

**ICB No: OSRP-CW- ICB-P04A1**  
**[INTERNATIONAL COMPETITIVE BIDDING]**

***Construction for Widening & Strengthening of Existing Carriageway to 2-lane road from Jagatpur to Nischintakoili***

*(Km. 0/0 to Km. 25/0 of MDR)(Balance Works)*

**Project: Odisha State Roads Project**

**Annexure-III**

*(Drawings)*

**Employer:** Works Department, Government of Odisha, Bhubaneswar, INDIA

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM  
JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



CLIENT :  
**ODISHA WORKS DEPARTMENT**



DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD.**  
E-12, Moji Colony, Malaviya Nagar  
Jaipur-17



DESIGN REVIEW CONSULTANT :  
**LEA ASSOCIATES SOUTH ASIA PVT. LTD.**  
B-1/E-27, MOHAN COOPERATIVE INDUSTRIAL ESTATE  
MATHURA ROAD, NEW DELHI - 110044



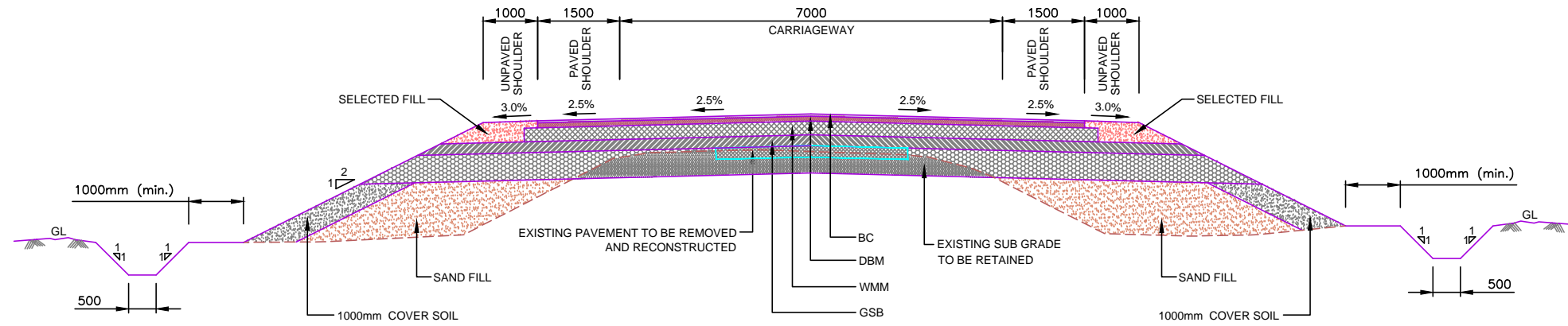
AUGUST, 2015

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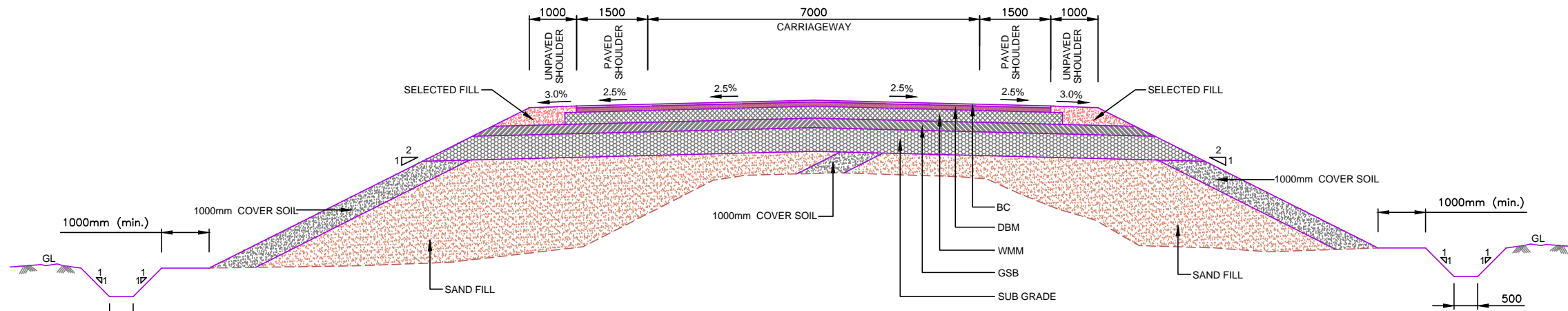
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R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRATID.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD.</b>	DESIGN REVIEW CONSULTANT : LEA Associates South Asia Pvt. Ltd., India E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com	CLIENT : ODISHA WORKS DEPARTMENT	PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	SCALE : N.T.S.	DRAWING TITLE : INDEX OF HIGHWAY DRAWINGS
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)						
-	JUNE 2008	ORIGINAL	CEG										
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:						
			DWG. NUMBER : 73466\LASA\HIGHWAYS\INDX-01      REV. R1										

# TYPICAL CROSS SECTIONS



TCS-01 : TYPICAL CROSS SECTION IN OPEN AREA (WITH PAVED SHOULDER) FOR RECONSTRUCTION / WIDENING

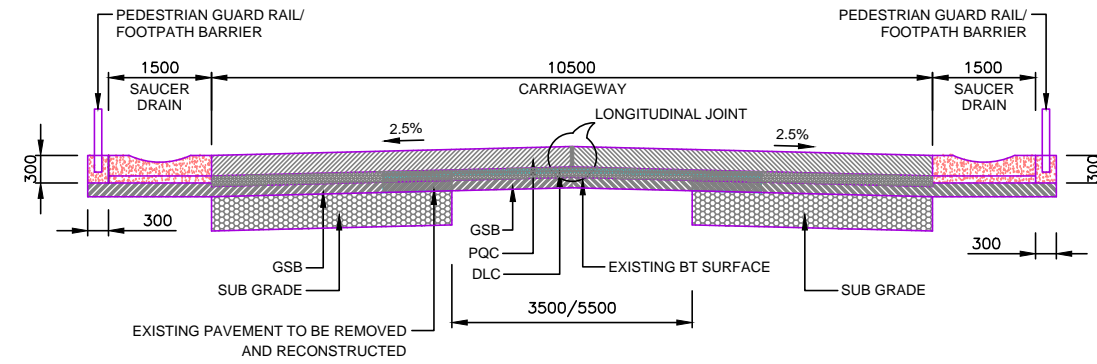


TCS-02 : TYPICAL CROSS SECTION IN OPEN AREA (WITH PAVED SHOULDER) FOR NEW CONSTRUCTION

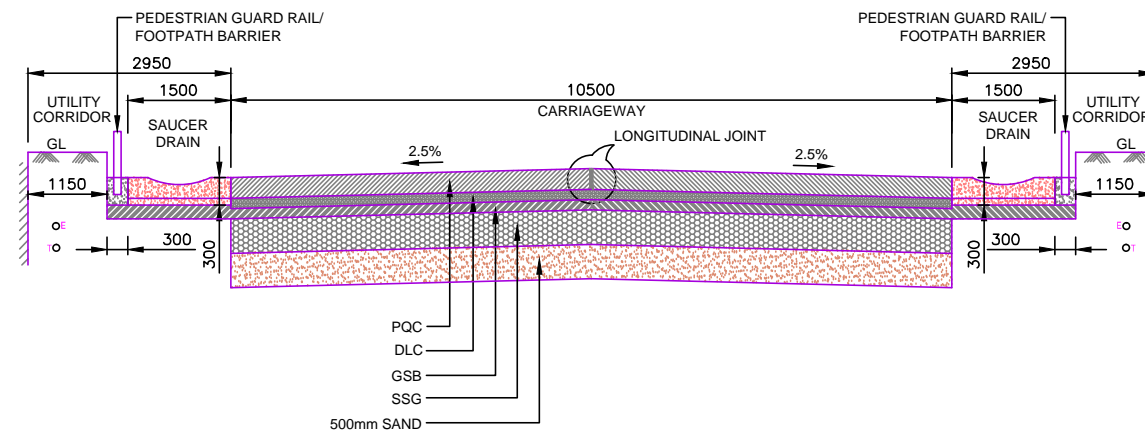
**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. FOR DRAIN DETAILS REFER DRAWING NO.73466/LASA/HIGHWAYS/MISC-10.
3. FOR LAYER THICKNESS DETAILS REFER 'SCHEDULE OF WIDENING AND LAYER THICKNESS DETAILS'.
4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO.73466/LASA/HIGHWAYS/MISC-08.
5. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
6. INCASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS.
7. THE SIDE OF INNER EARTH COVER WILL DEPEND ON THE WIDENING SCHEDULE.

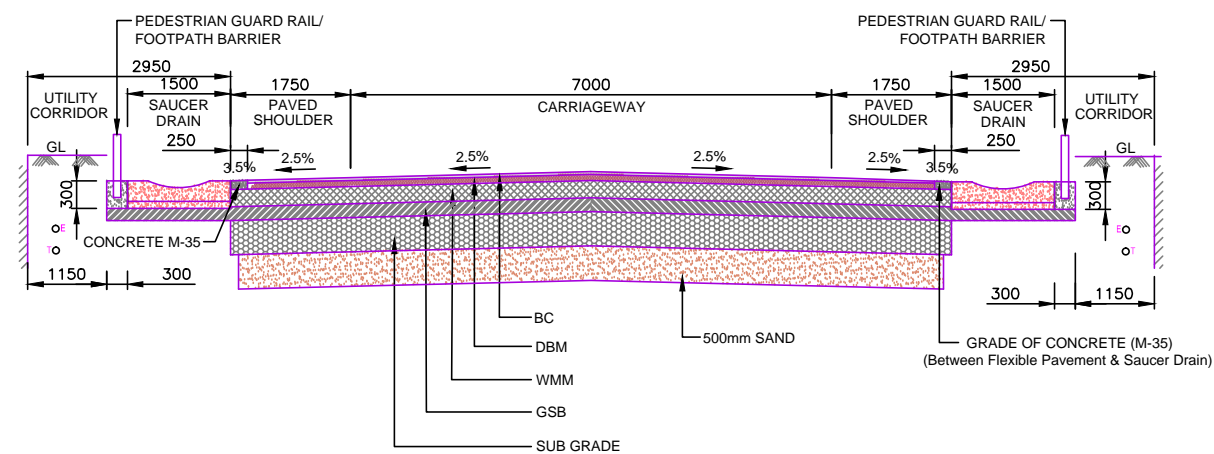
R1 JULY 2015 SECOND REVISION LASA VINAY SUBRAT/D.GHATAK S.D SARANGI (RE) G.P SAHOO (TL)						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com		DESIGN REVIEW CONSULTANT : <b>LEA</b> LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE : 1 : 75		DRAWING TITLE : <b>TYPICAL CROSS SECTIONS</b> (SHEET 1 OF 2)	
R0 FEB-2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R MISHRA (EE) N.K PRADHAN (CE)														DWG. NUMBER : 73466/LASA/HIGHWAYS/TYPICS-01 REV. R1			
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:										



TCS-03 : TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION WITHOUT EXPANSIVE CLAY



TCS-04 : TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION OVER EXPANSIVE CLAYS



TCS-05 : TYPICAL CROSS SECTION IN BUILT-UP AREA FOR NEW CONSTRUCTION IN EXPANSIVE CLAYS

**NOTES:**

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3. FOR LAYER THICKNESS DETAILS REFER 'SCHEDULE OF WIDENING AND LAYER THICKNESS DETAILS'.
4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO.73466/LASA/HIGHWAYS/MISC-08.
5. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
6. INCASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS.
7. THE SIDE OF INNER EARTH COVER WILL DEPEND ON THE WIDENING SCHEDULE.

R1	JULY 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI (RE)	G.P SAHOO (TL)
R0	FEB-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:

DPR CONSULTANT :  
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DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

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PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK)  
 PACKAGE - P04A-1

SCALE :  
 1 : 75

DRAWING TITLE :  
**TYPICAL CROSS SECTIONS**  
 (SHEET 2 OF 2)  
 DWG. NUMBER : 73466/LASA/HIGHWAYS/TYP/CS-01 REV. R1

# MISCELLANEOUS DRAWINGS



(HIGHWAY)





**VERTICAL CURVE DETAILS**

VERTICAL CURVE DETAILS (JAGATPUR - DUHURIA)												
Curve No.	Curve Type	VIP Details		Curve Length	K' value	Curve Start		Curve End		Start Gradient	End Gradient	Grade Difference
		Chainage	Level			Chainage	Level	Chainage	Level			
1	Sag	0+143.020	26.772	200	208.804	0+043.020	27.730	0+243.020	26.772	-0.958	0.000	-0.958
2	Sag	0+443.840	26.772	200	1138.829	0+343.840	26.772	0+543.840	26.948	0.000	0.176	-0.176
3	Hog	0+769.545	27.344	200	316.435	0+669.545	27.168	0+869.545	26.888	0.176	-0.456	0.632
4	Sag	1+146.389	25.624	300	747.217	0+996.389	26.309	1+296.389	25.542	-0.456	-0.055	-0.401
5	Sag	1+859.992	25.232	130	45.22	1+794.992	25.268	1+924.992	27.065	-0.055	2.82	-2.875
6	Hog	2+017.160	29.664	60	21.277	1+987.160	28.818	2+047.160	29.664	2.820	0	2.82
7	Hog	2+144.447	29.664	70	20.48	2+109.447	29.664	2+179.447	28.468	0.000	-3.418	3.418
8	Sag	2+283.416	24.914	150	43.878	2+208.416	27.478	2+358.416	24.914	-3.418	0.001	-3.419
9	Hog	4+010.199	24.747	200	939.212	3+910.199	24.762	4+110.199	24.52	-0.015	-0.227	0.212
10	Sag	4+373.760	23.92	300	1056.537	4+223.760	24.261	4+523.760	24.005	-0.227	0.056	-0.283
11	Hog	4+862.478	24.196	400	8133.709	4+662.478	24.083	5+062.478	24.211	0.056	0.007	0.049
12	Hog	5+424.412	24.237	150	2820.159	5+349.412	24.232	5+499.412	24.203	0.007	-0.046	0.053
13	Sag	7+949.892	23.078	150	340.863	7+874.892	23.112	8+024.892	23.374	-0.046	0.394	-0.44
14	Hog	8+343.634	24.63	200	571.323	8+243.634	24.236	8+443.634	24.674	0.394	0.044	0.35
15	Hog	8+935.441	24.891	150	268.635	8+860.441	24.858	9+010.441	24.505	0.044	-0.514	0.558
16	Sag	9+256.669	23.239	200	616.838	9+156.669	23.753	9+356.669	23.049	-0.514	-0.19	-0.324
17	Sag	9+862.850	22.087	300	2460.319	9+712.850	22.372	10+012.850	21.985	-0.190	-0.068	-0.122
18	Sag	10+416.392	21.71	150	2202.422	10+341.392	21.761	10+491.392	21.71	-0.068	0	-0.068
19	Sag	10+585.031	21.71	60	606.176	10+555.031	21.710	10+615.031	21.74	0.000	0.099	-0.099
20	Hog	11+269.000	22.387	300	1977.587	11+119.000	22.239	11+419.000	22.308	0.099	-0.053	0.152
21	Hog	13+399.163	21.264	200	440.243	13+299.163	21.317	13+499.163	20.757	-0.053	-0.507	0.454
22	Sag	13+785.346	19.306	200	300.576	13+685.346	19.813	13+885.346	19.464	-0.507	0.158	-0.665
23	Hog	14+299.314	20.12	200	1858.752	14+199.314	19.962	14+399.314	20.171	0.158	0.051	0.107
24	Hog	15+215.091	20.585	150	312.942	15+140.091	20.547	15+290.091	20.264	0.051	-0.429	0.48
25	Sag	15+762.290	18.24	100	233.347	15+712.290	18.454	15+812.290	18.24	-0.429	0	-0.429
26	Sag	15+975.454	18.24	100	201.537	15+925.454	18.240	16+025.454	18.488	0.000	0.496	-0.496
27	Hog	16+133.862	19.026	150	295.714	16+058.862	18.654	16+208.862	19.018	0.496	-0.011	0.507
28	Sag	16+414.161	18.995	150	1127.947	16+339.161	19.003	16+489.161	19.086	-0.011	0.122	-0.133
29	Hog	16+739.770	19.392	150	750.371	16+664.770	129.301	16+814.770	19.334	0.122	-0.078	0.2
30	Sag	17+864.480	18.515	200	2817.793	17+764.480	18.593	17+964.480	18.508	-0.078	-0.007	-0.071
31	Hog	18+164.560	18.494	60	292.524	18+134.560	18.496	18+194.560	18.43	-0.007	-0.212	0.205
32	Sag	18+469.120	17.848	60	220.142	18+439.120	17.912	18+499.120	17.866	-0.212	0.06	-0.272
33	Hog	18+854.610	18.081	200	554.976	18+754.610	18.021	18+954.610	17.781	0.060	-0.3	0.36
34	Sag	19+379.727	16.506	100	59.565	19+329.727	16.656	19+429.727	17.195	-0.300	1.379	-1.679
35	Hog	19+638.800	20.078	280	157.779	19+498.800	18.148	19+778.800	19.524	1.379	-0.396	1.775
36	Sag	20+437.200	16.919	200	431.745	20+337.200	17.315	20+537.200	16.987	-0.396	0.068	-0.464
37	Sag	21+112.571	17.375	150	638.442	21+037.571	17.324	21+187.571	17.602	0.068	0.302	-0.234
38	Hog	21+484.514	18.5	500	1102.659	21+234.514	17.744	21+734.514	18.123	0.302	-0.151	0.453
39	Sag	22+070.671	17.615	300	1333.001	21+920.671	17.841	22+220.671	17.726	-0.151	0.074	-0.225
40	Hog	22+832.085	18.179	500	2897.055	22+582.085	17.994	23+082.085	17.933	0.074	-0.099	0.173
41	Sag	24+563.120	16.474	200	522.187	24+463.120	16.572	24+663.120	16.758	-0.099	0.284	-0.383
42	Hog	24+857.808	17.312	300	918.812	24+707.808	16.885	25+007.808	17.249	0.284	-0.042	0.326



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R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R.MISHRA (EE)	N.K.PRAHDHAN (CE)						DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-02	REV. R1
-	JUNE 2008	ORIGINAL	CEG											
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:							

SCHEDULE OF EXTRA WIDENING

<b>Extra Widening (Km-0+000 to Km 25+000)</b>								
Direction	TS	SC	Transition In	Radius	Transition Out	CS	ST	Design Speed
RIGHT	1784	1819	35	200	35	1861	1869	50
LEFT	1921	1966	45	100	45	2014	2059	50
RIGHT	2109	2154	45	100	45	2172	2217	50
LEFT	2240	2275	35	200	35	2318	2353	50
LEFT	2941.361	2991.361	50	240	50	3033.211	3083.211	50
RIGHT	5130.244	5220.244	90	240	90	5250.123	5340.123	80
RIGHT	17286.405	17336.405	50	240	50	17369.534	17419.534	65
RIGHT	22799.951	22849.951	50	240	50	22908.953	22958.953	65
LEFT	23066.311	23106.311	40	300	40	23140.512	23180.512	65
RIGHT	24081.653	24131.653	50	240	50	24179.889	24229.889	65



**NOTES:-**

1. EXTRA WIDENING HAS BEEN DONE AS PER THE GUIDE LINES DETAILED IN IRC: 73-1980.
2. WIDENING SHALL BE DONE EQUALLY ON BOTH THE INNER AND OUTER CURVES.
3. THE SLOPE OF THE CARRIAGEWAY SHALL EXTEND IN THE WIDENING SECTIONS.




							DPR CONSULTANT :		DESIGN REVIEW CONSULTANT :		CLIENT :		PROJECT :		SCALE :		DRAWING TITLE :	
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	<b>CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com	 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	 ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		N.T.S.		SCHEDULE OF EXTRA WIDENING			
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**SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION (FLEXIBLE PAVEMENT)**

SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION FOR JAGATPUR - NISCHINTAKOILI																				
Sl. No.	Proposed Chainage		Distance in KMs	Thickness Design (IRC-37)								Thickness Design (IRC-37)								Type of Construction
	From	To		Crust Details Over Existing Pavement								Crust Details Over Existing Pavement								
				Surface Course		Base		Sub Base	Sub	Embankment	Total	Surface Course		Base		Sub Base	Sub	Total		
				BC	DBM	WMM1	WMM2	GSB	Grade	Fill	Thickness	BC	DBM	WMM1	WMM2	GSB	Grade	Thicknes		
1	1.90	3.15	1.25	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
2	3.15	3.35	0.2	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
3	3.35	3.85	0.5	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
4	4.30	4.60	0.3	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
5	4.60	5.50	0.9	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
6	5.50	5.80	0.3	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
7	7.20	7.55	0.35	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
8	7.95	9.30	1.35	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
9	9.66	10.10	0.44	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
10	10.48	10.70	0.22	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
11	10.70	13.60	2.9	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
12	13.60	14.00	0.4	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
13	14.00	15.55	1.55	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
14	15.55	16.30	0.75	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
15	16.30	16.60	0.3	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
16	17.10	17.70	0.6	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
17	20.80	21.10	0.3	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
18	21.10	22.15	1.05	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
19	22.15	22.50	0.35	40	90	100	150	200	-	-	580	40	90.00	100.00	150.00	200.00	500.00	1,080.00	RECONSTRUCTION	
20	22.50	24.00	1.5	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION
21	24.25	25.00	0.75	40	90	100	150	200	500	500	1,580	-	-	-	-	-	-	-	-	NEW CONSTRUCTION_DFS
22	25.00	26.60	1.6	40	90	100	150	200	500	-	1,080	-	-	-	-	-	-	-	-	NEW CONSTRUCTION




R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	<b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com	DESIGN REVIEW CONSULTANT :	 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CLIENT :	 ODISHA WORKS DEPARTMENT	PROJECT :	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	SCALE :	N.T.S	DRAWING TITLE :	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION (SHEET 1 OF 2)					
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)																	
	JUNE 2008	ORIGINAL	CEG																					
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:											DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-04	REV. R1				

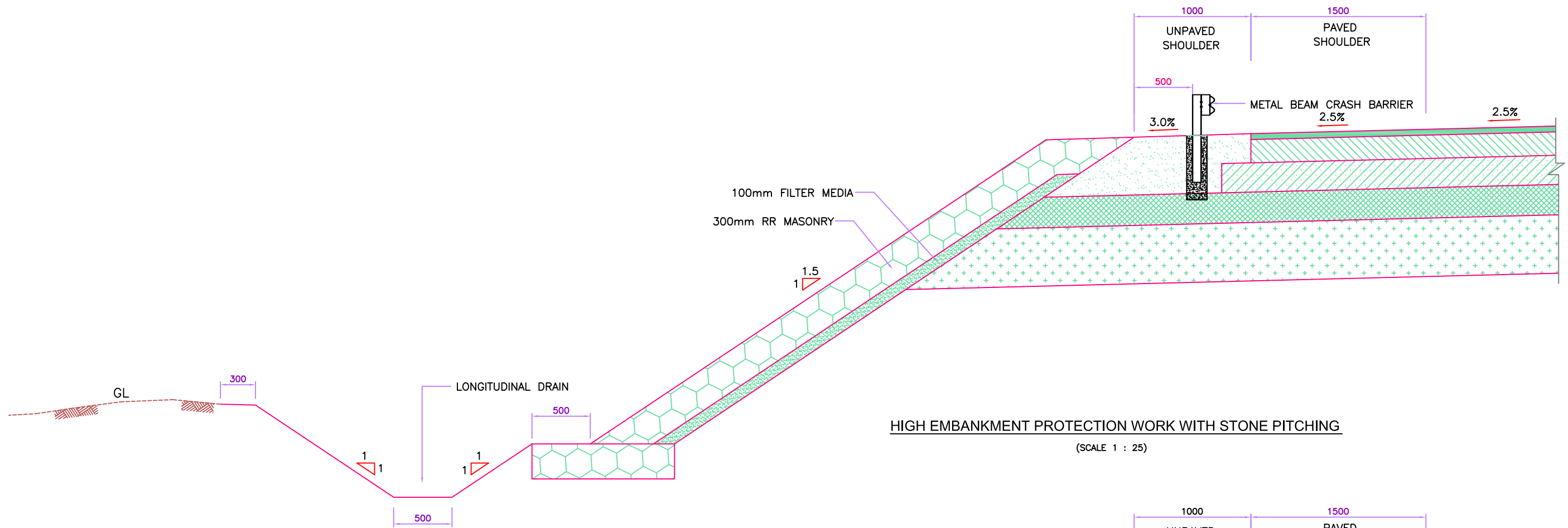
SCHEDULE OF PAVEMENT COMPOSITION (RIGID PAVEMENT)												
Sl. No.	Chainage		Length	PQC Slab (in mm)	Seperation layer (in micron)	Sub base (DLC) (in	Subbase GSB (in	Subgrade (in mm)	Embankment (in mm)	Total Thickness (in mm)	Remarks	Remarks
	From	To										
1	0.00	1.90	1.90	300	125	150	150	500	500	1,600	DFS	New
2	3.85	4.30	0.45	300	125	150	150	500	-	1,100	-	New
3	5.80	7.20	1.40	300	125	150	150	500	-	1,100	-	New
4	7.55	7.95	0.40	300	125	150	150	500	-	1,100	-	New
5	9.30	9.66	0.36	300	125	150	150	500	-	1,100	-	New
6	10.10	10.48	0.38	300	125	150	150	500	-	1,100	-	New
7	16.60	17.10	0.50	300	125	150	150	500	-	1,100	-	New
8	17.70	20.80	3.10	300	125	150	150	500	-	1,100	-	New
9	24.00	24.25	0.25	300	125	150	150	500	500	1,600	DFS	New

							DPR CONSULTANT :	DESIGN REVIEW CONSULTANT :	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :	
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	CONSULTING ENGINEERS GROUP LTD. 	 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	 ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	N.T.S	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION (SHEET 2 OF 2)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com					
	JUNE 2008	ORIGINAL	CEG										
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:					DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-04	REV. R1

**DETAILS OF PAVEMENT SCHEDULE WITH TYPE OF TCS**

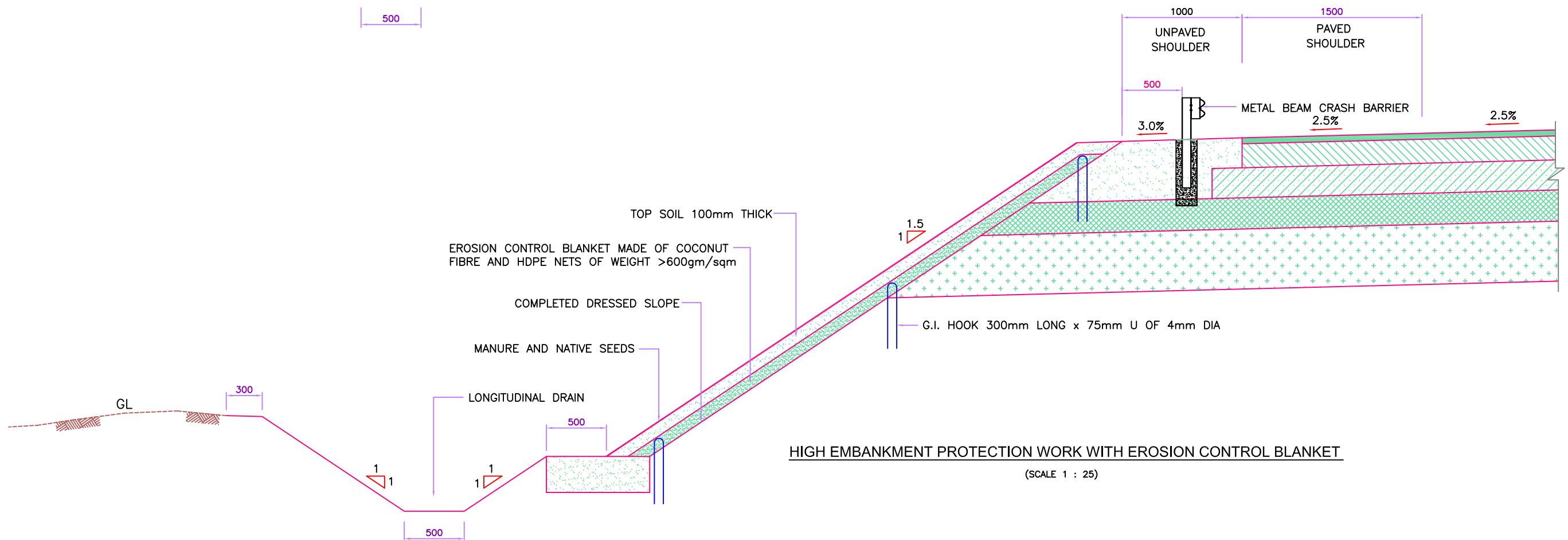
DETAILS PAVEMENT SCHEDULE WITH TYPE OF TCS (JAGATPUR-NISHCHINTKOILI)								
Sl. No.	Chainage		Length (in kms)	Total Thickness (in mm)	Type of Construction	Type of Area	TCS	Remarks
	From	To						
1	0.00	1.90	1.90	1600	RIGID PAVEMENT_DFS	BUILT	4	
2	1.90	2.20	0.30	1080	RECONSTRUCTION	OPEN	1	
3	2.20	2.40	0.20	1080	RECONSTRUCTION	BUILT	5	PROFILE
4	2.40	2.53	0.13	1080	RECONSTRUCTION	OPEN	1	PROFILE
5	2.53	2.80	0.27	1080	RECONSTRUCTION	BUILT	5	
6	2.80	3.15	0.35	1080	RECONSTRUCTION	OPEN	1	
7	3.15	3.35	0.20	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
8	3.35	3.85	0.50	1080	RECONSTRUCTION	OPEN	1	
9	3.85	4.30	0.45	1100	RIGID PAVEMENT	BUILT	3	
10	4.30	4.60	0.30	1080	RECONSTRUCTION	OPEN	1	
11	4.60	5.50	0.90	1080	NEW CONSTRUCTION	OPEN	2	REALIGN & PROFILE
12	5.50	5.80	0.30	1080	RECONSTRUCTION	OPEN	1	
13	5.80	7.20	1.40	1100	RIGID PAVEMENT	BUILT	3	
14	7.20	7.55	0.35	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
15	7.55	7.95	0.40	1100	RIGID PAVEMENT	BUILT	3	
16	7.95	9.30	1.35	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
17	9.30	9.66	0.36	1100	RIGID PAVEMENT	BUILT	3	
18	9.66	10.10	0.44	1080	RECONSTRUCTION	OPEN	1	
19	10.10	10.48	0.38	1100	RIGID PAVEMENT	BUILT	3	
20	10.48	10.60	0.12	1080	RECONSTRUCTION	OPEN	1	
21	10.60	10.70	0.10	1080	RECONSTRUCTION	OPEN+BUILT	1	
22	10.70	10.85	0.15	1080	NEW CONSTRUCTION	BUILT+OPEN	2	PROFILE
23	10.85	13.60	2.75	1080	NEW CONSTRUCTION	OPEN	2	
24	13.60	13.80	0.20	1080	RECONSTRUCTION	OPEN	1	
25	13.80	14.00	0.20	1080	RECONSTRUCTION	BUILT	5	
26	14.00	15.55	1.55	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
27	15.55	16.30	0.75	1080	RECONSTRUCTION	OPEN	1	
28	16.30	16.60	0.30	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
29	16.60	17.10	0.50	1100	RIGID PAVEMENT	BUILT	3	
30	17.10	17.70	0.60	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
31	17.70	20.80	3.10	1100	RIGID PAVEMENT	BUILT	3	
32	20.80	21.10	0.30	1080	RECONSTRUCTION	OPEN	1	
33	21.10	22.15	1.05	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
34	22.15	22.50	0.35	1080	RECONSTRUCTION	BUILT	5	
35	22.50	24.00	1.50	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
36	24.00	24.25	0.25	1600	RIGID PAVEMENT_DFS	BUILT	4	
37	24.25	25.00	0.75	1580	NEW CONSTRUCTION_DFS	OPEN	2	

R1		AUG. 2015	SECOND REVISION	LASA	VINAY	SUBBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	<b>C O N S U L T I N G</b> <b>ENGINEERS GROUP LTD.</b>  E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cecindia.com		DESIGN REVIEW CONSULTANT :	 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT :	 <b>ODISHA WORKS</b> <b>DEPARTMENT</b>		PROJECT :	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE :	N.T.S		DRAWING TITLE :	DETAILS OF PAVEMENT SCHEDULE WITH TYPE OF TCS	
R0		FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)																		
-		JUNE 2008	ORIGINAL	CEG																						
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:													DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-05					



HIGH EMBANKMENT PROTECTION WORK WITH STONE PITCHING

(SCALE 1 : 25)



HIGH EMBANKMENT PROTECTION WORK WITH EROSION CONTROL BLANKET

(SCALE 1 : 25)

NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

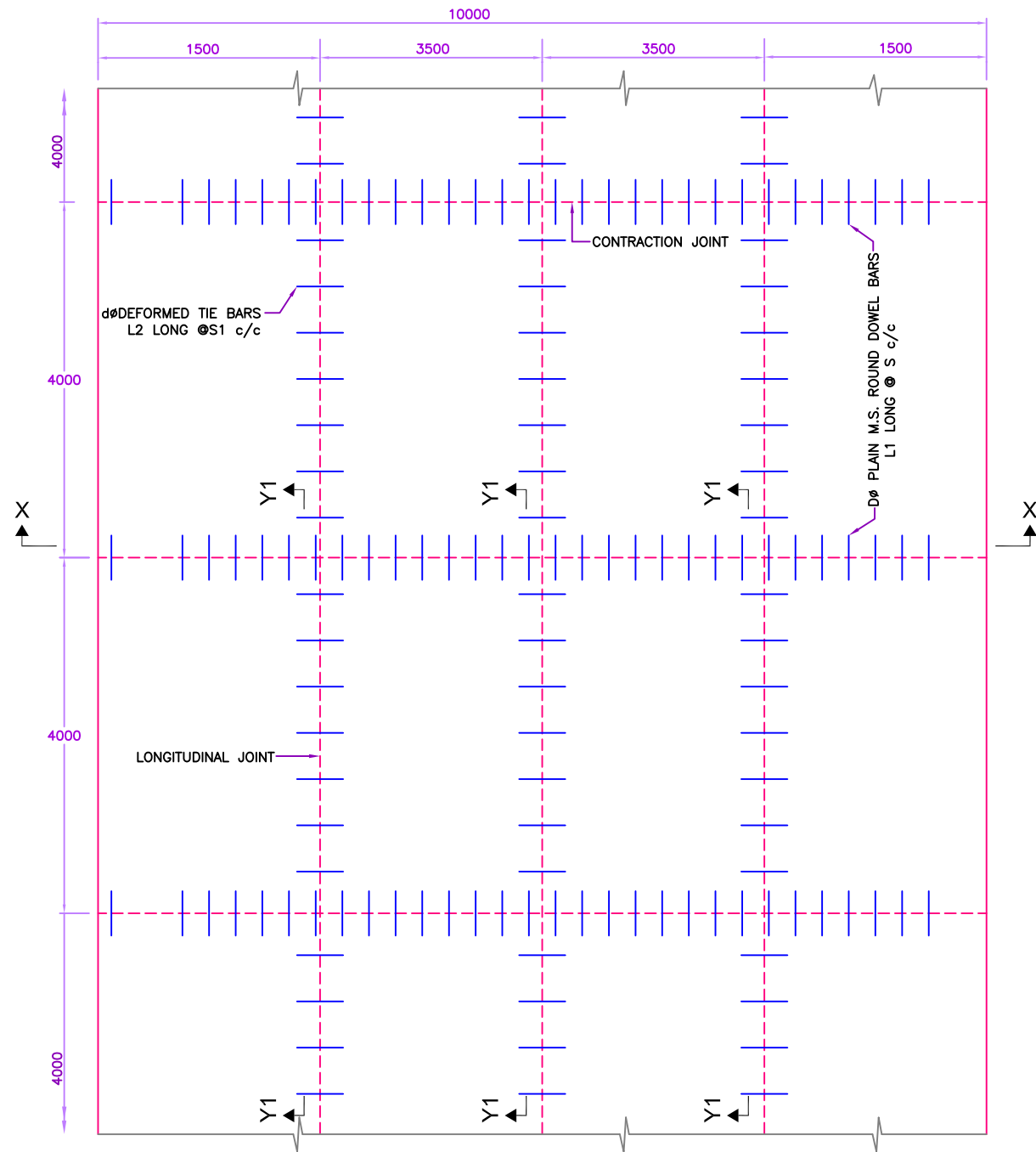
DPR CONSULTANT:  
CONSULTING ENGINEERS GROUP LTD.  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556  
Fax: 2521348, e-mail: ceg@cegindia.com

DESIGN REVIEW CONSULTANT:  
LEA Associates South Asia Pvt. Ltd., India  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

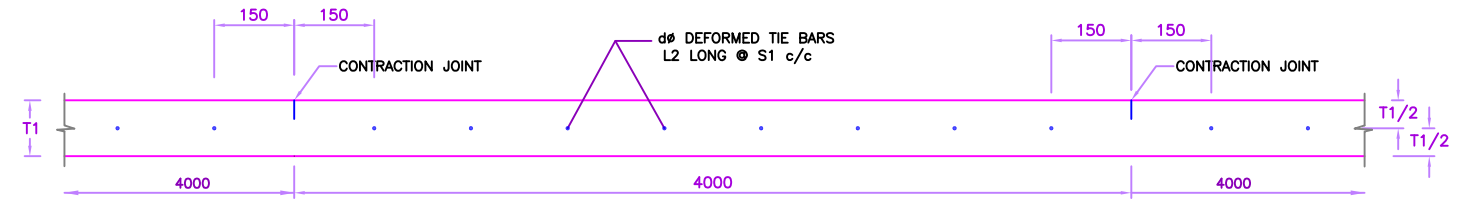
CLIENT:  
ODISHA WORKS DEPARTMENT

PROJECT:  
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1

DRAWING TITLE:  
TYPICAL DETAILS OF SLOPE PROTECTION  
DWG. NO. : 73466/LASA/HIGHWAYS/MISC-06  
SCALE:



MAIN CARRIAGEWAY  
(SCALE 1 : 50)



SECTION Y1-Y1 (SHOWING TIE BAR ARRANGEMENT BETWEEN CARRIAGEWAYS)

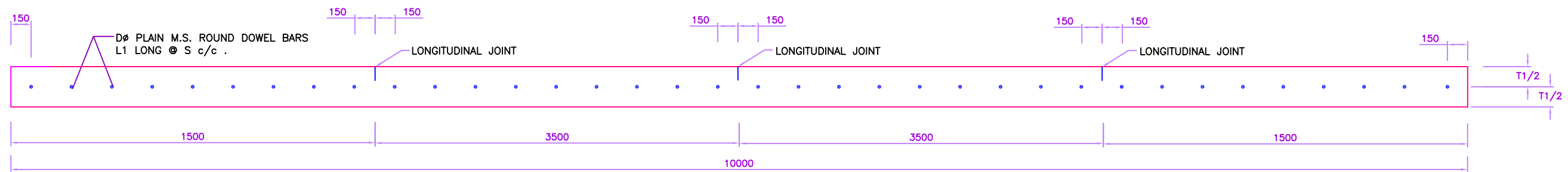
(SCALE 1 : 25)

NOTATIONS

T1	Pavement Thickness
T2	DLC Thickness
S	Spacing of Dowel Bars
S1	Spacing of Tie Bars
D	Dowel Bar Dia
d	Tie Bar Dia
L1	Length of Dowel Bar
L2	Length of Tie Bar

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. THIS DRG. IS TO BE READ ALONG WITH TYPICAL CROSS SECTION FOR RIGID PAVEMENT DRG. NO. 73466\LASA\HIGHWAYS\MISC-09.
3. FOR PAVEMENT THICKNESS AND OTHER DIMENSIONS REFER PAVEMENT SCHEDULE FOR RIGID PAVEMENT.



SECTION X-X (SHOWING DOWEL BAR ARRANGEMENT)

(SCALE 1 : 30)

R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:

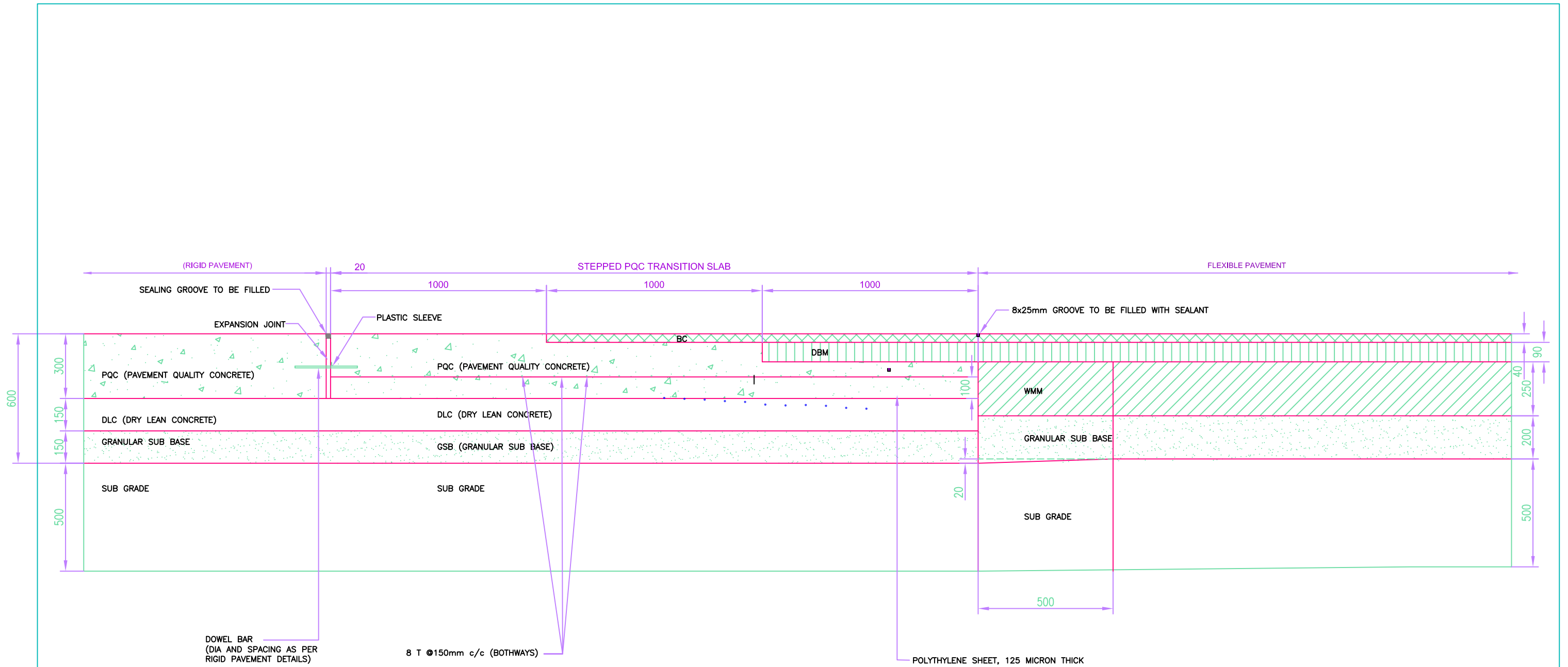
DPR CONSULTANT:  
CONSULTING ENGINEERS GROUP LTD.  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556  
Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT:  
LEA Associates South Asia Pvt. Ltd., India  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
ODISHA WORKS DEPARTMENT

PROJECT:  
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1

DRAWING TITLE:  
TYPICAL DETAILS OF DOWEL BAR AND TIE BAR ARRANGEMENT  
DWG. NO. : 73466\LASA\HIGHWAYS\MISC-07



TYP. DETAILS OF TRANSITION SLAB BETWEEN RIGID & FLEXIBLE PAVEMENT

(SCALE 1 : 80)

**NOTES:**

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING IS TO BE READ ALONG WITH OTHER TYP. ROAD X-SECTION DRAWINGS.
3. FOR TRANSITION DETAILS REFER 73466\LASA\HIGHWAYS\MISC-09.

NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
**CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556  
 Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
  
**ODISHA WORKS DEPARTMENT**

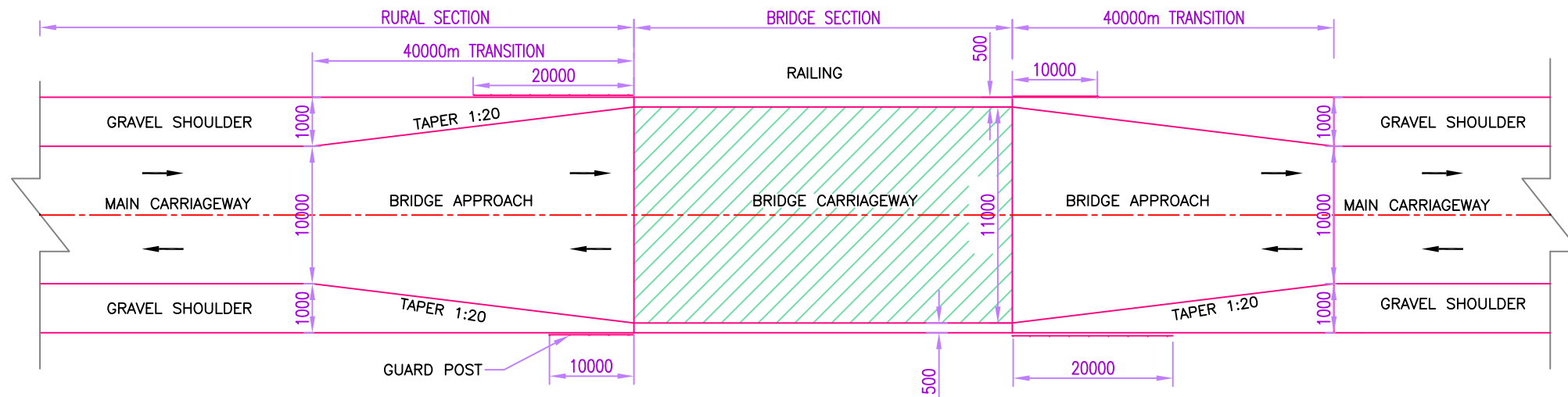
PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS OF TRANSITION SLAB BETWEEN RIGID AND FLEXIBLE PAVEMENT**

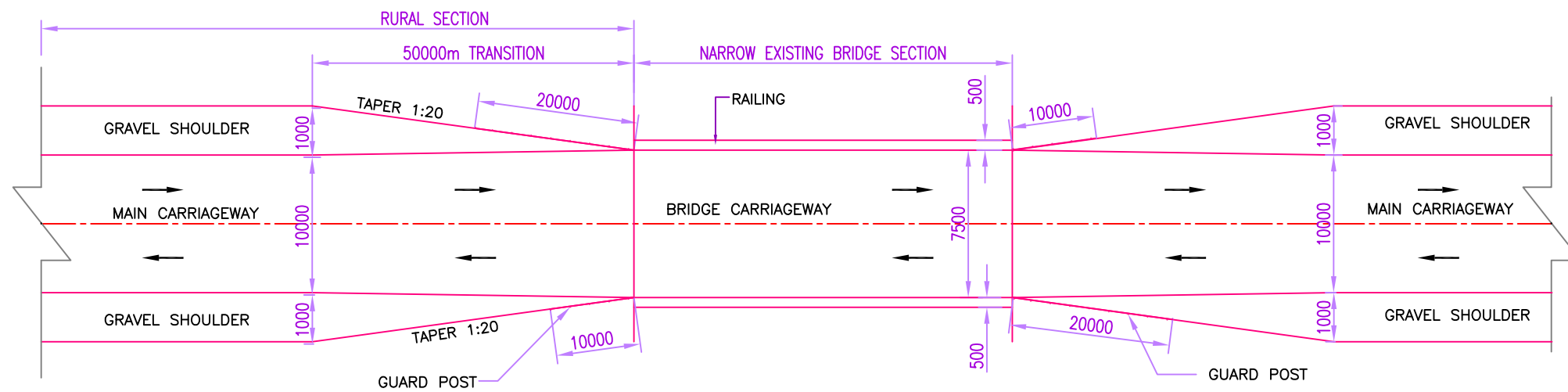
DWG. NO. : 73466\LASA\HIGHWAYS\MISC-08

SCALE:





**TRANSITION BETWEEN RURAL 12m SECTION TO BRIDGES WITH 11m CLEAR CARRIAGEWAY**



**TRANSITION BETWEEN RURAL 12m SECTION TO NARROW EXISTING BRIDGES SECTION**

**NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS INDICATED OTHERWISE.
2. FOR DETAILS OF STRUCTURES REFER STRUCTURAL DRGS.
3. METAL BEAM CRASH BARRIER ARE INSTALLED WHERE EMBANKMENT HEIGHT IS MORE THAN 3 METRES & AT BRIDGE APPROACHES.
4. FOR GUARD POST DETAIL REFER DWG. NO. 73466\LASA\HIGHWAYS\MISC-17.
5. FOR HAZARD MARKER DETAIL REFER TYPICAL ROAD SIGN & DETAILS OF ROAD DELINEATORS

NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

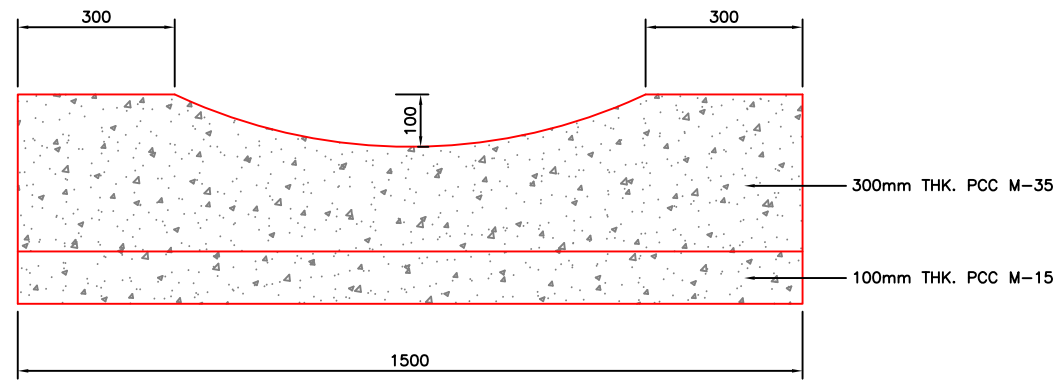
DPR CONSULTANT:  
**CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556  
 Fax: 2521348, e-mail: ceg@cegindia.com

DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
  
**ODISHA WORKS DEPARTMENT**

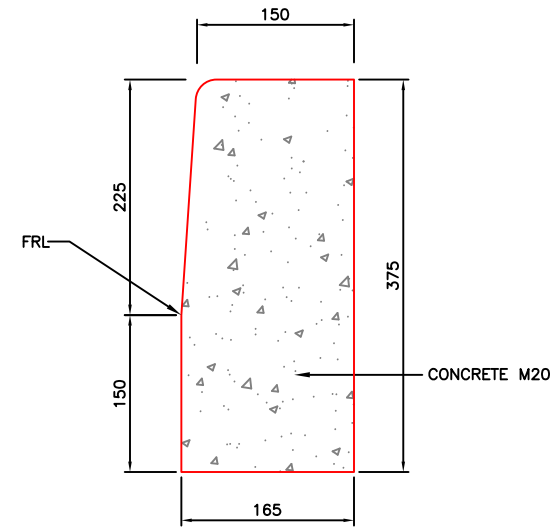
PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS OF TRANSITION OF DIFFERENT ROAD SECTIONS**  
 DWG. NO. : 73466\LASA\HIGHWAYS\MISC-09  
 SCALE:



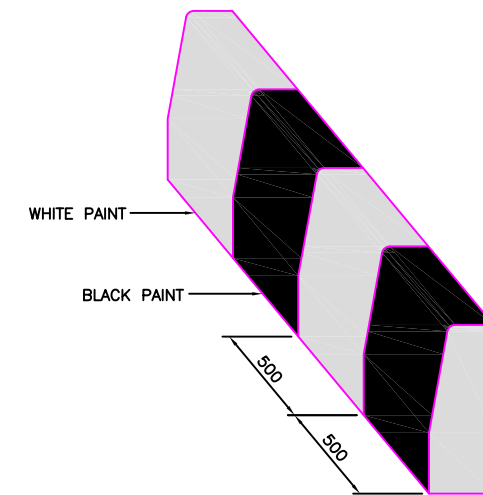
**PRECAST SAUCER DRAIN**

(SCALE 1 : 10)

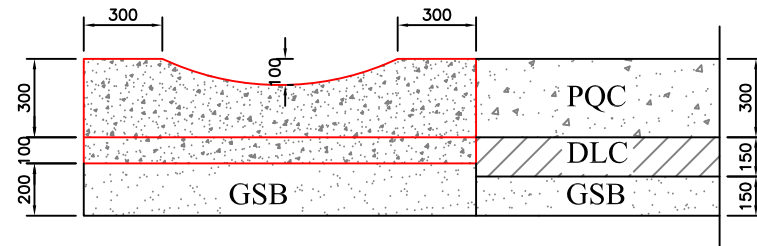


**TYPE-1  
KERB FOR CENTRAL  
AND DIRECTIONAL ISLAND**

(SCALE 1 : 5)

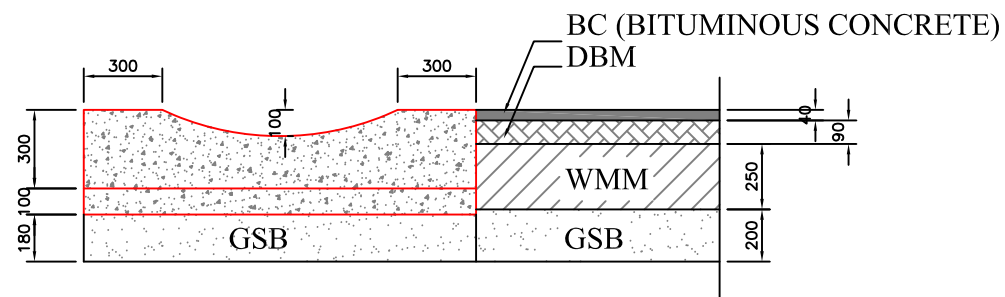


**KERB MARKING**



**PRECAST SAUCER DRAIN IN RIGID PAVEMENT**

(Scale 1:20)



**PRECAST SAUCER DRAIN IN FLEXIBLE PAVEMENT**

(Scale 1:20)

**SCHEDULE OF DRAIN - JAGATPUR TO CHANDBALI**

Sl. No.	Chainage		Length of Saucer Drain	Type of Drain	SIDE	Total Length (in M)
	From	To				
1	0+000	1+900	1,900.00	Saucer	Both	3,800.00
2	2+200	2+400	200.00	Saucer	Both	400.00
3	2+530	2+800	270.00	Saucer	Both	540.00
4	3+850	4+300	450.00	Saucer	Both	900.00
5	5+800	7+200	1,400.00	Saucer	Both	2,800.00
6	7+550	7+950	400.00	Saucer	Both	800.00
7	9+300	9+660	360.00	Saucer	Both	720.00
8	10+100	10+480	380.00	Saucer	Both	760.00
9	10+600	10+700	100.00	Saucer	Right	100.00
10	10+700	10+850	150.00	Saucer	Left	150.00
11	13+800	14+000	200.00	Saucer	Both	400.00
12	16+600	17+100	500.00	Saucer	Both	1,000.00
13	17+700	20+800	3,100.00	Saucer	Both	6,200.00
14	22+150	22+500	350.00	Saucer	Both	700.00
15	24+000	24+250	250.00	Saucer	Both	500.00
<b>TOTAL LENGTH</b>						<b>19,770.00</b>

**NOTES:-**

1. THE PROVISION AND LENGTH OF THE LINED DRAIN SHALL BE REASSESSED DURING THE TIME OF CONSTRUCTION.
2. FOOTPATH BARRIERS SHALL BE PROVIDED AS PER DWG No. 73466\LASA\HIGHWAYS\MISC-16.
3. FOR BARRICADES OPENING SHALL BE PROVIDED.
4. LINED DRAIN SCHEDULE SUPER SEED THE PLAN.
5. ALL REINFORCEMENT SHALL BE CONFIRMED TO Fe 500.

NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
**CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556  
 Fax: 2521348, e-mail: ceg@cegindia.com

DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

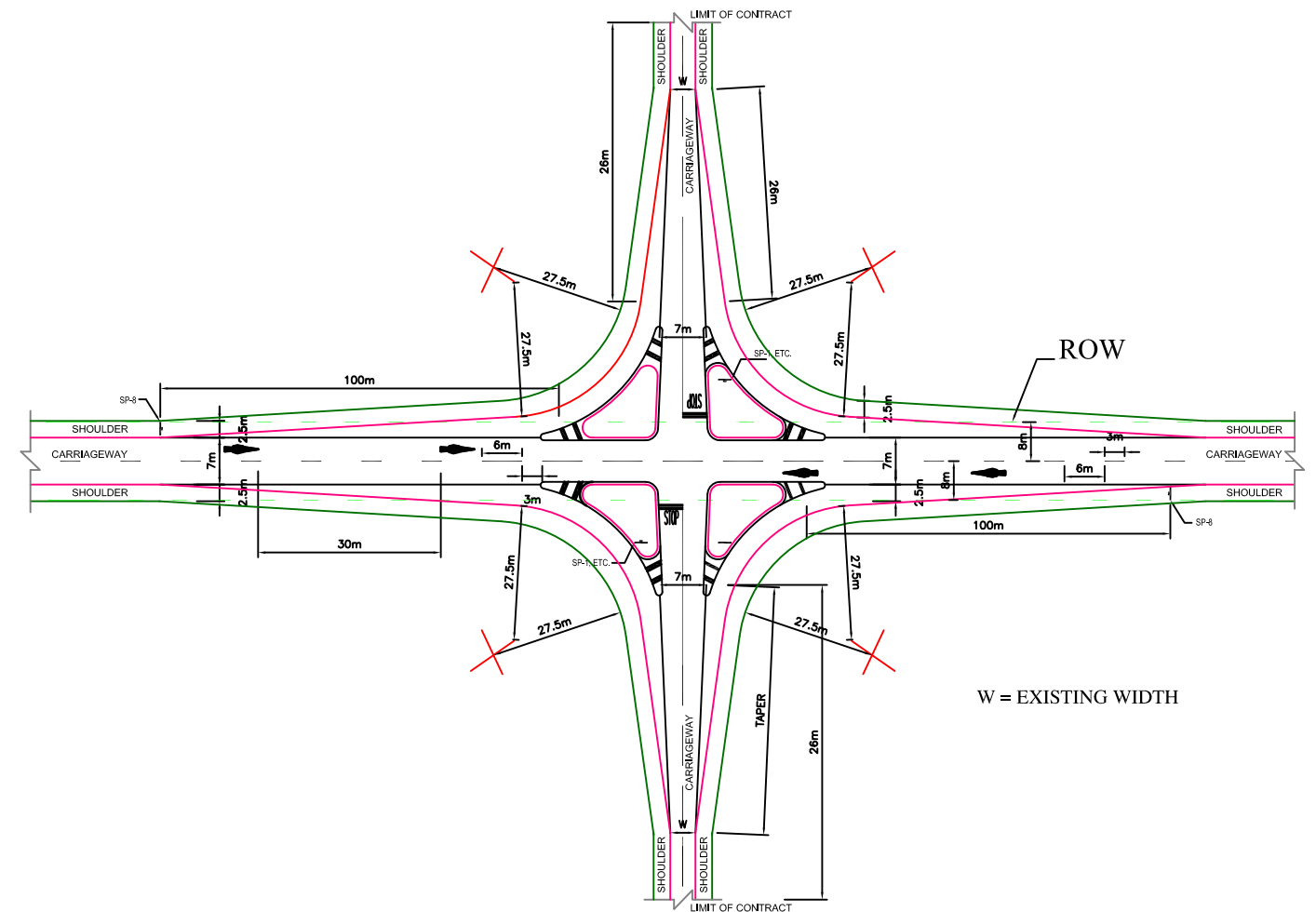
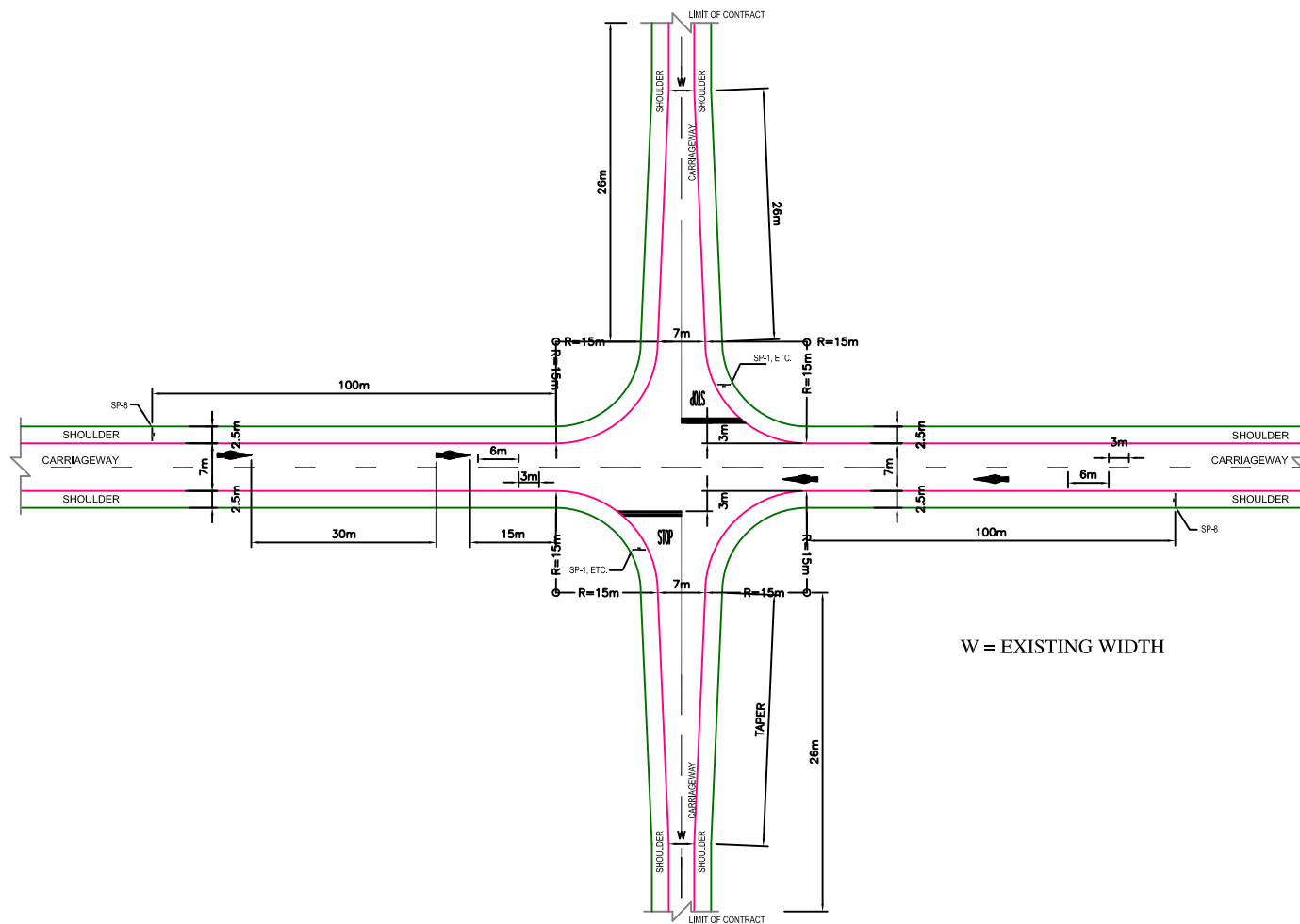
CLIENT:  
**ODISHA WORKS DEPARTMENT**

PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS OF DRAIN AND KERB**

DWG. NO. : 73466\LASA\HIGHWAYS\MISC-10

Sl. No.	Chainage	Remarks
1	6550	Builtup Section



**NOTES:**

1. FOR DETAILS OF ROAD SIGNS NUMBERED SP-1, ETC. SEE DRAWING NO. 73466\LASA\HIGHWAYS\MISC-14.
2. FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELISING ISLAND REFER DRAWING No. 73466\LASA\HIGHWAYS\MISC-13,14 & 15.
3. FOR DETAILS REGARDING ROAD HUMPS & OTHER SIGN BOARDS, MARKING REFER DRAWING No. 73466\LASA\HIGHWAYS\MISC-13, 14 & 15.
4. LONGITUDINAL GRADIENT ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD.
5. AS THE ROW IS 13 M ON EITHER SIDE OF THE ROAD IN RURAL SECTION AND 8 M ON EITHER SIDE IN BUILTUP SECTIONS, DRAWING SHALL BE MODIFIED AS PER THE LOCATIONAL REQUIREMENT.

NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

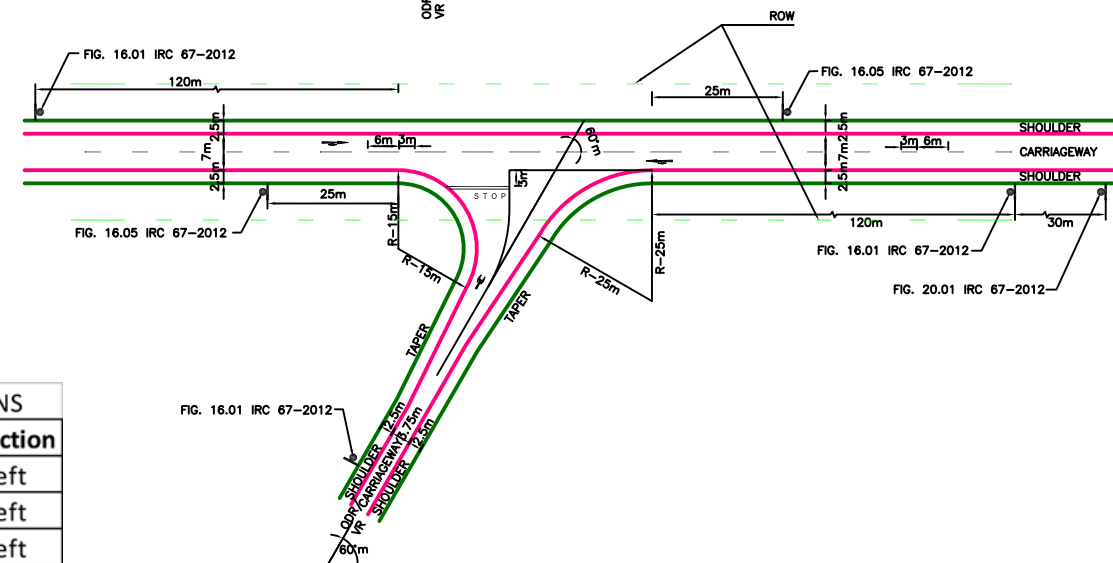
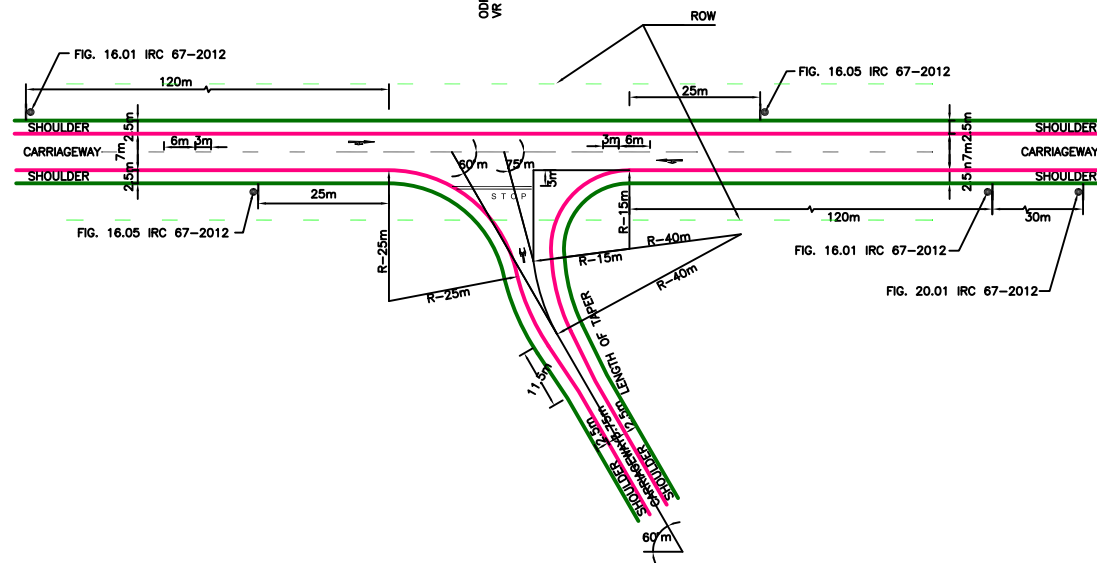
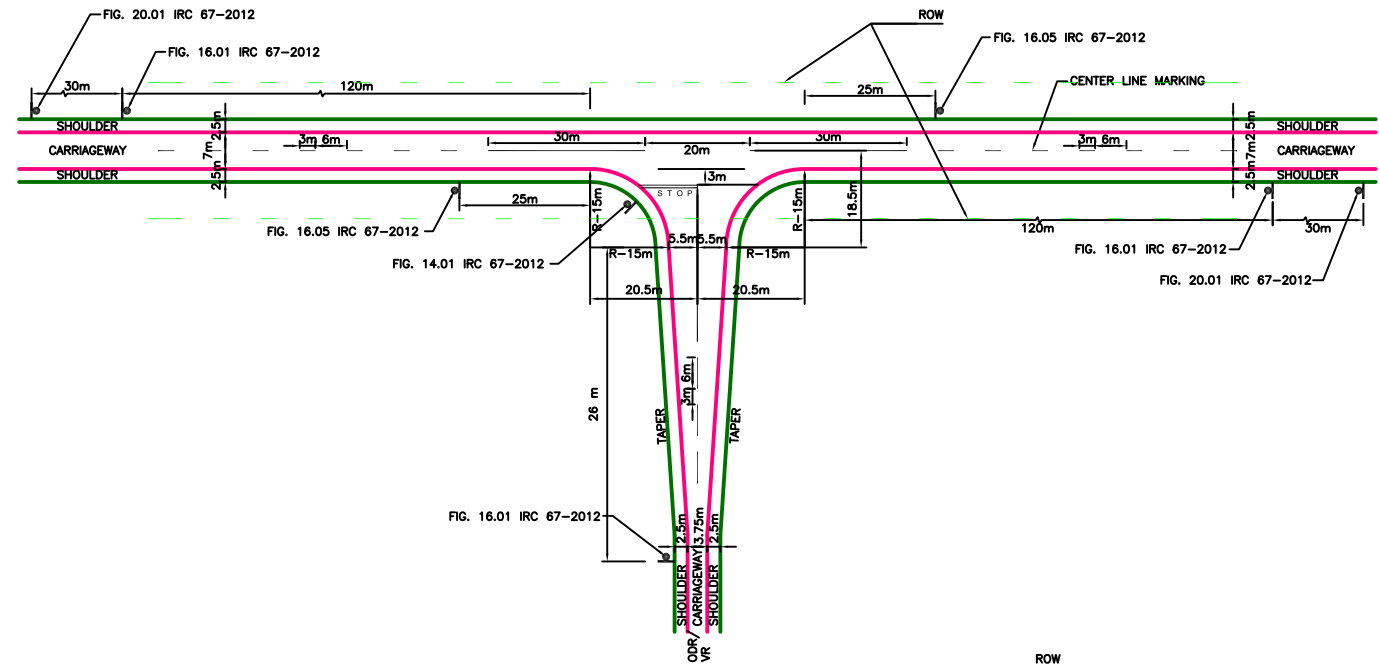
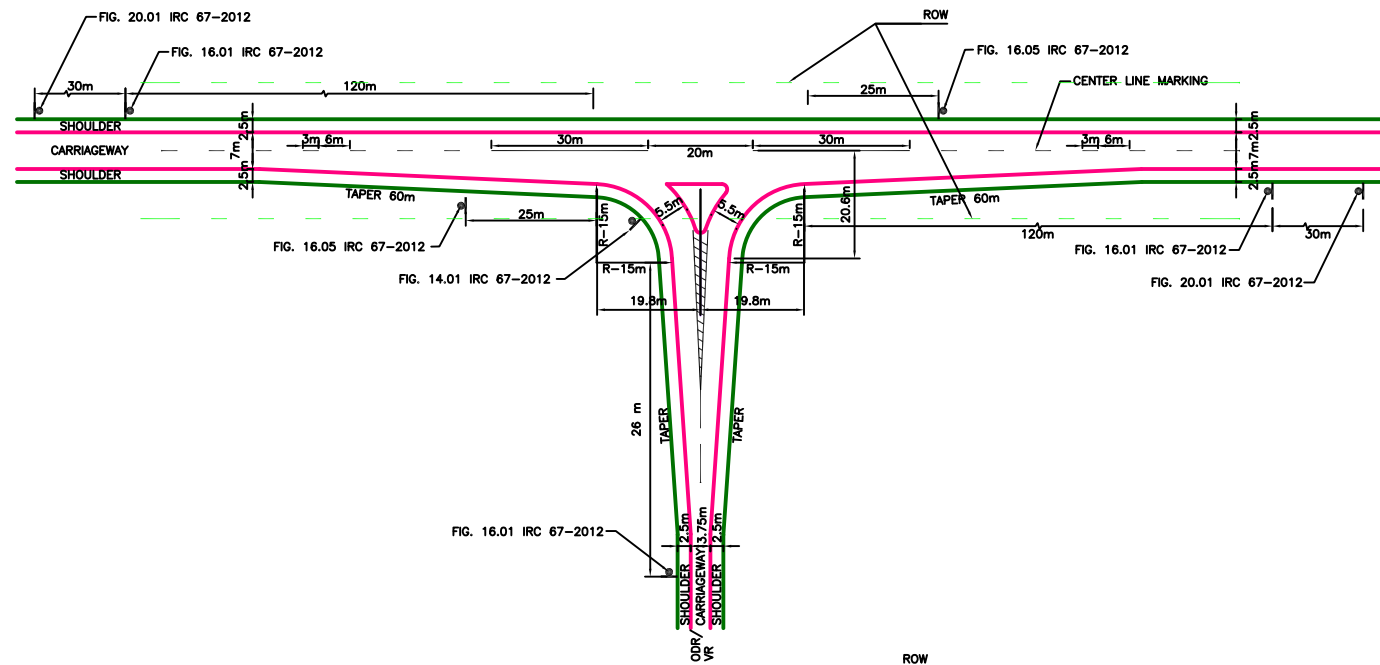
DPR CONSULTANT:  
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CLIENT:  
  
**ODISHA WORKS DEPARTMENT**

PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS AND SCHEDULE OF MINOR JUNCTIONS (4-LEGGED)**  
 DWG. NO. : 73466\LASA\HIGHWAYS\MISC-11  
 (SHEET 1 OF 2)  
 SCALE:



AT T-JUNCTION_TYPE-A		
Sl. No.	Chainage	Direction
1	182	Right
2	1000	Left
3	3980	Left
4	4200	Right
5	6075	Right
6	7880	Right
7	9070	Left
8	9445	Right
9	10440	Left
10	20028	Right
11	20075	Left
12	20440	Left

AT T-JUNCTION_TYPE-B		
Sl. No.	Chainage	Direction
1	1806	Right
2	2854	Left
3	3880	Right
4	4450	Left
5	5230	Left
6	5695	Left
7	5885	Left
8	9050	Right
9	9486	Left
10	19556	Left
11	21312	Right
12	24685	Left

TYPE-A_Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	510	Left
2	1183	Left
3	1366	Left
4	1405	Left
5	6105	Left
6	6315	Left
7	6800	Right
8	7640	Left
9	13896	Right
10	13904	Left
11	16650	Left
12	16891	Right
13	22400	Both

TYPE-B_Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	2148	Left
2	2184	Left
3	3330	Left
4	4730	Left
5	5160	Left
6	10858	Right
7	10878	Left
8	13120	Left
9	13530	Left
10	15646	Left
11	18658	Left
12	18817	Right
13	19642	Right
14	19771	Left
15	21350	Left
16	21890	Left
17	24120	Right
18	24430	Left
19	24680	Right
20	24880	Right

**NOTES:**

- ALL THE DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED.
- FOR FURTHER DETAILS OF ROAD SIGNAGES REFER IRC: 67-2012.
- FOR ROAD MARKING DETAILS REFER DRAWING No. 73466\LASA\HIGHWAYS\MISC\RS-01.
- LONGITUDINAL GRADIENT ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD.
- AS THE ROW IS 13 M ON EITHER SIDE OF THE ROAD IN RURAL SECTION AND 8 M ON EITHER SIDE IN BUILTUP SECTIONS, DRAWING SHALL BE MODIFIED AS PER THE LOCATIONAL REQUIREMENT.

NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
RO	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

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 Fax: 2521348, e-mail: ceg@cegindia.com

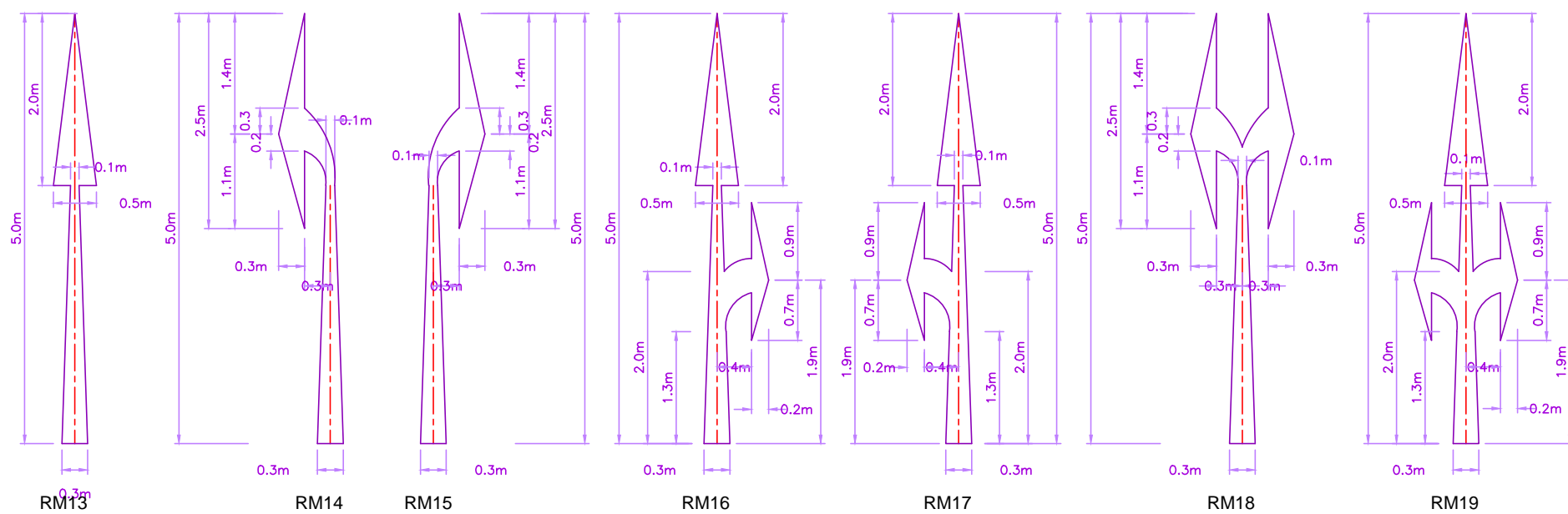
DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, II<sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
**ODISHA WORKS DEPARTMENT**

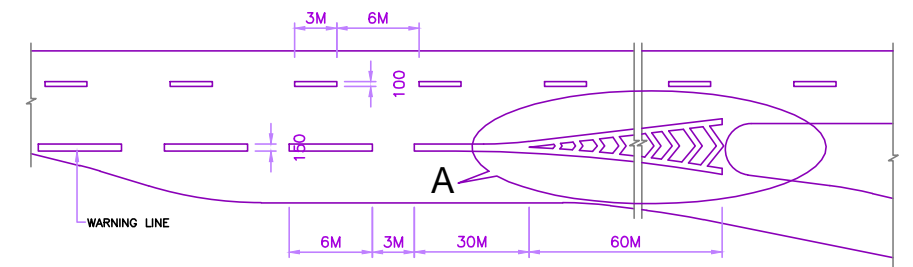
PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS AND SCHEDULE OF MINOR JUNCTIONS (T & Y JUNCTIONS)**  
 (SHEET 2 OF 2)  
 DWG. NO.: 73466\LASA\HIGHWAYS\MISC-11  
 SCALE:

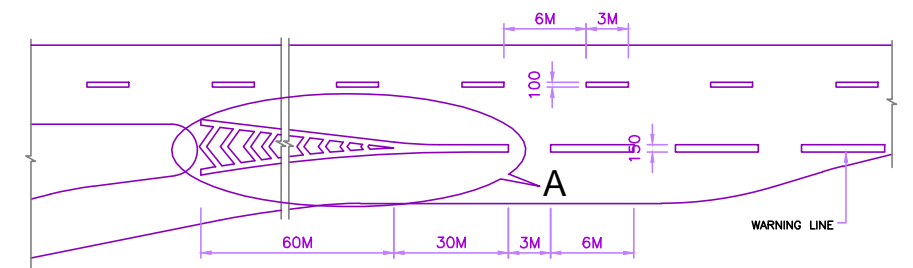




ARROW MARKING FOR ROUTE DIRECTION



PARALLEL ACCELERATION LANE



PARALLEL DECELERATION LANE

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED.
2. IN ACCESS CULVERT TO BE LAID IN DITCH WITHOUT HEADWALL AND WITHOUT CONCRETE BEDDING.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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**CONSULTING ENGINEERS GROUP LTD.**  
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 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com

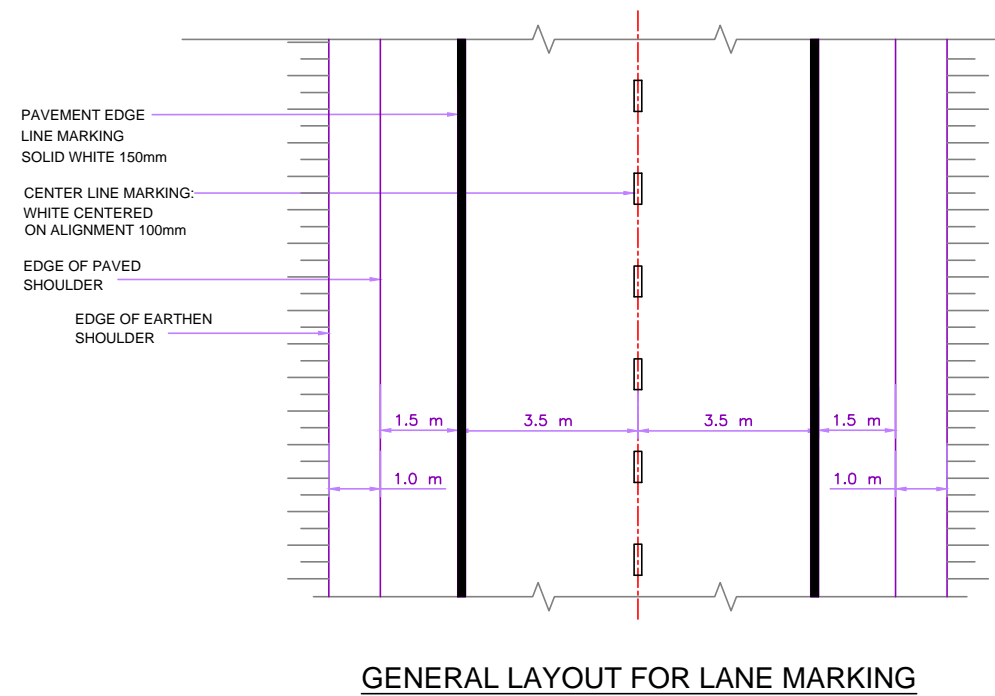
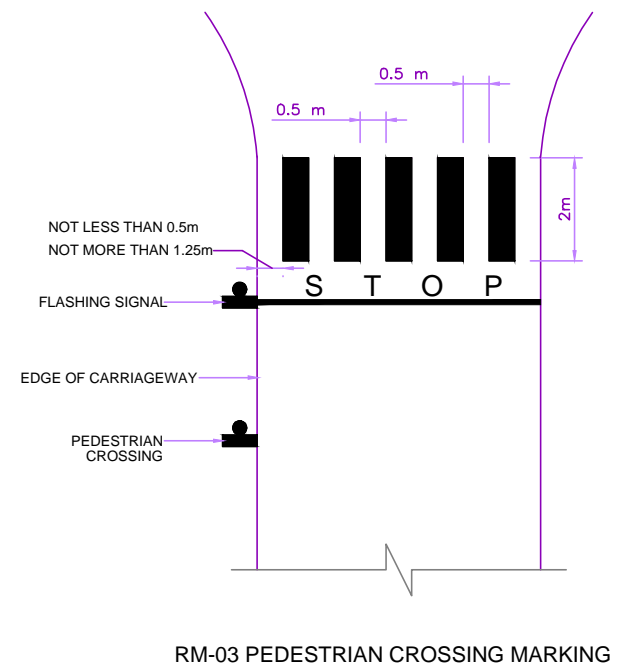
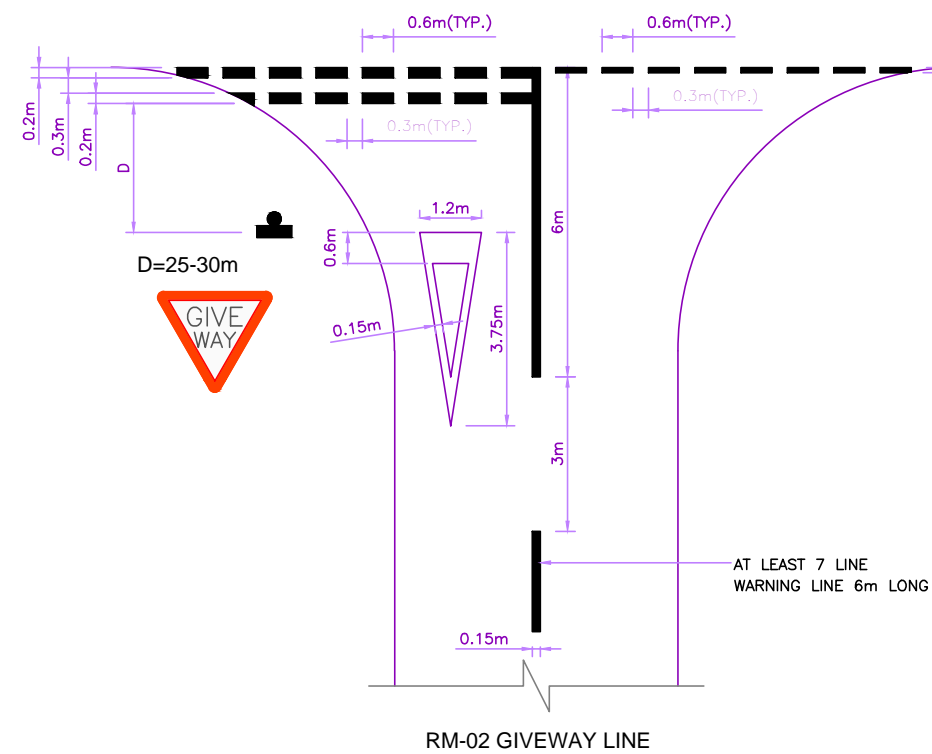
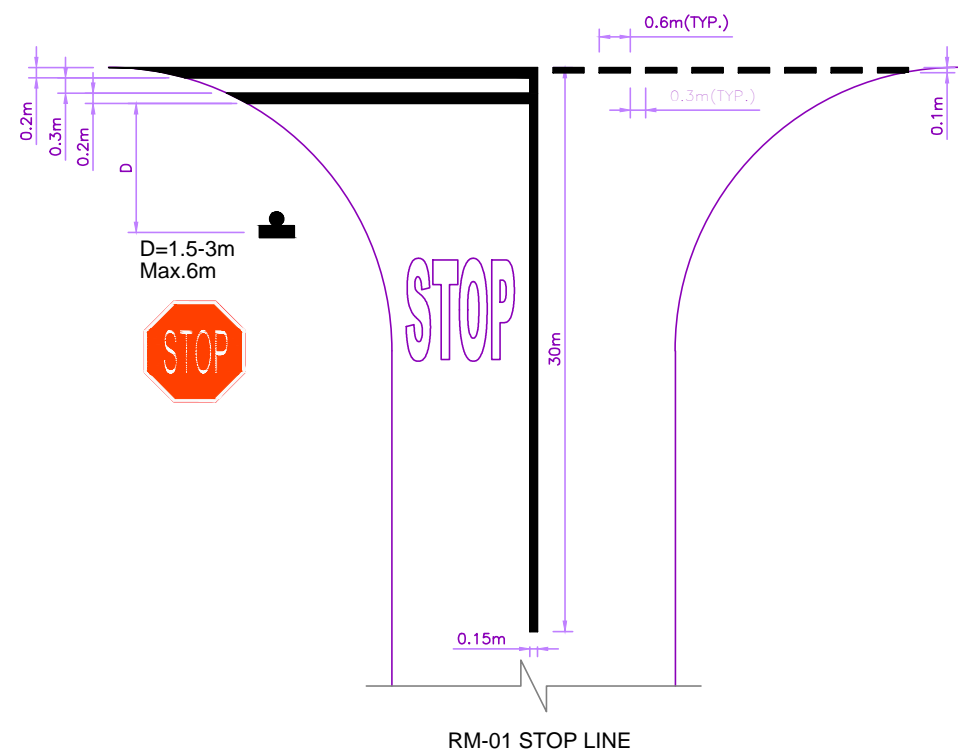
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**LEA Associates South Asia Pvt. Ltd., India**  
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CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK)  
 PACKAGE - P04A-1

SCALE :  
 N.T.S.

