LIST OF DRAWINGS

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3	Typical Cross Section 01 To 02	DWG NO: NHAI/G-ENG/22087/TCS/03
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3	Road Signs (Warning & Informatory Sign Detail)	DWG NO: NHAI/G-ENG/22087/SD/03
4	Road Signs (Facility Information Sign Detail)	DWG NO: NHAI/G-ENG/22087/SD/04
5	Road Signs (Regulatory Sign Detail)	DWG NO: NHAI/G-ENG/22087/SD/05
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3	General Arrangement Drawing of Box Culvert (TCS-3)	DWG NO: NHAI/G-ENG/22087/BC/33+112/GAD-01 (02 OF 02)
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6	General Arrangement Drawing of Vehicular Underpass at Km.- 33+275	DWG NO: NHAI/G-ENG/22087/VUP/33+275/GAD/-01 (02 OF 02)

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
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CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

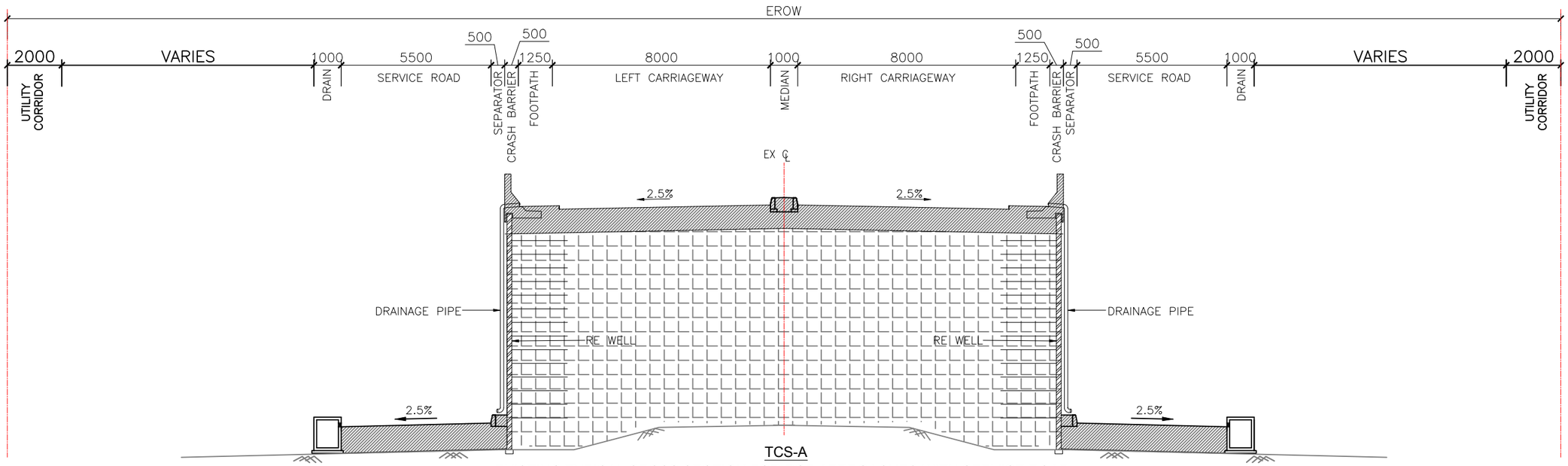
PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: LIST OF DRAWINGS

DRG NO.: NHAI/G-ENG/22087/LOD/01

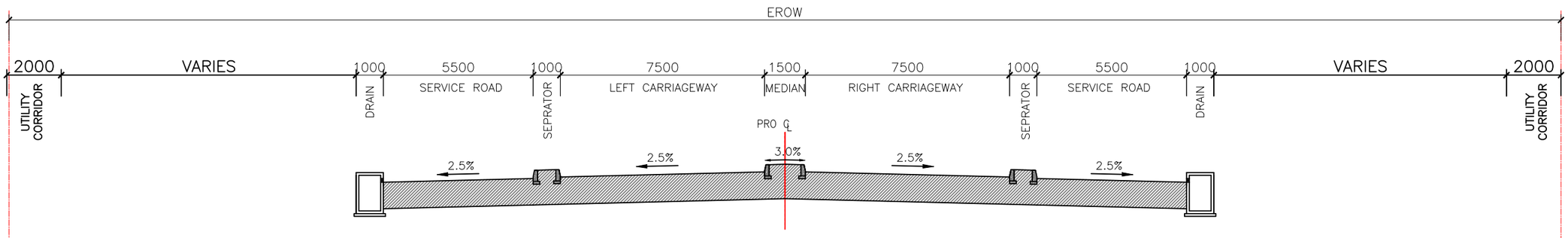
REV. R0

(TYPICAL CROSS SECTION)



TCS-A

EXISTING TYPICAL CROSS SECTION FOR ROB APPROACHES WITH SERVICE ROAD
FROM CH. 32+150 TO 32+775



TCS-B

EXISTING TYPICAL CROSS SECTION WITH SERVICE ROAD
FROM CH. 32+775 TO 33+110

NOTES:-
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. FOR CRUST THICKNESS REF. PAVEMENT DESIGN REPORT

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

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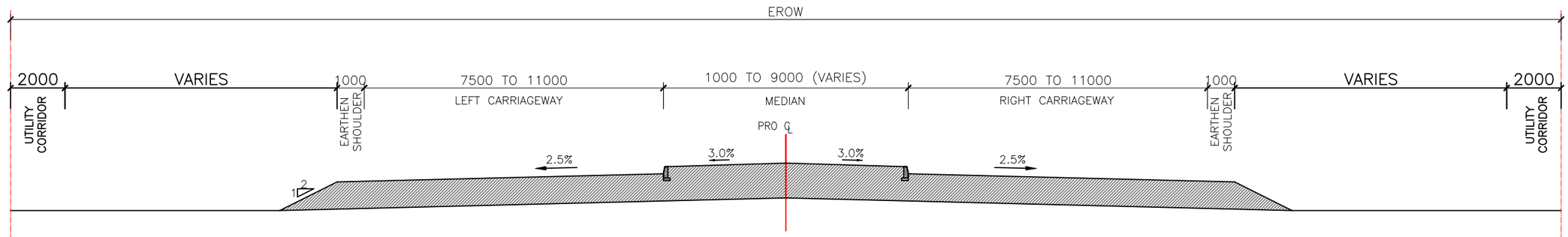
CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL CROSS SECTION

DRG NO.: NHAI/G-ENG/22087/TCS/01

REV. R0



TCS-C

EXISTING TYPICAL CROSS SECTION WITH EARTHEN SHOULDER
CH.-33+110 TO 33+640

NOTES:-
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. FOR CRUST THICKNESS REF. PAVEMENT DESIGN REPORT

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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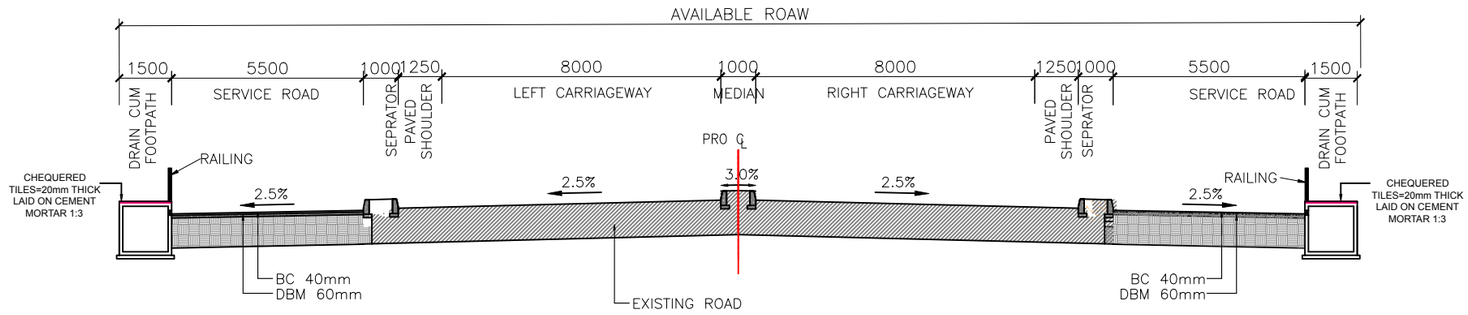
CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL CROSS SECTION

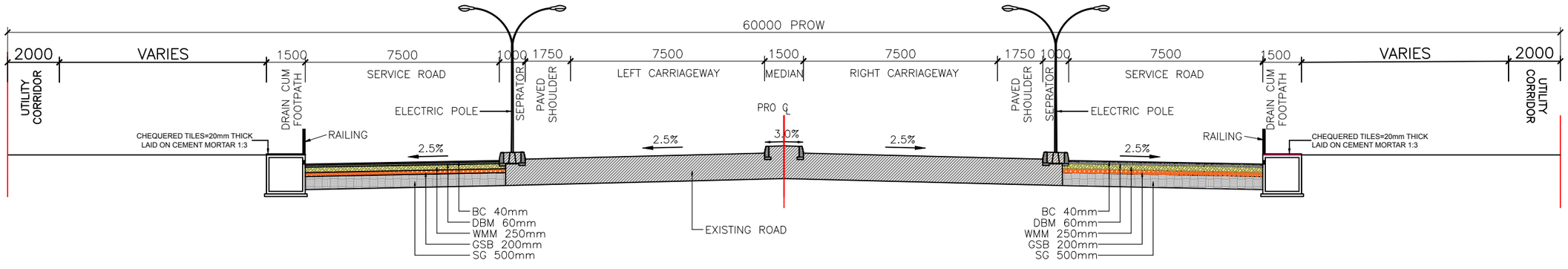
DRG NO.: NHAI/G-ENG/22087/TCS/02

REV. R0



TCS-1

PROPOSED TYPICAL CROSS SECTION, OVERLAY OF SERVICE ROAD
CH.-32+775 TO 32+960



TCS- 2

PROPOSED TYPICAL CROSS SECTION, RECONSTRUCTION OF SERVICE ROAD
CH.-32+960 TO 33+020

NOTES:-
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. FOR CRUST THICKNESS REF. PAVEMENT DESIGN REPORT

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

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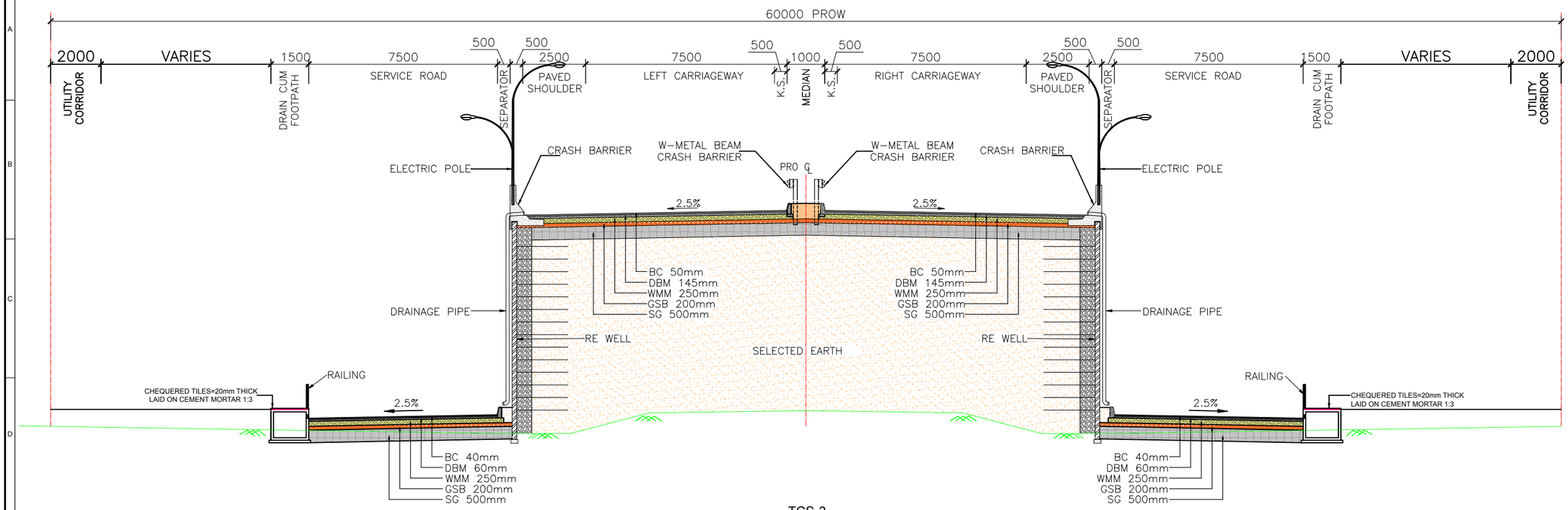
CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL CROSS SECTION

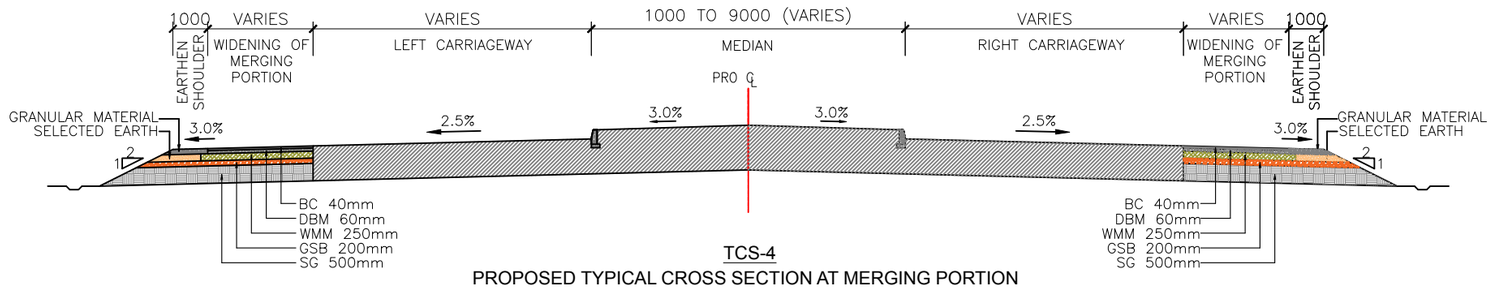
DRG NO.: NHAI/G-ENG/22087/TCS/03

REV. R0



TCS-3

PROPOSED TYPICAL CROSS SECTION FOR VUP APPROACHES WITH SERVICE ROAD
CH.-33+020 TO 33+550



TCS-4

PROPOSED TYPICAL CROSS SECTION AT MERGING PORTION
CH.-33+550 TO 33+640

NOTES:-
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. FOR CRUST THICKNESS REF. PAVEMENT DESIGN REPORT

05.07.22	R0	D.D	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL CROSS SECTION

DRG NO.: NHAI/G-ENG/22087/TCS/04

REV. R0

(PLAN & PROFILE)

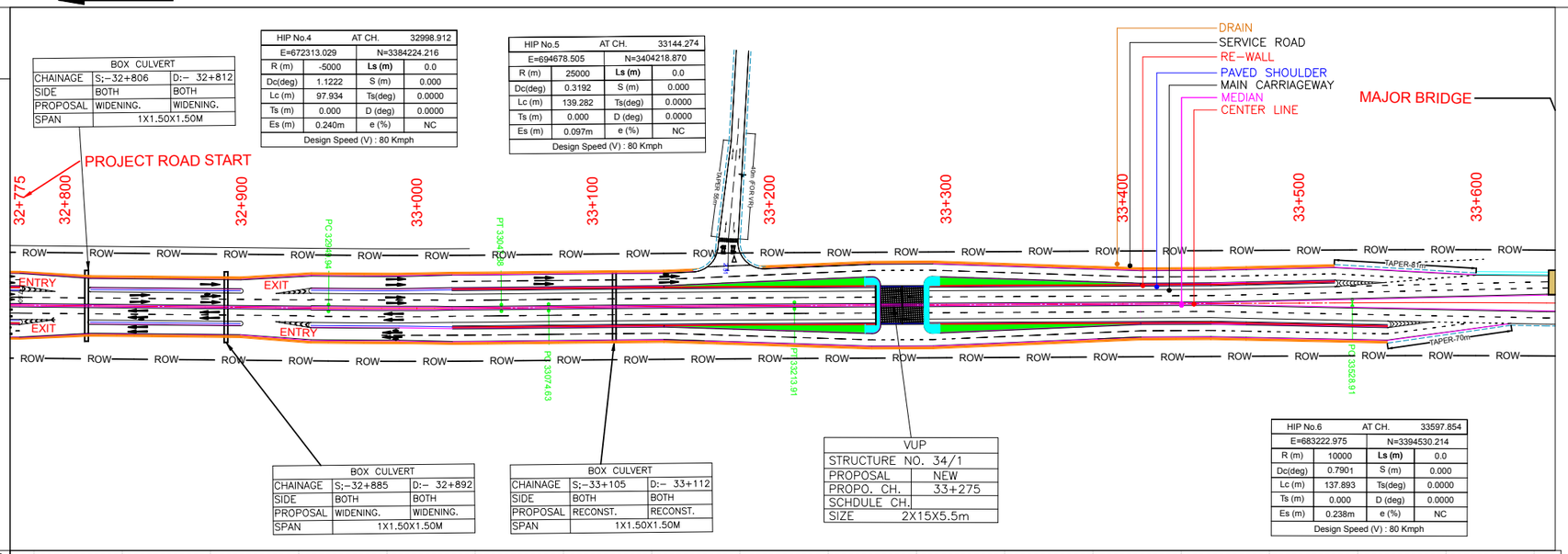
NOTES:-

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

LEGEND
HORIZONTAL PLAN

- Proposed CL
- Median
- Pro. Carriageway
- Paved Shoulder
- Seprator
- ROW
- Box Culvert
- Svup
- Lvup
- Vup
- Minor Bridge

AMBALA — CHANDIGARH



BOX CULVERT		
CHAINAGE	S:-32+806	D:- 32+812
SIDE	BOTH	BOTH
PROPOSAL	WIDENING.	WIDENING.
SPAN	1X1.50X1.50M	

HIP No.4	AT CH.	32998.912
E=672313.029		N=3384224.216
R (m)	-5000	Ls (m) 0.0
Dc(deg)	1.1222	S (m) 0.000
Lc (m)	97.934	Ts(deg) 0.0000
Ts (m)	0.000	D (deg) 0.0000
Es (m)	0.240m	e (%) NC
Design Speed (V) : 80 Kmph		

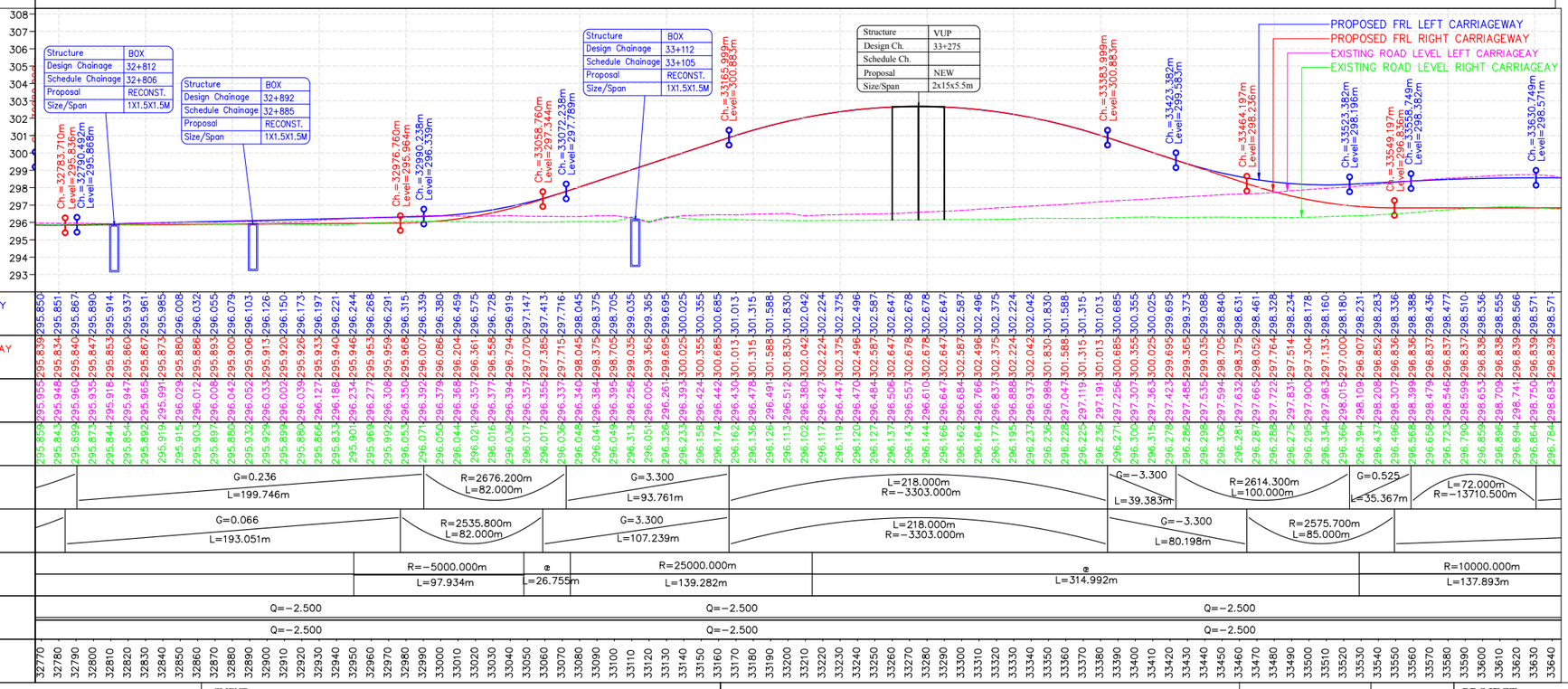
HIP No.5	AT CH.	33144.274
E=694678.505		N=3404218.870
R (m)	25000	Ls (m) 0.0
Dc(deg)	0.3192	S (m) 0.000
Lc (m)	139.282	Ts(deg) 0.0000
Ts (m)	0.000	D (deg) 0.0000
Es (m)	0.097m	e (%) NC
Design Speed (V) : 80 Kmph		

