

GOOD FOR CONSTRUCTION

Details Of Box culvert:

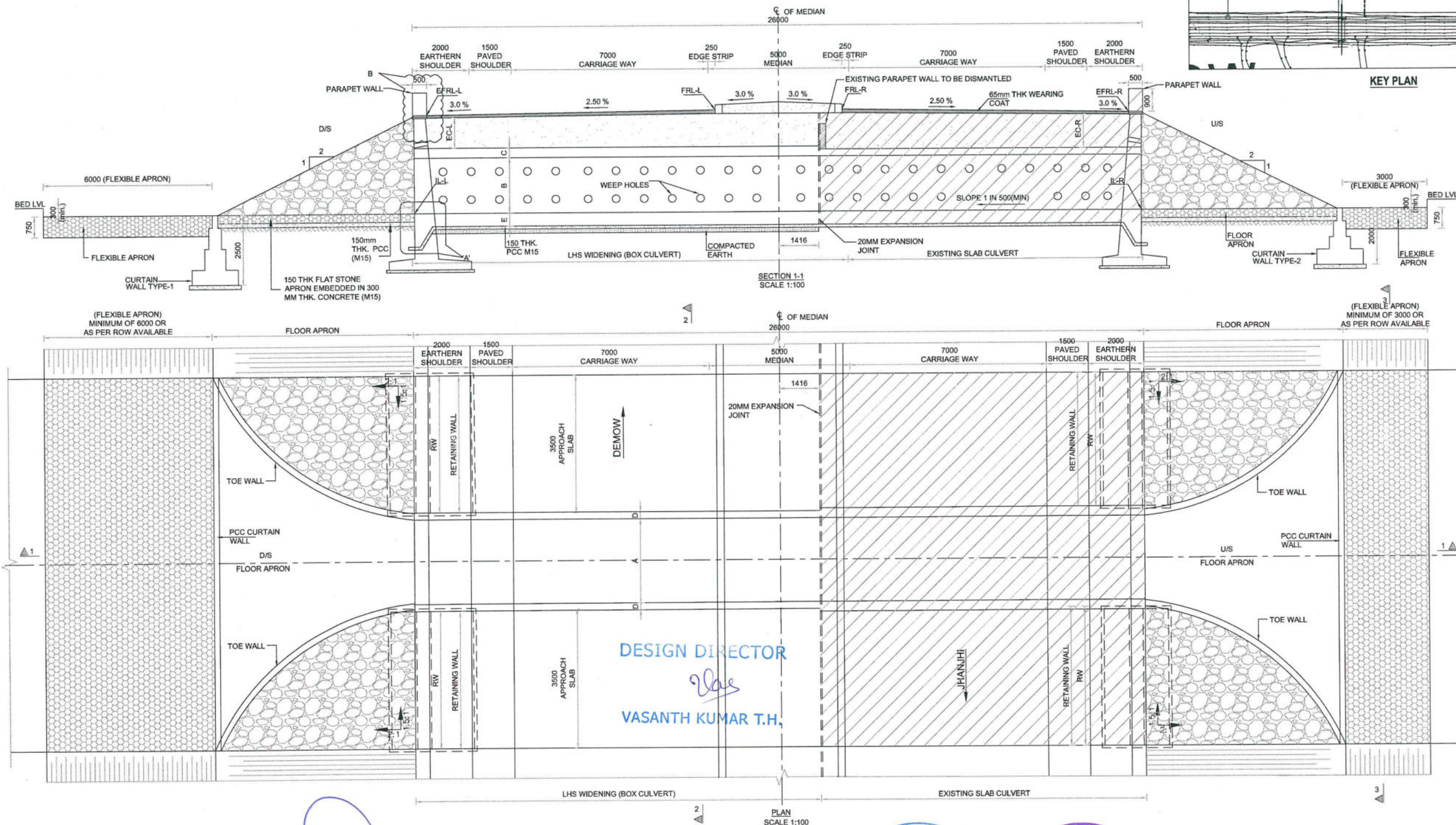
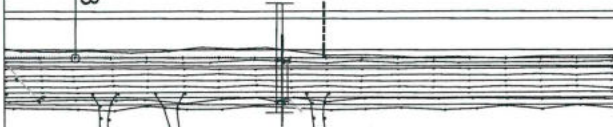
EXISTING CHAINAGE	DESIGN CHAINAGE	SPAN	FRL-L	FRL-R	EFRL-L	EFRL-R	EC-L	EC-R	IL-L	IL-R	CLEAR WIDTH (A)	CLEAR HEIGHT (B)	TOP SLAB THICKNESS (C)	WALL THICKNESS (D)	BOTTOM RAFT THICKNESS (E)	RW	FLOW DIRECTION	LHS WIDENING	RHS WIDENING
526+000	525+588	1X3.2X3.031	93.436	93.436	93.164	93.164	0.369	0.369	89.590	89.648	3.200	3.031	0.35	0.35	0.40	5.3	R-L	13.500	0.916