DRAWING TITLE :  
**TYPICAL DETAILS OF ROAD MARKINGS**  
 (SHEET 1 OF 3)  
 DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-13 REV. R1



NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com

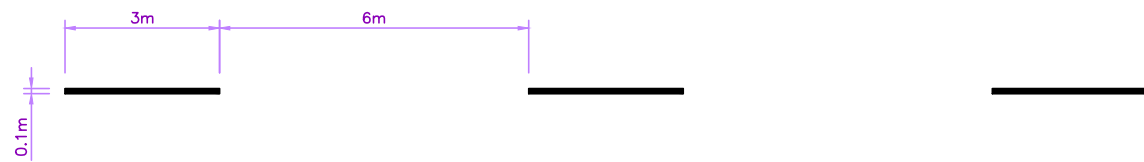
DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

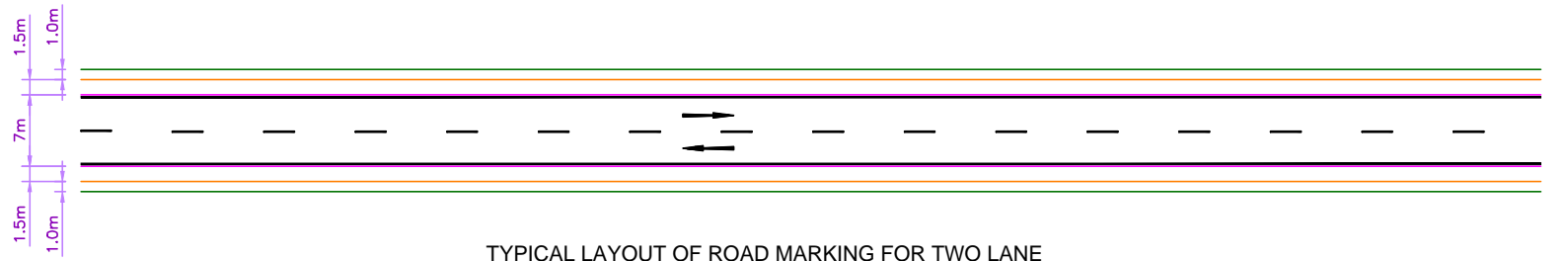
PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1

SCALE :  
 N.T.S.

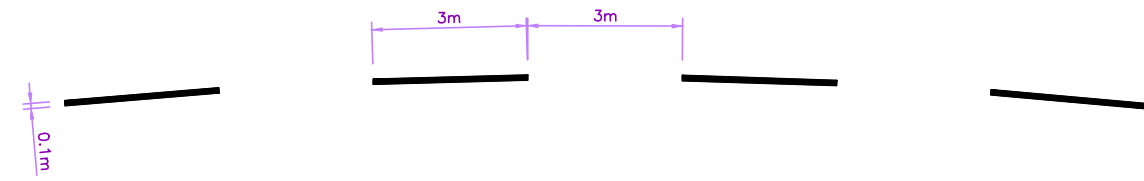
DRAWING TITLE :  
**TYPICAL DETAILS OF ROAD MARKINGS**  
 (SHEET 2 OF 3)  
 DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-13 REV. R1



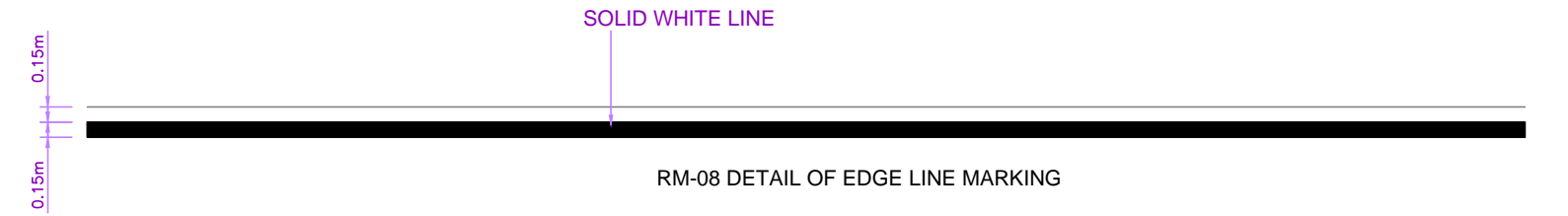
RM-04 LANE MARKING IN RURAL STRAIGHT REACHES



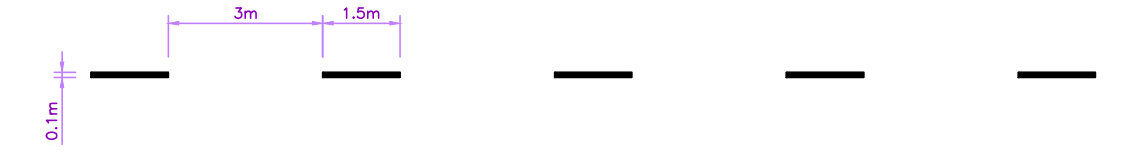
TYPICAL LAYOUT OF ROAD MARKING FOR TWO LANE



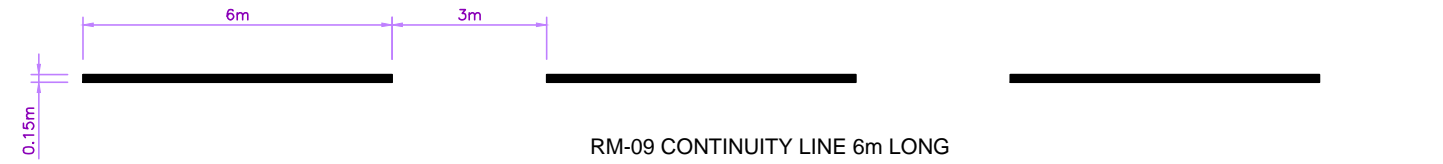
RM-05 LANE MARKING ON CURVES AND AT APPROACHES TO INTERSECTIONS IN RURAL AREA



RM-08 DETAIL OF EDGE LINE MARKING



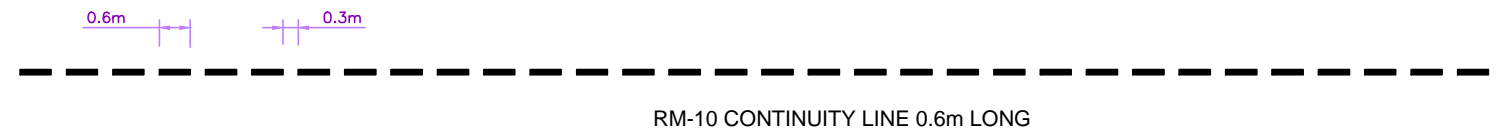
RM-06 LANE MARKING IN URBAN STRAIGHT REACHES



RM-09 CONTINUITY LINE 6m LONG



RM-07 LANE MARKING ON CURVES AND AT APPROACHES TO INTERSECTIONS IN URBAN AREA



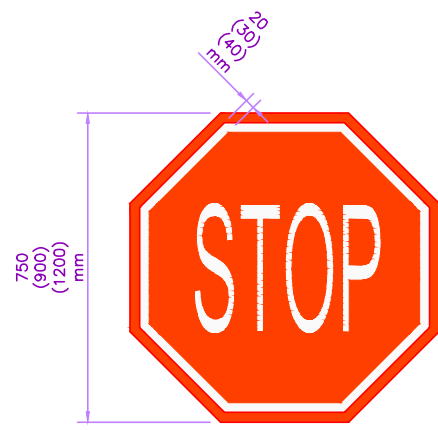
RM-10 CONTINUITY LINE 0.6m LONG



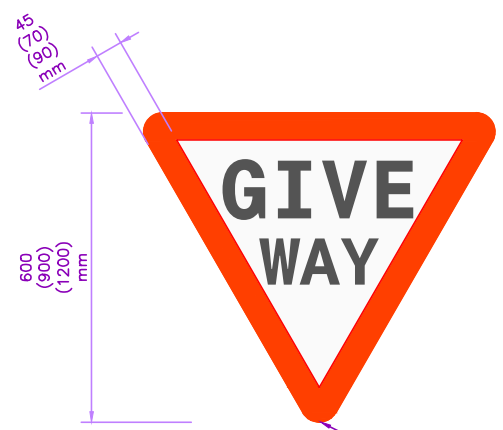
RM-11 WARNING LINE AT BUS BAY

DPR CONSULTANT : CONSULTING ENGINEERS GROUP LTD. <b>CEG</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com							DESIGN REVIEW CONSULTANT : <b>LEA</b> LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044			CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE : N.T.S.		DRAWING TITLE : <b>TYPICAL DETAILS OF ROAD MARKINGS</b> (SHEET 3 OF 3)	
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)										
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)										
-	JUNE 2008	ORIGINAL	CEG														
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:			DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-13	REV. R1					

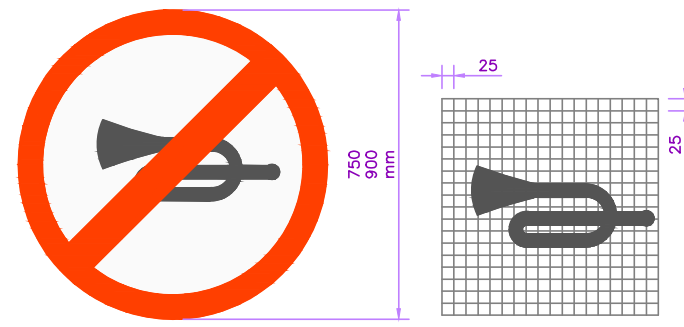




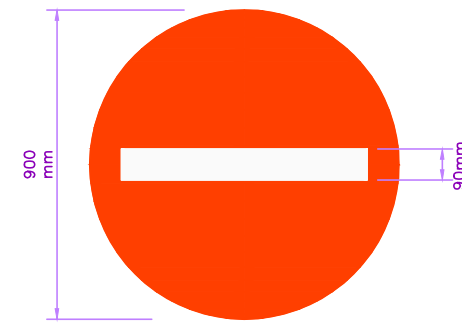
**STOP**  
FIG 14.01



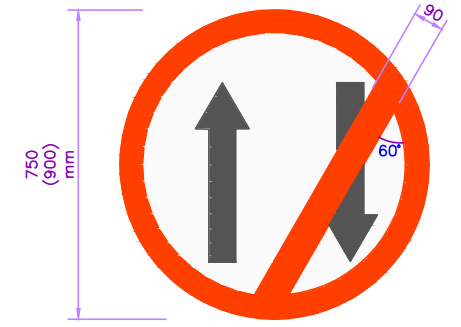
**GIVE WAY**  
FIG 14.02



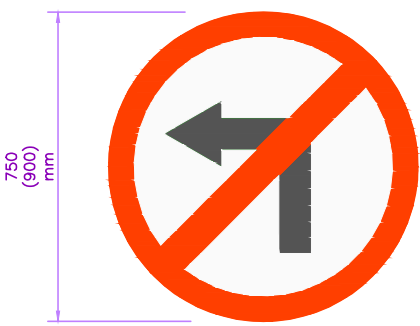
**HORN PROHIBITED**  
FIG 14.18



**NO ENTRY**  
FIG 14.19



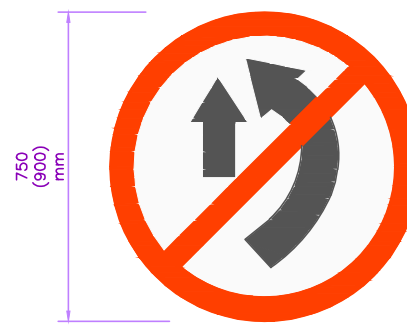
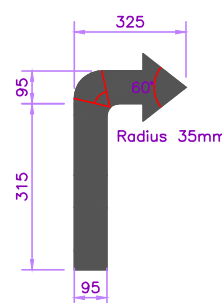
**ONE WAY SIGN**  
FIG 14.20



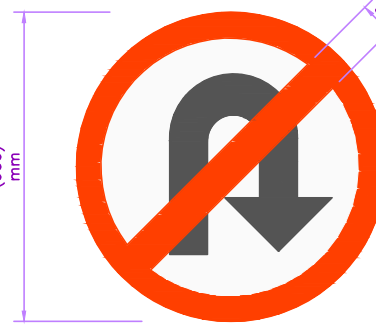
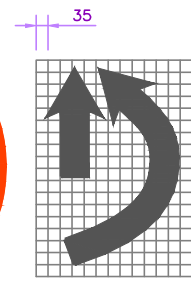
**LEFT TURN PROHIBITED**  
FIG 14.21



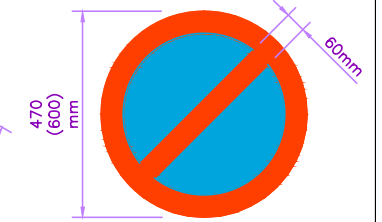
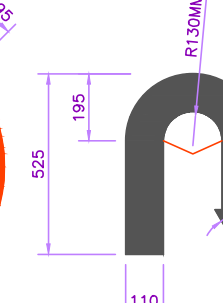
**RIGHT TURN PROHIBITED**  
FIG 14.22



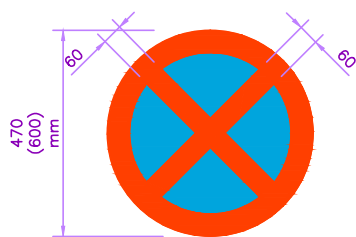
**OVER TAKING PROHIBITED**  
FIG 14.23



**U-TURN PROHIBITED**  
FIG 14.24



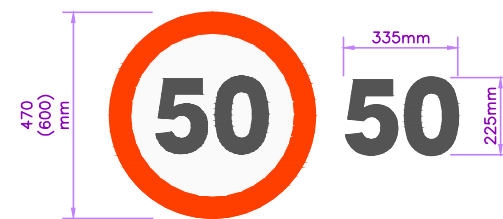
**NO STANDING**  
FIG 14.27



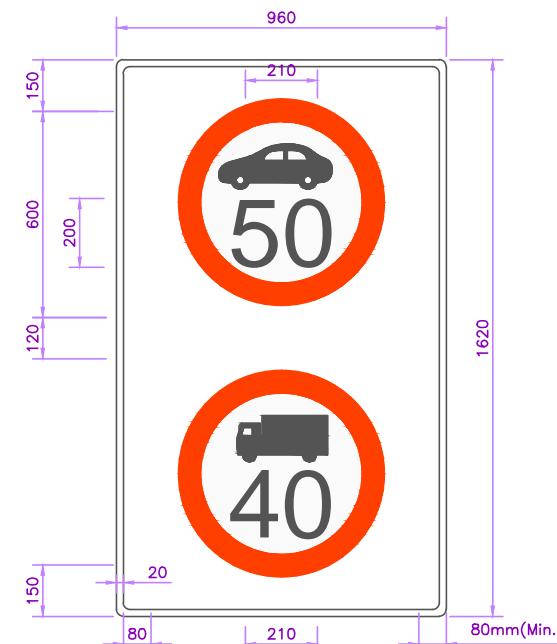
**NO STOPPING AND NO STANDING**  
FIG 14.28



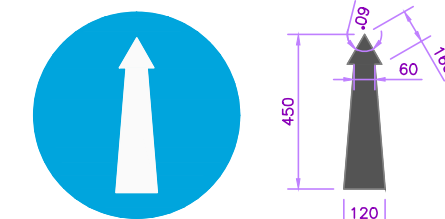
**NO PARKING**  
FIG 14.29



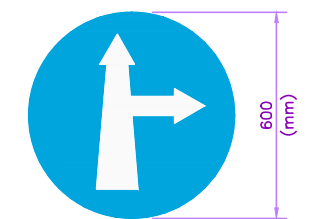
**MAXIMUM SPEED LIMIT**  
FIG 14.37



**MAXIMUM SPEED LIMIT VEHICLE TYPE**  
FIG 14.38



**COMPULSORY AHEAD**  
FIG 14.41



**COMPULSORY AHEAD OR RIGHT TURN**  
FIG 14.42

NOTES:-  
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67: 2012.  
2. FIGURE NUMBERS AS PER SPECIFIED IN IRC 67: 2012.

NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cecindia.com

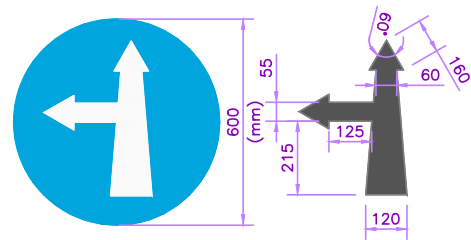
DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1

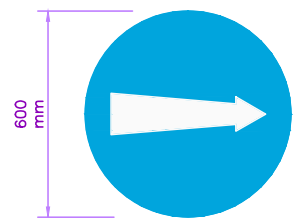
SCALE :  
AS SHOWN

DRAWING TITLE :  
**TYPICAL DETAILS OF ROAD SIGNS**  
(SHEET 1 OF 4)  
DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-14 REV. R1



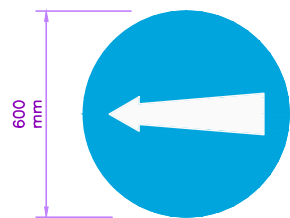
COMPULSORY AHEAD OR LEFT TURN

FIG 14.43



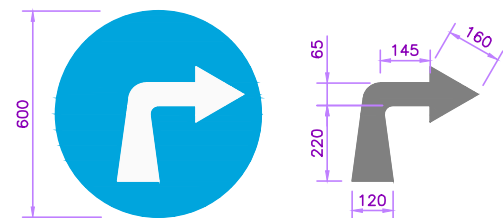
COMPULSORY TURN RIGHT

FIG 14.44



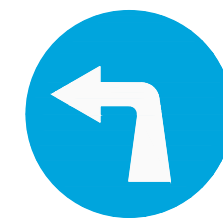
COMPULSORY TURN LEFT

FIG 14.45



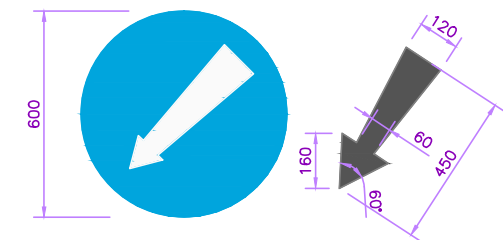
COMPULSORY TURN RIGHT IN ADVANCE OF JUNCTION

FIG 14.46



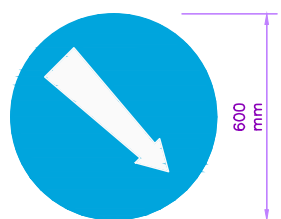
COMPULSORY TURN LEFT IN ADVANCE OF JUNCTION

FIG 14.47



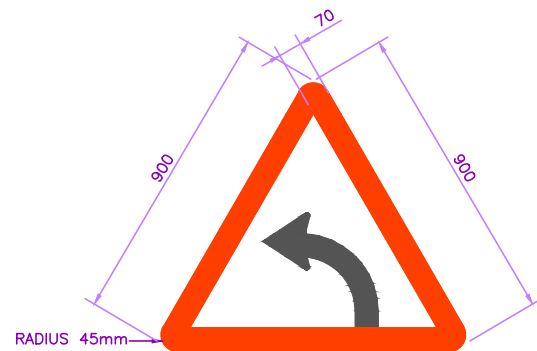
COMPULSORY KEEP LEFT

FIG 14.48



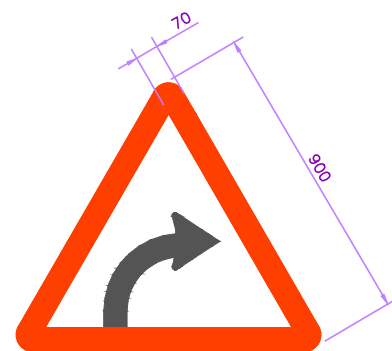
COMPULSORY KEEP RIGHT

FIG 14.49



LEFT HAND CURVE

FIG 15.01



RIGHT HAND CURVE

FIG 15.02



SIDE ROAD RIGHT

FIG 15.09



SIDE ROAD LEFT

FIG 15.10



LEFT

FIG 15.11



RIGHT

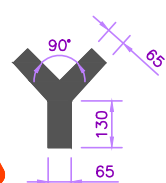
FIG 15.12

'Y' INTERSECTIONS



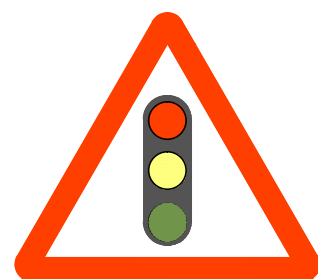
'Y' INTERSECTIONS

FIG 15.13



CROSS ROAD

FIG 15.14



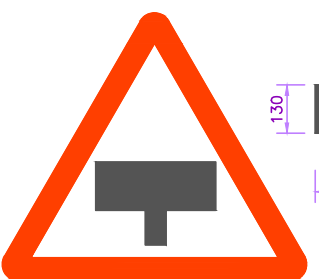
TRAFFIC SIGNALS

FIG 15.16



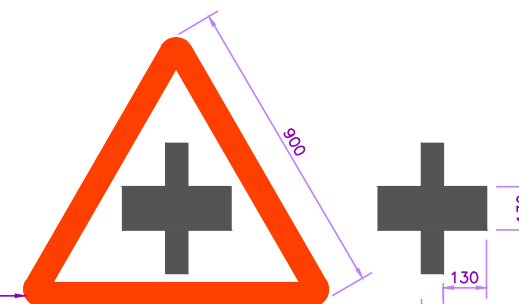
T - INTERSECTION

FIG 15.17



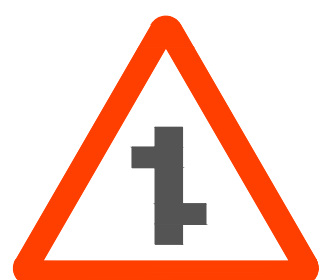
T - INTERSECTION MAJOR ROAD AHEAD

FIG 15.18



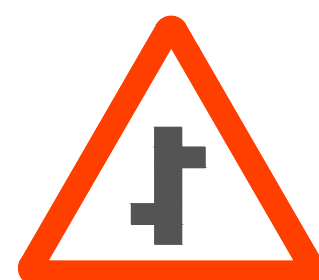
MAJOR ROAD AHEAD

FIG 15.19



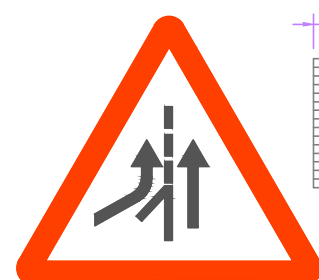
STAGGERED INTERSECTIONS RIGHT

FIG 15.20



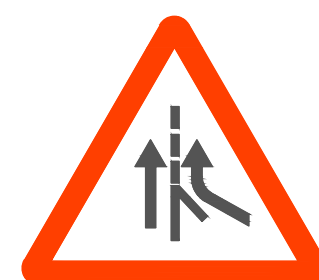
LEFT

FIG 15.21



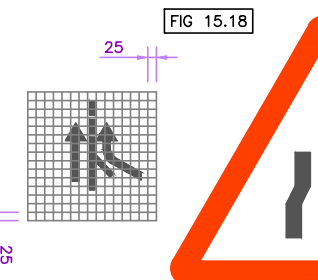
MERGING TRAFFIC AHEAD (FROM LEFT)

FIG 15.22



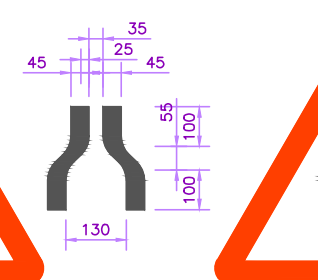
MERGING TRAFFIC AHEAD (FROM RIGHT)

FIG 15.22



NARROW ROAD AHEAD

FIG 15.23



ROAD WIDENS

FIG 15.24

- NOTES:-  
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67: 2012.  
2. FIGURE NUMBERS AS PER SPECIFIED IN IRC 67: 2012.

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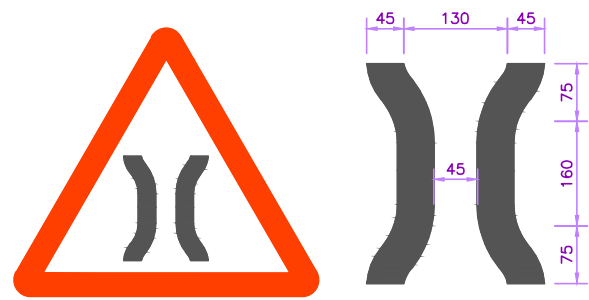
DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
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SCALE :  
AS SHOWN

DRAWING TITLE :  
**TYPICAL DETAILS OF ROAD SIGNS**  
(SHEET 2 OF 4)  
DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-14 REV. R1



NARROW BRIDGE AHEAD

FIG 15.25



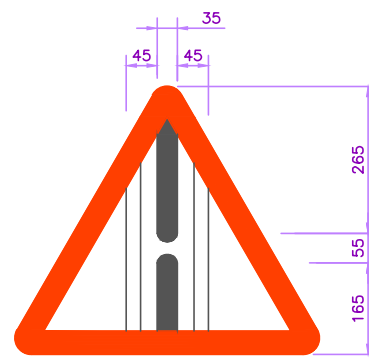
START OF DUAL CARRIAGEWAY

FIG 15.30



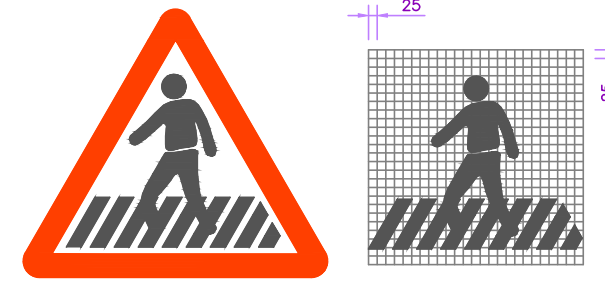
END OF DUAL CARRIAGEWAY

FIG 15.31



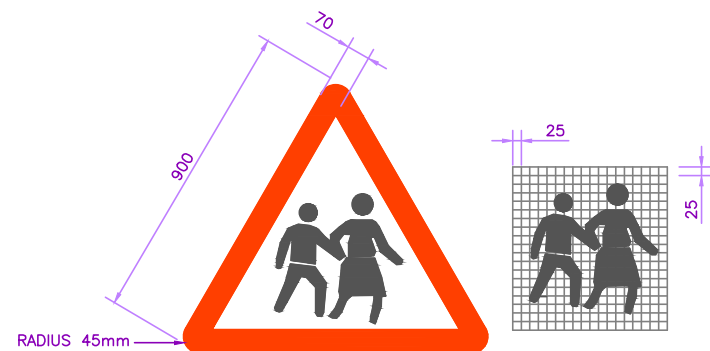
GAP IN MEDIAN

FIG 15.32



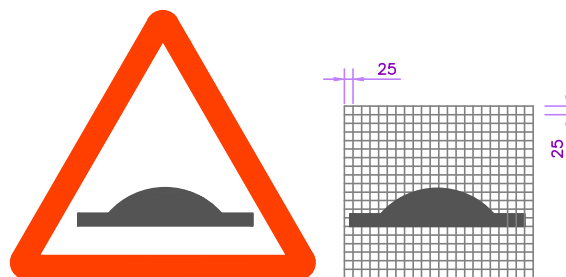
PEDESTRIAN CROSSING

FIG 15.33



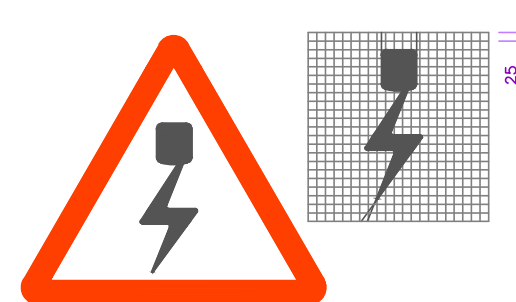
SCHOOL AHEAD

FIG 15.34



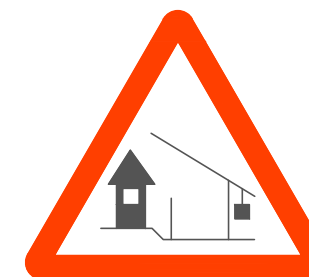
SPEED BREAKER

FIG 15.49



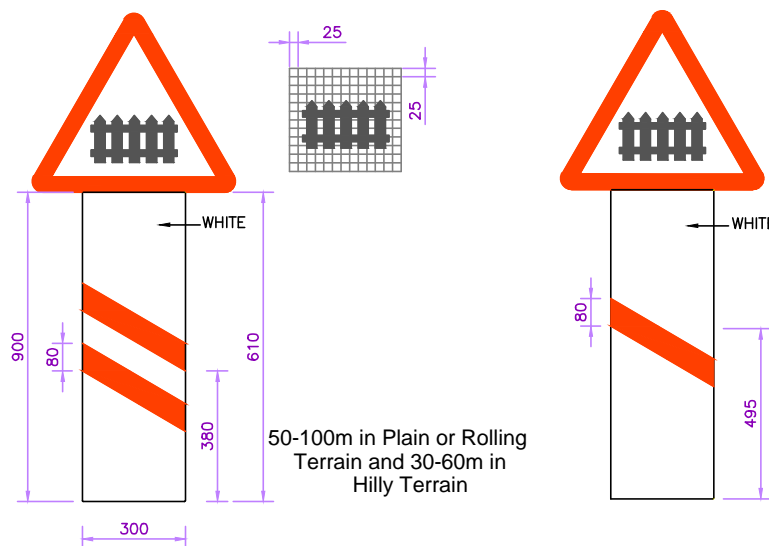
OVERHEAD CABLES

FIG 15.57



BARRIER

FIG 15.60

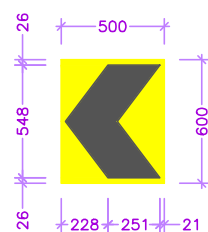


(a) At 200m

(b) At 50-100m (PLAIN / ROLLING)  
At 30-60m (HILL)

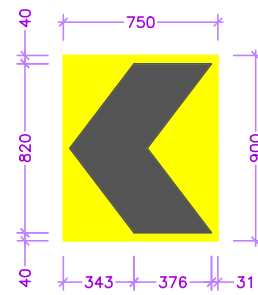
GUARDED RAILWAY CROSSING

FIG 15.71



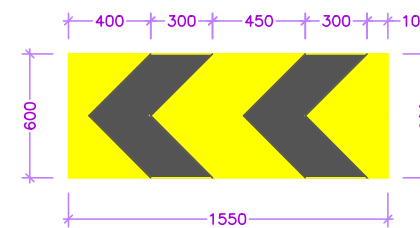
SINGLE CHEVRON (NORMAL)

FIG 15.72



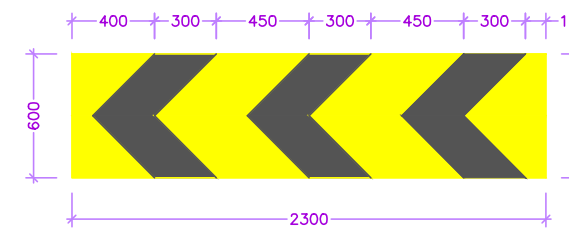
SINGLE CHEVRON (>100kmph speed)

FIG 15.73



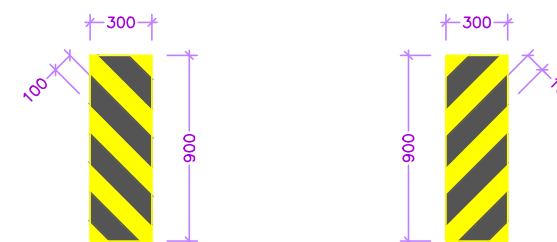
DOUBLE CHEVRON

FIG 15.74



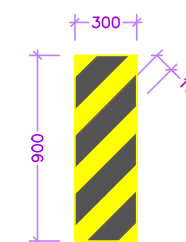
TRIPLE CHEVRON

FIG 15.75



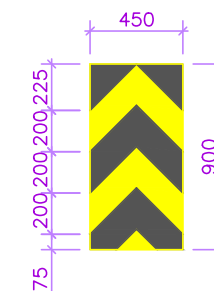
OBJECT HAZARD (Left)

FIG 15.76



OBJECT HAZARD (Right)

FIG 15.77



TWO WAY HAZARD MARKER

FIG 15.78

NOTES:-

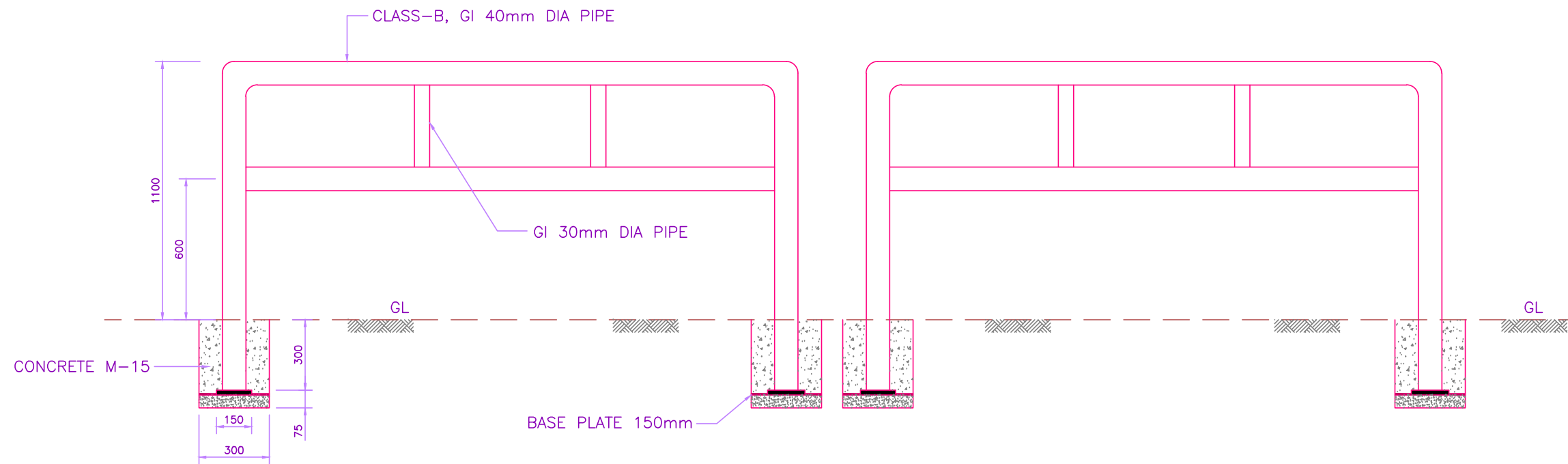
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67: 2012.
2. FIGURE NUMBERS AS PER SPECIFIED IN IRC 67: 2012.

