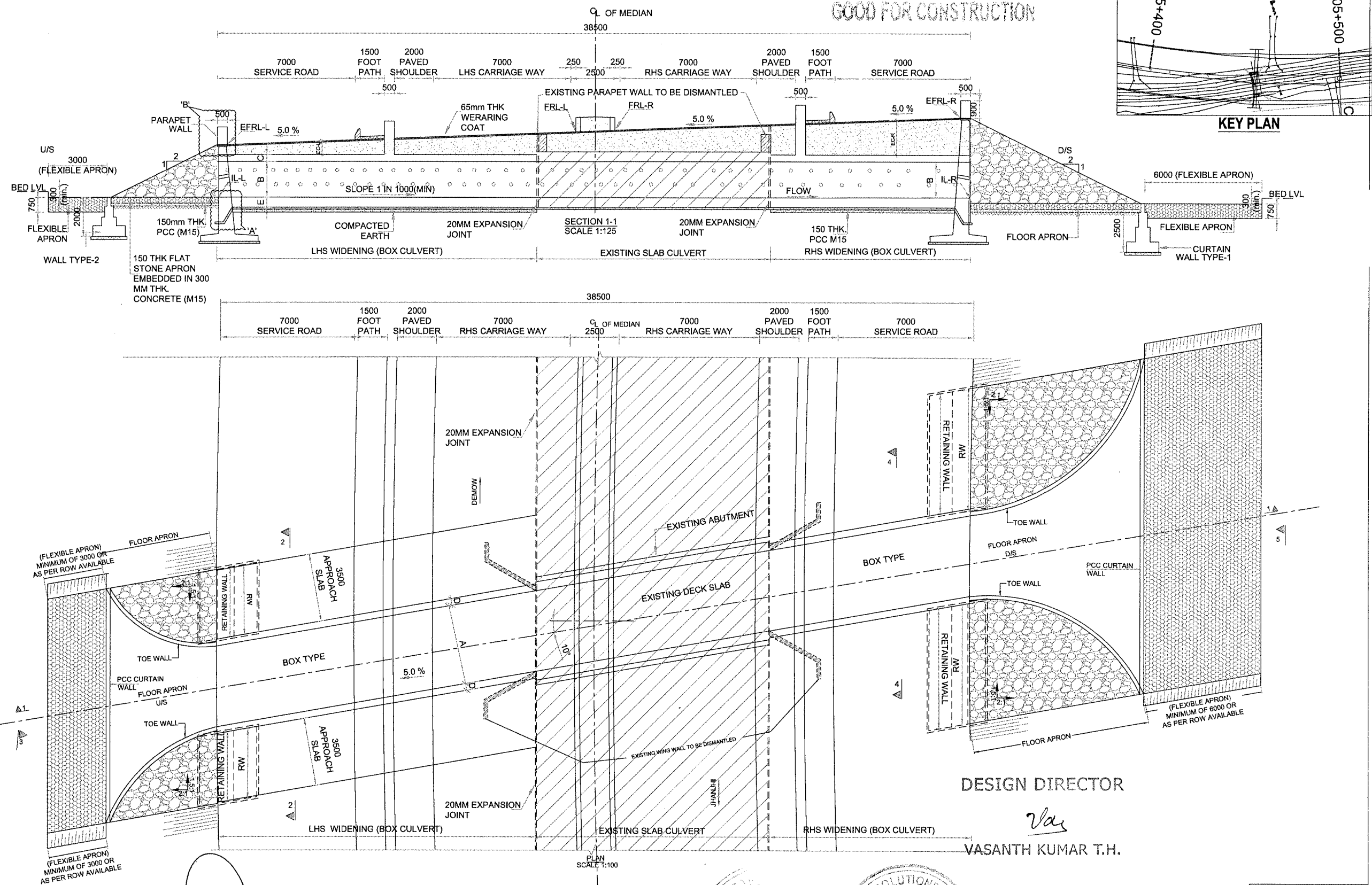


EXISTING CHAINAGE	DESIGN CHAINAGE	SPAN	FRL-L	FRL-R	EFRL-L	EFRL-R	EC-L	EC-R	IL-L	IL-R	CLEAR WIDTH (A)	CLEAR HEIGHT (B)	TOP SLAB THICKNESS (C)	WALL THICKNESS (D)	BOTTOM RAFT THICKNESS (E)	RW	FLOW DIRECTION	LHS WIDENING	RHS WIDENING
505+796	505+455	1x4.1x2.538	91.037	91.162	90.137	92.062	0.511	1.411	87.640	87.603	4.100	2.538	0.35	0.35	0.35	3.8	L-R	16.280	10.276

DETAILS OF BOX CULVERT:



PROJECT
FOUR LANING OF JHANJHI TO DEMOW
SECTION OF NH-37 FROM EXISTING CH. Km
491+050 TO Km 535+250 (DESIGN CH. Km
490+800 TO Km 534+800) IN THE STATE OF
ASSAM UNDER EPC MODE.

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
CANDUNKERLEY & CO. LTD.

DESIGN CONSULTANT
PROFESSIONAL CIVIL INFRA PVT. LTD.
1838, GROUND FLOOR,
SIR. M VISVESWARAYA LAYOUT,
NAGADEVANAHALLI,
BANGALORE - 560 056

