

**Four Laning of Jhanjhi – Demow Section from Design km 490.800 To
km 534.800 of NH-37, Assam under SARDP on EPC Mode**



Drawings

(Design Ch. 517.400–534.800)

- Underpass
- CD Structures

July 2016

Authority Engineer :



VOYANTS SOLUTIONS PVT LTD

Proof Checking Consultant :

Gifford PART OF **RAMBOLL**

GIFFORD INDIA PVT. LTD.

Contractor :



ISOLUX CORSAÁN **CORSAN CORVIAM CONSTRUCTION S.A.**

Consultant :



Projects Consulting India (P) Ltd

(Formerly: Distinct Planning and Design Consult (P) Ltd.)

Engineers & Planners

New Delhi, India

Email: info@pcindia.co



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LIMITED

Four Laning of Jhanjhi – Demow Section from Design km 490.800 To
km 534.800 of NH-37, Assam under SARDP on EPC Mode

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(Design Ch. 517.400–534.800)

- Underpass
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Date of Release : 01.07.2016
Prepared : KD/SPS
Checked : BKG/AS
Approved : RBS

Authority Engineer :



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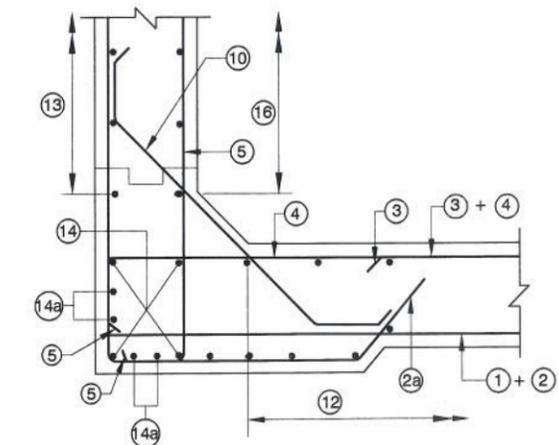
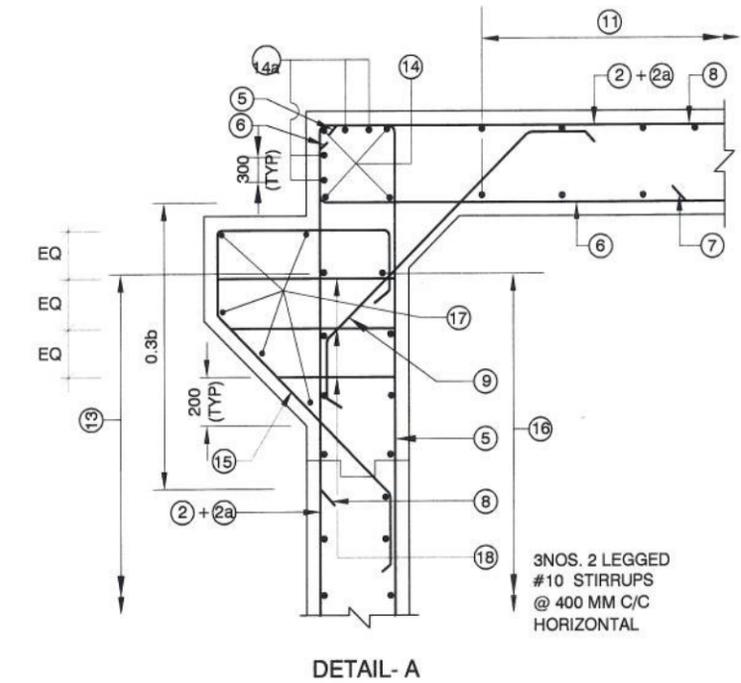
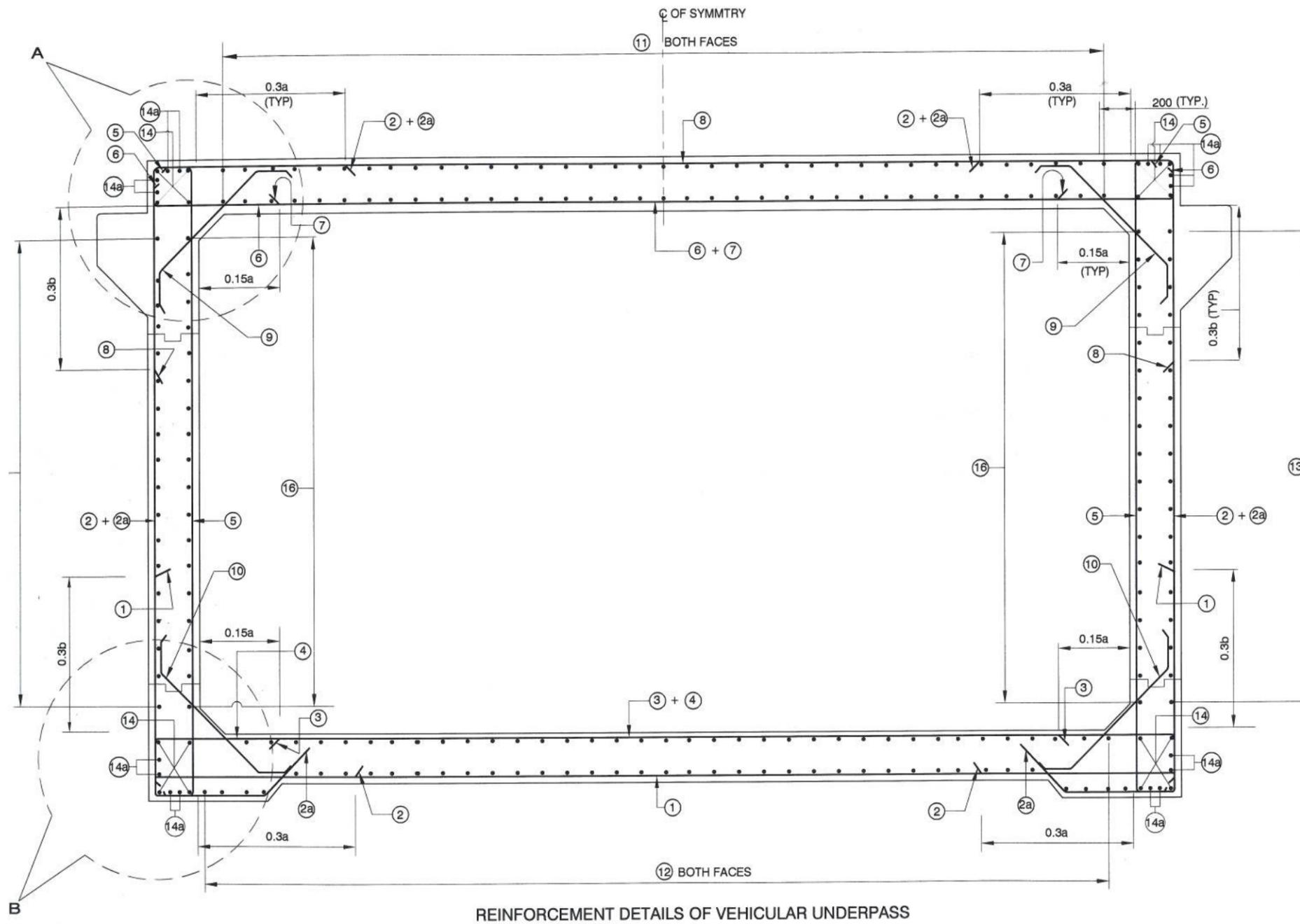
ISO 9001:2008

FOUR LANING OF JHANJHI TO DEMOW SECTION FROM KM 491+050 TO KM 535+250 (DESIGN KM. 490+800 TO 534+800) IN THE STATE OF ASSAM UNDER EPC MODE
UNDERPASS AND CD STRUCTURES
(CH. 517+000 TO CH. 534.800)
LIST OF DRAWING

S. NO.	DRAWING NO		DRAWING TITLE	DRG. REVISION
VUP CH.- 533.620		SHEET		
1	94-41-01	(SHEET 1 OF 2)	GENERAL ARRANGEMENT DRAWING - VEHICULAR UNDERPASS (CH.- 533.620)	R1
2	94-41-01	(SHEET 2 OF 2)	GENERAL ARRANGEMENT DRAWING - VEHICULAR UNDERPASS (CH.- 533.620)	R1
REINFORCEMENT VUP				
1	94-41-02	(SHEET 1 OF 2)	REINFORCEMENT - VEHICULAR UNDERPASS (CH.- 533.620)	R0
2	94-41-02	(SHEET 2 OF 2)	REINFORCEMENT - VEHICULAR UNDERPASS (CH.- 533.620)	R0
CD STRUCTURES				
1	94-42-00		SCHEDULE	R1
CD STRUCTURES				
1	94-42-01	(SHEET 1 OF 2)	GENERAL ARRANGEMENT DRAWING - SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-520.360, 523.810, 524.450, 525.582, 529.535, 531.494)	R0
2	94-42-01	(SHEET 2 OF 2)	GENERAL ARRANGEMENT DRAWING - SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-520.360, 523.810, 524.450, 525.582, 529.535, 531.494)	R1
CD STRUCTURES CH.-CH.-526.774				
1	94-43-01	(SHEET 1 OF 2)	GENERAL ARRANGEMENT DRAWING - SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-526.774)	R0
2	94-43-01	(SHEET 2 OF 2)	GENERAL ARRANGEMENT DRAWING - SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-526.774)	R1
CD STRUCTURES CH.-CH.-532.078				
1	94-44-01	(SHEET 1 OF 2)	SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-532.078)	R0
2	94-44-01	(SHEET 2 OF 2)	SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-532.078)	R1
REINFORCEMENT CD STRUCTURES				
1	94-45-01	(SHEET 1 OF 3)	REINFORCEMENT- SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	R0
2	94-45-01	(SHEET 2 OF 3)	REINFORCEMENT- SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	R0
3	94-45-01	(SHEET 3 OF 3)	REINFORCEMENT- SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	R0
1	94-46-01	(SHEET 1 OF 3)	MISCELLANEOUS DETAILS	R0
2	94-46-01	(SHEET 2 OF 3)	MISCELLANEOUS DETAILS	R0
3	94-46-01	(SHEET 3 OF 3)	MISCELLANEOUS DETAILS	R0

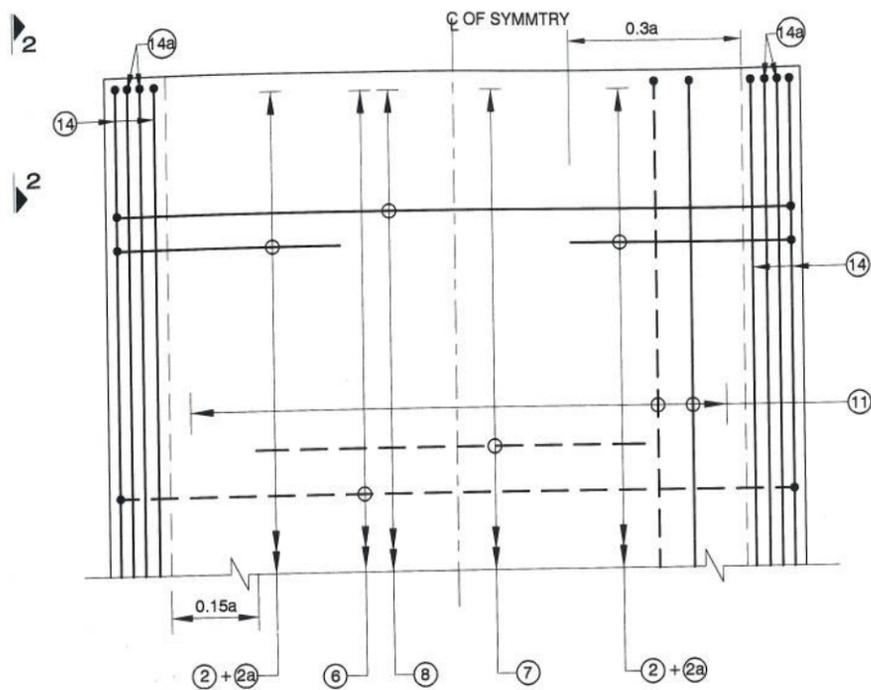
DESIGN DIRECTOR
Plaza
Corsan Corviam Construccion S.A.