deg)	0.000
deg)	1.184
(%)	NR
0	kmph

STRUCTURE NO:		36
DESCRIPTION	EXISTING	PROPOSED
CHAINAGE	526000	525588
SPAN	1X3.20X3.031	1X3.20X3.031
TYPE	SLAB	SLAB
PROPOSAL	WIDENING	

PT 525530.13

525+600



DESIGN DIRECTOR
VASANTH KUMAR T.H.

PROJECT
FOUR LANE 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
Gannon Dunkerley & Co. Ltd.
86A TOPSIA ROAD (SOUTH)
HALT STREET, 7TH FLOOR,
KOLKATA - 700046

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

PROOF CONSULTANT
CHETAN INFRASTRUCTURE
CONSULTANTS (P) LTD.
#11, 2ST FLOOR,
13TH MAIN, SRINAGAR,
CHAKRES COLLEGE,
BENGALURU-560030

SAFETY CONSULTANT
SMART SAFETY SERVICES
#3-56 & 7, HARI HARA NIVAS,
GUMMAKONDA COLONY,
HYDERGUDA,
HYDERABAD - 500048

AUTHORITY ENGINEER
VOYANTS SOLUTIONS PVT. LTD.
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Vihar, Sector 30,
Gurgaon, Haryana 122001

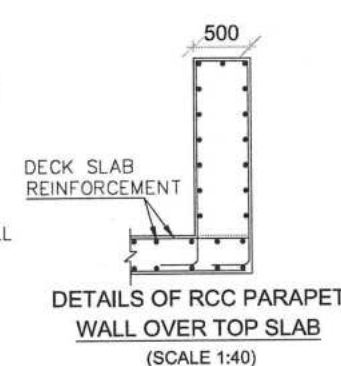
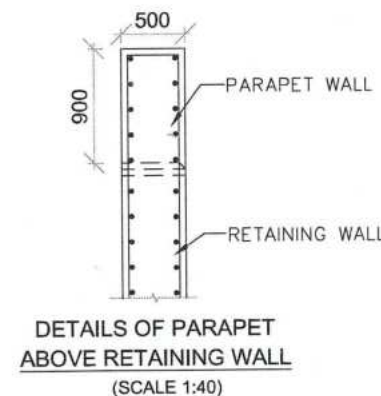
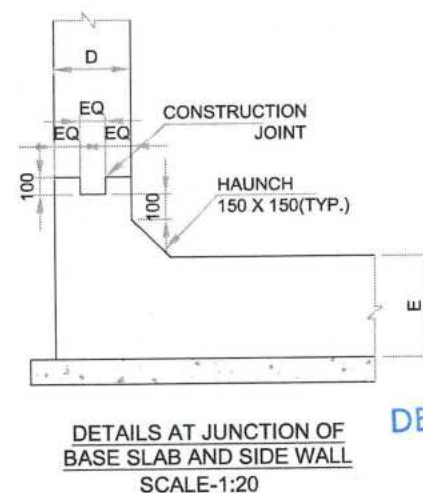
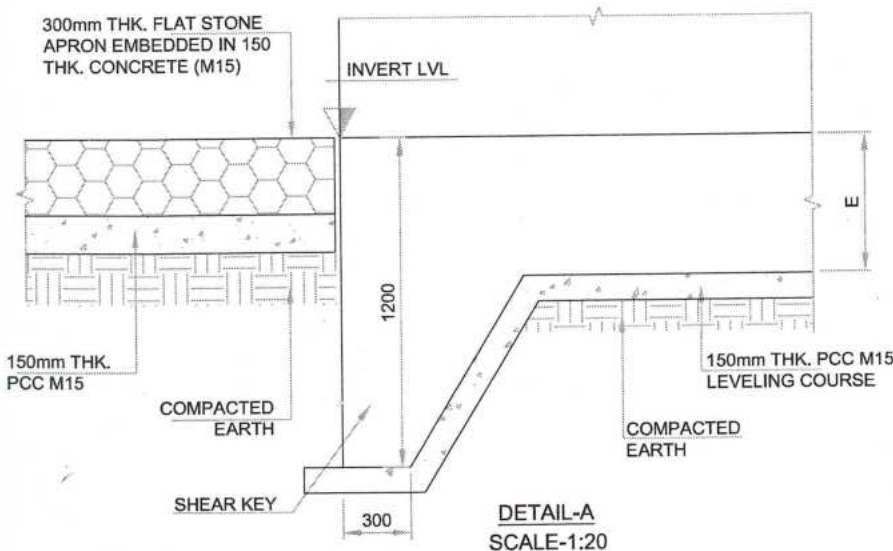
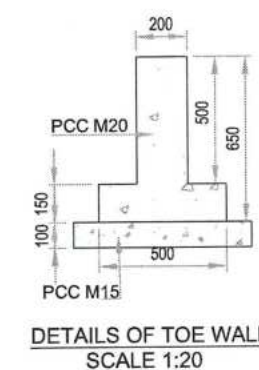
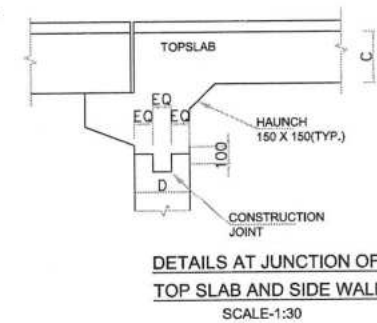
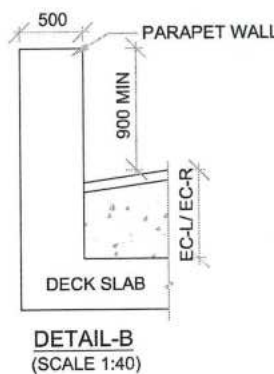
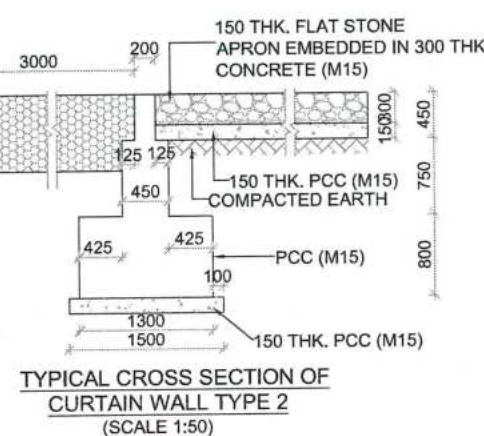
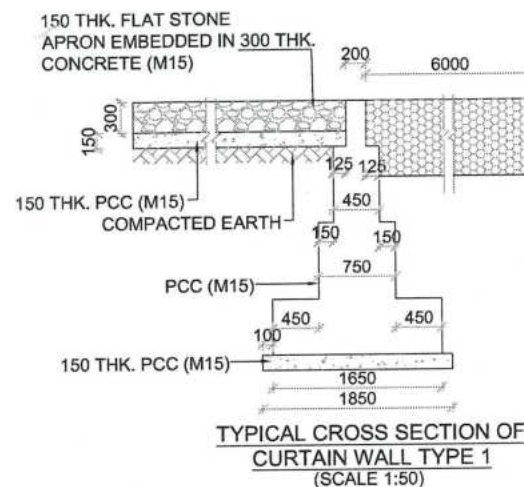
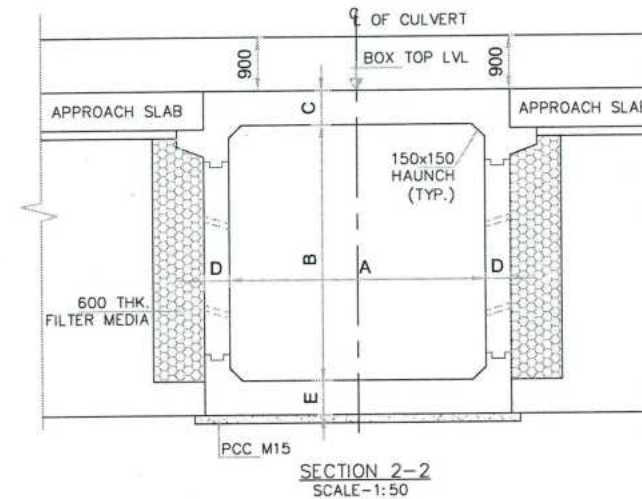
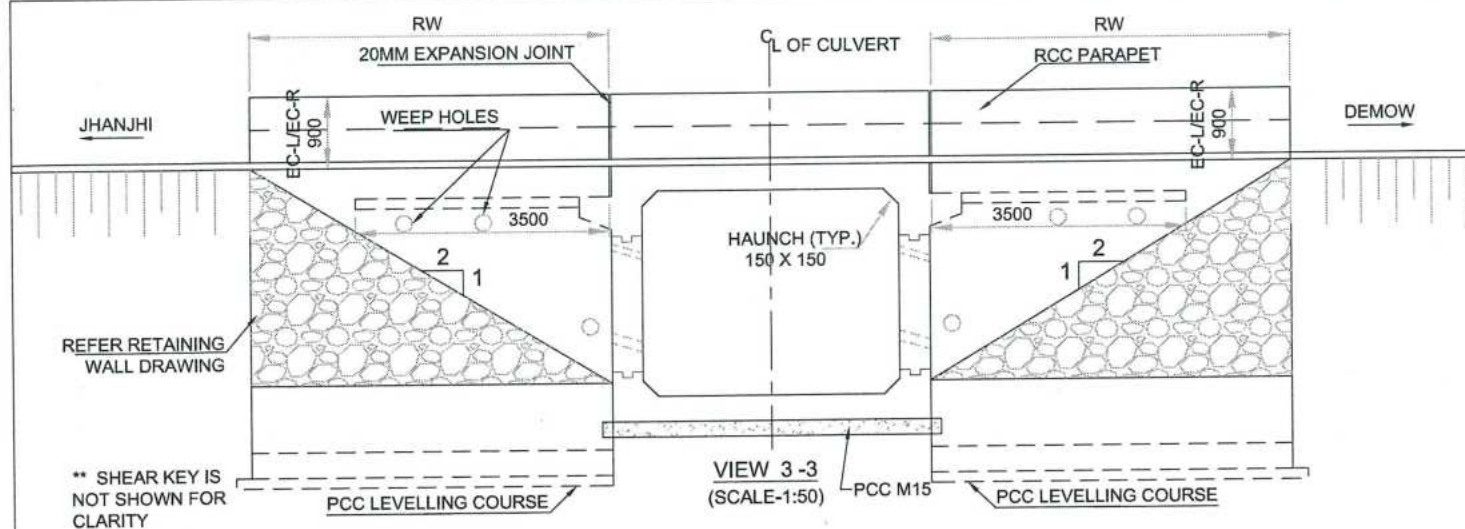
NAME	SHEET SIZE
DESIGN DIRECTOR	A2
PROOF CONSULTANT	SCALE
SAFETY CONSULTANT	AS SHOWN
AUTHORITY CONSULTANT	SHEET No.
	01 OF 02