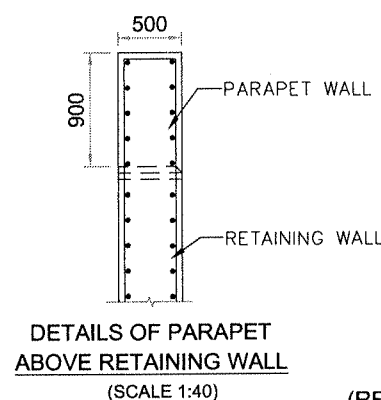
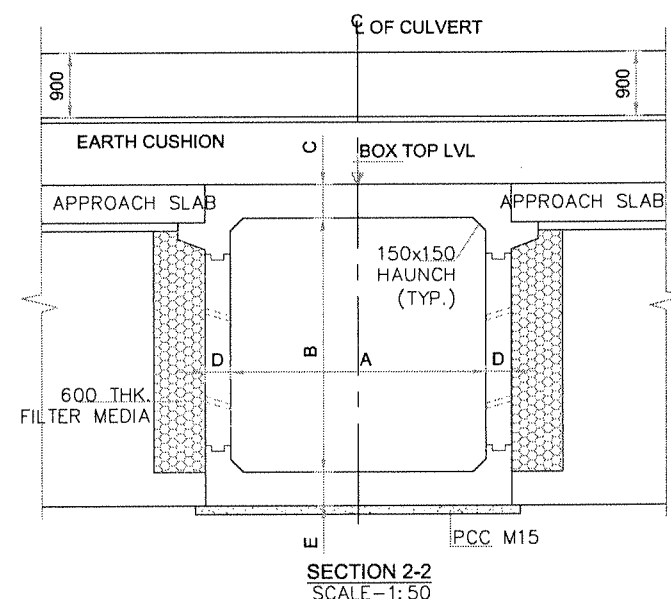
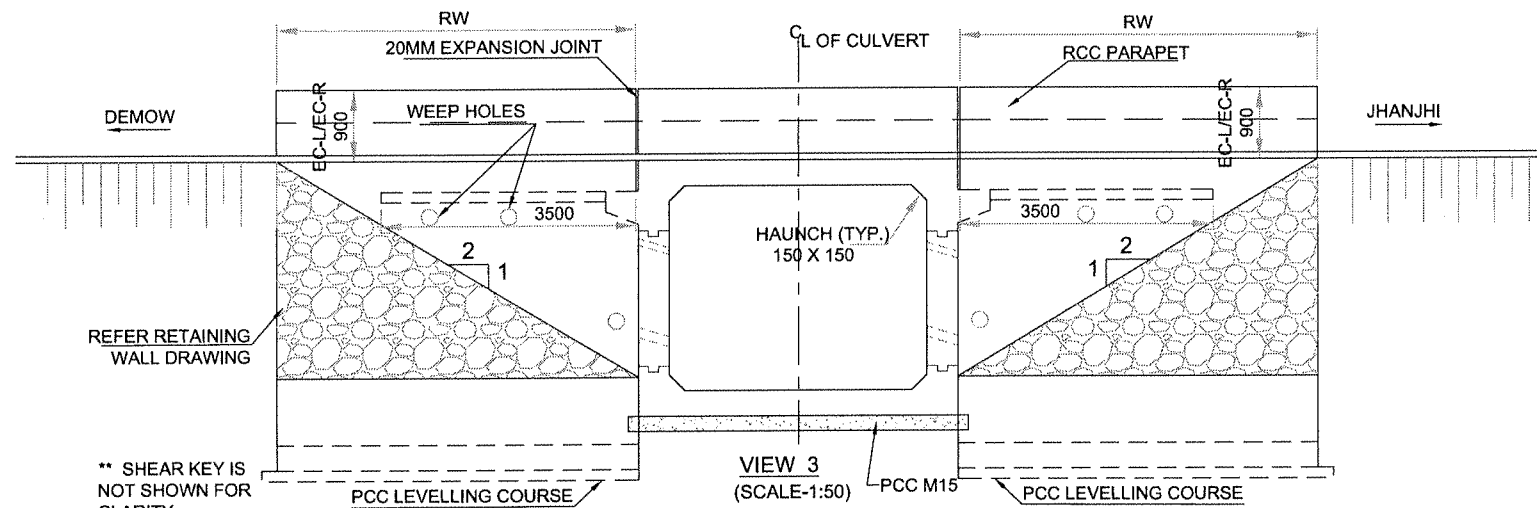
PROOF CONSULTANT
CHETAN INFRA TECH
CONSULTANTS (P) LTD.
7/11, 1st FLOOR,
13th MAIN, SRINAGAR
OPP. PES COLLEGE,
BANGALURU-560049

SAFETY CONSULTANT
SMART SAFETY SERVICES
P/3-5-6 & 7, HARI HARA NIVAS,
GUMMAKONDA COLONY,
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AUTHORITY ENGINEER
VOYANTS SOLUTIONS PVT. LTD.
403, 4th Floor, BPT Park
Central, Block A, Jai Vayu
Vihar, Sector 36,
Gurgaon, Haryana 122001

DESIGN DIRECTOR
NAME SHEET SIZE
A2
SCALE
AS SHOWN
SHEET No.
01 OF 03

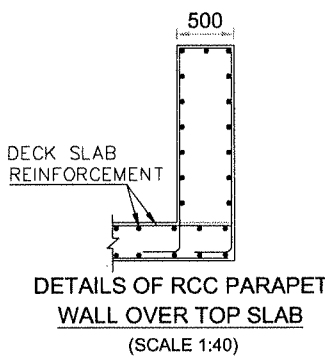
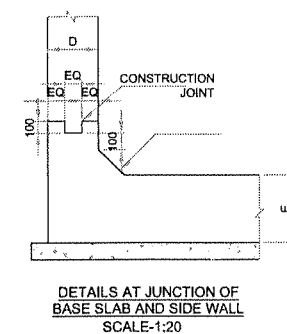
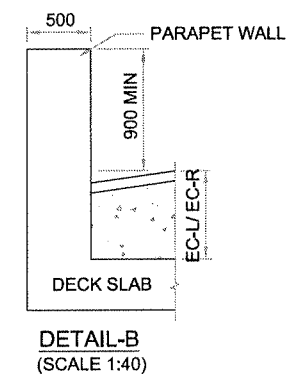
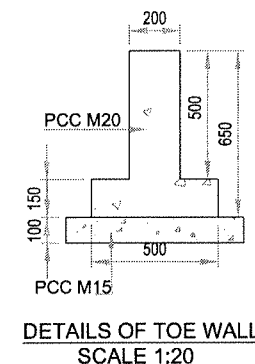
FOR APPROVAL
TITLE: GENERAL ARRANGEMENT
DRAWING OF BOX CULVERT
(WIDENING) AT DESIGN CH 505+455
(EXISTING CH 505+796)
DRAWING No.
PCIP/LNH-37/J-D/STR/BC/03
REV.
00



(REFER MISCELLANEOUS DRAWINGS)

- PROPOSED SEQUENCE OF CONSTRUCTION:-**
1. EARTH WORK EXCAVATION
 2. CONFIRMATION OF FOUNDING LEVEL AS MENTIONED IN GFC DRAWING
 3. LAYING OF PCC LEVELLING COURSE
 4. CONSTRUCTION OF BOTTOM SLAB WITH A PORTION OF WEB
 5. CONSTRUCTION OF WEB
 6. CONSTRUCTION OF TOP SLAB WITH A PORTION OF TOP WEB
 7. BACK FILLING BEHIND THE SIDE WALL
 8. LAYING OF WEARING COAT
 9. PLACING OF SIDE

GOOD FOR CONSTRUCTION



- LEGEND:**
- IL - INVERT LEVEL
 - EC - EARTH CUSHION
 - FRL - FINISHED ROAD LEVEL
 - EFRL - FINISHED ROAD LEVEL AT EDGE
 - A - CLEAR WIDTH OF BOX
 - B - CLEAR HEIGHT OF BOX
 - C - TOP SLAB THICKNESS
 - D - SIDE WALL THICKNESS
 - E - BOTTOM RAFT THICKNESS
 - RW - RETAINING WALL