BOX CULVERT		
CHAINAGE	S:-32+885	D:- 32+892
SIDE	BOTH	BOTH
PROPOSAL	WIDENING.	WIDENING.
SPAN	1X1.50X1.50M	

BOX CULVERT		
CHAINAGE	S:-33+105	D:- 33+112
SIDE	BOTH	BOTH
PROPOSAL	RECONST.	RECONST.
SPAN	1X1.50X1.50M	

VUP	
STRUCTURE NO.	34/1
PROPOSAL	NEW
PROPO. CH.	33+275
SCHDULE CH.	
SIZE	2X15X5.5m

HIP No.6	AT CH.	33597.854
E=683222.975		N=3394530.214
R (m)	10000	Ls (m) 0.0
Dc(deg)	0.7901	S (m) 0.000
Lc (m)	137.893	Ts(deg) 0.0000
Ts (m)	0.000	D (deg) 0.0000
Es (m)	0.238m	e (%) NC
Design Speed (V) : 80 Kmph		



Structure	BOX
Design Chainage	32+812
Schedule Chainage	32+806
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	BOX
Design Chainage	32+892
Schedule Chainage	32+885
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	BOX
Design Chainage	33+112
Schedule Chainage	33+105
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	VUP
Design Ch.	33+275
Schedule Ch.	
Proposal	NEW
Size/Span	2x15x5.5m

05-07-22	R0	DEV	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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CHECKED BY:	L.K
DESIGNED BY:	T.P
DRAWN BY:	DEV
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PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: PLAN & PROFILE 32+775 TO 33+640

DRG NO.: NHAI/G-ENG/22087/P&P/01 — REV. R0

HORIZONTAL ALIGNMENT DESIGN REPORT

Sr. No.	HIP Chainage	Easting	Northing	Arc Start Chainage	Arc End Chainage	Radius	Hand of Arc (Right/Left)	Length of Arc (m)	Start Of Transition			End Of Transition			Design Speed (kmph)	Superelevation (%)	Deflection Angle		
									Transition Start Chainage	Transition End Chainage	Transition Length (m)	Transition Start Chainage	Transition End Chainage	Transition Length (m)					
1	32+998.912	672313.029	3384224.216	32+949.943	33+047.877	5000	Left	97.934							80	NC	1	7	20.084
2	33+144.274	694678.505	3404218.87	33+074.633	33+213.914	25000	Right	139.282							80	NC	0	19	9.156
3	33+597.854	683222.975	3394530.214	33+528.906	33+666.800	10000	Right	137.893							80	NC	0	47	24.254

LHS MCW VERTICAL CURVE TABLE

Sr. No.	VIP Chainage	VIP LEVELS	LENGTH OF CURVE	TYPE OF CURVE	Grade IN %	Grade OUT %	Algebraic Difference	CHAINAGE START OF CURVE	CHAINAGE END OF CURVE	LEVEL START OF CURVE	LEVEL END OF CURVE	K VALUE	Design Speed (kmph)
1	32+715.492	295.691	150	Sag	-1.936	0.236	2.172	32+640.492	32+790.492	297.142	295.868	69.072	80
2	33+031.238	296.436	82	Sag	0.236	3.3	3.064	32+990.238	33+072.238	296.339	297.789	26.762	80
3	33+274.999	304.48	218	Hog	3.3	-3.3	-6.6	33+165.999	33+383.999	300.883	300.883	33.03	80
4	33+473.382	297.933	100	Sag	-3.3	0.525	3.825	33+423.382	33+523.382	299.583	298.196	26.143	80
5	33+594.749	298.571	72	Hog	0.525	0	-0.525	33+558.749	33+630.749	298.382	298.571	137.105	80

RHS MCW VERTICAL CURVE TABLE

Sr. No.	VIP Chainage	VIP LEVELS	LENGTH OF CURVE	TYPE OF CURVE	Grade IN %	Grade OUT %	Algebraic Difference	CHAINAGE START OF CURVE	CHAINAGE END OF CURVE	LEVEL START OF CURVE	LEVEL END OF CURVE	K VALUE	Design Speed (kmph)
1	32+708.710	295.786	150	Sag	-1.941	0.066	2.007	32+633.710	32+783.710	297.242	295.836	74.74	80
2	33+017.760	295.991	82	Sag	0.066	3.3	3.234	32+976.760	33+058.760	295.964	297.344	25.358	80
3	33+274.999	304.48	218	Hog	3.3	-3.3	-6.6	33+165.999	33+383.999	300.883	300.883	33.03	80
4	33+506.697	296.834	85	Sag	-3.3	0	3.3	33+464.197	33+549.197	298.236	296.836	25.757	80

DATE	REV	BY	DESCRIPTION OF REVISIONS
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CLIENT:

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APPROVED BY:	M.S
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DRAWN BY:	DEV
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PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: HORIZONTAL AND VERTICAL ALIGNMENT REPORT

DRG NO.: NHAI/G-ENG/22087/HOR/VER/02 REV. R0

(SERVICE ROAD)

NOTES:-

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

LEGEND
HORIZONTAL PLAN

- Proposed CL
- Median
- Pro. Carriageway
- Paved Shoulder
- Seprator
- ROW
- Box Culvert
- Svup
- Lvup
- Vup
- Minor Bridge

AMBALA ◄ ► CHANDIGARH

BOX CULVERT		
CHAINAGE	S:-32+806	D:- 32+812
SIDE	BOTH	BOTH
PROPOSAL	WIDENING	WIDENING
SPAN	1X1.50X1.50M	

HIP No.4		AT CH. 32998.912	
E=672313.029		N=3384224.216	
R (m)	-5000	Ls (m)	0.0
Dc(deg)	1.1222	S (m)	0.000
Lc (m)	97.934	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.240m	e (%)	NC
Design Speed (V) : 80 Kmph			

HIP No.5		AT CH. 33144.274	
E=694678.505		N=3404218.870	
R (m)	25000	Ls (m)	0.0
Dc(deg)	0.3192	S (m)	0.000
Lc (m)	139.282	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.097m	e (%)	NC
Design Speed (V) : 80 Kmph			

DRAIN
SERVICE ROAD
RE-WALL
PAVED SHOULDER
MAIN CARRIAGEWAY
MEDIAN
CENTER LINE

MAJOR BRIDGE

PROJECT ROAD START

VILLAGE - BHANKARPUR

32+775 32+800 32+900 33+000 33+100 33+200 33+300 33+400 33+500 33+600

PC 3304194
PT 3304463
PC 3322331
PT 3325891

ROW ENTRY EXIT

TAPER-81m
TAPER-70m

BOX CULVERT		
CHAINAGE	S:-32+885	D:- 32+892
SIDE	BOTH	BOTH
PROPOSAL	WIDENING	WIDENING
SPAN	1X1.50X1.50M	

BOX CULVERT		
CHAINAGE	S:-33+105	D:- 33+112
SIDE	BOTH	BOTH
PROPOSAL	RECONST.	RECONST.
SPAN	1X1.50X1.50M	

VUP	
STRUCTURE NO.	34/1
PROPOSAL	NEW
PROPO. CH.	33+275
SCHDULE CH.	
SIZE	2X15X5.5m

HIP No.6		AT CH. 33597.854	
E=683222.975		N=3394530.214	
R (m)	10000	Ls (m)	0.0
Dc(deg)	0.7901	S (m)	0.000
Lc (m)	137.893	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.238m	e (%)	NC
Design Speed (V) : 80 Kmph			

Structure	BOX
Design Chainage	32+812
Schedule Chainage	32+806
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	BOX
Design Chainage	32+892
Schedule Chainage	32+885
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	BOX
Design Chainage	33+112
Schedule Chainage	33+105
Proposal	RECONST.
Size/Span	1X1.5X1.5M

Structure	VUP
Design Ch.	33+275
Schedule Ch.	
Proposal	NEW
Size/Span	2x15x5.5m

PROPOSED FRL LEFT CARRIAGEWAY
PROPOSED FRL RIGHT CARRIAGEWAY
EXISTING ROAD LEVEL LEFT CARRIAGEAY
EXISTING ROAD LEVEL RIGHT CARRIAGEAY
LHS SERVICE ROAD
RHS SERVICE ROAD

309 308 307 306 305 304 303 302 301 300 299 298 297 296 295 294 293

Ch.=32785.996m Level=295.658m
Ch.=32811.146m Level=295.698m
Ch.=32880.656m Level=295.713m
Ch.=32830.656m Level=295.805m
Ch.=32974.616m Level=296.267m
Ch.=33007.487m Level=296.046m
Ch.=33047.487m Level=296.106m
Ch.=33094.616m Level=296.359m
Ch.=33273.317m Level=296.086m
Ch.=33273.449m Level=296.080m
Ch.=33333.317m Level=296.145m
Ch.=33333.449m Level=296.145m
Ch.=33542.584m Level=296.086m
Ch.=33585.000m Level=296.201m
Ch.=33619.717m Level=296.791m

Level Datum =292.000

LHS SERVICE ROAD LEVEL AT INNER EDGE	295.655 295.648 295.655 295.660 295.651 295.667 295.694 295.729 295.764 295.799 295.833 295.868 295.903 295.938 295.973 296.007 296.042 296.077 296.112 296.147 296.181 296.216 296.251 296.285 296.315 296.341 296.362 296.378 296.390 296.398 296.401 296.399 296.393 296.382 296.367 296.348 296.328 296.309 296.289 296.270 296.255 296.231 296.211 296.192 296.172 296.153 296.133 296.114 296.094 296.074 296.055 296.035 296.016 296.001 296.004 296.028 296.072 296.135 296.219 296.318 296.418 296.518 296.618 296.718 296.818 296.918 297.018 297.118 297.218 297.318 297.416 297.510 297.599 297.682 297.761 297.834 297.902 297.966 298.024 298.077 298.127 298.176 298.225 298.271 298.314 298.353 298.390 298.423 298.452 298.478
RHS SERVICE ROAD LEVEL AT INNER EDGE	295.655 295.655 295.660 295.660 295.666 295.672 295.677 295.683 295.689 295.695 295.701 295.706 295.712 295.720 295.733 295.752 295.779 295.835 295.866 295.897 295.927 295.963 295.992 296.028 296.053 296.071 296.050 296.044 296.021 296.016 296.035 296.017 296.017 296.035 296.048 296.041 296.049 296.313 296.005 296.326 296.233 296.158 296.174 296.162 296.136 296.126 296.113 296.102 296.143 296.144 296.165 296.162 296.177 296.195 296.137 296.237 296.160 296.318 296.418 296.518 296.618 296.718 296.818 296.918 297.018 297.118 297.218 297.318 297.416 297.510 297.599 297.682 297.761 297.834 297.902 297.966 298.024 298.077 298.127 298.176 298.225 298.271 298.314 298.353 298.390 298.423 298.452 298.478
EXISTING ROAD LEVEL AT LEFT CARRIAGEY	295.853 295.955 295.654 295.843 295.948 295.655 295.898 295.960 295.660 295.873 295.935 295.666 295.844 295.918 295.672 295.854 295.947 295.677 295.892 295.965 295.683 295.919 295.991 295.689 295.915 296.029 295.695 295.903 296.012 295.701 295.897 296.008 295.706 295.880 296.042 295.712 295.932 296.052 295.720 295.929 296.033 295.733 295.893 296.002 295.752 295.880 296.039 295.779 295.866 296.127 295.803 295.833 296.188 295.835 295.901 296.234 295.866 295.963 296.277 295.897 295.992 296.308 295.928 296.053 296.350 295.960 296.071 296.379 296.050 296.044 296.368 296.053 296.021 296.357 296.078 296.016 296.377 296.095 296.035 296.394 296.104 296.017 296.357 296.106 296.035 296.337 296.103 296.048 296.340 296.102 296.041 296.384 296.101 296.049 296.395 296.100 296.313 296.256 296.099 296.326 296.261 296.097 296.233 296.393 296.096 296.158 296.424 296.094 296.174 296.442 296.093 296.162 296.430 296.092 296.136 296.478 296.091 296.126 296.491 296.090 296.113 296.512 296.089 296.102 296.380 296.088 296.117 296.427 296.087 296.119 296.447 296.085 296.120 296.470 296.084 296.127 296.484 296.083 296.137 296.506 296.082 296.143 296.557 296.081 296.144 296.610 296.080 296.165 296.647 296.084 296.162 296.684 296.091 296.164 296.766 296.103 296.177 296.837 296.118 296.195 296.888 296.137 296.237 296.937 296.160 296.236 296.989 296.182 296.228 297.047 296.205 296.225 297.119 296.227 296.236 297.191 296.250 296.271 297.256 296.273 296.300 297.307 296.295 296.315 297.363 296.318 296.278 297.423 296.340 296.286 297.485 296.363 296.298 297.535 296.385 296.306 297.594 296.408 296.281 297.632 296.431 296.287 297.665 296.453 296.285 297.722 296.476 296.275 297.831 296.498 296.295 297.900 296.521 296.334 297.963 296.543 296.368 298.015 296.566 296.394 298.109 296.589 296.437 298.208 296.611 296.498 298.307 296.634 296.563 298.479 296.679 296.658 298.546 296.723 296.790 298.599 296.724 296.895 298.653 296.747 296.895 298.709 296.769 296.894 298.741 296.792 296.784 298.683 296.823
LHS SERVICE ROAD VERTICAL ALIGNMENT	8630.171m =80.000m; G=0.348; L=163.468m; L=120.000m R=−22084.368m; L=178.701m G=−0.195; R=5019.231m L=60.000m; G=1.000; L=109.266m; L=100.000m R=−19745.833m; G L; L=150 R=−30
RHS SERVICE ROAD VERTICAL ALIGNMENT	354.152m 0.000m; G=0.058; L=94.659m; R=19617.926m L=50.000m; G=0.313; L=76.832m; L=40.000m R; L=225.962m G=−0.011; R=25314.314m L=60.000m; G=0.226; L=286.267m; L=40.0 R
HORIZONTAL ALIGNMENT	R=−5000.000m L=97.934m; R=25000.000m L=139.282m; R=10000.000m L=137.893m
SUPERELEVATION	Q=−2.500 Q=−2.500 Q=−2.500 Q=−2.500 Q=−2.500 Q=−2.500
CHAINAGE	32770 32780 32790 32800 32810 32820 32830 32840 32850 32860 32870 32880 32890 32900 32910 32920 32930 32940 32950 32960 32970 32980 32990 33000 33010 33020 33030 33040 33050 33060 33070 33080 33090 33100 33110 33120 33130 33140 33150 33160 33170 33180 33190 33200 33210 33220 33230 33240 33250 33260 33270 33280 33290 33300 33310 33320 33330 33340 33350 33360 33370 33380 33390 33400 33410 33420 33430 33440 33450 33460 33470 33480 33490 33500 33510 33520 33530 33540 33550 33560 33570 33580 33590 33600 33610 33620 33630 33640

DATE	REV	BY	DESCRIPTION OF REVISIONS
05-07-22	R0	DEV	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
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APPROVED BY:	M.S
CHECKED BY:	L.K
DESIGNED BY:	T.P
DRAWN BY:	DEV
SCALE:	1:2
PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: SERVICE ROAD PLAN & PROFILE 32+775 TO 33+640

DRG NO.: NHAI/G-ENG/22087/SR/01

REV. R0

LHS SERVICE ROAD VERTICAL CURVE TABLE

Sr. No.	VIP Chainage	VIP LEVELS	LENGTH OF CURVE	TYPE OF CURVE	Grade IN %	Grade OUT %	Algebraic Difference	CHAINAGE START OF CURVE	CHAINAGE END OF CURVE	LEVEL START OF CURVE	LEVEL END OF CURVE	K VALUE	Design Speed (kmph)
1	32+771.148	295.559	80	Sag	-0.579	0.348	0.927	32+731.148	32+811.148	295.791	295.698	86.302	40
2	33+034.616	296.476	120	Hog	0.348	-0.195	-0.543	32+974.616	33+094.616	296.267	296.359	220.844	40
3	33+303.317	295.951	60	Sag	-0.195	1.000	1.195	33+273.317	33+333.317	296.009	296.251	50.192	40
4	33+492.584	297.843	100	Hog	1.000	0.494	-0.506	33+442.584	33+542.584	297.343	298.09	197.458	40
5	33+640.000	298.571	150	Hog	0.494	0.000	-0.494	33+565.000	33+715.000	298.201	298.571	303.858	40

RHS SERVICE ROAD VERTICAL CURVE TABLE

Sr. No.	VIP Chainage	VIP LEVELS	LENGTH OF CURVE	TYPE OF CURVE	Grade IN %	Grade OUT %	Algebraic Difference	CHAINAGE START OF CURVE	CHAINAGE END OF CURVE	LEVEL START OF CURVE	LEVEL END OF CURVE	K VALUE	Design Speed (kmph)
1	32+765.996	295.646	40	Sag	-0.121	0.058	0.179	32+745.996	32+785.996	295.670	295.658	223.542	40
2	32+905.656	295.727	50	Sag	0.058	0.313	0.255	32+880.656	32+930.656	295.713	295.805	196.179	40
3	33+027.487	296.108	40	Hog	0.313	-0.011	-0.324	33+007.487	33+047.487	296.046	296.106	123.442	40
4	33+303.449	296.077	60	Sag	-0.011	0.226	0.237	33+273.449	33+333.449	296.080	296.145	253.143	40
5	33+639.717	296.836	40	Hog	0.226	-0.041	-0.267	33+619.717	33+659.717	296.791	296.828	149.972	40

DATE	REV	BY	DESCRIPTION OF REVISIONS
05-07-22	R0	DEV	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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DRAWN BY:	DEV
SCALE:	NTS
PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: SERVICE ROAD VERTICAL ALIGNMENT REPORT

DRG NO.: NHAI/G-ENG/22087/SR/VER/02 | REV. R0

SIGNAGE PLAN

AMBALA

CHANDIGARH

BOX CULVERT		
CHAINAGE	S;–32+806	D:– 32+812
SIDE	BOTH	BOTH
PROPOSAL	WIDENING	WIDENING
SPAN	1X1.50X1.50M	

HIP No.4		AT CH.	32998.912
E=672313.029		N=3384224.216	
R (m)	-5000	**Ls (m)**	0.0
Dc(deg)	1.1222	S (m)	0.000
Lc (m)	97.934	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.240m	e (%)	NC
Design Speed (V) : 80 Kmph			

HIP No.5		AT CH.	33144.274
E=694678.505		N=3404218.870	
R (m)	25000	**Ls (m)**	0.0
Dc(deg)	0.3192	S (m)	0.000
Lc (m)	139.282	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.097m	e (%)	NC
Design Speed (V) : 80 Kmph			

PROJECT ROAD START

PROJECT ROAD END CH. 33+640

32+775 32+800 32+900 33+000 33+100 33+200 33+300 33+400 33+500 33+600

BHANKARPUR

TAPER 55m

40.0m (FOR VR)

TAPER-81m

TAPER-70m

PC 32994.94

PT 33074.63

PC 33213.91

PC 33528.91

ENTRY EXIT EXIT ENTRY

ROW

GIVE WAY

BOX CULVERT		
CHAINAGE	S;–32+885	D:– 32+892
SIDE	BOTH	BOTH
PROPOSAL	WIDENING	WIDENING
SPAN	1X1.50X1.50M	

BOX CULVERT		
CHAINAGE	S;–33+105	D:– 33+112
SIDE	BOTH	BOTH
PROPOSAL	RECONST.	RECONST.
SPAN	1X1.50X1.50M	

VUP	
STRUCTURE NO.	34/1
PROPOSAL	NEW
PROPO. CH.	33+275
SCHDULE CH.	
SIZE	2X15X5.5m

HIP No.6		AT CH.	33597.854
E=683222.975		N=3394530.214	
R (m)	10000	**Ls (m)**	0.0
Dc(deg)	0.7901	S (m)	0.000
Lc (m)	137.893	Ts(deg)	0.0000
Ts (m)	0.000	D (deg)	0.0000
Es (m)	0.238m	e (%)	NC
Design Speed (V) : 80 Kmph			