APPROVED: RBS	CONSULTANT  PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24	PROOF CHECKING CONSULTANT:  Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE
CHECKED: BKG	AUTHORITY ENGINEER:  VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CONTRACTOR:  CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	SAFETY CONSULTANT:  L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	TITLE: LIST OF DRAWINGS
DESIGNED: AS	DRAWN: KDS			SHEETS SIZE: SHEET: DATE: A3 01 March 2016
01.07.2016 PC COMPLIANCE				DRAWING NO: 94-00-00
DATE DESCRIPTION OF REVISIONS				SCALE: NTS REV: R1

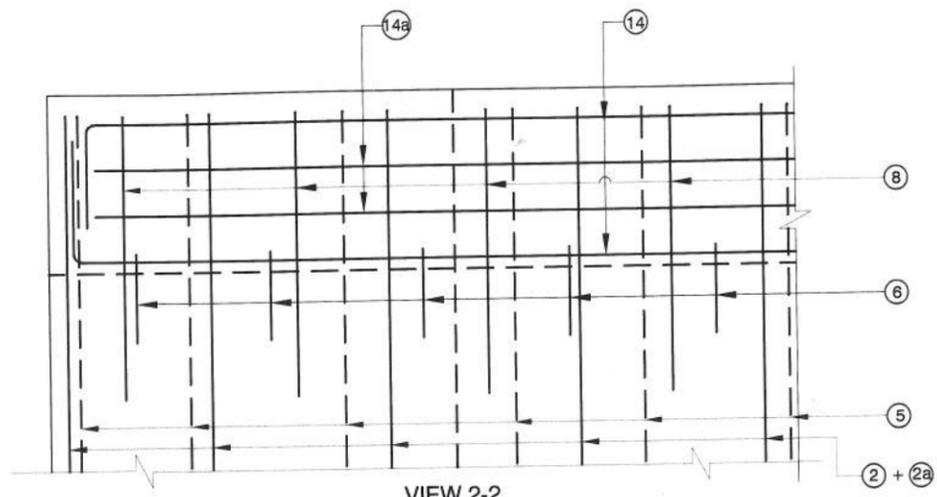


DESIGN DIRECTOR
 Corsan Corviam Construccion S.A.
[Signature]

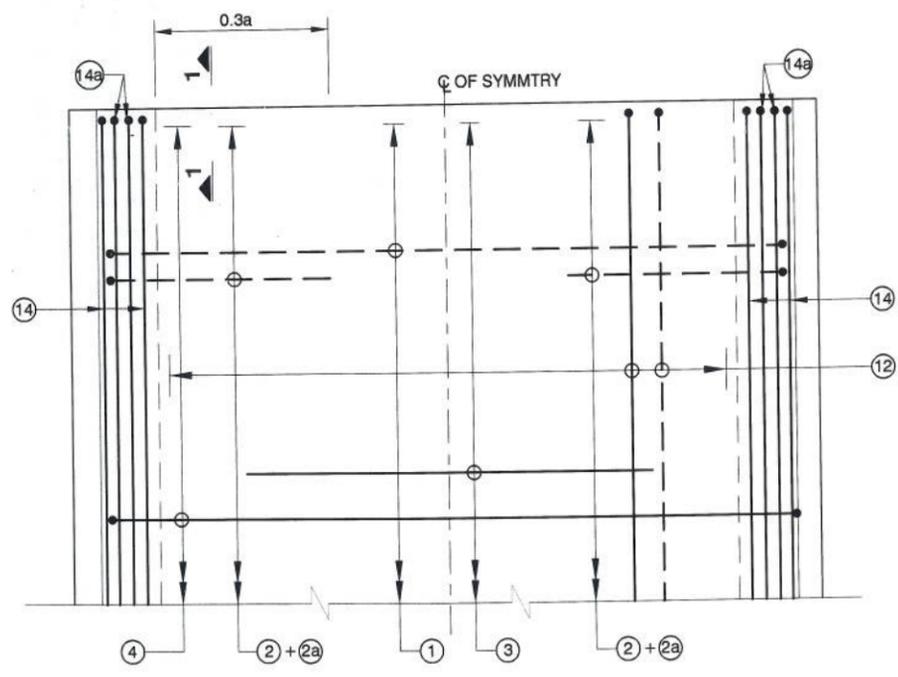
	APPROVED: RBS CHECKED: BKG DESIGNED: AS DRAWN: KDS	CONSULTANT PCI PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070 AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centre, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24 CONTRACTOR: CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	PROOF CHECKING CONSULTANT: Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002 SAFETY CONSULTANT: L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE TITLE: REINFORCEMENT-VEHICULAR UNDERPASS (CH.-533.620) DRAWING NO. 94-41-02	SHEETSIZE: A3 SHEET: 01 SCALE: NTS DATE: March 2016 REV: 0
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TOP SLAB REINFORCEMENT PLAN
(BAR MARK ⑤, ⑱ KERB, BRACKET & HAUNCH LINES NOT SHOWN IN PLAN)



VIEW 2-2
(HAUNCH LINES NOT SHOWN)



BOTTOM SLAB REINFORCEMENT PLAN
(HAUNCH LINES NOT SHOWN IN PLAN)

NOTES:

- ALL DIMENSIONS ARE IN mm AND LEVELS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS SHALL NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL TO BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
- ALL REINFORCING STEEL SHALL BE HIGH YIELD STRENGTH DEFORMED (CRS-TMT) BARS (GRADE - Fe 500). CONFORMING IS :1786.
- CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE FOLLOWS.
 - EARTH FACE - 75 mm
 - FOR OTHERS - 40 mm
- MINIMUM ANCHORAGE LENGTH SHALL BE 42D .WHERE 'D' IS THE DIAMETER OF BAR.
- LAP LENGTH SHALL BE PROVIDED AS PER BELOW - (FOR GRADE OF CONC. M35 AND ABOVE)

LAP LENGTH	% LAP AT ANY SECTION IS
76 d	BETWEEN 40 - 50%
68 d	BETWEEN 25 - 40%
60 d	- 25%

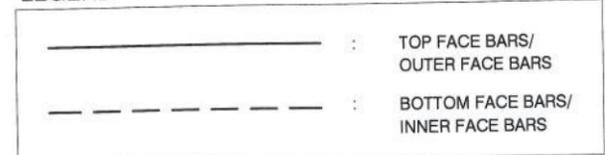
(WHERE 'd' IS THE DIAMETER OF THE BAR)

- FOR UNFAVORABLE BOND CONDITIONS LAP LENGTH SHALL BE MULTIPLIED 1.4 AS PER IRC: 21-2000
- ALL LAP SHALL BE SUITABLY STAGGERED AND MINIMUM DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 130 TIMES OF LAP LENGTH.

SCHEDULE OF REINFORCEMENT

BAR MARKS	BARS SHAPE	BAR DIA.	SPACING / NOS.	REMARKS
①		20	200	Lapping
②		20	200	Alternate + Lapping
②a		12	200	Alternate + Lapping
③		20	200	Alternate
④		20	200	Alternate
⑤		16	200	
⑥		16	200	Alternate
⑦		20	200	Alternate
⑧		16	200	Lapping
⑨		10	200	
⑩		10	200	
⑪		12	200	
⑫		12	150	
⑬		12	200	
⑭		10	4 x 4 Nos	
⑭a		12	4 x 4 Nos	
⑮		12	200	
⑯		12	200	
⑰		12	2 x 5 Nos	
⑱		10	3 LAYERS 2 LEGGED STIRRUPS @ 400 c/c	

LEGEND



DESIGN DIRECTOR
CorSan Corviam Construction S.A.

APPROVED: RBS	CONSULTANT PCI PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road - Guwahati - 24	PROOF CHECKING CONSULTANT: Gifford Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE
CHECKED: BKG	AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, RPTP Park Centra.	CONTRACTOR: CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	SAFETY CONSULTANT: L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	TITLE: REINFORCEMENT-VEHICULAR UNDERPASS (CH.-533.620)
DESIGNED: AS				SHEETSIZE: A3 SHEET: 02 DATE: March 2016
DRAWN:				SCALE: NTS REV: 0
				DRAWING NO. 94-41-02

SCHEDULE OF CD WORKS

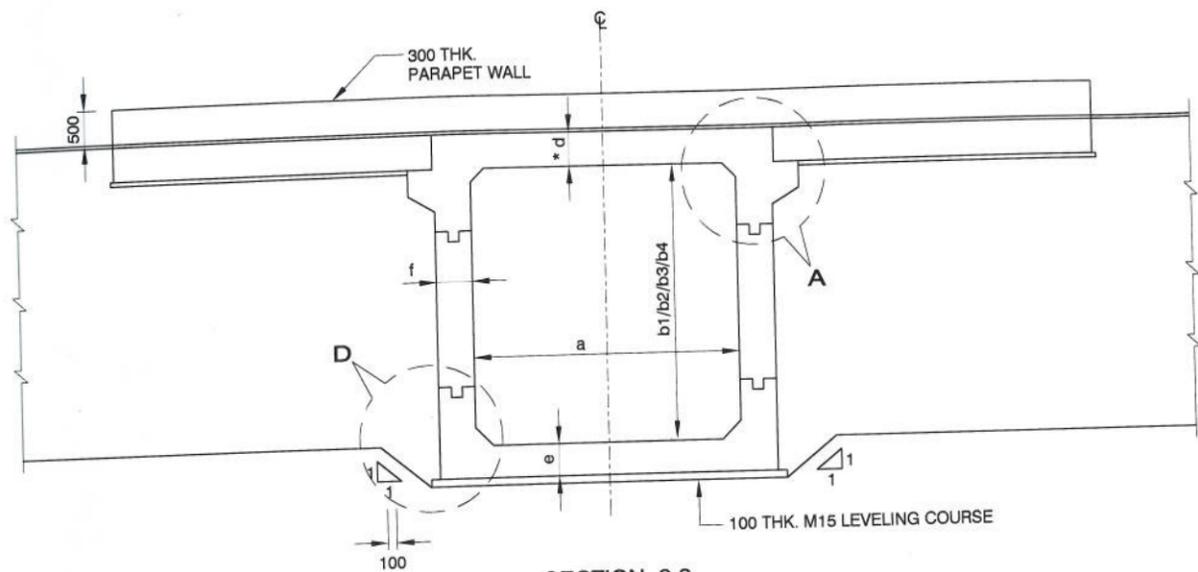
S.no	Existing CD No	Proposed CD No	Existing Chainage	Proposed Chainage	Invert Level	HFL	Lowest bed level	Detail of Widening			Existing Detail				Proposed Details			Ref. Dwg No.			
								Existing width (E)	LHS Widening (A)	RHS Widening (B)	Length Of culvert	FRL at RME	FRL at LME	Existing FRL	RFP opening	Type of Proposal	No. of Spans		Proposal	Type of Structure	Opening Proposal (MAX)
1	521/1	521/1	520.752	520.360	89.961	88.843	90.261	11.346	13.180	1.473	26.00	92.095	92.095	92.095	1x2.5x1.5	BOX	1	Widening	BOX	1x2.5x1.842	94-42-01
2	525/1	524/1	524.120	523.810	90.149	91.903	90.449	11.155	13.027	1.878	26.06	93.808	93.808	93.808	1x3x3	BOX	1	Widening	BOX	1x3x3.338	94-42-01
3	525/2	525/1	524.960	524.450	88.850	90.473	89.150	11.273	12.750	2.000	26.02	93.009	93.009	93.009	1x3x3.5	BOX	1	Widening	BOX	1x3x3.831	94-42-01
4	526/1	526/1	526.000	525.582	89.432	91.223	89.732	11.290	13.077	1.640	26.01	93.141	93.141	93.141	1x4x3	BOX	1	Widening	BOX	1x4x3.40	94-42-01
5	528/1	527/1	527.190	526.774	91.252	91.603	91.552	11.314	6.260	8.500	26.07	93.386	93.386	93.386	1x1.8x1.5	BOX	1	Widening	BOX	1x1.8x1.94	94-43-01
6	530/1	530/1	529.930	529.535	90.283	91.657	90.583	10.967	2.277	12.755	26.00	94.117	94.117	94.117	1x6x3	BOX	1	Widening	BOX	1x6x3.332	94-42-01
7	532/1	532/1	531.895	531.494	88.987	91.483	89.287	11.129	13.262	1.608	26.00	93.501	93.501	93.501	1x6x3.5	BOX	1	Widening	BOX	1x6x3.845	94-42-01
8	533/1	533/1	532.486	532.078	90.140	91.403	90.440	11.199	14.359	0.441	26.00	93.593	93.593	93.593	1x2x2.5	BOX	1	Widening	BOX	1x2x3.825	94-44-01

* Refers to maximum culvert opening height

DESIGN DIRECTOR

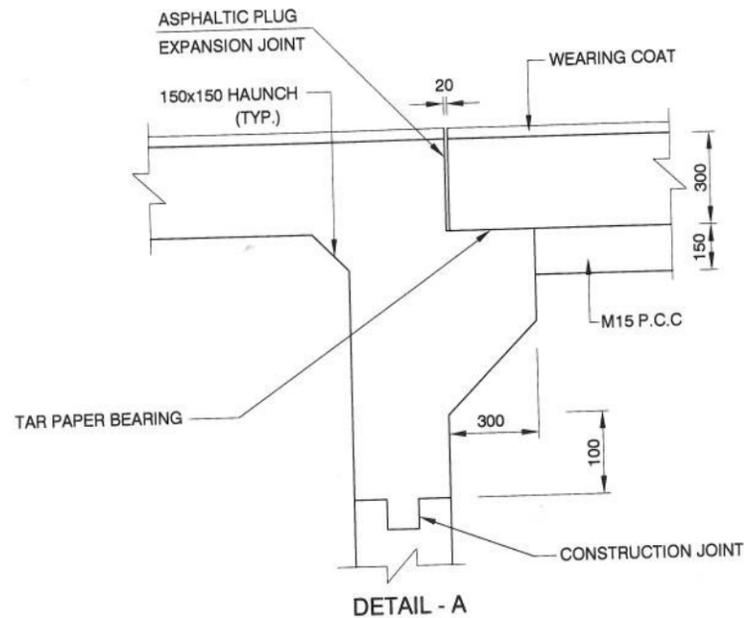
 Corsan Corviam Construction S.A.