- NOTES:**
01. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METERS, UNLESS MENTIONED OTHERWISE.
 02. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 03. CONCRETE MIX SHALL BE DESIGN MIX AND SHALL HAVE MAXIMUM 28 DAYS CHARACTERISTIC CUBE STRENGTH AS FOLLOWS:
 - (i) BOX.....M30
 - (ii) PARAPET.....M40
 - (iii) RETURN WALL.....M30
 - (iv) LEVELING COURSE.....M15
 - (v) CURTAIN WALL.....M20
 - (vi) TOE WALL.....M20
 - (vii) GUARD STONE.....M20
 04. GRADE OF UNTENSIONED STEEL SHALL BE Fe 500D, CONFORMING TO IS: 1786.
 05. 600mm FILTER MEDIA SHALL BE PROVIDED BEHIND RCC BOX AND RETURN WALL.
 06. THE BACK FILL MATERIAL BEHIND RCC BOX / RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES $\phi 30^\circ$, $\gamma=2.0$ T/Cum.
 07. SEISMIC ZONE - V.
 08. SAFE BEARING CAPACITY AT FOUNDING LEVEL IS 12m^2 . THE SAME SHALL BE VERIFIED AT SITE BEFORE STARTING OF WORK.
 09. FLOW DIRECTION SHOWN IN THE PLAN IS INDICATIVE ONLY, BED PROTECTION FOR UPSTREAM AND DOWN STREAM SHALL BE BASED ON THE FLOW DIRECTION THE SITE.
 10. FLEXIBLE APRON SHALL BE PROVIDED BASED ON SITE CONDITION & SHALL BE DECIDED BY ENGINEER-IN-CHARGE WHEREVER ROCK IS AVAILABLE AT TOP LEVEL FLEXIBLE APRON SHALL BE DISPENSED.
 11. BACK FILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDE OF BOX.
 12. DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT APPROVED HIGHWAY DRAWING FOR FRL, INVERT LEVEL, GL, CROSS SLOPE, LONGITUDINAL GRADIENT, ROAD WAY DETAILS ETC.
 13. PITCHING / REVETMENT ON SLOPES TO BE PROVIDED AS PER MORTH SPECIFICATION.
 14. IF BC/CLAYEY SOIL ENCOUNTERED AS FOUNDING SOIL, THEN 900mm. DEPTH OF SOIL BELOW FOUNDATION TO BE REMOVED & FILLED BY METAL / BOULDERS WITH SAND AS PER SP-13.
 15. THE CLEAR OPENING SIZE AND EARTH CUSHION MENTIONED SHALL BE VERIFIED WITH EXISTING STRUCTURE / APPROVED PPD AND IN CASE OF ANY DISCREPANCY, IT SHOULD BE IMMEDIATELY REPORTED FOR SUITABLE ACTION PRIOR TO COMMENCEMENT OF THE WORK.
 16. SOFT AND LOOSE PATCHES IN THE BEARING AREA SHALL BE REPLACED BY COMPACTED GRANULAR FILLS AND SHALL BE PROPERLY COMPACTED WITH LAYERS NOT EXCEEDING 200mm BEFORE LAYING PCC OVER IT.
 17. PCC LEVELLING COURSE:
 - BELOW BOX STRUCTURE & TOE WALL - 150 THK.
 - BELOW FLOOR APRON - 150 THK.
 18. STRUCTURE HAS BEEN DESIGNED FOR
 - i) ONE LANE, TWO LANE AND THREE LANES OF CLASS A
 - ii) ONE LANE OF CLASS 70R + ONE LANE OF CLASS A
 - iii) ONE LANE OF 40R BOGIE + ONE LANE OF CLASS A.
 19. CONSTRUCTION JOINTS:-
 - i) THE LOCATION AND PROVISION OF CONSTRUCTION JOINTS SHALL BE AS PER THE DRAWING AND THE SAME SHALL BE APPROVED BY THE ENGINEER-IN-CHARGE.
 - ii) THE CONCRETE SURFACE AT THE JOINT SHALL BE BRUSHED WITH A STIFF BRUSH AFTER CASTING WHILE THE CONCRETE IS STILL FRESH AND IT HAS ONLY SLIGHTLY HARDENED.
 - iii) BEFORE NEW CONCRETE IS POURED THE SURFACE OF OLD CONCRETE SHALL BE PREPARED AS UNDER:
 - (a) FOR HARDENED CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DEBRIS / LAITANCE & MADE ROUGH SO THAT $\frac{1}{4}$ OF THE SIZE OF THE AGGREGATE IS EXPOSED
 - (b) FOR PARTIALLY HARDENED CONCRETE, THE SURFACE SHALL BE TREATED BY WIRE BRUSH FOLLOWED BY AN AIR JET
 - (c) THE OLD SURFACE SHALL BE SOAKED WITH WATER WITHOUT LEAVING PUDDLES IMMEDIATELY, BEFORE STARTING CONCRETING TO PREVENT THE ABSORPTION OF WATER FROM NEW CONCRETE
 - iv) NEW JOINT SHALL BE THOROUGHLY COMPACTED IN THE REGION OF THE JOINT
 20. REFER TCS TYPE: TCS-2C

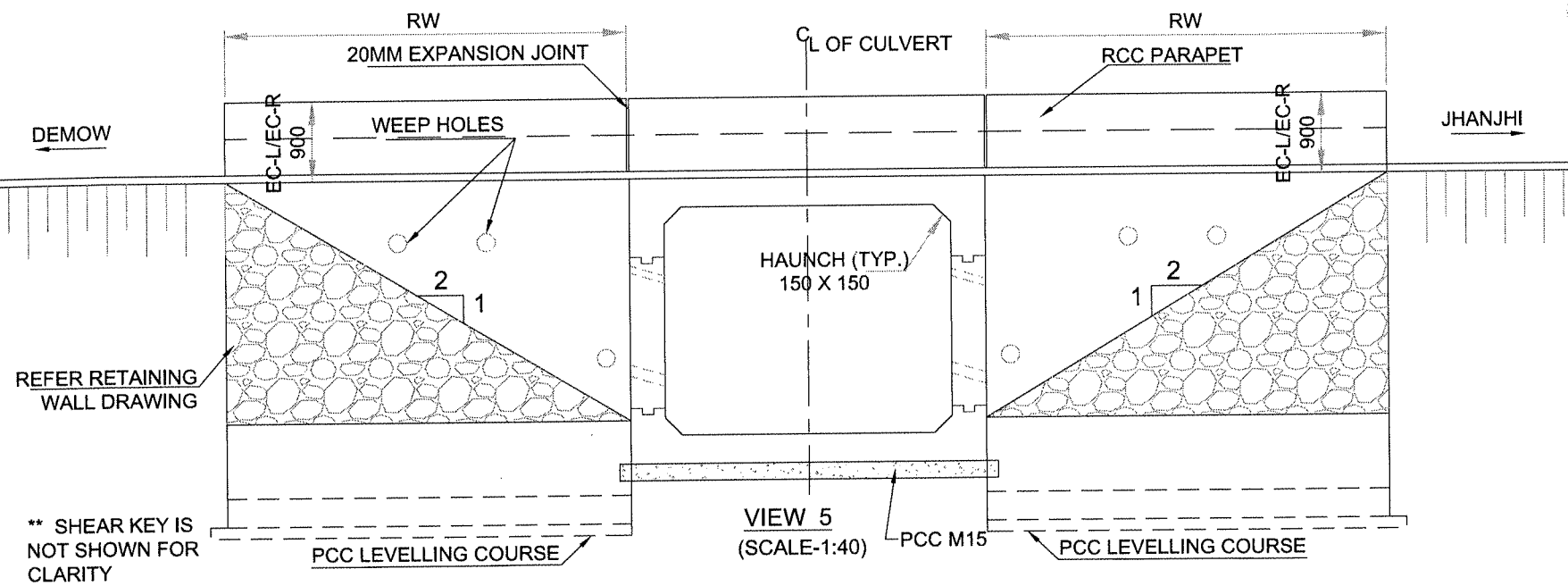
DESIGN DIRECTOR

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VASANTH KUMAR T.H.

