHPIELD AND GREEN FIELD) (2 LANE) (PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE B)					GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 44+526				
Date	Drawn	Check	Appr.	Scale	Drawn	Check	Appr.	Scale	Drawn
JAN 2024	W.P.	V.S.	A.H.	MPS					
Project No.	Drawing No.	Sheet No.	Rev						
	AVC/NH-38/BOX/REINF./44+526	1 OF 3	RD						

12000

11100

450

450

HALF PLAN AT TOP

PLAN

(SCALE=1:100)

HALF PLAN AT BOTTOM

CLIENT:



NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR



KAMAC ENGINEERS PVT.LTD
F0291, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY TO EXECUTE

ALMOND CLOUTIER CONSULTANT
LIMITED IN CHARGE
CONSULTANT
(PKG-3.45)
CO. JAYANTA SAKIA, BARBIL JININ
NANGHAR, BORBIL NO.2, DISBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

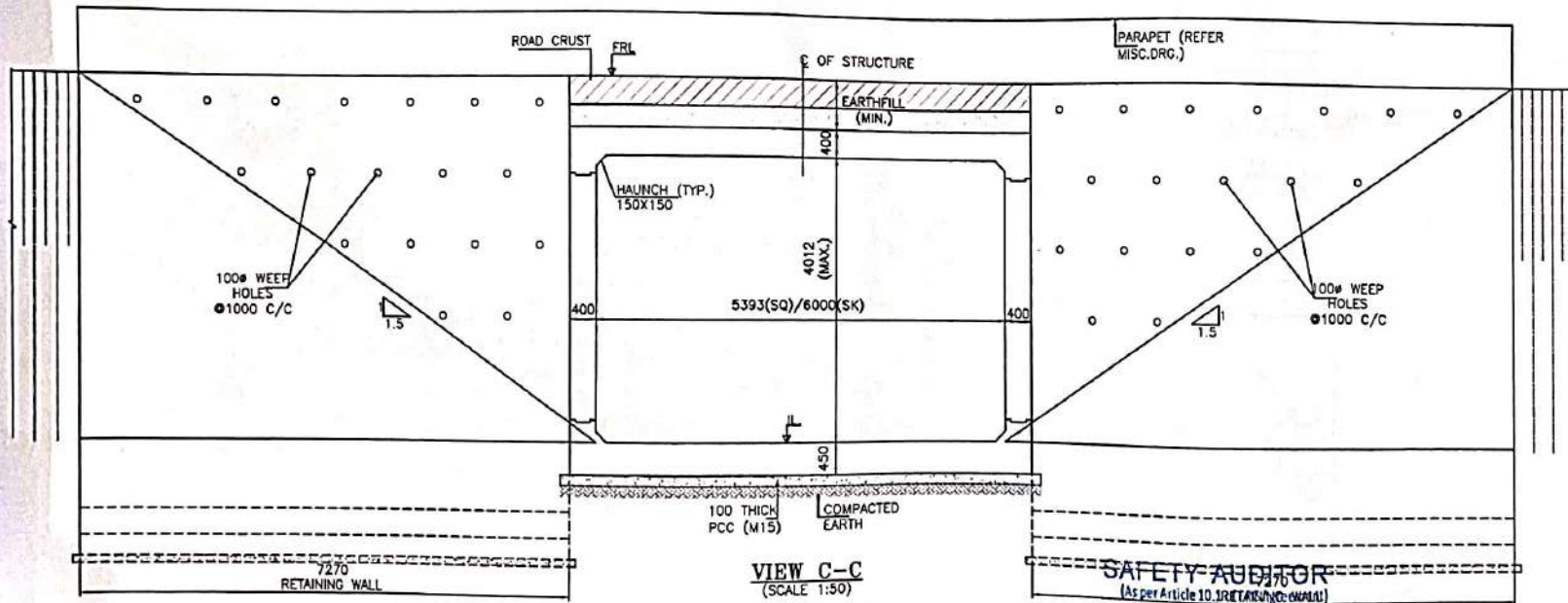
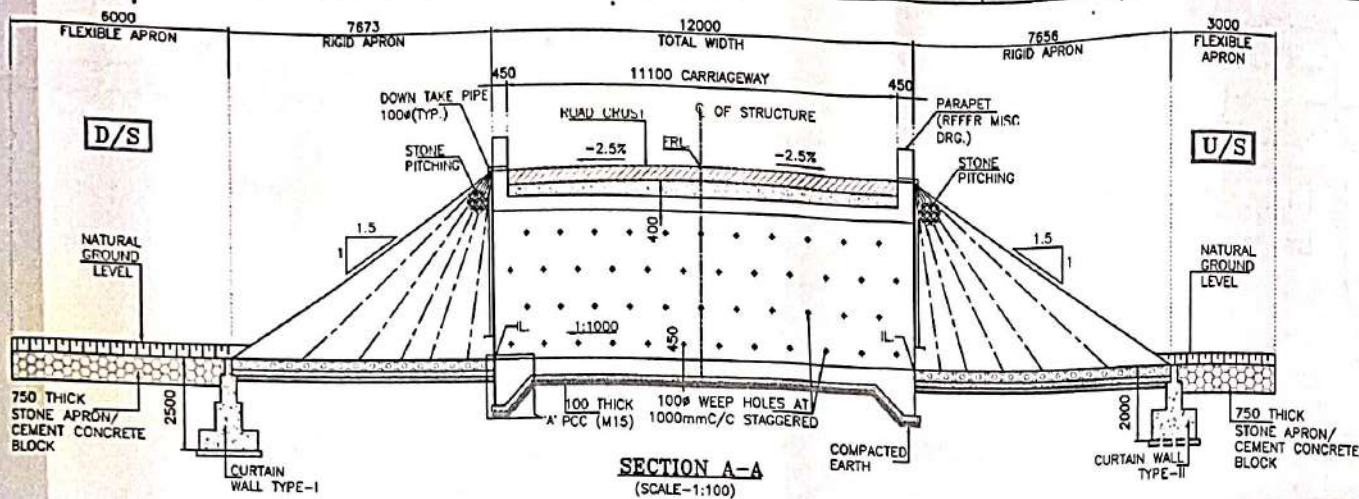
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P.-201010

SAFETY CONSULTANT:

DESIGN

DESIGN AID

PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,



GOOD FOR CONSTRUCTION

DESIGN AID, NEW DELHI

CLIENT:



NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR



KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

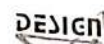
AUTHORITY'S ENGINEER

ALMOND, GLOBAL INFRA CONSULTANT
LIMITED IN JV WITH JAYALAKSHI
CONSULTANTS LIMITED.
(Joint Venture)
C/O J. YANTRA SANKAR, BARUAJANI
NAMCHAR, BORBIL NO. 2, DISCO,
TINJUKIA, ASSAM-786171

PROOF CONSULTANT

CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P. 201010

SAFETY CONSULTANT:



DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT



Winst Infra Solution
Pvt. Ltd.
OFFICE: P-1, BHANU CORPORATE
TOWER, PLOT NO. C-23, SECTOR-13,
VAISHALI, GHAZIABAD, U.P. 201017

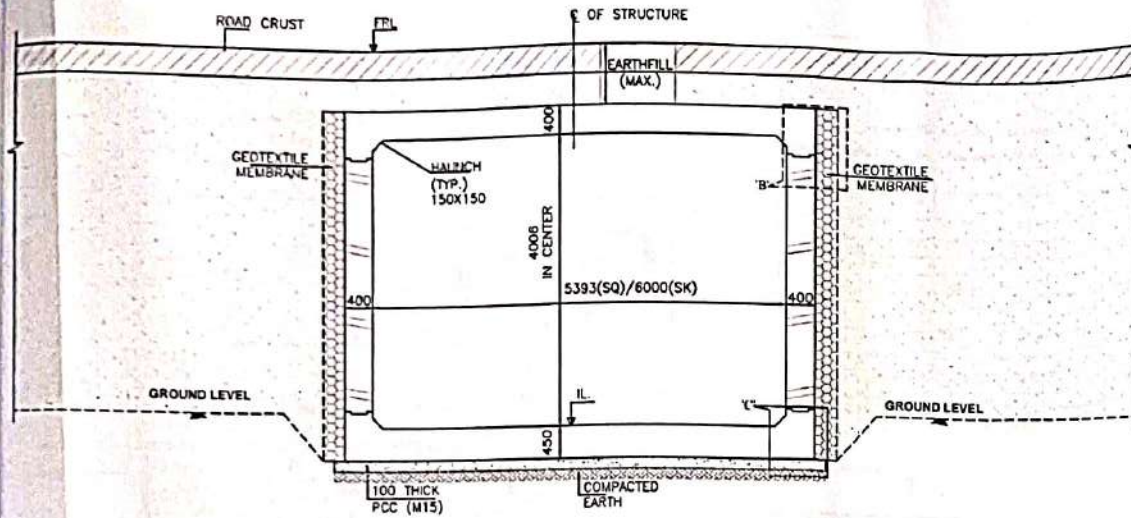
PROJECT:

WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(GOLAI GARDI) TO KM 47+142 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARCH-ERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE B)

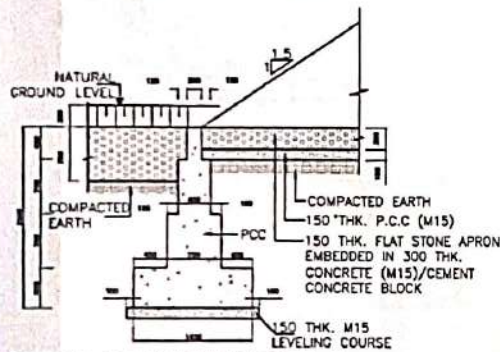
DRAWING TITLE:

GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 44+528

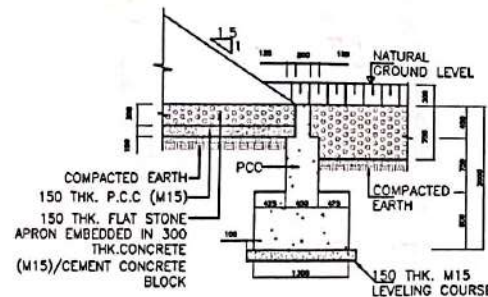
Date	Drawn	Check	Appr.	Scale	Drawing Status
JAN. 2024	W.P.	V.S.	A.B.	NTS	
Project No.	Drawing No.	Sheet No.	Rev.		
	AVC/NH-38/BOX/GAD/44+528/01	2 OF 3	RD		



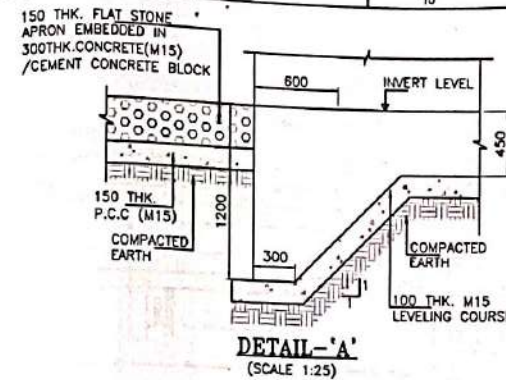
SECTION B-B
(SCALE 1:50)



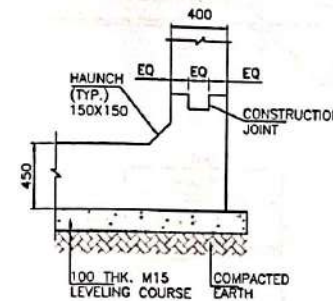
DETAIL OF CURTAIN WALL-I
(DOWN STREAM SIDE)
(SCALE 1:50)



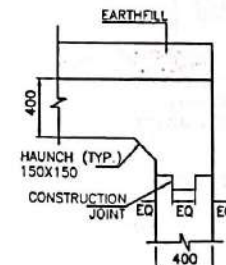
DETAIL OF CURTAIN WALL-II
(UP STREAM SIDE)
(SCALE 1:50)



DETAIL-A'
(SCALE 1:25)



DETAIL-C'
(SCALE 1:25)

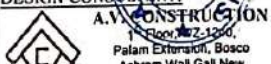


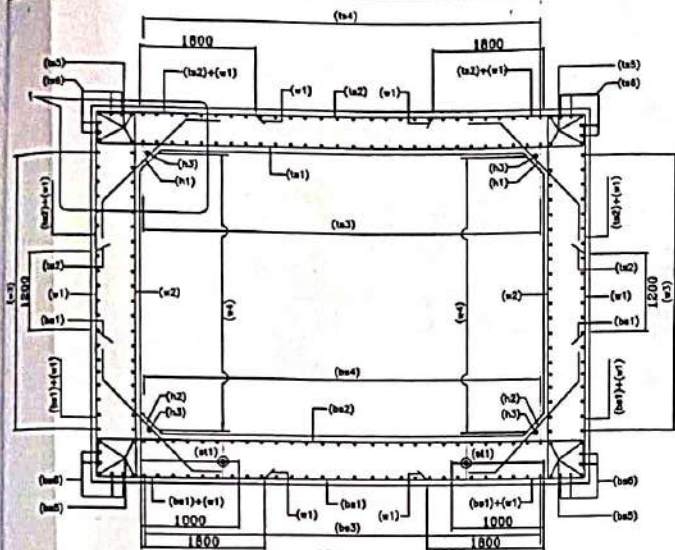
DETAIL-B'
(SCALE 1:25)

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

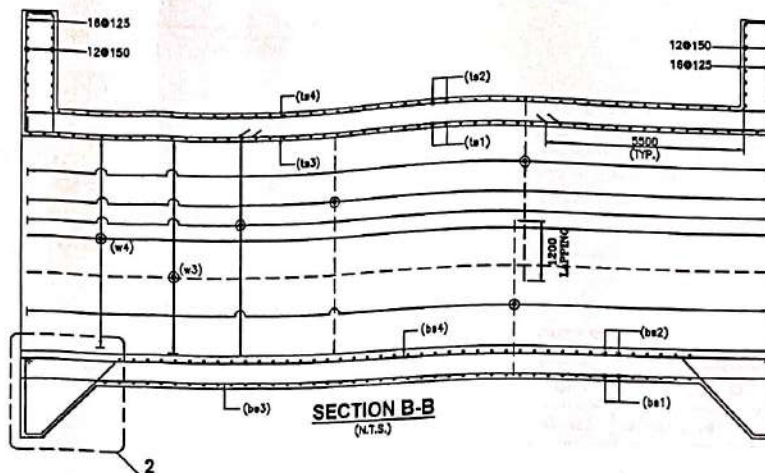
DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORISED ENGINEER  ALMOND ALKALINE CONSULTANT LIMITED, 100/111A, OFFICE ZA CONSTRUCTION PRIVATE LIMITED, CO-2, VANDANA, 85B JANGAM NAGAR, BOBBI NO.2, DIGBOI, ANIKUM ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P. 201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070.	DESIGN CONSULTANT:  Winst Infra Solution Pvt. Ltd. OFFICE P-4, ISHAN CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASANT VIHAR, NEW DELHI-110017	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAN GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED HARD SHOULDERS & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TIBHARA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE 3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 44+328 <table border="1"> <tr> <td>Date</td><td>Drawn</td><td>Eng.</td><td>Chk.</td><td>App.</td><td>Scale</td><td>Drawing Status</td> </tr> <tr> <td>JAN 2024</td><td>W.P.</td><td>V.S</td><td>A.D</td><td></td><td>NTS</td><td></td> </tr> <tr> <td>Project No.</td><td>Drawing No.</td><td>Sheet No.</td><td>Rev</td><td></td><td></td><td></td> </tr> <tr> <td></td><td>AVCRH-34/BOXROAD/44+328/1</td><td>3 OF 3</td><td>MD</td><td></td><td></td><td></td> </tr> </table>	Date	Drawn	Eng.	Chk.	App.	Scale	Drawing Status	JAN 2024	W.P.	V.S	A.D		NTS		Project No.	Drawing No.	Sheet No.	Rev					AVCRH-34/BOXROAD/44+328/1	3 OF 3	MD			
Date	Drawn	Eng.	Chk.	App.	Scale	Drawing Status																												
JAN 2024	W.P.	V.S	A.D		NTS																													
Project No.	Drawing No.	Sheet No.	Rev																															
	AVCRH-34/BOXROAD/44+328/1	3 OF 3	MD																															



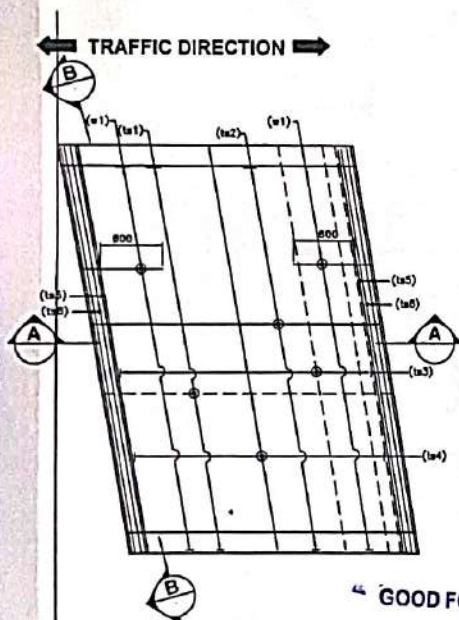
SECTION A-A
(N.T.S.)