APPROVED: RBS		CONSULTANT  PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 8110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070		CLIENT:  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24		PROOF CHECKING CONSULTANT:  Gifford Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002		PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE				
CHECKED: BKG		AUTHORITY ENGINEER:  VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India		CONTRACTOR:  CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001		SAFETY CONSULTANT:  L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070		TITLE: CD STRUCTURES (CH. - 517.000 TO 534.800)		SHEETSIZE: A3	SHEET: 01	DATE: March 2016
DESIGNED: AS								DRAWING NO. 94-42-00		SCALE: NTS	REV. R1	
01.07.2016	PC COMPLIANCE											
DATE	DESCRIPTION OF REVISIONS											

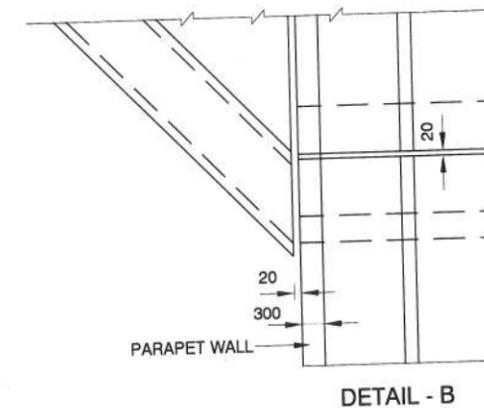


SECTION 2-2

*d DECK SLAB THICKNESS AT INNER EDGE OF KERB AS SHOWN IN SECTION 1-1

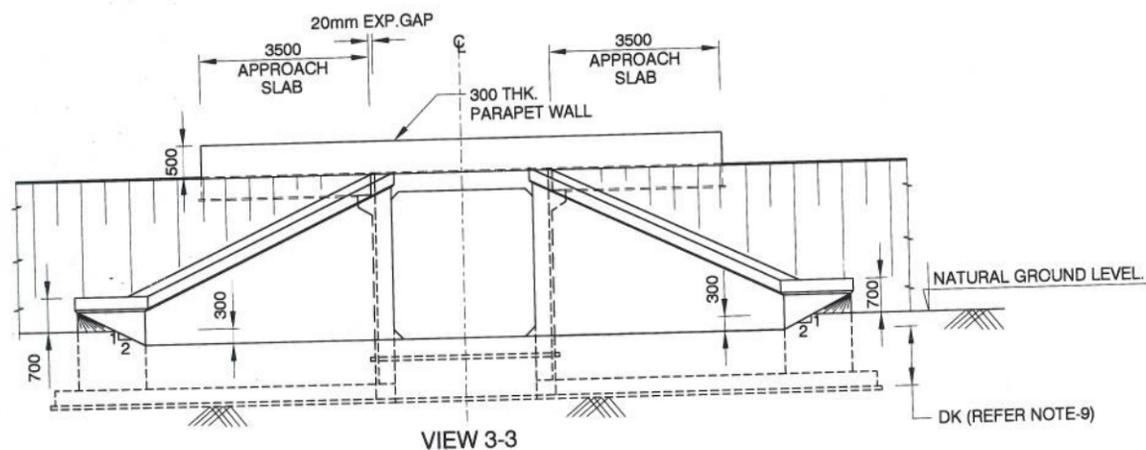


DETAIL - A

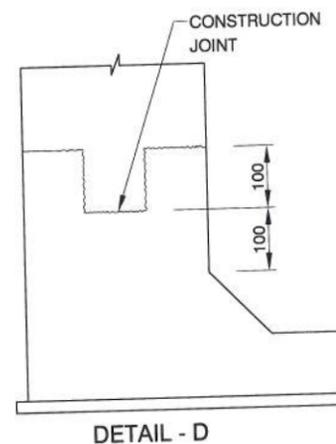


DETAIL - B

DESIGN DIRECTOR
Plex
 Corsan Corviam Construction S.A.



VIEW 3-3



DETAIL - D

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150MM CUBES AS FOLLOWS:-

RCC BOX	M-30
APPROACH SLAB	M-30
LEVELLING COARSE	M15
PCC WING WALL	M20
PARAPET WALL	M-30
PCC CURTAIN WALL	M-20
- THE REINFORCING STEEL SHALL BE CORROSION RESISTANT TMT HYSD BARS (GRADE DESIGNATION FE-500 CONFORMING TO IS:1786-1985)
- PROPOSED CULVERT IS DESIGNED FOR ONE LANE OF IRC CLASS 70R TRACKED & 40 BOGIE LOAD WHICHEVER IS GOVERNING.
- BACKFILLING BEHIND BOX SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC 78-2014 HAVING PROPERTIES $C=0$, $\phi > 30^\circ$ & $YD=20$ KN/M²
- 65MM THK WEARING COURSE COMPRISING OF 40MM THK BITUMINOUS CONCRETE & 25MM THK ASPHALTIC SHALL BE PROVIDED
- GROUND IMPROVEMENT TO BE DONE WHERE BASE PRESSURE EXCEEDS ALLOWABLE SBC
- THE VARIOUS LEVELS (FRL, INVERT LEVELS) & SUPER ELEVATION SHOWN IN DRAWINGS SHALL BE VERIFIED PRIOR TO EXECUTION AT SITE, AND IF ANY DISCREPANCY FOUND SHALL BE INFORM TO ENGINEER
- SOFT AND LOOSE PATCHES IN THE BEARING AREA ARE TO BE REPLACED BY BY COMPACTED GRANULAR FILLS WITH LAYERS NOT EXCEEDING 300mm.
- FOR REINFORCEMENT DETAILS REFER DRG NO. 94-45-01
- FOR RETAINING WALL/WING WALL, PARAPET WALL, CURTAIN WALL & GUARD STONE DETAILS REFER DRG NO. 94-46-01
- EXISTING WING WALL SHALL BE DISMANTLED AT WIDENING END BEFORE EXECUTION.

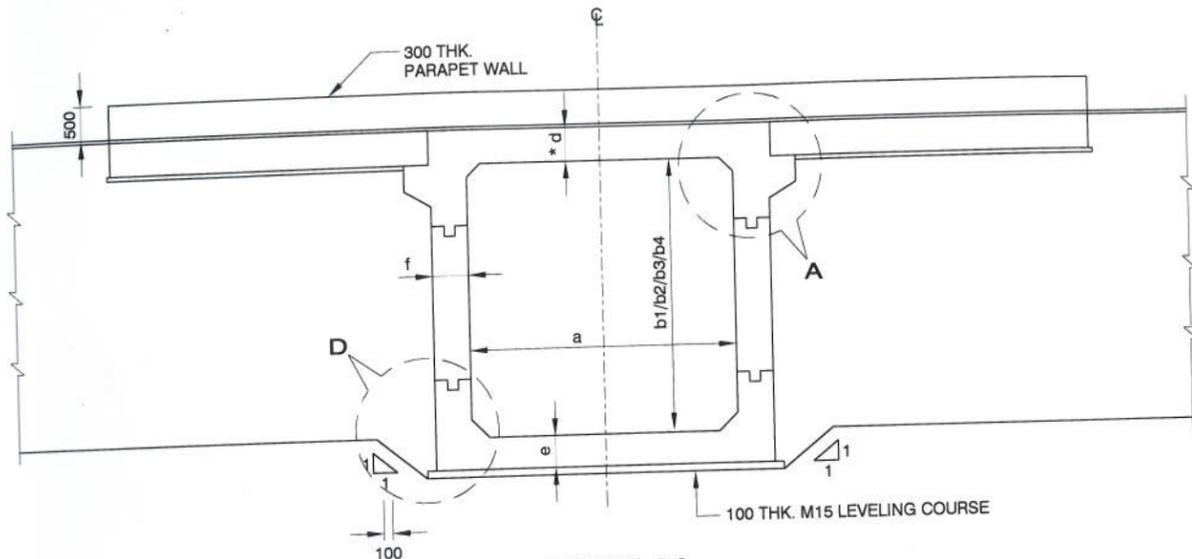
S.no	Existing Chainage	Design Chainage	Proposed		Details of widening				FRL at RME	FRL at LME	Invert level	Lowest Bed Level	Span "a" (m)	clear height "b1" (m)	clear height "b2" (m)	clear height "b3" (m)	clear height "b4" (m)	top slab 'd' thickness (m)	Bottom slab 'e' thickness (m)	Side wall 'r' thickness (m)	Design Base Pressure (kN/m ²)	Direction of flow	
			Type of Structure Proposed	No. of Spans	No. of span x span arrangement	Existing FRL	Existing width (E)	LHS Widening (A)															RHS Widening (B)
1	520.752	520.360	BOX	1	1x2.5x1.842	92.095	11.346	13.180	1.473	92.095	92.095	89.961	90.261	2.5	1.5	1.842	1.538	1.5	0.300	0.425	0.325	87	Right to Left
2	524.120	523.810	BOX	1	1x3x3.338	93.808	11.155	13.027	1.878	93.808	93.808	90.149	90.449	3	3	3.338	3.049	3	0.325	0.475	0.375	91	Right to Left
3	524.960	524.450	BOX	1	1x3x3.831	93.009	11.273	12.750	2.000	93.009	93.009	88.850	89.150	3	3.5	3.831	3.552	3.5	0.325	0.500	0.400	95	Right to Left
4	526.000	525.582	BOX	1	1x4x3.40	93.141	11.290	13.077	1.640	93.141	93.141	89.432	89.732	4	3	3.340	3.044	3	0.375	0.450	0.400	80	Right to Left
5	529.930	529.535	BOX	1	1x6x3.332	94.117	10.967	2.277	12.755	94.117	94.117	90.283	90.583	6	3	3.059	3.332	3	0.500	0.600	0.450	66	Right to Left
6	531.895	531.494	BOX	1	1x6x3.845	93.501	11.129	13.262	1.608	93.501	93.501	88.987	89.287	6	3.5	3.845	3.542	3.5	0.500	0.600	0.450	68	Right to Left

APPROVED:	RBS	CONSULTANT	PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070
CHECKED:	BKS	DESIGNED:	KDS
DRAWN:		AUTHORITY ENGINEER:	VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra,

CLIENT:	NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road, Guwahati - 24
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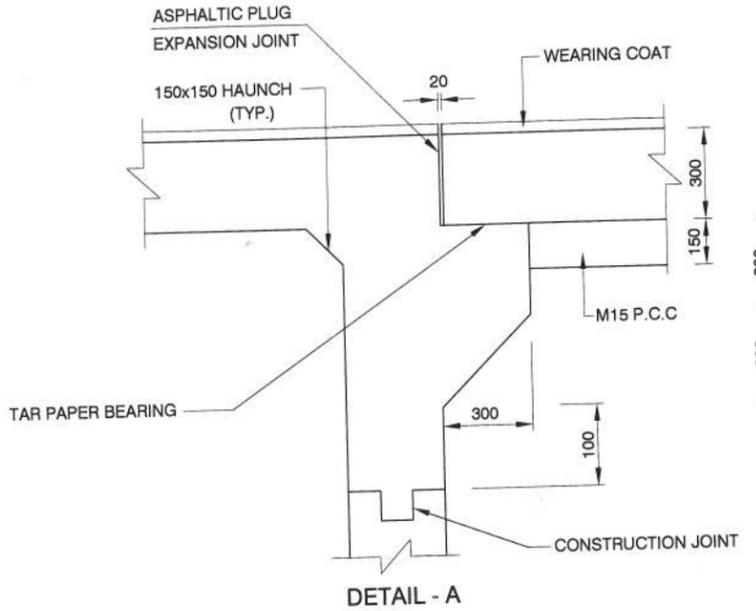
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PROJECT:	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE		
TITLE:	GENERAL ARRANGEMENT DRAWING SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	SHEETSIZE:	A3
DRAWING NO.:	94-42-01	SHEET:	02
		SCALE:	NTS
		DATE:	March 2016
		REV:	R1