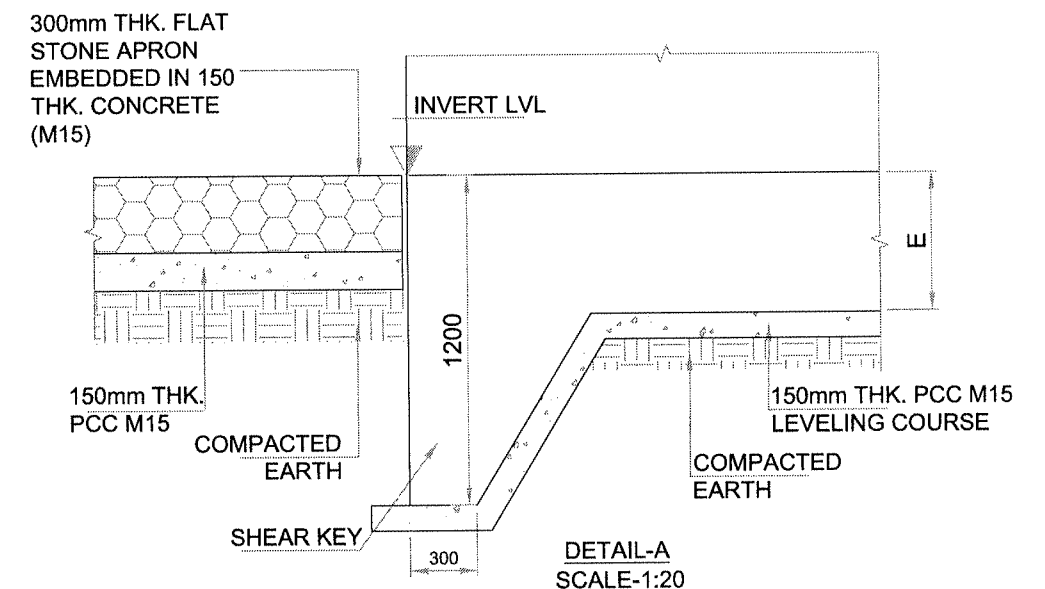
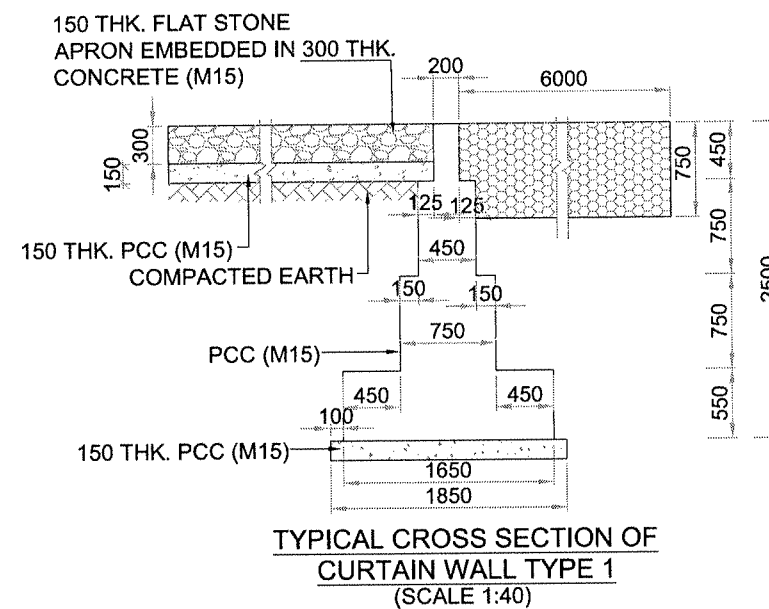
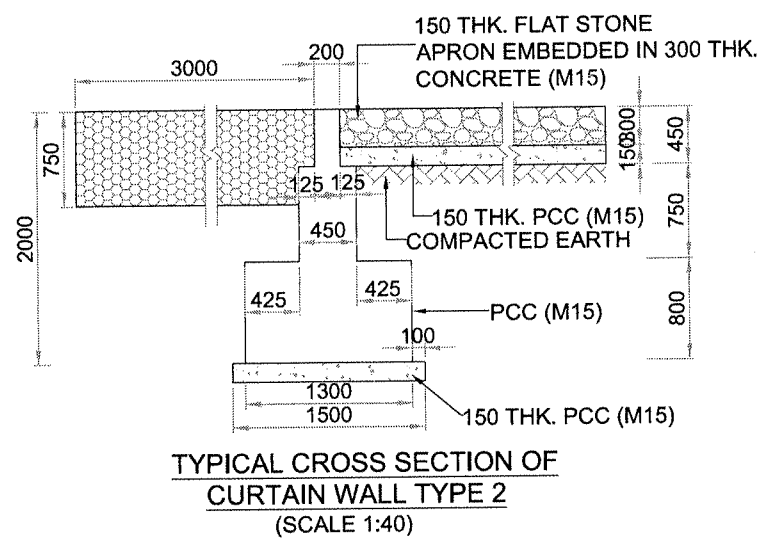
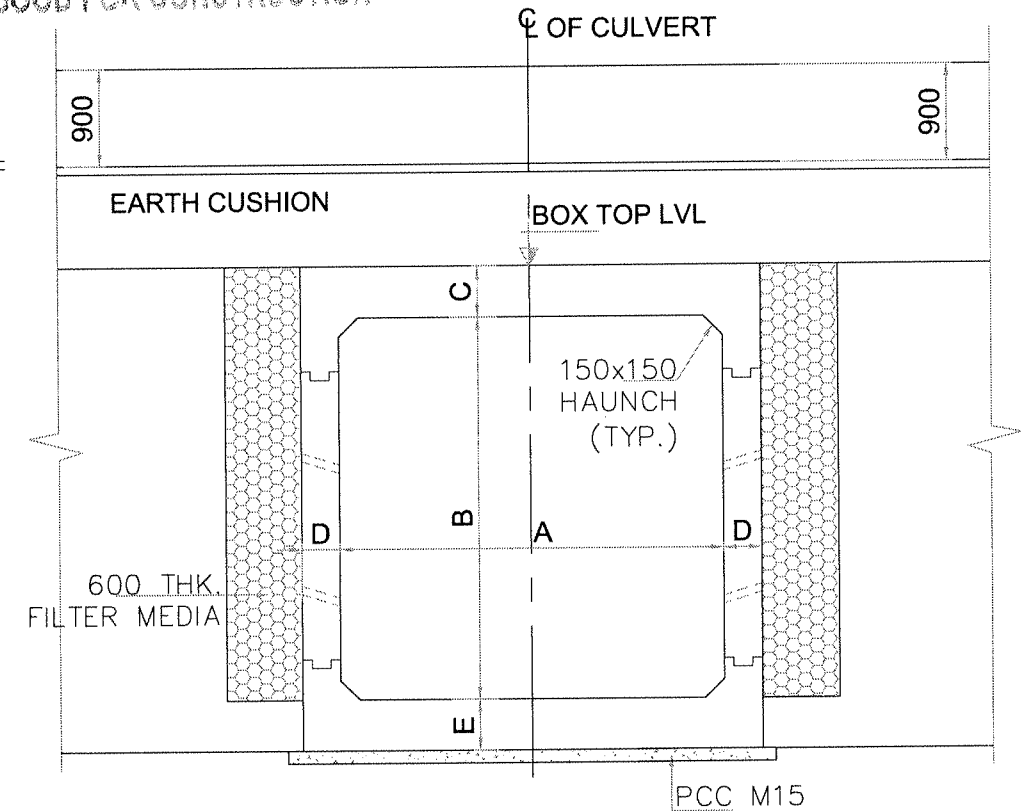
FOR APPROVAL