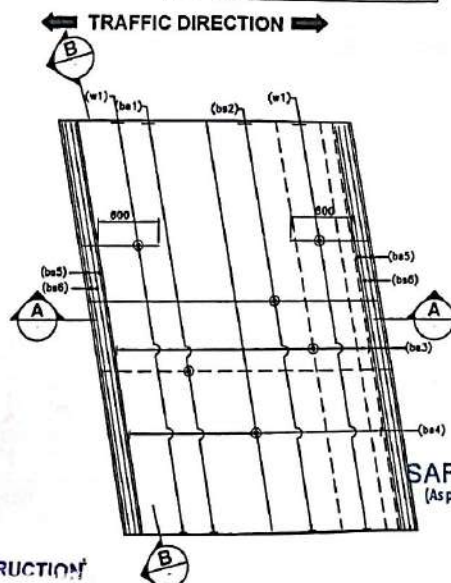
SECTION B-B
(N.T.S.)

LEGEND:-

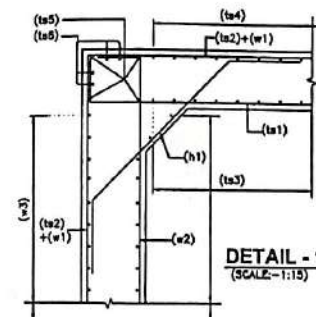
TOP FACE BAR	———
BOTTOM FACE BAR	-----



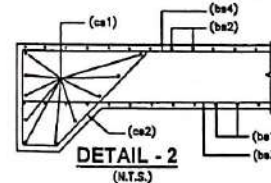
REINFORCEMENT DETAILS OF TOP SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



REINFORCEMENT DETAILS OF BOTTOM SLAB
(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40# AS PER IS:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR $bs1$ & $bs2$ IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/GAD/444-528/01

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		20+8	180
2	ts2		16	180
3	ts3		12	200
4	ts4		12	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	180
8	w2		16	180
9	w3		12	200
10	w4		10	200
11	bs1		16	180
12	bs2		20+10	180
13	bs3		12	200
14	bs4		12	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 180 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
 - DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 - ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
 - MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - TOP SLAB - 45mm
 - BOTTOM SLAB - 75mm
 - SIDE WALL (EARTH SIDE) - 75mm
 - SIDE WALL (INNER SIDE) - 45mm
 - OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.3. LAP LENGTH SHALL NOT BE LESS THAN 58#.
- ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-
-
- AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE

CLIENT:
NADCL
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

AUTHORITY'S ENGINEER
ALMOND GLOBAL INFRA CONSULTANT
LIMITED, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P. 201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3RD FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.

DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE P-4, BHAW CORPORATE TOWER, PLOT NO-C-32, SECTOR-13, VASINDHRA, DISTRICT, U.P. 201012

PROJECT:
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+190 (GOLLA GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH PROPOSED MARCHING AREA & LEDO BYPASS (BYPASS) AND GREEN FIELD (GREEN FIELD) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC BASIS (PACKAGE-5)

DRAWING TITLE:
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 44+528

Date: JAN.2024
Project No.:
Drawing No.:
Chk. V.S.
App. A.B.
Scale: NTS
Sheet No.: 81 OF 81
Rev. RD

45350

DESCRIPTION	PROPOSED
DESIGN CHN	45+433
C.A.CHN	45+400
STR TYPE	BOX
SPAN/DIA	1X2X1.8m
PROPOSAL	NEW 2 LANE

45450

KEY PLAN

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe 500.
- THE CARRIAGEWAY OF PROPOSED CULVERT IS DESIGN AS PER 6-2017.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
MAX DRY DENSITY = $1850-2280 \text{ kg/m}^3$
OPTIMUM MOISTURE CONTENT = 7-15
AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION. IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/C IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE $9t/m^3$ AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE. CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.

LEGEND:-

FRL FINISHED ROAD LEVEL
IL INVERT LEVEL
LVL LEVEL
EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

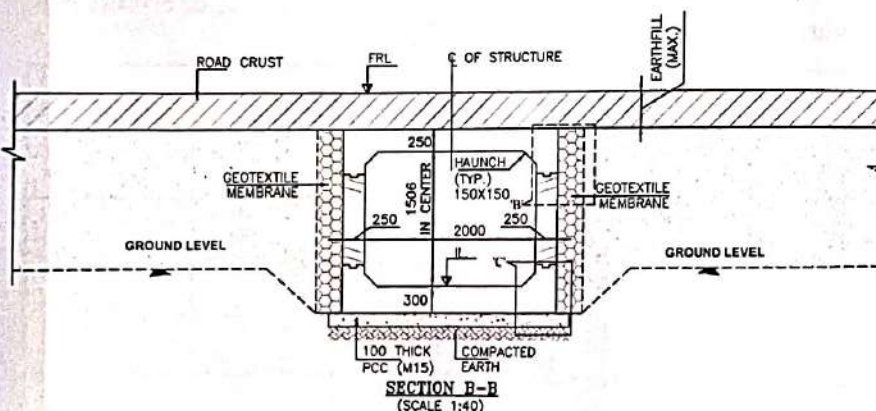
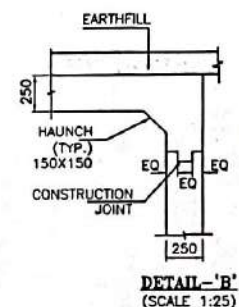
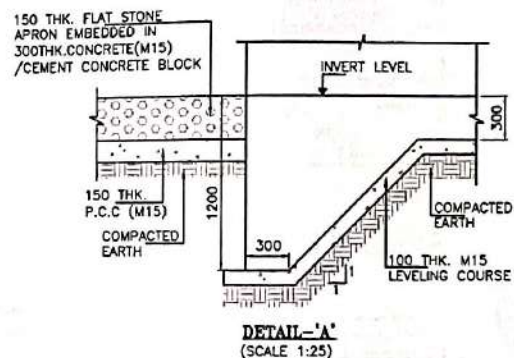
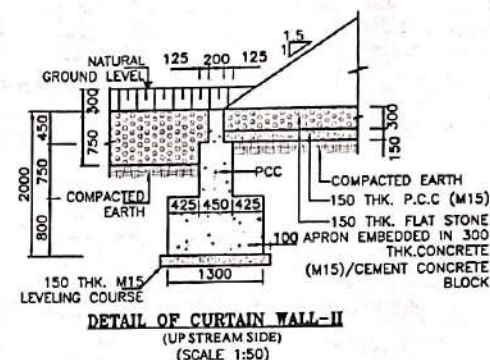
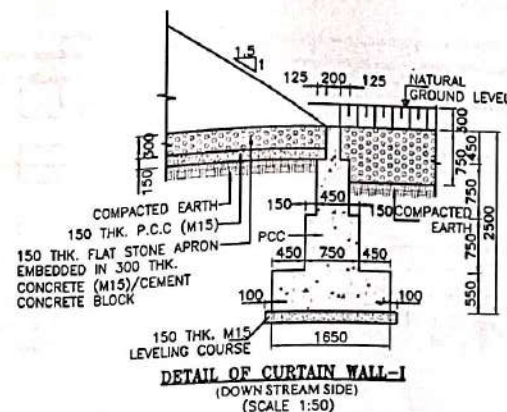
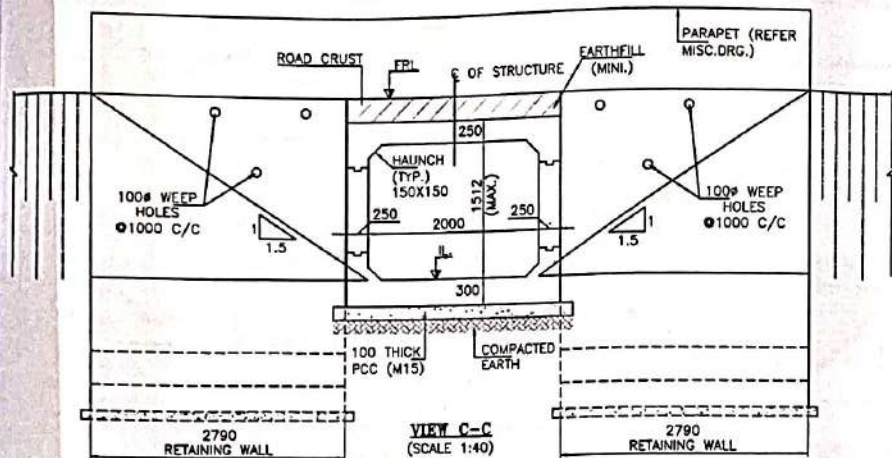
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

REFERENCE NEW DELHI
REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
AVC/NH-38/BC/REINF./45+433/01

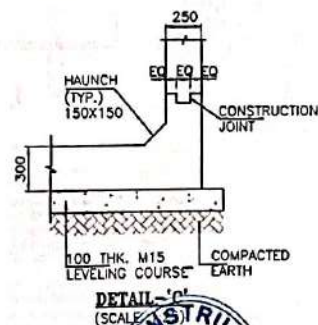
GOOD FOR CONSTRUCTION

 HIDCL NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENGINEER ALMONDE ENGINEERING CONSULTANT LIMITED, ANAND KOLKATA CONSTANT PRICE LIMITED, CO. JAYAN, DEBANGI, SARBANJAN NAMSHAR, BOISB NO.2, PIGBO, TINSUKIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT:  Winst Infra Solutions Pvt. Ltd. OFFICE, F-4, ISHAN CORPORATE TOWER, PLOT NO-23, SECTOR-13, VASUNDERPURA, GURGAON, HARYANA-122012	PROJECT: WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (GOLAI GOAN) TO KM 47+882 (LEDO) ON CARRIAGEWAY TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (3 LANE +PB) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-5)
	DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 45+433					
Date: JAN. 2024 Project No.:		Drawn: W.P. Checked: V.S. Approved: A.D. Project No.:		Date: JAN. 2024 Project No.:		Drawing Status: Sheet No. 81 OF 82 Rev. RD



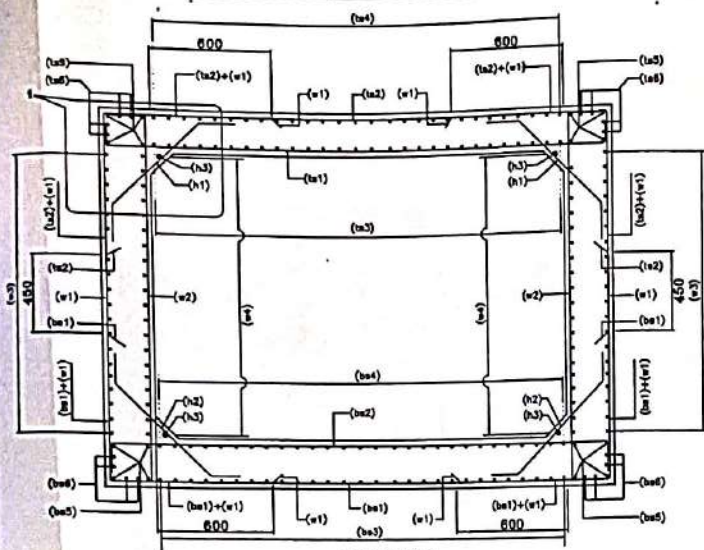
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

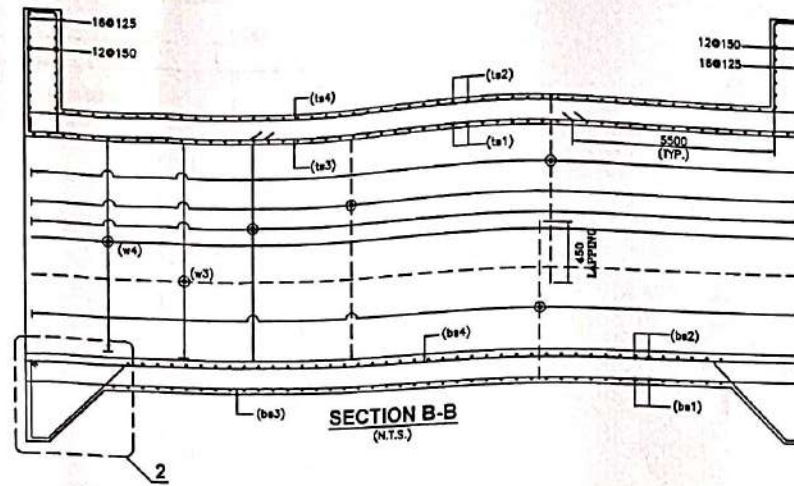


GOOD FOR CONSTRUCTION

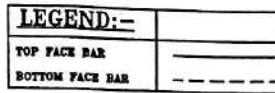
CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.		EPC CONTRACTOR:  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010*		AUTHORITY'S ENGINEER:  ALMONDZELOR, INTRA CONSULTANT LIMITED ANANDAPUR, EZZA CONSULTANT PRIVATE LIMITED. C/O ANANTHAKRISHNAN BARAJANIN NANGAR, PORT NO.2, DIBOI, WISAKA, ASSAM 786171		PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.201010		SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070,		DESIGN CONSULTANT:  Winst Infra Solution Pvt. Ltd. OFFICE: F-1, BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VASUDEVIA CHANABAD, U.P.201012		PROJECT: WIDENING/IMPROVEMENT TO 3 LANE LANE WITH PAVED SHOULDER FROM KM 27+150 GULAI GONAI TO KM 47+882 (LEDO) ON DISBURSAH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 45+433 <table><tr><td>Date</td><td>Drawn</td><td>Eng</td><td>Chk</td><td>App</td><td>Scale</td><td>Drawing Status</td></tr><tr><td>JAN. 2024</td><td>W.P.</td><td>V.S</td><td>A.D</td><td></td><td>M75</td><td></td></tr><tr><td>Project No.</td><td>Drawing No.</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>AVCANH-38/BC/GADH41+433B1</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Sheet No.</td><td>82 OF 82</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Rev.</td><td>NO</td><td></td><td></td><td></td><td></td><td></td></tr></table>		Date	Drawn	Eng	Chk	App	Scale	Drawing Status	JAN. 2024	W.P.	V.S	A.D		M75		Project No.	Drawing No.							AVCANH-38/BC/GADH41+433B1						Sheet No.	82 OF 82						Rev.	NO					
Date	Drawn	Eng	Chk	App	Scale	Drawing Status																																																	
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Rev.	NO																																																						
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SECTION A-A
(N.T.S.)