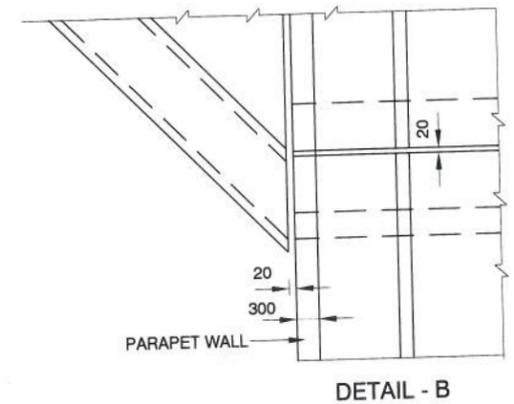


SECTION 2-2

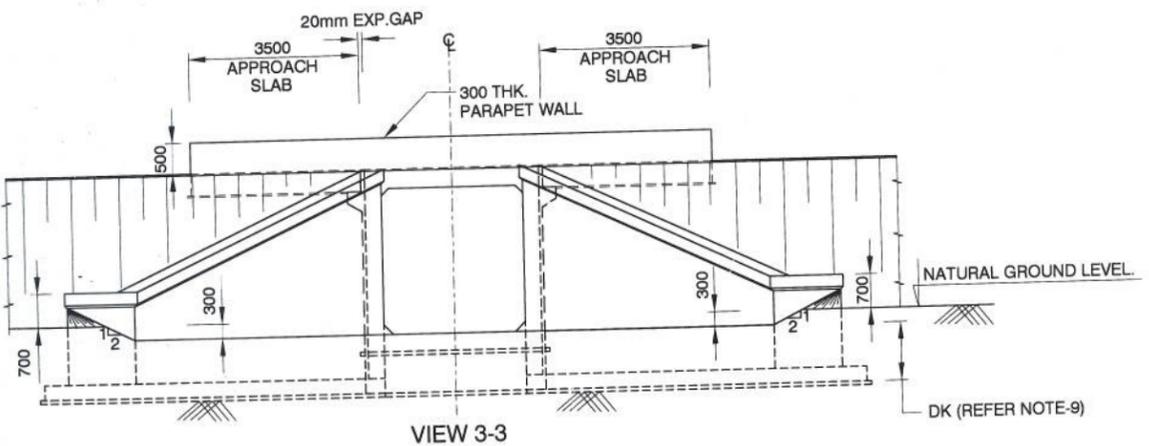
*d DECK SLAB THICKNESS AT INNER EDGE OF KERB AS SHOWN IN SECTION 1-1



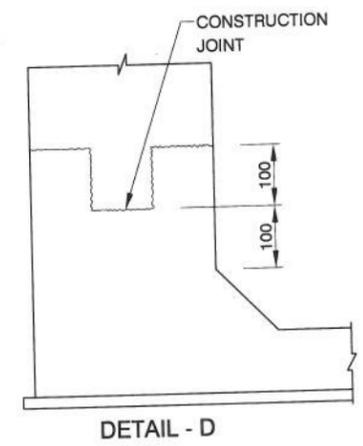
DETAIL - A



DETAIL - B



VIEW 3-3



DETAIL - D

NOTES:

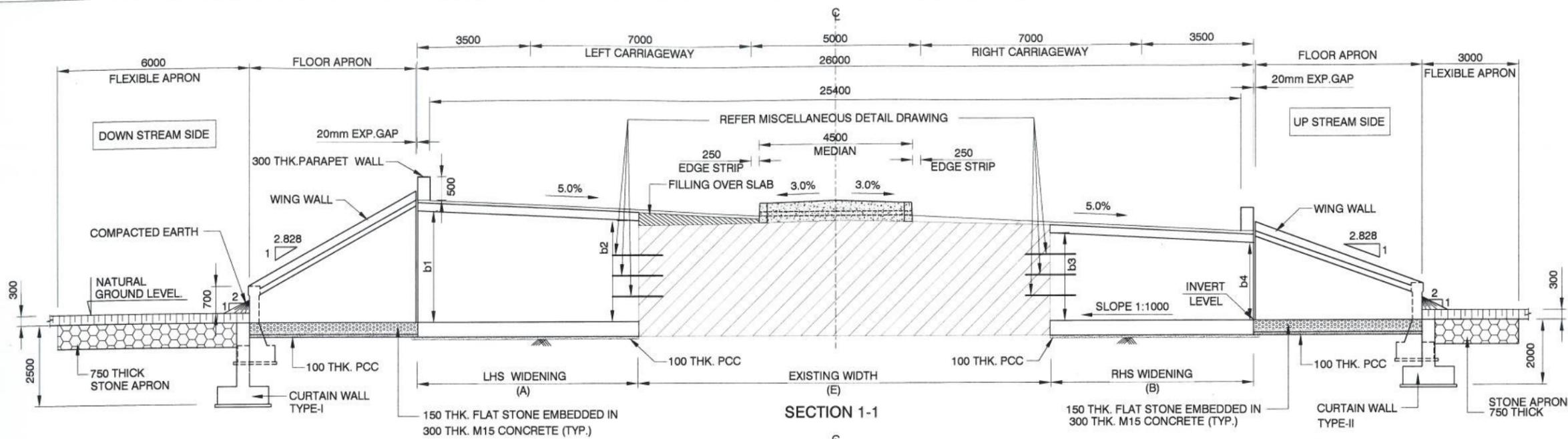
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150MM CUBES AS FOLLOWS:-

RCC BOX	M-30
APPROACH SLAB	M-30
LEVELLING COARSE	M15
PCC WING WALL	M20
PARAPET WALL	M-30
PCC CURTAIN WALL	M-20
- THE REINFORCING STEEL SHALL BE CORROSION RESISTANT TMT HYSD BARS (GRADE DESIGNATION FE-500 CONFORMING TO IS:1786-1985)
- PROPOSED CULVERT IS DESIGNED FOR ONE LANE OF IRC CLASS 70R TRACKED & 40 BOGIE LOAD WHICHEVER IS GOVERNING.
- BACKFILLING BEHIND BOX SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC 78-2014 HAVING PROPERTIES C=0, $\phi > 30^\circ$ & YD=20 KN/M²
- 65MM THK WEARING COURSE COMPRISING OF 40MM THK BITUMINOUS CONCRETE & 25MM THK ASPHALTIC SHALL BE PROVIDED
- NET SAFE BEARING CAPACITY AT FDN LEVEL ASSUMED 9.1T/M²
- GROUND IMPROVEMENT TO BE DONE WHERE BASE PRESSURE EXCEEDS ALLOWABLE SBC
- THE VARIOUS LEVELS (FRL, INVERT LEVELS) & SUPER ELEVATION SHOWN IN DRAWINGS SHALL BE VERIFIED PRIOR TO EXECUTION AT SITE, AND IF ANY DISCREPANCY FOUND SHALL BE INFORM TO ENGINEER
- SOFT AND LOOSE PATCHES IN THE BEARING AREA ARE TO BE REPLACED BY COMPACTED GRANULAR FILLS WITH LAYERS NOT EXCEEDING 300mm.
- FOR REINFORCEMENT DETAILS REFER DRG NO. 94-45-01
- FOR RETAINING WALL, WING WALL, PARAPET WALL, CURTAIN WALL & GUARD STONE DETAILS REFER DRG NO. 94-46-01
- EXISTING WING WALL SHALL BE DISMANTLED AT WIDENING END BEFORE EXECUTION.

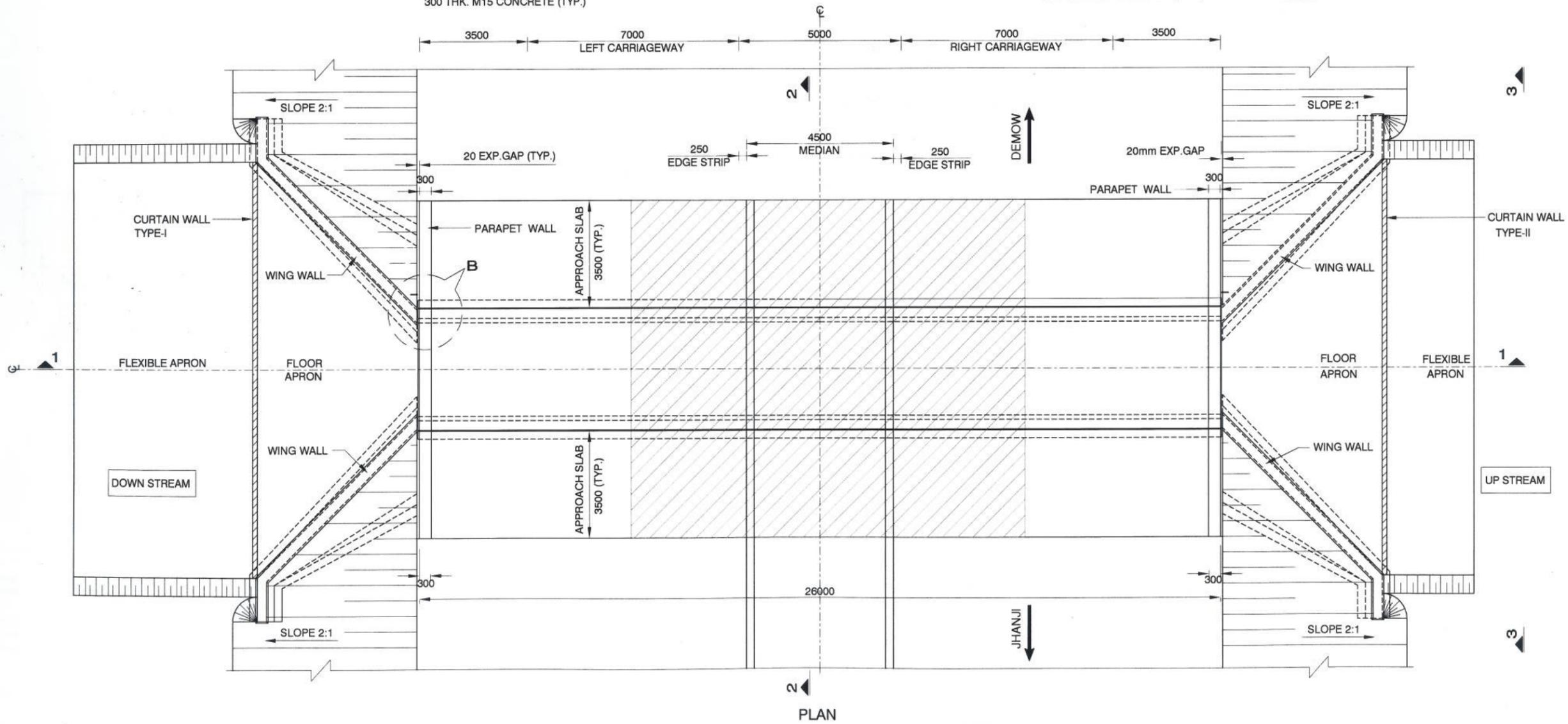
S.no	Existing Chainage	Design Chainage	Proposed		Details of widening				FRL at RME	FRL at LME	Invert level	Lowest bed Level	Span "a" (m)	clear height "b1" (m)	clear height "b2" (m)	clear height "b3" (m)	clear height "b4" (m)	top slab 'd' thickness (m)	Bottom slab 'e' thickness (m)	Side wall 'r' thickness (m)	Design Base Pressure (kN/m ²)	Direction of flow	
			Type of Structure Proposed	No. of Spans	No. of span x span arrangement	Existing FRL	Existing width (E)	LHS Widening (A)															RHS Widening (B)
1	527.19	526.774	BOX	1	1x1.8x1.94	93.386	11.314	6.26	8.5	93.386	93.386	91.252	91.552	1.8	1.94	1.844	1.72	1.5	0.275	0.400	0.300	91	Right to Left

DESIGN DIRECTOR
 Corсан Construction S.A.