REFERENCE DRAWINGS:	
DETAILS OF RCC BOX	PCIPL/NH-37/JD/BC/STR/REIN/03
MISCELLANEOUS DETAILS	PCIPL/NH-37/JD/STR/RCC-MIS/01
DETAILS OF RETAINING WALL	PCIPL/NH-37/JD/STR/RW/01

PROJECT FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. Km 491+050 TO Km 535+250 (DESIGN CH. Km 490+800 TO Km 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.	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 GANDHIDUNKERLEKAR & CO. LTD.	DESIGN CONSULTANT PROFESSIONAL CIVIL ENGINEER PVT. LTD. # 1838, GROUND FLOOR, SIR. M VISVESWARAYA LAYOUT, NAGADEVANAHALLI, BANGALORE - 560 056	PROOF CONSULTANT CHEER INFRA TECH CONSULTANTS PVT. LTD., 7TH, 1ST FLOOR, 4TH MAIN, SRINIVASAR, OPP. PES COLLEGE, BANGALORE - 560050	SAFETY CONSULTANT SMART SAFETY SERVICES # 35-6 & 7, HARIHARA NIVAS GUMMAKONDA COLONY, HYDERABAD # 35-6 & 7, HARIHARA NIVAS GUMMAKONDA COLONY, HYDERABAD	AUTHORITY ENGINEER VAJANTH SOLUTIONS PVT. LTD. Date: 15/05/2024 403, 4th Floor, Bapuji Park Centra, Block A, Jal Vayu Vihar, Sector 36 Gurgaon - 122001	NAME	SHEET SIZE	TITLE: GENERAL ARRANGEMENT DRAWING OF BOX CULVERT (WIDENING) AT DESIGN CH 505+455 (EXISTING CH 505+796)	DRAWING No. PCIPL/NH-37/J-D/STR/BC/03	REV. 00
							DESIGN DIRECTOR	A2			
							PROOF CONSULTANT	SCALE			
							SAFETY CONSULTANT	AS SHOWN			
							AUTHORITY CONSULTANT	SHEET No.			
							CONSULTANT	02 OF 03			



GOOD FOR CONSTRUCTION



DESIGN DIRECTOR

VASANT

PROJECT
FOUR LANING OF JHANJHI TO DEMOW
SECTION OF NH-37 FROM EXISTING CH. Km
491+050 TO Km 535+250 (DESIGN CH. Km
490+800 TO Km 534+800) IN THE STATE OF
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Ministry of Road Transport &
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Branch office : House No. 1, Panipath,
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Guwahati-24

CONTRACTOR
GANDHI BUNKERLEY & CO. LTD.

DESIGN CONSULTANT
PROFESSIONAL CIVIL INFRA PVT. LTD.
1838, GROUND FLOOR,
SIR. M VISVESWARAYA LAYOUT,
NAGADEVANAHALLY,
BANGALORE - 560 056

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CHETAN NERA TECH
CONSULTANTS PVT. LTD.
2ND FLOOR,
13TH MAIN, SRINAGAR,
OFF. PES COLLEGE,
BANGALURU-560 005

SAFETY CONSULTANT
SMART SAFETY SERVICES
656 & 7, HARI HARA NIVAS,
GUMMAKONDA COLONY,
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HYDERABAD - 500048

AUTHORITY ENGINEER
DR. J. K. SINGH
403, 4th Floor, BTP Park
Central, Block A, Jai Vayu
Vihar, Sector 30,
Gurgaon, Haryana 122001