SECTION B-B
(N.T.S.)

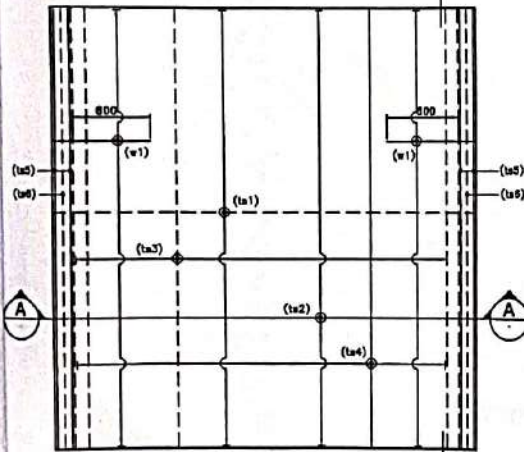


BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	200
2	ts2		10	200
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	200
8	w2		10	200
9	w3		10	200
10	w4		8	200
11	bs1		10	200
12	bs2		10+8	200
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	200
18	h2		10	200
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200

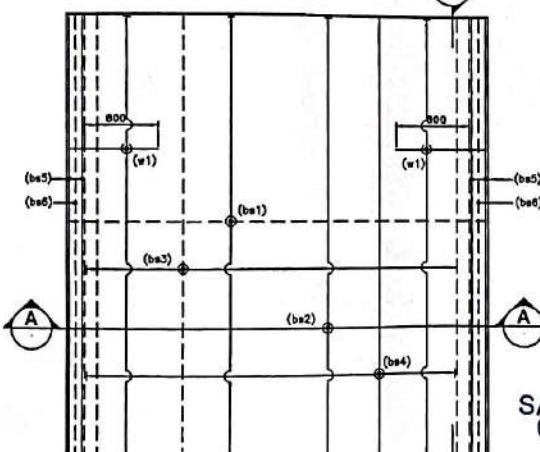
TRAFFIC DIRECTION

TRAFFIC DIRECTION



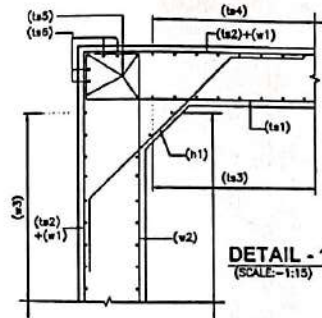
REINFORCEMENT DETAILS OF
TOP SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

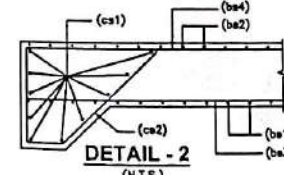


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(HAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE: 1:15)



DETAIL - 2
(N.T.S.)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 58d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-
 - 1. TOP SLAB: LAP LENGTH = L_p
 - 2. BOTTOM SLAB: LAP LENGTH = L_p
 - 3. SIDE WALL (EARTH SIDE): LAP LENGTH = L_p
 - 4. SIDE WALL (INNER SIDE): LAP LENGTH = L_p

SAFETY AUDIT
(As per Article 10.1 of EPC)

DESIGN AID, NEW DRAWING

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING.
AVC/NH-38/BOX/04D/45+433/01

CLIENT:

NADRA
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR:

KAMAC
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER:

ALMOND GLOBAL INFRA CONSULTANT LIMITED
C/O JAYANTA SARKAR, SARBAJAMIN
NAMGHAR, SOBIL NO.2, DIBROO,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:

DESIGN AID
PLOT NO.64, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:

Winst Infra Solution Pvt. Ltd.
OFFICE: P-4, BHANU CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAISHALI, GHAZIABAD, U.P-201012

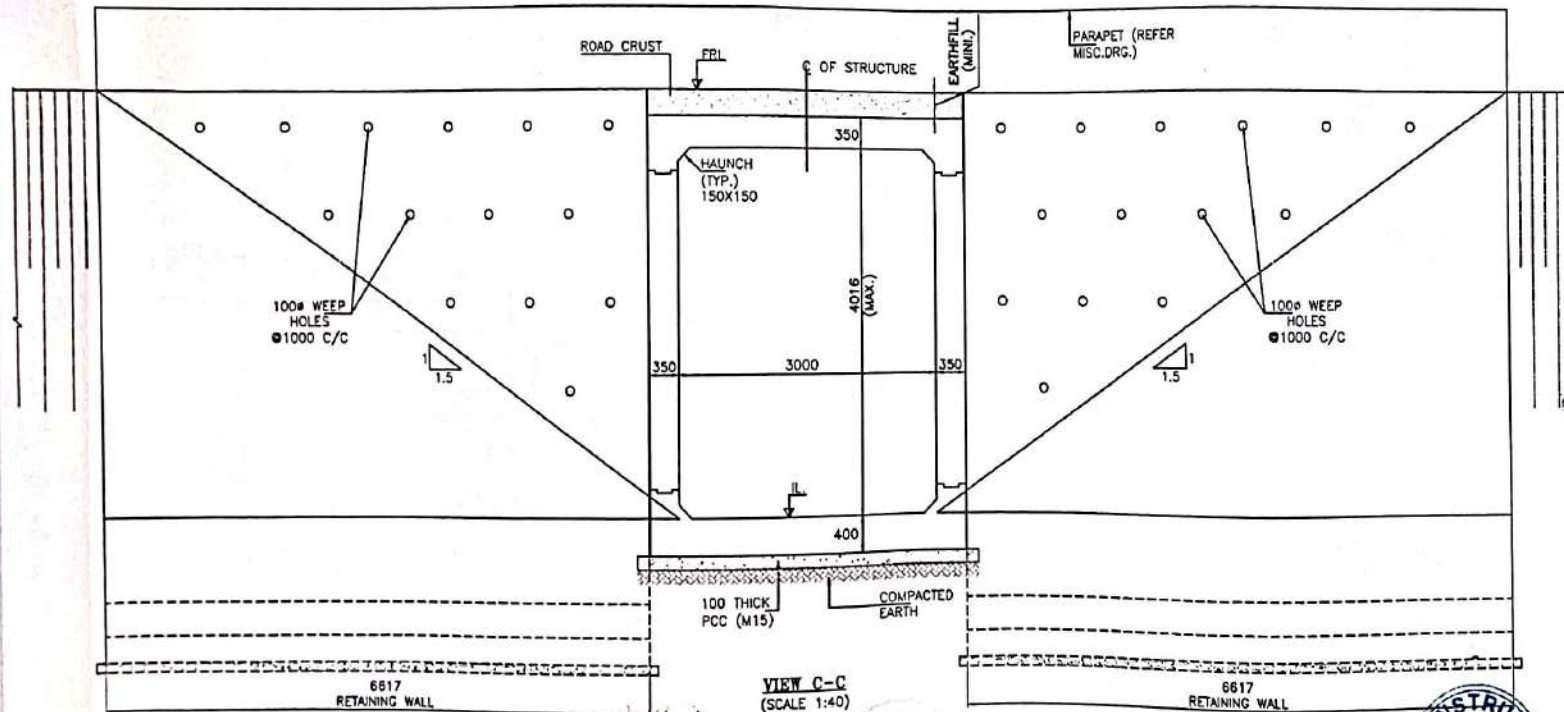
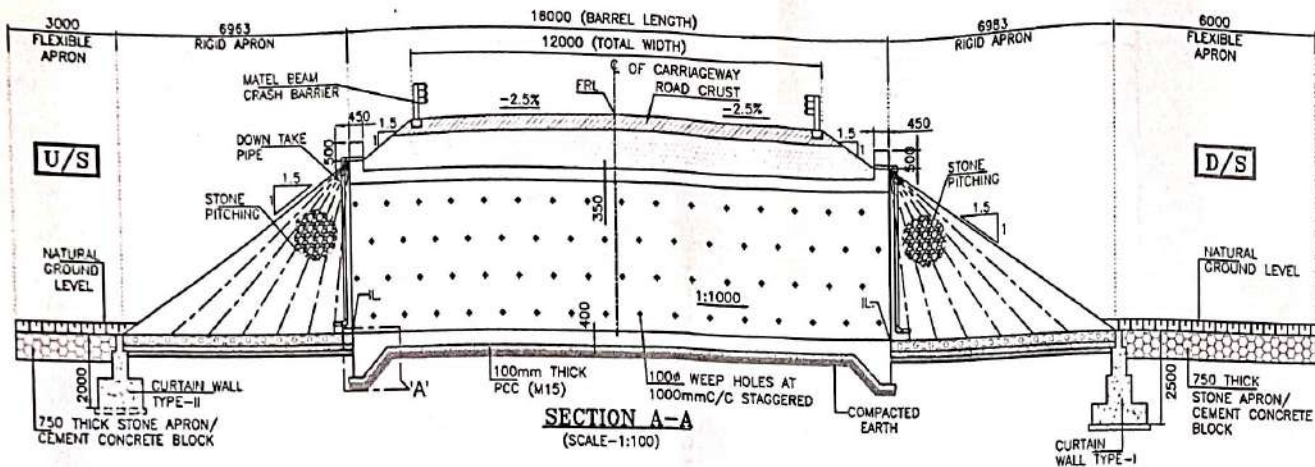
PROJECT:

WIDENING/IMPROVEMENT TO 4 LANE WITH PAVED SHOULDER FROM KM 37+150 (DOLA GAN) TO KM 47+842 (EOD) ON DURGAPUR TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3)

DRAWING TITLE:

REINFORCEMENT DETAIL OF BOX CULVERT
AT CH. 45+433

Date: JAN 2024
Drawn by: W.P.
Checked by: V.S.
Approved by: A.D.
Scale: N.T.S.
Drawing No.: AVC/NH-38/BOX/REIN/45+433/01
Sheet No.: 01 OF 01
Rev.: RD



GOOD FOR CONSTRUCTION

SAFETY AUDITOR
(As per Article 10.1 of EPC Appr)

CLIENT:
NH&PI
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER
ALMOND GLOBAL INFRA CONSULTANT
LIMITED IN INDIA (P) LTD.
CONSULTANTS PRIVATE LIMITED.
C/O JANANTA SAKIA, SAMBAJANIN
NAMGHAR, SECTOR NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-J, VAISHALI,
GHAZIABAD, U.P-201010

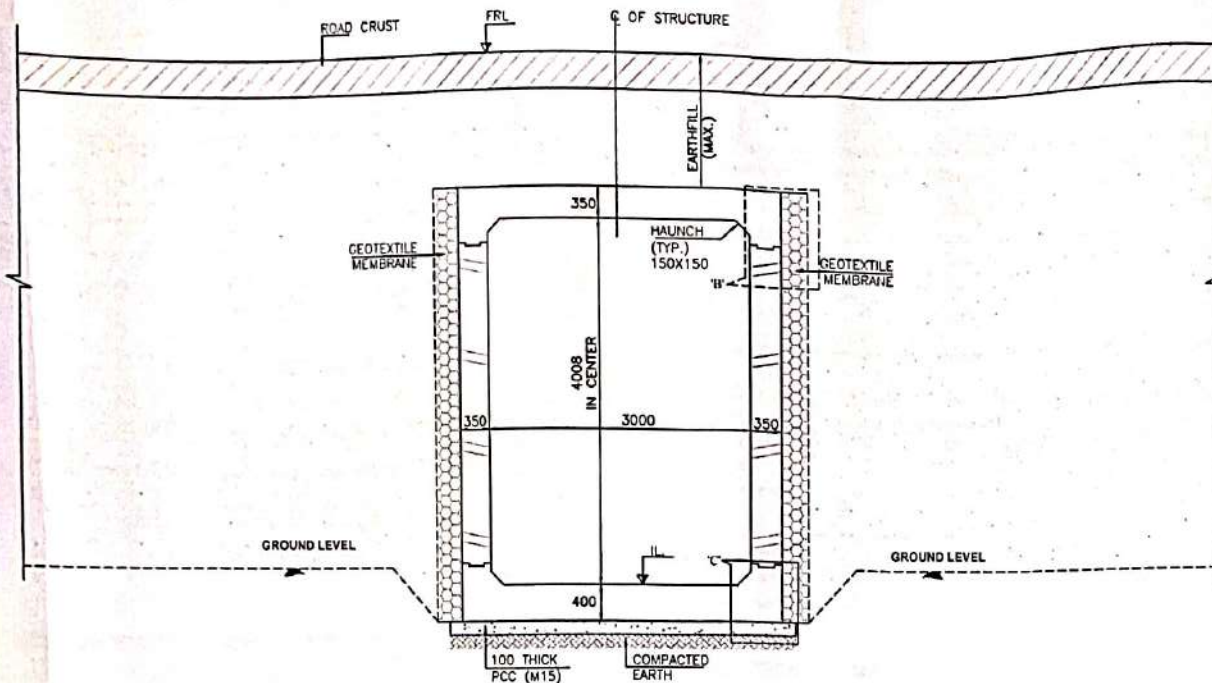
SAFETY CONSULTANT:
DESIGN AID
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE: 14-B SHYAM CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAS. PUNJAB CHAUNAR, U.P-201012

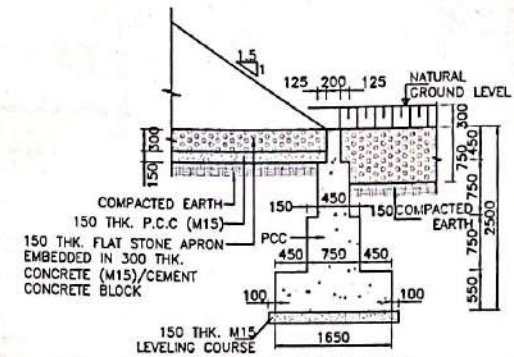
PROJECT:
WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(DOLA GOAN) TO KM 47+881 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE-PB) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE 5)

DRAWING TITLE:
GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 48+000

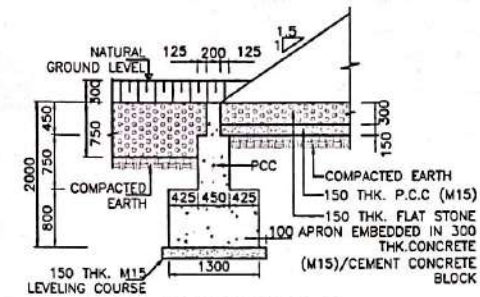
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Drawn By	W.F.	V.S.	A.B.	App.	NTS						
Project No.	AYC/NH-38/BC/GAD/48+000/01										
Sheet No.	02 OF 03										
Rev.	00										