DATE	REV	BY	DESCRIPTION OF REVISIONS
08-07-22	R0	DEV	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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APPROVED BY:	M.S
CHECKED BY:	L.K
DESIGNED BY:	T.P
DRAWN BY:	DEV
SCALE:	1:2
PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:

CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: SIGNAGE PLAN 32+775 TO 33+640

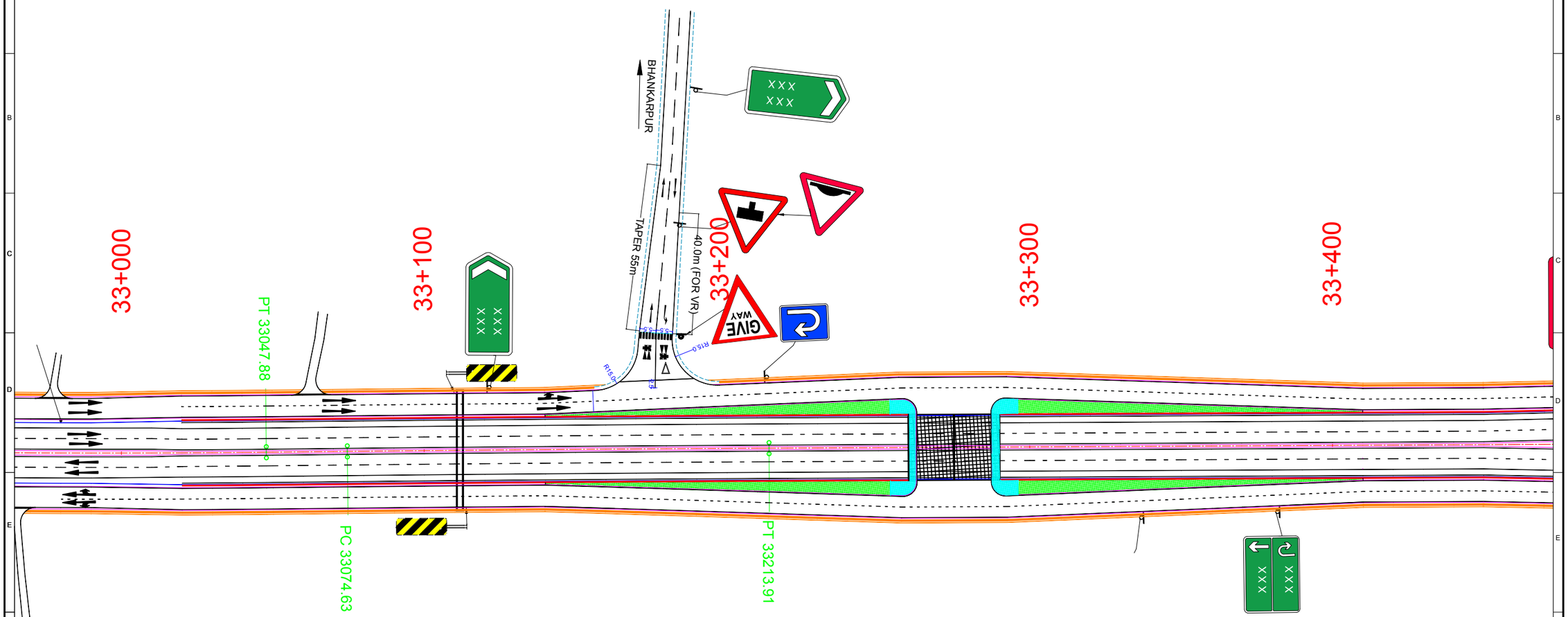
DRG NO.: NHAI/G-ENG/22087/SP/01

REV. R0

JUNCTION PLAN

AMBALA

CHANDIGARH



08-07-22	R0	DEV	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

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SCALE:	1:2
PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:

CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: JUNCTION PLAN 33+200

DRG NO.: NHAI/G-ENG/22087/JN/01

REV. R0

AMBALA

CHANDIGARH

PROJECT ROAD START

32+600

32+700

32+775

32+800

32+900

33+000

33+100

PC 32949.94

PT 33047.88

PC 33074.63

ENTRY

EXIT

EXIT

ENTRY

GIVE WAY

GIVE WAY

TAPER 55m

40.0m (FOR VR)

TAPER 55m

40.0m (FOR VR)

XXX XXX

08-07-22	R0	DEV	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

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DRAWN BY:	DEV
SCALE:	1:2
PAPER SIZE	A2
DATE:	JULY. - 2022

PROJECT:

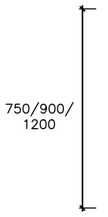
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

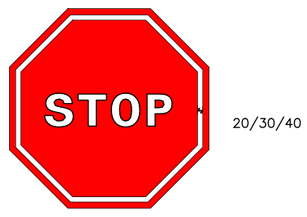
TITLE: JUNCTION PLAN
32+850 (BOTH SIDE)

DRG NO.: NHAI/G-ENG/22087/JN/02

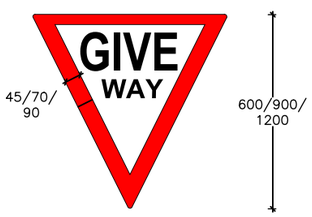
REV. R0

STANDARD DRAWINGS

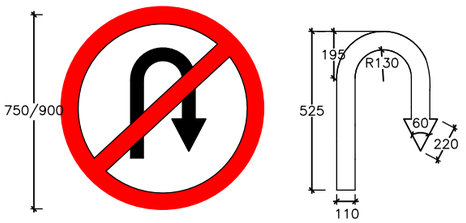




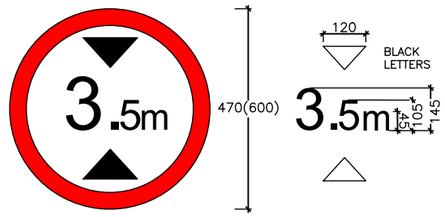
STOP SIGN
S-1



GIVE WAY
S-2

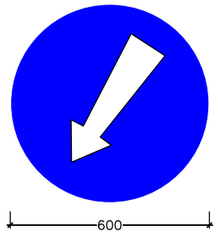


U-TURN PROHIBITED
S-3

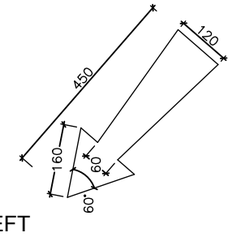


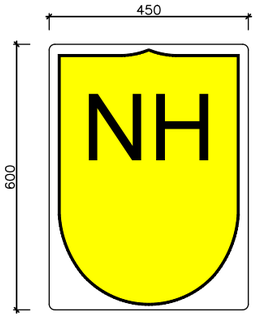
HEIGHT LIMIT
S-4

Fig No	Design speed(kmph)	Size	Regulatory signs	Mandatory signs			
14.37			Diameter(mm)	Diameter(mm)	Border(mm)	Oblique (mm)	Font size (mm)
A	Up to 65	SMALL	600	600	50	50	100
B	66–80	MEDIUM	750	750	60	60	125
C	81–100	NORMAL	900	900	75	75	150
D	>100	LARGE	1200	1200	100	100	225

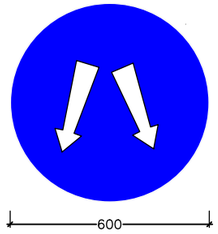


COMPULSORY KEEP LEFT
S-5

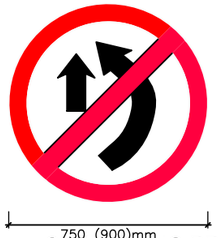


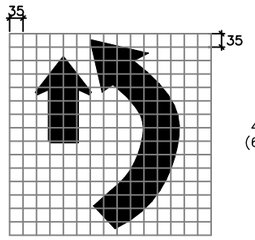


NATIONAL HIGHWAY
ROUTE MARKER SIGN

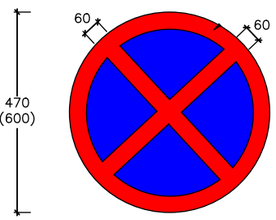


PASS EITHER SIDE
S-6

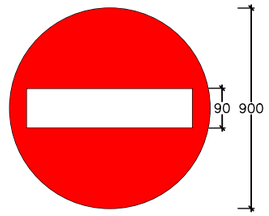




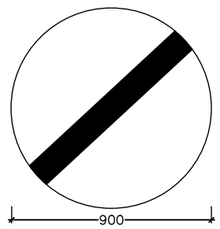
OVERTAKING PROHIBITED
S-7



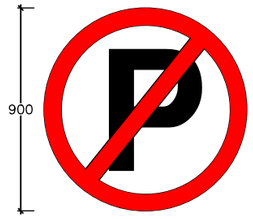
NO STOPPING AND
NO STANDING
S-8



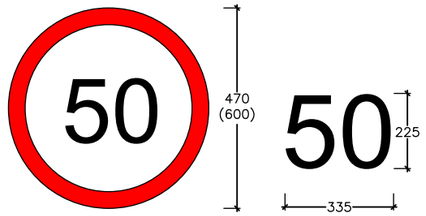
NO ENTRY
S-9



RESTRICTION END
S-10



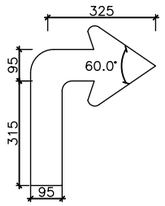
NO PARKING
S-11

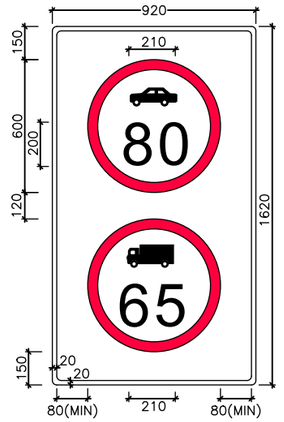


SPEED LIMIT
S-12



RIGHT TURN PROHIBITED
S-13





MAX SPEED LIMIT SIGN

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. PLACE OF ROAD SIGN ARE MAY BE CHANGED AS PER SITE CONDITION.
3. FOR FURTHER DETAILS OF ROAD SIGNS REFER GOVERNMENT OF INDIA MINISTRY OF SURFACE TRANSPORT (ROAD WINGS) NEW DELHI 1995.
4. THE SIZE OF SIGN BOARD SHALL DEPEND ON THE MESSAGE & SIZE OF LETTERS.
5. OBJECT MARKS SHOULD BE LOCATED PERIPHARY OF ROTARY ISLANDS,

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

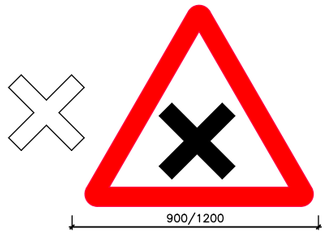
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

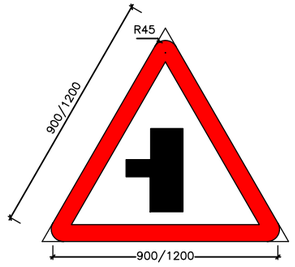
PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: ROAD SIGNS (REGULATORY SIGN DETAIL)

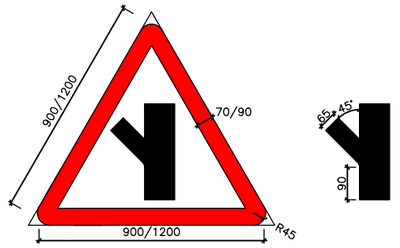
DRG NO.: NHAI/G-ENG/22087/SD/01
(SHEET 01 OF 04)



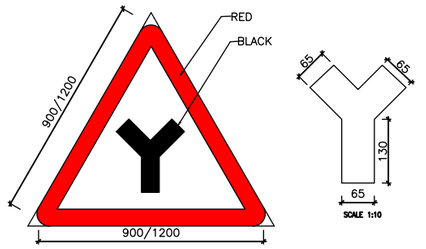
CROSS ROAD
S-14



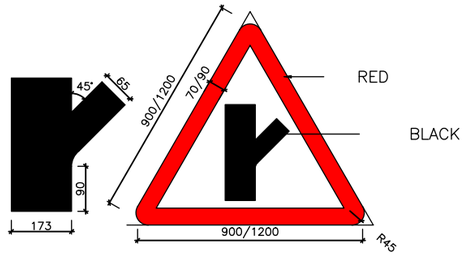
SIDE ROAD LEFT
S-15



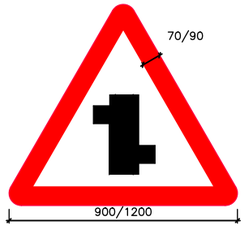
'Y' INTERSECTION (LEFT)
S-16



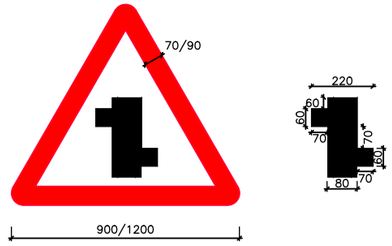
'Y' INTERSECTIONS
S-17



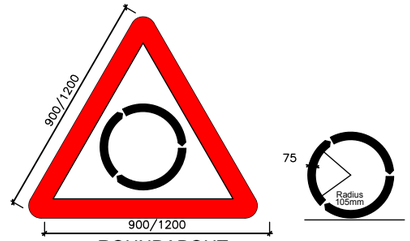
S-23 'Y' INTERSECTION (RIGHT)
S-18



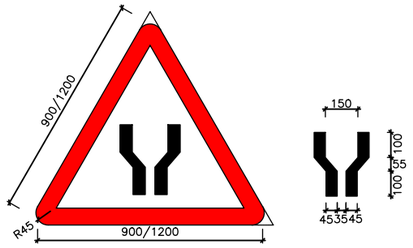
STAGGERED INTER-SECTIONS
S-19



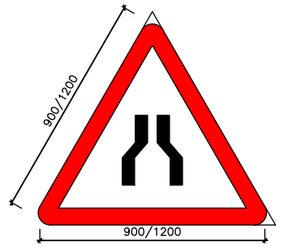
STAGGERED INTER-SECTIONS
S-20

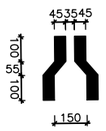


ROUNDABOUT
CS-20A

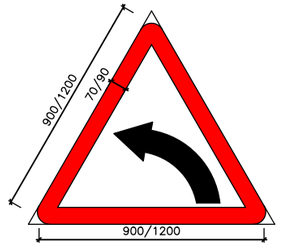


ROAD WIDENS AHEAD
S-21

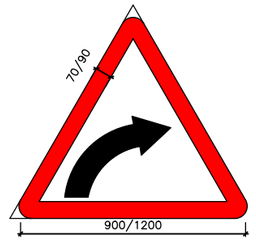




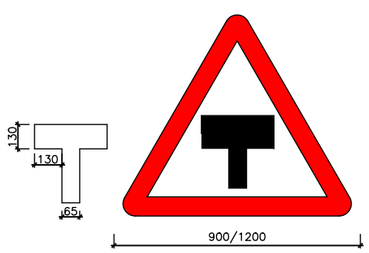
NARROW WIDENS AHEAD
S-22



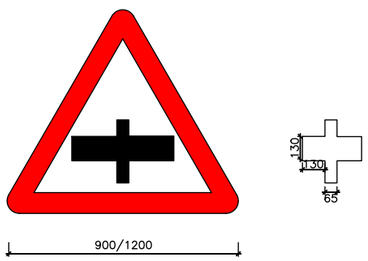
LEFT HAND CURVE
S-23



RIGHT HAND CURVE
S-24



T-INTERSECTION



MAJOR ROAD AHEAD
S-26

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL ROAD SIGN ARE IN ACCORDANCE WITH IRC-67-2012,"C0DE OF PRACTICE FOR ROAD SIGNS".
3. TEXT FOR SIGN BORADS SHALL BE S PER IRC:30-1968,"STANDARD LETTERS AND NUMERICAL OF DIFFERENT HEIGHTS FOR USE IN HIGHWAY SIGNS".
4. FOR DETAILED CHARACTERISTICS OF THE ROAD SIGNS RELEVANT IRC CODE & MOST GUIDELINES SHALL BE REFERRED.
5. DIMENSIONS ARE AS PER DESIGN SPEED.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

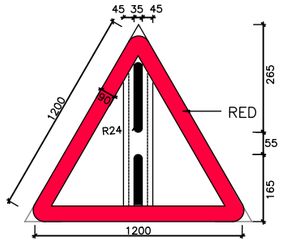
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

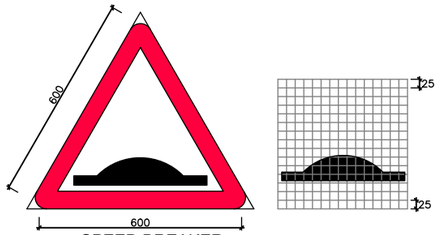
PROJECT:
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TITLE: ROAD SIGNS (WARNING SIGN DETAIL)

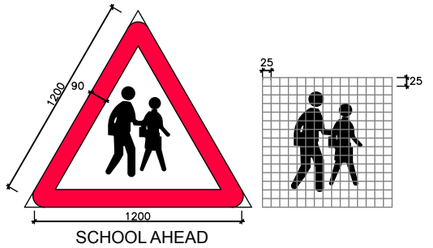
DRG NO.: NHAI/G-ENG/22087/SD/02 (SHEET 02 OF 04)



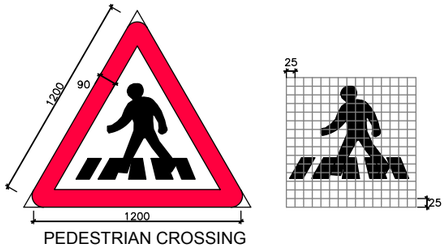
GAP IN MEDIAN
S-27



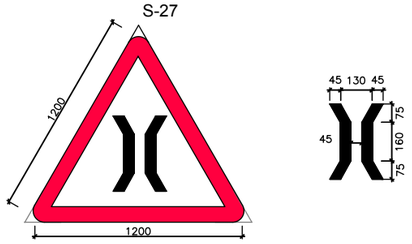
SPEED BREAKER
S-28



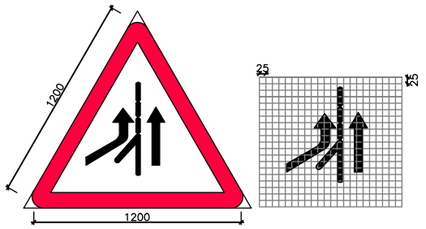
SCHOOL AHEAD
S-29



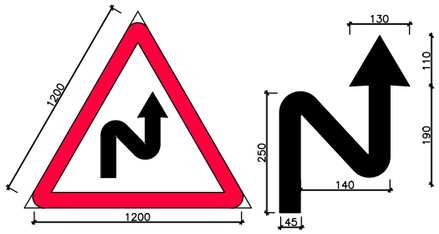
PEDESTRIAN CROSSING
S-30



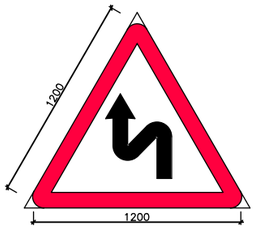
NARROW BRIDGE AHEAD
S-31



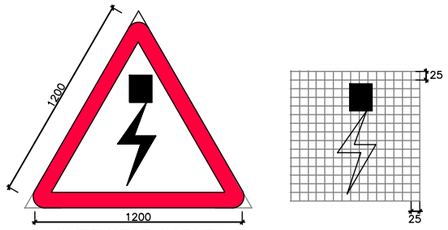
MERGING TRAFFIC AHEAD (FROM LEFT)
S-32



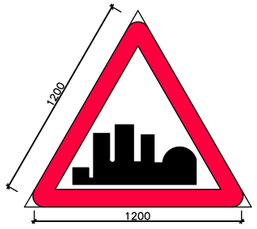
RIGHT REVERSE BEND
S-33



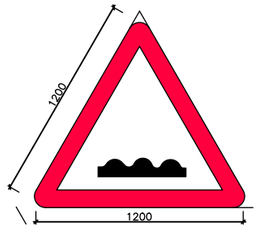
LEFT REVERSE BEND
S-34



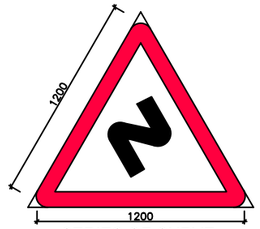
OVER HEAD CABLES
S-35



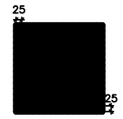
BUILT-UP AREA
S-36

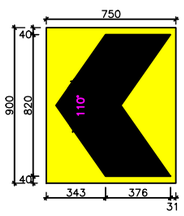


RUMBLE STRIP
S-37

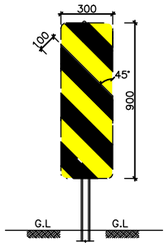


SERIES OF CURVE
S-37A

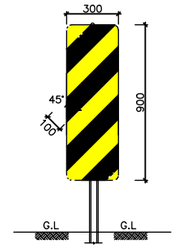




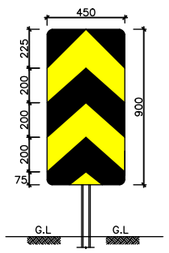
SINGLE CHEVRON (>100kmph SPEED)
S-38



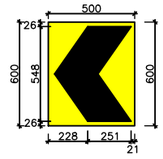
ONE WAY HAZARD MARKER (LEFT)
S-39



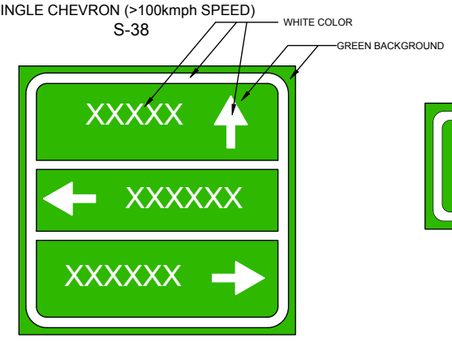
ONE WAY HAZARD MARKER (RIGHT)
S-40



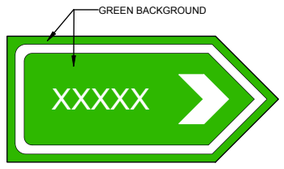
TWO WAY HAZARD MARKERS
S-41



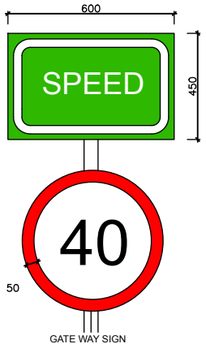
SINGLE CHEVRON (NORMAL)
S-42



STACK TYPE ADVANCE DIRECTION/DESTINATION SIGN



FLAG TYPE DIRECTION SIGN



GATE WAY SIGN

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
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DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