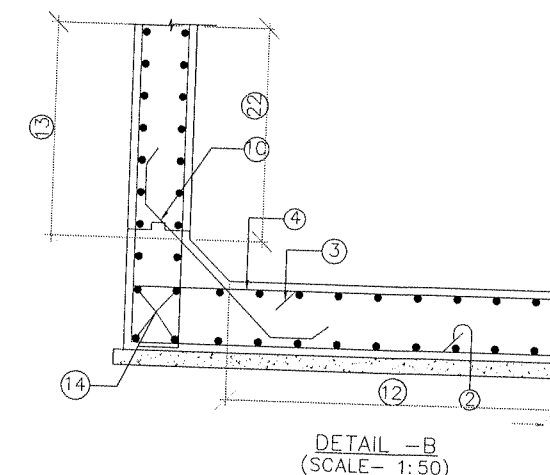
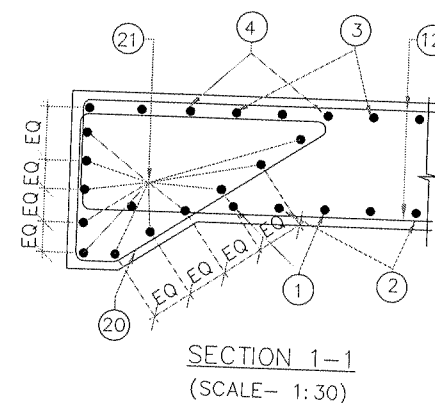
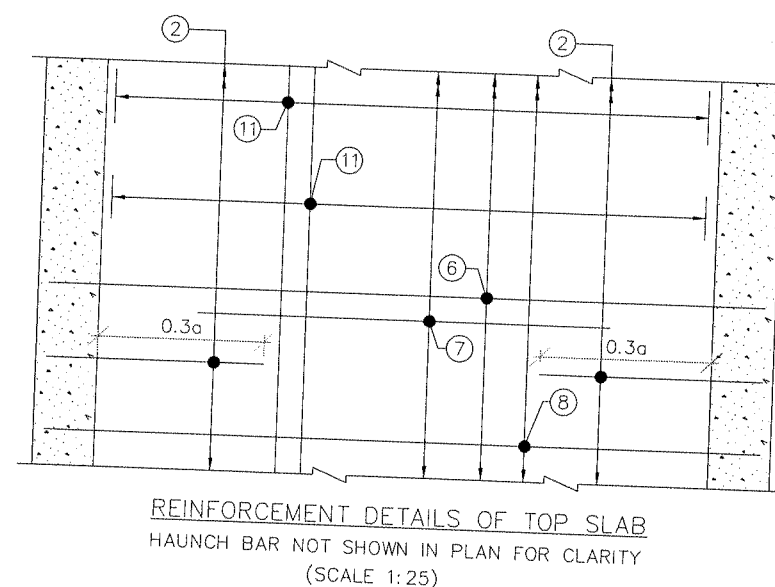
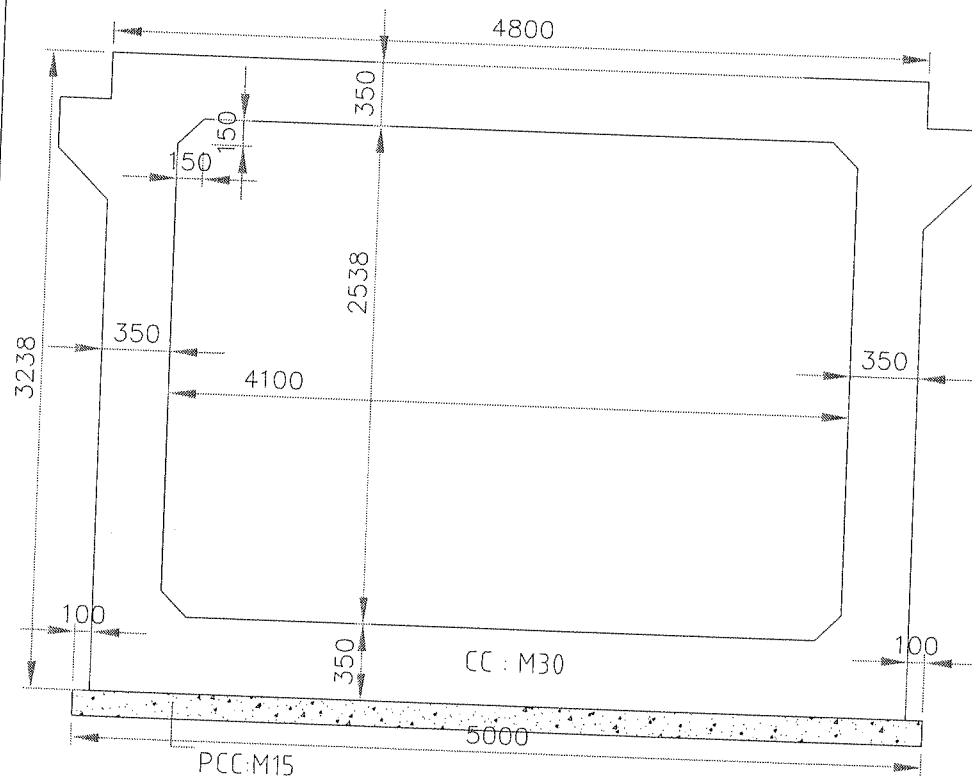
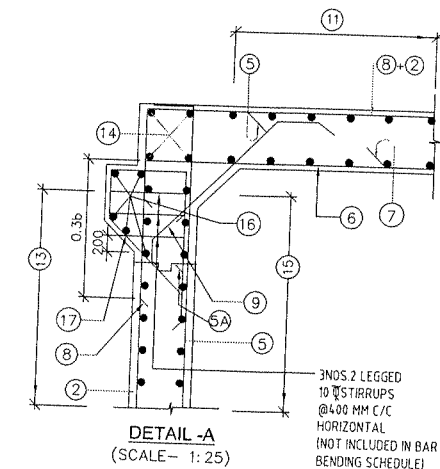
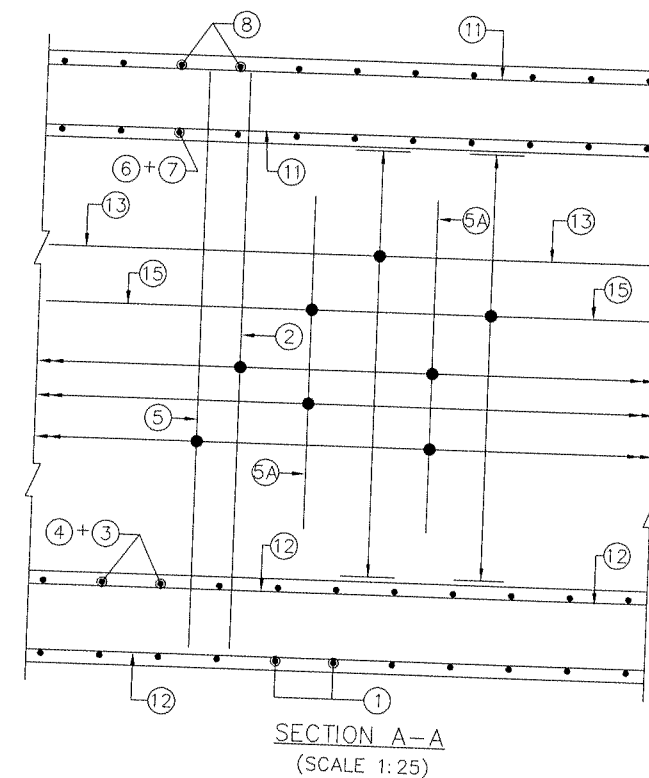
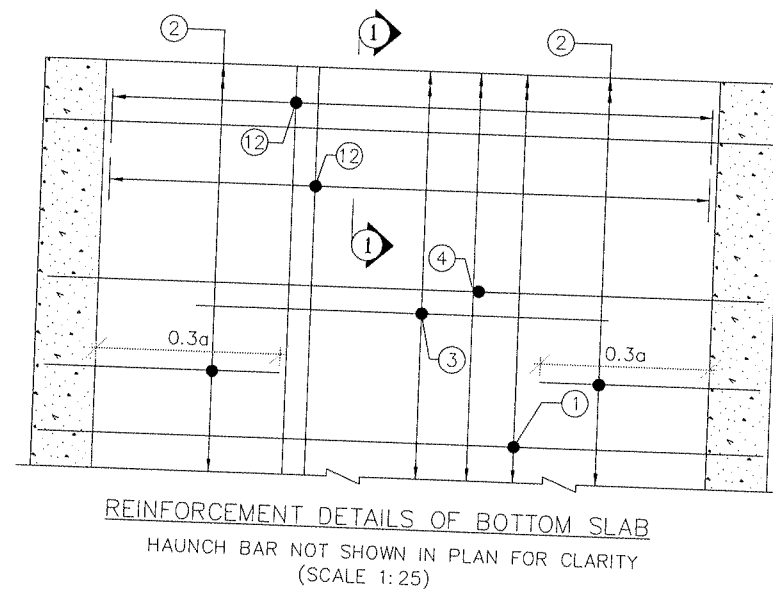
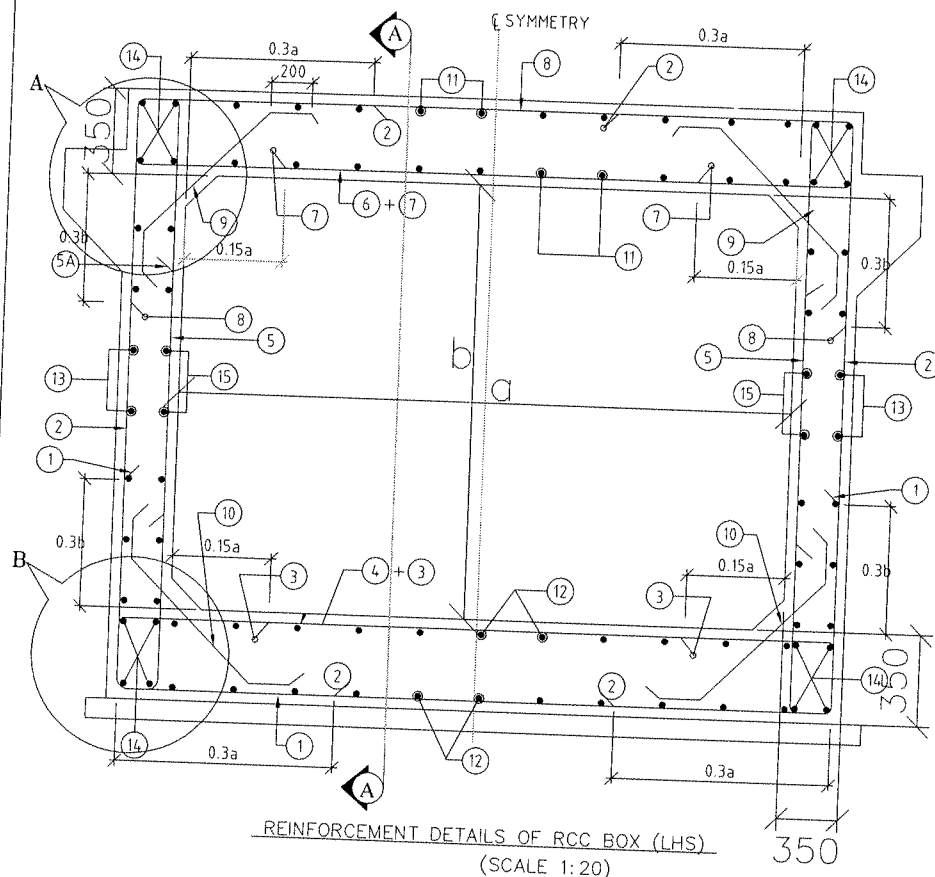
NAME	SHEET SIZE
DESIGN DIRECTOR	A2
PROOF CONSULTANT	SCALE
SAFETY CONSULTANT	AS SHOWN
AUTHORITY CONSULTANT	SHEET No.
	03 OF 03