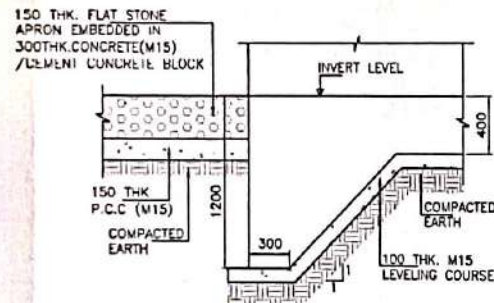
SECTION B-B
(SCALE 1:40)



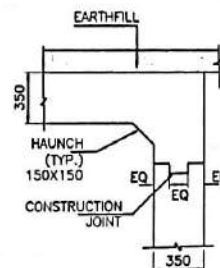
DETAIL OF CURTAIN WALL-I
(DOWN STREAM SIDE)
(SCALE 1:50)



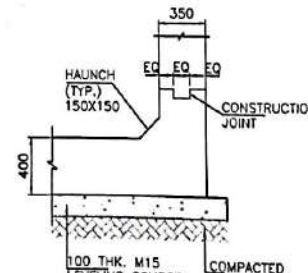
DETAIL OF CURTAIN WALL-II
(UP STREAM SIDE)
(SCALE 1:50)



DETAIL - 'A'
(SCALE 1:25)



DETAIL - 'B'
(SCALE 1:25)



DETAIL - 'C'
(SCALE 1:25)

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

NADGI
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

KAMAC ENGINEERS
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

ALMONDZ
ALMONDZ CONSULTANT
LIMITED IN INDIA VOLTEZA
CONSULTANTS LIMITED.
C/O. MANTA SINGH, SARGAJA IN
NAGHAR, ROAD NO. 7, DIGBOI,
TINSUKIA, ASSAM 786117

CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P. 201010

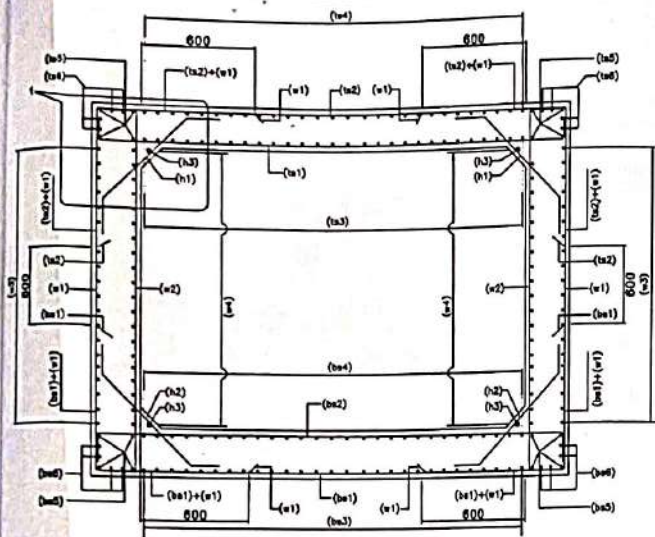
DESIGN AID
PLOT NO 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

Winst Infra Solution
Pvt. Ltd.
OFFICE: F-8, ISHAN CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAISHALI, GHAZIABAD, U.P. 201012

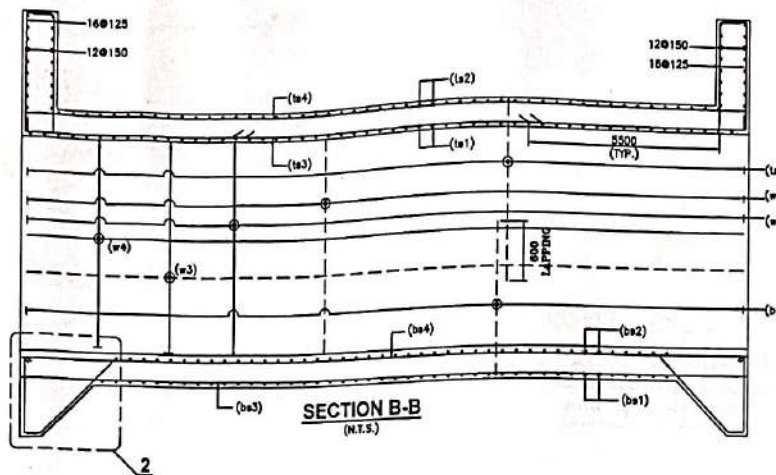
PROJECT
WIDENING/IMPROVEMENT TO 3-LANE LANE WITH PAVED SHOULDER FROM KM 27+180
(GOLAN DRAIN) TO KM 47+482 (LEDO) ON DIBRUGAHAT TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
(2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-5)

DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 48+008

Date	Drw.	Des.	Chk.	App.	Seal.	Drawing Status
JAN 2024	W.P.	V.S.	A.B.		MYS	
Project No.	Drawing No.		Sheet No.		Rev.	
	AV/CNN-38/BC/GAD/48+008/01		93 OF 93		RD	



SECTION A-A
(N.T.S.)



SECTION B-B
(N.T.S.)

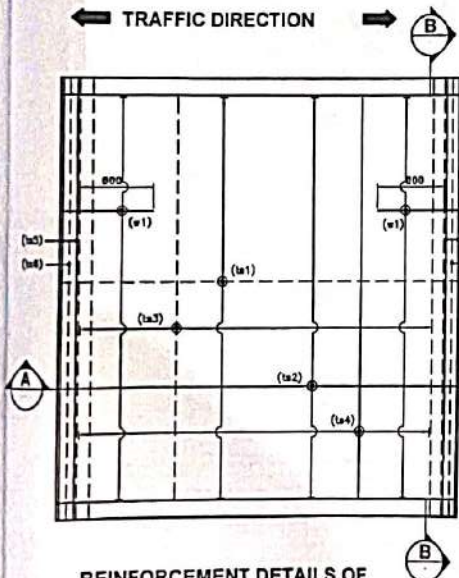
LEGEND:-

TOP FACE BAR	_____
BOTTOM FACE BAR	_____

BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+10	180
2	ts2		12	180
3	ts3		10	180
4	ts4		10	180
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		16	180
8	w2		16	180
9	w3		10	180
10	w4		10	180
11	bs1		12	180
12	bs2		12+12	180
13	bs3		10	180
14	bs4		10	180
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200

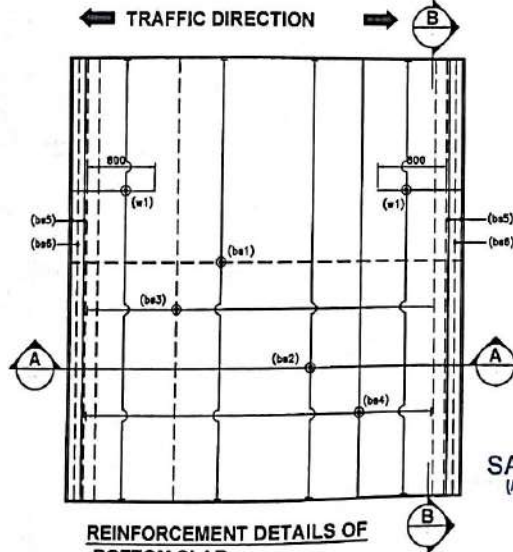
TRAFFIC DIRECTION



REINFORCEMENT DETAILS OF
TOP SLAB

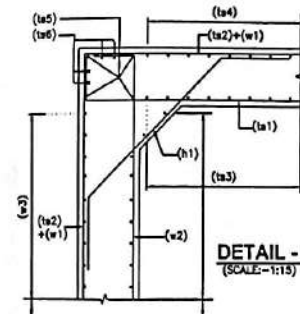
(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

TRAFFIC DIRECTION

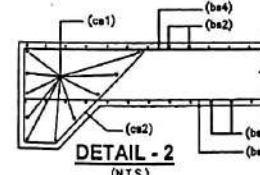


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(LAUNCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:- 1:15)



DETAIL - 2
(N.T.S.)

SAFETY AUDIT

(As per Article 10.1 of EPC Agreement)
6. ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IS:112.
7. FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
8. CENTER LINE OF OVERLAPPING BAR ts1 & ts2 IN WALL BEYOND HEIGHT OF WALLS ARE AT SAME POINT.
9. BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

1. GENERAL ARRANGEMENT DRAWING.
AVC/NH-36/BOX/GAD/48+009/01

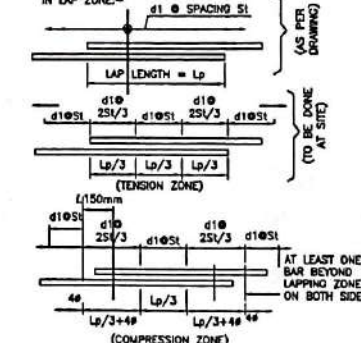
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-

- TOP SLAB - 45mm
- BOTTOM SLAB - 75mm
- SIDE WALL (EARTH SIDE) - 75mm
- SIDE WALL (INNER SIDE) - 45mm

5. OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.10.2.5.

LAP LENGTH SHALL NOT BE LESS THAN 55d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE

CLIENT:
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR
KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER
ALMONDZ GLOBA INFRA CONSULTANT
LIMITED, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U P-201010

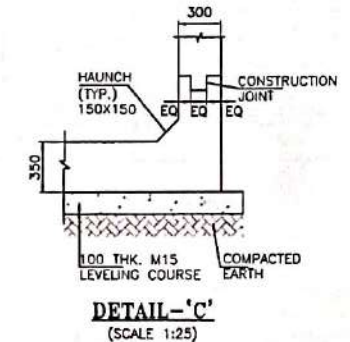
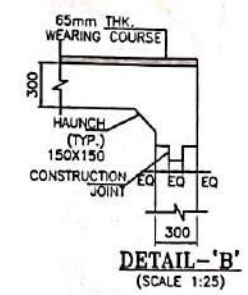
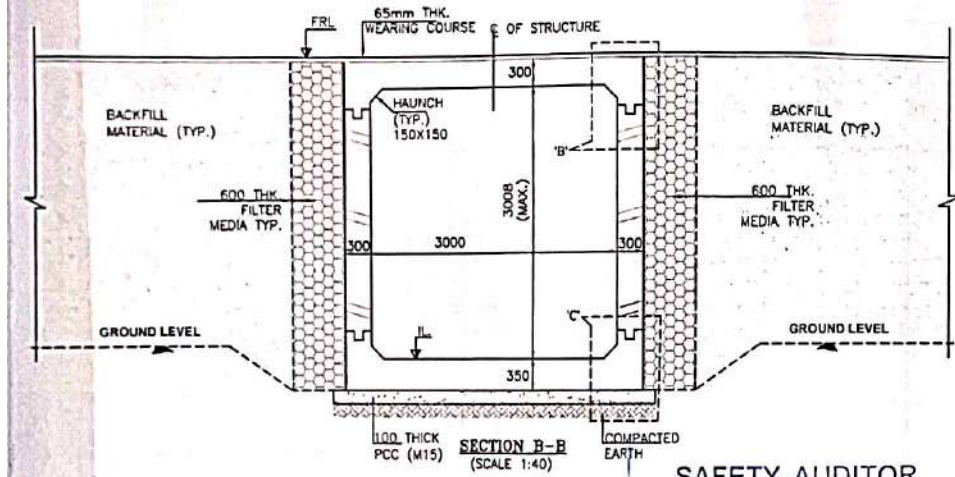
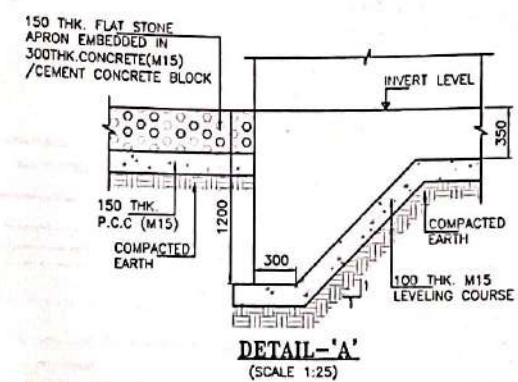
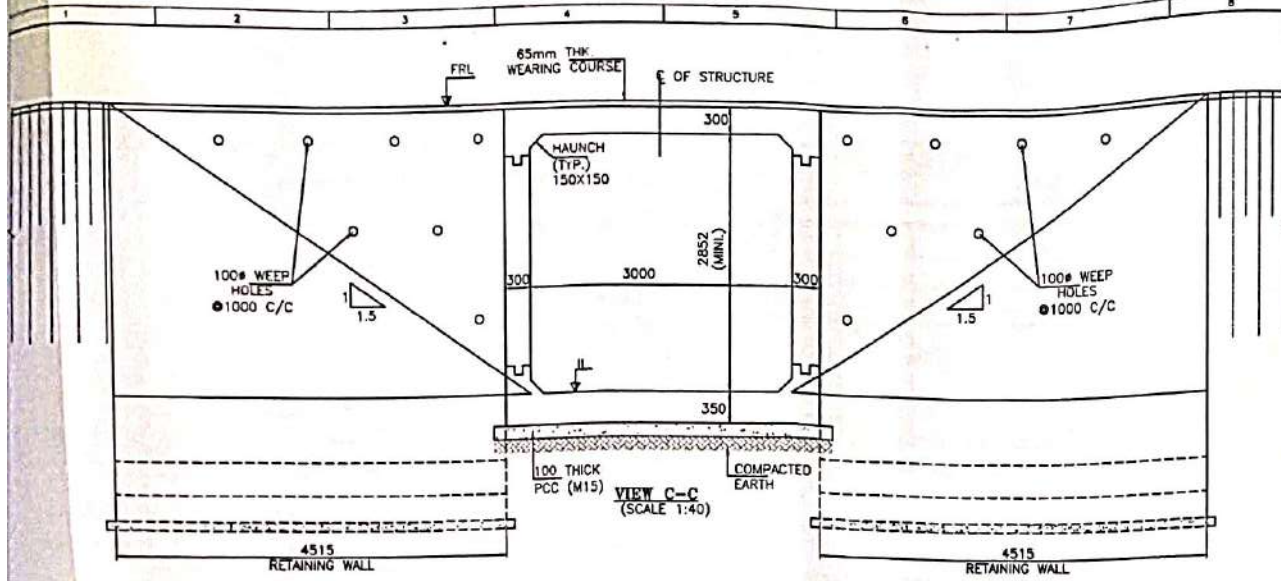
SAFETY CONSULTANT:
DESIGN AID
PLOT NO 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution Pvt. Ltd.
OFFICE: F-11 BHANU CORPORATE
TOWER, PLOT NO-C-23, SECTOR-13,
VAISHALI, GHAZIABAD, U P-201012

PROJECT:
WIDENING & IMPROVEMENT TO 3 LANE LANE WITH PAVED SHOULDER FROM KM 27+150
(GOLLA GOAN) TO KM 47+000 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED MARGHERITA & LEDO BYPASS (BROWFIELD AND GREEN FIELDS
(2-LANE+PS) OF NH-36 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE PACKAGE B)