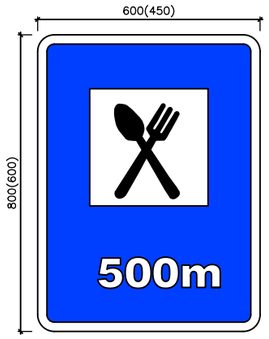
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

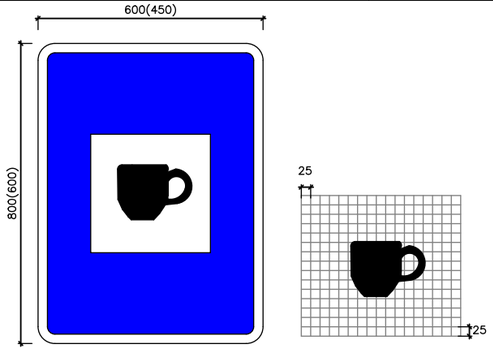
TITLE: ROAD SIGNS (WARNING & INFORMATRY SIGN DETAIL)

DRG NO.: NHAI/G-ENG/22087/SD/03 (SHEET 03 OF 04)



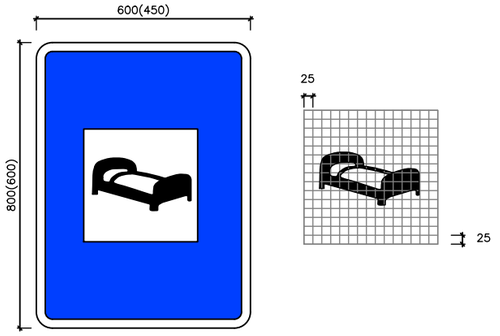
EATING PLACE

S-43



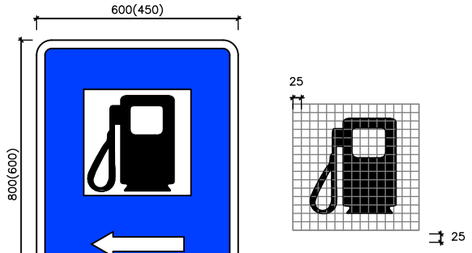
LIGHT REFRESHMENT

S-44



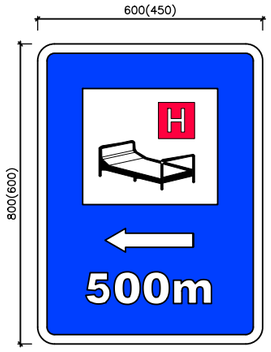
RESTING PLACE

S-45



FILLING STATION

S-46



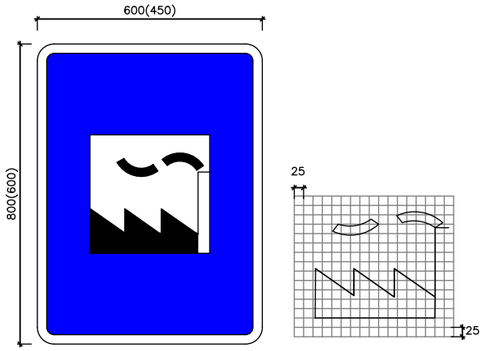
HOSPITAL

S-47



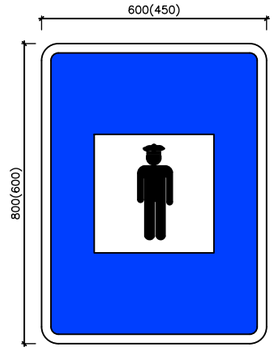
PUBLIC TELEPHONE

S-48



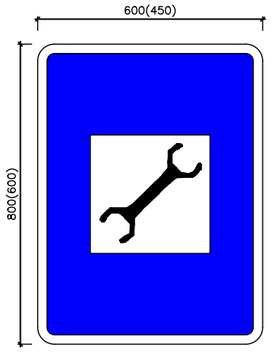
INDUSTRIAL AREA

S-49



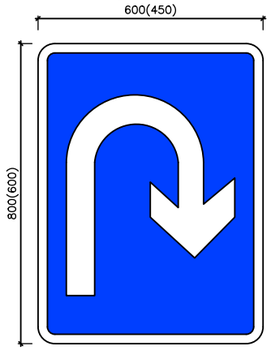
POLICE STATION

S-50



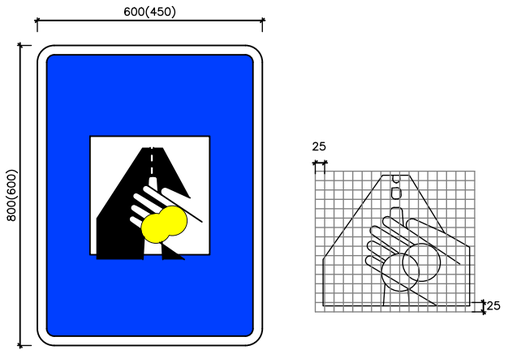
REPAIR FACILITY

S-51



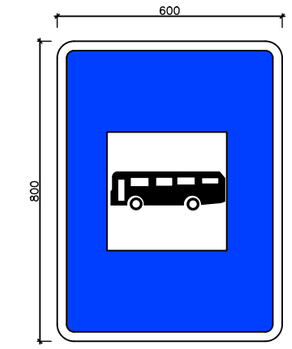
U TURN AHEAD

S-52



TOLL ROAD AHEAD

S-53



BUS STOP

S-54

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL ROAD SIGN ARE IN ACCORDANCE WITH IRC-67-2012,"C0DE OF PRACTICE FOR ROAD SIGNS".
3. TEXT FOR SIGN BORADS SHALL BE S PER IRC:30-1968,"STANDARD LETTERS AND NUMERICAL OF DIFFERENT HEIGHTS FOR USE IN HIGHWAY SIGNS".
4. FOR DETAILED CHARACTERISTICS OF THE ROAD SIGNS RELEVANT IRC CODE & MOST GUIDELINES SHALL BE REFERRED.
5. DIMENSIONS ARE AS PER DESIGN SPEED.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

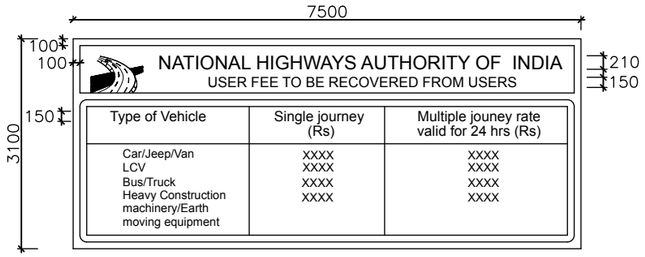
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

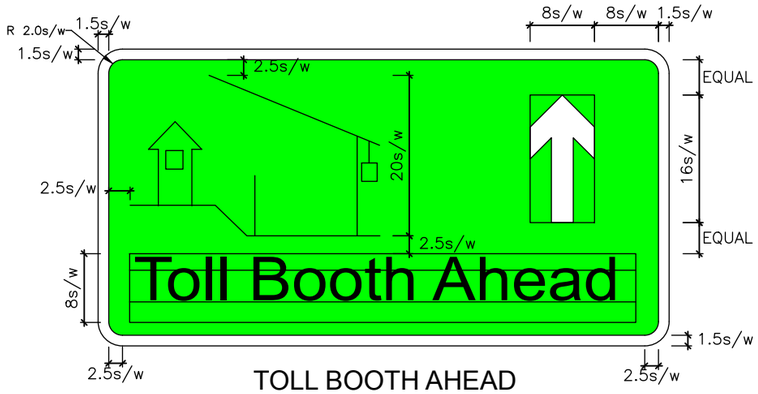
PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: ROAD SIGNS (FACILITY INFORMATION SIGN DETAIL)

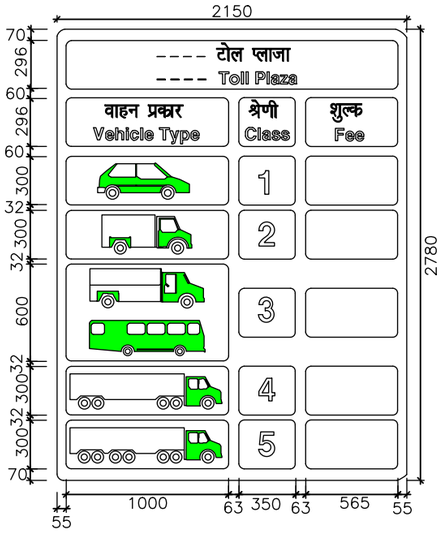
DRG NO.: NHAI/G-ENG/22087/SD/04 (SHEET 04 OF 04)



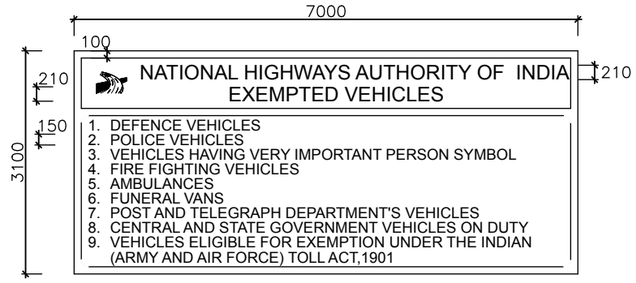
SIGN BOARD SHOWING USER FEE



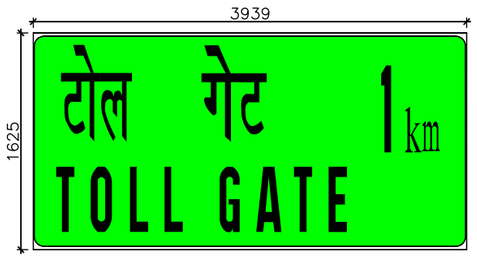
TOLL BOOTH AHEAD

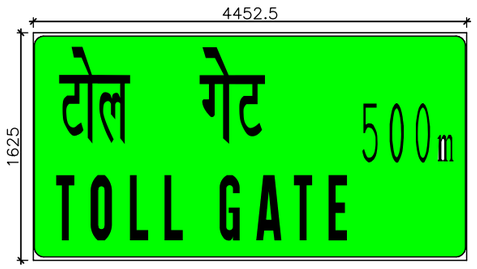


TOLL RATES DEPICTION SIGN AT TOLL PLAZA

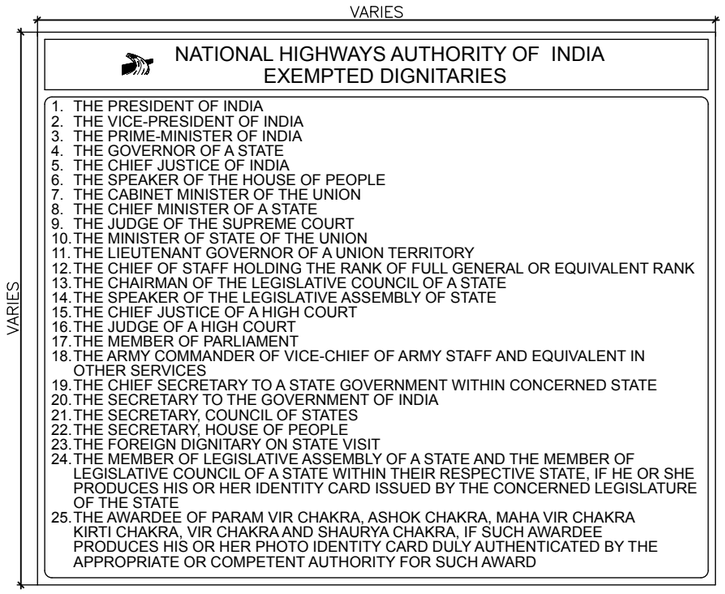


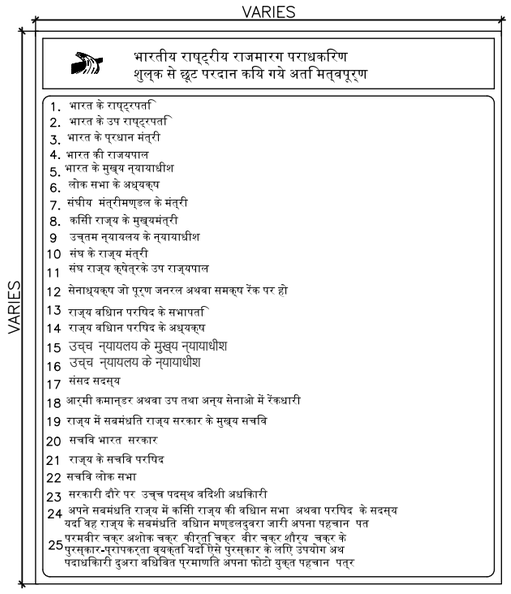
SIGN BOARD SHOWING TOLL EXEMPTED VEHICLES





TOLL PLAZA AHEAD (CANTILEVER SIGN)





SIGN BOARD SHOWING TOLL EXEMPTED DIGNITARIES

1. ALL DIMENSIONS ARE IN MILIMETRES UNLESS OTHERWISE SPECIFIED.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

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Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: ROAD SIGNS (REGULATORY SIGN DETAIL)

DRG NO.: NHAI/G-ENG/22087/SD/05 (SHEET 05 OF 07)

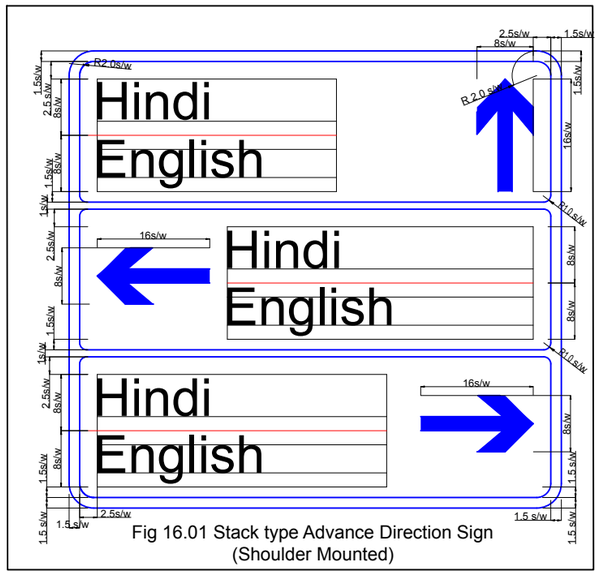


Fig 16.01 Stack type Advance Direction Sign
(Shoulder Mounted)

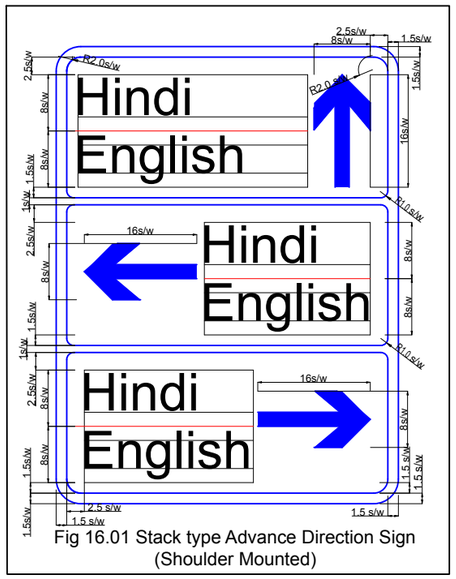


Fig 16.01 Stack type Advance Direction Sign
(Shoulder Mounted)

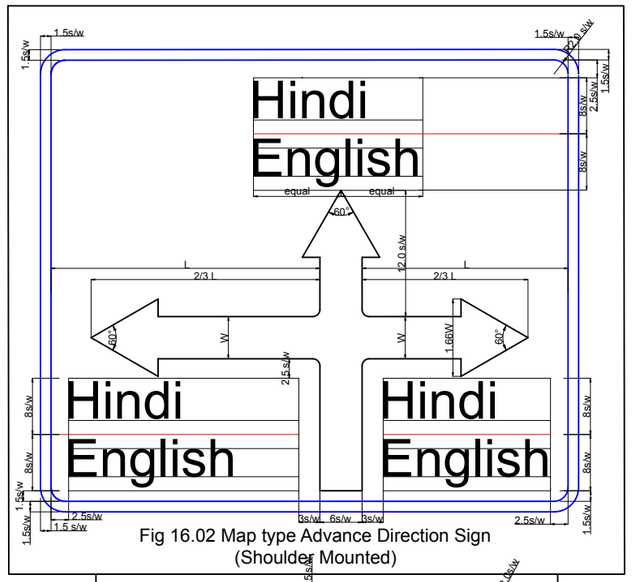


Fig 16.02 Map type Advance Direction Sign
(Shoulder Mounted)

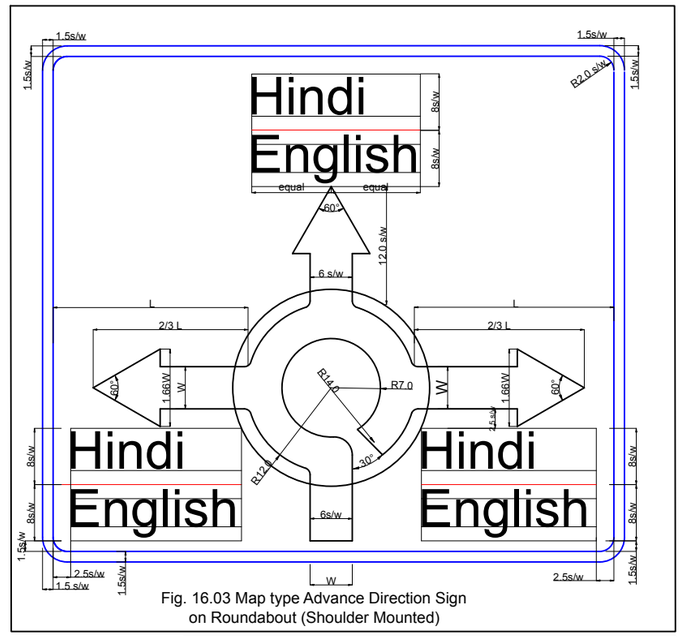


Fig. 16.03 Map type Advance Direction Sign
on Roundabout (Shoulder Mounted)