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R0		FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com		LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		AS SHOWN	TYPICAL DETAILS OF ROAD SIGNS (SHEET 3 OF 4)		
-		JUNE 2008	ORIGINAL	CEG																
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:											DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-14	REV. R1









**ELEVATION OF FOOTPATH BARRIER**

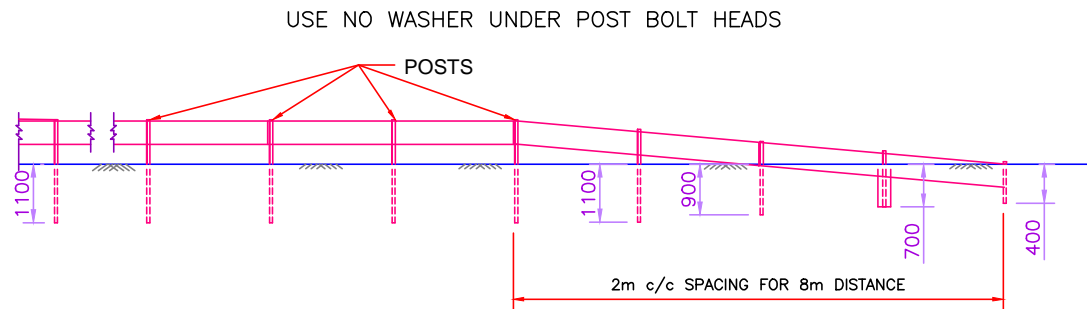
(SCALE 1:10)

**NOTE:**

1. LENGTH OF FOOTPATH BARRIER AT EACH BUS BAY SHALL BE 15m (MIN.)
2. LENGTH OF FOOTPATH BARRIER AT BUILTUP/VILLAGE AREA SHALL BE 1477m (MIN.)
3. THE LOCATION OF FOOTPATH BARRIER AT BUILTUP/VILLAGE AREA SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

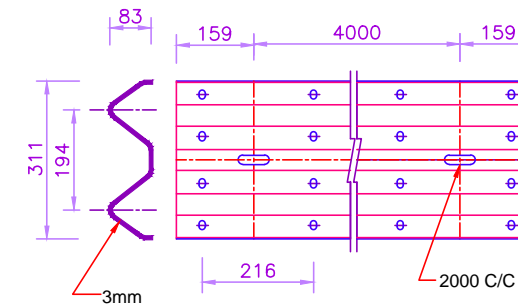
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R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
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DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-16										REV. R1	

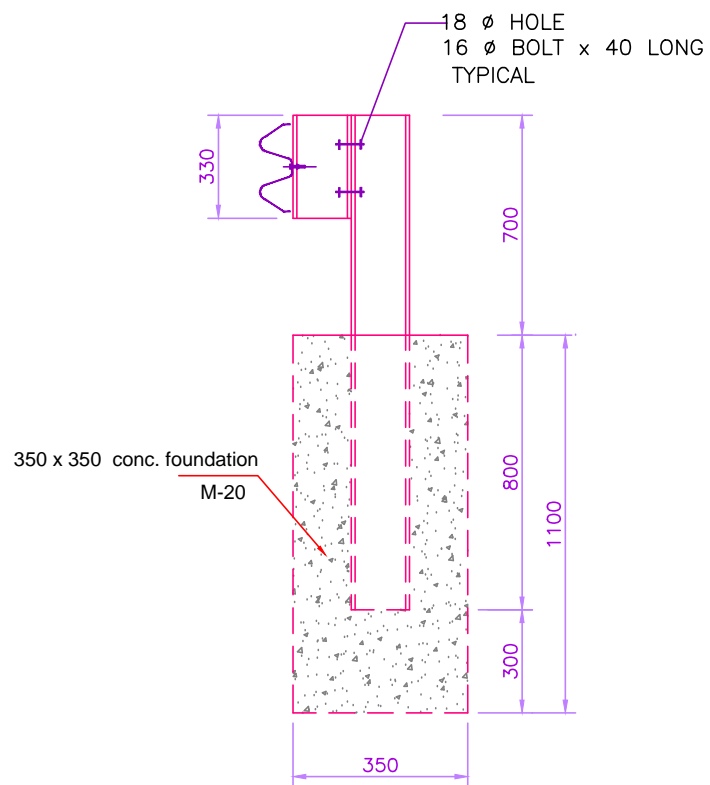


TYPICAL TURN DOWN DETAIL

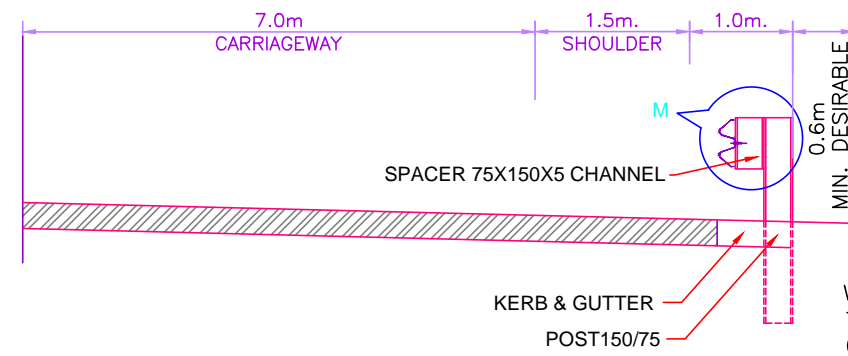
RAIL	
$I_{xx}$	$= 1311.0 \text{ cm}^4$
$Z_{xx}$	$= 86.0 \text{ cm}^3$
$A$	$= 14.1 \text{ cm}^2$
$I_{yy}$	$= 105.0 \text{ cm}^4$
$Z_{yy}$	$= \text{min.} 25.0 \text{ cm}^3$
$W$	$= 11.0 \text{ kg/m}$



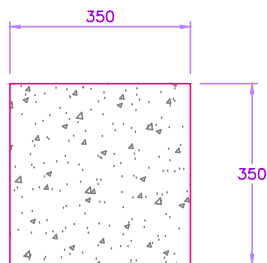
GUARDRAIL



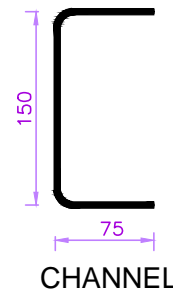
DETAIL AT 'M'



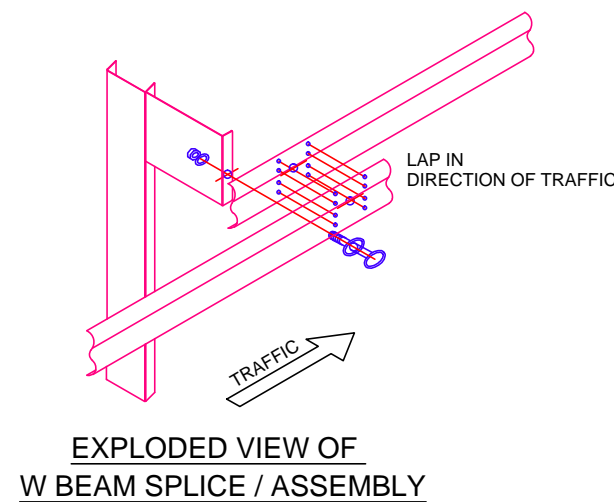
SECTION A-A



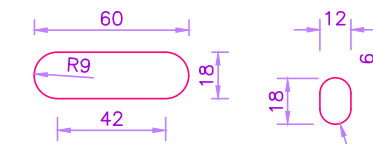
PLAN



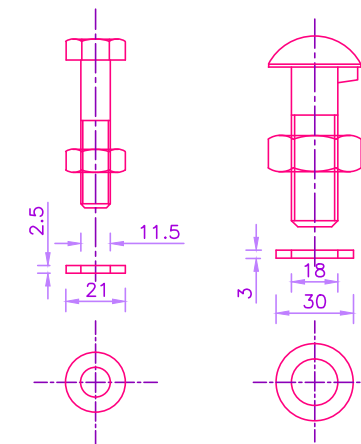
CHANNEL



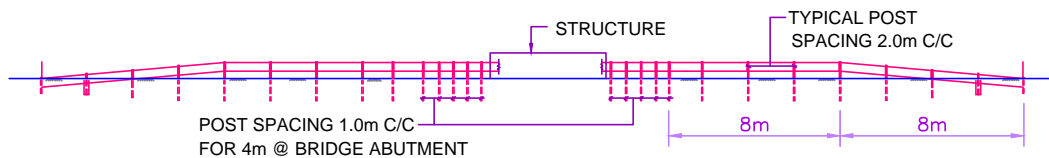
EXPLODED VIEW OF W BEAM SPLICE / ASSEMBLY



HOLE DETAILS



HIGH TENSILE BOLTS & NUTS  
IS-4.6 GRADE



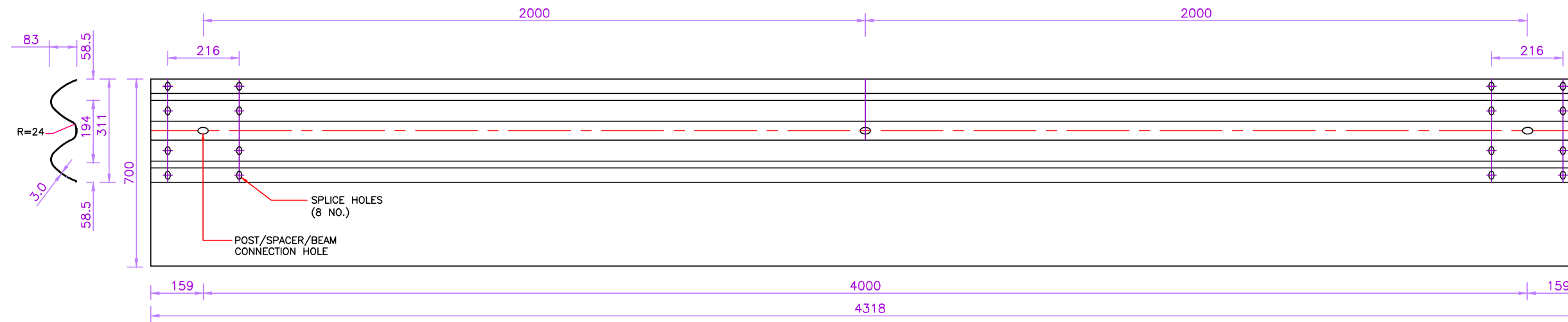
ELEVATION AT STRUCTURE LOCATION

**NOTE:**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED.
2. THE LOCATION OF THE FOOTPATH BARRIERS ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

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R0		FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	N.K PRADHAN (CE)	CONSULTING ENGINEERS GROUP LTD. <b>CEG</b>	ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	N.T.S.	TYPICAL DETAILS OF METAL BEAM CRASH BARRIER	
-		JUNE 2008	ORIGINAL	CEG					LEA Associates South Asia Pvt. Ltd., India E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com				(SHEET 1 OF 2)	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:						DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-17	REV. R1





**W- GUARD RAIL BEAM**

(SCALE 1:10)

**SPECIFICATION**

**W-PROFILED CORRUGATED BEAM**

- HOT ROLL FORMED
- YIELD STRENGTH 255 MPA
- TENSILE STRENGTH 410-520 MPA
- THE W BEAMS ARE FABRICATED IN THICKNESS OF 3.0mm/2.67mm AND IS OF DIMENSIONS 311mm x 83mm. THE RAW MATERIAL FOR THE W BEAMS SHALL CONFORM TO STEEL AS PER IS 5986 GRADE Fe 360/Fe, 410/Fe 510 AND THEY ARE HOT DIP GALVANIZED TO 550gms/sqm. IN GENERAL THE W BEAMS ARE SUPPLIED ACCORDING TO THE CLIENT'S SPECIFICATIONS AND REQUIREMENT.

**GUARD POST AND SPACER**

- THE POSTS AND SPACERS ARE FABRICATED IN THICKNESS OF 5.0mm AND ARE OF DIMENSION 150mm x 75mm. THE RAW MATERIAL SHALL CONFORM TO STEEL AS PER IS 5986 GRADE Fe 360/Fe 410 AND THEY ARE HOT DIP GALVANIZED TO 550gms/sqm. THE POSTS ARE GENERALLY VARYING IN LENGTHS FROM 1500mm TO 1800mm AND THE SPACER IS OF 330mm LENGTH.
- HOT ROLLED SECTION
- CHANNEL SECTION
- ANCHORED ON FOUNDATION OR GROUND
- YIELD STRENGTH :210-235mpa
- TENSILE STRENGTH :360-410mpa

**FASTENERS**

- ALL FASTENERS ARE HOT DIP GALVANIZED FOR LONGER LIFE AND CONFIRM TO IS 1367. THEY CONSIST OF
  - A) M16/M20 HEXAGON HEAD BOLT, NUT AND WASHER FOR SPACER TO POST CONNECTION IN GRADE 4.6.
  - B) M16 BUTTON HEAD BOLT, NUT AND WASHER FOR BEAM TO BEAM SPLICE IN GRADE 4.6.
  - C) M16 BUTTON HEAD BOLT, NUT AND WASHER FOR BEAM TO POST JOINT IN GRADE 4.6.

**END TERMINAL / SPECIALS**

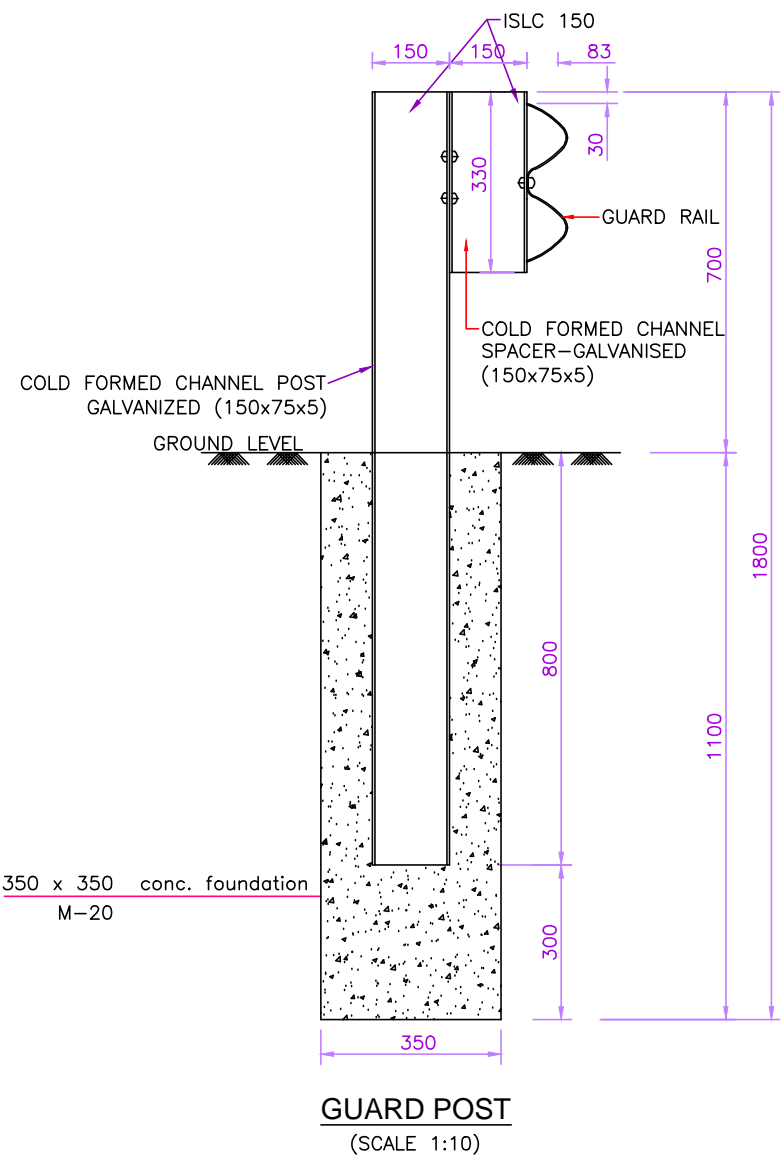
- ALL END TERMINALS SHALL BE ONE OF THE FOLLOWING TYPES DEPENDING ON THEIR APPLICATION.
  - MEDIAN END TERMINALS WITH SAME CROSS SECTION AS THE W BEAMS.
  - FORMED TERMINAL (FISH TAIL)
  - MITRED TURNED DOWN TERMINAL WITH THE SAME CROSS SECTION AS THE W BEAM.

**ANCHORAGE**

THE POSTS MAY BE DRIVEN POSTS, ANCHORED IN THE GROUND WITH CONCRETE OR BOLTED TO THE FRAMES ON BRIDGE DECK LOCATIONS.

**NOTE:**

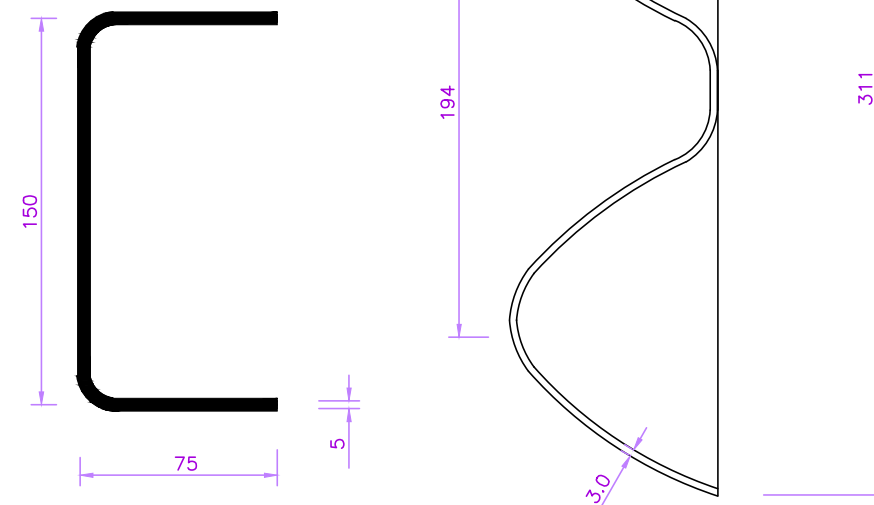
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED.
2. THE LOCATION OF THE FOOTPATH BARRIERS ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.



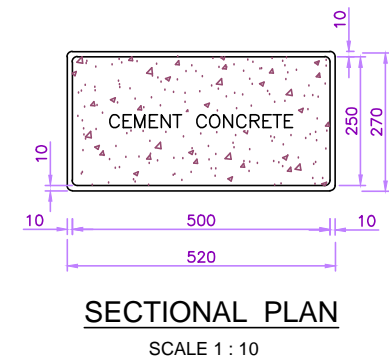
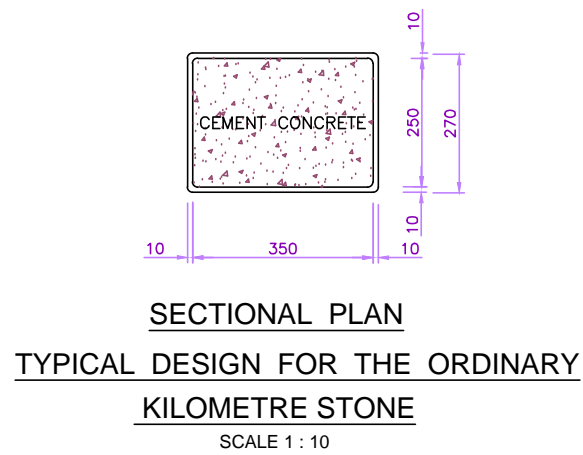
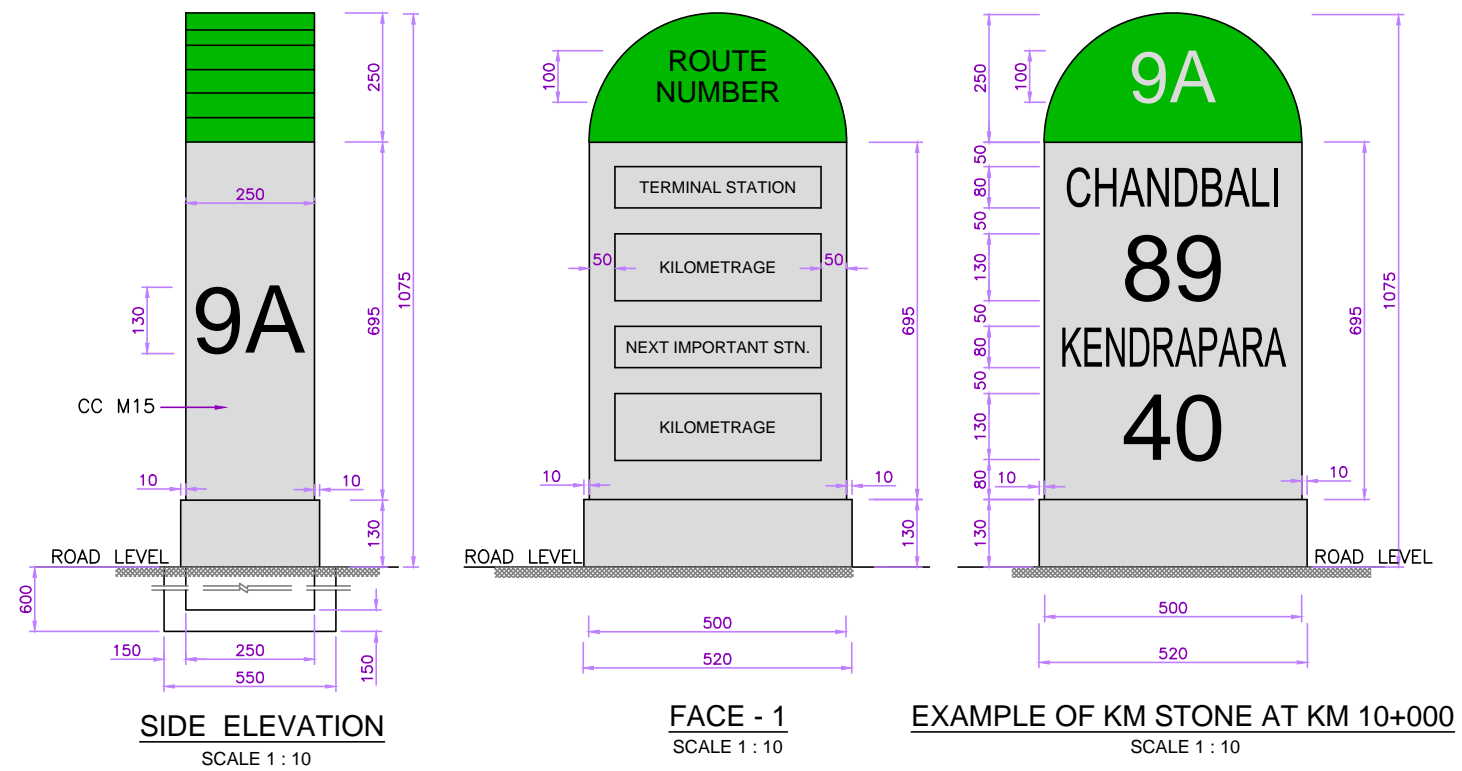
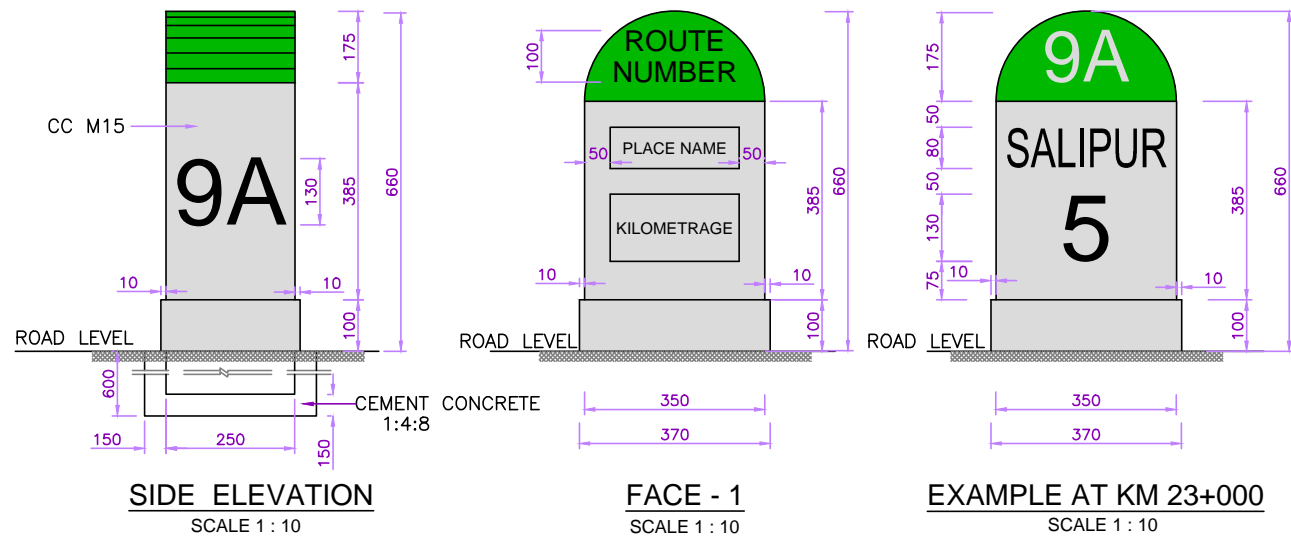
**GUARD POST**  
(SCALE 1:10)

**POST AND SPACER CHANNEL**

**DETAILS OF W- BEAM SECTION**



R1 AUG. 2015 SECOND REVISION LASA VINAY SUBBRAT/D.GHATAK S.D SARANGI G.P SAHOO (TL) R0 FEB. 2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R MISHRA (EE) N.K PRADHAN (CE) JUNE 2008 ORIGINAL CEG						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEG</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com			DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE : N.T.S.		DRAWING TITLE : <b>TYPICAL DETAILS OF METAL BEAM CRASH BARRIER</b> (SHEET 2 OF 2)	
NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED	DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-17		REV.	R1						

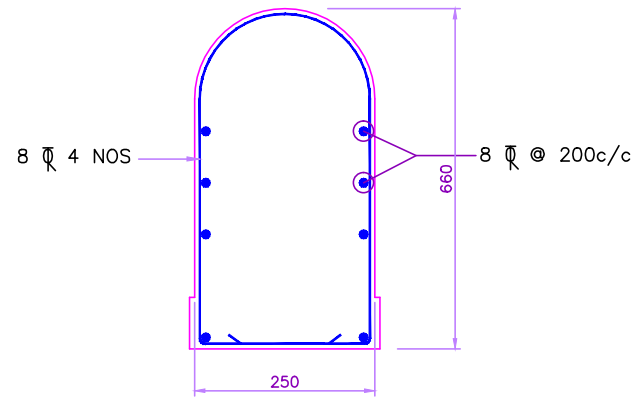


TYPICAL DESIGN FOR THE 5TH KILOMETRE STONE

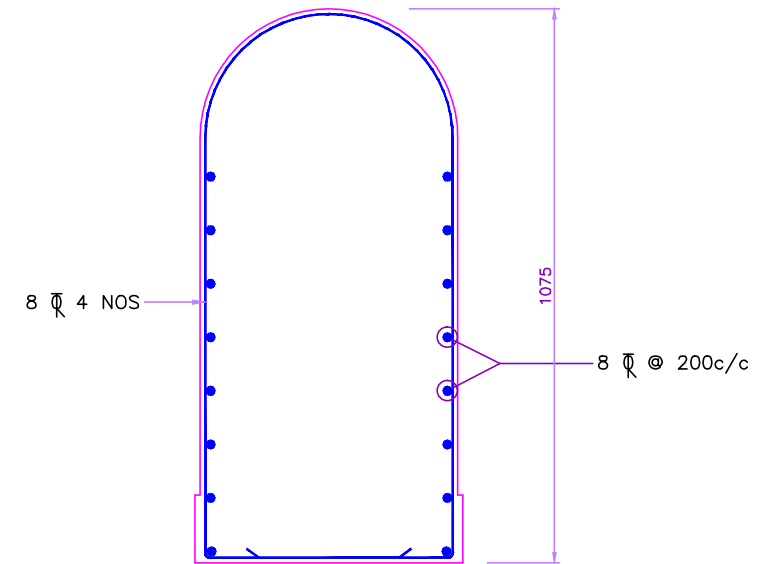
**NOTES:**

1. ALL THE DIMENSIONS ARE IN MILLIMETRES UNLESS AND OTHERWISE SPECIFIED.
2. FOR FURTHER DETAILS OF DRAWING REFER IRC: 8 - 1980 AND IRC: 26 - 1967.
3. KILOMETRE STONE TO BE FIXED ON RIGHT SIDE OF THE ROAD.

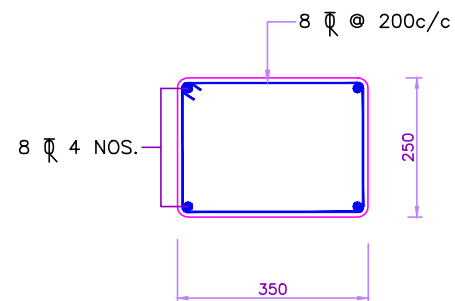
R1 AUG. 2015 SECOND REVISION LASA VINAY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO (TL)							DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b>		DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cecindia.com		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE : AS SHOWN		DRAWING TITLE : <b>TYPICAL DETAILS OF KM STONE AND HECTOMETRE STONE</b>	
R0 FEB. 2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R. MISHRA (EE) N.K PRADHAN (CE)							CONSULTING ENGINEERS GROUP LTD. CEC		LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		AS SHOWN		DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-18	
JUNE 2008 ORIGINAL CEG							CONSULTING ENGINEERS GROUP LTD. CEC		LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		AS SHOWN		REV. R1	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:											



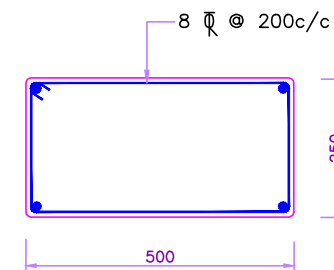
**FACE - 1**  
SCALE 1 : 10



**FACE - 1**  
SCALE 1 : 10



**SECTIONAL PLAN**  
**TYP. REINFORCEMENT DETAIL FOR THE ORDINARY**  
**KILOMETRE STONE**  
SCALE 1 : 10

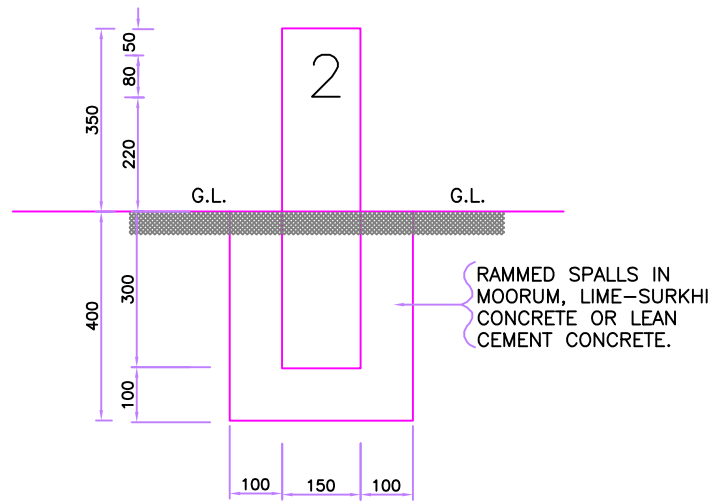


**SECTIONAL PLAN**  
**TYP. DESIGN FOR THE 5TH KILOMETRE STONE**  
SCALE 1 : 10

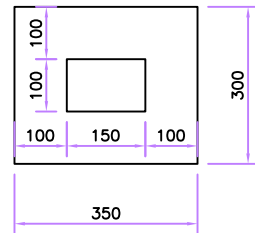
**NOTES:**

1. ALL THE DIMENSIONS ARE IN MILLIMETRES UNLESS AND OTHERWISE SPECIFIED.
2. CLEAR COVER 25mm.
3. GRADE OF CONCRETE SHALL BE M-20. THE REINFORCEMENT SHALL BE  $f_e$  500.
4. FOR DIMENSION DETAILS REFER DWG. 73466\LASA\HIGHWAY\MISC-18

							DPR CONSULTANT :			DESIGN REVIEW CONSULTANT :			CLIENT :		PROJECT :		SCALE :		DRAWING TITLE :	
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	CONSULTING ENGINEERS GROUP LTD.					ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		AS SHOWN		REINFORCEMENT DETAILS OF KM STONE AND HECTOMETRE STONE	
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com			LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044									
-	JUNE 2008	ORIGINAL	CEG																	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:										DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-19		REV. R1	

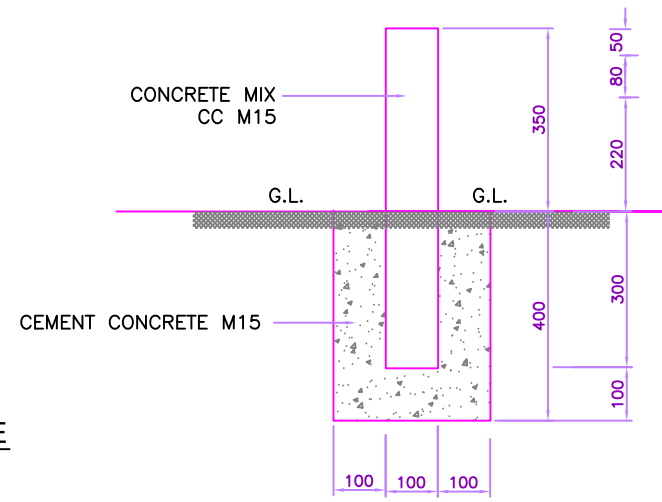


**FRONT ELEVATION**  
SCALE 1 : 10

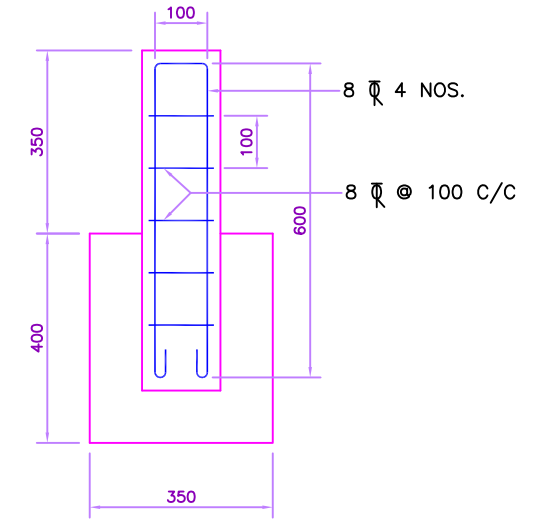


**PLAN**

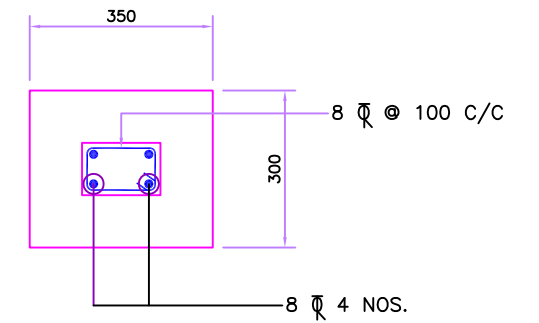
**TYPICAL DESIGN FOR 200 - METRE STONE**  
SCALE 1 : 10



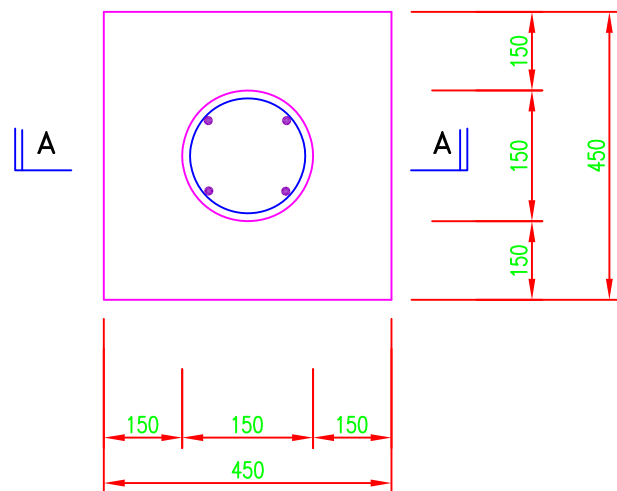
**SIDE ELEVATION**  
SCALE 1 : 10



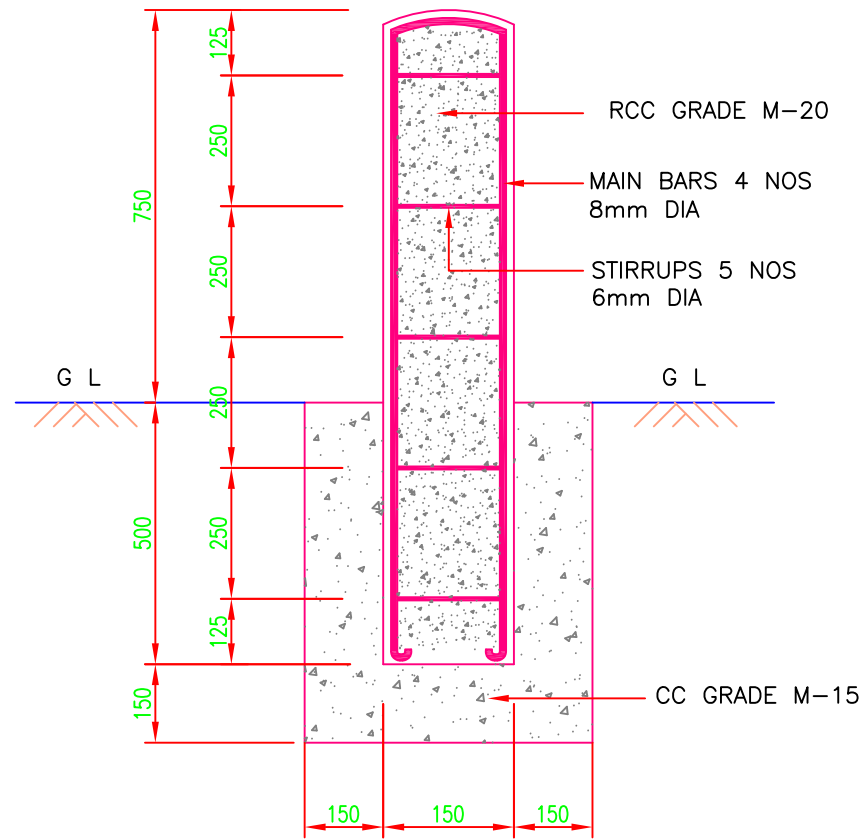
**SECTIONAL ELEVATION**  
SCALE 1 : 10



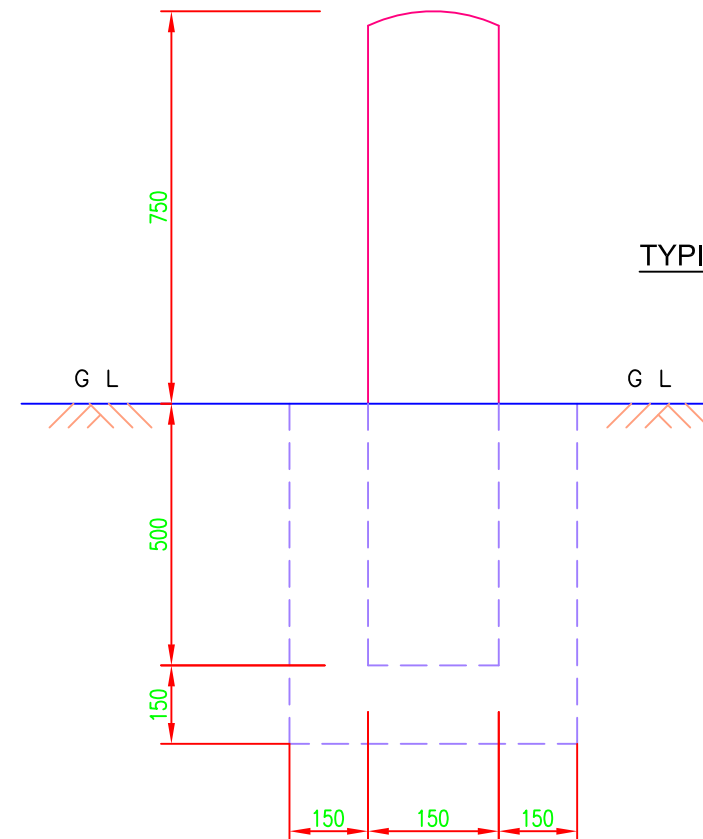
**SECTIONAL PLAN**  
SCALE 1 : 10  
**TYPICAL DESIGN FOR 200 - METRE STONE**



**PLAN**



**SECTION A-A**



**ELEVATION**

- NOTES:-**
- ALL DIMENSIONS ARE IN mm EXCEPT WHERE OTHERWISE MENTIONED
  - REINFORCEMENT - MILD STEEL BARS CONFORMING TO I.S.432/1966 GRADE 1 TESTED STEEL
  - CONCRETE MIX -  
RCC : GRADE M - 20  
CC : GRADE M - 15
  - GUARD POST TO BE PROVIDED ON EMBANKMENTS 2m TO 3m HIGH AT 5m INTERVAL ON BOTH SIDE OF THE ROADWAY

NO.	DATE	REVISION	BY	DRAWN	PREPARED	CHECKED	APPROVED
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
R0	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
**CONSULTING ENGINEERS GROUP LTD.**  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556  
Fax: 2521348, e-mail: ceg@cegindia.com

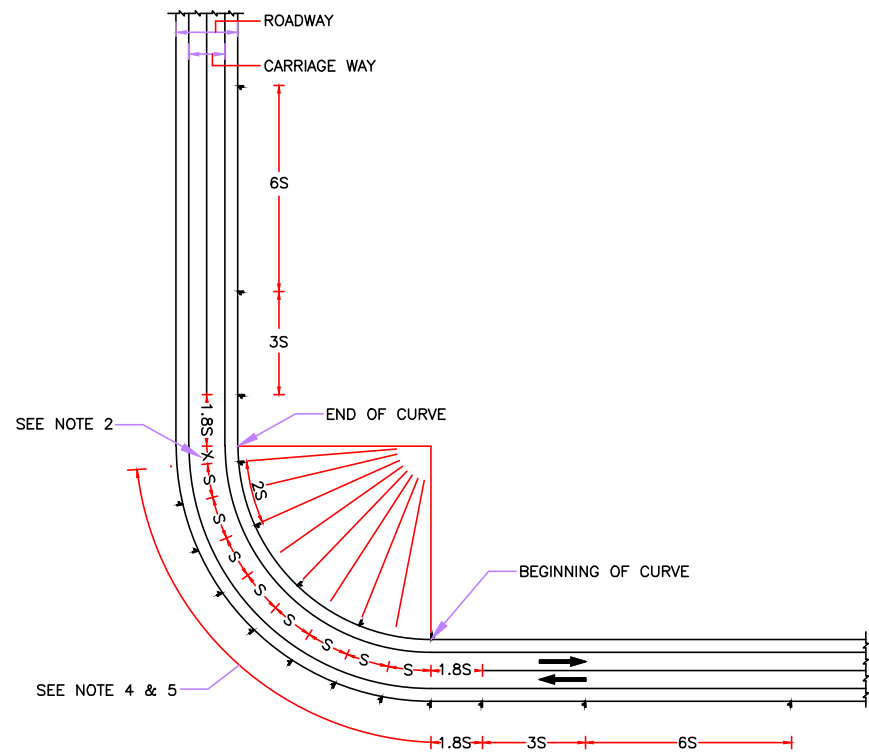
DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
**ODISHA WORKS DEPARTMENT**

PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

DRAWING TITLE:  
**TYPICAL DETAILS OF GUARD POST & 200m STONE**

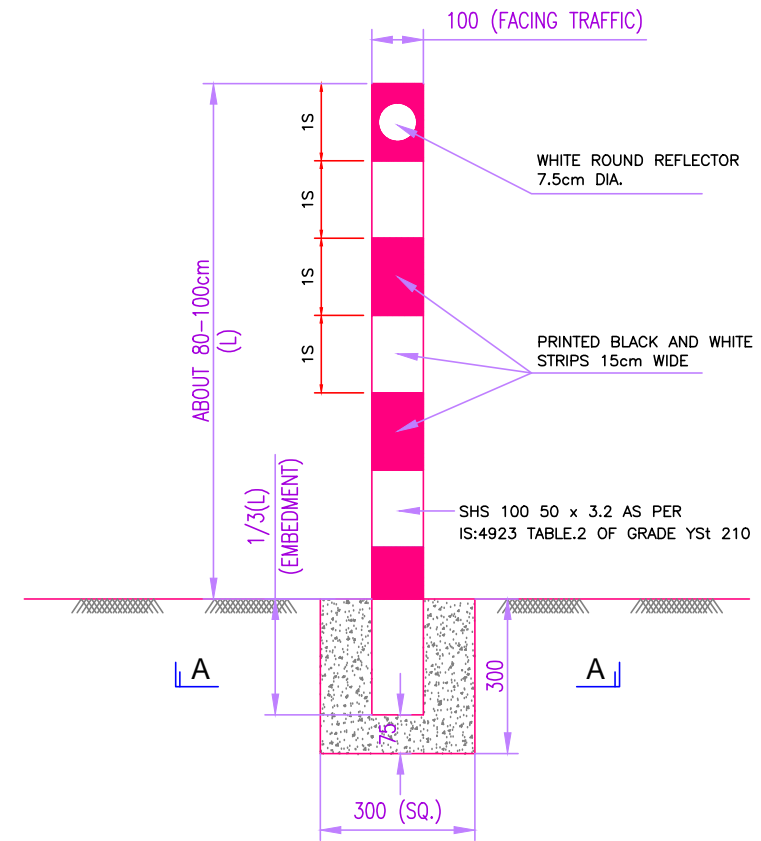
DWG. NO. : 73466/LASA/HIGHWAYS/MISC-20



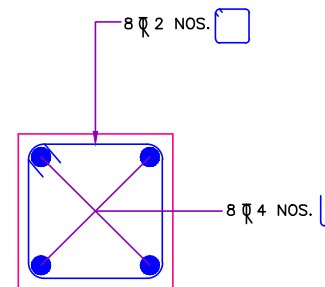
**ROADWAY DELINEATOR SPACING ON CURVES**

**TABLE FOR RECOMMENDED SPACING FOR ROADWAY DELINEATORS ON HORIZONTAL CURVES**

RADIUS OF CURVE (METRES)	SPACING ON CURVE, S (METRES)
30	6
50	8
100	12
200	20
300	25
400	30
500	35
600	38
700	42
800	45
900	48
1000	50



**DELINEATOR WITH RECTANGULAR REFLECTOR**

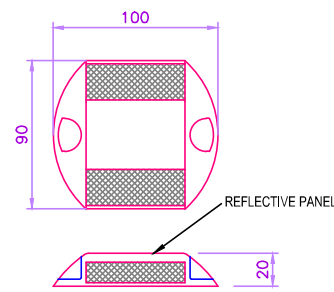


**SECTION A-A REINFORCEMENT DETAILS**

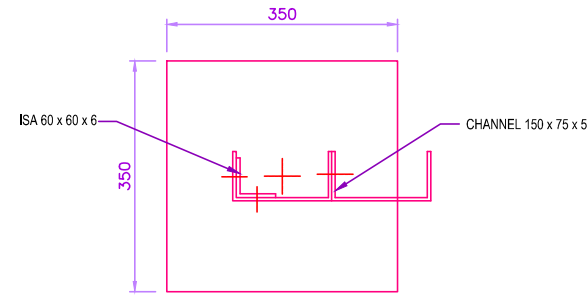
**NOTES:**

1. ALL DIMENSIONS ARE IN mm EXCEPT WHERE OTHERWISE MENTIONED.
2. ADJUST DISTANCE 'X' SUITABLY SO THAT THE LAST ROADWAY DELINEATOR IS AT THE END OF THE CURVE.
3. INSTALL ALL DELINEATORS AT EDGE OF THE ROADWAY PERPENDICULAR TO THE ONCOMING TRAFFIC.
4. SEE TABLE FOR VALUE OF 'S' i.e. SPACING OF DELINEATORS ON THE CURVE.
5. THE SPACING OF FIRST, SECOND & THIRD DELINEATORS ON THE APPROACHES SHALL BE 1.85S, 3S & 6S RESPECTIVELY BUT NOT EXCEEDING 50m.
6. THE GRADE OF CONCRETE FOR FOUNDATION SHALL BE M-20.
7. THE GRADE OF STEEL SHALL BE Fe 500.
8. CLEAR COVER TO ALL REINFORCEMENT SHALL BE 40mm.