DRAWING TITLE:-
REINFORCEMENT DETAIL OF BOX CULVERT
AT CH. 48+009

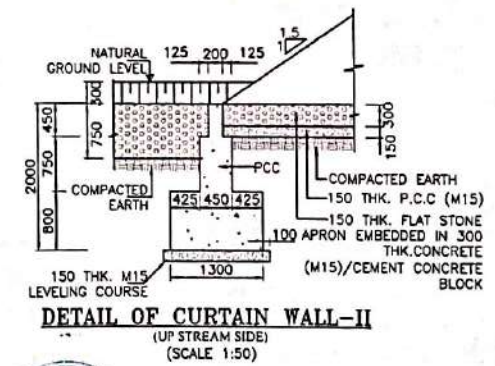
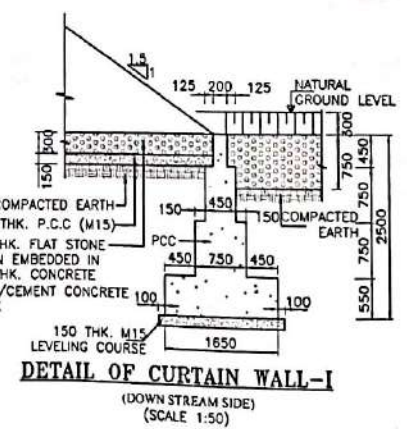
Date: JAN 2024
Project No.:
Drawing No.:
Sheet No.: 01 OF 01
Rev: RO

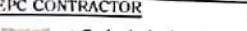
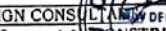


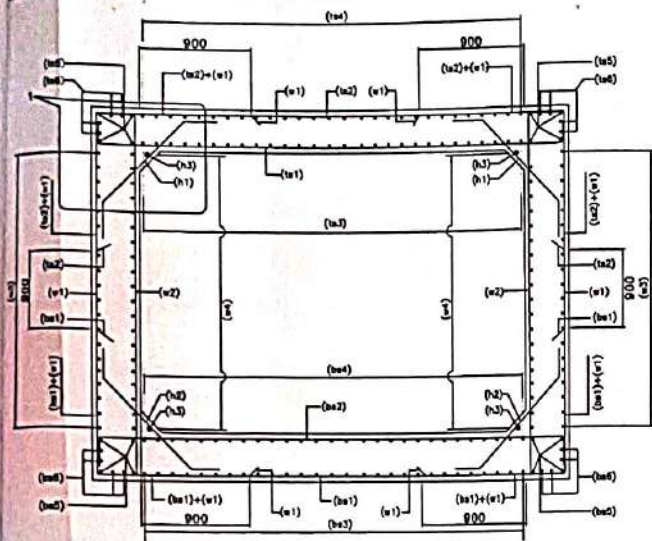
SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

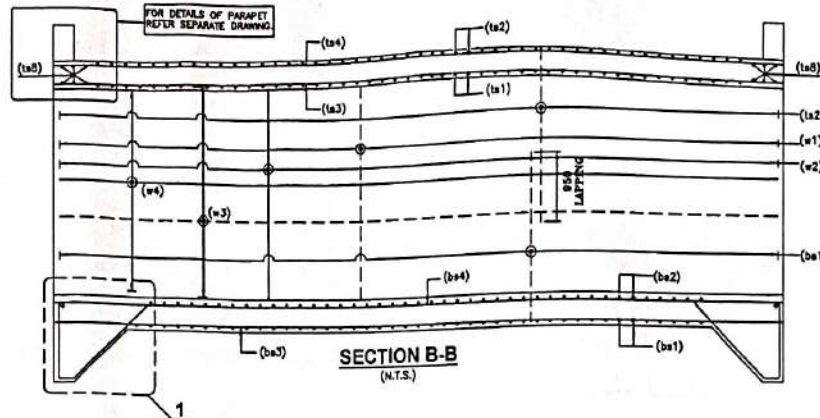
6500 FOR CONSTRUCTION



CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010	AUTHORITY ENGINEER  ALMOND CHOWDHURY & ASSOCIATES CONSULTANT LIMITED IN CIVIL ENGINEERING CONSULTANCY PRIVATE LIMITED. C/O JAY CHANDRA PRASAD JAIN NAVAGHAR, PO BOX 102, DISBOI, TINSUKIA, ASSAM-786171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO.54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT:  Winst Infra Solution Pvt. Ltd. OFFICE: F-11 BHANU CORPORATE TOWER, PLOT NO-C-23, SECTOR-13, VAISHALI, GHAZIABAD, U.P-201017	PROJECT: WIDENING IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+150 (DOLAI GOM) TO KM 47+642 (LEDO) ON DISBURGH TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWN FIELD AND GREEN FIELD) (G-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B) DRAWING TITLE:- GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 46+146 <table><tr><td>Date</td><td>Drawn</td><td>Check</td><td>Appr.</td><td>Scale</td><td>Drawing Status</td></tr><tr><td>JAN 2021</td><td>W.P.</td><td>V.S.</td><td>A.D.</td><td>NTS</td><td></td></tr><tr><td>Project No.</td><td colspan="4">Drawing No.</td><td>Sheet No. 02 OF 02</td></tr><tr><td></td><td colspan="4">AVCMH-38/BC/GADH-146/01</td><td>Rev. 00</td></tr></table>	Date	Drawn	Check	Appr.	Scale	Drawing Status	JAN 2021	W.P.	V.S.	A.D.	NTS		Project No.	Drawing No.				Sheet No. 02 OF 02		AVCMH-38/BC/GADH-146/01				Rev. 00
Date	Drawn	Check	Appr.	Scale	Drawing Status																									
JAN 2021	W.P.	V.S.	A.D.	NTS																										
Project No.	Drawing No.				Sheet No. 02 OF 02																									
	AVCMH-38/BC/GADH-146/01				Rev. 00																									



SECTION A-A
(N.T.S.)



SECTION B-B
(N.T.S.)

LEGEND:-

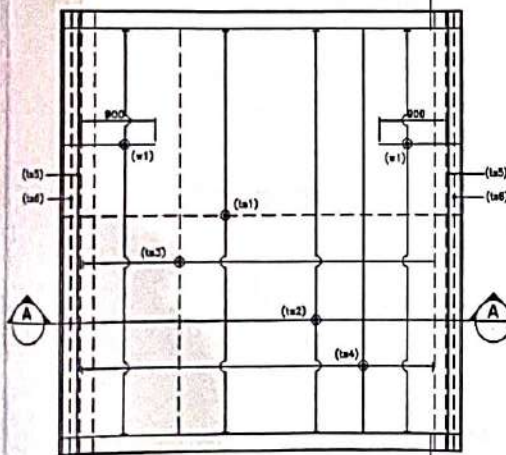
TOP FACE BAR
BOTTOM FACE BAR

BOX REIN. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12+10	180
2	ts2		12	180
3	ts3		10	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		12	180
8	w2		12	180
9	w3		10	200
10	w4		8	200
11	bs1		12	180
12	bs2		12+12	180
13	bs3		10	200
14	bs4		10	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	180
18	h2		10	180
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200

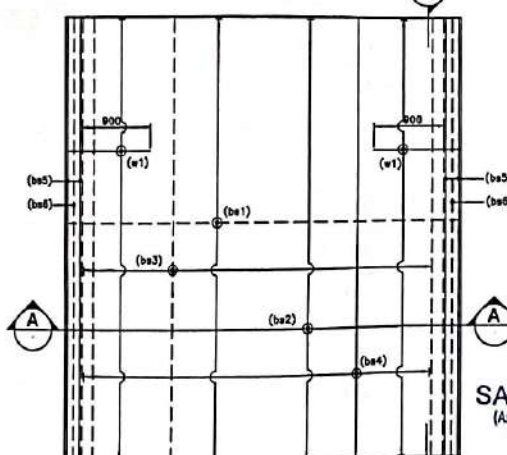
TRAFFIC DIRECTION

TRAFFIC DIRECTION



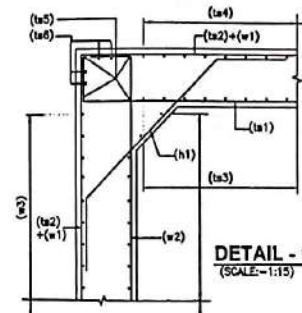
REINFORCEMENT DETAILS OF
TOP SLAB

(HATCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

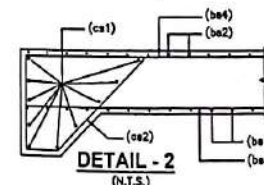


REINFORCEMENT DETAILS OF
BOTTOM SLAB

(HATCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)



DETAIL - 1
(SCALE:-1:15)



DETAIL - 2
(N.T.S.)

SAFETY AUDITOR

(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

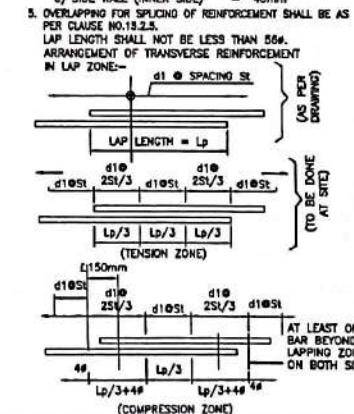
- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IS:112.
- UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & bs2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING, A/C/NH-38/BOX/GAD/48+148/01

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE NOTED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS:1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - TOP SLAB - 45mm
 - BOTTOM SLAB - 75mm
 - SIDE WALL (EARTH SIDE) - 75mm
 - SIDE WALL (INNER SIDE) - 45mm
- OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.19.2.5. LAP LENGTH SHALL NOT BE LESS THAN 56d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



(TO BE DONE AT SITE)

AT LEAST ONE BAR BEYOND LAPPING ZONE ON BOTH SIDE

(COMPRESSION ZONE)

CLIENT:
ADDEL
NATIONAL HIGHWAYS &
INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD.

EPC CONTRACTOR
AMAC
KAMAC ENGINEERS PVT.LTD
F201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

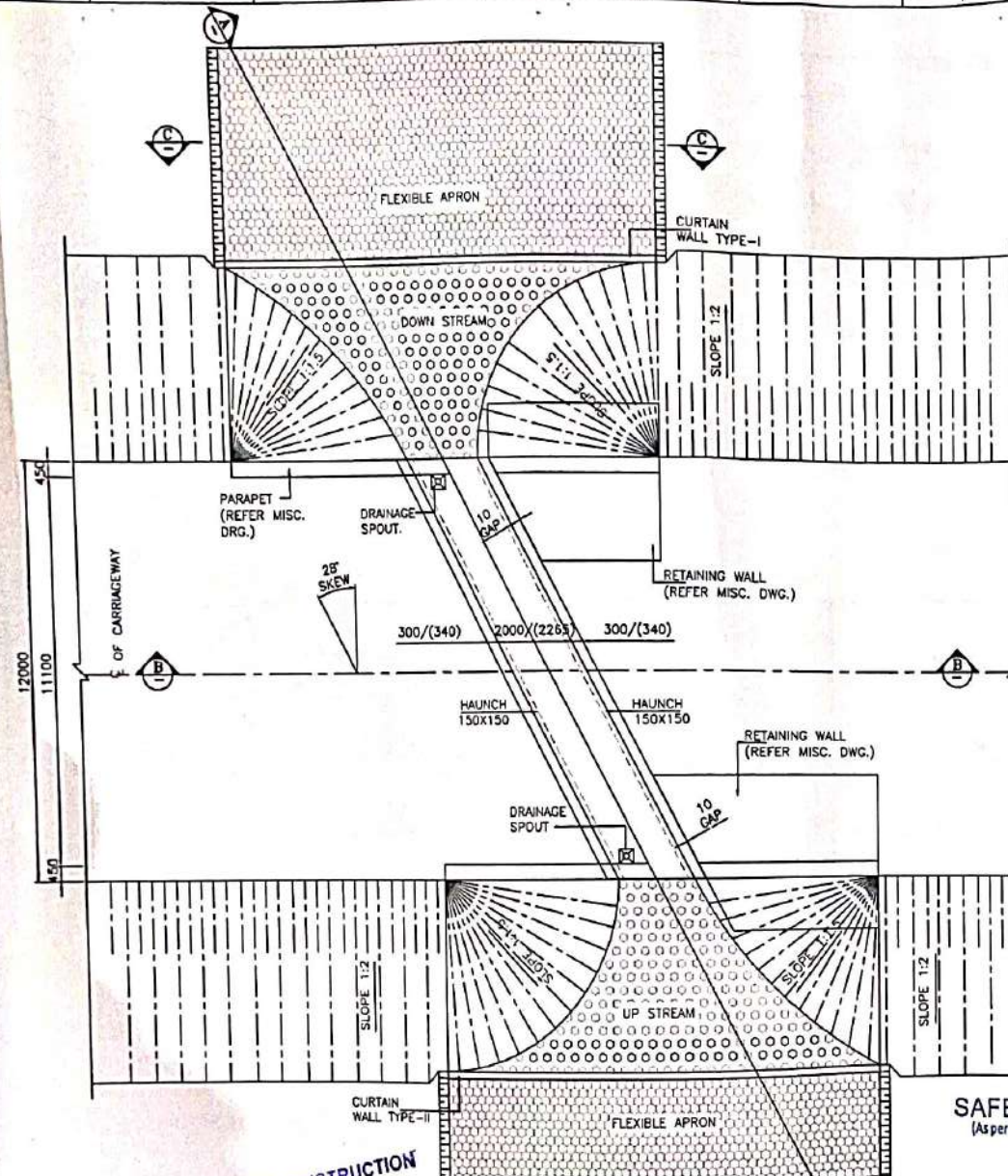
AUTHORITY'S ENGINEER
ALMOND ENGINEERS CONSULTANT
LIMITED IN ASSOCIATION WITH
CONSULTANT PRIVATE LIMITED.
C/O AYAN TARIK, SARBAJININ
NAGAR, BLOCK NO 2, DIBBOI,
TINUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070,

DESIGN CONSULTANT:
Winst Infra Solution
Pvt. Ltd.
OFFICE-F-8, BHANU CORPORATE
TOWER, PLOT NO-C-23,SECTOR-13,
VAISHALI, GHAZIABAD, U.P-201012

PROJECT:
WIDENING/IMPROVEMENT TO 4-LANE LANE WITH PAVED SHOULDER FROM KM 27+100
(GOLAI GOAN) TO KM 47+800 ON DHRUWACHAL TO LEED SECTION WITH
PROPOSED MARGHERITA & LEED BYPASS (BYPASS) AND GREEN FIELDS
(2-LANE-2PS) OF NH-38 IN TINUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE 5)
DRAWING TITLE:
REINFORCEMENT DETAIL OF BOX CULVERT
AT CH. 48+148
Date: JAN. 2024
Project No.:
Drawing No.:
Rev: RD



DESCRIPTION	PROPOSED
DESIGN CHN	47+298
CA CHN.	47+300
STR. TYPE	BOX
SPAN/DIA	1X2X2m
PROPOSAL	NEW CONS.

KEY PLAN

LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
47+298	155.130	151.475	150.294	150.308	2.312m	2.540m	1.908m

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 - M30-FOR RCC BOX CELL STRUCTURE.
 - M15-FOR PCC AND LEVELING COURSE.
 - M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 - ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 - ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1850-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 6 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM/C IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 13t/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- THE EXPOSURE CONDITION IS MODERATE.