TITLE: GENERAL ARRANGEMENT
DRAWING OF BOX CULVERT
(WIDENING) AT DESIGN CH 525+588
(EXISTING CH 526+000)

DRAWING No.
PCIPL/NH-37/J-D/STR/BC/20

REV.
00

* EXISTING SLAB CULVERT WIDENED WITH BOX. FOR APPROVAL



DESIGN DIRECTOR
V. K. S. (REFER MISCELLANEOUS DRAWINGS)
VASANTH KUMAR T.H.

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 SIDL

LEGEND:
IL - INVERT LEVEL
EC - EARTH CUSHION
FRL - FINISHED ROAD LEVEL
EURL - 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:
- ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METERS, UNLESS MENTIONED OTHERWISE.
 - DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - 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
 - GRADE OF UNTENSIONED STEEL SHALL BE Fe 500D, CONFORMING TO IS: 1786.
 - 600mm FILTER MEDIA SHALL BE PROVIDED BEHIND RCC BOX AND RETURN WALL.
 - THE BACK FILL MATERIAL BEHIND RCC BOX / RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES $\phi 30^\circ$, $\gamma=2.0$ T/Cum.
 - SEISMIC ZONE - V.
 - SAFE BEARING CAPACITY AT FOUNDING LEVEL IS 121m^2 . THE SAME SHALL BE VERIFIED AT SITE BEFORE STARTING OF WORK.
 - 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.
 - 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.
 - BACK FILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDE OF BOX.
 - DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT APPROVED HIGHWAY DRAWING FOR FRL, INVERT LEVEL, GL, CROSS SLOPE, LONGITUDINAL GRADIENT, ROAD WAY DETAILS ETC
 - PITCHING / REVETMENT ON SLOPES TO BE PROVIDED AS PER MORTH SPECIFICATION.
 - IF BC/CLAYEY SOIL ENCOUNTERED AS FOUNDING SOIL, THEN 900mm. DEPTH OF SOIL BELOW FOUNDATION TO BE REMOVED & FILLED BY METAL / BOULDERES WITH SAND AS PER SP-13.
 - 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.
 - 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.
 - PCC LEVELLING COURSE:
BELOW BOX STRUCTURE & TOE WALL - 150 THK.
BELOW FLOOR APRON - 150 THK.
 - 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.
 - 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
 - REFER TCS TYPE: TCS-1B