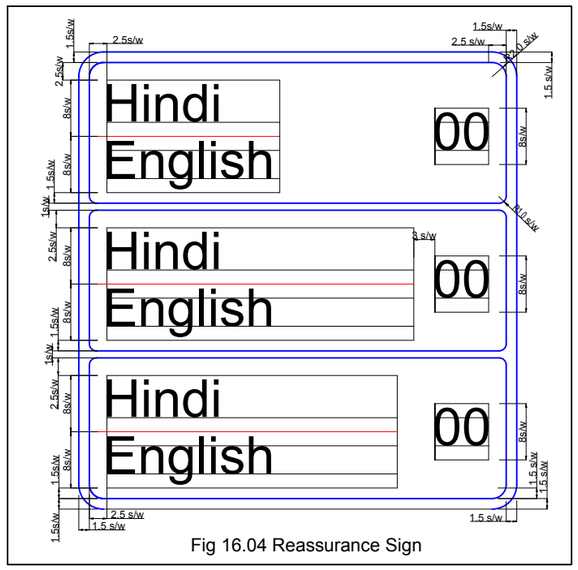


Fig 16.04 Reassurance Sign

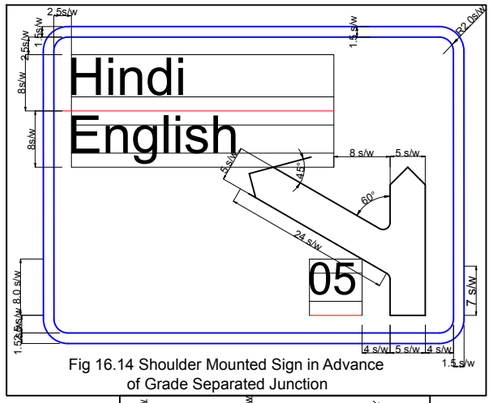


Fig 16.14 Shoulder Mounted Sign in Advance
of Grade Separated Junction

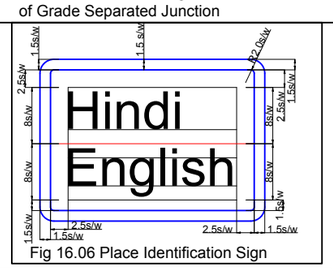


Fig 16.06 Place Identification Sign

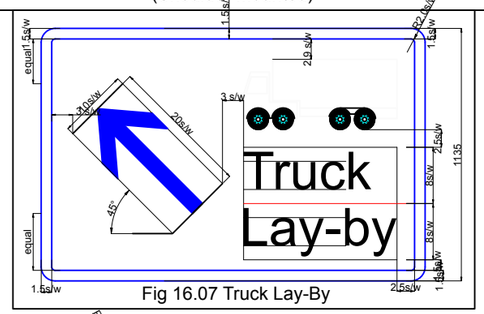


Fig 16.07 Truck Lay-By

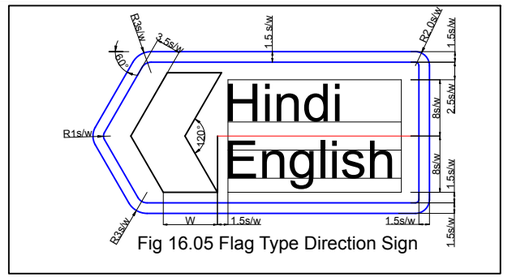


Fig 16.05 Flag Type Direction Sign

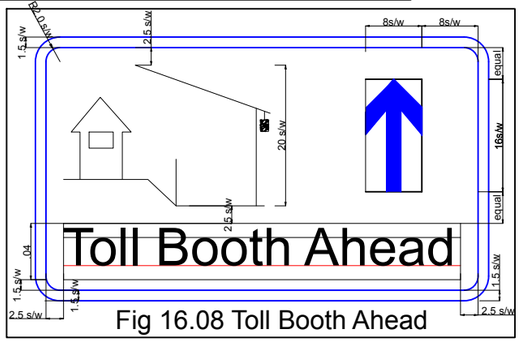


Fig 16.08 Toll Booth Ahead

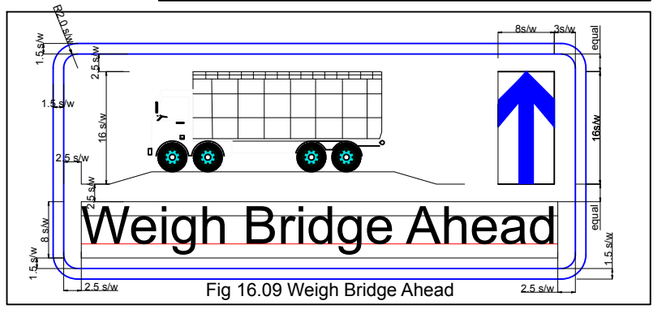


Fig 16.09 Weigh Bridge Ahead

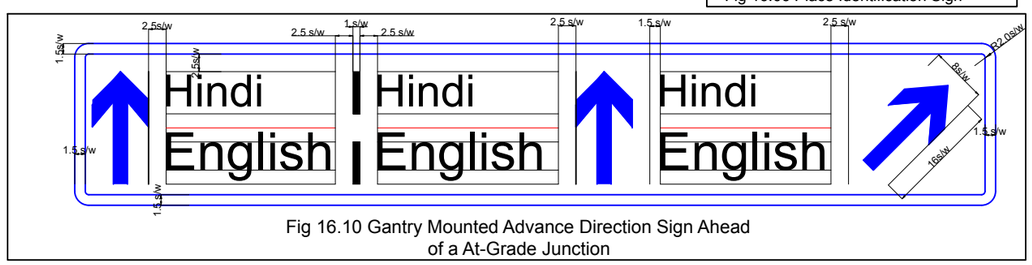


Fig 16.10 Gantry Mounted Advance Direction Sign Ahead
of a At-Grade Junction

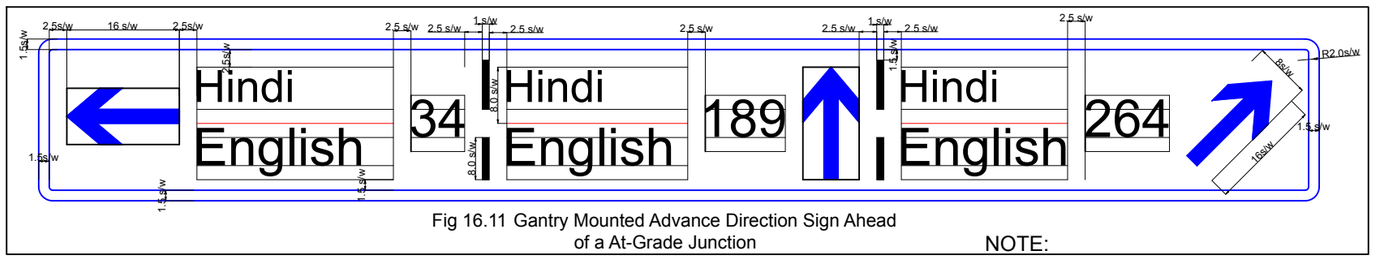


Fig 16.11 Gantry Mounted Advance Direction Sign Ahead
of a At-Grade Junction

NOTE:

i.e. 1s/w = $\frac{1}{4}$ of lowercase "x" height

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL DETAILS OF TRAFFIC SIGNS (INFORMATORY SIGNS)

DRG NO.: NHAI/G-ENG/22087/SD/06
(SHEET 06 OF 07)

Table 11.1 letter Size and Siting of Information Signs (Shoulder & Gantry Mounted)

	Advance Direction Signs {Shoulder Mounted)					Flag Type Direction Signs Reassurance Signs Place Identification Signs			Gantry Mounted Signs		
1	2	3	4	5	6	7	8	9	10	11	12
Design Speed	"x" height (mm) lower case	"X" height (mm) upper case	Minimum clear visibility to the sign (m)	ONE sign: distance from junction (m)	TWO signs: distance between 1st and 2nd sign (m)	"x" height (mm) lower case	"X" height (mm) upper case	Minimum clear visibility to the sign (m)	"x" height (mm) lower case	"X" height (mm) upper case	Minimum clear visibility to the sign (m)
Up to 30 km/h	75 (60)*	105 (84)	50 (35)	20	-	60 (50)	84 (70)	35 (30)	200 (175)	280 (245)	150
31-50 km/h	100 (75)	140 (105)	75 (45)	45	45	75 (60)	105 (84)	45 (35)			
51-65 km/h	125 (100)	175 (140)	100 (60)	90	50	100 (75)	140 (105)	60 (45)			
66-80 km/h	150 (125)	210 (175)	135	90- 150	70	125 (100)	175 (140)	75 (60)			
81 - 100 km/h	200 (150)	280 (210}	165	150-225	100	150 (125)	210 (175)	105 (75)	250 (200)	350 (280)	200
101- 110 km/h	250 (200)	350 (280)	225	225-300, SP£> also Note 1	100	200 (150)	280 (210)	135 (105)	275 (250)	385 (350)	240
111- 120 km/h	300 (250)	420 (350)	260	See Note 1	See Note 1	300 (250)	420 (350)	180 (150)	300 (275)	420 (385)	260

*Note: The values in brackets are the minimum values to be adopted when there are site/space constraints.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in
ISO 9001:2008 Certified Company

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: SITTING INFORMATORY SIGN TABLE

DRG NO.: NHAI/G-ENG/22087/SD/07 (SHEET 07 OF 07)

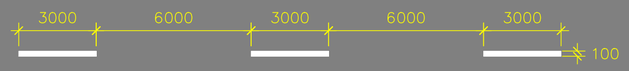
MAIN CARRIAGWAY

EDGE LINE MARKING (SHOULDER SIDE & MEDIAN SIDE)



DETAIL OF EDGE LINE MARKING (LM–24)

LANE MARKING–RURAL



LANE MARKING ON STRAIGHT REACHES IN (RURAL SECTION)(LM–01)



LANE MARKING FOR CURVES AND AT APPROACH ROADS TO INTERSECTIONS IN (RURAL SECTION)(LM–11)

LANE MARKING–URBAN



LANE MARKING ON STRAIGHT REACHES IN (URBAN SECTION) (LM–02)



LANE MARKING FOR CURVES AND AT APPROACH ROADS TO INTERSECTIONS IN (URBAN SECTION)(LM–12)

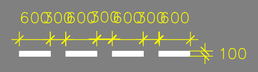
EDGE LINEMARKING



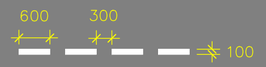
DETAIL OF EDGE LINE MARKING SERVICE ROAD WIDTH MORE THAN 7M (LM–24)



DETAIL OF EDGE LINE MARKING SERVICE ROAD WIDTH LESS 7M (LM–23)



CONTINUITY LINE FOR MEDIAN AND ISLANDS (LM–17)



CONTINUITY LINE FOR STOP AND GIVE WAY LINES (TM–04)

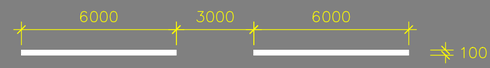


MARKING FOR ACCELERATION/ DECELERATION (LM–22)

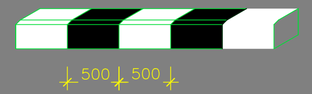
SERVICE ROAD CENTERLINE MARKING



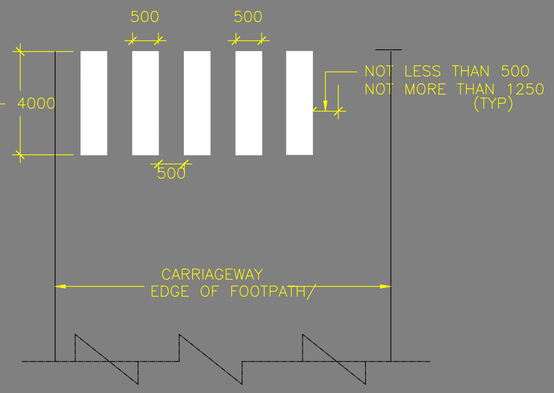
CENTERLINE MARKING FOR STRAIGHT REACHES IN (URBAN SECTION)(LM–01)



CENTERLINE MARKING FOR CURVE AND AT APPROACH TO INTERSECTION (URBAN SECTION)(LM–04)



KERB MARKINGS



PEDESTRIAN CROSSING MARKING (BM01 / BM02 / BM03)

Notes:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLLESS OTHERWISE SPECIFIED.
2. LANE MARKING & OBJECT MARKINGS SHALL BE DONE WITH HOT THERMOPLASTIC PAINT WITH GLASS REFLECTORING BEADS AND SHALL BE IN ACCORDANCE WITH CLAUSE–803 OF"MOST" SPECIFICATION REVISION V, 2013
3. ALL MARKINGS SHALL BE IN ACCORDANCE WITH IRC:35–2015 AND TYPE DESIGN FOR INTERSECTION ON NATIONAL HIGHWAYS('MOST"1995).
4. PAINTINGS FOR MEDIAN KERB SHALL BE DONE ON TOP AND ON VERTICAL EXPOSED SURFACES.
5. MARKING COLOUR ON RIGID PAVEMENT SHALL BE ACCORDING TO CLAUSE 3.8.2 OF IRC:35–2015.
6. TYPICAL SECTION FOR EDGE AND LANE LINE MARKING IS INDICATIVE ONLY.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

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CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

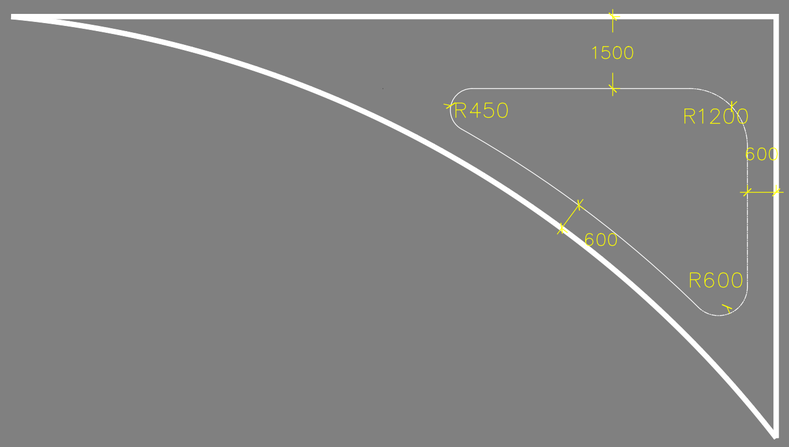
PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL DETAIL OF ROAD LANE MARKING

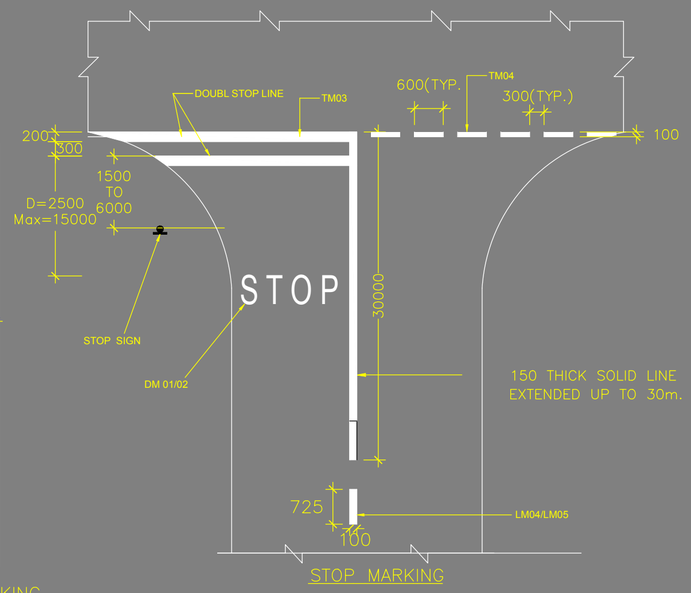
DRG NO.: NHAI/G-ENG/22087/SD/04

APROACH SPEED ON MINOR	SIZE OF STOP MARKING		
	HEIGHT	BORDER	SIZE
UPTO 50Kmph	750	25	125
51-65 Kmph	900	30	150
>65 Kmph	1200	40	225

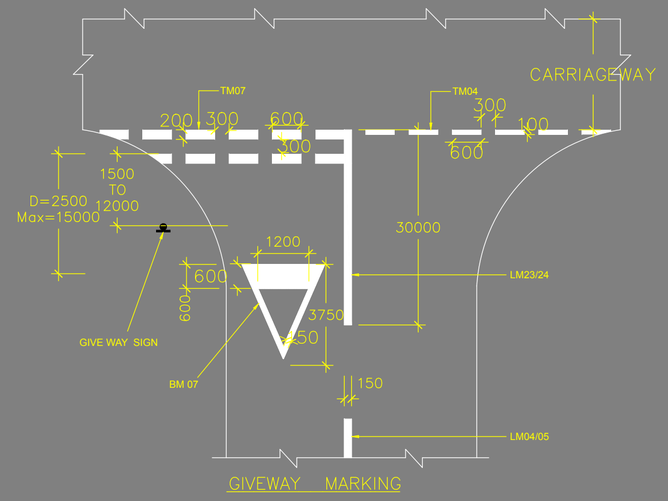
NOTE: ALL DIMENSION IN mm.



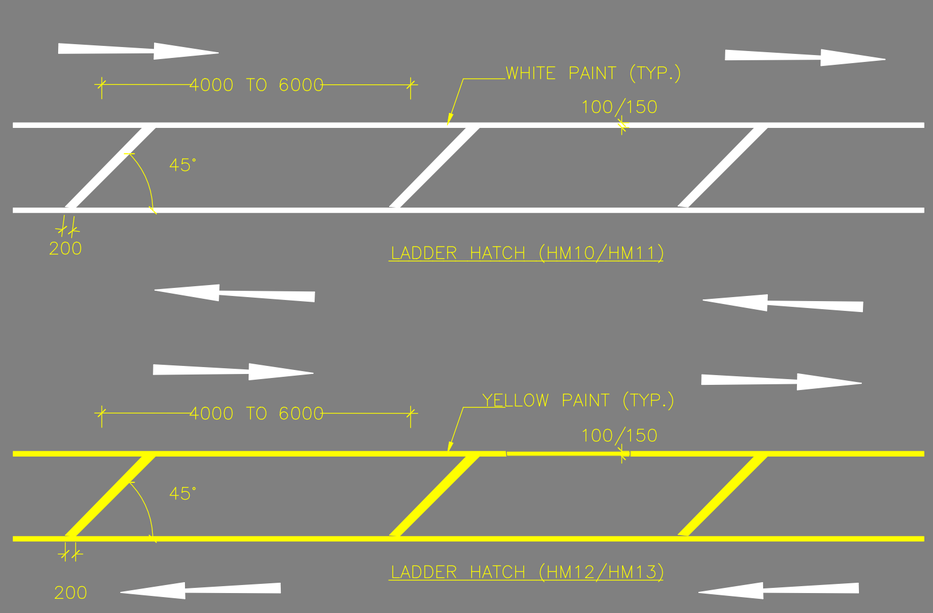
EDGE MARKING
AROUND ISLAND



STOP MARKING

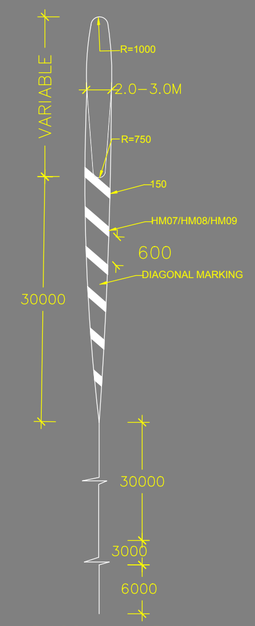


GIVEWAY MARKING



LADDER HATCH (HM10/HM11)

LADDER HATCH (HM12/HM13)



DIAGONAL MARKING
IN ADVANCE
OF DIRECTION ISLAND

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

ISO 9001:2008 Certified Company

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

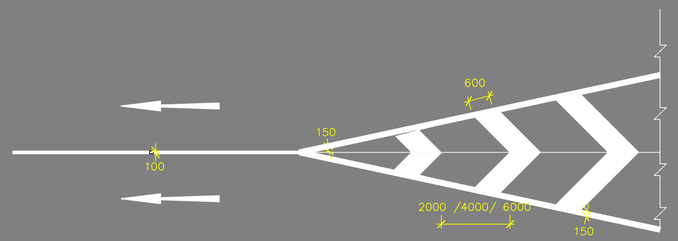
PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL DETAIL OF ROAD LANE MARKING

DRG NO.: NHAI/G-ENG/22087/SD/05

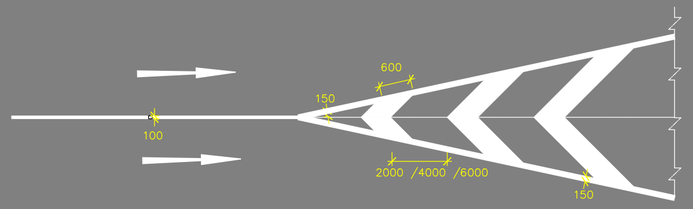
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLLESS OTHERWISE SPECIFIED.
2. LANE MARKING & OBJECT MARKINGS SHALL BE DONE WITH HOT THERMOPLASTIC PAINT WITH GLASS REFLECTORING BEADS AND SHALL BE IN ACCORDANCE WITH CLAUSE–803 OF"MOST" SPECIFICATION REVISION V, 2013
3. ALL MARKINGS SHALL BE IN ACCORDANCE WITH IRC:35–2015 AND TYPE DESIGN FOR INTERSECTION ON NATIONAL HIGHWAYS('MOST"1995).
4. PAINTINGS FOR MEDIAN KERB SHALL BE DONE ON TOP AND ON VERTICAL EXPOSED SURFACES.
5. MARKING COLOUR ON RIGID PAVEMENT SHALL BE ACCORDING TO CLAUSE 3.8.2 OF IRC:35–2015.