LEGEND:-
 FRL FINISHED ROAD LEVEL
 IL INVERT LEVEL
 LVL LEVEL
 EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

SAFETY AUDITOR
 (As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

REFERENCE DRAWINGS:-
 1. REINFORCEMENT DETAIL OF BOX CULVERT
 MISPL/HM-38/BOX/REINF/47+298/02

GOOD FOR CONSTRUCTION

HALF PLAN AT TOP HALF PLAN AT BOTTOM

PLAN
 (SCALE-1:100)

NADCL
 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

KAMAC
 KAMAC ENGINEERS PVT.LTD
 F2021, CITY CENTER OFFICE
 BLOCK, 2ND FLOOR,
 MATIGARA 734010

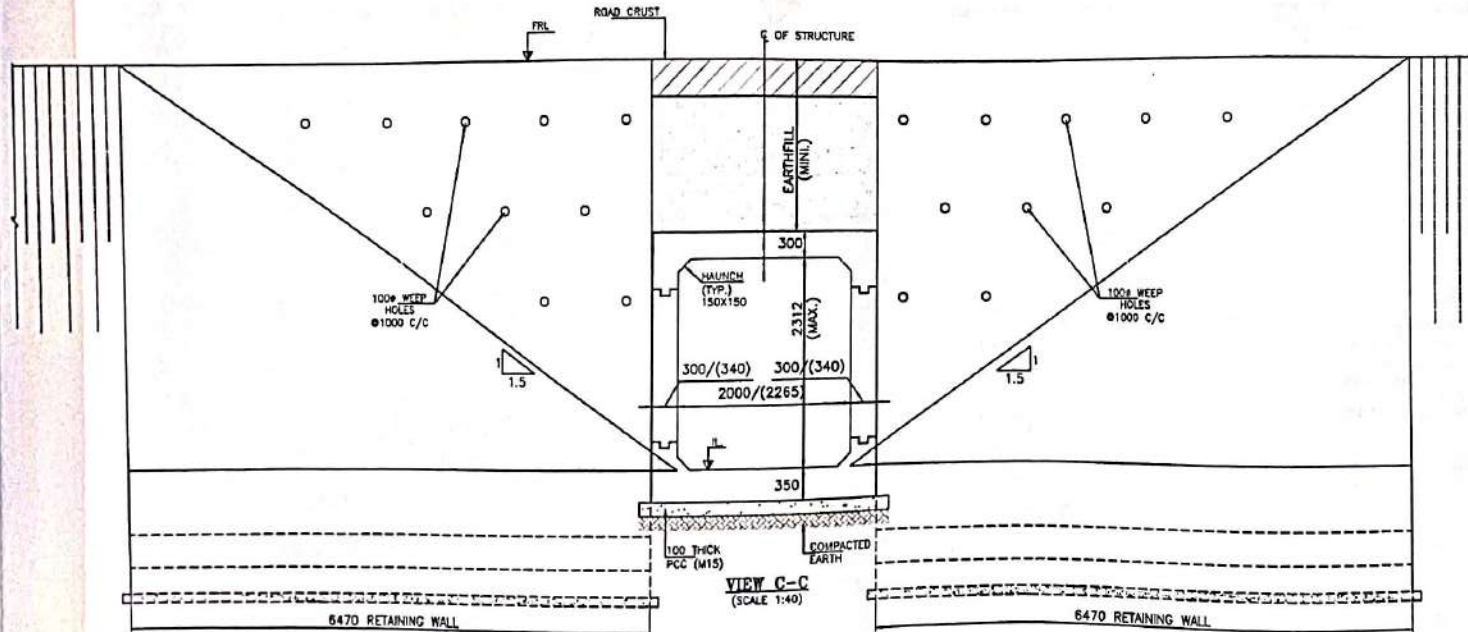
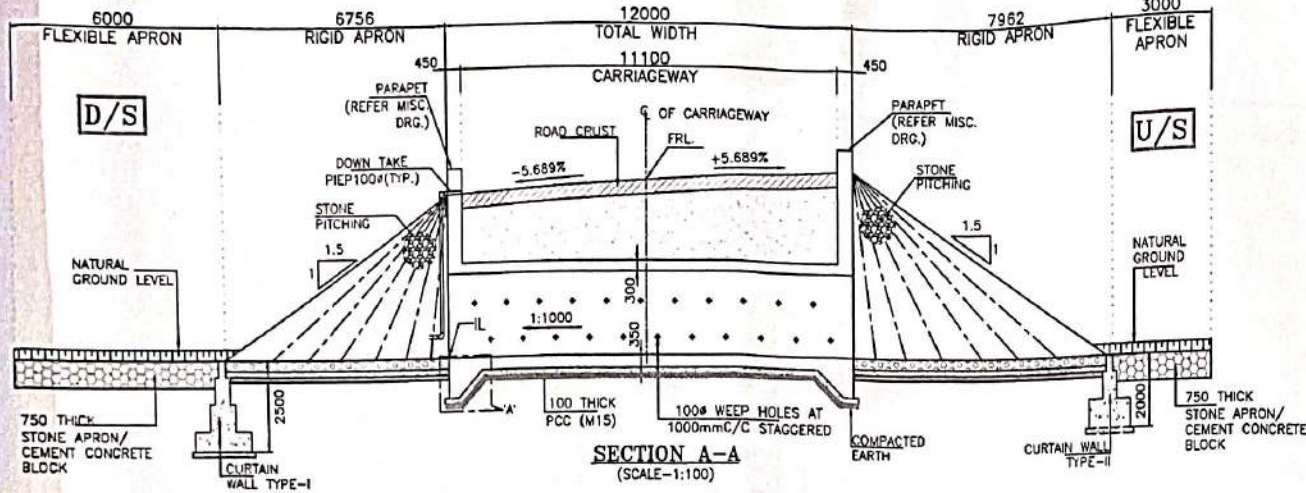
ALMOND CONSULTANTS
 ALMOND CONSULTANTS
 LIMITED INDIAN WITH A LEEZA
 CONSULTANTS PRIVATE LIMITED.
 CO. JAYANTABAI SARKAR JANIN
 WANCHAN BORBI NO.2, BIGBOI,
 TINSUKIA, ASSAM-786171

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
 OFFICE NO: 620, SIGNATURE GLOBAL
 MALL, SECTOR-3,
 VAISHALI, GHAZIABAD, U.P.-201010

DESIGN AID
 PLOT NO.54, 3rd FLOOR(FRONT),
 MASOODPUR DAIRY FARM,VASANT KUNJ,
 NEW DELHI-110070,

Winst Infra Solution Pvt. Ltd.
 OFFICE: P-8, BHANU CORPORATION
 TOWER, PLOT NO-C-23, SECTOR-13,
 VASUDEVAN PRASTHABAD, U.P.-201012

PROJECT:
 IMPROVEMENT TO 3 LANE LANE WITH PAVED SHOULDER FROM KM 37+193
 (GOLAN GOAN) TO KM 47+882 (LEDO) ON DIBRUGARH TO LEDO SECTION WITH
 PROPOSED JAMKHERITA A LEDO BYPASS (BROWNFIELD AND GREEN FIELD)
 (2 LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
 MODE (PACKAGE-3)
DRAWING TITLE:
 GENERAL ARRANGEMENT DRAWING FOR
 BOX CULVERT AT CHAINAGE 47+298
Date: JAN 2024
Project No.: WINS/2023/01
Drawn By: W.S.P.
Checked By: A.B.
App. No.: NIS
Sheet No.: 01 OF 03
Rev.: 00



SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW

GOOD FOR CONSTRUCTION

CLIENT:



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

EPC CONTRACTOR



KAMAC ENGINEERS PVT. LTD.
PG201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 734010

AUTHORITY'S ENGINEER

ALMOND GLOBAL INFRA CONSULTANT LIMITED (AN INDIA ANGLEEZA CONSULTANTS PRIVATE LIMITED).

CH. ANANT KUMAR, BARBAJAN
NARAYAN, SECTOR NO. 2, DIGBOI,
TINSUKIA, ASSAM 786171

PROOF CONSULTANT:



CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P. 201010.

SAFETY CONSULTANT:



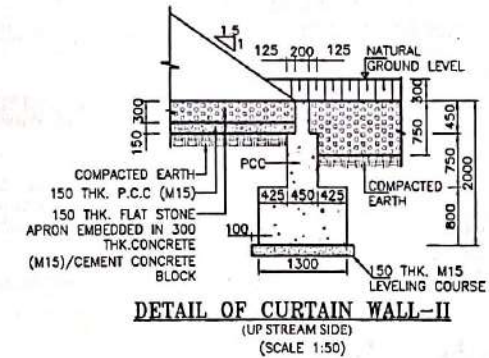
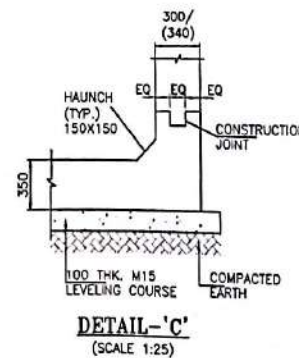
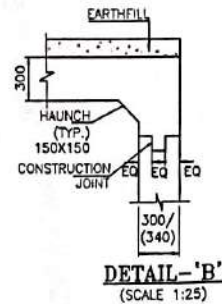
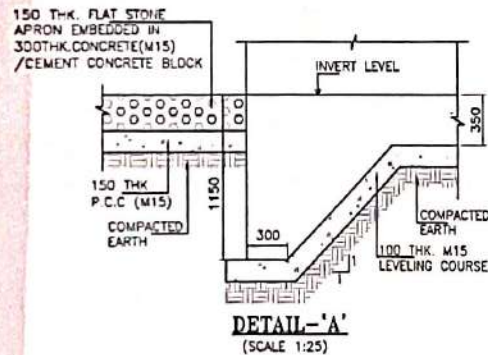
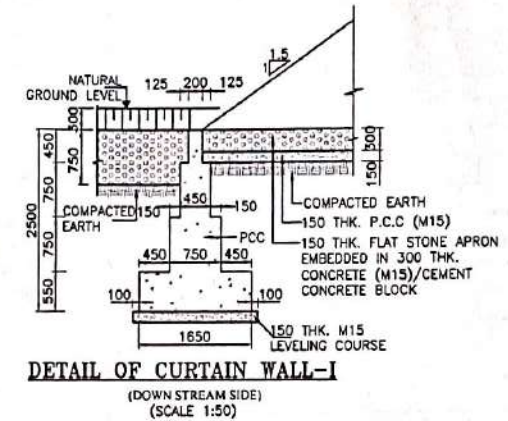
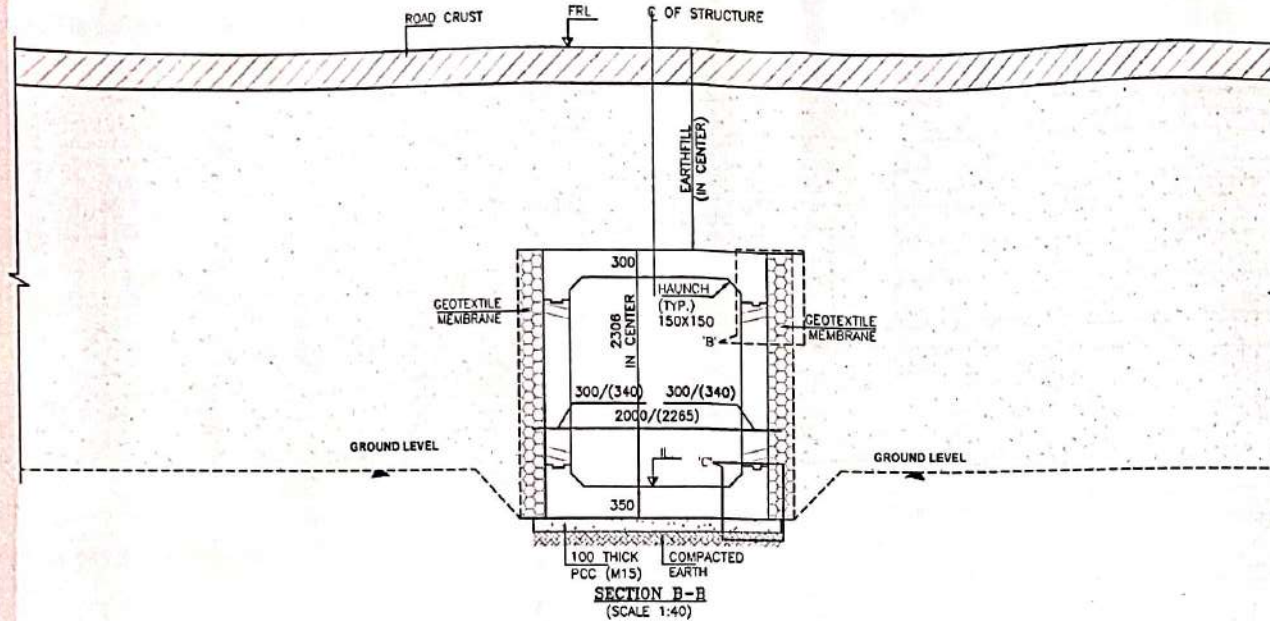
DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT),
MASOODPUR DAIRY FARM, VASANT KUNJ,
NEW DELHI-110070.

DESIGN CONSULTANT WITH



Winst Infra Solution Pvt. Ltd.
OFFICE: F-4, ISHAAN CORPORATE
TOWER, PLOT NO. C-23, SECTOR-13,
VALLUJHATA, CHANDEL, U.P. 201017

PROJECT					
WIDENING/IMPROVEMENT TO 2 LANE LANE WITH PAVED SHOULDER FROM KM 27-150 (GOLAN GOANS TO KM 47-083 (LEDO)) ON OBRUAGH TO LEDO SECTION WITH PROPOSED MARCHENTA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2 LANE+PS) OF NH-38 IN TRIBHUKA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-3)					
DRAWING TITLE:					
GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 47+294					
Date	Drawn	Des.	Chk.	App.	Scale
JAN 2024	W.P.	V.S.	A.D.	NTS	NTS
Project No.	Drawing No.	Sheet No.	Rev.		
	AVCMH-38/BC/04/17-294/01	02 OF 03	000		



SAFETY AUDITOR
(As per Article 10.1.1 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

KAMAC ENGINEERS PVT.LTD
F0201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR,
MATIGARA 736010

AUTHORITY'S ENGINEER
ALMOND GLOBAL INFRA CONSULTANT
LIMITED IN INDIA, MTO, EEZA
CONSULTANT PRIVATE LIMITED.
C/O JAYANTA BAKSI BARBAANIN
KANGHAR BORAIL NO.2, DIBBOI,
TINSUKIA, ASSAM-786771

PROOF CONSULTANT:
CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-J,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT),
MASOODPUR DAIRY FARM,VASANT KUNJ,
NEW DELHI-110070.