REFERENCE DRAWINGS:	
DETAILS OF RCC BOX	PCIP/NH-37/JD/BC/STR/REIN/20
MISCELLANEOUS DETAILS	PCIP/NH-37/JD/STR/RCC-MIS/01
DETAILS OF RETAINING WALL	PCIP/NH-37/JD/STR/RW/01

PROJECT
FOUR LANE 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
Gannett Dunkerley & Co. Ltd.
66A, TOPSIA ROAD (SOUTH)
HAUTE STREET, 7th FLOOR
KOLKATA - 700046

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

PROOF CONSULTANT
CHETAN INFRA PVT. LTD.
7/11, 1st FLOOR,
13th MAIN, BONGMAR,
OPP. COLLEGE
BENGALURU-560050

SAFETY CONSULTANT
SMART SAFETY SERVICES
35-6 & 7, HARI HARA NIVAS,
GUMMAKONDA COLONY,
HYDERGUDA,
HYDERABAD - 500048

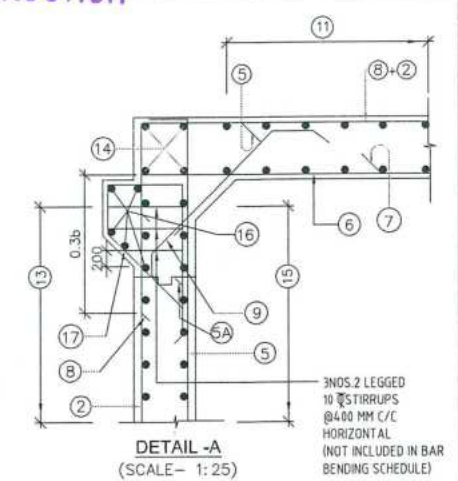
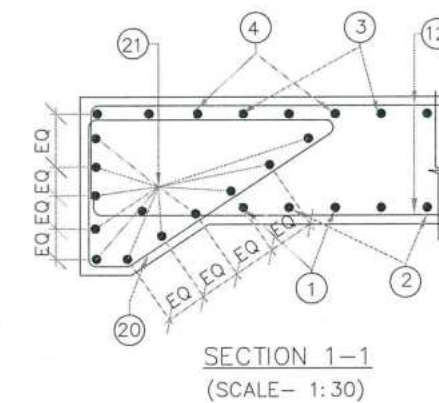
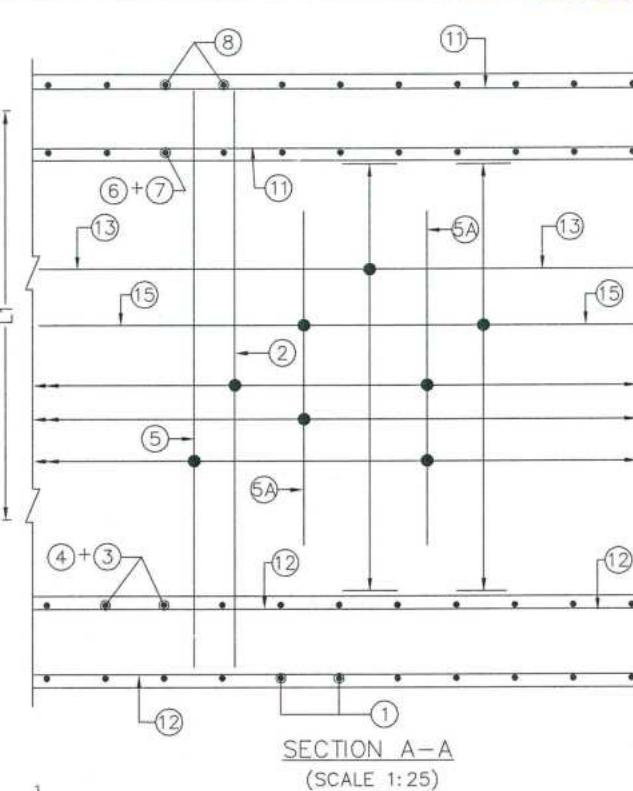
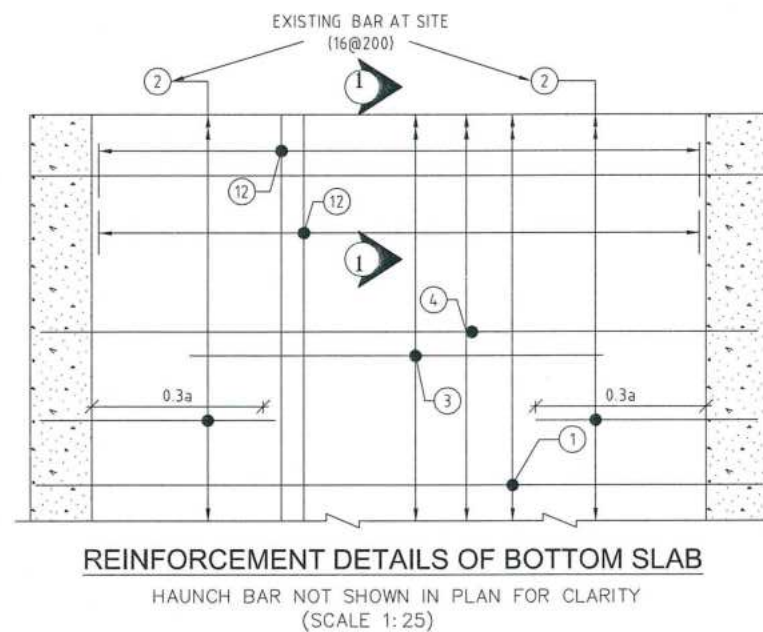
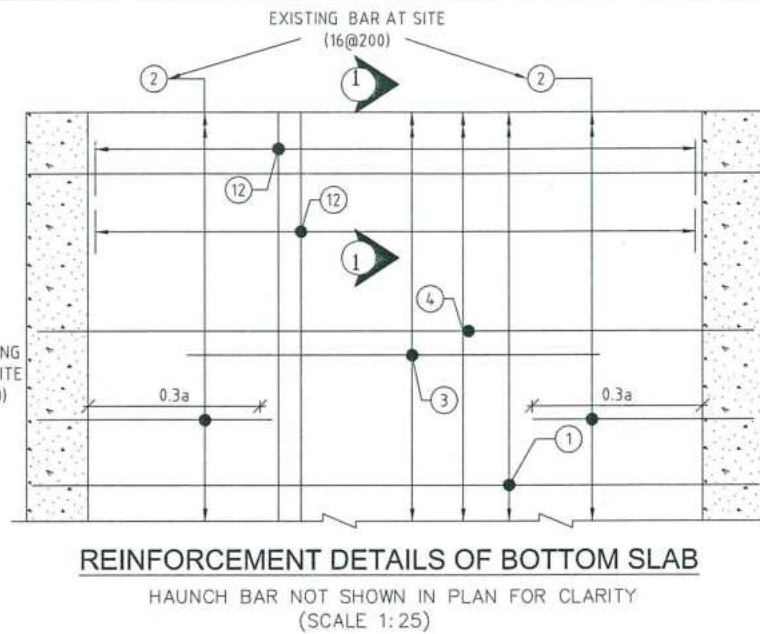
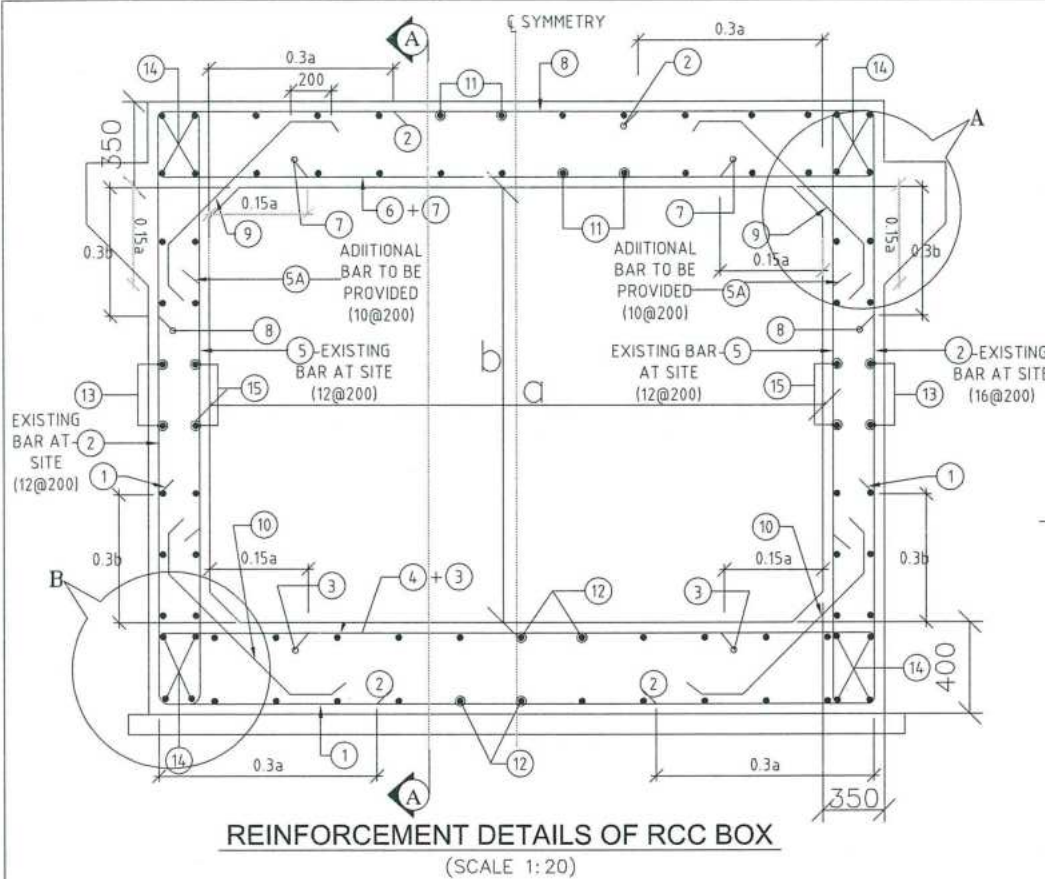
AUTHORITY ENGINEER
VOYANTS SOLUTIONS PVT. LTD.
403, 4th Floor, BPTF Park
Centra, Block A, Jal Vayu
Vihar, Sector 34,
Gurgaon, Haryana - 122001