APPROVED: RBS CHECKED: BKS DESIGNED: KDS DRAWN:	CONSULTANT PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070 AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centre,	CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road, Guwahati - 24 CONTRACTOR: CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	PROOF CHECKING CONSULTANT: Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002 SAFETY CONSULTANT: L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE TITLE: GENERAL ARRANGEMENT DRAWING SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-526.774) DRAWING NO. 94-43-01	SHEETSIZE: A3 SHEET: 02 DATE: March 2016 SCALE: NTS REV: R1
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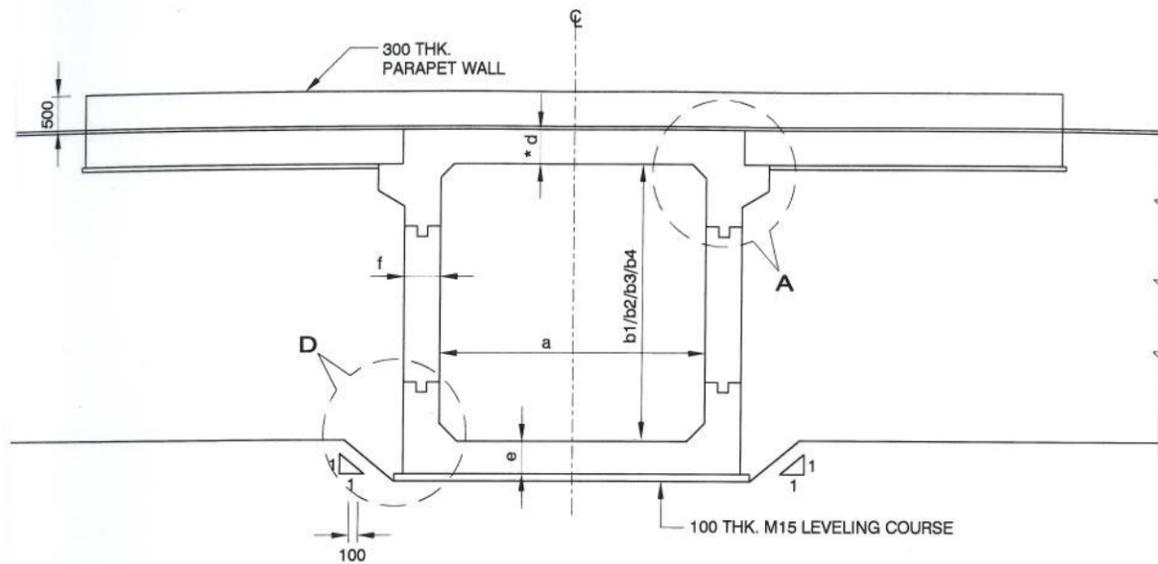
SECTION 1-1



PLAN

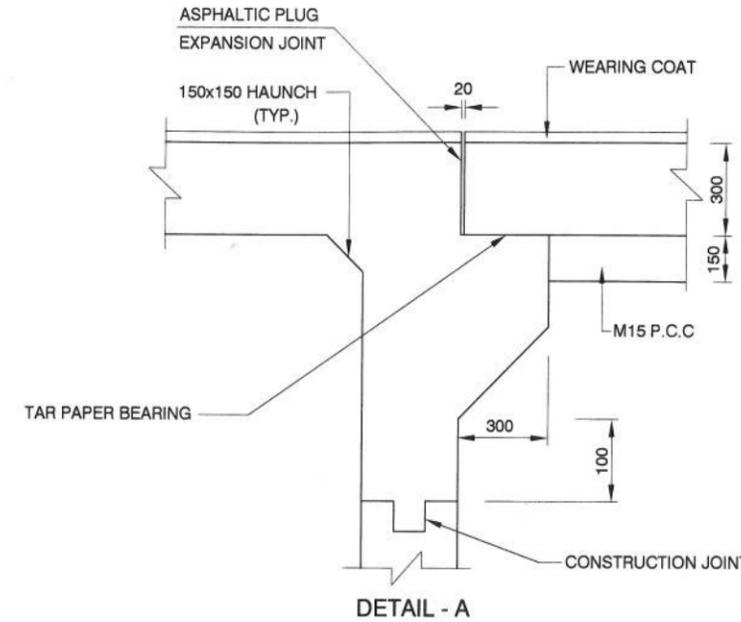
DESIGN DIRECTOR
 Corsan Corviam Construction S.A.

APPROVED:	RBS	CONSULTANT	 PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT:	NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road, Gurgaon - 24	PROOF CHECKING CONSULTANT:	Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT:	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE		
CHECKED:	BKS	AUTHORITY ENGINEER :	 VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CONTRACTOR:	 CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	SAFETY CONSULTANT:	 L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	TITLE:	GENERAL ARRANGEMENT DRAWING SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-532.078)		
DESIGNED:	KDS							DRAWING NO.	94-44-01		
DRAWN:	AY							SHEETSIZE:	SHEET:	DATE:	
DESCRIPTION OF REVISIONS								SCALE:	NTS	REV.	0

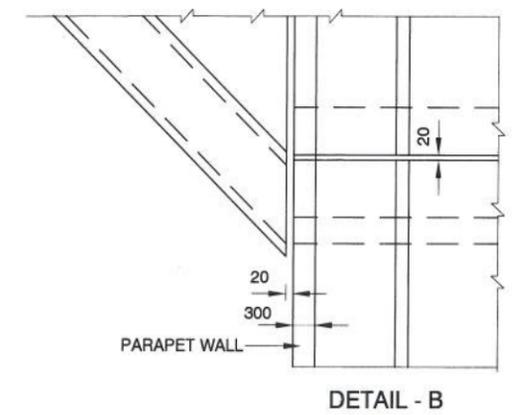


SECTION 2-2

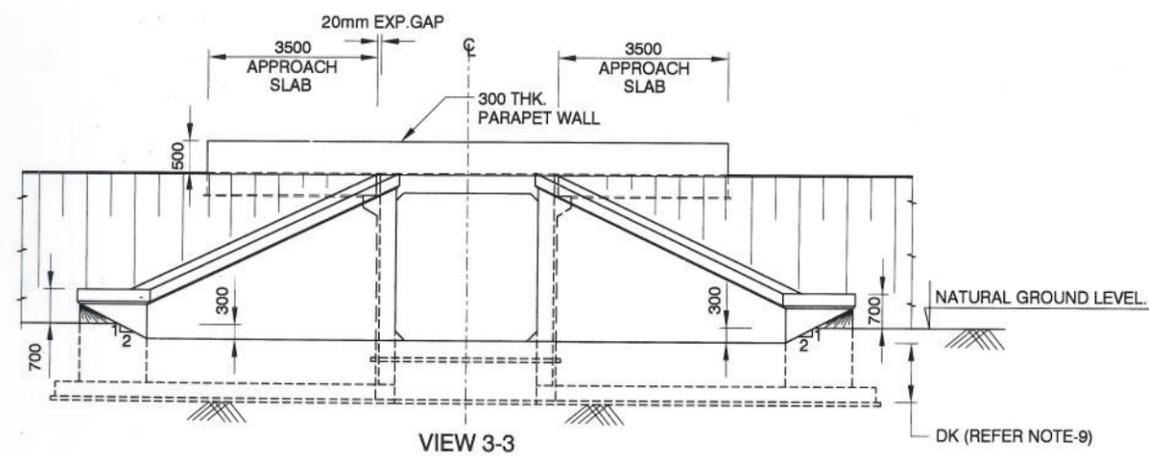
*d DECK SLAB THICKNESS AT INNER EDGE OF KERB AS SHOWN IN SECTION 1-1



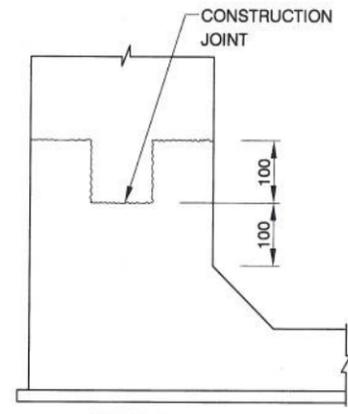
DETAIL - A



DETAIL - B



VIEW 3-3



DETAIL - D

NOTES:

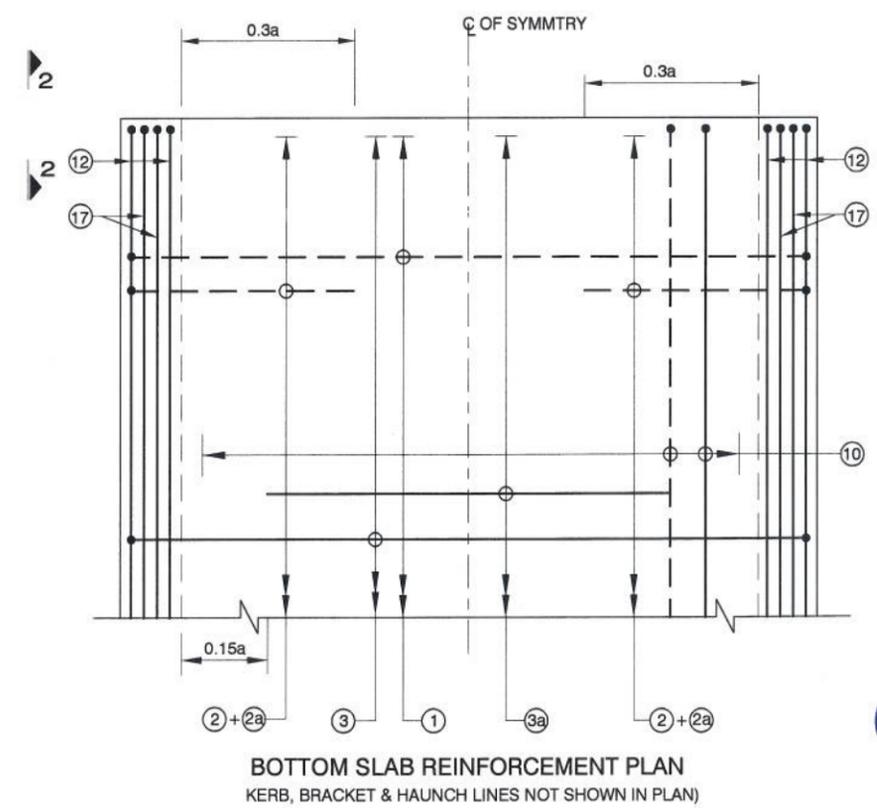
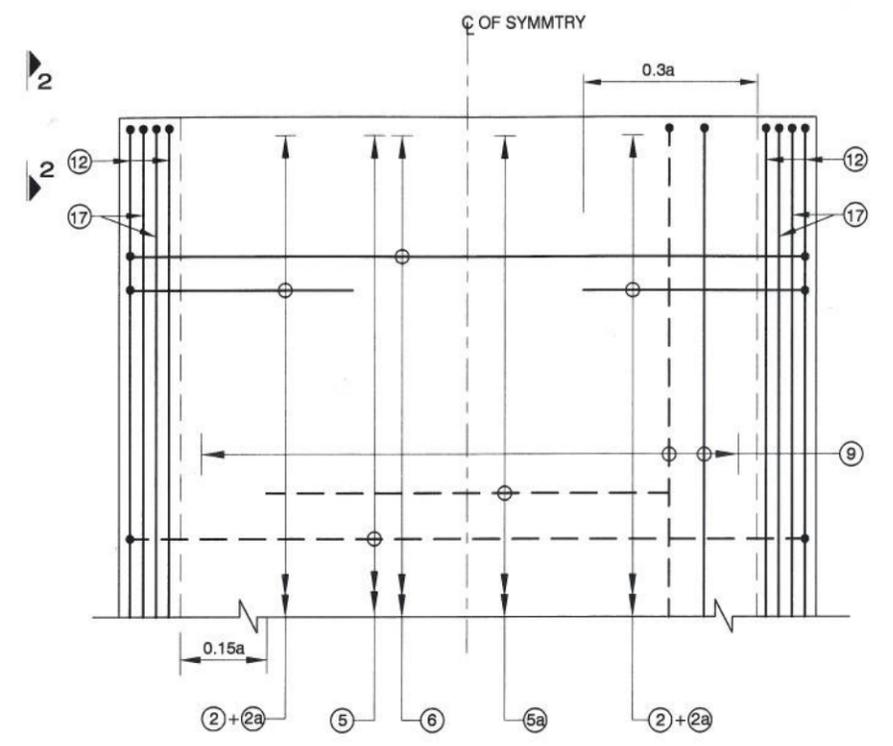
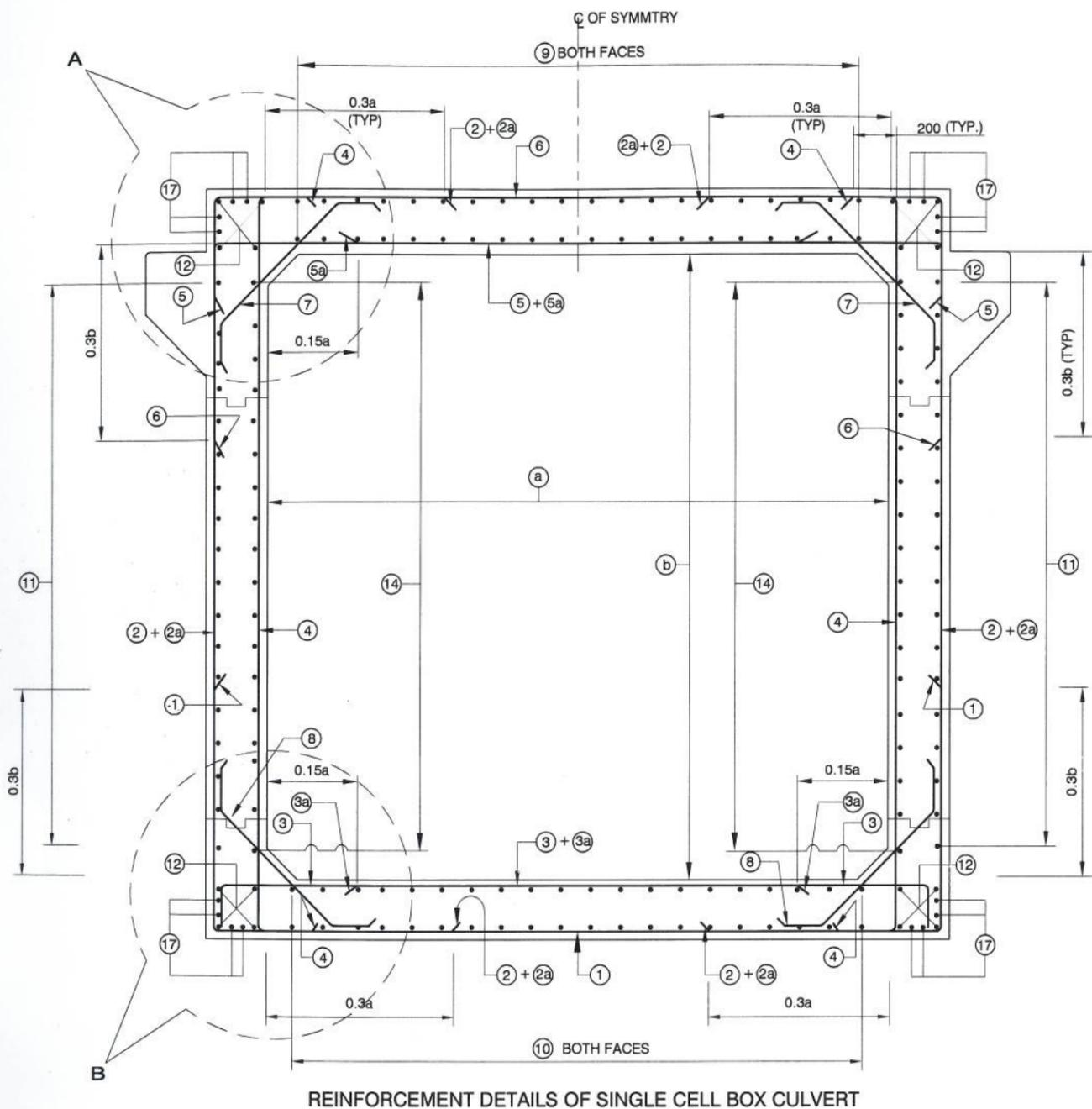
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RCC BOX	M-30
APPROACH SLAB	M-30
LEVELLING COARSE	M15
PCC WING WALL	M20
PARAPET WALL	M-30
PCC CURTAIN WALL	M-20
- THE REINFORCING STEEL SHALL BE CORROSION RESISTANT TMT HYSD BARS (GRADE DESIGNATION FE-500 CONFORMING TO IS:1786-1985)
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- BACKFILLING BEHIND BOX SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX 6 OF IRC 78-2014 HAVING PROPERTIES $C=0$, $\phi > 30^\circ$ & $YD=20$ KN/M²
- 65MM THK WEARING COURSE COMPRISING OF 40MM THK BITUMINOUS CONCRETE & 25MM THK ASPHALTIC SHALL BE PROVIDED
- NET SAFE BEARING CAPACITY AT FDN LEVEL ASSUMED 11.2T/M²
- GROUND IMPROVEMENT TO BE DONE WHERE BASE PRESSURE EXCEEDS ALLOWABLE SBC
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- FOR REINFORCEMENT DETAILS REFER DRG NO. 94-45-01
- FOR RETAINING WALL/WING WALL, PARAPET WALL, CURTAIN WALL & GUARD STONE DETAILS REFER DRG NO. 94-46-01
- EXISTING WING WALL SHALL BE DISMANTLED AT WIDENING END BEFORE EXECUTION.