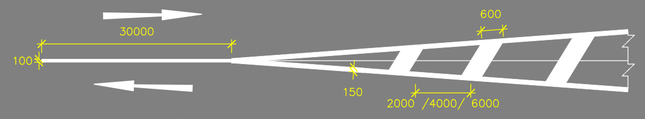
DETAILS OF CEVRON MARKING (MERGING)

(HM04/HM–05/HM06)

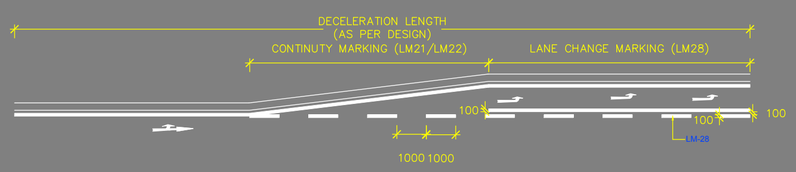


DETAILS OF CEVRON MARKING (DIVERGING)

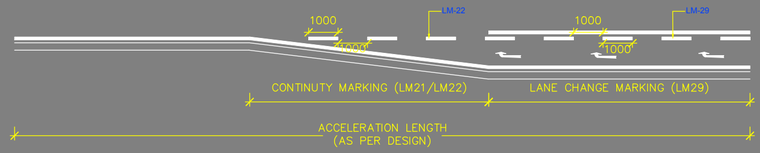
(HM01/HM–02/HM03)



DETAILS OF DIAGONAL MARKING–(HM07/HM/08/HM09)



TYPICAL ARRANGEMENT FOR MARKINGS ON DECELERATION LANE



TOTAL LENGTH OF DIGONALS/CEVRON MARKING (IN M)	SPACING OF DIGONAL/CEVRON (IN M)		
	DIAGONAL MARKING	CHEVRON MARKING (DIVERGING SITUATIONS)	CHEVRON MARKING (MERGING SITUATIONS)
< 10	2	2	2
10 m TO 22	4	4	4
> 22	6	6	6

TABLE 7.1 OF IRC 35-2015.



LANE MARKING ON STRAIGHT REACHES IN (RURAL SECTION) (LM–05)



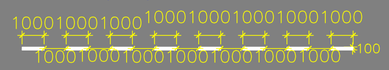
MARKING FOR DECELERATION LANE (LM–28)



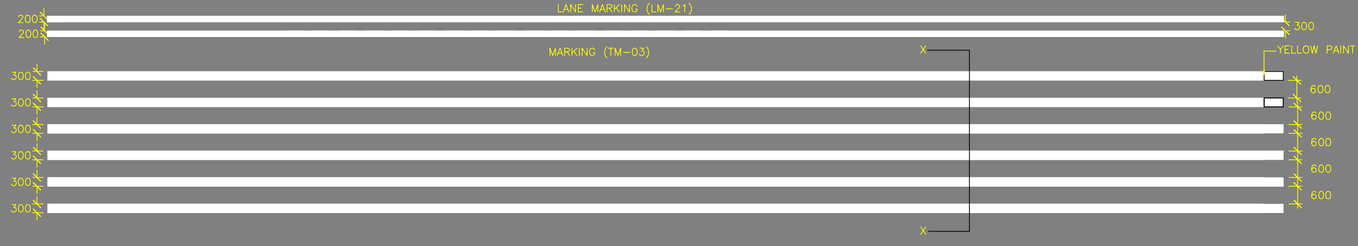
MARKING FOR ACCELERATION LANE (LM–29)



MARKING (TM–07)



LANE MARKING (LM–21)





SECTION–XX

BAR MARKINGE (TM–08)

05.07.22	R0	D.D	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,EEPS-01,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

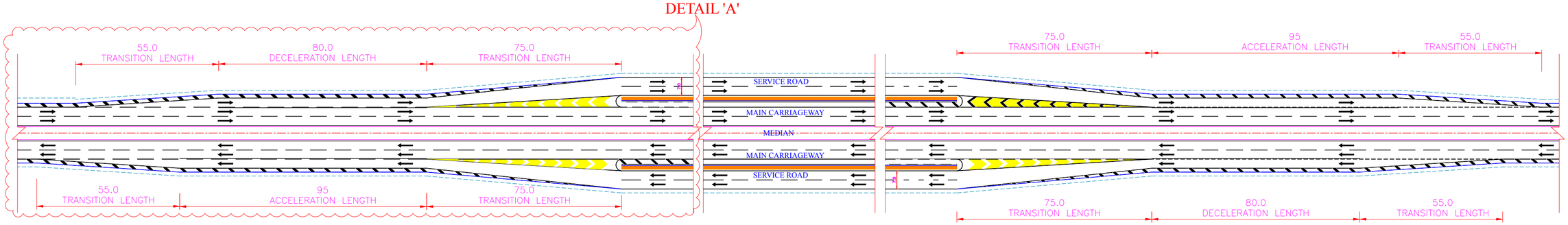
PROJECT:

CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

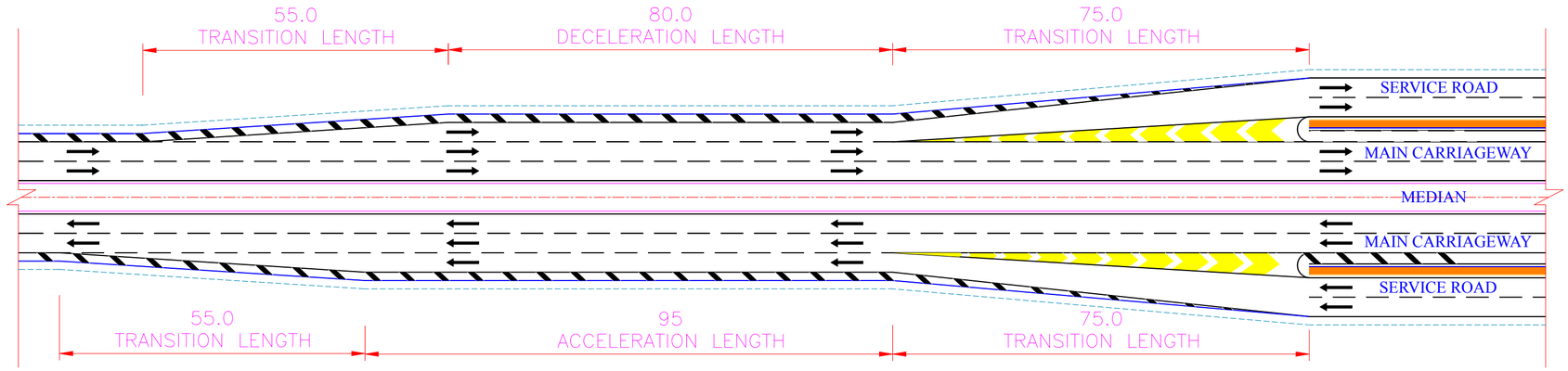
TITLE: TYPICAL DETAIL OF ROAD LANE MARKING

DRG NO.: NHAI/G-ENG/22087/SD/06

DETAIL 'A'



ENTRY/EXIT ARRANGEMENT WITH 7.0M SERVICE ROAD
IRC:SP: 84 -2019.(FIG. 2.1A)



DETAIL 'A'

NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

DATE	REV	BY	DESCRIPTION OF REVISIONS
05.07.22	R0	D.D	FOR APPROVAL

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

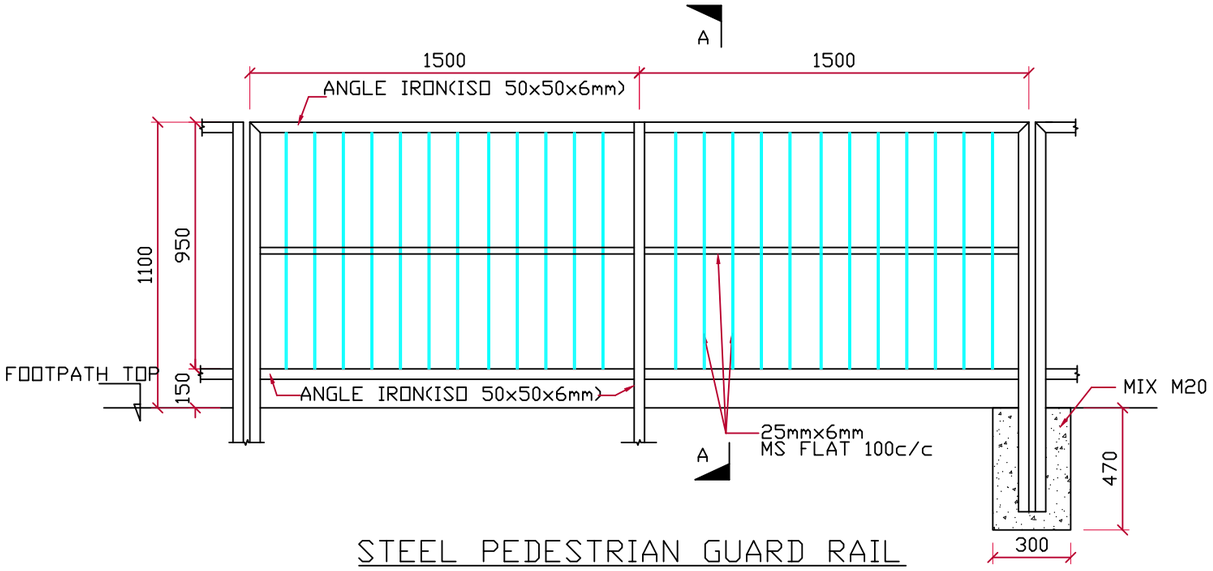
G-ENG ADVISORY SERVICES PVT. LTD.
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Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

PROJECT:
CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: TYPICAL DETAILS OF ENTRY & EXIT

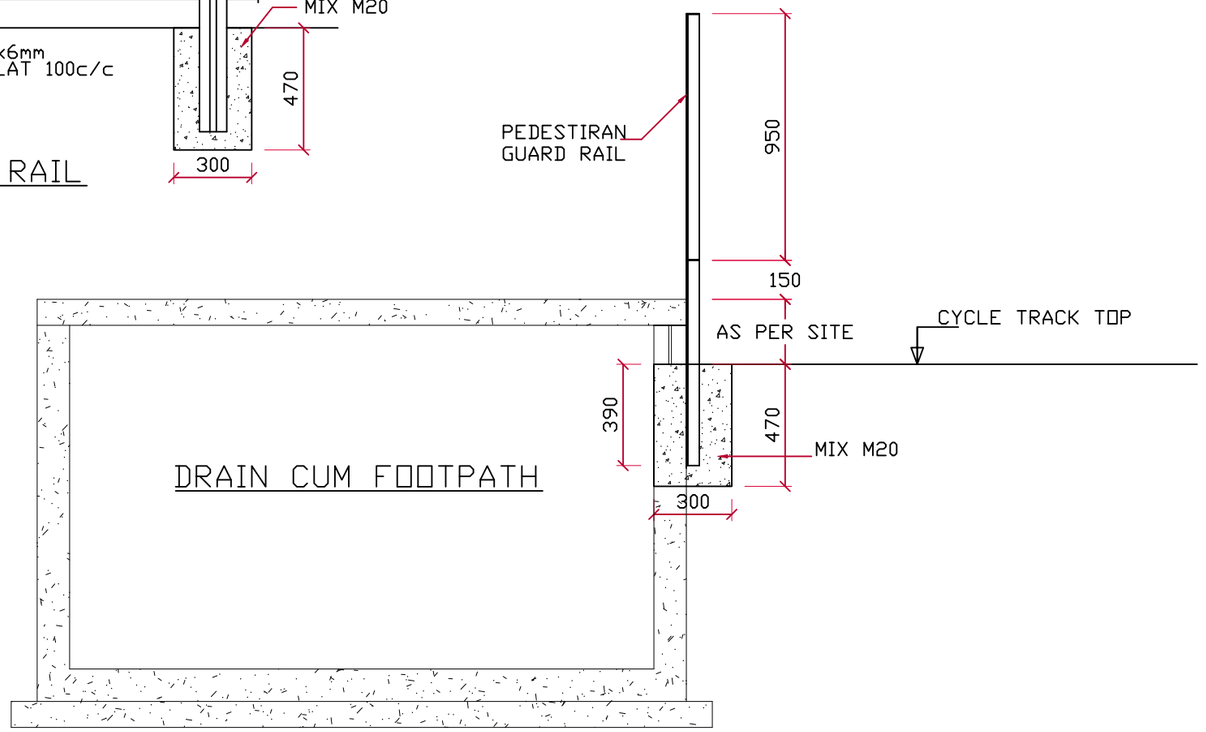
DRG NO.: NHAI/G-ENG/22087/01



STEEL PEDESTRIAN GUARD RAIL

(Typ. Elevation)

(IRC:103-2012)



SECTION:A-A

05.07.22	R0	D.D	FOR APPROVAL
DATE	REV	BY	DESCRIPTION OF REVISIONS

CLIENT:

NATIONAL HIGHWAY
AUTHORITY OF INDIA (NHAI)
G-5 & 6, Sector – 10, Dwarka, New Delhi-110075

DESIGN CONSULTANT:

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Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

CHECKED BY:	L.K
DESIGNED BY:	SHIV
DRAWN BY:	D.D
SCALE:	AS SHOWN
DATE:	JULY- 2022

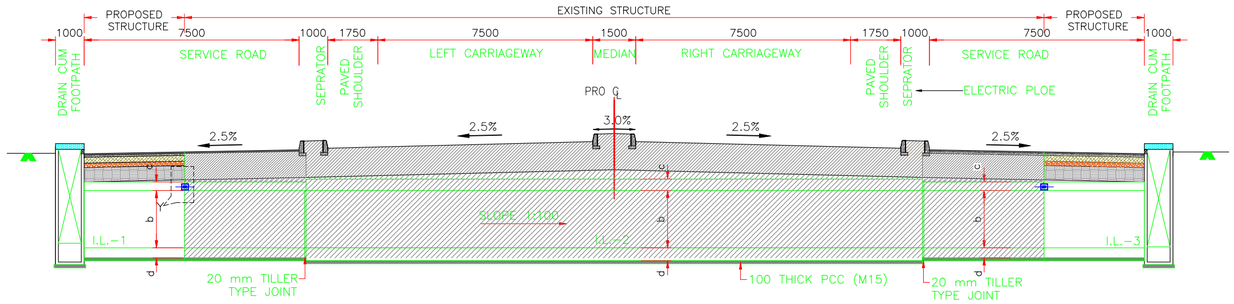
PROJECT:

CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

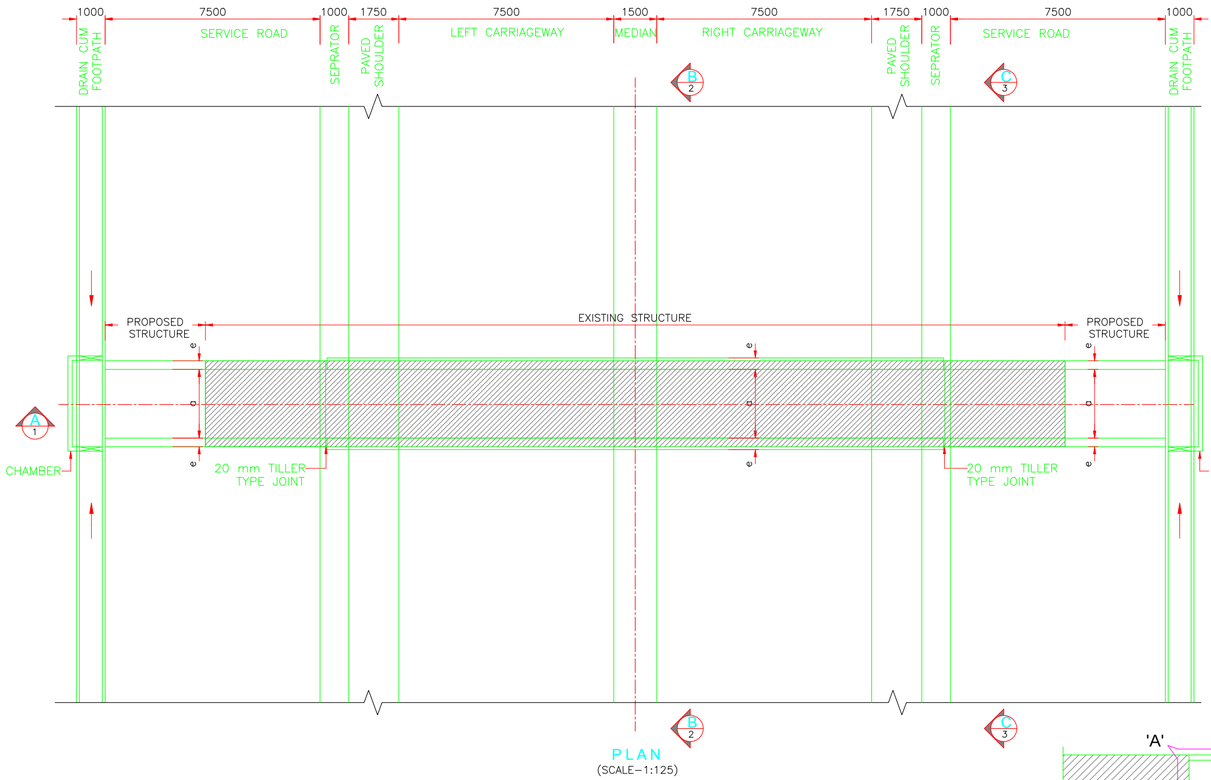
TITLE: PEDESTRIAN GUARD-RAIL

DRG NO.: NHAI/G-ENG/22087/SD/01

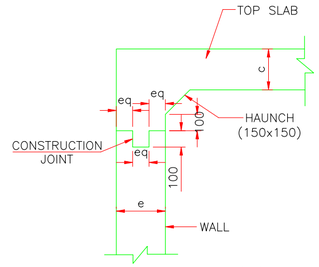
STRUCTURE DRAWINGS



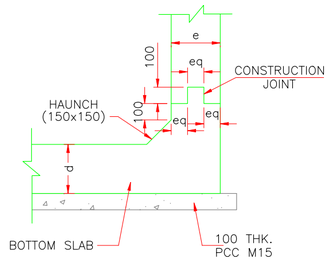
SECTIONAL ELEVATION A-A
SCALE 1:125
(PROPOSED BOX CULVERT)



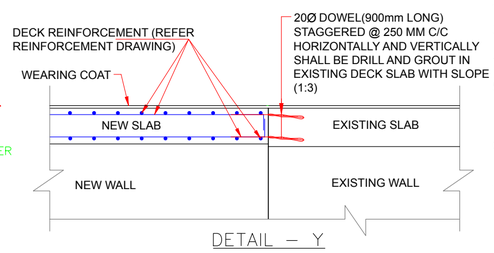
PLAN
(SCALE-1:125)



DETAIL-'A'
(SCALE-1:25)



DETAIL-'B'
(SCALE-1:25)



DETAIL - Y

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONCRETE:-
   a. RCC BOX M35
   b. RCC CRASH BARRIER.....M40
   c. RETAINING WALL / RETURN WALL.....M35
   d. PCC LEVELING COURCE.....M15
4. GRADE OF UNTENSIONED STEEL SHALL BE Fe 500, CONFIRMING TO IS:1786
5. 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND RETAINING WALL / RETURN WALL.
6. THE BACKFILL MATERIAL BEHIND RCC BOX/RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES ϕ=30° =2.0 T/cum
7. THE SAFE BEARING CAPACITY CONSIDERED IN THE DESIGN IS 15T/M2 ANY VARIATION ON SITE SHOULD BE INFORMED TO THE DESIGN ENGINEER FOR NECESSARY ACTION.
8. THE RCC BOX SHOULD BE CONSTRUCTED FIRST AND THE SIDE FILLING & COMPACTION SHALL BE DONE AS PER MORTH SPECIFICATION.
9. FOR DETAIL OF CAMBER/SUPER ELEVATION REFER LATEST PLAN AND PROFILE DRAWING.
10. FLOW DIRECTION SHOWN IN THE DRAWING IS INDICATIVE ONLY BED PROTECTION FOR UPSTREAM AND DOWN STREAM SHALL BE BASED ON THE FLOW DIRECTION IN SITE
11. FLEXIBLE APRON SHALL BE PROVIDED AS PER THE SPECIFICATION/ DETAILS MENTIONED IN PLATE -22 OF IRC:SP:13-2004
12. DISCREPANCY IF ANY IS TO BE IMMEDIATELY BROUGHT IN TO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
13. 100mm ø PVC WEEP HOLES SPACED AT 1000/cc BOTH HORIZONTALLY AND VERTICALLY SHALL PROVIDED IN RETAINING WALL AND BOX WALLS.
14. ALL LEVELS SHOWN IN THIS DRAWING SHOULD BE VERIFIED AT SITE WITH RESPECT TO PLAN & PROFILE BEFORE EXECUTION OF WORK.
15. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH RELEVANT DRAWING.
16. WEARING COAT SHALL CONSIST OF THE FOLLOWING FOR BOX CELL STRUCTURES.
    (a) A COAT OF MASTIC ASPHALT 25MM THICK WITH A PRIME COAT OVER THE TOP OF DECK IS TO BE PROVIDED BEFORE THE WEARING COAT IS LAID.
    (b) 40 MM THICK ASPHALTIC CONCRETE WEARING COAT AS PER CLAUSE 512 OF MOST'S SPECIFICATIONS FOR ROADS AND BRIDGE WORKS
17. FOR CHEMBER DETAIL RAFER SEPARATE DRAWING.