FOR APPROVAL

TITLE: GENERAL ARRANGEMENT
DRAWING OF BOX CULVERT
(WIDENING) AT DESIGN CH 505+455
(EXISTING CH 505+796)

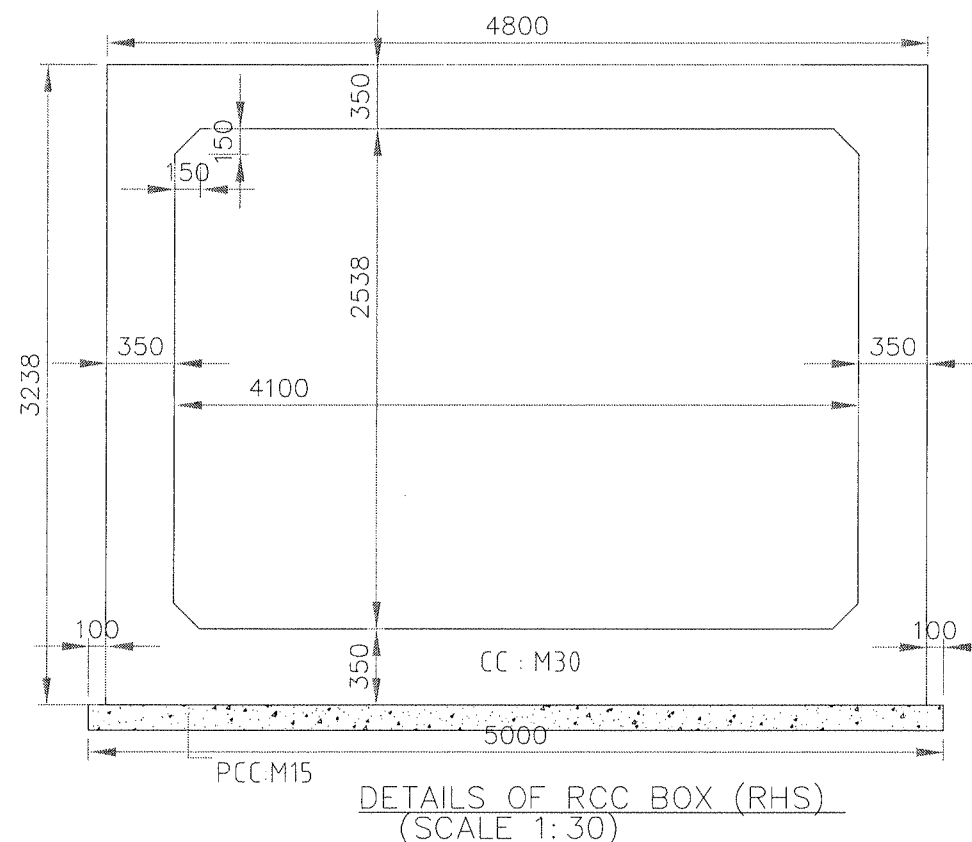
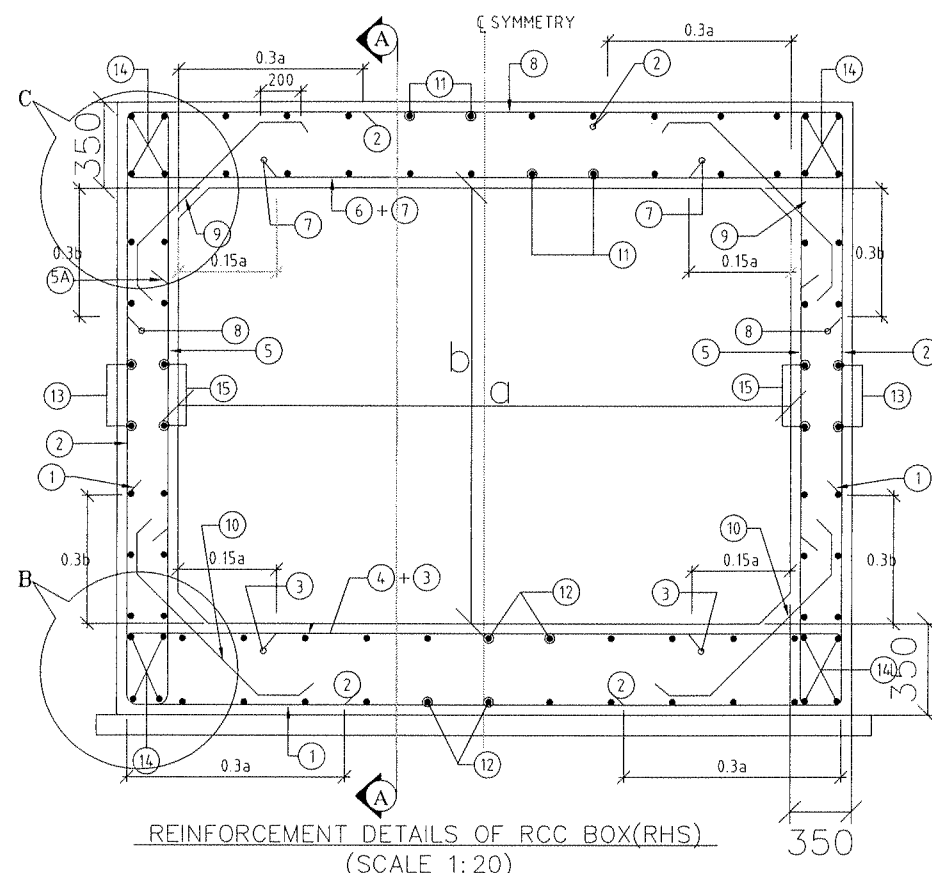
DRAWING No. PCIP/LNH-37/J-D/STR/BC/03

REV. 00



DESIGN DIRECTOR
VASANTH KUMAR T.H.