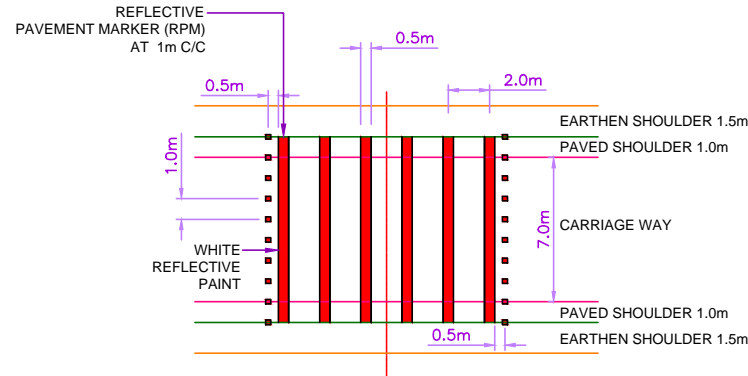
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	CONSULTING ENGINEERS GROUP LTD.	DESIGN REVIEW CONSULTANT :	LEA Associates South Asia Pvt. Ltd., India E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com	CLIENT :		ODISHA WORKS DEPARTMENT	PROJECT :	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	SCALE :	N.T.S.	DRAWING TITLE :	TYPICAL DETAILS OF DELINEATOR		
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADHAN (CE)															
	JUNE 2008	ORIGINAL	CEG																			
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:												DWG. NUMBER :	73466\LASA\HIGHWAYS\MISC-21	REV	R1



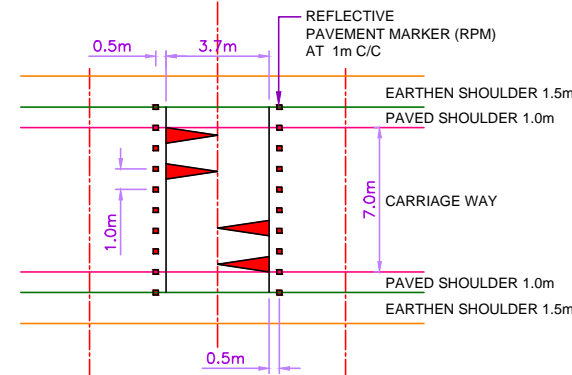
REFLECTIVE PAVEMENT MARKERS (RPM)



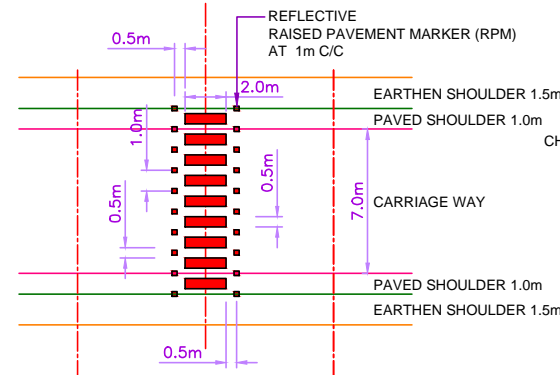
SECTION 'A-A'



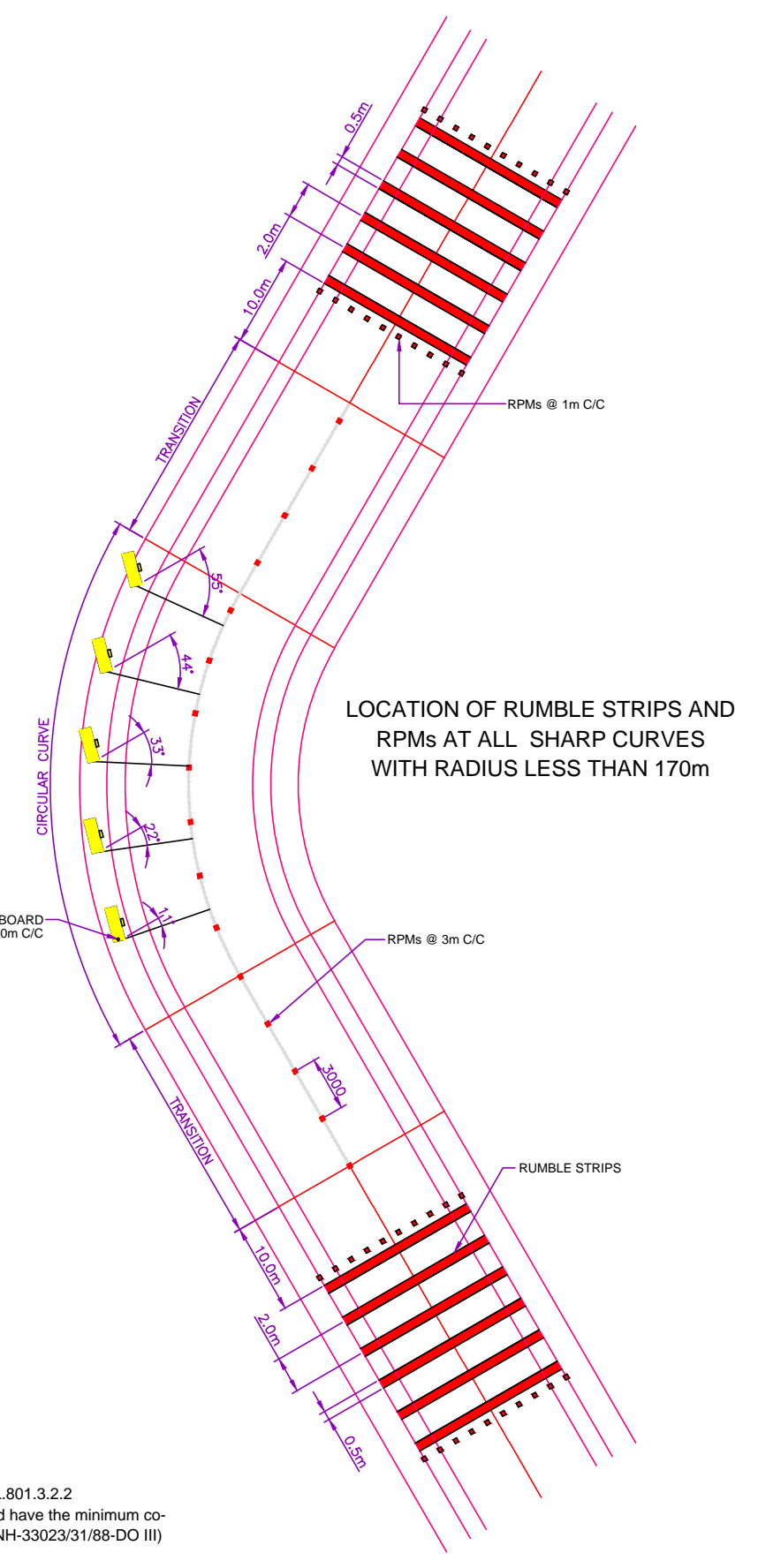
LOCATION OF RPM BEFORE RUMBLE STRIPS



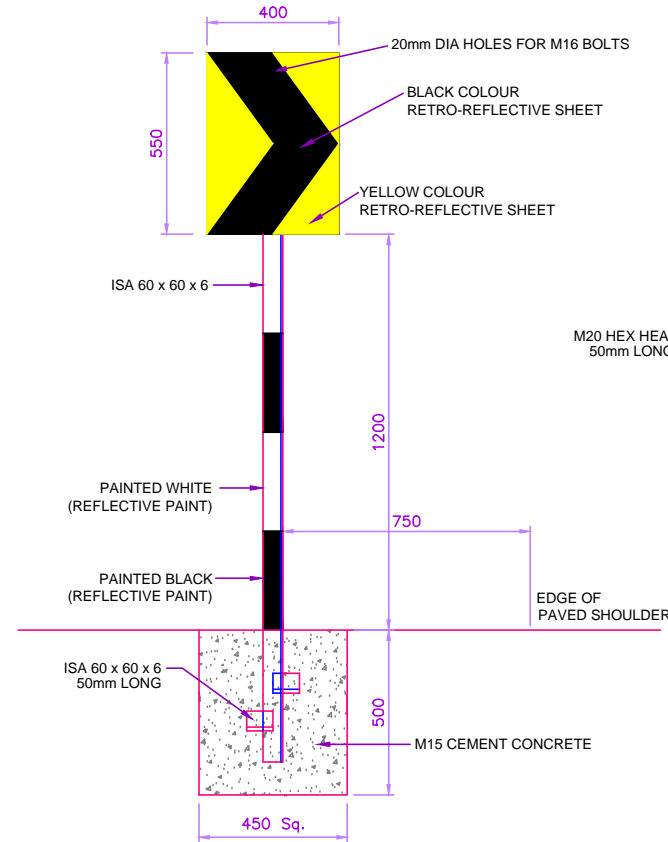
LOCATION OF RPM BEFORE ROAD HUMP



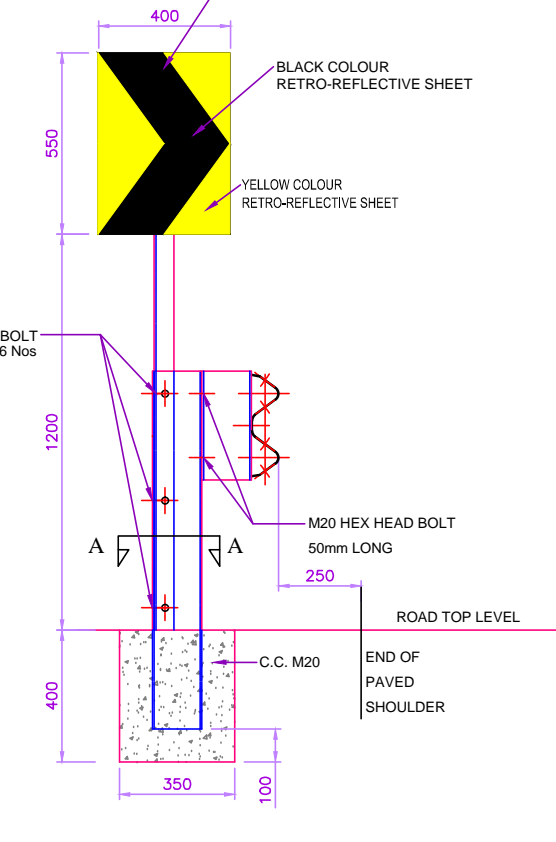
LOCATION OF RPM BEFORE PEDESTRIAN CROSSING



LOCATION OF RUMBLE STRIPS AND RPMs AT ALL SHARP CURVES WITH RADIUS LESS THAN 170m



(FOR CURVES > 170m & < 200m RADIUS) CHEVRON DIRECTION SIGN BOARD



(FOR CURVES < 170m RADIUS) CHEVRON DIRECTION SIGN BOARD WITH CRASH BARRIER

REFLECTIVE PAVEMENT MARKERS

- SPECIFICATION OF MATERIAL, DESIGN, OPTICAL PERFORMANCE, TESTS AND FIXING OF RPM SHALL BE IN ACCORDANCE WITH TECH.SPEC. CL.812.
- LOCATIONS OF RPM

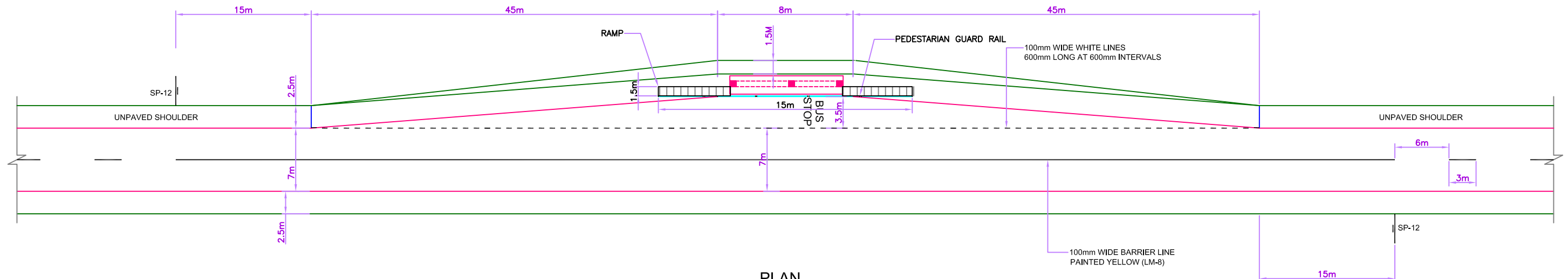
COLOUR OF RPM	LOCATION	SPACING
WHITE	RUMBLE STRIP & ROAD HUMP AS SHOWN IN DRG.	1m C/C
AMBER	CURVES < 600m RADIUS ALONG CENTERLINE	3m C/C
RED	BEFORE AND AFTER PEDESTRIAN CROSSING AS SHOWN IN DRG. AND AT APPROACHES TO ROAD INTERSECTION AS SHOWN IN DRG. U/T/6/11	1m C/C

- RPM SHOULD MEET MINIMUM CIL VALUES EQUIVALENT TO CATEGORY 'A' STUDS AS PER CLAUSE 812 OF TECH.SPEC.

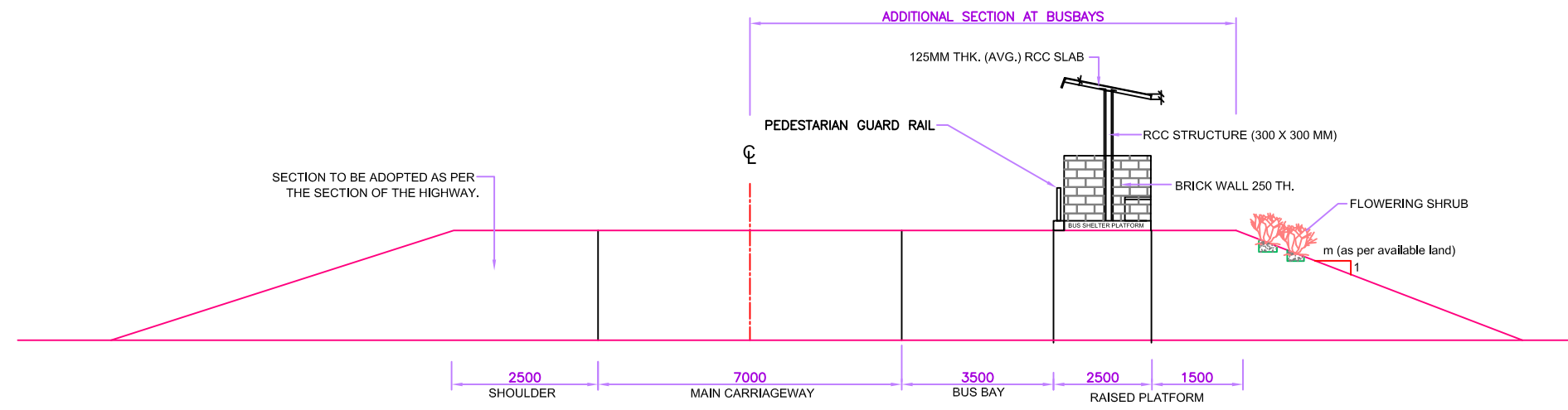
CHEVRON SIGN BOARD

- The size of 'Chevron' Signboard is 400mm x 550mm.
- The sign board should be wide-angle micro-prismatic lens conforming to tech.spec. CL.801.3.2.2
- The retro - reflective surface after cleaning with soap and water in dry condition should have the minimum coefficient of retro-reflection (MORT&H wide 801.3.2 clause & Ministry's letter No. RW/NH-33023/31/88-DO III) as indicated below for encapsulated lens.
- Chevron sign boards shall be installed at 10m c/c as shown in the drawings at all curves of radius less than 200m along the outer edge facing the traffic of nearby lane.

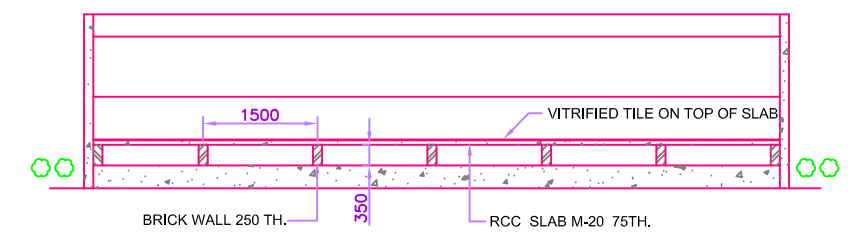
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	CONSULTING ENGINEERS GROUP LTD.	DESIGN REVIEW CONSULTANT :	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)		LEA Associates South Asia Pvt. Ltd., India E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com	LEA		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	N.T.S.	TYPICAL DETAILS OF RRPM MARKERS
	JUNE 2008	ORIGINAL	CEG											DWG. NUMBER : 73466\LASA\HIGHWAYS\MISC-22
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:							REV. R1



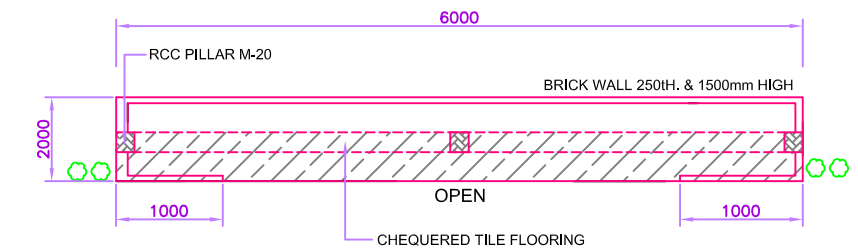
**PLAN  
BUS BAY DETAILS**



**SECTION AT THE BUS BAY**



**SECTION OF BUS SHELTER**



**PLAN FOR BUS SHELTER**

- NOTE:**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
  2. PAVEMENT LAYERS OF CARRIAGEWAY SHALL BE EXTENDED IN THE BUS BAY AREA AS PER THE CONTINUING TCS.
  3. REFER IRC-35 FOR BUS STOP DRAWING AND DETAILS.
  4. THE LOCATION OF THE FOOTPATH BARRIERS ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
R0	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
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 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556  
 Fax: 2521348, e-mail: ceg@cegindia.com

DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

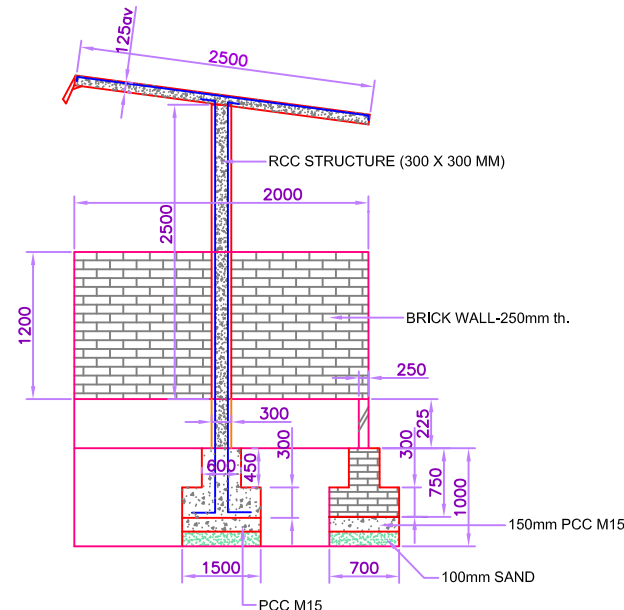
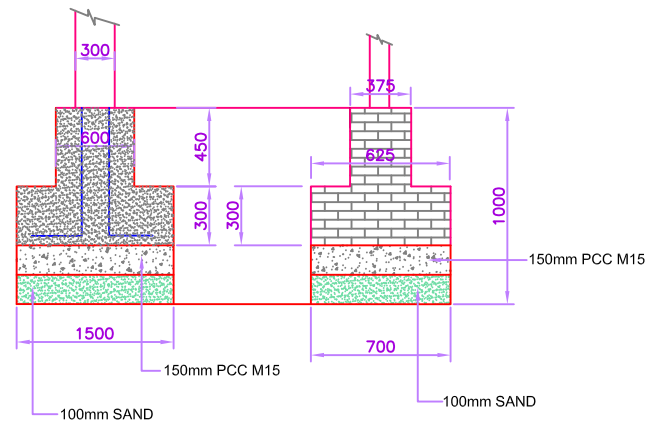
CLIENT:  
**ODISHA WORKS DEPARTMENT**

PROJECT:  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1**

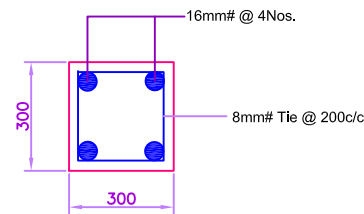
DRAWING TITLE:  
**TYPICAL DETAILS OF BUS BAY**

DWG. NO. : 73466/LASA/HIGHWAYS/MISC-23

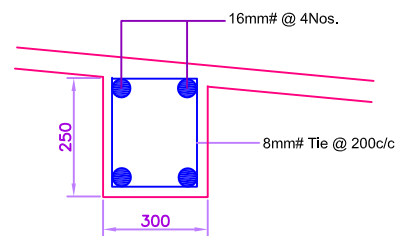
(SHEET 1 OF 2)  
 SCALE:



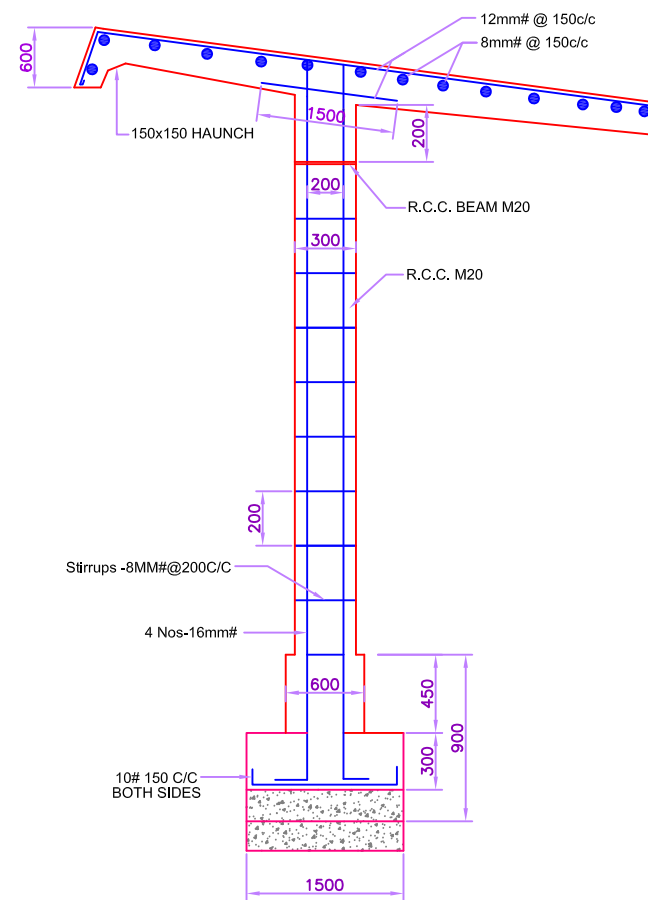
CROSS SECTION  
BUS SHELTER PLATFORM  
(SCALE 1 : 100)



REINFORCEMENT PLAN of COLUMN  
(SCALE 1 : 20)



REINFORCEMENT OF BEAM  
(SCALE 1 : 20)



REINFORCEMENT OF PILLAR  
(SCALE 1 : 50)

SCHEDULE OF BUSBAYS			
Sl. No.	Chainage	Side	Pavement
1	1900	L	Flexible
2	2000	R	Flexible
3	3750	L	Flexible
4	4350	R	Flexible
5	5740	L	Flexible
6	6200	R	Rigid
7	7450	L	Flexible
8	7750	R	Rigid
9	9200	L	Flexible
10	9640	R	Rigid
11	10000	L	Flexible
12	10200	R	Rigid
13	10600	L	Flexible
14	10900	R	Flexible
15	12980	L	Flexible
16	13950	R	Flexible
17	14000	L	Flexible
18	15600	L	Flexible
19	15650	R	Flexible
20	16750	L	Rigid
21	17100	R	Rigid
22	18650	L	Rigid
23	18670	R	Rigid
24	19555	R	Rigid
25	19775	L	Rigid
26	20300	L	Rigid
27	22220	L	Flexible
28	22300	R	Flexible
29	23900	R	Flexible
30	24300	L	Flexible

NO.	DATE	REVISION	BY	DRAWN	PREPARED:	CHECKED:	APPROVED:
R1	AUGUST, 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	SD SARANGI(RE)	GP SAHOO, (TL)
R0	FEB, 2013	FIRST REVISION	OWD	OWD	PK MISHRA (AE)	MR MISHRA (EE)	NK PRADHAN, (CE)
-	JUNE, 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
CONSULTING ENGINEERS GROUP LTD.  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556  
Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT:  
LEA Associates South Asia Pvt. Ltd., India  
B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
ODISHA WORKS DEPARTMENT

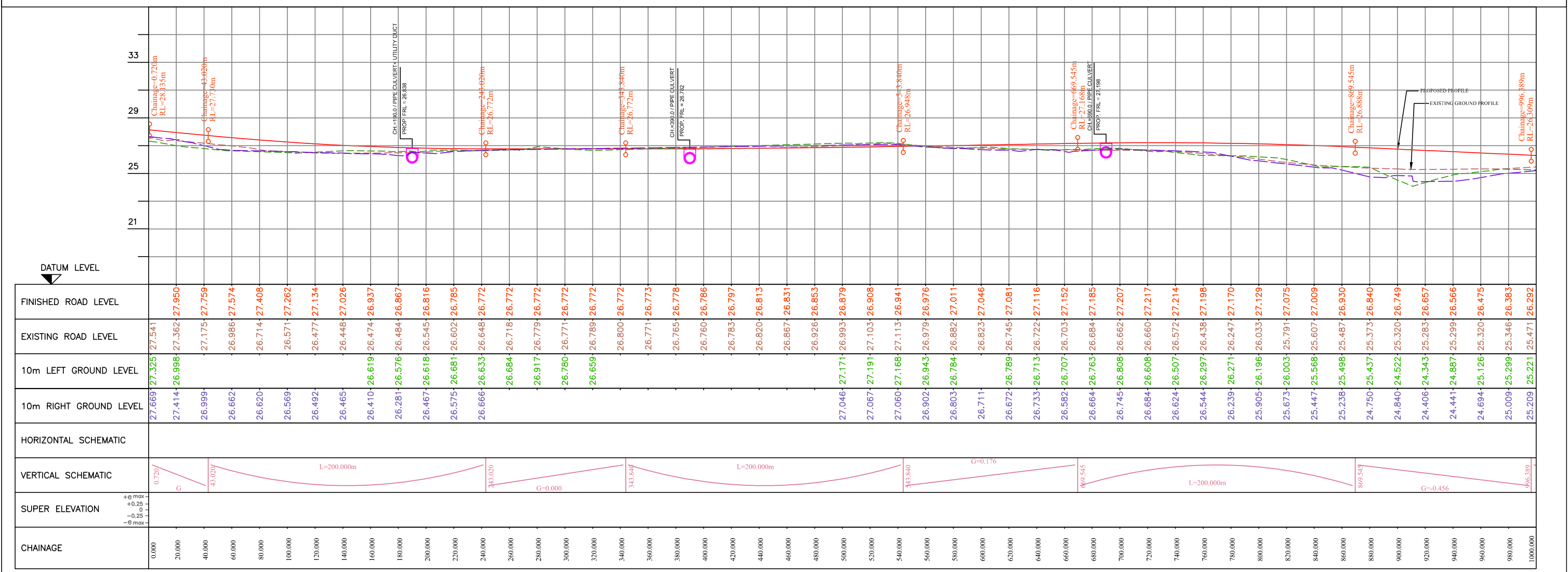
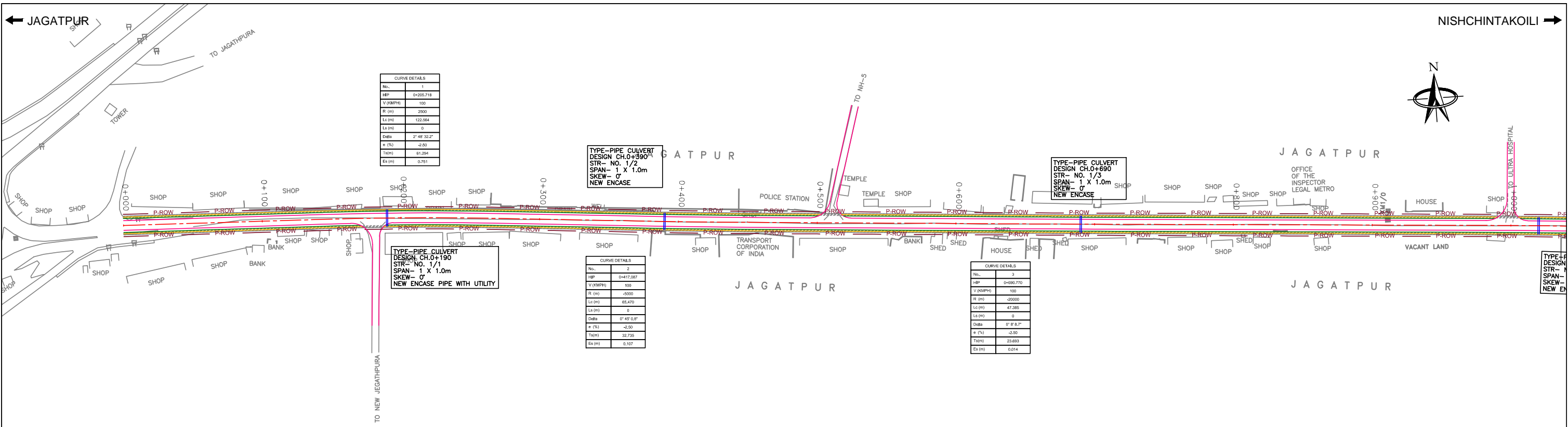
PROJECT:  
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-1

DRAWING TITLE:  
TYPICAL DETAILS OF BUS BAY  
DWG. NO.: 73466/LASA/HIGHWAYS/MISC-23  
(SHEET 2 OF 2)  
SCALE:



# PLAN & PROFILE

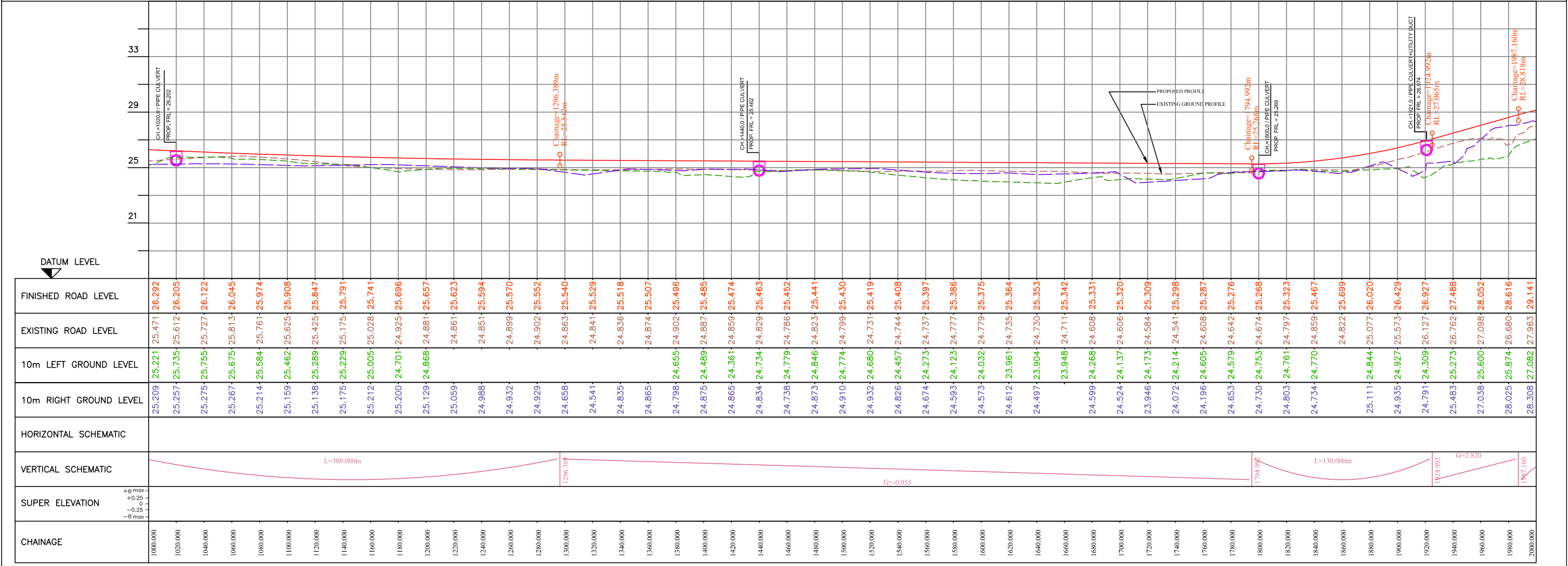
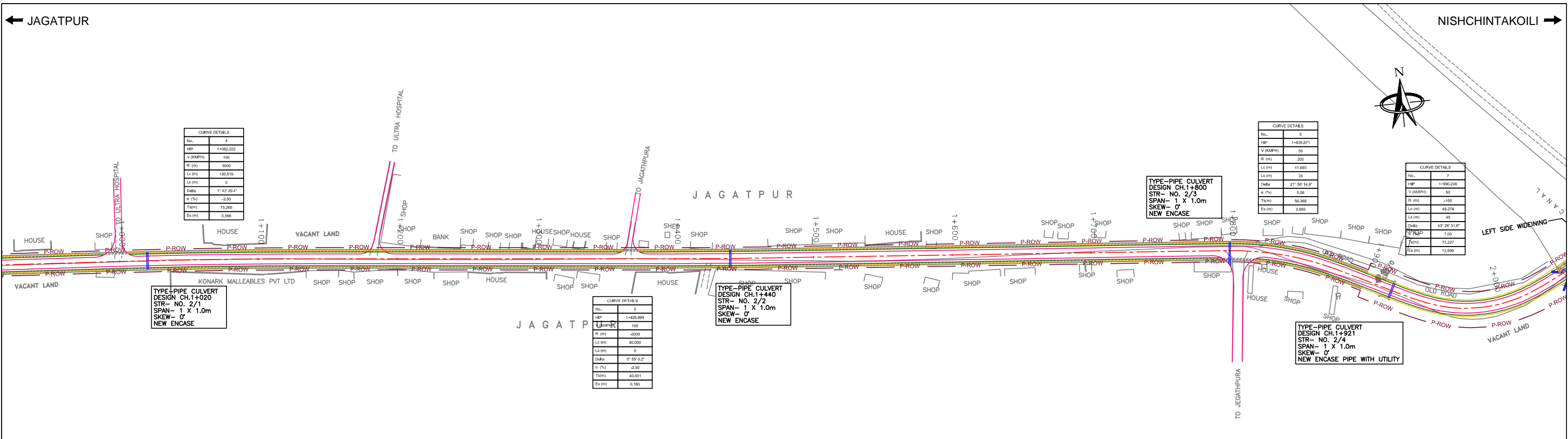
(KM 0+000 TO 25+000)



R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	<b>CEG CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com	DESIGN REVIEW CONSULTANT :	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	<b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		<b>ODISHA WORKS DEPARTMENT</b>	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	0 25 50m HORIZONTAL SCALE 0 2.5 5m VERTICAL SCALE	PLAN & PROFILE KM 00+000 TO 01+000	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:		DWG. NUMBER :					73466/LASA/HIGHWAYS/PP-01

← JAGATPUR

NISHCHINTAKOILI →



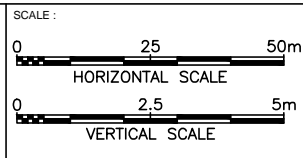
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, II<sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

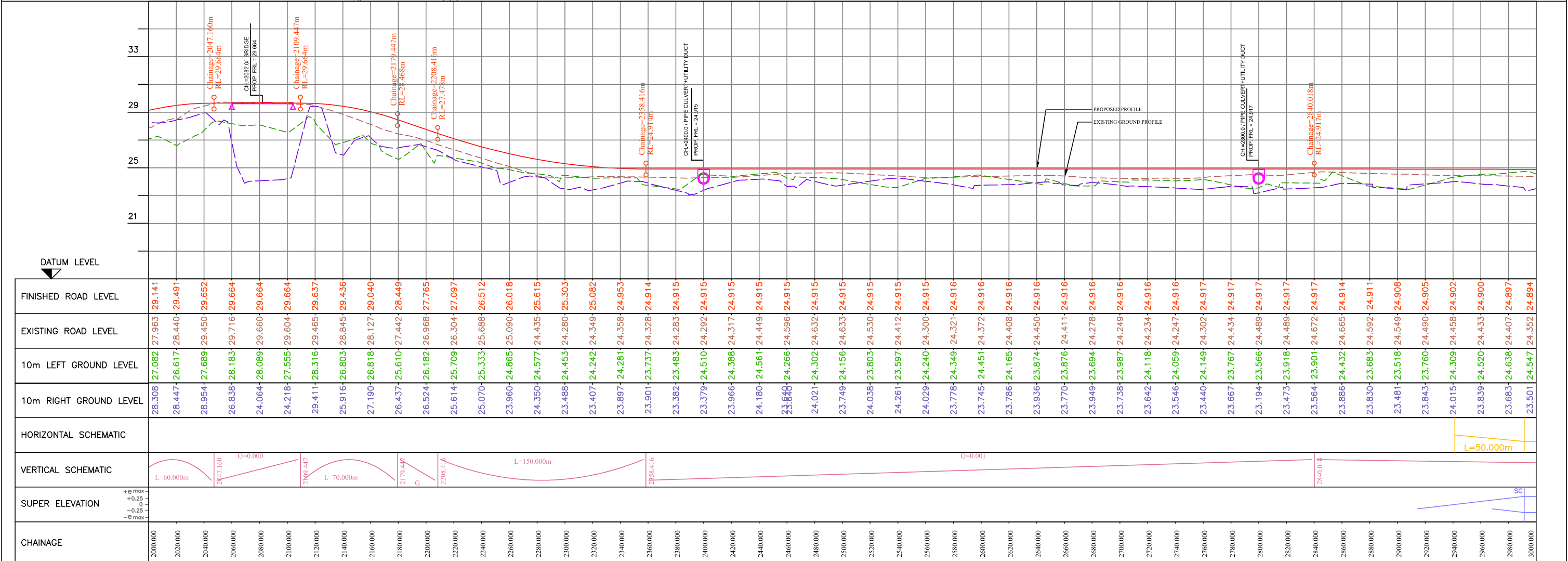
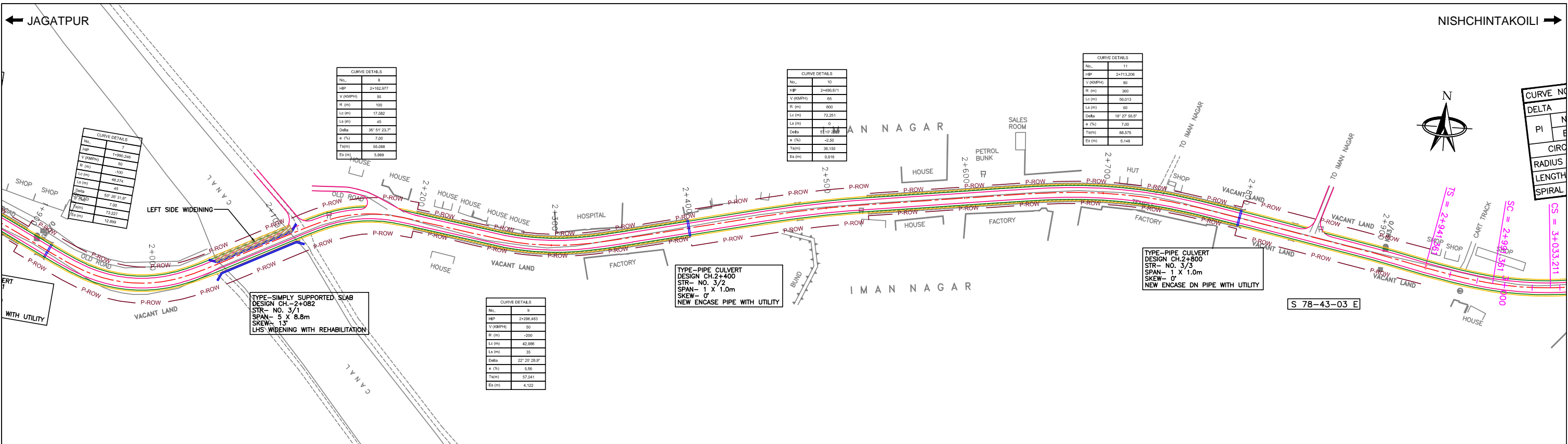
CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
**KM 01+000 TO 02+000**

DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-02 REV. R1



R1 AUG. 2015 SECOND REVISION LASA VINAY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO (TL)						DPR CONSULTANT : <b>CEG CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com		DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1		SCALE : HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5		DRAWING TITLE : <b>PLAN &amp; PROFILE</b> KM 02+000 TO 03+000		DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-03		REV. R1	
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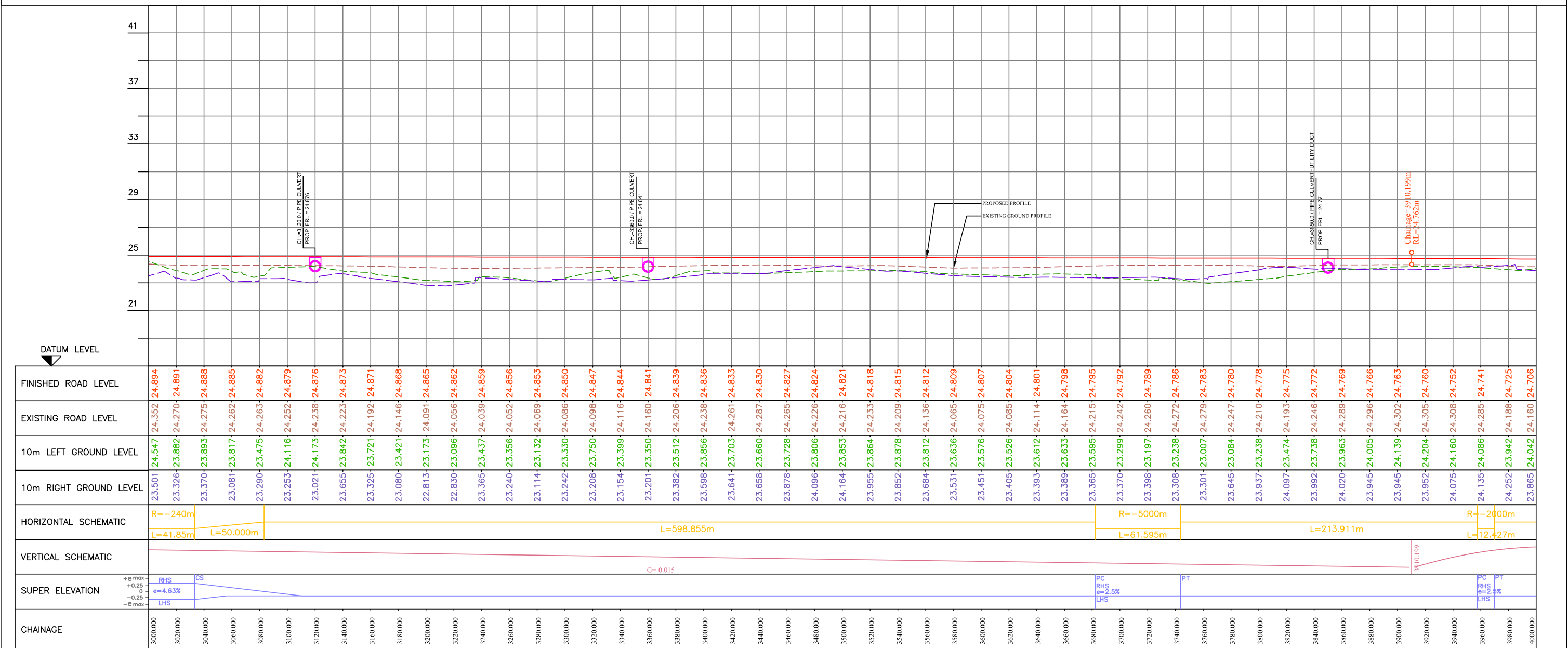
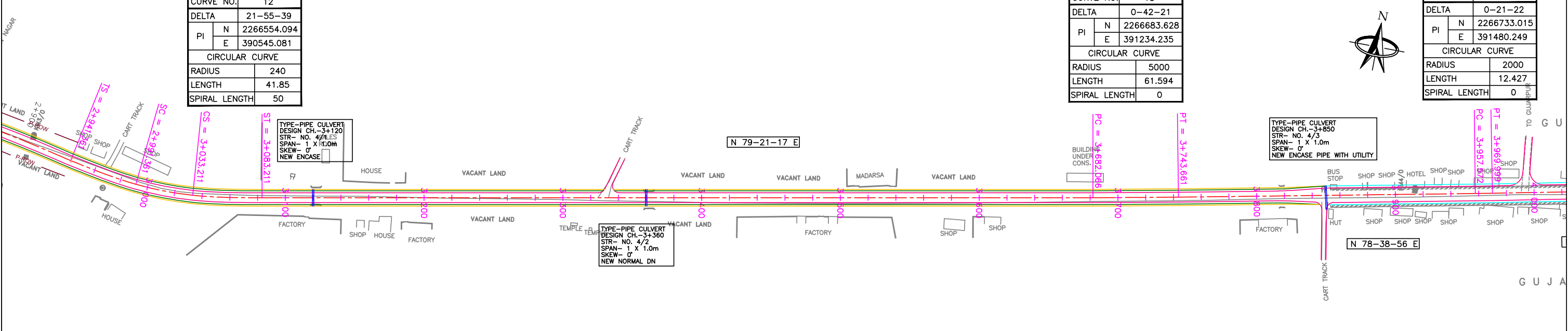
JAGATPUR