DESIGN CONSULTANT:
A.V. CONSTRUCTION
Palam Extension, Bosco
Ashram Wall Gali, New
Delhi 110045
Winst Infra Solution
Pvt. Ltd.
OFFICE #4, 15TH FLOOR CORPORATE
TOWER, PLOT NOG-23, SECTOR-13,
VAISHALI, GHAZIABAD, U.P-201012

PROJECT:
IMPROVING/UPGRADATION TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27+130
(GOLAI GAN) TO KM 47+882 (LEDC) ON DIBRUGARH TO LEDO SECTION WITH
PROPOSED HAUNCHES & LEDO BYPASS (BYPASS) AND GREEN FIELD
(2-LANE +PS OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC
MODE (PACKAGE-3)

DRAWING TITLE:
GENERAL ARRANGEMENT DRAWING FOR
BOX CULVERT AT CHAINAGE 47+298

Date	W.P.	Eng.	Chk.	App.	In ch.	Drawing Status
JAN.2024	V.S	A.B	NTS			
Project No.	Drawing No.	AVCNH-38/BOIGAD47+298/01				
		Sheet No.	63 OF 63	Rev.	RD	



DETAIL -
(SCALE:-1:15)



DESIGN AID, NEW DELHI

REFERENCE DRAWING:-

- ← TRAFFIC DIRECTION →



GOOD FOR CONSTRUCTION

← TRAFFIC DIRECTION →



(HALINCH BAR NOT SHOWN IN PLAN FOR CLARITY,
(N.T.S.)

EPC CONTRACTOR

KAMAC ENGINEERS

KAMAC ENGINEERS PVT.LTD
F8201, CITY CENTER OFFICE
BLOCK, 2ND FLOOR
MATIGARA 734010

AUTHORITY'S SIGNATURE
ALMOND GLORIA INTRA CONSULTANT
LIMITED IN CHIA MAYOLEEZA
CONSULTANT PRIVATE LIMITED.
DIO JAYANTA SAKTA, SARBA JANIN
NANGAR, BORBIL NO.2, DIGBOI,
TINSUKIA, ASSAM-786171

PROOF CONSULTANT:

CREATIVE ENGINEERING SERVICES
OFFICE NO. 620, SIGNATURE GLOBAL
MALL, SECTOR-3,
VAISHALI, GHAZIABAD, U.P-201010

SAFETY CONSULTANT:	
--------------------	--

DESIGN
DESIGN AID
PLOT NO.54, 3rd FLOOR(FRONT)
MASOODPUR DAIRY FARM,VASANT K
NEW DELHI-110070.

DESIGN CONSULTING & CONSTRUCTION
 1st Floor, WZ-2
 Adam Extension, Jeddah
 Ashraf Mall, Giza, New
 Date: 11/04/15

Winst Infra Solution
Pvt. Ltd.
 OFFICE: P-8, ISMAAN CORPORATE
 TOWER, PLOT NO-C-23, SECTOR-13,
 GATEWAY INDIA, GHAZIABAD, U.P-201001

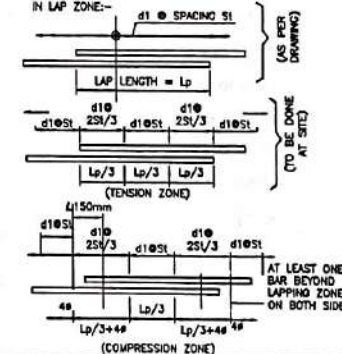
BOX REINF. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		12	170
2	ts2		10	170
3	ts3		8	200
4	ts4		10	200
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		10	170
8	w2		10	170
9	w3		10	200
10	w4		8	200
11	bs1		10	170
12	bs2		12+8	170
13	bs3		10	200
14	bs4		8	200
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	170
18	h2		10	170
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	200
22	st1		8	200 c/c (L-L) 170 c/c (T-T) DIRECTIO

NOTES:-

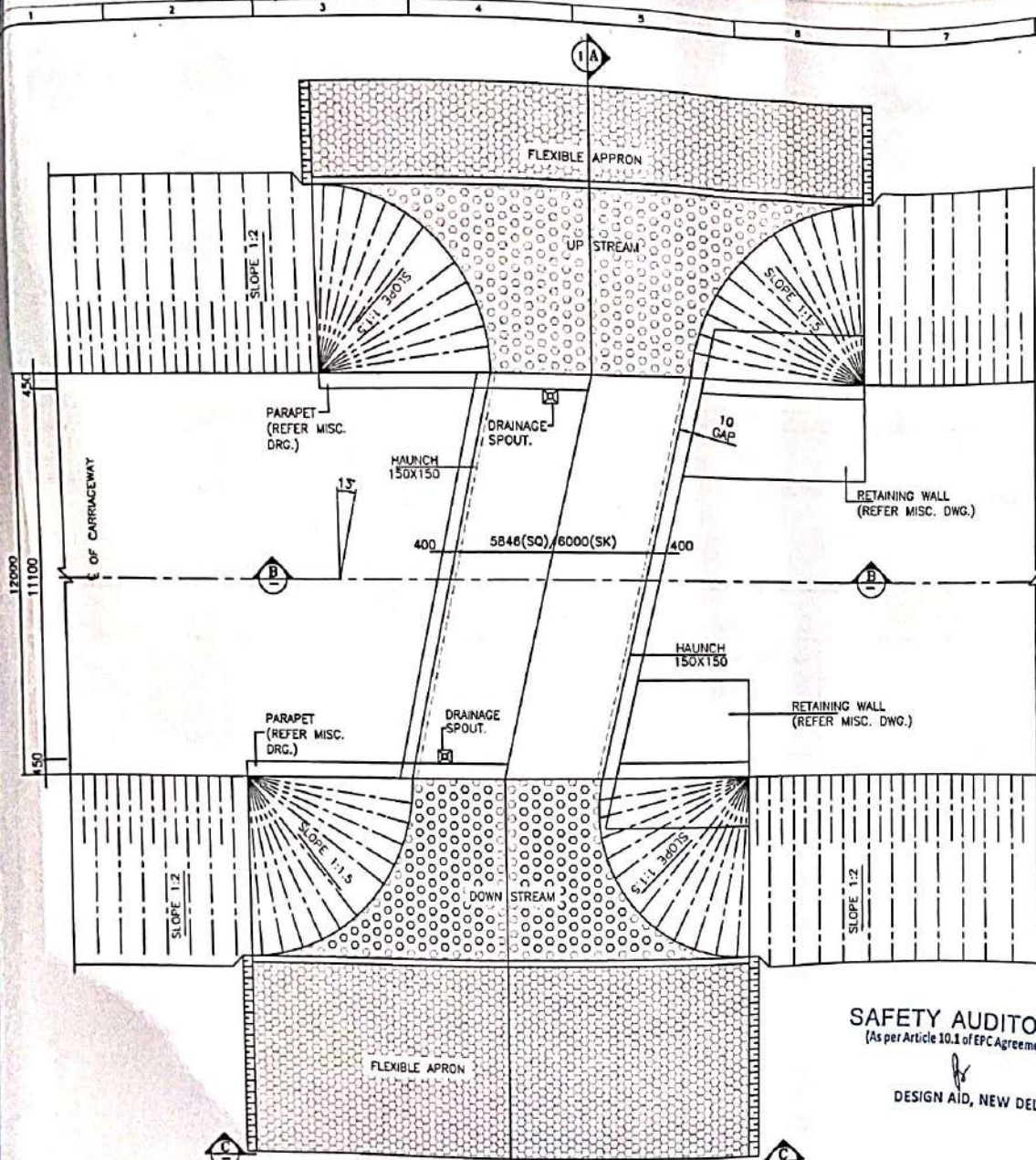
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE METERS UNLESS OTHERWISE MENTIONED.
2. DRAWING SHOULD NOT BE SCALED UNLESS WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) TO BE USED IN ALL STANDARDS.
4. MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-

a) TOP SLAB	= 45mm
b) BOTTOM SLAB	= 75mm
c) SIDE WALL (EARTH SIDE)	= 75mm
d) SIDE WALL (INNER SIDE)	= 45mm
5. OVERLAPPING FOR SPLICING OF REINFORCEMENT SHALL BE AS PER CLAUSE 10.13.3.
6. LAP LENGTH SHALL NOT BE LESS THAN 56d.
7. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP JOINT:-



AT LEAST ONE
BAR BEYOND
LAPPING ZONE
ON BOTH SIDES

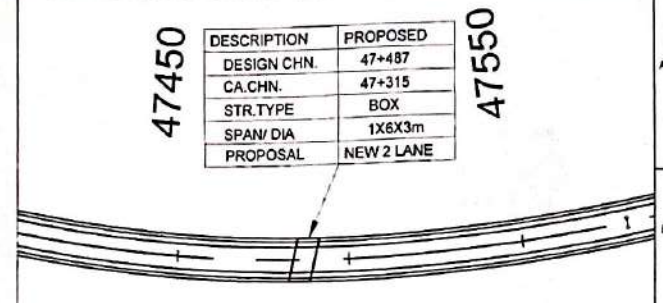
REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 47+298							
Date	Drawn	Usg.	Units	App.	Scale	Drawing Status	
JAN. 2024	W P	V S	A B		1/1"		
Project No.	Drawing No.					Sheet No.	Of
	A/C/CH/30/BOX CULVERT AT CH. 47+298					86	08



LEVELS

DESIGN CH.	FRL	GROUND LEVEL	INVERT LEVEL		VERTICAL CLEARANCE (MAX.)	EARTH FILL (MAX.)	EARTH FILL (MIN.)
			LHS	RHS			
47+487	157.935	153.023	152.735	152.723	3.012m	2.124m	1.476m

KEY PLAN



LEGEND:-
 FRL FINISHED ROAD LEVEL
 IL INVERT LEVEL
 LVL LEVEL
 EGL EXISTING GROUND LEVEL

FRL CAMBER & LOCATION IS TO BE MATCHED WITH HIGHWAY ALIGNMENT DRAWING.

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER, LEVELS ARE IN METER AND CHAINAGE ARE IN KILOMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF ROAD.
- GRADE OF CONCRETE:-
 a. M30-FOR RCC BOX CELL STRUCTURE.
 b. M15-FOR PCC AND LEVELING COURSE.
 c. M30-PARAPET
- GRADE OF STEEL - Fe500.
- THE FOLLOWING LOADS HAVE BEEN CONSIDERED IN THE DESIGN:-
 a. ONE LANE, TWO LANE AND THREE LANE OF CLASS A
 b. ONE LANE OF CLASS A IN ADDITION OF ONE LANE OF CLASS 70R WHEEL OR ONE LANE OF 70R TRACKED WHICHEVER IS GOVERNS.
- BACKFILL MATERIAL BEHIND END WALL SHALL BE SELECTED GRANULAR SOIL HAVING PROPERTIES
 MAX DRY DENSITY = 1650-2280kg/m³
 OPTIMUM MOISTURE CONTENT = 7-15
 AS PER IRC78-2014 AND MORTH SPECIFICATION.
- THE FRL SHOWN IN THE DRAWING SHALL BE VERIFIED WITH CORRESPONDING PLAN AND PROFILE DRAWING BEFORE EXECUTION, IF THERE IS ANY VARIATION SHALL BE BROUGHT TO THE NOTICE OF ENGINEER.
- THE DIMENSION AND LEVEL ARE SUBJECT TO CHANGE AS PER SITE CONDITION AND DETAILED DESIGN.
- BACKFILL TO BE DONE AND COMPACTED FROM BOTH SIDE SIMULTANEOUSLY.
- 600MM THICK FILTER MATERIAL BEHIND RETAINING WALL SHALL BE LAID AS PER APPENDIX 8 OF IRC 78-2014.
- 50MM THICK CEMENT CONCRETE WEARING COAT SHALL BE PROVIDED.
- 100MM DIA P.V.C. PIPE AT SPACING 1000MM @/S IN HORIZONTAL/VERTICAL DIRECTION SHALL BE PROVIDED UP TO 150MM ABOVE GROUND LEVEL FOR WEEP HOLES IN RETAINING WALL.
- SBC SHALL BE 121/m² AND SAME SHALL BE ENSURED AT SITE BY ANY SUITABLE METHOD.
- AS PER MORTH SECTION-2500, WHERE THE REQUIRED SIZE OF BOULDERS ARE NOT AVAILABLE ECONOMICALLY, CEMENT CONCRETE BLOCKS OF EQUIVALENT WEIGHT SHALL BE USED. THE GRADE OF CONCRETE SHALL BE M15 NOMINAL MIX. CEMENT CONCRETE BLOCK SHALL BE PREFERRED WHERE PRACTICABLE.
- CHOOSE ANY SUITABLE METHOD TO ACHIEVE THE REQUIRED SBC AS PER SITE.
- IF THE EXPOSURE CONDITION IS MODERATE.

SAFETY AUDITOR
 (As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

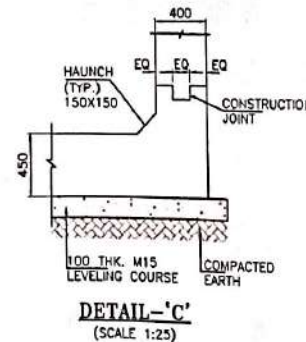
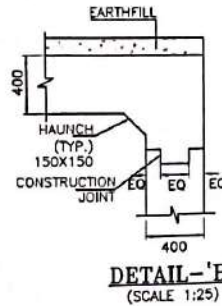
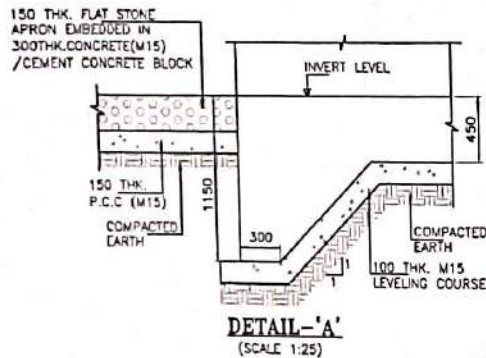
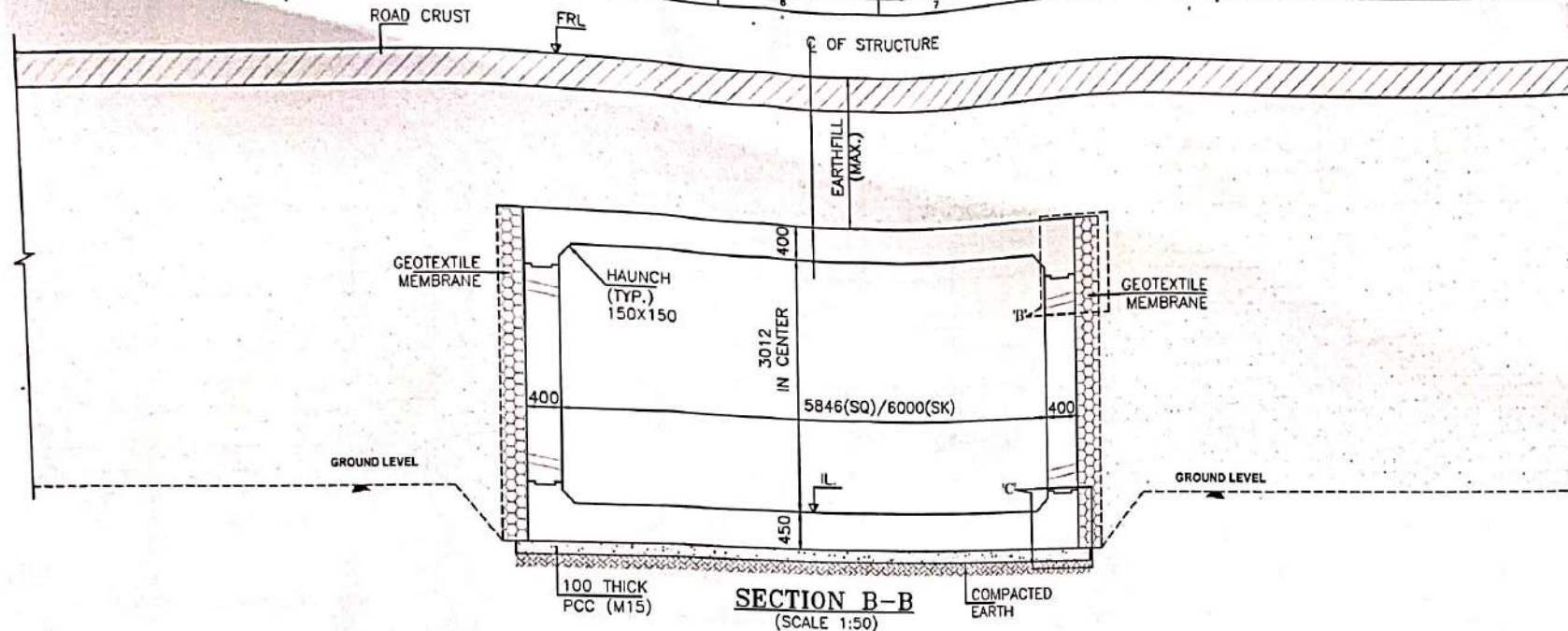
REFERENCE DRAWINGS:-