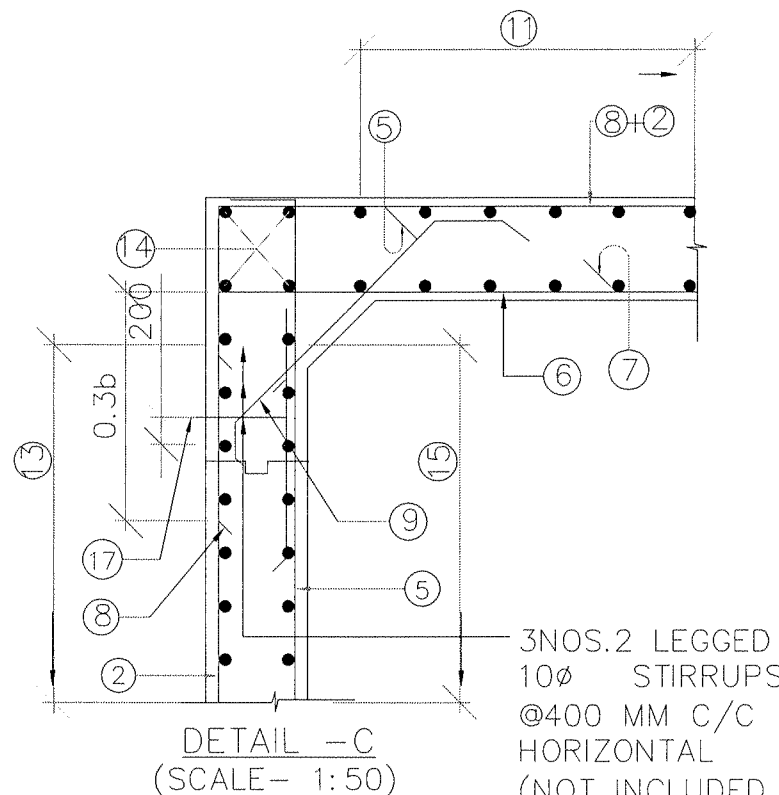
<p>PROJECT</p> <p>FOUR LANE OF JHANJHI TO DEMOW ECTION OF NH-37 FROM EXISTING CH. Km 491+050 TO Km 535+250 (DESIGN CH. Km :90+800 TO Km 534+800) IN THE STATE OF ASSAM UNDER EPC MODE.</p>	<p>CLIENT</p> <p>National Highways Infrastructure Development Corporation Ltd. Ministry of Road Transport & Highways, Government of India Branch office : House No.1, Panipath, Ambikagiri Nagar, Zoo road, Guwahati-24</p>	<p>CONTRACTOR</p> <p>GANDHIKUNTERLEY & CO. LTD.</p>	<p>DESIGN CONSULTANT</p> <p>PROFESSIONAL CIVIL INFRA PVT. LTD.</p>	<p>PROOF CONSULTANT</p> <p>CHETAN INFRA TECH CONSULTANTS PVT. LTD.</p>	<p>SAFETY CONSULTANT</p> <p>SMART SAFETY SERVICES PRABHAKAR</p>	<p>AUTHORITY ENGINEER</p> <p>403, 4th Floor, Park Centre, Block, Vayur Vihar, Sector 3, Gurgaon, Haryana 122001</p>	<p>DESIGN DIRECTOR</p> <p>NAME SHEET SIZE</p> <p>A2</p>	<p>FOR APPROVAL</p> <p>TITLE: REINFORCEMENT DETAILS OF BOX CULVERT (1X4.1X2.538) AT DESIGN CHAINAGE 505+455 (EXISTING CHAINAGE 505+796) DRAWING No. REV.</p>
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GOOD FOR CONSTRUCTION

DESIGN CH: 505+455
SCHEDULE OF REINFORCEMENT

BAR MARK	SHAPE OF BARS (NOT TO SCALE)	BAR DIA IN mm	SPACING OR NO. OF BAR
1		12	125 C/C
2		12	125 C/C
3		12	125 C/C
4		12	125 C/C
5		12	125 C/C
5A		10	200 C/C
6		12	150 C/C
7		12	150 C/C
8		12	125 C/C
9		10	200 C/C
10		10	200 C/C
11		10	200 C/C
12		10	200 C/C
13		10	200 C/C
14		12	16 NOS.
15		12	150
16		12	10 NOS.
17		12	250
18	NOT USED		
19		12	16 NOS.
20		12	150
21		12	20 NOS.



3 NOS. 2 LEGGED
10 ϕ STIRRUPS
@400 MM C/C
HORIZONTAL
(NOT INCLUDED IN BAR
BENDING SCHEDULE)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS & LEVELS ARE IN METERS.
- DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
- GRADE OF CONCRETE : M30 FOR BOX.
- GRADE OF STEEL : Fe500.
- CLEAR COVER TO REINFORCEMENT SHALL BE AS FOLLOWS.
TOP SLAB = 75mm (TOP FACE); 50mm (BOTTOM FACE)
BOTTOM SLAB = 50mm (TOP FACE); 75mm (BOTTOM FACE)
OUTER WALL = 75mm (EARTH FACE); 50mm (WATER FACE).
- ANCHORAGE LENGTH SHALL BE 40x BAR DIA (ϕ)
- LAP LENGTH OF THE STEEL SHALL BE PROVIDED AS BELOW.
LAP LENGTH = $K \times l$
 $K = 1.00$ (<25% LAPPED BAR RELATIVE TO TOTAL CROSS SECTIONAL AREA.)
 $K = 1.15$ (33% LAPPED BAR RELATIVE TO TOTAL CROSS SECTIONAL AREA.)
 $K = 1.40$ (50% LAPPED BAR RELATIVE TO TOTAL CROSS SECTIONAL AREA.)
ALTERNATIVELY BAR SPLICE COUPLER CAN BE USED FOR REBAR LAPPING AND SPLICING.
- NOT MORE THAN 50% OF BARS CAN BE LAPPED AT A SECTION AND LAPS SHALL BE STAGGERED.
- FOR DETAILS OF APPROACH SLAB, HAND RAILING RETAINING WALL, REFER SEPARATE MISCELLANEOUS DRAWINGS.
- SBC OF SOIL BELOW THE BOX STRUCTURE SHALL NOT BE LESS THAN 12.0 T/Sq.m

VASANTH KUMAR T.H.

PROJECT
FOUR LANING OF JHANJHI TO DEMOW
SECTION OF NH-37 FROM EXISTING CH. Km
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CONTRACTOR
M/S. SANKAR & SONS
PVT. LTD.

DESIGN CONSULTANT
PROFESSIONAL CIVIL INFRA PVT. LTD.
7th FLOOR,
10th MAIN, SPINAR,
OPP. PES COLLEGE
BANGALORE - 560 056

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BANGALORE - 560 056

AUTHORITY ENGINEER
M/S. SANKAR & SONS
PVT. LTD.,
403, 4th Floor, Sankar Park
Central, Bhubaneswar, Odisha
Vihar, Bhubaneswar, Odisha
Pin - 751 005

DESIGN DIRECTOR
PROOF CONSULTANT
SAFETY CONSULTANT
AUTHORITY CONSULTANT

NAME SHEET SIZE
TITLE: REINFORCEMENT DETAILS OF
BOX CULVERT (1X4.1x2.538) AT
DESIGN CHAINAGE 505+455
(EXISTING CHAINAGE 505+796)
DRAWING No. PCIP/NH-37/JD/BC/STR/REIN/03
REV. 00

FOR APPROVAL