NISHCHINTAKOILI

CURVE NO.	12
DELTA	21-55-39
PI	N 2266554.094
	E 390545.081
CIRCULAR CURVE	
RADIUS	240
LENGTH	41.85
SPIRAL LENGTH	50

CURVE NO.	13
DELTA	0-42-21
PI	N 2266683.628
	E 391234.235
CIRCULAR CURVE	
RADIUS	5000
LENGTH	61.594
SPIRAL LENGTH	0

CURVE NO.	14
DELTA	0-21-22
PI	N 2266733.015
	E 391480.249
CIRCULAR CURVE	
RADIUS	2000
LENGTH	12.427
SPIRAL LENGTH	0



R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

DPR CONSULTANT :  
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**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1**

SCALE :  
 HORIZONTAL SCALE : 1:25  
 VERTICAL SCALE : 1:2.5

DRAWING TITLE :  
**PLAN & PROFILE KM 03+000 TO 04+000**  
 DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-04 REV. R1

← JAGATPUR

NISHCHINTAKOILI →

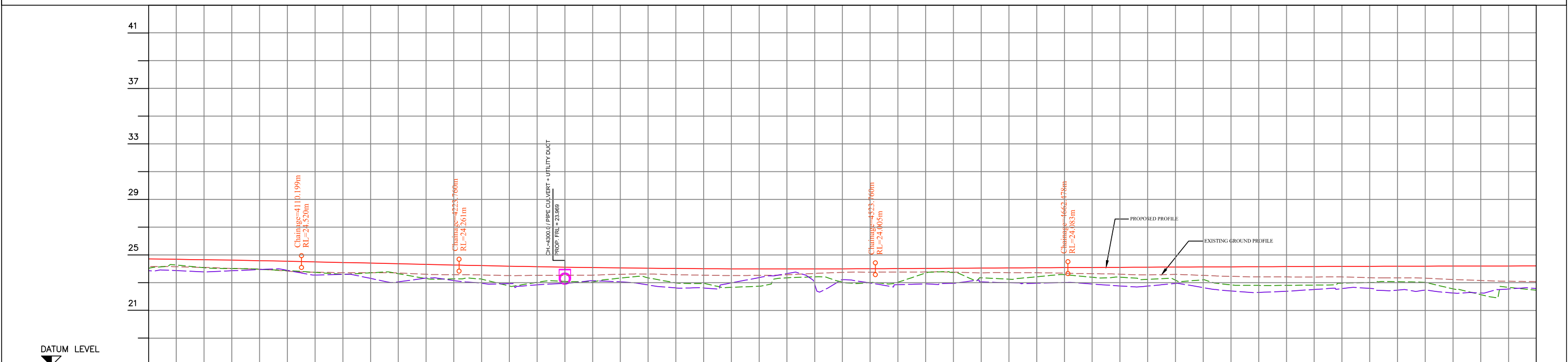
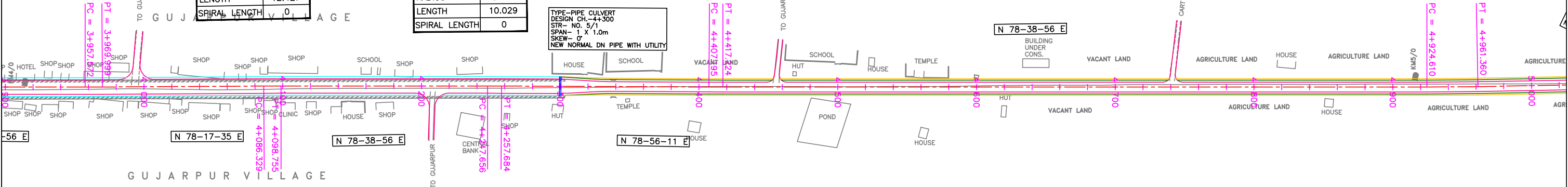
CURVE NO.	14
DELTA	0-21-22
PI	N 2266733.015 E 391480.249
CIRCULAR CURVE	
RADIUS	2000
LENGTH	12.427
SPIRAL LENGTH	0

CURVE NO.	15
DELTA	0-21-22
PI	N 2266759.14 E 391606.327
CIRCULAR CURVE	
RADIUS	2000
LENGTH	12.427
SPIRAL LENGTH	0

CURVE NO.	16
DELTA	0-17-14
PI	N 2266790.656 E 391763.323
CIRCULAR CURVE	
RADIUS	2000
LENGTH	10.029
SPIRAL LENGTH	0

CURVE NO.	17
DELTA	0-17-14
PI	N 2266821.272 E 391919.898
CIRCULAR CURVE	
RADIUS	2000
LENGTH	10.029
SPIRAL LENGTH	0

CURVE NO.	18
DELTA	40181
PI	N 2266925.739 E 392440.291
CIRCULAR CURVE	
RADIUS	2000
LENGTH	36.749
SPIRAL LENGTH	0



FINISHED ROAD LEVEL	24.706	24.160	24.706	24.681	24.653	24.620	24.583	24.542	24.497	24.452	24.406	24.361	24.315	24.270	24.226	24.185	24.148	24.115	24.086	24.061	24.039	24.021	24.007	23.997	23.991	23.988	23.989	23.994	24.003	24.014	24.025	24.036	24.048	24.059	24.070	24.082	24.093	24.103	24.114	24.123	24.132	24.141	24.149	24.157	24.164	24.171	24.177	24.183	24.188	24.192	24.197	24.200	24.204
EXISTING ROAD LEVEL	24.160	24.145	24.093	24.620	23.970	23.833	23.549	23.753	23.715	23.717	23.692	23.603	23.574	23.553	23.509	23.525	23.527	23.538	23.536	23.602	23.619	23.571	23.539	23.518	23.523	23.570	23.664	23.737	23.754	23.769	23.772	23.757	23.704	23.719	23.713	23.682	23.646	23.610	23.564	23.521	23.521	23.450	23.412	23.412	23.356	23.341	23.324	23.324	23.228	23.154	23.106	23.073	
10m LEFT GROUND LEVEL	24.042	24.265	24.075	23.966	23.867	23.739	23.594	23.708	23.708	23.648	23.291	23.268	23.254	22.760	23.019	23.087	23.044	23.326	23.345	22.983	22.932	22.659	22.742	23.349	23.349	23.418	23.038	23.004	23.028	23.693	23.732	23.349	23.246	23.246	23.182	23.206	23.182	23.235	23.206	23.122	23.067	23.067	23.020	22.550	22.550	22.135	22.135	22.663	22.452				
10m RIGHT GROUND LEVEL	23.865	23.867	23.779	23.942	23.885	23.549	23.596	23.303	23.056	23.330	23.148	22.952	22.926	22.835	22.981	23.365	23.654	22.868	23.214	22.971	22.850	22.908	22.953	23.055	22.998	22.957	23.007	22.902	22.763	22.756	22.936	22.642	22.398	22.294	22.376	22.507	22.569	22.585	22.460	22.467	22.255	22.252	22.545	22.578									
HORIZONTAL SCHEMATIC	L=116.33m		R=2000m		L=12.426m		L=148.901m		R=2000m		L=10.028m		L=149.511m		R=2000m		L=10.029m		L=507.386m		R=-2000m		L=36.75m																														
VERTICAL SCHEMATIC	L=200.000m		4110.19m		G=-0.227		4223.76m		L=300.000m		4123.76m		G=0.056		4102.478m		L=400.000m																																				
SUPER ELEVATION	+0.25% max		0		-0.25% max		PC LHS		PT RHS		RHS		LHS		PC LHS		PT RHS		RHS		LHS		PC LHS		PT RHS		RHS		LHS		PC LHS		PT RHS		RHS		LHS																
CHAINAGE	4000.000	4020.000	4040.000	4060.000	4080.000	4100.000	4120.000	4140.000	4160.000	4180.000	4200.000	4220.000	4240.000	4260.000	4280.000	4300.000	4320.000	4340.000	4360.000	4380.000	4400.000	4420.000	4440.000	4460.000	4480.000	4500.000	4520.000	4540.000	4560.000	4580.000	4600.000	4620.000	4640.000	4660.000	4680.000	4700.000	4720.000	4740.000	4760.000	4780.000	4800.000	4820.000	4840.000	4860.000	4880.000	4900.000	4920.000	4940.000	4960.000	4980.000	5000.000		

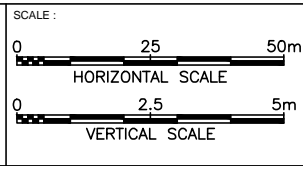
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

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CLIENT :  
**ODISHA WORKS DEPARTMENT**

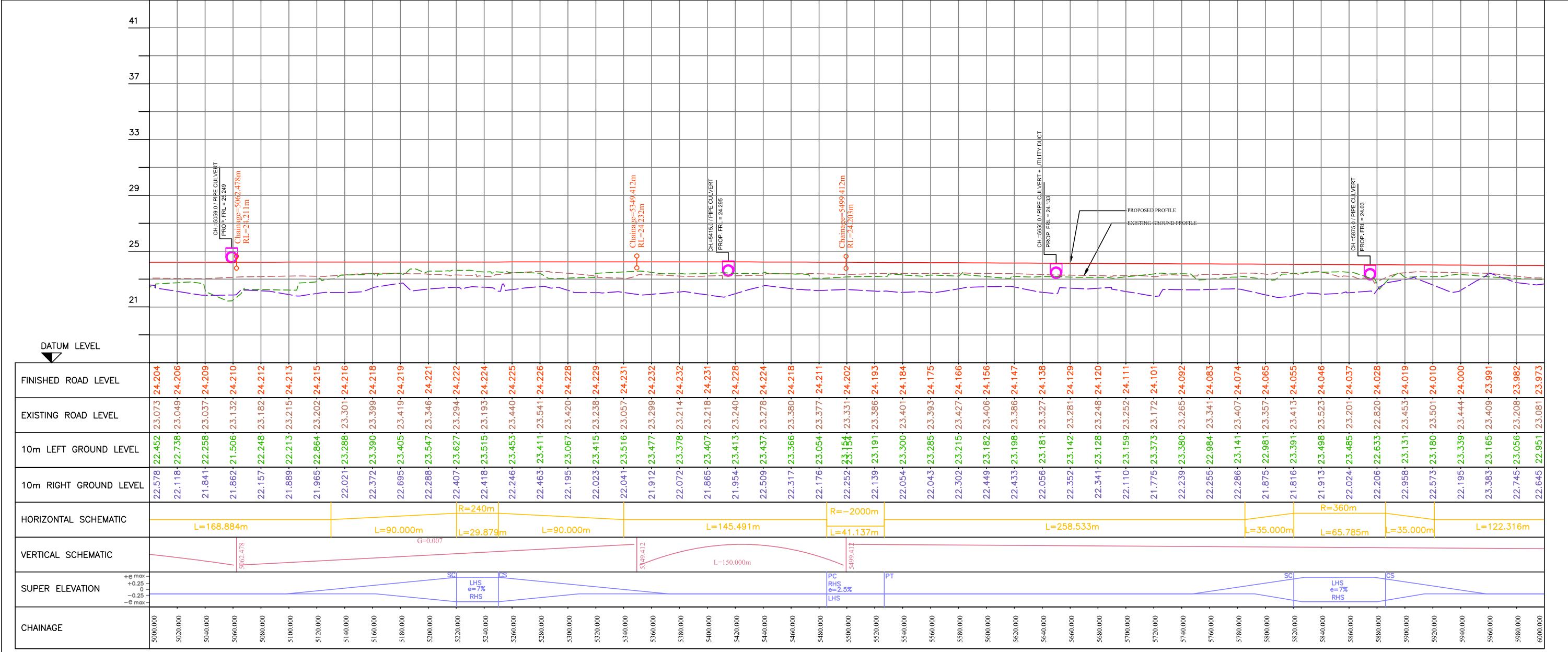
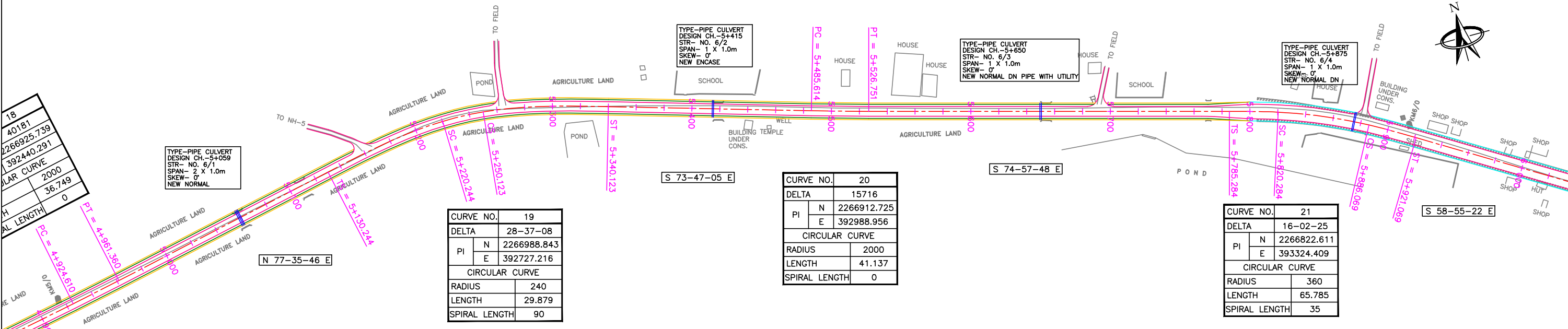
PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 04+000 TO 05+000  
 DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-05  
 REV: R1

← JAGATPUR

NISHCHINTAKOILI →



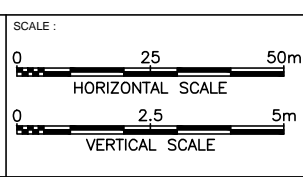
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-	JUNE 2008	ORIGINAL	CEG				

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CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 05+000 TO 06+000

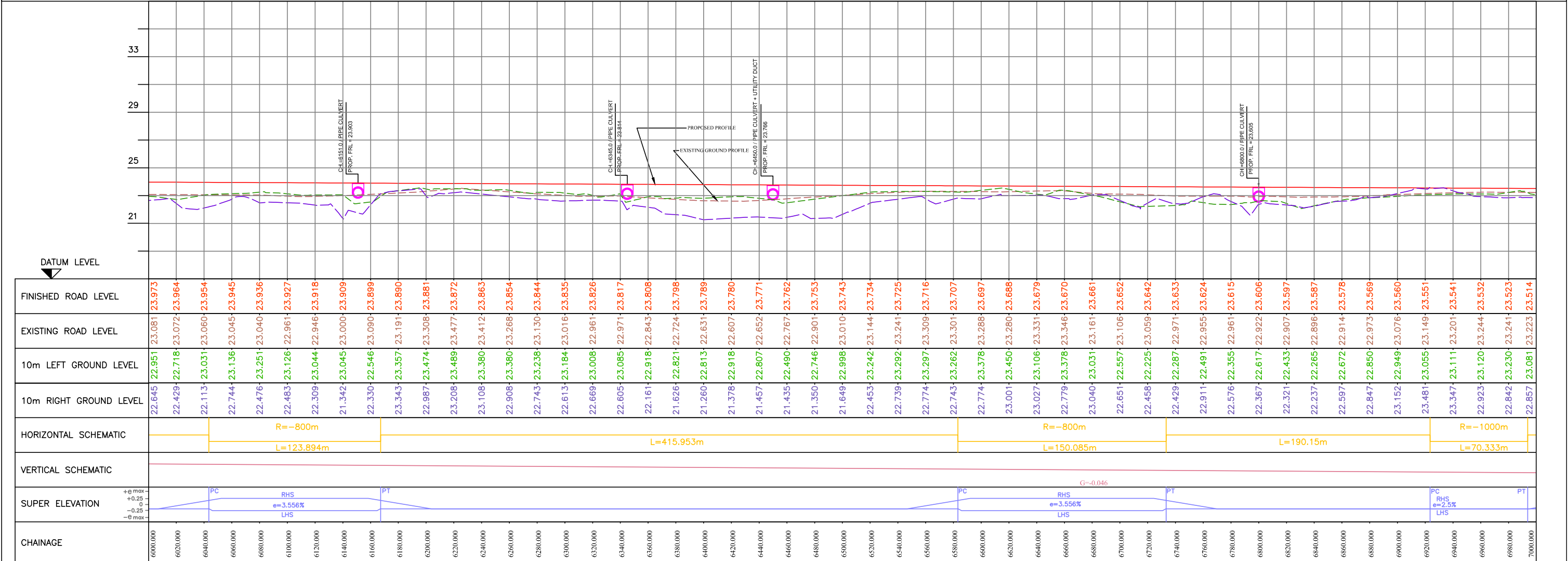
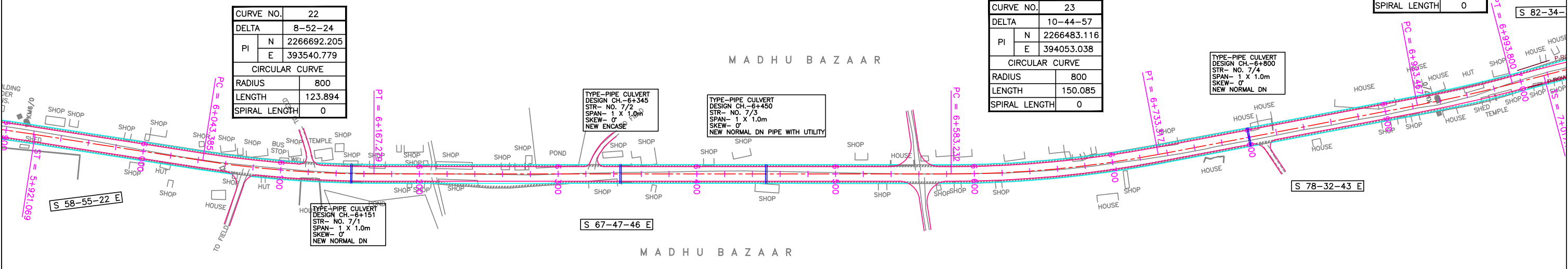
DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-06 REV. R1

CURVE NO.	24	
DELTA	17258	
PI	N	2266423.42
	E	394347.645
CIRCULAR CURVE		
RADIUS	1000	
LENGTH	70.334	
SPIRAL LENGTH	0	



CURVE NO.	22	
DELTA	8-52-24	
PI	N	2266692.205
	E	393540.779
CIRCULAR CURVE		
RADIUS	800	
LENGTH	123.894	
SPIRAL LENGTH	0	

CURVE NO.	23	
DELTA	10-44-57	
PI	N	2266483.116
	E	394053.038
CIRCULAR CURVE		
RADIUS	800	
LENGTH	150.085	
SPIRAL LENGTH	0	



NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
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R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
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DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, II<sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1**

SCALE :  
 0 25 50m  
 HORIZONTAL SCALE  
 0 2.5 5m  
 VERTICAL SCALE

DRAWING TITLE :  
**PLAN & PROFILE KM 06+000 TO 07+000**  
 DWG. NUMBER : **73466/LASA/HIGHWAYS/PP-07** REV. R1





← JAGATPUR

NISHCHINTAKOILI →



CURVE NO.	29
DELTA	41855
PI	N 2266054.268
	E 395302.808
CIRCULAR CURVE	
RADIUS	1200
LENGTH	169.027
SPIRAL LENGTH	0

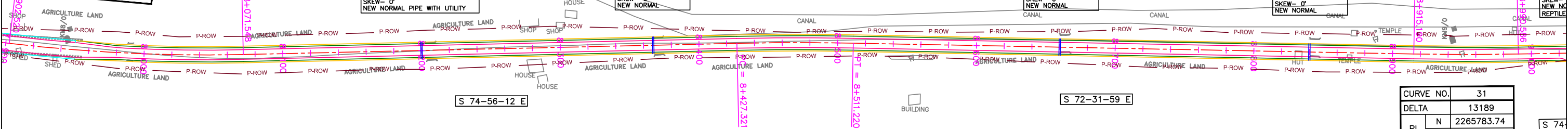
TYPE-PIPE CULVERT  
DESIGN CH.-8+200  
STR- NO. 9/1  
SPAN- 1 X 1.0m  
SKEW- 0°  
NEW NORMAL PIPE WITH UTILITY

TYPE-PIPE CULVERT  
DESIGN CH.-8+367  
STR- NO. 9/2  
SPAN- 1 X 1.0m  
SKEW- 0°  
NEW NORMAL

TYPE-PIPE CULVERT  
DESIGN CH.-8+660  
STR- NO. 9/3  
SPAN- 1 X 1.0m  
SKEW- 0°  
NEW NORMAL

TYPE-PIPE CULVERT  
DESIGN CH.-8+840  
STR- NO. 9/4  
SPAN- 1 X 1.0m  
SKEW- 0°  
NEW NORMAL

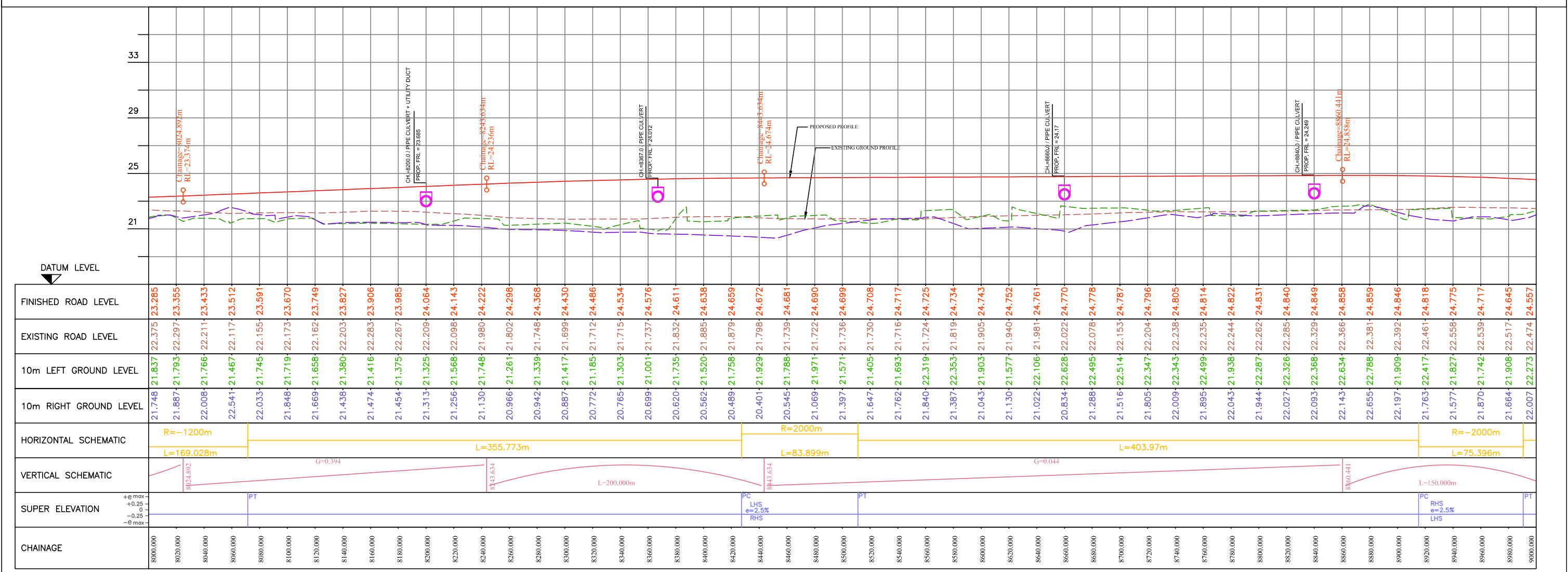
TYPE-PIPE CULVERT  
DESIGN STR- N  
SPAN-  
SKEW-  
NEW-NC  
REPTILE



CURVE NO.	30
DELTA	41329
PI	N 2265928.903
	E 395768.615
CIRCULAR CURVE	
RADIUS	2000
LENGTH	83.9
SPIRAL LENGTH	0

CURVE NO.	31
DELTA	13189
PI	N 2265783.74
	E 396229.944
CIRCULAR CURVE	
RADIUS	2000
LENGTH	75.396
SPIRAL LENGTH	0

S 74



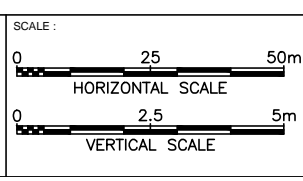
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R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CEG CONSULTING ENGINEERS GROUP LTD.**  
E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

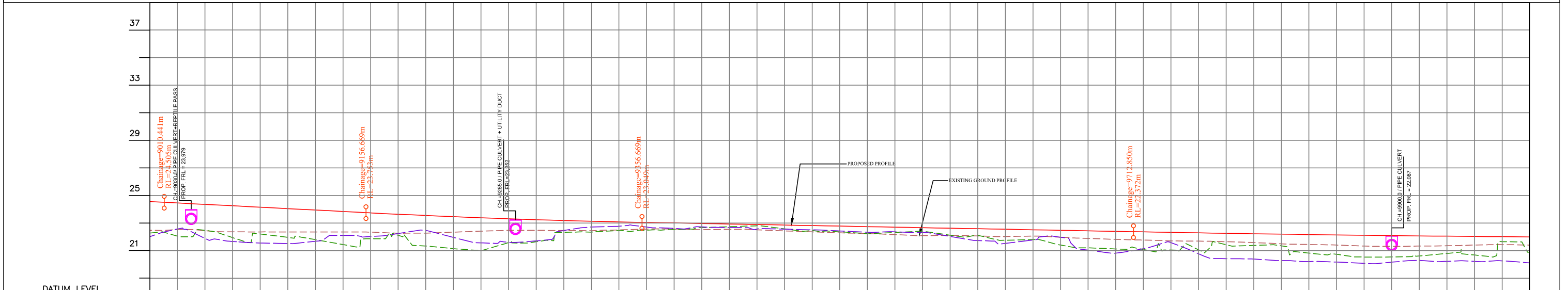
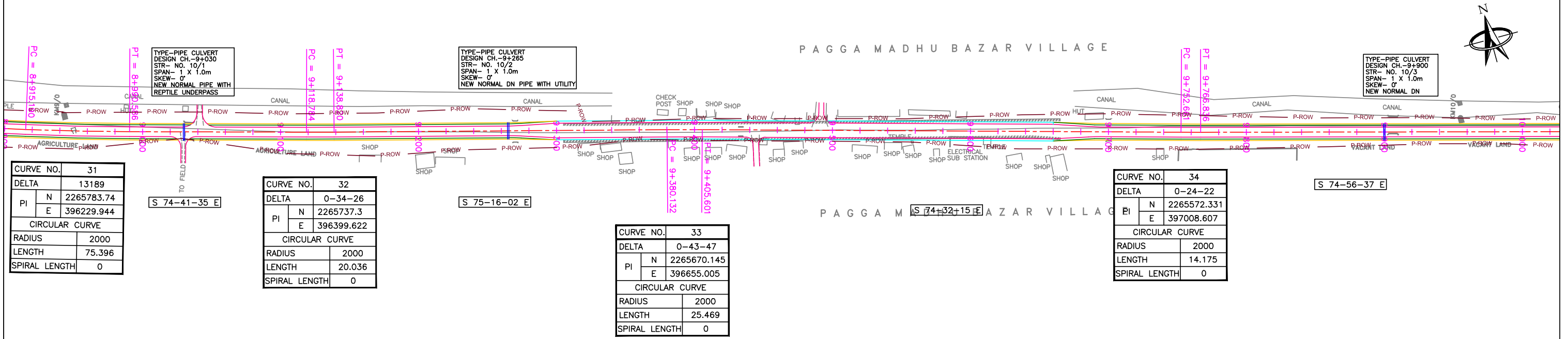
PROJECT :  
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
KM 08+000 TO 09+000

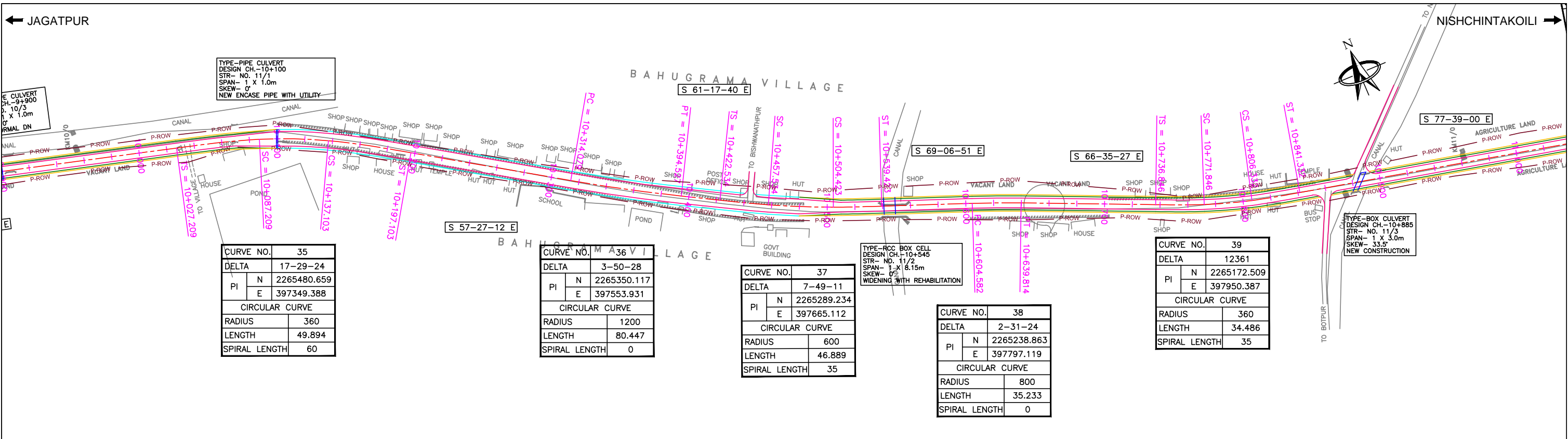
DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-09

REV. R1



FINISHED ROAD LEVEL	24.557, 24.474, 22.474, 22.539, 24.456, 22.444, 24.353, 21.883, 22.470, 22.361, 24.250, 22.356, 24.148, 21.511, 21.957, 22.351, 24.045, 21.677, 21.796, 22.348, 23.942, 22.099, 21.437, 22.352, 23.839, 22.017, 21.855, 22.337, 23.736, 22.238, 22.109, 22.259, 23.638, 22.456, 21.332, 22.269, 23.546, 21.960, 21.143, 22.339, 23.460, 21.564, 21.023, 22.411, 23.381, 21.590, 21.580, 22.470, 23.308, 21.706, 21.638, 22.469, 23.242, 22.455, 22.318, 22.457, 23.183, 22.715, 22.344, 22.451, 23.130, 22.767, 22.459, 22.502, 23.083, 22.705, 22.482, 22.559, 23.043, 22.606, 22.527, 22.560, 23.005, 22.716, 22.666, 22.520, 22.967, 22.676, 22.735, 22.540, 22.929, 22.563, 22.801, 22.507, 22.891, 22.556, 22.577, 22.429, 22.853, 22.507, 22.452, 22.357, 22.815, 22.425, 22.360, 22.287, 22.777, 22.329, 22.226, 22.234, 22.739, 22.367, 22.313, 22.159, 22.701, 22.331, 22.405, 22.087, 22.663, 22.029, 22.116, 22.100, 22.625, 21.729, 22.111, 22.060, 22.587, 21.524, 21.751, 22.019, 22.549, 21.767, 21.794, 22.052, 22.511, 21.971, 21.400, 21.969, 22.473, 21.032, 21.200, 21.882, 22.434, 20.814, 21.121, 21.816, 22.396, 21.135, 21.082, 21.764, 22.359, 21.582, 21.038, 21.706, 22.322, 20.773, 21.056, 21.685, 22.287, 20.412, 21.427, 21.644, 22.254, 20.386, 21.376, 21.581, 22.222, 20.278, 21.342, 21.491, 22.192, 20.209, 20.819, 21.445, 22.163, 20.167, 20.734, 21.401, 22.136, 20.077, 20.534, 21.333, 22.111, 20.159, 20.542, 21.310, 22.088, 20.290, 20.608, 21.327, 22.066, 20.222, 20.798, 21.352, 22.045, 20.218, 20.679, 21.405, 22.027, 20.107, 20.894, 21.396, 21.994																																																																																																																																																																																																
	EXISTING ROAD LEVEL	22.474	22.539	24.456	22.444	24.353	21.883	22.470	22.361	24.250	22.356	24.148	21.511	21.957	22.351	24.045	21.677	21.796	22.348	23.942	22.099	21.437	22.352	23.839	22.017	21.855	22.337	23.736	22.238	22.109	22.259	23.638	22.456	21.332	22.269	23.546	21.960	21.143	22.339	23.460	21.564	21.023	22.411	23.381	21.590	21.580	22.470	23.308	21.706	21.638	22.469	23.242	22.455	22.318	22.457	23.183	22.715	22.344	22.451	23.130	22.767	22.459	22.502	23.083	22.705	22.482	22.559	23.043	22.606	22.527	22.560	23.005	22.716	22.666	22.520	22.967	22.676	22.735	22.540	22.929	22.563	22.801	22.507	22.891	22.556	22.577	22.429	22.853	22.507	22.452	22.357	22.815	22.425	22.360	22.287	22.777	22.329	22.226	22.234	22.739	22.367	22.313	22.159	22.701	22.331	22.405	22.087	22.663	22.029	22.116	22.100	22.625	21.729	22.111	22.060	22.587	21.524	21.751	22.019	22.549	21.767	21.794	22.052	22.511	21.971	21.400	21.969	22.473	21.032	21.200	21.882	22.434	20.814	21.121	21.816	22.396	21.135	21.082	21.764	22.359	21.582	21.038	21.706	22.322	20.773	21.056	21.685	22.287	20.412	21.427	21.644	22.254	20.386	21.376	21.581	22.222	20.278	21.342	21.491	22.192	20.209	20.819	21.445	22.163	20.167	20.734	21.401	22.136	20.077	20.534	21.333	22.111	20.159	20.542	21.310	22.088	20.290	20.608	21.327	22.066	20.222	20.798	21.352	22.045	20.218	20.679	21.405	22.027	20.107	20.894	21.396	21.994	
10m LEFT GROUND LEVEL	22.273	22.051	22.539	22.444	24.353	21.883	22.470	22.361	24.250	22.356	24.148	21.511	21.957	22.351	24.045	21.677	21.796	22.348	23.942	22.099	21.437	22.352	23.839	22.017	21.855	22.337	23.736	22.238	22.109	22.259	23.638	22.456	21.332	22.269	23.546	21.960	21.143	22.339	23.460	21.564	21.023	22.411	23.381	21.590	21.580	22.470	23.308	21.706	21.638	22.469	23.242	22.455	22.318	22.457	23.183	22.715	22.344	22.451	23.130	22.767	22.459	22.502	23.083	22.705	22.482	22.559	23.043	22.606	22.527	22.560	23.005	22.716	22.666	22.520	22.967	22.676	22.735	22.540	22.929	22.563	22.801	22.507	22.891	22.556	22.577	22.429	22.853	22.507	22.452	22.357	22.815	22.425	22.360	22.287	22.777	22.329	22.226	22.234	22.739	22.367	22.313	22.159	22.701	22.331	22.405	22.087	22.663	22.029	22.116	22.100	22.625	21.729	22.111	22.060	22.587	21.524	21.751	22.019	22.549	21.767	21.794	22.052	22.511	21.971	21.400	21.969	22.473	21.032	21.200	21.882	22.434	20.814	21.121	21.816	22.396	21.135	21.082	21.764	22.359	21.582	21.038	21.706	22.322	20.773	21.056	21.685	22.287	20.412	21.427	21.644	22.254	20.386	21.376	21.581	22.222	20.278	21.342	21.491	22.192	20.209	20.819	21.445	22.163	20.167	20.734	21.401	22.136	20.077	20.534	21.333	22.111	20.159	20.542	21.310	22.088	20.290	20.608	21.327	22.066	20.222	20.798	21.352	22.045	20.218	20.679	21.405	22.027	20.107	20.894	21.396	21.994		
10m RIGHT GROUND LEVEL	22.007	22.563	22.051	22.539	24.456	22.444	24.353	21.883	22.470	22.361	24.250	22.356	24.148	21.511	21.957	22.351	24.045	21.677	21.796	22.348	23.942	22.099	21.437	22.352	23.839	22.017	21.855	22.337	23.736	22.238	22.109	22.259	23.638	22.456	21.332	22.269	23.546	21.960	21.143	22.339	23.460	21.564	21.023	22.411	23.381	21.590	21.580	22.470	23.308	21.706	21.638	22.469	23.242	22.455	22.318	22.457	23.183	22.715	22.344	22.451	23.130	22.767	22.459	22.502	23.083	22.705	22.482	22.559	23.043	22.606	22.527	22.560	23.005	22.716	22.666	22.520	22.967	22.676	22.735	22.540	22.929	22.563	22.801	22.507	22.891	22.556	22.577	22.429	22.853	22.507	22.452	22.357	22.815	22.425	22.360	22.287	22.777	22.329	22.226	22.234	22.739	22.367	22.313	22.159	22.701	22.331	22.405	22.087	22.663	22.029	22.116	22.100	22.625	21.729	22.111	22.060	22.587	21.524	21.751	22.019	22.549	21.767	21.794	22.052	22.511	21.971	21.400	21.969	22.473	21.032	21.200	21.882	22.434	20.814	21.121	21.816	22.396	21.135	21.082	21.764	22.359	21.582	21.038	21.706	22.322	20.773	21.056	21.685	22.287	20.412	21.427	21.644	22.254	20.386	21.376	21.581	22.222	20.278	21.342	21.491	22.192	20.209	20.819	21.445	22.163	20.167	20.734	21.401	22.136	20.077	20.534	21.333	22.111	20.159	20.542	21.310	22.088	20.290	20.608	21.327	22.066	20.222	20.798	21.352	22.045	20.218	20.679	21.405	22.027	20.107	20.894	21.396	21.994
HORIZONTAL SCHEMATIC	L=128.198m															L=241.312m															L=347.06m															L=260.373m																																																																																																																																																			
VERTICAL SCHEMATIC	G=-0.514															L=200.000m															G=-0.190															L=300.000m																																																																																																																																																			
SUPER ELEVATION	RHS 2.5% LHS															RHS 2.5% LHS															RHS 2.5% LHS															RHS 2.5% LHS																																																																																																																																																			
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<table border="1"> <tr><td>R1</td><td>AUG. 2015</td><td>SECOND REVISION</td><td>LASA</td><td>VINAY</td><td>SUBRAT/D.GHATAK</td><td>S.D SARANGI</td><td>G.P SAHOO (TL)</td></tr> <tr><td>R0</td><td>FEB. 2013</td><td>FIRST REVISION</td><td>OWD</td><td>VINAY</td><td>PK.MISHRA (AE)</td><td>M.R MISHRA (EE)</td><td>N.K PRADHAN (CE)</td></tr> <tr><td>-</td><td>JUNE 2008</td><td>ORIGINAL</td><td>CEG</td><td></td><td></td><td></td><td></td></tr> </table>	R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	-	JUNE 2008	ORIGINAL	CEG					DPR CONSULTANT : <b>C CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com	DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, II <sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>	PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	SCALE : 0 25 50m HORIZONTAL SCALE 0 2.5 5m VERTICAL SCALE	DRAWING TITLE : <b>PLAN &amp; PROFILE</b> <b>KM 09+000 TO 10+000</b> DWG. NUMBER : 73466/LASA/HIGHWAYS/PP- 10 REV. R1
	R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)																						
	R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)																						
-	JUNE 2008	ORIGINAL	CEG																											