- REINFORCEMENT DETAIL OF BOX CULVERT
 AYC/NH-38/BOX/REINF./47+487/02

HALF PLAN AT TOP HALF PLAN AT BOTTOM

PLAN
 (SCALE - 1:100)

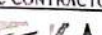
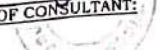
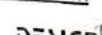
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR KAMAC ENGINEERS PVT. LTD. F0201, CITY CENTER OFFICE BLOCK 2ND FLOOR, MATIGARA 734010	AUTHORITY'S ENGINEER ALMOND G. D. INFRA CONSULTANT LIMITED, KATIPALLI, VALEZZA CONSULTANTS PRIVATE LIMITED, C-5, AYANTIA SAHAKI, BARAJANIN NAGBHAS, BOBILUNG 7 DIGIOI, TINSUKIA, ASSAM 786117	PROOF CONSULTANT: CREATIVE ENGINEERING SERVICES OFFICE NO. 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P. 201010	SAFETY CONSULTANT: DESIGN AID PLOT NO.54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070,	DESIGN CONSULTANT: Winst Infra Solution Pvt. Ltd. OFFICE: P-8, ISHAN CORPORATE TOWER, PLOT NO-23, SECTOR-13, VASANT VIHAR, GHAZIABAD, U.P. 201012	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE WITH PAVED SHOULDER FROM KM 37-150 (KOLAM GRADU TO KM 47+487) ON NH-38 IN DISTRICT MATIGARA TO LEDO SECTION WITH PROPOSED MARHORETA & LEDO BYPASS (BROWNFIELD AND GREEN FIELD) (2 LANE-4PS) OF NH-38 IN TRIBHENA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-5) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHAINAGE 47+487 <table border="1"> <thead> <tr> <th>Date</th> <th>Rev.</th> <th>W.P.</th> <th>V.S.</th> <th>A.D.</th> <th>App.</th> <th>Scale</th> <th>NTS</th> <th>Drawing No.</th> <th>Sheet No.</th> <th>Rev.</th> </tr> </thead> <tbody> <tr> <td>JAN 2024</td> <td>01</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>81 OF 83</td> <td>RD</td> </tr> </tbody> </table> Project No. AYC/NH-38/BOX/GA/INT-487/81	Date	Rev.	W.P.	V.S.	A.D.	App.	Scale	NTS	Drawing No.	Sheet No.	Rev.	JAN 2024	01								81 OF 83	RD
Date	Rev.	W.P.	V.S.	A.D.	App.	Scale	NTS	Drawing No.	Sheet No.	Rev.																		
JAN 2024	01								81 OF 83	RD																		

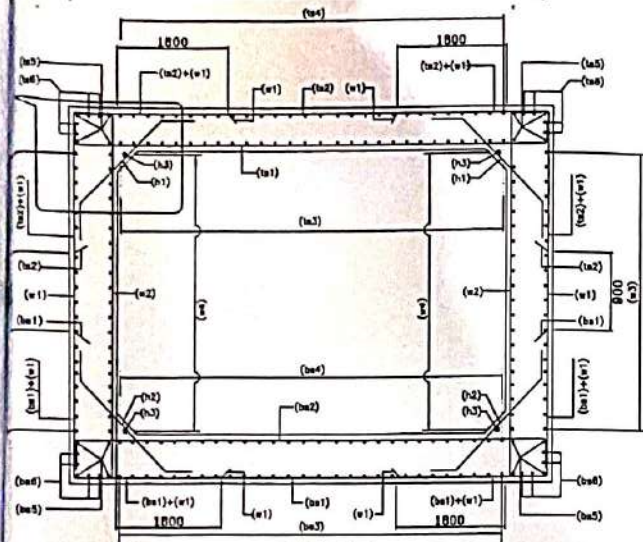


SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

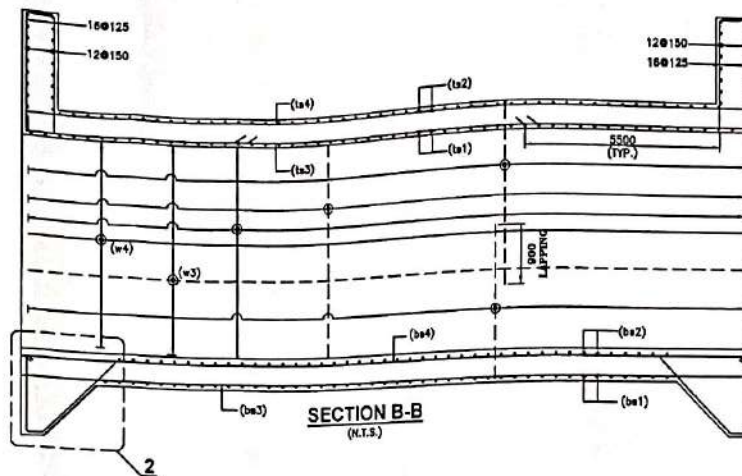
DESIGN AID, NEW DELHI

GOOD FOR CONSTRUCTION

NT:	 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	EPC CONTRACTOR  KAMAC ENGINEERS PVT.LTD F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734510	AUTHORITY'S ENGINEER  ALMOND GEOTECHNICAL CONSULTANT LIMITED/INFRATECH CONSULTANTS LIMITED, Civil Section, C/O. DAYANTA SARKAR, BARAJANIN NAMCHAR, BORBIL NO.2, JIGBOI, TINSUKIA, ASSAM-781171	PROOF CONSULTANT:  CREATIVE ENGINEERING SERVICES OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, GHAZIABAD, U.P.-201010	SAFETY CONSULTANT:  DESIGN AID PLOT NO 54, 3rd FLOOR(FRONT), MASOODPUR DAIRY FARM,VASANT KUNJ, NEW DELHI-110070.	DESIGN CONSULTANT  Winst Infra Solution Pvt. Ltd. OFFICE: F-8, BHANU CORPORATE TOWER, PLOT NO-G-23,SECTOR-13, VASANT VIHAR, CHANDIGARH-160010	PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 27-150 (LOCAL ROAD) TO KM 47-682 (LEO) ON DIBRUGARH TO LEOO SECTION WITH PROPOSED MARCHERITA & LEOO BYPASS (BROWNFIELD AND GREEN FIELD) (2-LANE+PS) OF NH-38 IN TINSUKIA DISTRICT IN THE STATE OF ASSAM ON EPC MODE (PACKAGE-B) DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR BOX CULVERT AT CHARGE 47+487 Date: JAN. 2024 Project No. Drawing No. Sheet No. Rev. Drawn: W.P. Checked: V.S. Appr.: A.B. Scale: NTN AVC/IN-38/BC/GAD/47-487/01 03 OF 03
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SECTION A-A
(N.T.S.)



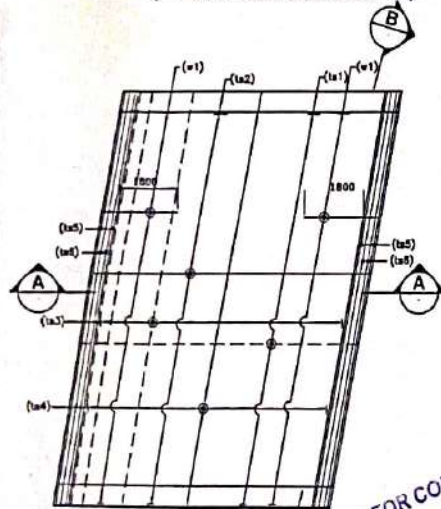
SECTION B-B
(N.T.S.)

LEGEND:-

TOP FACE BAR
BOTTOM FACE BAR

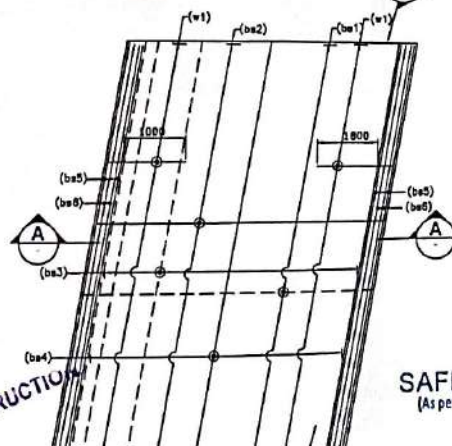
TRAFFIC DIRECTION

TRAFFIC DIRECTION



REINFORCEMENT DETAILS OF TOP SLAB

(HATCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

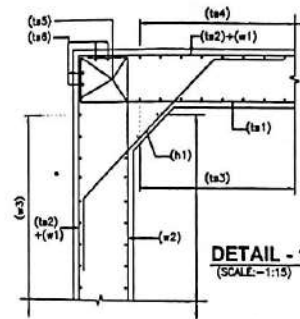


REINFORCEMENT DETAILS OF BOTTOM SLAB

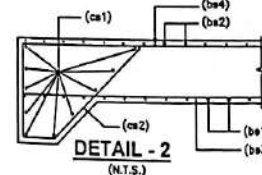
(HATCH BAR NOT SHOWN IN PLAN FOR CLARITY)
(N.T.S.)

SAFETY AUDITOR
(As per Article 10.1 of EPC Agreement)

DESIGN AID, NEW DELHI



DETAIL - 1
(SCALE: 1:15)



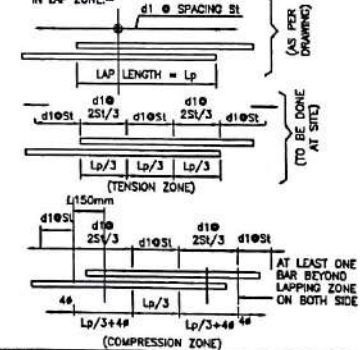
DETAIL - 2
(N.T.S.)

BOX REIN. SCHEDULE

SL.NO.	BAR MARK	BAR SHAPE	DIAMETER	SPACING
1	ts1		16+10	130
2	ts2		16	130
3	ts3		12	180
4	ts4		12	180
5	ts5		12	2x4 Nos.
6	ts6		12	2x4 Nos.
7	w1		12	130
8	w2		16	130
9	w3		12	180
10	w4		10	180
11	bs1		16	130
12	bs2		16+10	130
13	bs3		12	180
14	bs4		12	180
15	bs5		12	2x4 Nos.
16	bs6		12	2x4 Nos.
17	h1		10	130
18	h2		10	130
19	h3		10	1x4 Nos.
20	cs1		12	10 Nos.
21	cs2		10	180
22	st1		10	180 c/c (L-L) 130 c/c (T-T) DIRECTION
23	st2		12	180 c/c (L-L) 130 c/c (T-T) DIRECTION

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- DRAWING SHOULD NOT BE SCALED ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- ALL REINFORCING BARS SHALL BE THERMO MECHANICALLY TREATED (TMT) BARS (GRADE DESIGNATION Fe-500) CONFORMING TO IS 1786 STANDARDS.
- MINIMUM CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:-
 - a) TOP SLAB = 45mm
 - b) BOTTOM SLAB = 75mm
 - c) SIDE WALL (EARTH SIDE) = 75mm
 - d) SIDE WALL (INNER SIDE) = 45mm
- OVERLAPPING FOR SPACING OF REINFORCEMENT SHALL BE AS PER CLAUSE NO.15.2.5. LAP LENGTH SHALL NOT BE LESS THAN 56d. ARRANGEMENT OF TRANSVERSE REINFORCEMENT IN LAP ZONE:-



- ANCHORAGE LENGTH OF BOX SHALL BE TAKEN AS 40d AS PER IS:112.
- FOR UNFAVORABLE BOND CONDITIONS THE FACTOR 40 SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
- CENTER LINE OF OVERLAPPING BAR bs1 & ts2 IN WALL & MID HEIGHT OF WALLS ARE AT SAME POINT.
- BAR BENDING SCHEDULE SHOULD BE STRICTLY FOLLOW DURING THE TIME OF EXECUTION IF IN CASE ANY CHANGES AT SITE KINDLY DISCUSS IT WITH ENGINEER IN CHARGE.

REFERENCE DRAWING:-

- GENERAL ARRANGEMENT DRAWING. AYC/NH-38/BOX/CAD/47+487/01

CONSTRUCTION
Winst Infra Solution Pvt. Ltd.
OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO. 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.



Winst Infra Solution Pvt. Ltd.

OFFICE: F-8, ISHAAN CORPORATE TOWER, PLOT NO. 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

KAMAC ENGINEERS PVT. LTD.
F0201, CITY CENTER OFFICE BLOCK, 2ND FLOOR, MATIGARA 734010

ALMOND GLOBAL INFRA CONSULTANT LIMITED IN CHARGE
CONSULTANT ENGINEER
(PKG-345)
C/O. ANANTA SAKIA, SARBAJAN NAMOHAR, BORIBILL NO.2, DIGBOI, TINSUKIA, ASSAM-786111

CREATIVE ENGINEERING SERVICES
OFFICE NO: 620, SIGNATURE GLOBAL MALL, SECTOR-3, VAISHALI, CHAZIABAD, U.P.-201010

DESIGN AID
PLOT NO. 54, 3rd FLOOR (FRONT), MASOODPUR DAIRY FARM, VASANT KUNJ, NEW DELHI-110070.

DESIGN CONSULTANT
Winst Infra Solution Pvt. Ltd.

PROJECT: WIDENING/IMPROVEMENT TO 2-LANE LANE WITH PAVED SHOULDER FROM KM 37+100 (SOLAI GOAN) TO KM 47+882 (LEDO) ON CHIRAGUAM TO LEDO SECTION WITH PROPOSED MARGHERITA & LEDO BYPASS (BROWN FIELD AND GREEN FIELD).
DRAWING TITLE: REINFORCEMENT DETAIL OF BOX CULVERT AT CH. 47+487

Date	Drawn	Check	Appr.	Scale	Drawing Status
JAN 2024	W.P.	V.S.	A.D.	NTS	
Project No.	Drawing No.	Sheet No.	Rev.		
AVGNH-38/BOX/REIN/47+487/01		01 OF 01	RO		