NAME	SHEET SIZE
DESIGN DIRECTOR	A2
SCALE	AS SHOWN
PROOF CONSULTANT	
SAFETY CONSULTANT	
AUTHORITY CONSULTANT	

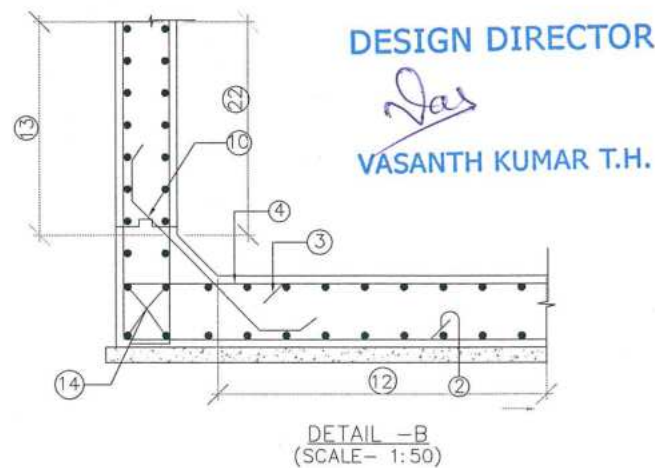
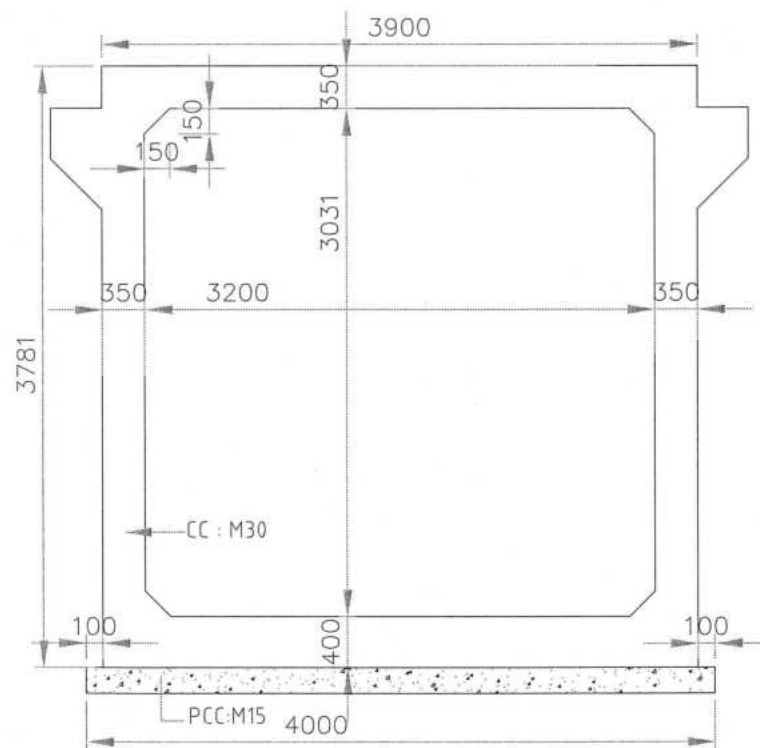
TITLE:	GENERAL ARRANGEMENT DRAWING OF BOX CULVERT (WIDENING) AT DESIGN CH 525+588 (EXISTING CH 526+000)
DRAWING No.	PCIP/NH-37/J-D/STR/BC/20
REV.	00