TYPE-PIPE CULVERT  
DESIGN CH.-10+100  
STR- NO. 11/1  
SPAN- 1 X 1.0m  
SKEW- 0°  
NEW ENCASE PIPE WITH UTILITY



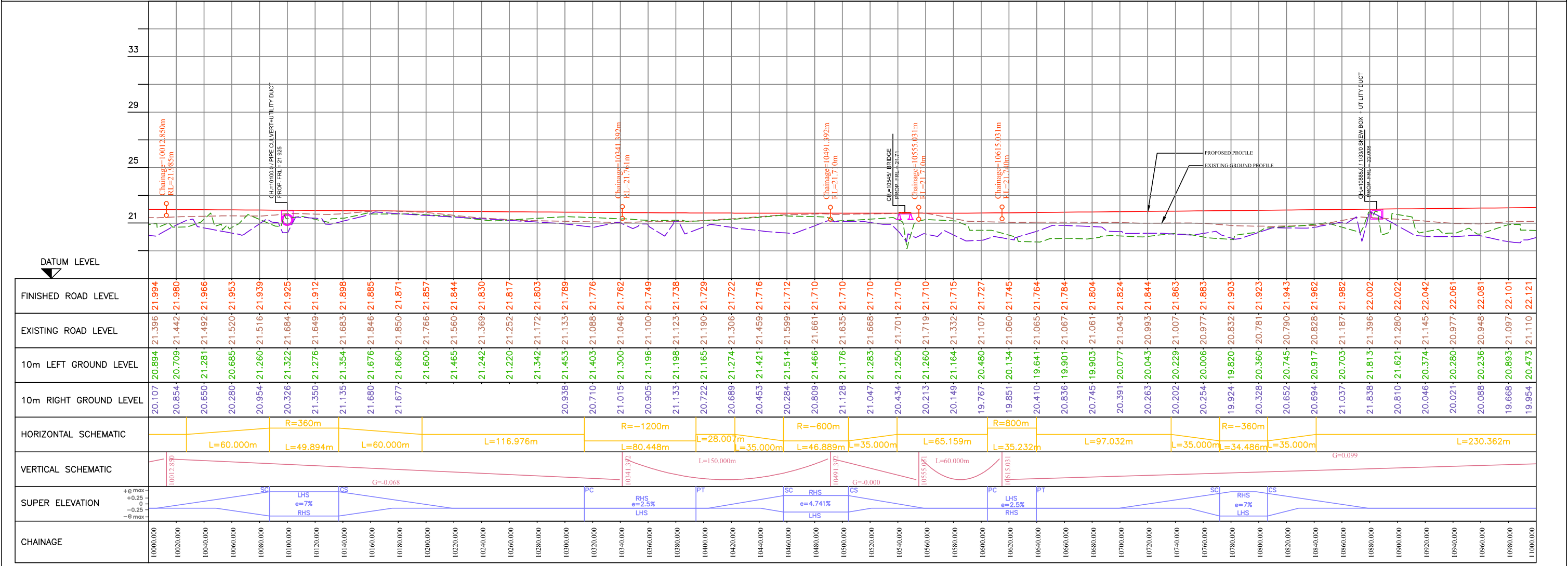
CURVE NO. 35	
DELTA	17-29-24
PI	N 2265480.659
	E 397349.388
CIRCULAR CURVE	
RADIUS	360
LENGTH	49.894
SPIRAL LENGTH	60

CURVE NO. 36	
DELTA	3-50-28
PI	N 2265350.117
	E 397553.931
CIRCULAR CURVE	
RADIUS	1200
LENGTH	80.447
SPIRAL LENGTH	0

CURVE NO. 37	
DELTA	7-49-11
PI	N 2265289.234
	E 397665.112
CIRCULAR CURVE	
RADIUS	600
LENGTH	46.889
SPIRAL LENGTH	35

CURVE NO. 38	
DELTA	2-31-24
PI	N 2265238.863
	E 397797.119
CIRCULAR CURVE	
RADIUS	800
LENGTH	35.233
SPIRAL LENGTH	0

CURVE NO. 39	
DELTA	12361
PI	N 2265172.509
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CIRCULAR CURVE	
RADIUS	360
LENGTH	34.486
SPIRAL LENGTH	35



← JAGATPUR

NISHCHINTAKOILI →

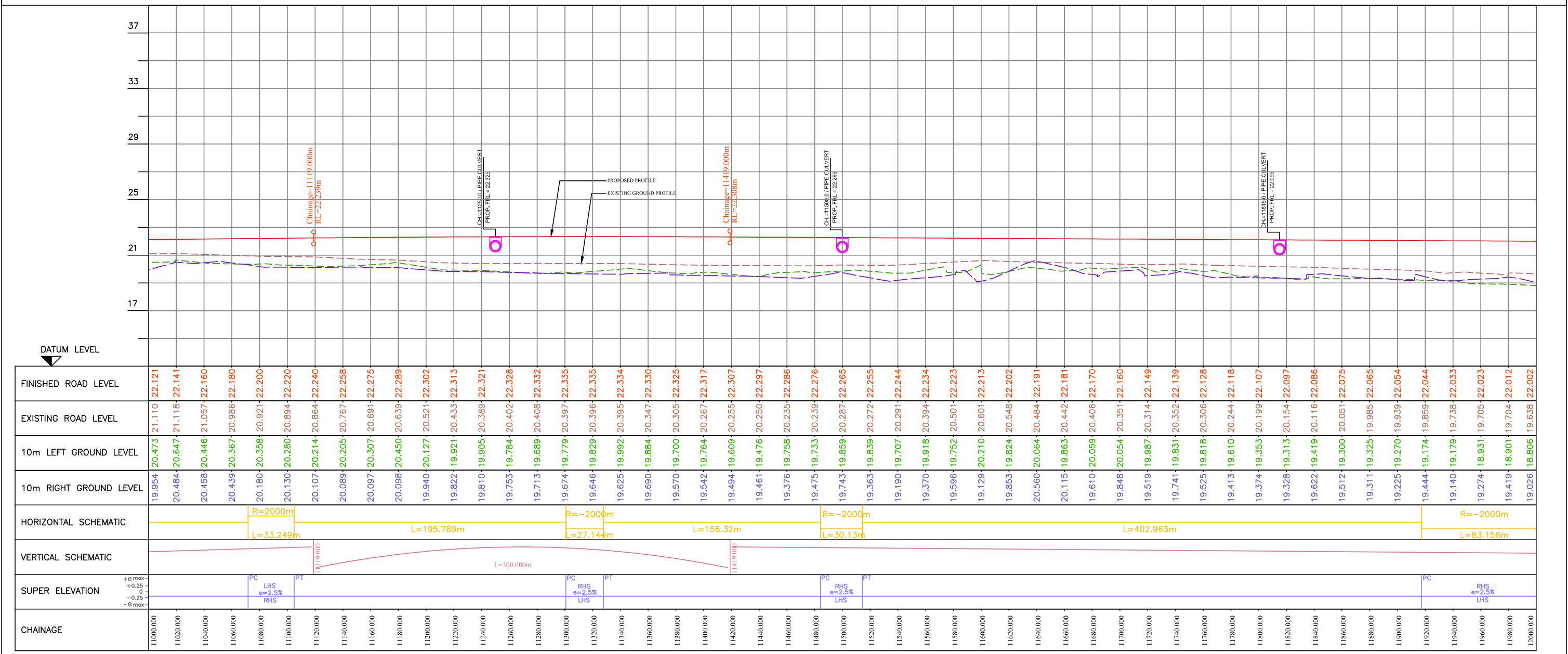
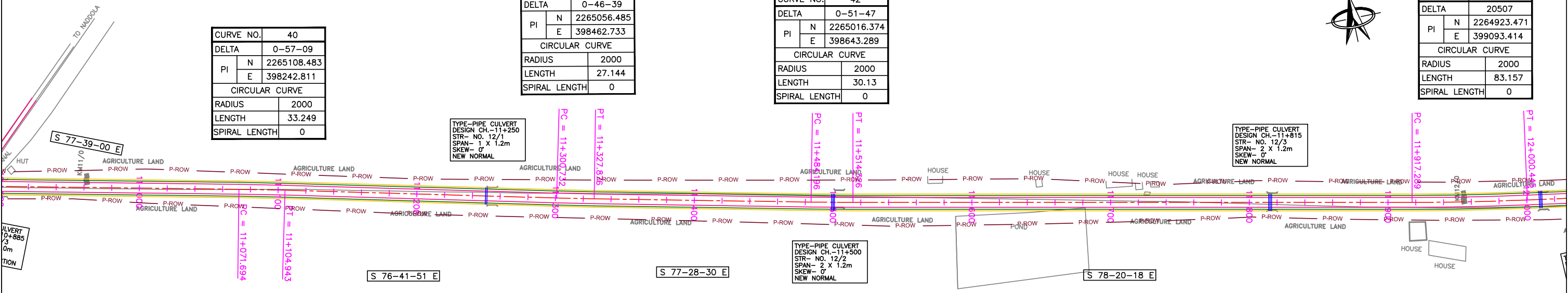


CURVE NO.		40
DELTA		0-57-09
PI	N	2265108.483
	E	398242.811
CIRCULAR CURVE		
RADIUS	2000	
LENGTH	33.249	
SPIRAL LENGTH	0	

CURVE NO.		41
DELTA		0-46-39
PI	N	2265056.485
	E	398462.733
CIRCULAR CURVE		
RADIUS	2000	
LENGTH	27.144	
SPIRAL LENGTH	0	

CURVE NO.		42
DELTA		0-51-47
PI	N	2265016.374
	E	398643.289
CIRCULAR CURVE		
RADIUS	2000	
LENGTH	30.13	
SPIRAL LENGTH	0	

CURVE NO.		43
DELTA		20507
PI	N	2264923.471
	E	399093.414
CIRCULAR CURVE		
RADIUS	2000	
LENGTH	83.157	
SPIRAL LENGTH	0	



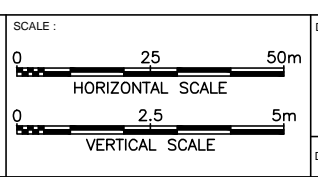
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

DPR CONSULTANT :  
**CEG CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17  
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DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

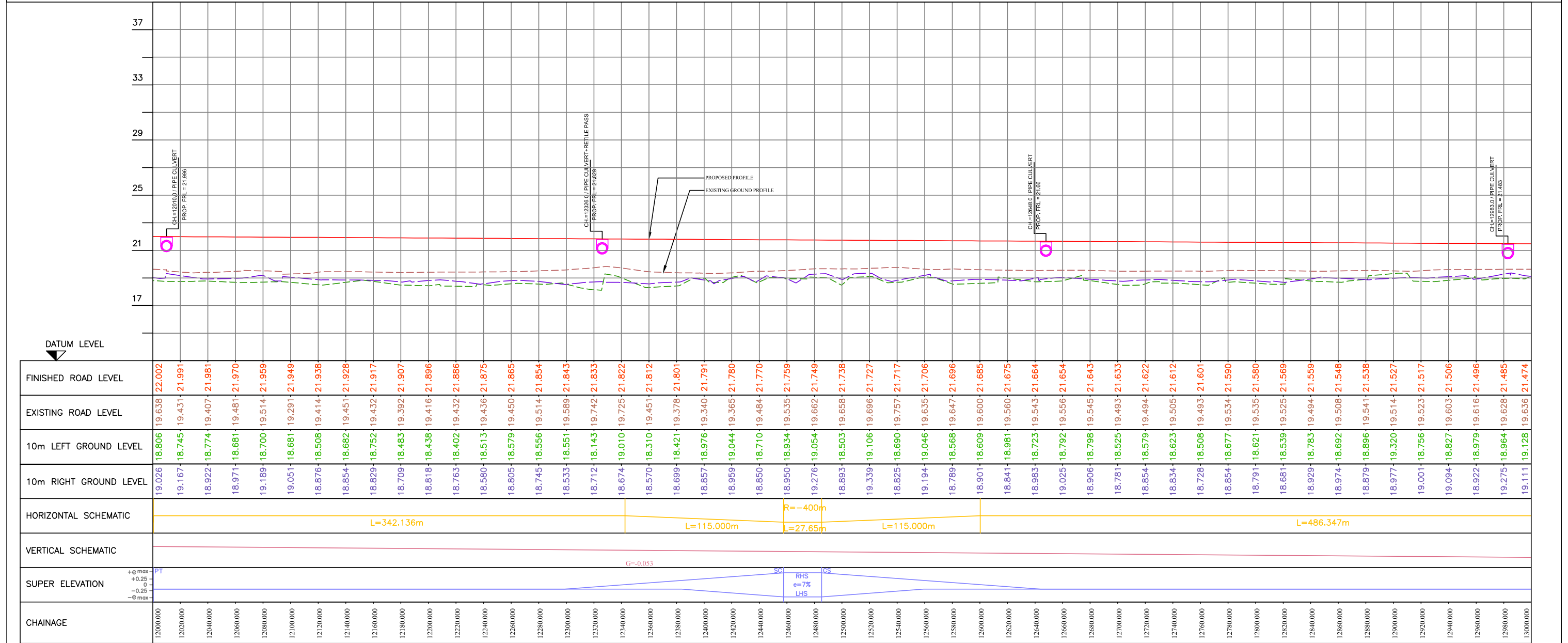
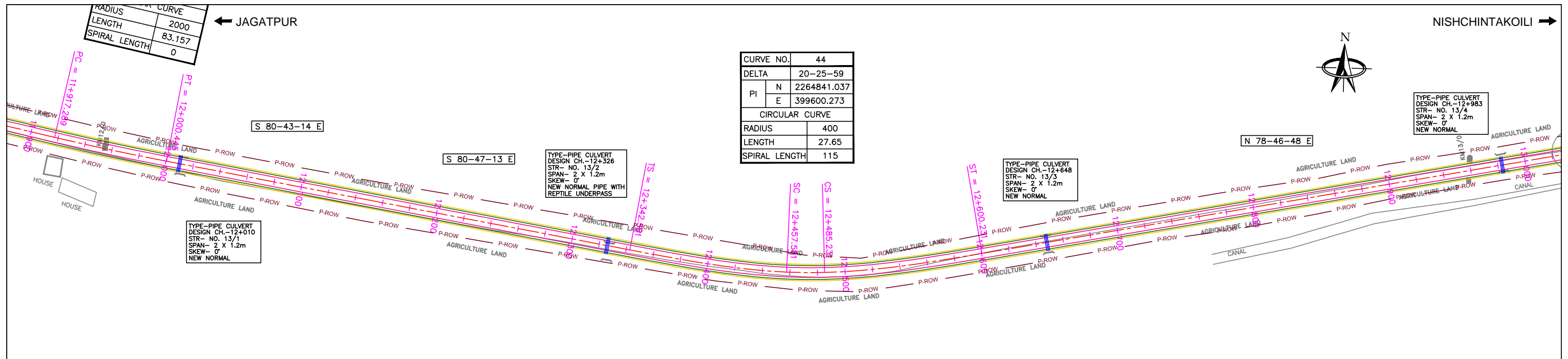
PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
**KM 11+000 TO 12+000**

DWG. NUMBER : **73466/LASA/HIGHWAYS/PP-12**

REV. **R1**



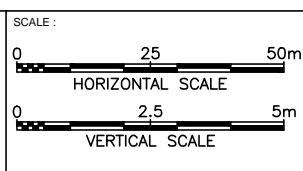
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
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DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, II<sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

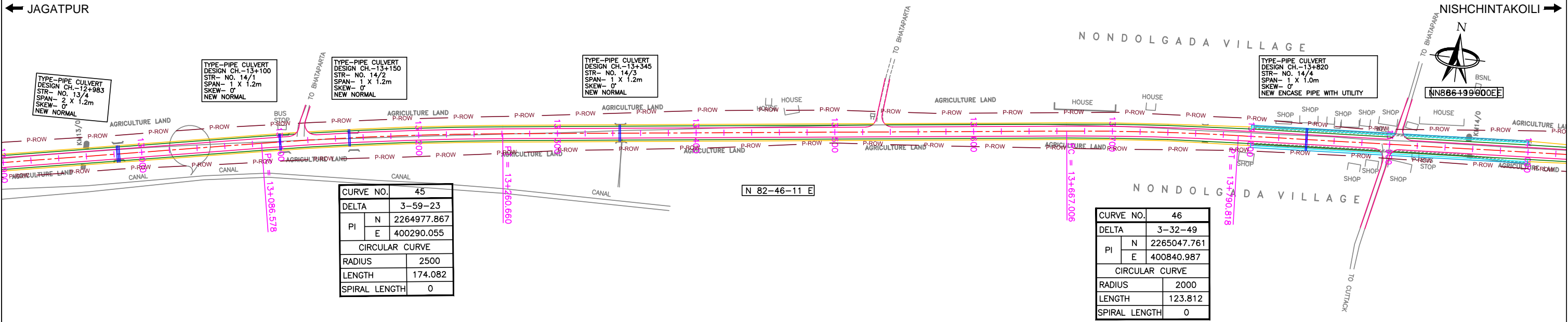
CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



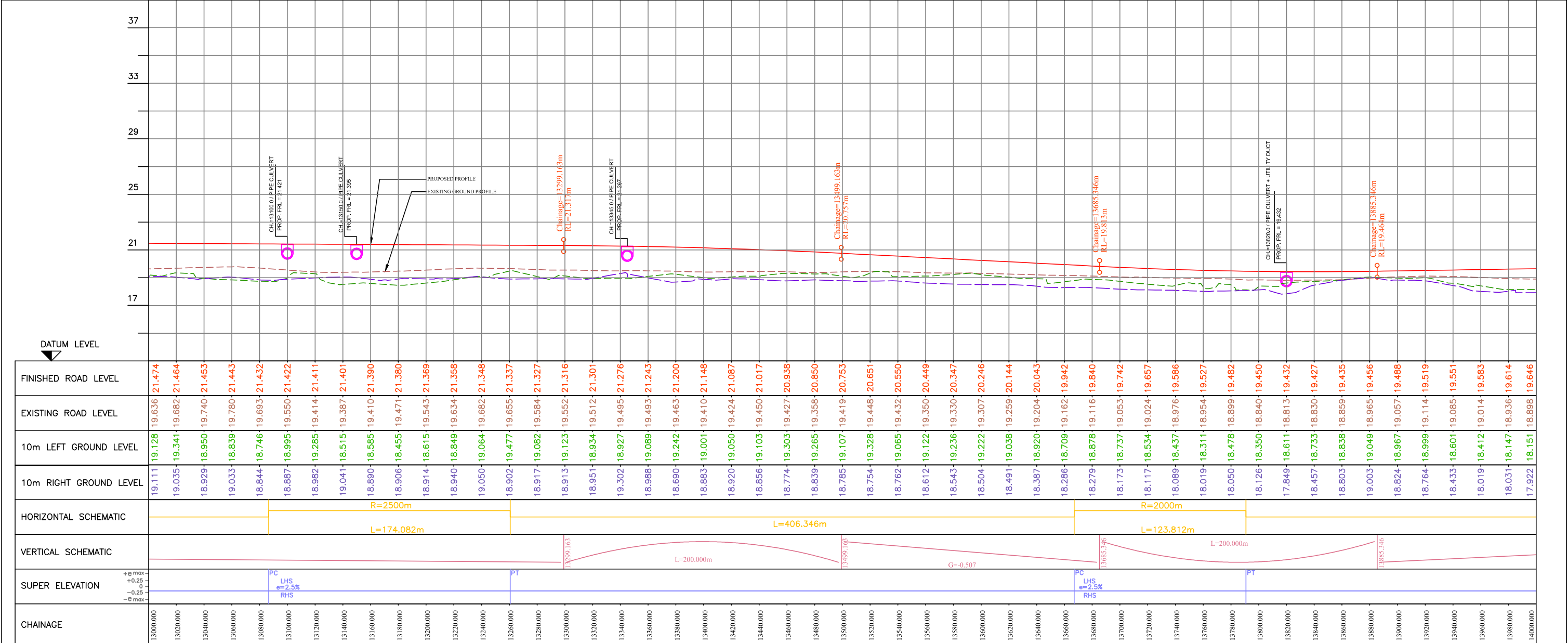
DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 12+000 TO 13+000

DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-13 REV. R1



CURVE NO.	45
DELTA	3-59-23
PI	N 2264977.867
	E 400290.055
CIRCULAR CURVE	
RADIUS	2500
LENGTH	174.082
SPIRAL LENGTH	0

CURVE NO.	46
DELTA	3-32-49
PI	N 2265047.761
	E 400840.987
CIRCULAR CURVE	
RADIUS	2000
LENGTH	123.812
SPIRAL LENGTH	0



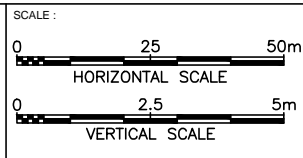
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R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com

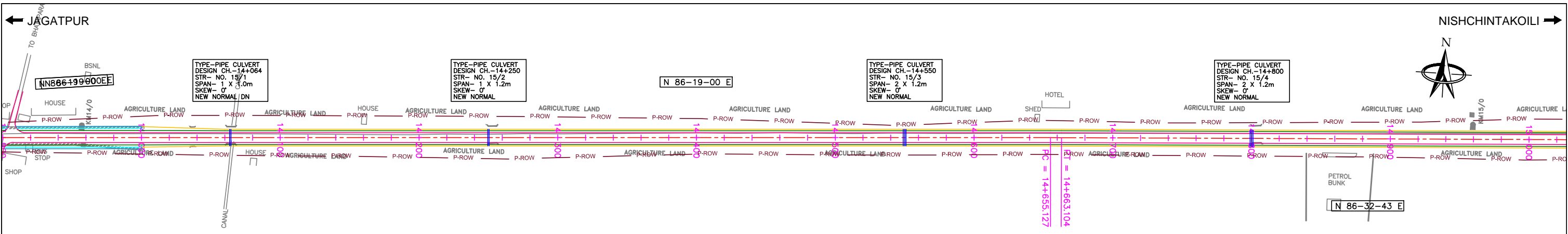
DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd.,** India  
 B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

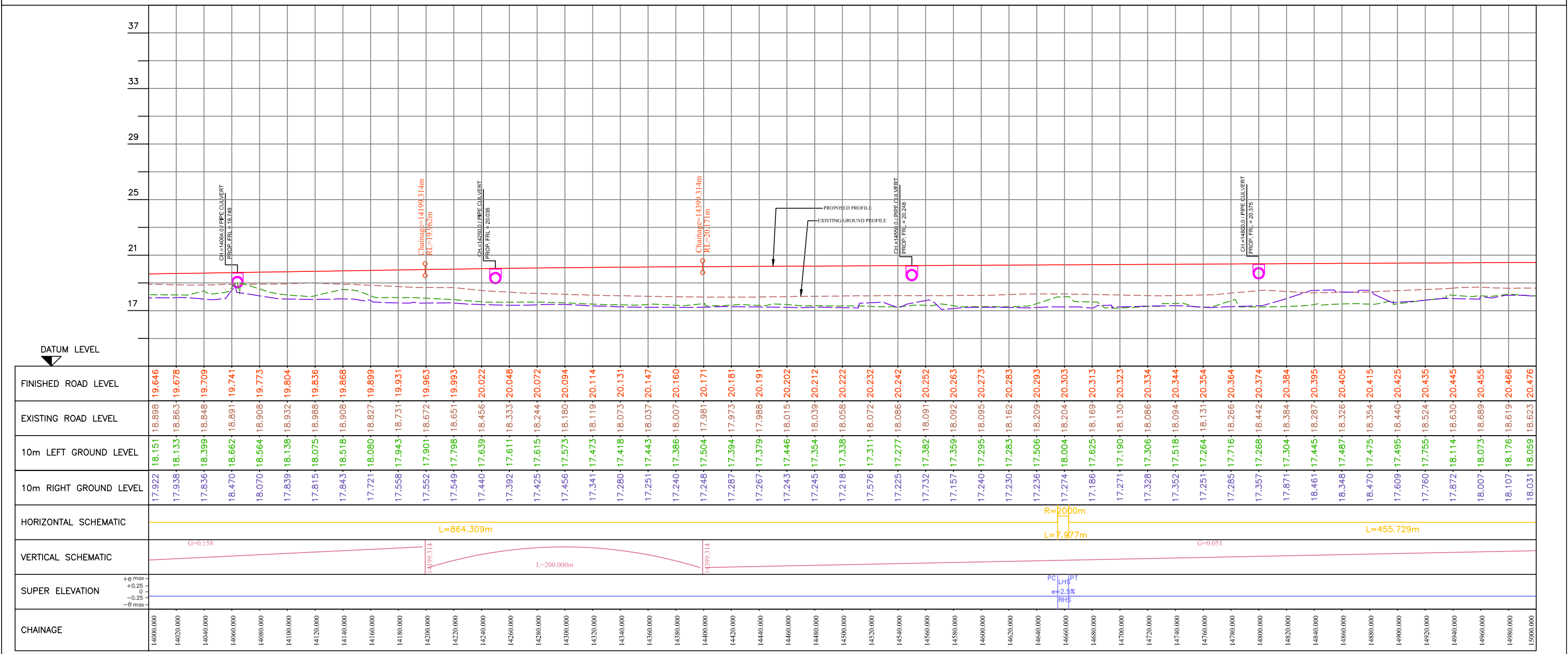
PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE : **PLAN & PROFILE**  
**KM 13+000 TO 14+000**  
 DWG. NUMBER : 73466/LASA/HIGHWAYS/PP- 14  
 REV. R1



CURVE NO.	47
DELTA	0-13-43
PI	N 2265107.521
	E 401769.289
CIRCULAR CURVE	
RADIUS	2000
LENGTH	7.977
SPIRAL LENGTH	0



R1 AUG. 2015 SECOND REVISION LASA VINAY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO (TL) R0 FEB. 2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R MISHRA (EE) N.K PRADHAN (CE) JUNE 2008 ORIGINAL CEG						DPR CONSULTANT : <b>CEG CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com						DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044						CLIENT : <b>ODISHA WORKS DEPARTMENT</b>						PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1						SCALE : HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5						DRAWING TITLE : <b>PLAN &amp; PROFILE</b> <b>KM 14+000 TO 15+000</b>																																																																																			
NO.												DATE												REVISION												BY												DRAWN:												PREPARED :												CHECKED:												APPROVED:												DWG. NUMBER : 73466/LASA/HIGHWAYS/PP- 15												REV. R1											





JAGATPUR

NISHCHINTAKOILI

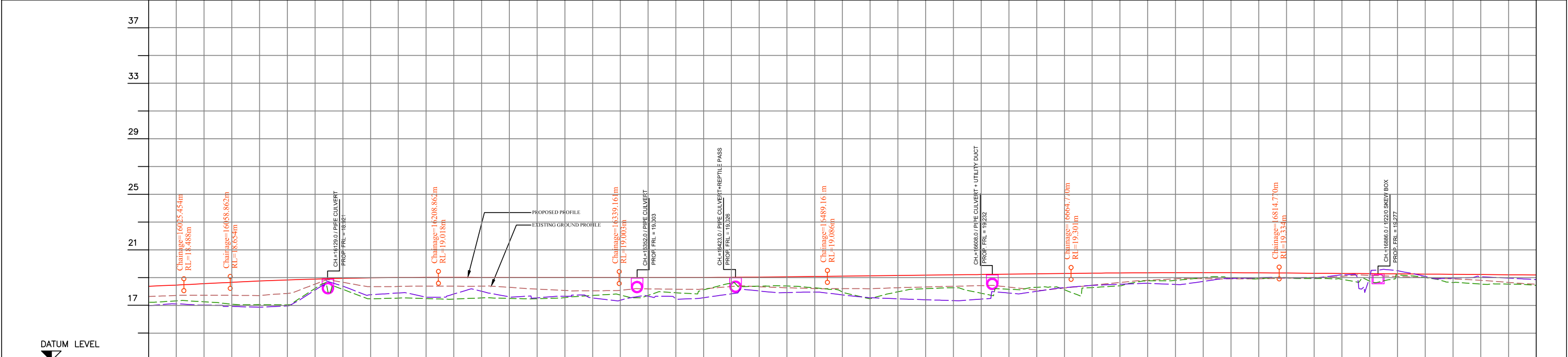
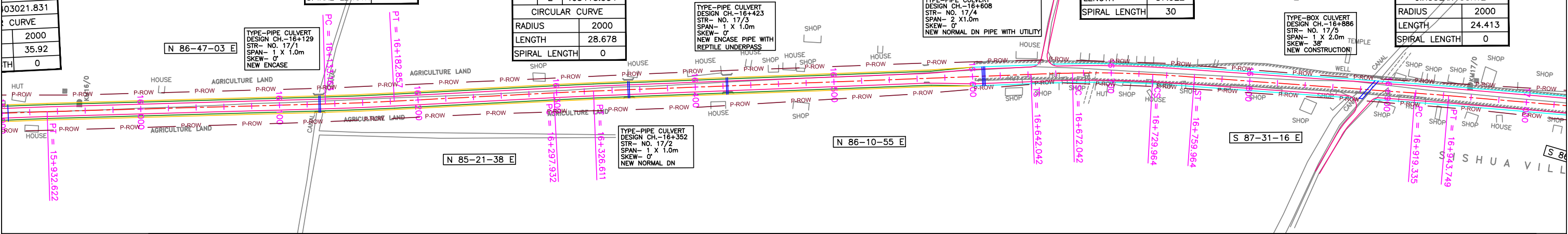
49
16072
265193.942
03021.831
CURVE
2000
35.92
TH
0

CURVE NO.	50
DELTA	45682
PI	N 2265207.594
	E 403264.797
CIRCULAR CURVE	
RADIUS	2000
LENGTH	49.694
SPIRAL LENGTH	0

CURVE NO.	51
DELTA	0-49-18
PI	N 2265220.072
	E 403418.554
CIRCULAR CURVE	
RADIUS	2000
LENGTH	28.678
SPIRAL LENGTH	0

CURVE NO.	52
DELTA	18066
PI	N 2265245.959
	E 403806.47
CIRCULAR CURVE	
RADIUS	800
LENGTH	57.922
SPIRAL LENGTH	30

CURVE NO.	53
DELTA	0-41-58
PI	N 2265235.986
	E 404036.84
CIRCULAR CURVE	
RADIUS	2000
LENGTH	24.413
SPIRAL LENGTH	0



DATUM LEVEL	
FINISHED ROAD LEVEL	18.378
EXISTING ROAD LEVEL	17.641
10m LEFT GROUND LEVEL	17.224
10m RIGHT GROUND LEVEL	16.979
HORIZONTAL SCHEMATIC	R=-2000m, L=200.541m, R=2000m, L=49.694m, L=115.075m, L=28.679m, L=315.431m, L=30.000m, R=800m, L=57.922m, L=30.000m, L=159.371m, R=2000m, L=24.413m
VERTICAL SCHEMATIC	G=0.122, L=150.000m, G=-0.011, L=150.000m, G=3.556%, L=150.000m
SUPER ELEVATION	RHS e=2.5%, LHS e=2.5%, LHS e=3.556%, RHS e=3.556%, LHS e=2.5%, RHS e=2.5%
CHAINAGE	16000.000, 16020.000, 16040.000, 16060.000, 16080.000, 16100.000, 16120.000, 16140.000, 16160.000, 16180.000, 16200.000, 16220.000, 16240.000, 16260.000, 16280.000, 16300.000, 16320.000, 16340.000, 16360.000, 16380.000, 16400.000, 16420.000, 16440.000, 16460.000, 16480.000, 16500.000, 16520.000, 16540.000, 16560.000, 16580.000, 16600.000, 16620.000, 16640.000, 16660.000, 16680.000, 16700.000, 16720.000, 16740.000, 16760.000, 16780.000, 16800.000, 16820.000, 16840.000, 16860.000, 16880.000, 16900.000, 16920.000, 16940.000, 16960.000, 16980.000, 17000.000

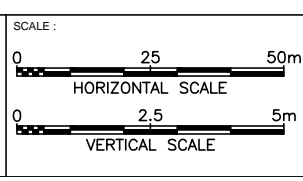
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:

DPR CONSULTANT :  
**CEG CONSULTING ENGINEERS GROUP LTD.**  
 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 16+000 TO 17+000

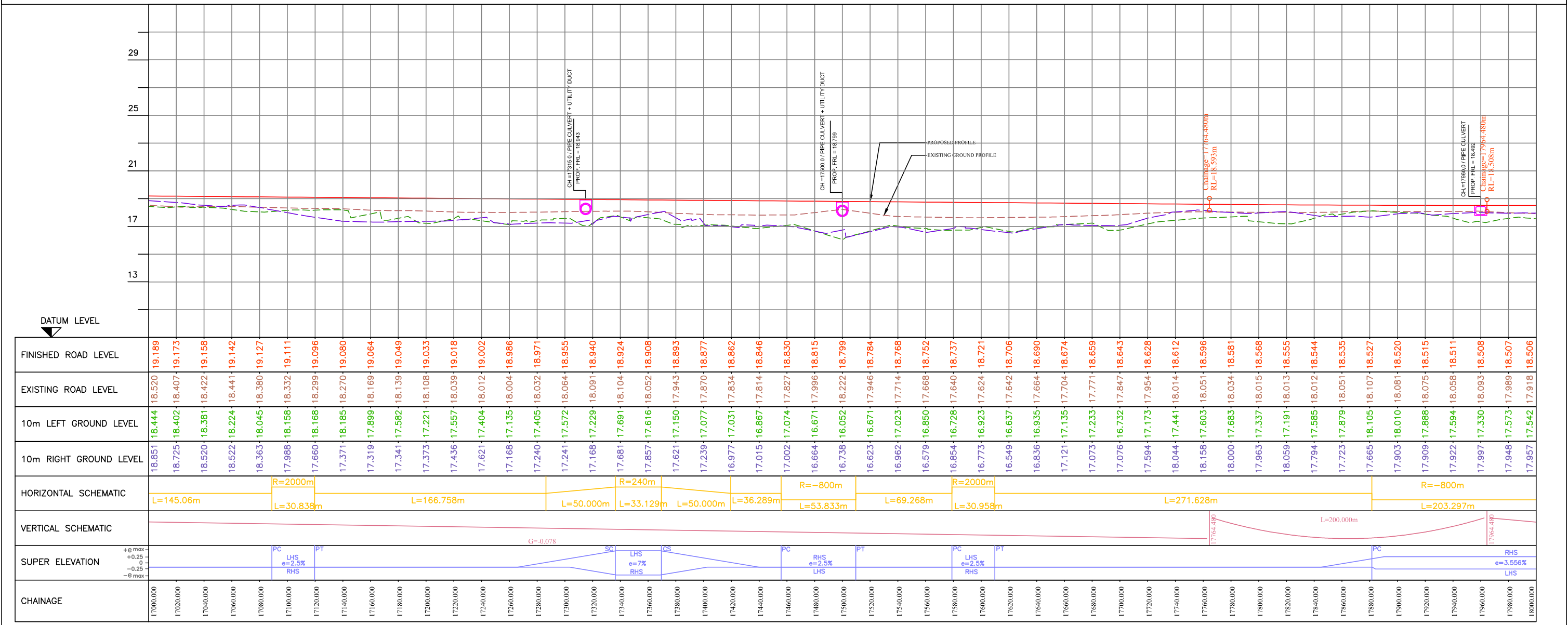
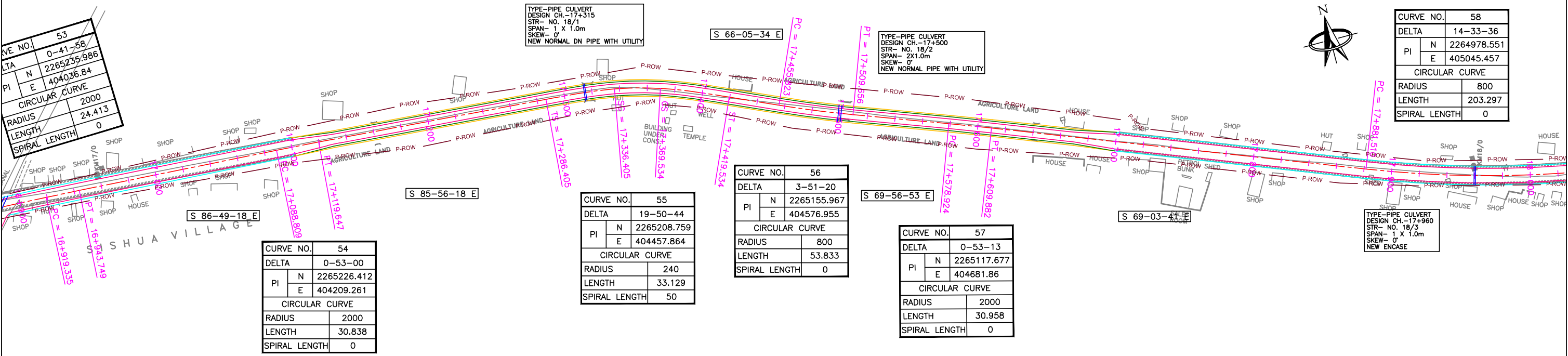
DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-17 REV. R1

← JAGATPUR

NISHCHINTAKOILI →

VE NO.	53
STA	0-41-58
PI	N 2265235.986 E 404036.84
CIRCULAR CURVE	
RADIUS	2000
LENGTH	24.413
SPIRAL LENGTH	0

CURVE NO.	58
DELTA	14-33-36
PI	N 2264978.551 E 405045.457
CIRCULAR CURVE	
RADIUS	800
LENGTH	203.297
SPIRAL LENGTH	0



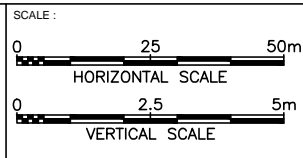
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

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 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 17+000 TO 18+000

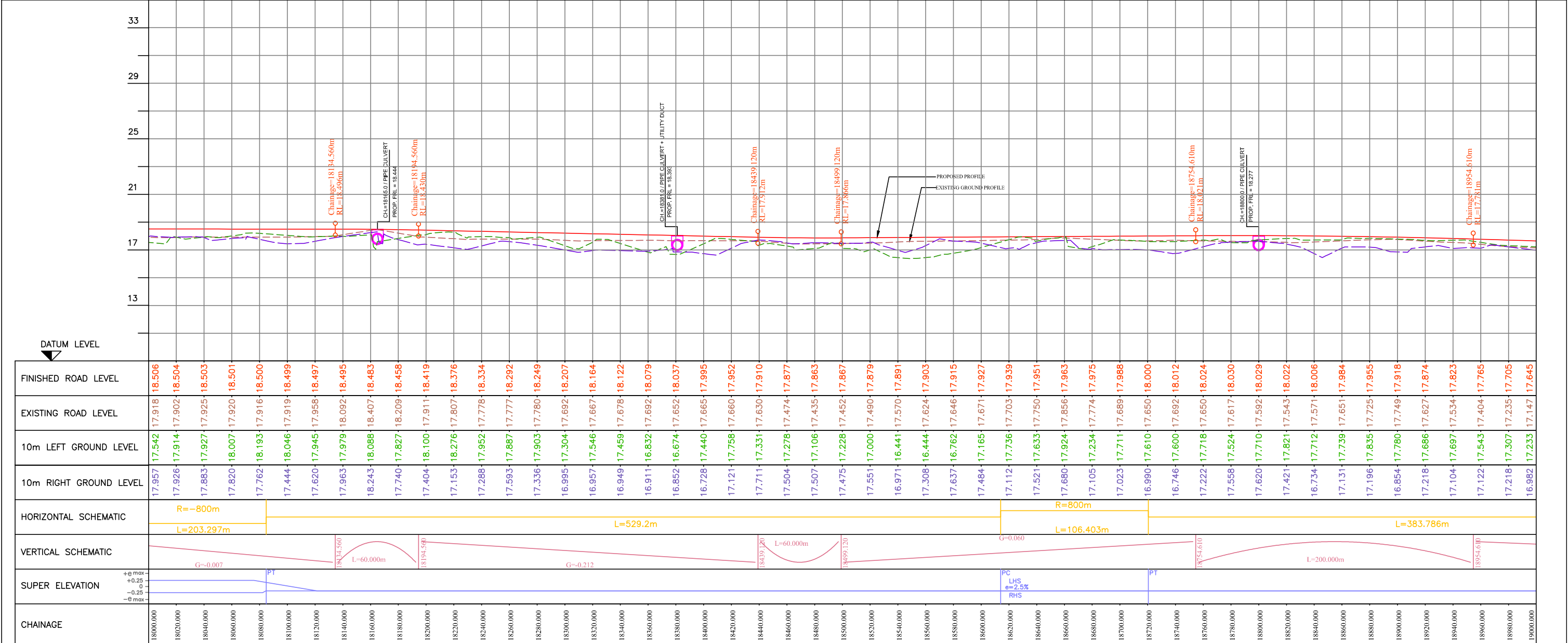
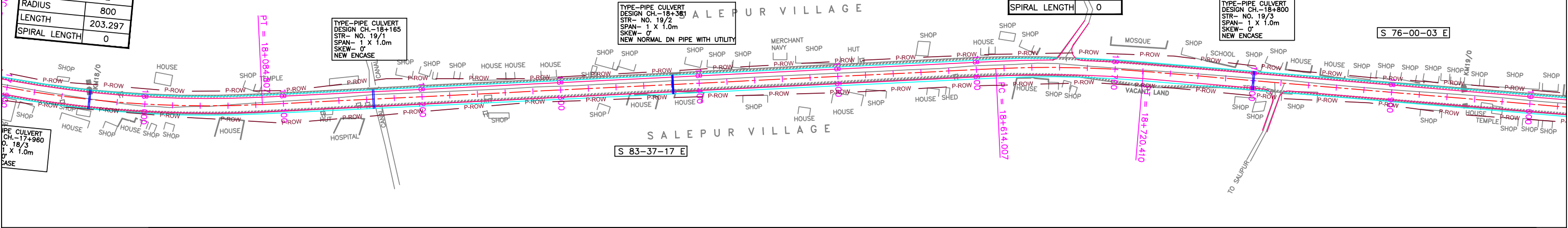
DWG. NUMBER : 73466/LASA/HIGHWAYS/PP- 18 REV. R1

← JAGATPUR

NISHCHINTAKOILI →

CURVE NO.	58
DELTA	14-33-36
PI	N 2264978.551
	E 405045.457
CIRCULAR CURVE	
RADIUS	800
LENGTH	203.297
SPIRAL LENGTH	0

CURVE NO.	59
DELTA	7-37-14
PI	N 2264902.484
	E 405725.898
CIRCULAR CURVE	
RADIUS	800
LENGTH	106.403
SPIRAL LENGTH	0



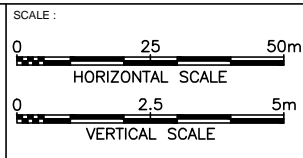
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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DESIGN REVIEW CONSULTANT :  
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 B-1, E-27, II<sup>nd</sup> FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
**KM 18+000 TO 19+000**