LEGEND:-

FRL. - FINISHED ROAD LEVEL
LVL. - LEVEL
GL. - FINISHED ROAD LEVEL
IL. - INVERT LEVEL

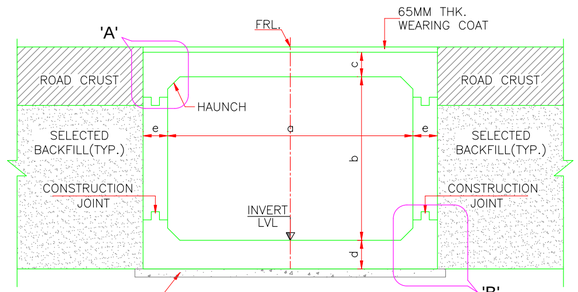
WIDENING METHOLOGY:

FOR RCC BOX:-

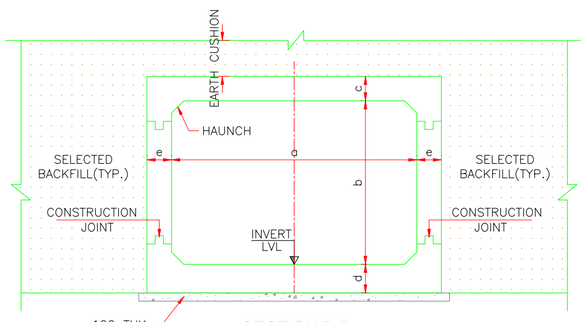
1. DISMANTLE OF EXISTING CRASH BARRIER/RAILING WITH SUITABLE DIVERSION TO AVOID FALL OF VEHICLE.
2. CUTOFF THE EXISTING REINFORCEMENT AND APPLY A COAT OF NEAT CEMENT SLURRY AND EPOXY COATING TO OLD EXPOSED REINF.
3. CONSTRUCT OF BOX- BASE SLAB WITH 20mm GAP JOINT FROM THE EXISTING STRUCTURE.
4. CONSTRUCT OF BOX- WALLS WITH 20mm GAP JOINT FROM THE EXISTING STRUCTURE.
5. DOWEL SHALL BE PLACED IN THE TOP SLAB OF EXISTING STRUCTURE AS PER DESIGN AND DRAWING WITH DRILL AND BOND METHOD BONDING COMPOUND SHALL BE OF HILTI OR EQUIVALENT AS PER APPROVAL OF ENGINEER-IN-CHARGE. (STAGE-1)
6. CAST THE BOX-TOP SLAB (EXCEPT 900MM SLAB ADJACENT TO EXISTING STRUCTURE). BINDING OF REINFORCEMENT AND SHUTTERING SHALL BE AS PER DESIGN&DRAWING FOR TOP SLAB.
7. CAST THE LAST 900 MM SLAB 14 DAYS AFTER REMOVAL OF SHUTTERING IN REMAINING PORTION. FOR DECK CLOSURE FORM SHALL BE SUPPORTED FROM SUPERSTRUCTURE ON BOTH SIDES OF THE CLOSURE SPACE. (STAGE-2)

TABLE-1

SL. NO	SURVEY CHAINAGE (KM)	SPAN ARRANGEMENT (NOS X CLEAR SPAN)	FRL (MAIN CARRIAGEWAY)	FRL SERVICE ROAD		WIDENING WIDTH(MTR)		TOTAL PROPOSED WIDTH	CLEAR HEIGHT (M)	a	b	c	d	e	EARTH CUSHION UPTO (m)	HAUNCH
										m	m	m	m	m		MM
				LHS	RHS	LHS	RHS			CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF TOP SLAB	THICKNESS OF BOTTOM SLAB	SIDE WALL THICKNESS		
1	132+813	1x1.5x1.5	295.914	295.747	295.692	3.50	3.50	39.00	1.5	1.5	1.5	0.250	0.300	0.250	1.0	150X150
2	132+892	1x1.5x1.5	296.126	295.908	295.710	4.50	1.50	42.00	1.5	1.5	1.5	0.250	0.300	0.250	1.0	150X150



SECTION C-C
(SCALE 1:50)
BOX CULVERT AT SERVICE ROAD WITHOUT EARTH CUSHION
(* FOR DETAIL REFER TABLE 1)



SECTION B-B
(SCALE 1:50)
BOX CULVERT BELOW MAIN CARRIAGEWAY WITH EARTH CUSHION
(* FOR DETAIL REFER TABLE 2)

DATE	REV	BY	DESCRIPTION OF REVISIONS
07/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

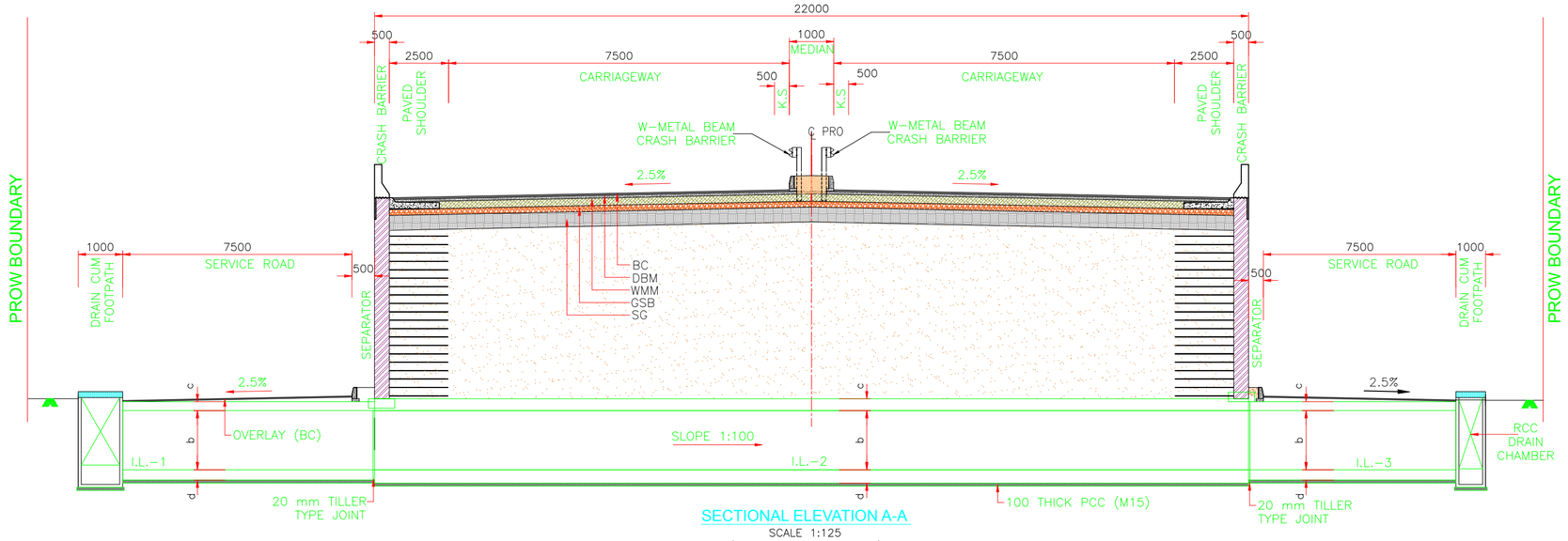
DESIGN CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,Emerald Estate Primary School-01, Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY:
AM	SD	RS	FMM

PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

TITLE: GENERAL ARRANGEMENT DRAWING OF BOX CULVERT (TCS-2)

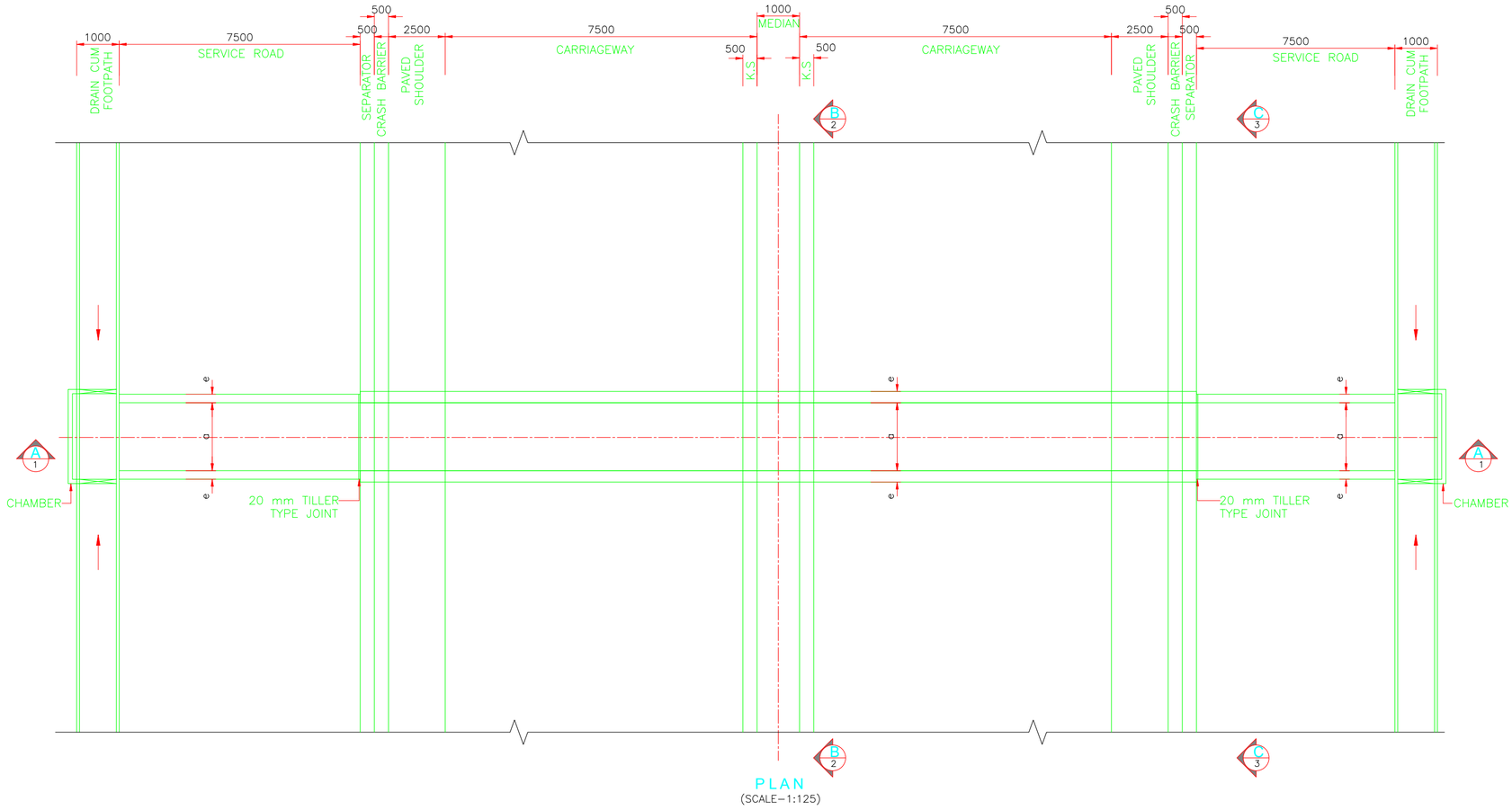
SCALE: AS SHOWN
DATE: JULY. - 2022
DRG NO.: NHAI/G-ENG/22087/BC/32+813&32+892/GAD-01
REV. R0



SECTIONAL ELEVATION A-A

SCALE 1:125

(PROPOSED BOX CULVERT)



PLAN

(SCALE-1:125)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 2 OF 2 OF THIS DRAWING.
4. OPENING SHALL BE LEFT IN BOX WALL FOR DRAIN.

DATE	REV	BY	DESCRIPTION OF REVISIONS
07/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

DESIGN CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
Middle Building,Emerald Estate Primary School-01,
Adjacent World Mark Mall, Sector-65, Gurugram, Haryana - 122018
Tel. No.: +91-124-4295802,03
E-mail: Info@g-eng.in I web : www.g-eng.in

APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY:
AM	SD	RS	FMM

PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

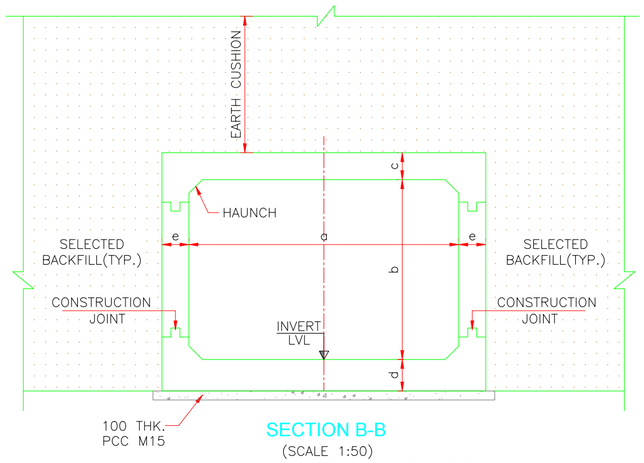
TITLE: GENERAL ARRANGEMENT DRAWING OF BOX CULVERT (TCS-3)

SCALE: AS SHOWN

DATE: JULY. - 2022

DRG NO.: NHAI/G-ENG/22087/BC/33+112/GAD-01 (SHEET- 1 OF 2)

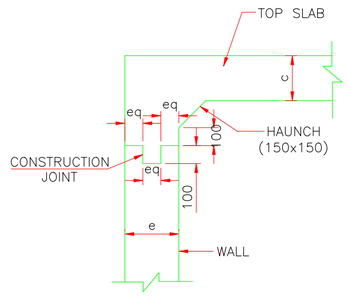
REV. R0



SECTION B-B

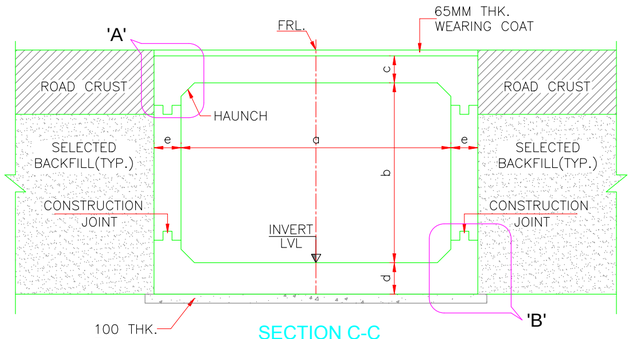
(SCALE 1:50)

BOX CULVERT BELOW MAIN CARRIAGEWAY
WITH EARTH CUSHION
(* FOR DETAIL REFER TABLE 2)



DETAIL–'A'

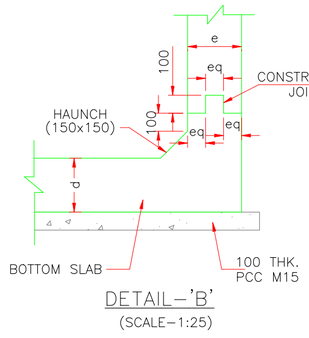
(SCALE–1:25)



SECTION C-C

(SCALE 1:50)

BOX CULVERT AT SERVICE ROAD
WITHOUT EARTH CUSHION
(* FOR DETAIL REFER TABLE 1)



DETAIL–'B'

(SCALE–1:25)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONCRETE:–
   a. RCC BOX M35
   b. RCC CRASH BARRIER.....M40
   c. RETAINING WALL / RETURN WALL.....M35
   d. PCC LEVELING COURCE.....M15
4. GRADE OF UNTENSIONED STEEL SHALL BE Fe 500, CONFIRMING TO IS:1786
5. 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND RETAINING WALL / RETURN WALL.
6. THE BACKFILL MATERIAL BEHIND RCC BOX/RETAINING WALL SHALL HAVE FOLLOWING PROPERTIES ø=30° =2.0 T/cum
7. THE SAFE BEARING CAPACITY CONSIDERED IN THE DESIGN IS 15T/M2 ANY VARIATION ON SITE SHOULD BE INFORMED TO THE DESIGN ENGINEER FOR NECESSARY ACTION.
8. THE RCC BOX SHOULD BE CONSTRUCTED FIRST AND THE SIDE FILLING & COMPACTION SHALL BE DONE AS PER MORTH SPECIFICATION.
9. FOR DETAIL OF CAMBER/SUPER ELEVATION REFER LATEST PLAN AND PROFILE DRAWING.
10. FLOW DIRECTION SHOWN IN THE DRAWING IS INDICATIVE ONLY BED PROTECTION FOR UPSTREAM AND DOWN STREAM SHALL BE BASED ON THE FLOW DIRECTION IN SITE
11. FLEXIBLE APRON SHALL BE PROVIDED AS PER THE SPECIFICATION/ DETAILS MENTIONED IN PLATE –22 OF IRC:SP:13–2004
12. DISCREPANCY IF ANY IS TO BE IMMEDIATELY BROUGHT IN TO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
13. 100mm ø PVC WEEP HOLES SPACED AT 1000/cc BOTH HORIZONTALLY AND VERTICALLY SHALL PROVIDED IN RETAINING WALL AND BOX WALLS.
14. ALL LEVELS SHOWN IN THIS DRAWING SHOULD BE VERIFIED AT SITE WITH RESPECT TO PLAN & PROFILE BEFORE EXECUTION OF WORK.
15. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH RELEVANT DRAWING.
16. WEARING COAT SHALL CONSIST OF THE FOLLOWING FOR BOX CELL STRUCTURES.
    (a) A COAT OF MASTIC ASPHALT 25MM THICK WITH A PRIME COAT OVER THE TOP OF DECK IS TO BE PROVIDED BEFORE THE WEARING COAT IS LAID.
    (b) 40 MM THICK ASPHALTIC CONCRETE WEARING COAT AS PER CLAUSE 512 OF MOST'S SPECIFICATIONS FOR ROADS AND BRIDGE WORKS
17. FOR CHEMBER DETAIL RAFER SEPARATE DRAWING.

LEGEND:-

FRL. – FINISHED ROAD LEVEL
LVL. – LEVEL
GL. – FINISHED ROAD LEVEL
IL. – INVERT LEVEL

TABLE-1 (FOR SERVICE ROAD)

SL. NO	SURVEY CHAINAGE (KM)	SPAN ARRANGEMENT (NOS X CLEAR SPAN)	FRL SERVICE ROAD		INVERT LEVEL		a	c	d	e	HAUNCH
							m	m	m	m	
			LHS	RHS	IL–1	IL–3	CLEAR SPAN	THICKNESS OF TOP SLAB	THICKNESS OF BOTTOM SLAB	SIDE WALL THICKNESS	MM
1	133+112	1x1.5x1.5	296.067	295.824	293.842	293.880	1.5	0.250	0.300	0.250	150X150

TABLE-2 (FOR MAIN-CARRIAGEWAY)

SL. NO	SURVEY CHAINAGE (KM)	SPAN ARRANGEMENT (NOS X CLEAR SPAN)	FRL (MAIN CARRIAGEWAY)	IL–2	TOTAL WIDTH	CLEAR HEIGHT (M)	a	b	c	d	e	EARTH CUSHION UPTO (m)	HAUNCH
							m	m	m	m	m		
							CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF TOP SLAB	THICKNESS OF BOTTOM SLAB	SIDE WALL THICKNESS		MM
1	133+112	1x1.5x1.5	299.035	293.865	22.000	1.5	1.5	1.5	0.250	0.300	0.250	3.00	150X150

DATE	REV	BY	DESCRIPTION OF REVISIONS
07/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

DESIGN CONSULTANT:
G-ENG ADVISORY SERVICES PVT. LTD.
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APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY:
AM	SD	RS	FMM

PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

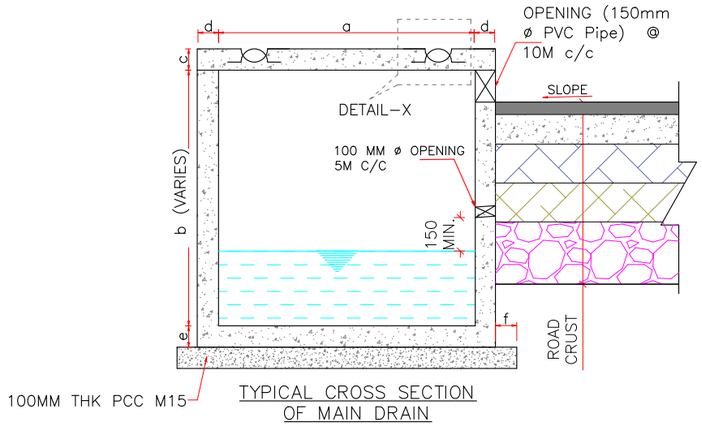
TITLE: GENERAL ARRANGEMENT DRAWING OF BOX CULVERT (TCS-3)

SCALE: AS SHOWN

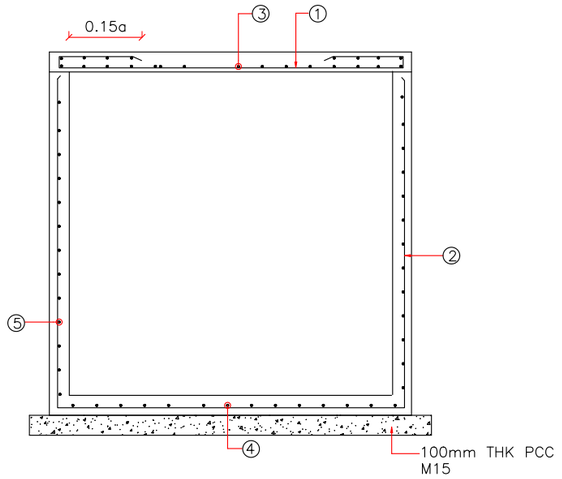
DATE: JULY. - 2022

DRG NO.: NHAI/G-ENG/22087/BC/33+112/GAD-01 (SHEET- 2 OF 2)