S.no	Existing Chainage	Design Chainage	Proposed		Details of widening				FRL at RME	FRL at LME	Invert level	Lowest Bed Level	Span "a" (m)	clear height "b1" (m)	clear height "b2" (m)	clear height "b3" (m)	clear height "b4" (m)	top slab 'd' thickness (m)	Bottom slab 'e' thickness (m)	Side wall 'f' thickness (m)	Design Base Pressure (kN/m ²)	Direction of flow	
			Type of Structure Proposed	No. of Spans	No. of span x span arrangement	Existing FRL	Existing width (E)	LHS Widening (A)															RHS Widening (B)
1	532.486	532.078	BOX	1	1x2x3.825	93.593	11.20	14.359	0.441	93.593	93.593	90.14	90.44	2	3.825	3.093	2.52	2.5	0.300	0.450	0.375	112	Right to Left

DESIGN DIRECTOR
 Corsan Construction S.A.

APPROVED: RBS CHECKED: BKS DESIGNED: KDS DRAWN: AY	CONSULTANT: PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24	PROOF CHECKING CONSULTANT: Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE
AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India		CONTRACTOR: CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001		SAFETY CONSULTANT: L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070
TITLE: GENERAL ARRANGEMENT DRAWING SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT (CH.-532.078)		SHEETSIZE: A3 SHEET: 02 DATE: March 2016	DRAWING NO.: 94-44-01 SCALE: NTS REV: R1	

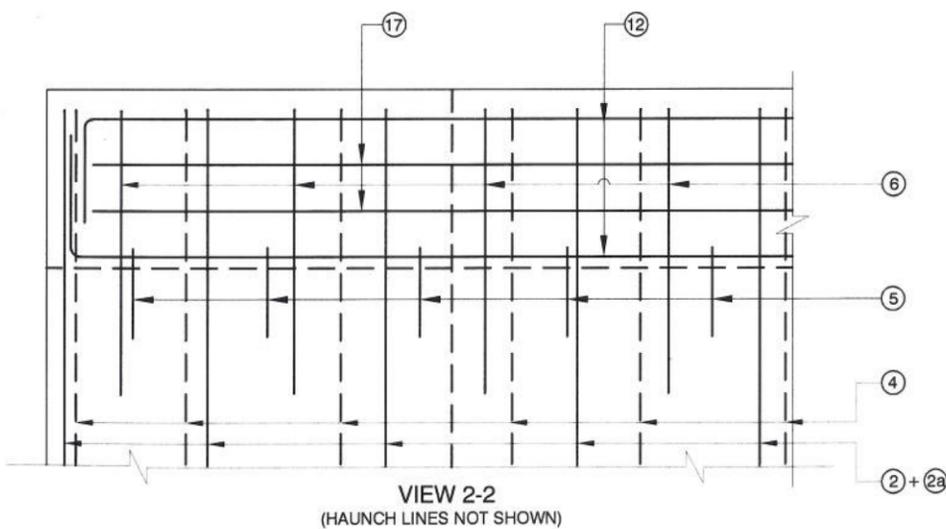
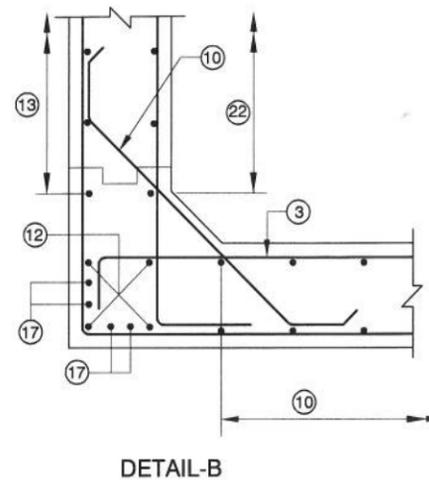
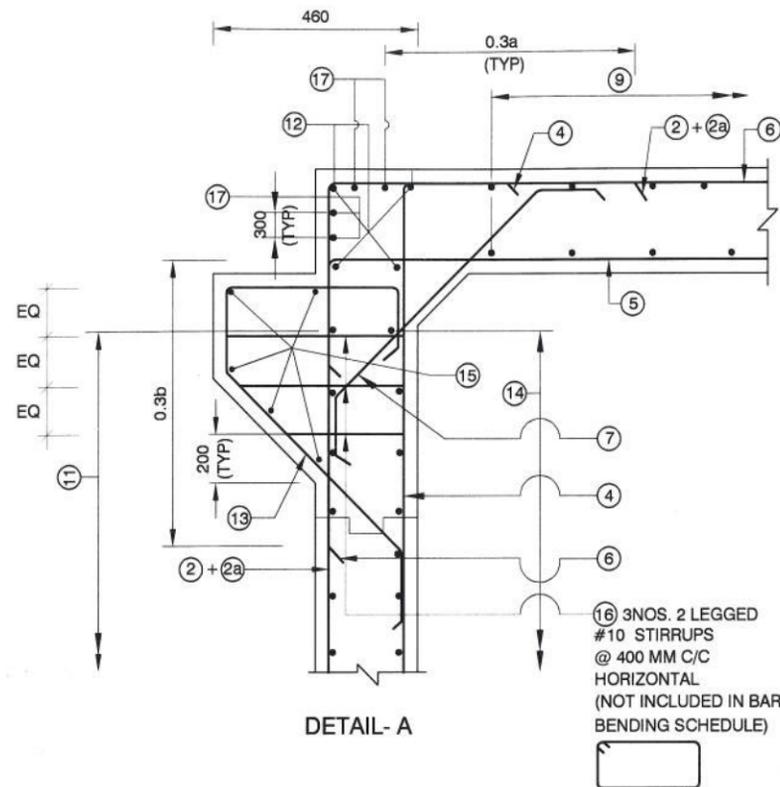


LEGEND

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

Pleg
DESIGN DIRECTOR
Corsan Corviam Construccion S.A.

APPROVED:	CONSULTANT	CLIENT:	PROOF CHECKING CONSULTANT:	PROJECT:
RBS	 PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kuni New Delhi (India) 110070	 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24	 Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE
CHECKED:				
BKS				REINFORCEMENT SINGLE CELL BOX CULVERT
DESIGNED:				SHEETSIZE: SHEET: DATE:



DESIGN DIRECTOR
 Corsan Corviam Construccion S.A.

NOTES:

- ALL DIMENSIONS ARE IN mm AND LEVELS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS SHALL NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL TO BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
- ALL REINFORCING STEEL SHALL BE HIGH YIELD STRENGTH DEFORMED (CRS-TMT) BARS (GRADE - Fe 500). CONFORMING IS :1786.
- CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE FOLLOWS.
 - EARTH FACE - 75 mm
 - FOR OTHERS - 40 mm
- MINIMUM ANCHORAGE LENGTH SHALL BE 42D .WHERE 'D' IS THE DIAMETER OF BAR.
- LAP LENGTH SHALL BE PROVIDED AS PER BELOW - (FOR GRADE OF CONC. M30 AND ABOVE)

LAP LENGTH	% LAP AT ANY SECTION IS
76 d	BETWEEN 40 - 50%
68 d	BETWEEN 25 - 40%
60 d	- 25%

(WHERE 'd' IS THE DIAMETER OF THE BAR)

- FOR UNFAVORABLE BOND CONDITIONS LAP LENGTH SHALL BE MULTIPLIED 1.4 AS PER IRC: 21-2000
- ALL LAP SHALL BE SUITABLY STAGGERED AND MINIMUM DISTANCE BETWEEN THE ADJACENT LAPS SHALL BE 1.3 TIMES OF LAP LENGTH.
- PARAPET REINFORCEMENT SHALL BE TIED TO SLAB REINFORCEMENT & SHALL BE CAST MONOLITHICALLY. FOR PARAPET REINFORCEMENT REFER DRG NO. 94-46-01