FOR APPROVAL

GOOD FOR CONSTRUCTION



DESIGN CH: 525+588			
SCHEDULE OF REINFORCEMENT			
BAR MARK	SHAPE OF BARS (NOT TO SCALE)	BAR DIA IN mm	SPACING OR NO. OF BAR
1		12	200 C/C
2	EXISTING BAR AT SITE	16	200 C/C
3		10	100C/C
4		12	100C/C
5	EXISTING BAR AT SITE	12	200 C/C
5A	ADDITIONAL BAR TO BE PROVIDED	10	200 C/C
6		12	200 C/C
7		10	200 C/C
8		12	200 C/C
9		10	200
10		10	200
11		10	200
12		10	200
13		10	200
14		10	16 NOS.
15		10	200
16		10	10 NOS.
17		10	250
18		NOT USED	
19		NOT USED	
20		10	150
21		10	20 NOS.



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS & LEVELS ARE IN METERS.
2. DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. GRADE OF CONCRETE : M30 FOR BOX.
4. GRADE OF STEEL : Fe500.
5. 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).
6. ANCHORAGE LENGTH SHALL BE 40x BAR DIA (Ø)
7. 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 SPUCE COUPLER CAN BE USED FOR REBAR LAPPING AND SPLICING.
8. NOT MORE THAN 50% OF BARS CAN BE LAPPED AT A SECTION AND LAPS SHALL BE STAGGERED.
9. FOR DETAILS OF APPROACH SLAB, HAND RAILING RETAINING WALL, REFER SEPARATE MISCELLANEOUS DRAWINGS.
10. SBC OF SOIL BELOW THE BOX STRUCTURE SHALL NOT BE LESS THAN 12.0 T/Sq.m

DETAILS OF RCC BOX
(SCALE 1:30)

DETAIL -B
(SCALE- 1:50)

DESIGN DIRECTOR

VASANTH KUMAR T.H.

FOR APPROVAL

<div>PROJECT</div> <div>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.</div>	<div>CLIENT</div> <div>National Highways Infrastructure Development Corporation Ltd.</div> <div> Ministry of Road Transport & Highways, Government of India Branch office : House No.1, Panipath, Ambikagiri Nagar, Zoo road, Guwahati-24</div>	<div>CONTRACTOR</div> <div> Gannong Dunkerley & Co. Ltd. 5A/1 TOPSI ROAD (SOUTH) EIGHT STREET, 7TH FLOOR KOLKATA - 700045</div>	<div>DESIGN CONSULTANT</div> <div> PROFESSIONAL CIVIL INFRA PVT. LTD. 17/1838, GROUND FLOOR SIR. J. VISVESWARAYA LAYOUT, NAGADEVANAHALLI BANGALORE - 560 058</div>	<div>PROOF CONSULTANT</div> <div> CHETAN INFRA TECH CONSULTANTS (P) LTD. 1ST FLOOR 18TH MAIN, SHANABAR, OPP.PES COLLEGE, BENGALURI-560050</div>	<div>SAFETY CONSULTANT</div> <div> SMART SAFETY SERVICES # 3-5-6 & 7, HARIHARA IVAS CHANNARAKKAL COLONY HYDERABAD CHENNAI-600044</div>	<div>AUTHORITY ENGINEER</div> <div> PCIPCL 403, 3rd Floor, BHR Park Centra, Block A, Isl Yauy Vihar, Sector 3 Gurgaon, Haryana-122001</div>	NAME	SHEET SIZE	TITLE: REINFORCEMENT DETAILS OF BOX CULVERT (1X3.2X3.031) AT DESIGN CHAINAGE 525+588 (EXISTING CHAINAGE 526+000)
							DESIGN DIRECTOR	A2	
PROOF CONSULTANT	SCALE	AS SHOWN	PCIPCL/NH-37/JD/BC/STR/REIN/20	00					
SAFETY CONSULTANT									
AUTHORITY CONSULTANT	SHEET No.								
	01 OF 01								