REV. R0



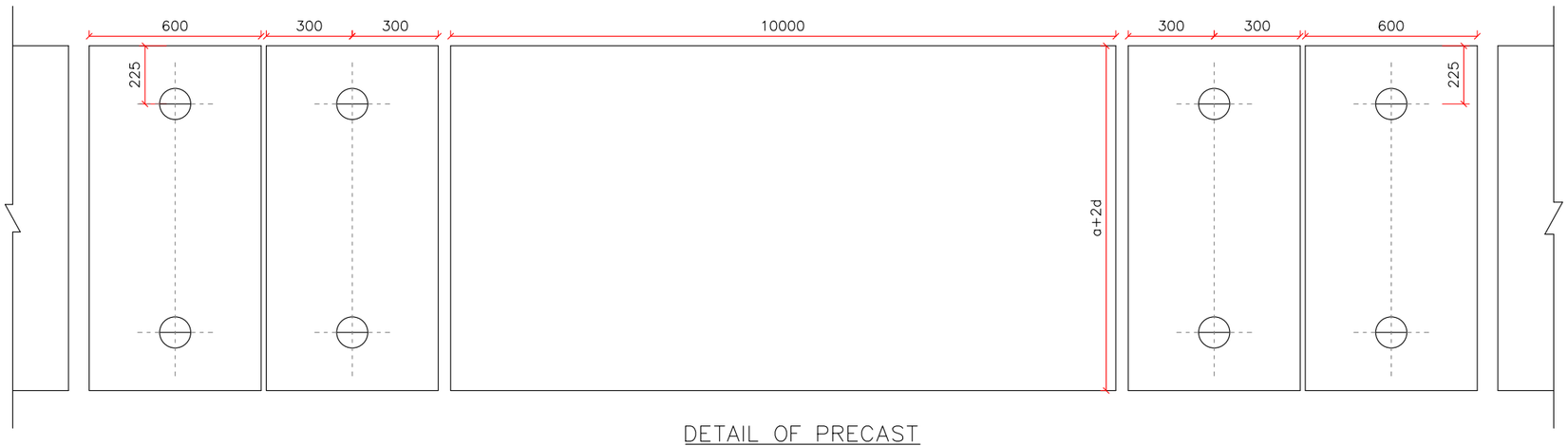
TYPICAL CROSS SECTION OF MAIN DRAIN



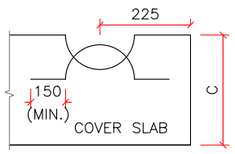
TYPICAL CROSS SECTION OF DRAIN REINFORCEMENT

NOTES: –

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. ALL R.C.C. WORK IN CEMENT CONC. M–25.
3. CLEAR COVER SHALL BE AS FOLLOWING
   TOP SLAB–25MM,FOR WALL & BOTTOM SLAB–65MM
4. BAR SHALL BE PLACED AT WALL CENTER.
5. VERIFY DIMENSIONS AND LEVELS AT SITE BEFORE STARTING EXECUTION.
6. DEFORMED STEEL BARS OF GRADE Fe–500D CONFORMING TO IS : 1786– LATEST SHALL BE USED
7. DEVELOPMENT LENGTH SHALL BE 47 D WHERE D IS THE DIAMETER OF THE BAR.
8. STANDARD 'L' HOOKS SHALL BE PROVIDED AT THE ENDS OF ALL BARS.
9. WORK SHALL BE DONE AS PER RELEVANT IRC CODES & TECHNICAL SPECIFICATION.
10. THIS DRAWING IS APPLICABLE FOR SIDE DRAIN WITHOUT CROSSING.
11. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE:
    52 X DIA OF BAR (WHEN LESS THAN 25% OF BARS ARE LAPPED AT ONE LOCATION.)
    60 X DIA OF BAR (WHEN LESS THAN 25% TO 33% OF BARS ARE LAPPED AT ONE LOCATION.)
    73 X DIA OF BAR (WHEN LESS THAN 33% TO 55% OF BARS ARE LAPPED AT ONE LOCATION.)



DETAIL OF PRECAST CONCRETE COVER @ 10.00M C/C



Detail –X

NOTE :–

THIS DRAWING IS APPLICABLE FOR SIDE DRAIN. FOR DRAIN AT ROAD CROSSING, REFER SEPARATE DRAWING.

TABLE–1: REINFORCEMENT DETAIL

BAR MARK	SHAPE OF BARS (NOT TO SCALE)	FOR b up to 1500mm	
		BAR DIA in mm.	SPACING in mm.
①		10	180
②		10	150
③		8	200
④		8	200
⑤		8	200

TABLE 2: SHOWING DIMENSION DETAIL.

S. no.	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)
1.	1200	1500	100	150	150	100

DATE	REV	BY	DESCRIPTION OF REVISIONS
04/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

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APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY:
AM	SD	RS	FMM

PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANSKARPUR JUNCTION OF NH-152 (CH- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

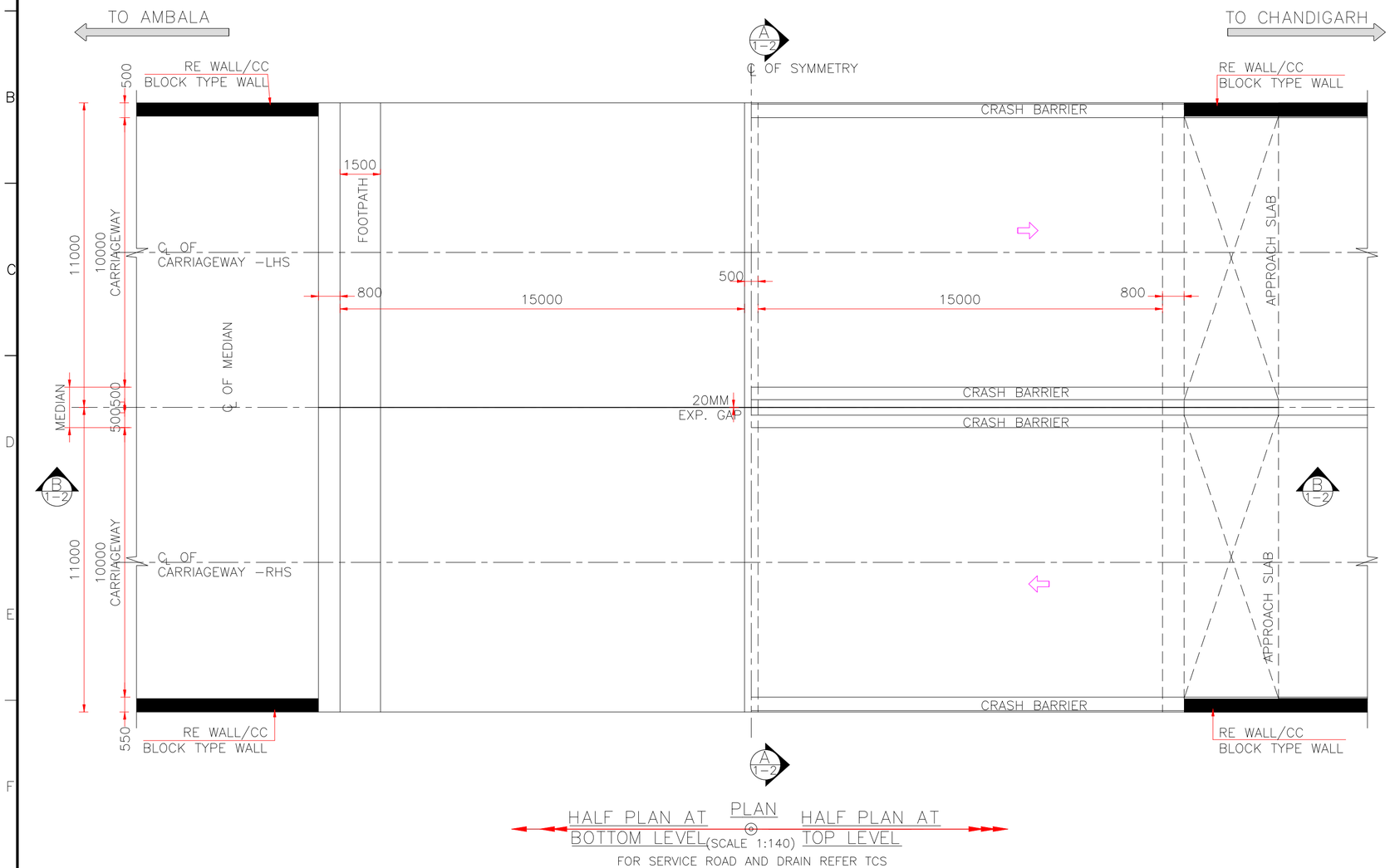
SCALE: AS SHOWN

DATE: JULY. - 2022

TITLE: CONCRETE OUTLINE & REINF. DETAIL OF SIDE DRAIN OF HEIGHT UP TO 1.5M

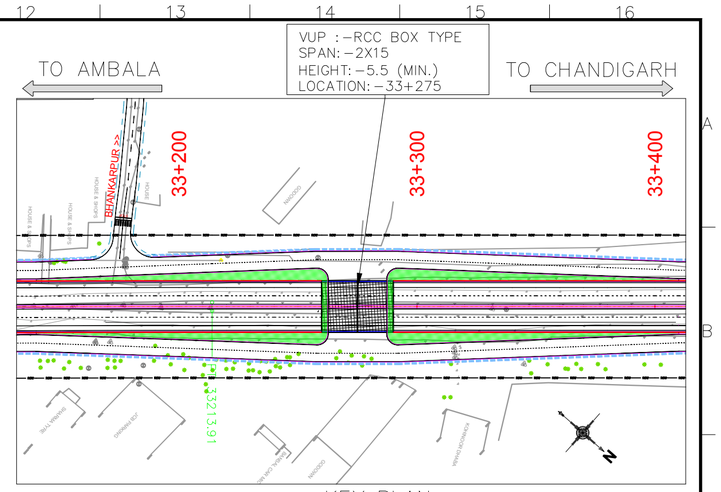
DRG NO.: NHAI/G-ENG/22087/SD/01

REV. R0



HALF PLAN AT BOTTOM LEVEL — PLAN (SCALE 1:140) — HALF PLAN AT TOP LEVEL

FOR SERVICE ROAD AND DRAIN REFER TCS



KEY PLAN

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS UNLESS OTHERWISE MENTIONED.
2. DIMENSIONS ARE NOT BE SCALED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. GRADE OF CONCRETE:–
   a. RCC BOX .....M35.
   b. CRASH BARRIER.....M40.
   c. PCC LEVELING COURSE.....M15.
4. GRADE OF UNTENSIONED STEEL SHALL BE Fe 500D CONFORMING TO IS:1786 (LATEST)
5. THE BACKFILL MATERIAL BEHIND RCC BOX/RETURN WALL SHALL HAVE FOLLOWING PROPERTIES ø=30°, DENSITY(ɣ)=2.0 T/cum C=0, AS PER CLAUSE 305.2 OF MORTH SPECIFICATION.
6. SBC REQUIRED AT FOUNDING LEVEL SHOULD BE 11 T/M2 AND THE SAME SHOULD BE ACHIEVE AT SITE. GSB FILLING OF MINIMUM 1000MM SHOULD BE DONE BELOW THE FOUNDING LEVEL .
7. THE CARRIAGEWAY OF PROPOSED BRIDGE IS DESIGNED FOR :–
   - 3 LANES OF IRC CLASS A
   - ONE LANE OF CLASS 70R + 1 LANES OF IRC CLASS A
   - SV LOADING
8. THE RCC BOX SHOULD BE CONSTRUCTED FIRST AND THE SIDE FILLING & COMPACTION SHALL BE DONE AS PER MORTH SPECIFICATION.
9. CAMBER/SUPER ELEVATION SHALL BE CHECKED WITH LATEST PLAN AND PROFILE DRAWING.30MM CAMBER SHALL BE PROVIDED AT MID IN LONG. DIRECTION.
10. DISCREPANCY IF ANY IS TO BE IMMEDIATELY BROUGHT IN TO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
11. ALL LEVELS SHOWN IN THIS DRAWING SHOULD BE VERIFIED AT SITE WITH RESPECT TO PLAN & PROFILE BEFORE EXECUTION OF WORK.
12. 65MM THICK WEARING COURSE COMPRISES OF 40MM THICK BITUMINOUS CONCRETE AND 25MM THK. MASTIC ASPHALT FOR TOP SLAB.50MM THICK WEARING COURSE COMPRISES OF 50MM THICK BITUMINOUS CONCRETE FOR BOTTOM SLAB .
13. THIS DRAWING IS BASED UPON PRELIMINARY DESIGN.

LEGEND:–

FRL. – FINISHED ROAD LEVEL
LVL. – LEVEL
GL. – GROUND LEVEL
NGL. – NATURAL GROUND LEVEL
SRL. – SERVICE ROAD LEVEL
VC – VENT HEIGHT

DATE	REV	BY	DESCRIPTION OF REVISIONS
04/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

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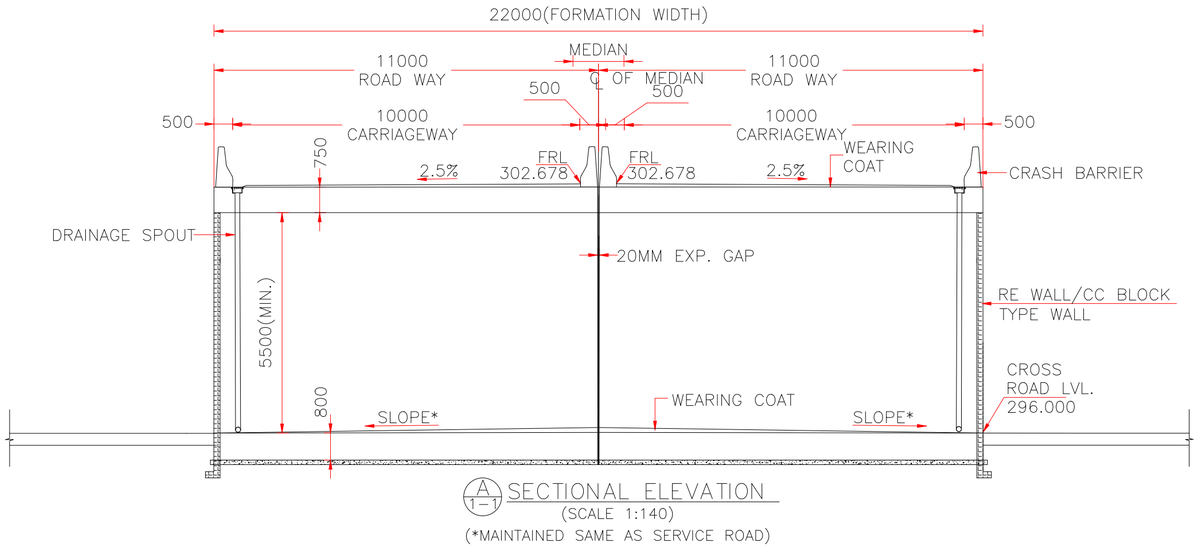
APPROVED BY:	CHECKED BY:	DESIGNED BY:	DRAWN BY:
AM	SD	RS	FMM

PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH. - 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

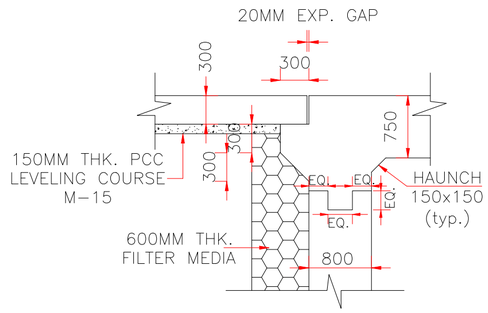
SCALE: AS SHOWN
DATE: JULY. - 2022

TITLE: GENERAL ARRANGEMENT DRAWING OF VEHICULAR UNDERPASS AT KM 33+275

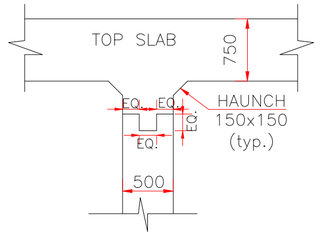
DRG NO.: NHAI/G-ENG/22087/VUP/33+275/GAD-01 (SHEET- 1 OF 2)
REV. R0



A/1–1 SECTIONAL ELEVATION
(SCALE 1:140)
(*MAINTAINED SAME AS SERVICE ROAD)



DETAIL–Y
(SCALE 1:50)



DETAIL–Z
(SCALE 1:50)

NOTES:

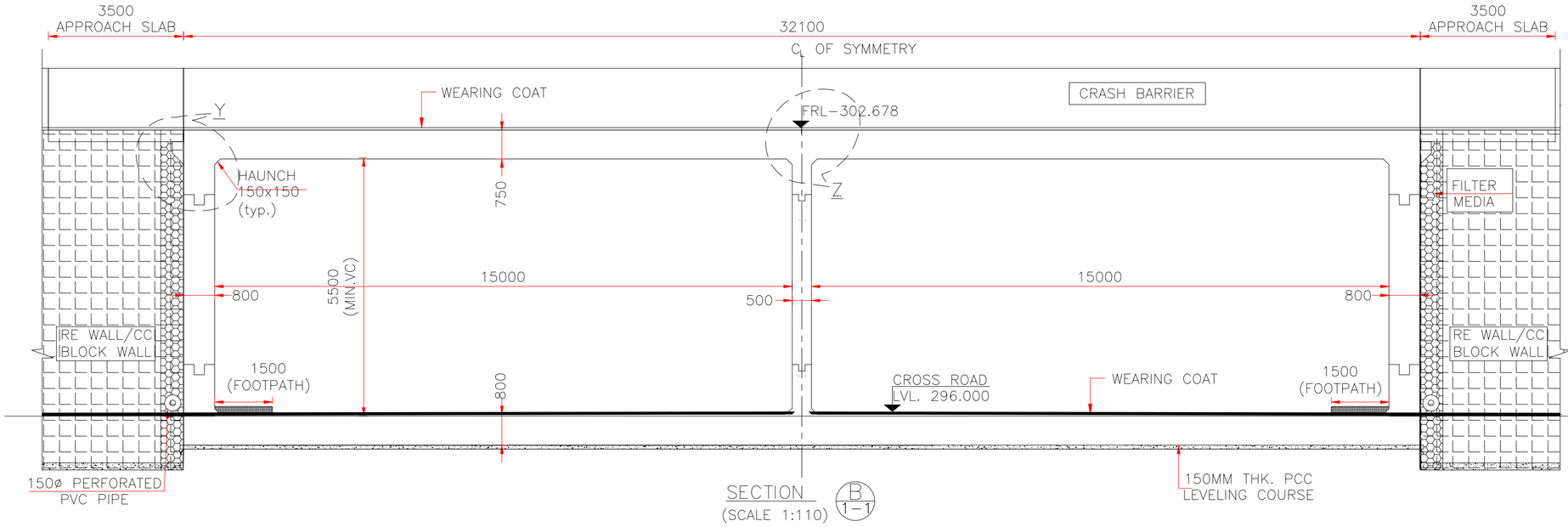
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13. THIS DRAWING IS BASED UPON PRELIMINARY DESIGN.

TO AMBALA

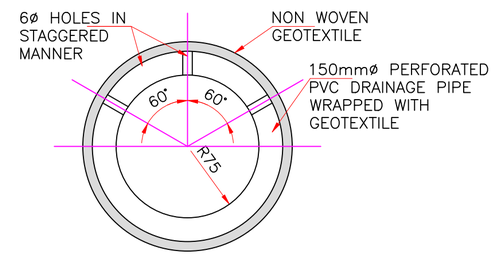
TO CHANDIGARH

LEGEND: –

FRL. – FINISHED ROAD LEVEL
LVL. – LEVEL
GL. – GROUND LEVEL
NGL. – NATURAL GROUND LEVEL
SRL. – SERVICE ROAD LEVEL
VC – VENT HEIGHT



SECTION
(SCALE 1:110)
B/1–1



" PIPE DETAIL "
(SCALE–1:5)

DATE	REV	BY	DESCRIPTION OF REVISIONS
04/07/2022	R0	FMM	INITIAL SUBMISSION

CLIENT: NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

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PROJECT: CONSTRUCTION OF 4 LANE VUP AT BHANKARPUR JUNCTION OF NH-152 (CH.- 33+275) ON AMBALA-CHANDIGARH SECTION OF NH-152 IN THE STATE OF PUNJAB ON EPC BASIS.

SCALE: AS SHOWN
DATE: JULY. - 2022

TITLE: GENERAL ARRANGEMENT DRAWING OF VEHICULAR UNDERPASS AT KM 33+275

DRG NO.: NHAI/G-ENG/22087/VUP/33+275/GAD-01 (SHEET- 2 OF 2)
REV. R0