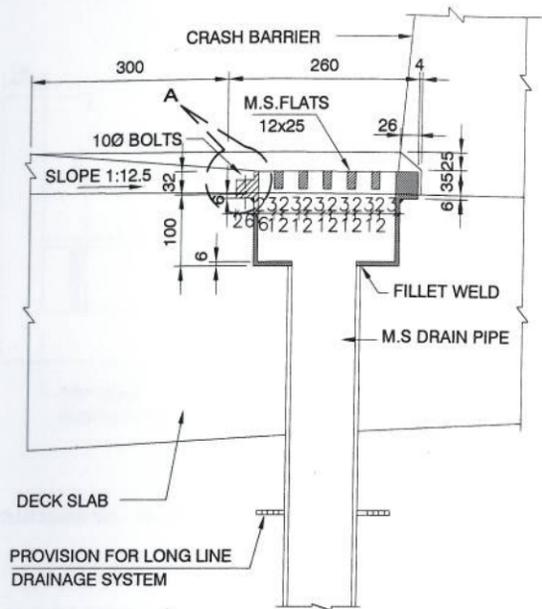
APPROVED: RBS	CONSULTANT	CLIENT:	PROOF CHECKING CONSULTANT:	PROJECT:	SHEETSIZE: SHEET: DATE: A3 02 March 2016
	CHECKED: BKS	PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office - House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24	Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	
DESIGNED: KDS	AUTHORITY ENGINEER:	CONTRACTOR:	SAFETY CONSULTANT:	TITLE:	DRAWING NO. 94-45-01
DRAWN: AY	VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	REINFORCEMENT SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	
DESCRIPTION OF REVISIONS					SCALE: NTS REV. 0

SCHEDULE OF REINFORCEMENT

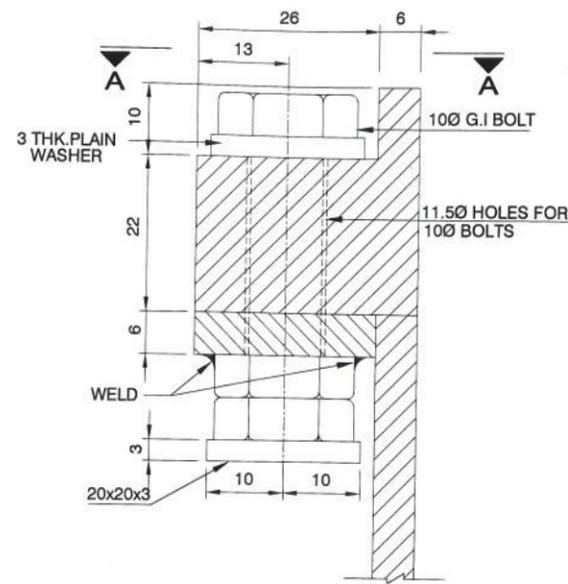
DESIGN CHAINAGE		520.360	523.810	524.450	525.582	526.774	529.535	531.494	532.078
OPENING		2.5 x 2	3.0 x 3.5	3 x 4	4 x 3.5	1.8 x 2	6 x 3.5	6 x 4	2.0 x 4
BAR MARKS	BARS SHAPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6	TYPE 7	TYPE 8
①		#10 s200	#12 s200	#12 s200	#10 s200				
②		#12 s200	#16 s200	#16 s200	#16 s200	#12 s200	#16 s200	#16 s200	#16 s200
②a		#12 s200	#12 s200	#12 s200	#12 s200	#10 s200	#12 s200	#16 s200	#12 s200
③		#12 s200	#12 s200	#12 s200	#16 s200	#12 s200	#16 s200	#16 s200	#12 s200
③a		#10 s200	#10 s200	#12 s200	#10 s200	N.A.	#16 s200	#16 s200	N.A.
④		#10 s200	#12 s200	#12 s200	#10 s200	#10 s200	#12 s200	#12 s200	#12 s200
⑤		#12 s200	#12 s200	#12 s200	#16 s200	#12 s200	#16 s200	#16 s200	#12 s200
⑤a		#10 s200	#10 s200	#10 s200	#12 s200	N.A.	#12 s200	#12 s200	N.A.
⑥		#12 s200	#10 s200	#12 s200	#12 s200	#10 s200	#12 s200	#12 s200	#12 s200
⑦		#10 s200							
⑧		#10 s200							
⑨		#10 s200	#10 s200	#10 s200	#10 s200	#10 s250	#10 s200	#10 s200	#10 s200
⑩		#10 s200	#10 s175	#10 s150	#10 s175	#10 s250	#10 s150	#10 s150	#10 s200
⑪		#10 s200	#10 s200	#10 s200	#10 s200	#10 s250	#10 s175	#10 s175	#10 s200
⑫		4 X 4 - #10							
⑬		#12 s200							
⑭		#10 s200	#10 s200	#10 s200	#10 s200	#10 s250	#10 s175	#10 s175	#10 s200
⑮		2 x 5 - #12							
⑯		#10 s400 IN 3 LAYERS HORIZONTAL							
⑰		2 x 4 - #10	2 x 4 - #10	2 x 4 - #10	4 x 4 - #10	2 x 4 - #10	4 x 4 - #10	4 x 4 - #10	2 x 4 - #10

DESIGN DIRECTOR
 Corsan Corviam Construccion S.A.

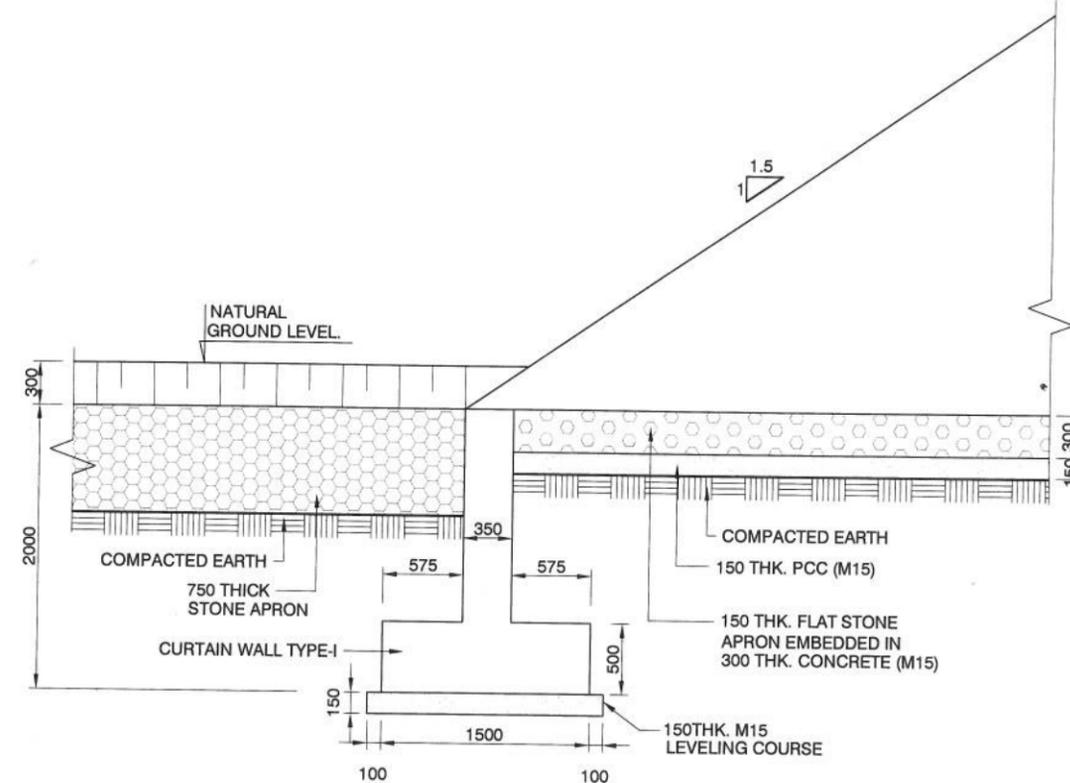
APPROVED:	RBS	CONSULTANT	 PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT:	NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road, Gurgaon - 24	PROOF CHECKING CONSULTANT:	 Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT:	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE						
CHECKED:	BKS	AUTHORITY ENGINEER:	 VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CONTRACTOR:	 CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	SAFETY CONSULTANT:	 L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	TITLE:	REINFORCEMENT SINGLE CELL RCC BOX CULVERT FOR WIDENING OF BOX CULVERT	SHEETS SIZE:	A3	SHEET:	03	DATE:	March 2016
DESIGNED:	KDS							DRAWING NO.	94-45-01	SCALE:	NTS	REV.	0		
DRAWN:	AY														
DESCRIPTION OF REVISIONS															



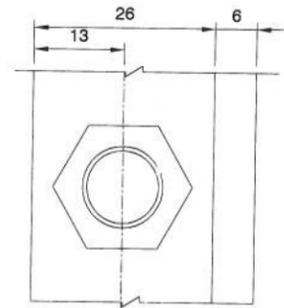
SECTION 1-1
SCALE 1:100



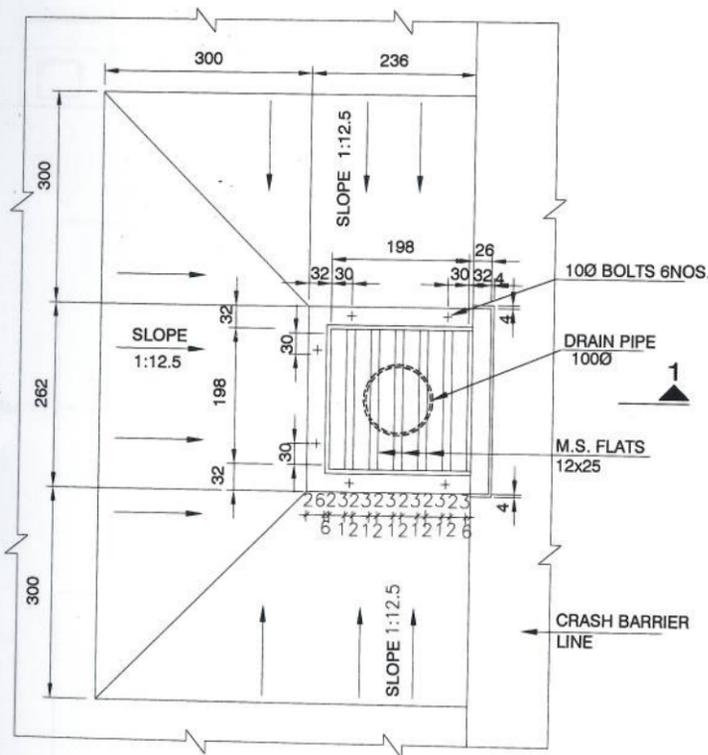
DETAIL-A
SCALE 1:100



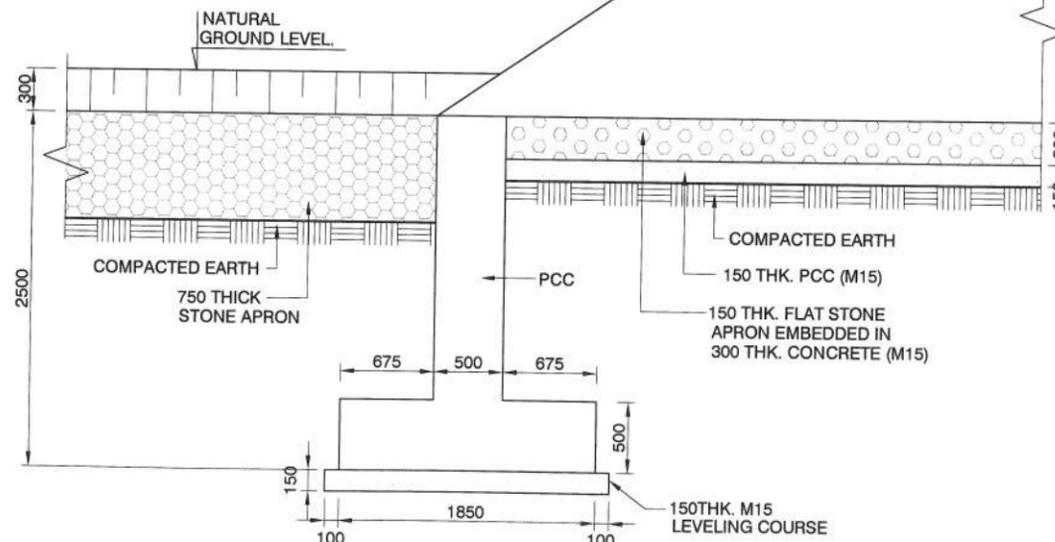
DETAIL OF CURTAIN WALL - II
(UP STREAM SIDE)
SCALE 1:50



VIEW - A A
SCALE 1:75



PLAN
DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT
SCALE 1:100



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

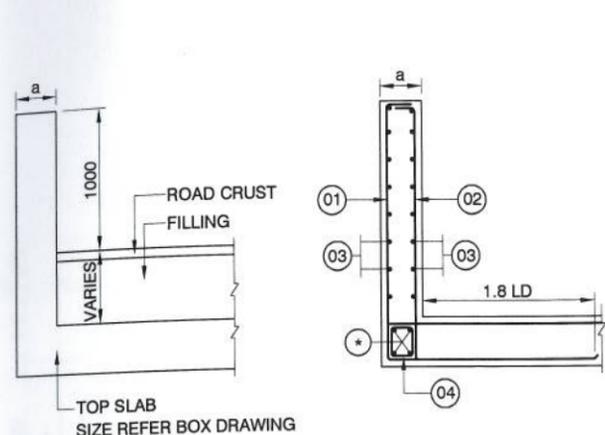
DESIGN DIRECTOR
Corsan Corviam Construccion S.A.

NOTES

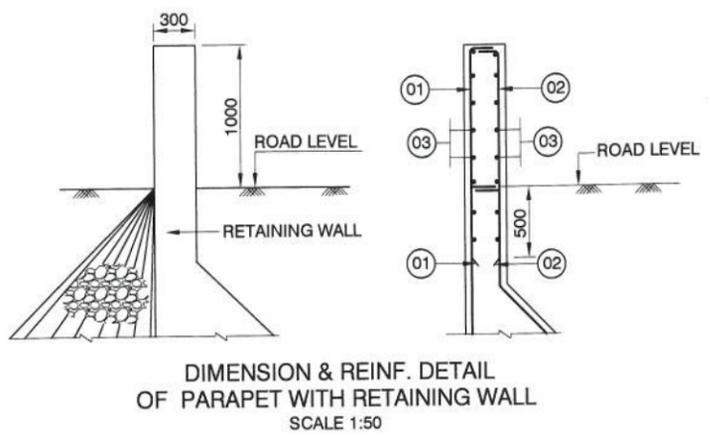
1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SPECIFIED.
2. $H' = H - 200\text{MM}$, WHERE H IS THE HEIGHT OF THE RELATED ABUTMENT.
3. THE DETAIL OF WING WALL OF 3.8M HEIGHT HAS BEEN SHOWN IN THE DRAWING FOR ILLUSTRATION ONLY.
4. 80 DIA WEEP HOLES SHALL BE PROVIDED IN STAGGERED PATTERN STARTING FROM 0.5M ABOVE GROUND LEVEL WITH 1.0m C/C SPACING IN A SLOPE OF 1:20 TOWARDS OUTER SIDE.
5. ALL EXPOSED SURFACE OF PCC SHALL BE PROVIDED WITH REINFORCEMENT # 8 - 200 C/C.

APPROVED:	RBS	CONSULTANT	PCI PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110/2 Sector - D6, Vasant Kunj New Delhi (India) 110070
CHECKED:	BKG	AUTHORITY ENGINEER:	VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, 9PTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India
DESIGNED:	AS	CLIENT:	NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office: House No.1, Panipath, Ambikagiri Nagar, Zoo Road, Guwahati - 24
DRAWN:	KDS	CONTRACTOR:	CORSAN CORVIAM CONSTRUCTION S.A.
DATE	DESCRIPTION OF REVISIONS	PROOF CHECKING CONSULTANT:	Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002
		SAFETY CONSULTANT:	L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070

PROJECT:	FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE		
TITLE:	MISCELLANEOUS DETAILS	SHEETSIZE:	A3
		SHEET:	01
		DATE:	March 2016
DRAWING NO.	04-16-01	SCALE:	AS SHOWN
		REV.	



DIMENSION & REINF. DETAIL OF PARAPET WITH BOX
 *(BAR MARK NO. - REFER REINFORCEMENT DRAWING OF BOX)
 SCALE 1:50



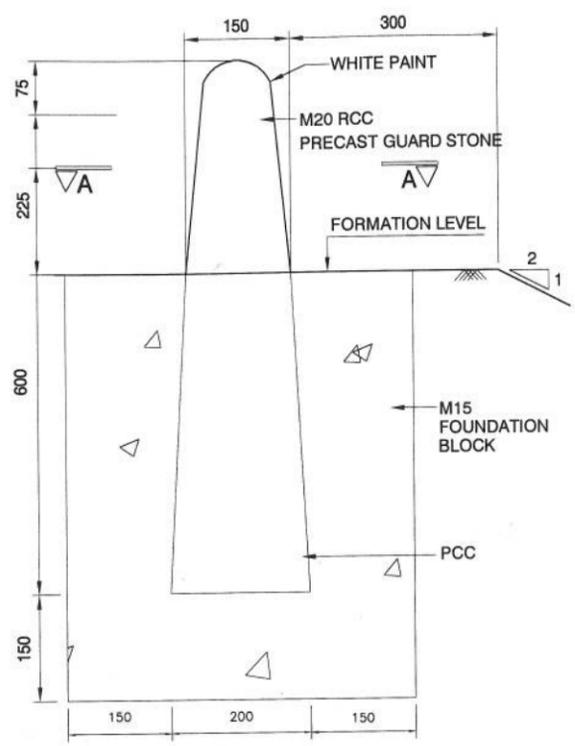
DIMENSION & REINF. DETAIL OF PARAPET WITH RETAINING WALL
 SCALE 1:50

REINFORCEMENT SCHEDULE FOR PARAPET WALL

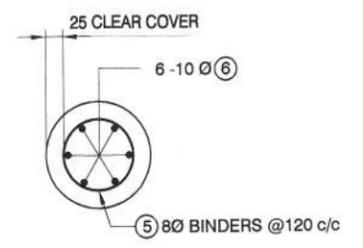
BAR MARK	SHAPE OF BARS	1.0m		1.5m		2.0m		2.5m	
		DIA #	NOS / SPACING	DIA #	NOS / SPACING	DIA #	NOS / SPACING	DIA #	NOS / SPACING
1		10	150 c/c	10	150 c/c	10	150 c/c	10	150 c/c
2		10	150 c/c	10	150 c/c	12	150 c/c	12	100 c/c
3		10	250 c/c	10	250 c/c	10	250 c/c	10	250 c/c
4		NOT IN USE		NOT IN USE		10	200 c/c	10	200 c/c

DIMENSION OF PARAPET WALL

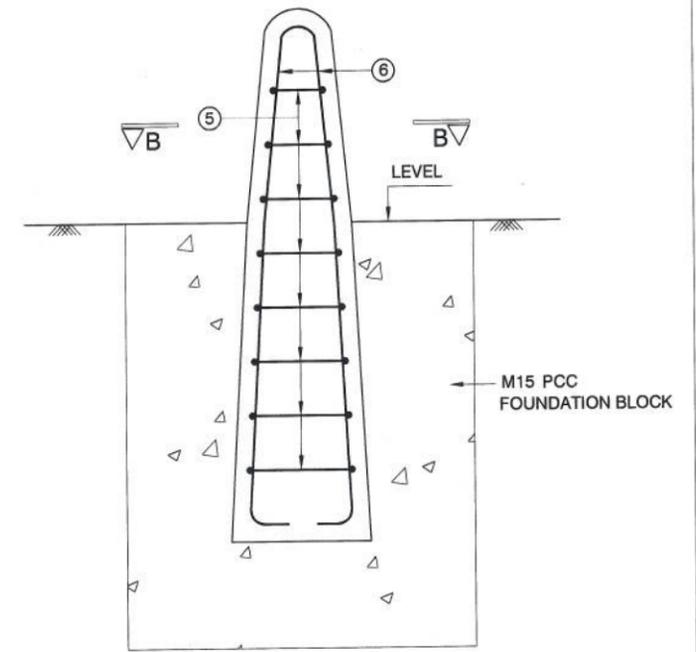
HEIGHT			
1.0m	1.5m	2.0m	2.5m
300	300	300	300



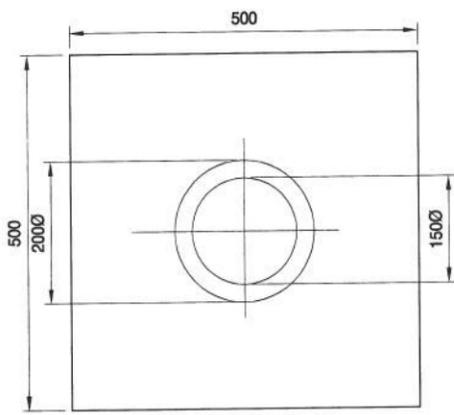
DETAIL OF PRECAST GUARD STONE @ 1.0 m c/c
 SCALE 1:10



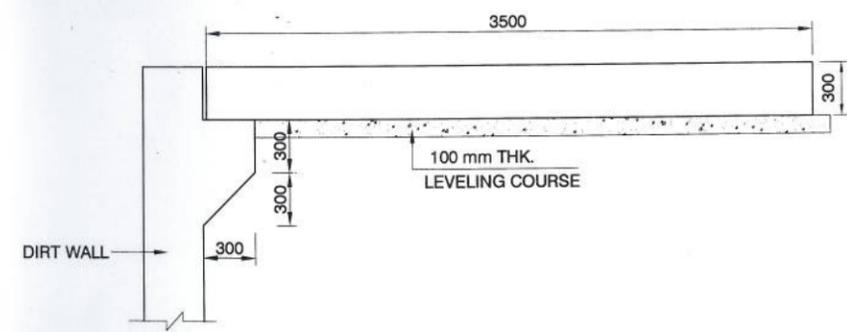
SECTION AT B-B
 SCALE 1:10



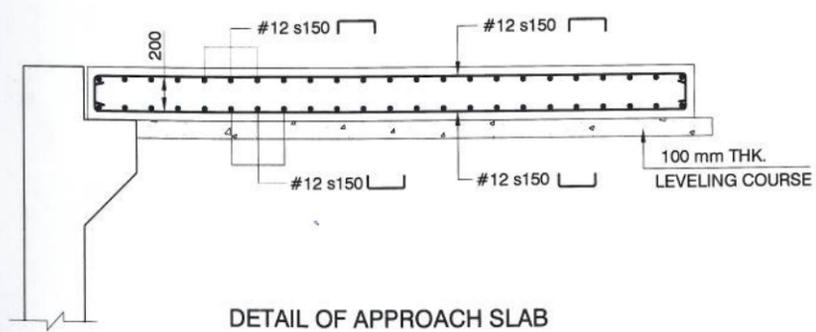
DETAIL OF PRECAST GUARD STONE @ 1.0 m c/c
 SCALE 1:10



SECTION AT A-A
 SCALE 1:10



DETAIL OF APPROACH SLAB
 SCALE 1:40



NOTES

- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- ALL REINFORCEMENT SHOWN IN THIS DRAWING ARE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING TO IS:1786 GRADE OF STEEL - 500 (T.M.T BARS.)
 PARAPET WALL M30.
 CURTAIN WALL PCC M20.
 GUARD STONE FOR RCC M20.
- MINIMUM DEVELOPMENT LENGTH LD SHALL BE 42 TIMES DIA OF THE BAR. MINIMUM LAP LENGTH SHALL BE 18 TIMES LD. WHERE 'D' IS DIA OF BAR. NOT MORE THAN 50% BARS TO BE LAPPED AT ONE LOCATION.
- CLEAR COVER.
 WALL EARTH FACE 50MM
 WALL NON EARTH FACE 40MM
- ADEQUATE LINKS / SPACER BARS SHALL BE PROVIDED FOR PROPER POSITIONING OF REINFORCEMENT.

DESIGN DIRECTOR
 Corsan Corviam Construccion S.A.

APPROVED: RBS	CONSULTANT: PCI PROJECTS CONSULTING INDIA (P) LTD Engineers and Planners 6110 / 2 Sector - D6, Vasant Kunj New Delhi (India) 110070	CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. Ministry of Road Transport & Highways, Government of India Branch Office : House No.1, Panipath, Ambikagiri Nagar, Zoo Road , Guwahati - 24	PROOF CHECKING CONSULTANT: Gifford India Pvt Ltd. (Part of Ramboll) The Epitome, Building No 5, Tower 'B', Level - 17, DLF Cyber City Phase-III, Gurgaon, Haryana-122002	PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM DESIGN CH. KM 490+800 TO KM 534+800 IN THE STATE OF ASSAM UNDER EPC MODE
CHECKED: BKG	AUTHORITY ENGINEER: VOYANTS SOLUTIONS PVT LTD. 403, 4th Floor, BPTP Park Centra, Sector-30, NH-8, Gurgaon, Haryana - 122001, India	CONTRACTOR: CORSAN CORVIAM CONSTRUCTION S.A. 02nd Floor, Block Two, Vatika Business Park, Sector - 49, Sohna Road, Gurgaon, Haryana, India - 122001	SAFETY CONSULTANT: L. R. KADIYALI & ASSOCIATES RZ-44, Bhawani Kunj, Behind D-2 Vasant Kunj, New Delhi 110 070	TITLE: MISCELLANEOUS DETAILS
DESIGNED: AS				SHEETSIZE: SHEET: DATE: A3 02 March 2016
DRAWN: KDS				SCALE: REV. AS SHOWN 0
DATE	DESCRIPTION OF REVISIONS			DRAWING NO. 94-46-01