DWG. NUMBER : 73466/LASA/HIGHWAYS/PP- 19

REV. R1

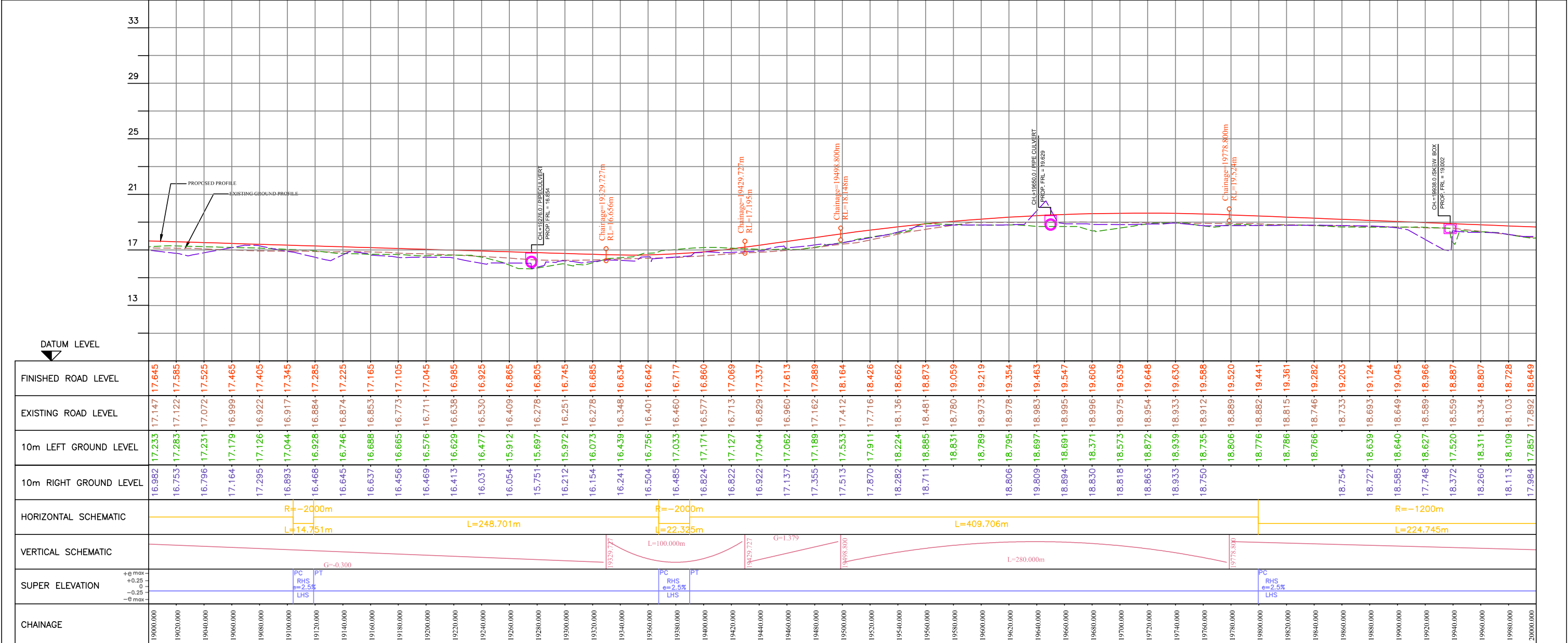
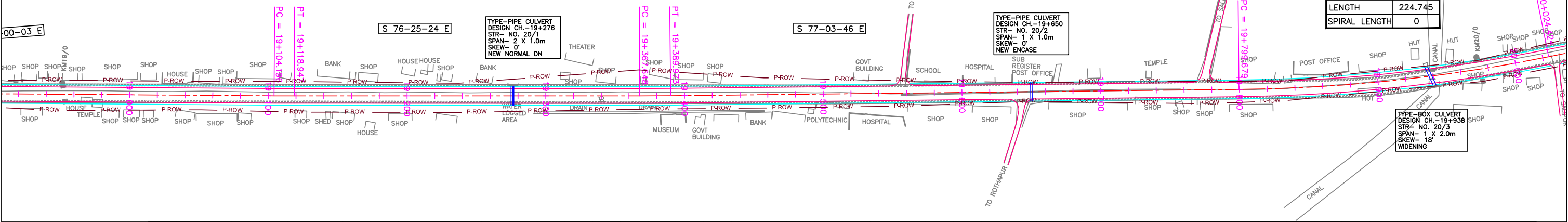
← JAGATPUR

NISHCHINTAKOILI →

CURVE NO.	60
DELTA	0-25-21
PI	N 2264794.969 E 406157.139
CIRCULAR CURVE	
RADIUS	2000
LENGTH	14.75
SPIRAL LENGTH	0

CURVE NO.	61
DELTA	0-38-22
PI	N 2264732.236 E 406416.911
CIRCULAR CURVE	
RADIUS	2000
LENGTH	22.324
SPIRAL LENGTH	0

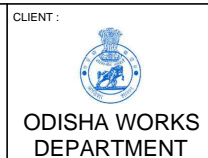
CURVE NO.	62
DELTA	10-43-51
PI	N 2264612.779 E 406936.938
CIRCULAR CURVE	
RADIUS	1200
LENGTH	224.745
SPIRAL LENGTH	0



R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:

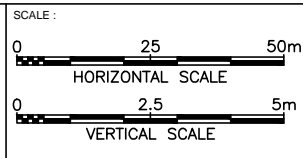
DPR CONSULTANT :  
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 E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
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DESIGN REVIEW CONSULTANT :  
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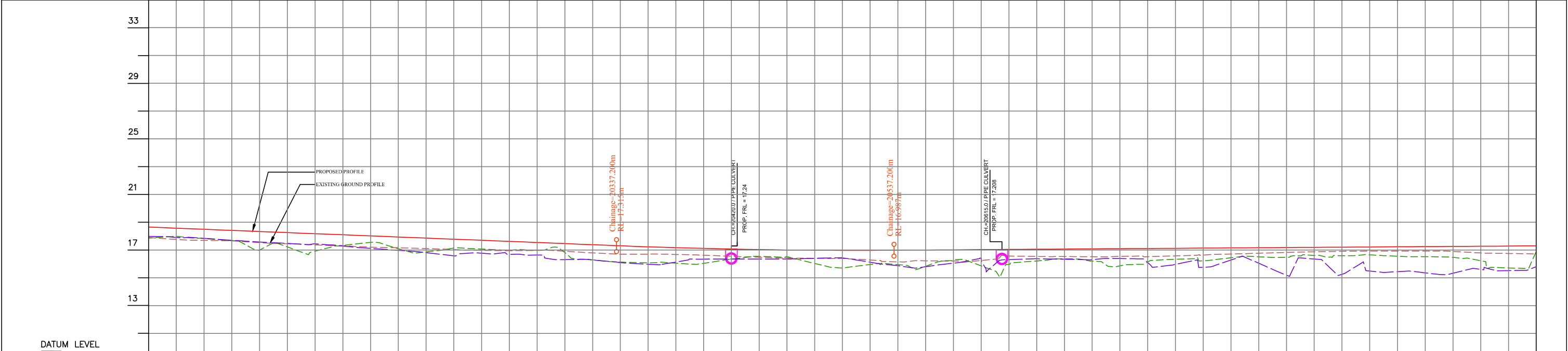
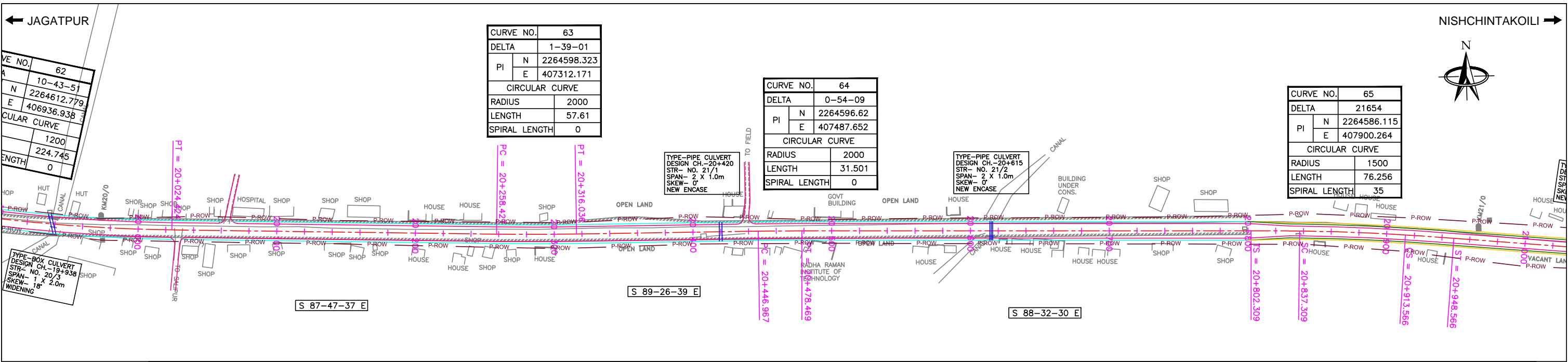
CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



DRAWING TITLE :  
**PLAN & PROFILE**  
**KM 19+000 TO 20+000**

DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-20 REV. R1

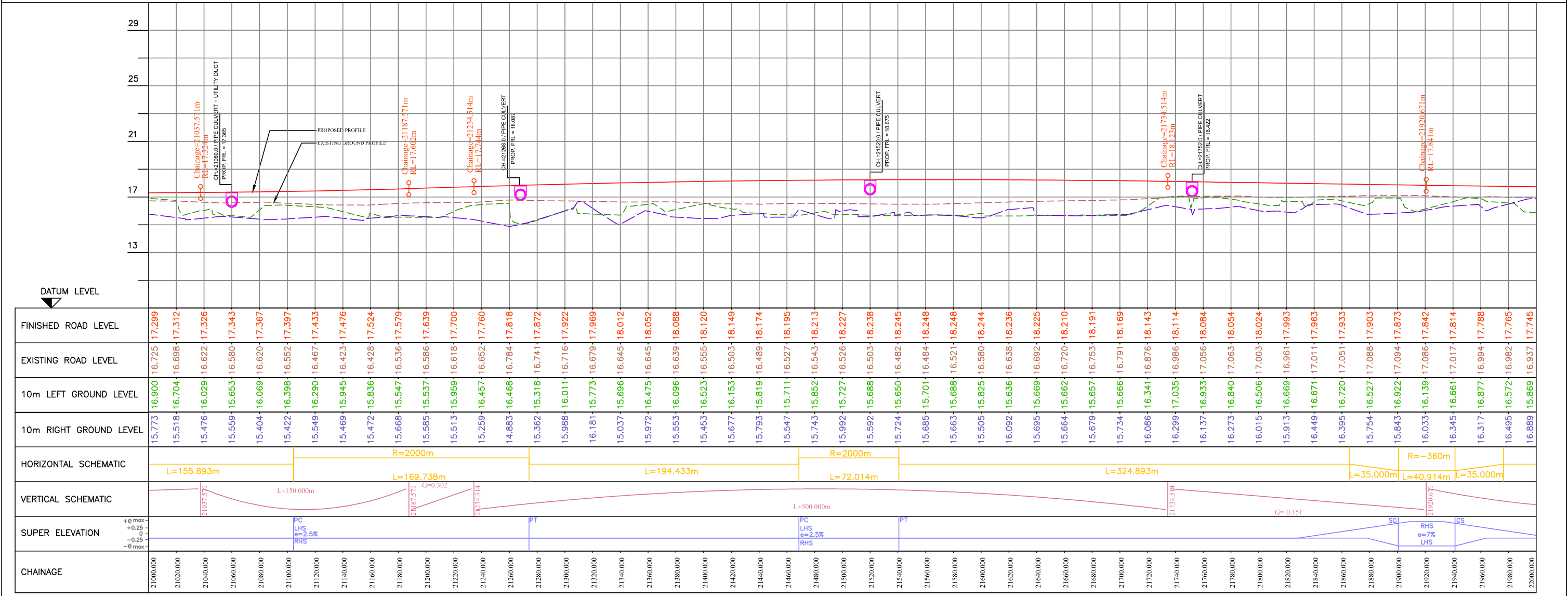
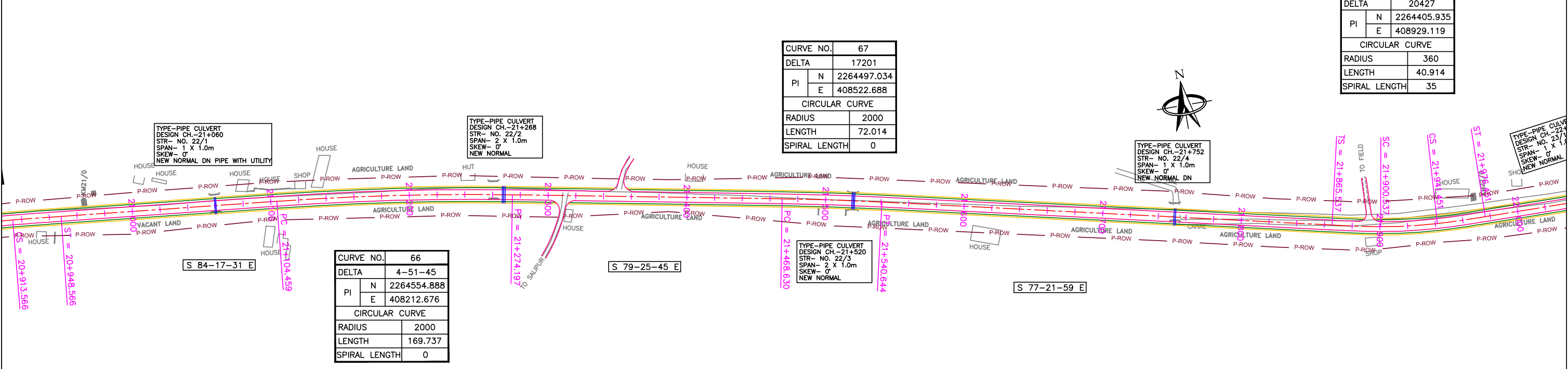


FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
18.649	17.892	17.857	17.984
18.570	17.761	17.906	17.906
18.491	17.693	17.826	17.841
18.412	17.659	17.663	17.696
18.333	17.532	17.593	17.578
18.253	17.453	17.222	17.473
18.174	17.368	16.917	17.445
18.095	17.304	17.329	17.289
18.016	17.207	17.550	17.114
17.937	17.162	17.093	16.977
17.858	17.101	16.862	16.811
17.778	17.029	17.136	16.577
17.699	16.980	17.070	16.772
17.620	16.951	16.982	16.684
17.541	16.975	16.985	16.638
17.462	16.913	16.812	16.308
17.383	16.788	16.294	16.283
17.304	16.701	16.131	16.083
17.231	16.704	16.070	15.973
17.167	16.679	16.048	16.132
17.112	16.625	16.045	16.344
17.066	16.547	16.340	16.355
17.030	16.484	16.537	16.351
17.003	16.422	16.515	16.348
16.986	16.401	16.031	16.401
16.977	16.388	15.705	16.436
16.978	16.283	15.956	16.123
16.988	16.146	15.947	15.870
17.002	16.224	15.828	15.797
17.015	16.206	16.269	16.052
17.029	16.248	15.858	16.422
17.042	16.569	15.972	16.307
17.056	16.536	16.212	16.370
17.069	16.529	16.362	16.336
17.083	16.514	16.202	16.310
17.096	16.541	15.857	16.386
17.110	16.519	16.130	16.101
17.123	16.577	16.335	15.964
17.137	16.638	16.223	15.756
17.150	16.711	16.441	16.280
17.161	16.788	16.511	16.041
17.177	16.830	16.471	15.178
17.191	16.871	16.607	16.352
17.204	16.907	16.594	15.252
17.218	16.926	16.652	15.485
17.231	16.928	16.550	15.441
17.245	16.926	16.515	15.355
17.258	16.896	16.465	15.327
17.272	16.790	16.230	15.604
17.285	16.751	15.709	15.515
17.299	16.725	16.900	15.773

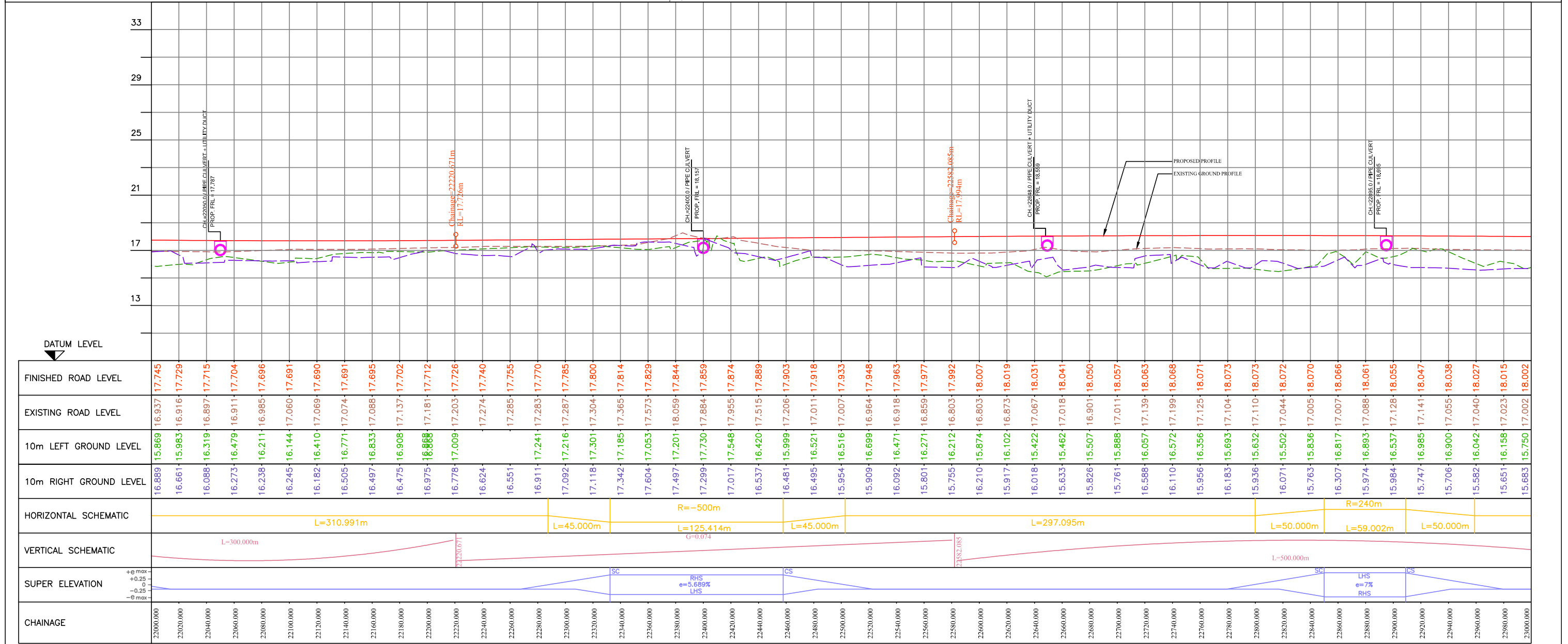
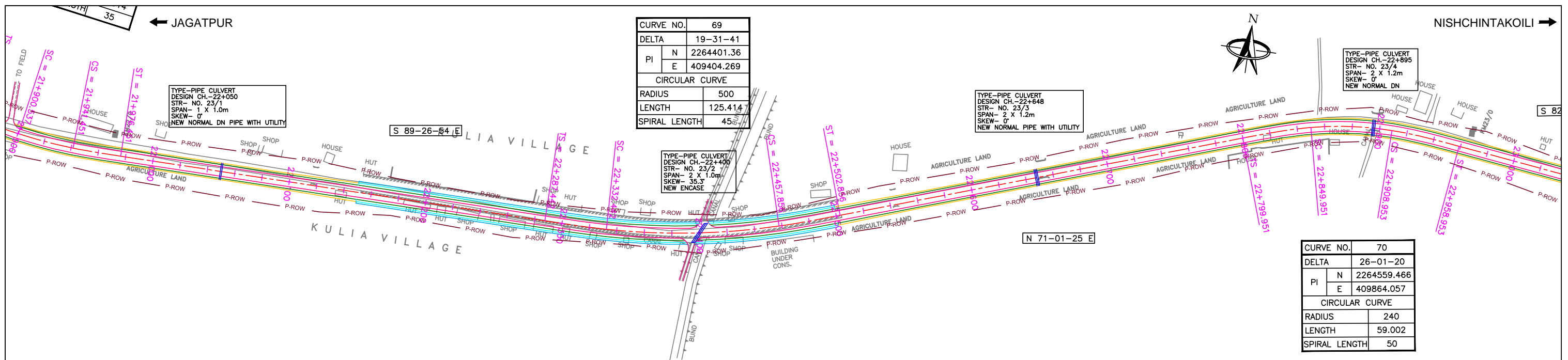
<b>REVISIONS</b> R1 AUG. 2015 SECOND REVISION LASA VINAY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO (TL) R0 FEB. 2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R MISHRA (EE) N.K PRADHAN (CE) JUNE 2008 ORIGINAL CEG						<b>DPR CONSULTANT :</b> <b>CEG CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com						<b>DESIGN REVIEW CONSULTANT :</b> <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044						<b>CLIENT :</b> <b>ODISHA WORKS DEPARTMENT</b>						<b>PROJECT :</b> WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1						<b>SCALE :</b> HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5						<b>DRAWING TITLE :</b> <b>PLAN &amp; PROFILE</b> <b>KM 20+000 TO 21+000</b>						<b>DWG. NUMBER :</b> 73466/LASA/HIGHWAYS/PP-21						<b>REV. R1</b>					
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JAGATPUR ←

→ NISHCHINTAKOILI



R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	DPR CONSULTANT :	CONSULTING ENGINEERS GROUP LTD.	DESIGN REVIEW CONSULTANT :	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :
R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	C E G	E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17	LEA Associates South Asia Pvt. Ltd., India	ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1	0 25 50m HORIZONTAL SCALE 0 2.5 5m VERTICAL SCALE	PLAN & PROFILE KM 21+000 TO 22+000
-	JUNE 2008	ORIGINAL	CEG						Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegingdia.com	DELHI-110044				DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-22
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:							REV. R1



DPR CONSULTANT : <b>CEG CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com						DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044						CLIENT : <b>ODISHA WORKS DEPARTMENT</b>						PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1						SCALE : HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5						DRAWING TITLE : <b>PLAN &amp; PROFILE</b> KM 22+000 TO 23+000					
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)	R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)	NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:	DWG. NUMBER :	73466/LASA/HIGHWAYS/PP-23				REV.	R1					



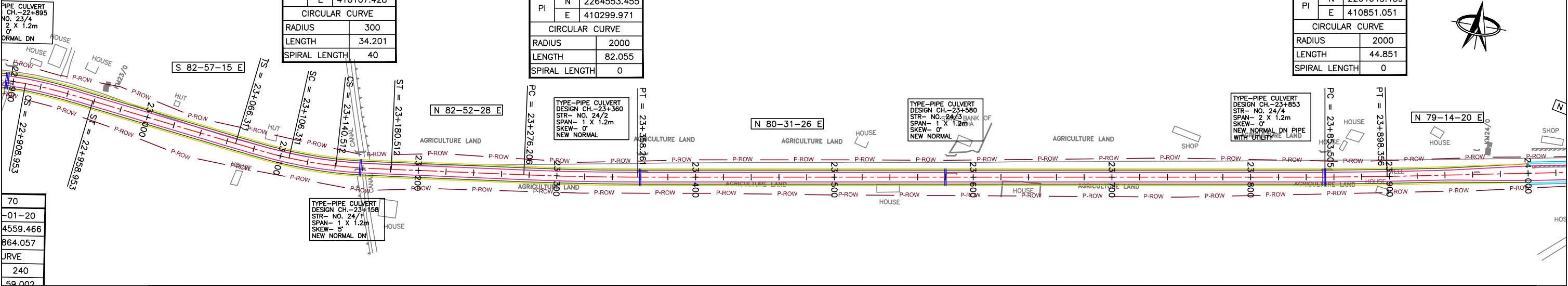
JAGATPUR ←

→ NISHCHINTAKOILI

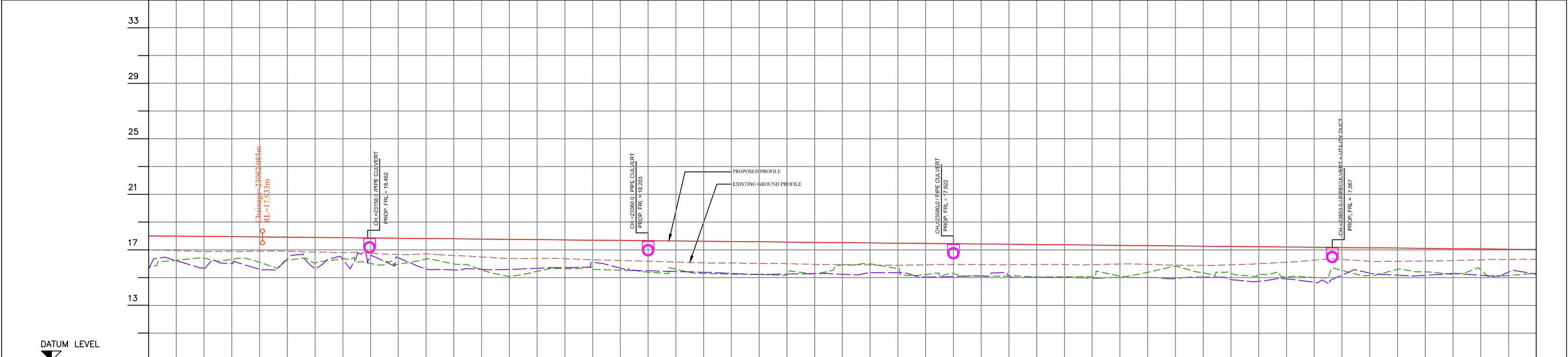
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DELTA	14-10-17
PI	N 2264529.386
	E 410107.428
CIRCULAR CURVE	
RADIUS	300
LENGTH	34.201
SPIRAL LENGTH	40

CURVE NO.	72
DELTA	37673
PI	N 2264553.455
	E 410299.971
CIRCULAR CURVE	
RADIUS	2000
LENGTH	82.055
SPIRAL LENGTH	0

CURVE NO.	73
DELTA	38734
PI	N 2264645.439
	E 410851.051
CIRCULAR CURVE	
RADIUS	2000
LENGTH	44.851
SPIRAL LENGTH	0



70
-01-20
4559.466
864.057
URVE
240
59.002



FINISHED ROAD LEVEL	18.002	17.987	17.971	17.954	17.935	17.915	17.895	17.876	17.856	17.836	17.817	17.797	17.777	17.757	17.738	17.718	17.698	17.679	17.659	17.639	17.620	17.600	17.580	17.560	17.541	17.521	17.501	17.482	17.462	17.442	17.422	17.403	17.383	17.363	17.344	17.324	17.304	17.285	17.265	17.245	17.225	17.206	17.186	17.166	17.147	17.127	17.107	17.088	17.068	17.048	17.028																																													
EXISTING ROAD LEVEL	17.002	16.948	16.875	16.900	16.903	16.895	16.837	16.810	16.754	16.668	16.701	16.595	16.488	16.370	16.376	16.359	16.281	16.231	16.177	16.120	16.060	16.056	16.018	16.007	15.952	15.926	15.906	15.887	15.923	15.944	15.935	15.928	15.928	15.945	15.938	15.929	15.929	15.953	15.953	15.981	15.979	15.988	16.006	16.015	16.037	16.071	16.107	16.147	16.183	16.224	16.263	16.307	16.351	16.397	16.444																																									
10m LEFT GROUND LEVEL	15.750	16.244	16.411	16.322	16.100	16.249	16.047	16.343	16.013	15.967	16.334	15.989	15.569	15.089	15.452	15.648	15.595	15.529	15.395	15.601	15.300	15.245	15.221	15.274	15.291	15.915	15.993	15.642	15.230	15.288	15.130	15.935	15.110	15.928	15.108	15.380	15.380	15.834	15.358	15.879	15.265	15.303	15.924	15.245	15.225	15.066	16.107	17.206	17.186	17.166	17.147	17.127	17.107	17.088	17.068	17.048	17.028																																							
10m RIGHT GROUND LEVEL	15.683	16.221	16.411	16.322	16.100	16.249	16.047	16.343	16.013	15.967	16.334	15.989	15.569	15.089	15.452	15.648	15.595	15.529	15.395	15.601	15.300	15.245	15.221	15.274	15.291	15.915	15.993	15.642	15.230	15.288	15.130	15.935	15.110	15.928	15.108	15.380	15.380	15.834	15.358	15.879	15.265	15.303	15.924	15.245	15.225	15.066	16.107	17.206	17.186	17.166	17.147	17.127	17.107	17.088	17.068	17.048	17.028																																							
HORIZONTAL SCHEMATIC	L=107.358m		L=40.000m		L=34.201m		L=40.000m		L=95.694m										L=82.055m										L=495.244m										L=2000m		L=44.851m		L=183.297m																																																					
VERTICAL SCHEMATIC	G=-0.099																																																																																															
SUPER ELEVATION	RHS e=6.259%																								RHS e=2.5%																								RHS e=2.5%																																															
CHAINAGE	23000.000	23020.000	23040.000	23060.000	23080.000	23100.000	23120.000	23140.000	23160.000	23180.000	23200.000	23220.000	23240.000	23260.000	23280.000	23300.000	23320.000	23340.000	23360.000	23380.000	23400.000	23420.000	23440.000	23460.000	23480.000	23500.000	23520.000	23540.000	23560.000	23580.000	23600.000	23620.000	23640.000	23660.000	23680.000	23700.000	23720.000	23740.000	23760.000	23780.000	23800.000	23820.000	23840.000	23860.000	23880.000	23900.000	23920.000	23940.000	23960.000	23980.000	24000.000																																													

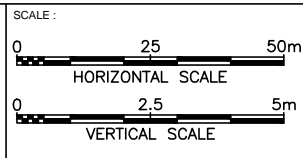
R1	AUG. 2015	SECOND REVISION	LASA	VINAY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO (TL)
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-	JUNE 2008	ORIGINAL	CEG				
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DPR CONSULTANT :  
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DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1



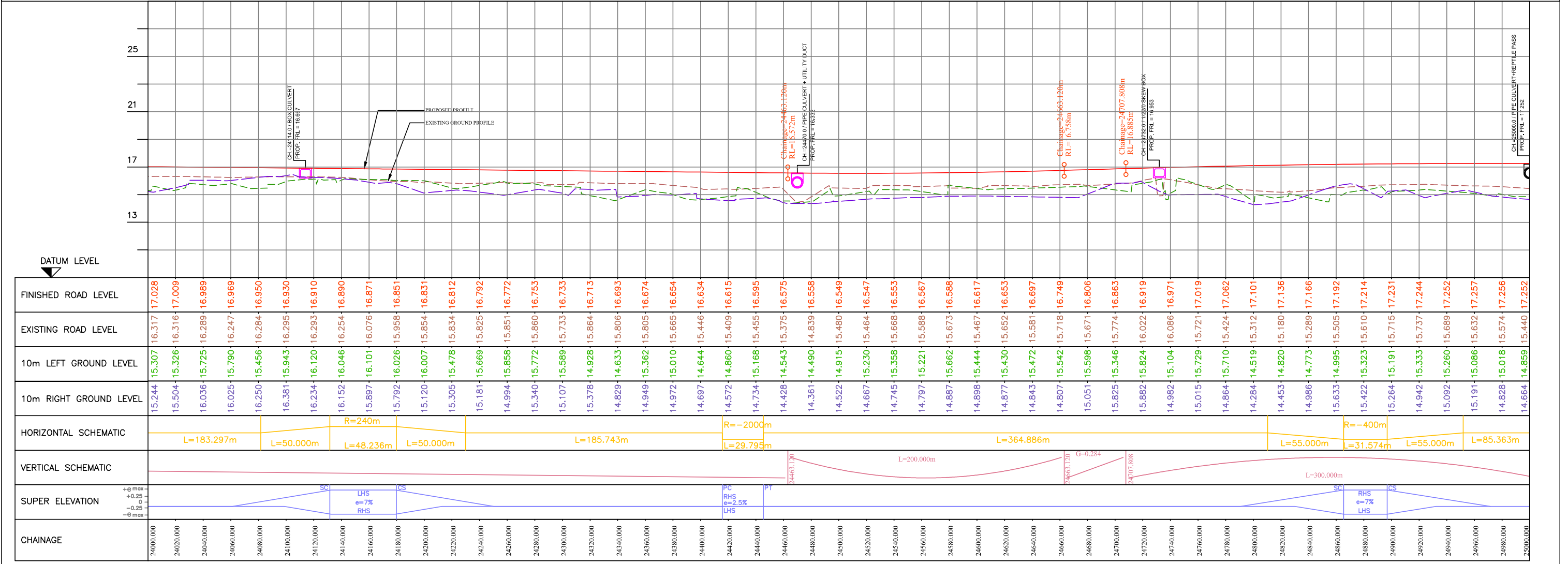
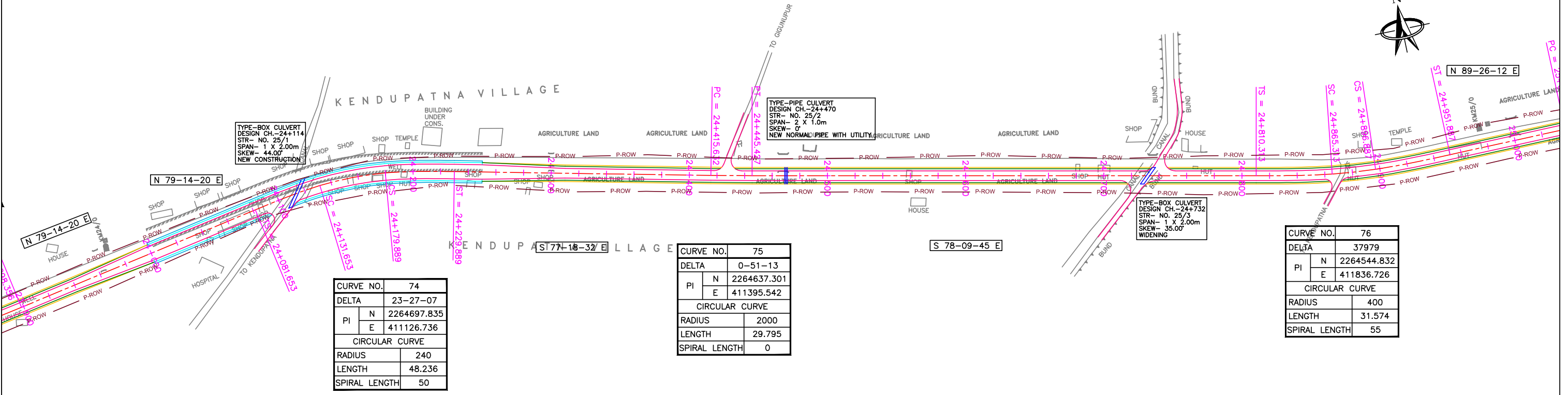
DRAWING TITLE :  
**PLAN & PROFILE**  
 KM 23+000 TO 24+000

DWG. NUMBER : 73466/LASA/HIGHWAYS/PP-24

REV. R1

← JAGATPUR

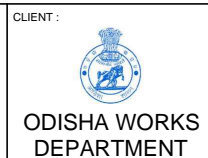
NISHCHINTAKOILI →



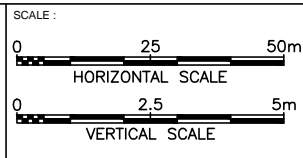
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R0	FEB. 2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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 B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044



CLIENT :  
 PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 (BALANCE WORK) PACKAGE - P04A-1**



DRAWING TITLE :  
**PLAN & PROFILE**  
**KM 24+000 TO 25+000**

DWG. NUMBER : **73466/LASA/HIGHWAYS/PP-25** REV. R1

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3	GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE OVER SUKHABHADRA RIVER AT km 10+545	73466\LASA\GAD\MNBR-02	01	04
4	GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE OVER KNALIAMUHAN POLO AT km 15+900	73466\LASA\GAD\MNBR-03	01	05
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R1	AUG. 2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL	DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD.</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com	DESIGN REVIEW CONSULTANT :  LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>	PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)	SCALE : AS SHOWN	DRAWING TITLE : TABLE OF CONTENT	
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE							DWG. NUMBER :
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:							

(A) GENERAL

- I. The design of bridges & culverts are in accordance with the IRC codes, specifications, other relevant IS codes & standards of M.O.R.T & H
- II. All dimensions are in mm , levels are in metre & chainages are in kilometer. Only written dimensions shall be followed. No dimensions shall be scaled.
- III. The following loads have been considered in the design: –
  - a. One lane of IRC class 70R or one lane of IRC class A, or two lanes of IRC class A, on carriageway, whichever is critical.
  - b. Footpath load of 5kN/sqm for superstructure having footpaths has been considered in design.
  - c. Wearing coat load of 2.0kn/m<sup>2</sup>. has been considered in design.
- IV. The designs are applicable for "severe" conditions of exposure.
- V. Wearing coat shall be 65mm thick comprising of 2 layers of 20mm each thick asphaltic concrete and one layer of 25mm thick mastic asphalt.

(B) MATERIALS SPECIFICATIONS

Concrete

- I. Concrete shall be design mix and have a minimum 28 days characteristic strength as given below on 150mm cubes.

<u>STRUCTURAL ELEMENT</u>	<u>GRADE OF CONCRETE</u>
---------------------------	--------------------------

- |                            |       |
|----------------------------|-------|
| a. RCC Foundation          | – M20 |
| b. RCC Substructure        | – M20 |
| c. RCC Pier / Abutment Cap | – M25 |
| d. RCC Dirt Wall           | – M25 |
| e. RCC Approach Slab       | – M30 |
| f. RCC Superstructure      | – M30 |
| g. RCC Crash Barrier       | – M40 |
| h. RCC Return Wall         | – M20 |
| i. PCC Leveling Course     | – M15 |
| j. RCC Parapet             | – M15 |
| k. RCC Box                 | – M20 |

- II. Portland Slag Cement conforming to IS:455 and having more than 50% slag shall be used all concrete work up to grade M35  
Ordinary Portland Cement,53 Grade conforming to IS:12269 shall be used for High Performance concrete work. for grade M40 and M60
- III. To improve workability of concrete and cement grout, admixtures conforming to IS:6925 and IS:9103 may be permitted subject to satisfactory proven use. Admixtures generating hydrogen, nitrogen, chlorides etc. should not be used.
- IV. Minimum cement content & maximum water cement ratio in concrete shall be as per table 5 of IRC:21–2000 for "severe conditions of Exposure".
- V. Nominal maximum size of aggregate to be used in RCC and PSC work shall be as per Technical specification.
- VI. Clear cover to main reinforcement shall be as follows:–
  - a) Superstructure – 50mm
  - b) Box type structures – 75mm
  - c) Piers /Abutment structure – 75mm
  - d) Abutment caps, Pier cap – 50mm
  - e) Foundation – 75mm
  - f) Retaining walls (earth face) – 75mm
  - g) Railing & Crash Barrier – 40mm
- VII. Suitable surface coating for concrete shall be used in the splash zone for protection against corrosion.

Water

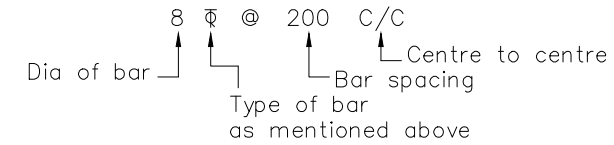
- I. Water to be used in concreting, grouting and curing shall conform to clause 302.4 of IRC:21–2000.

Reinforcement

- I. All reinforcement shall be of grade Fe 500 confirming to IS:1786.

- II. Notation of reinforcement bar shall be as follows:–

Example:–



Φ represent Grade – S : 415 Grade Bar

∅ represent Grade – S : 240 Grade Bar

- III. spacing given for all reinforcement is perpendicular to bars unless otherwise shown on drawings.
- IV. Steel spacer bars shall be provided between adjacent layers of parallel reinforcement and spaced at not more than 60 x smaller bar dia. The diameter of the spacer bar shall be at least 25mm but not less than the maximum dia of the parallel reinforcements.
- V. Laps in reinforcement bars shall be avoided as far as possible. Laps may be provided ,if unavoidable. However,in such cases:
  - (a) minimum lap length of reinforcement shall conform to table 12 & clause 304.6.6 of IRC :21–2000
  - (b) not more than 50% of reinforcement bars shall be lapped at any one section.
  - (c) for closely spaced bars lapping may be avoided by providing suitable type of mechanical splicing.
- VI. Welding of reinforcement bars shall not be permitted.
- VII. All structural steel shall conform to IS : 2062,Grade B, Fabrication shall conform to IRC:24.

Expansion Joints

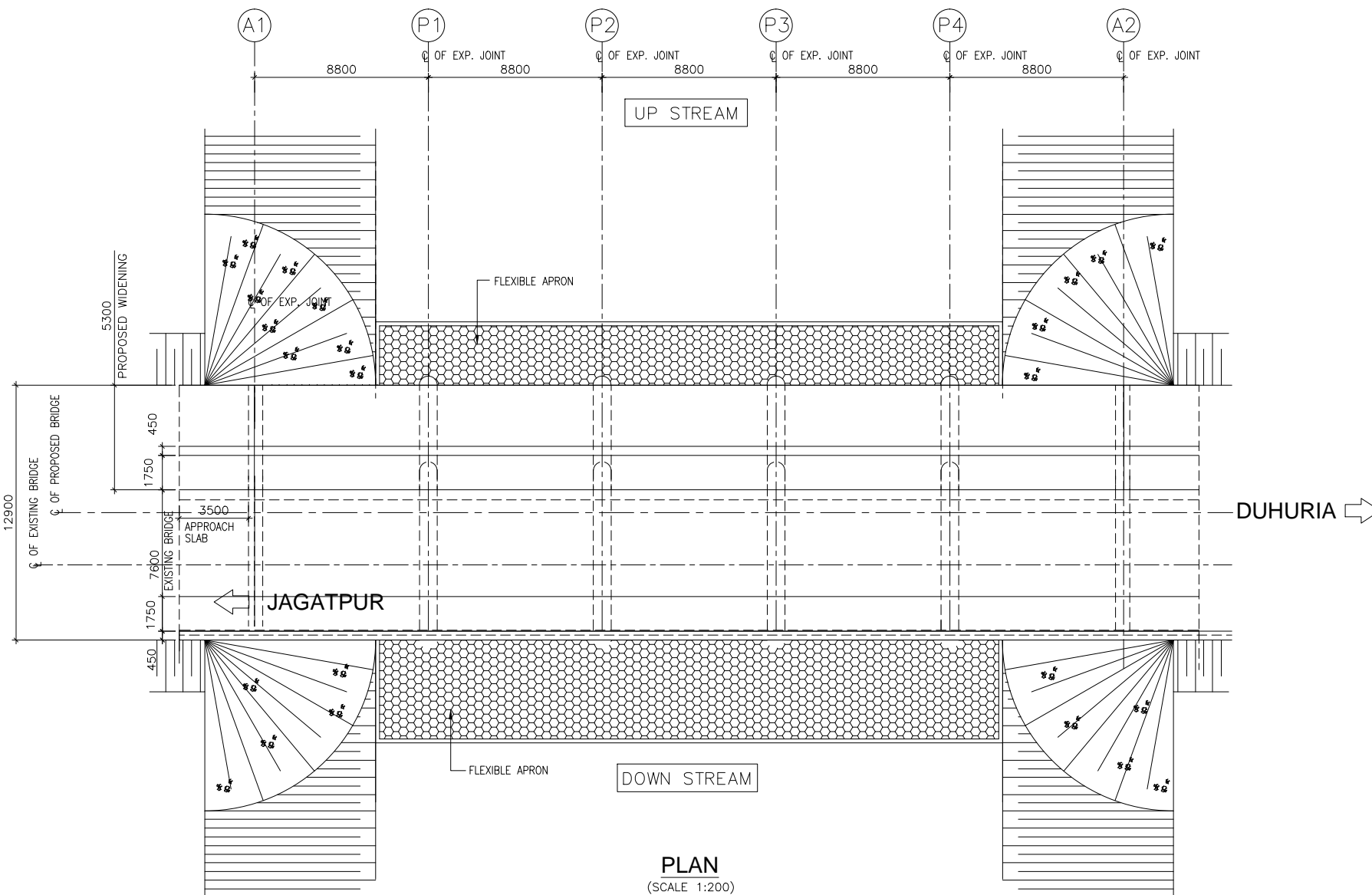
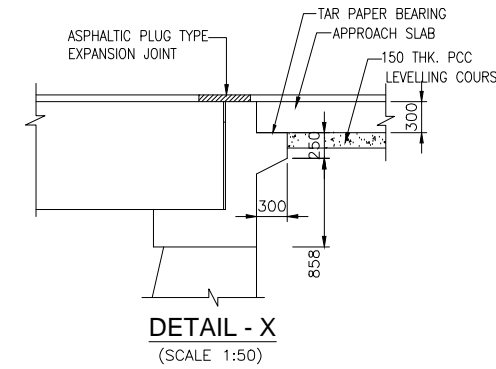
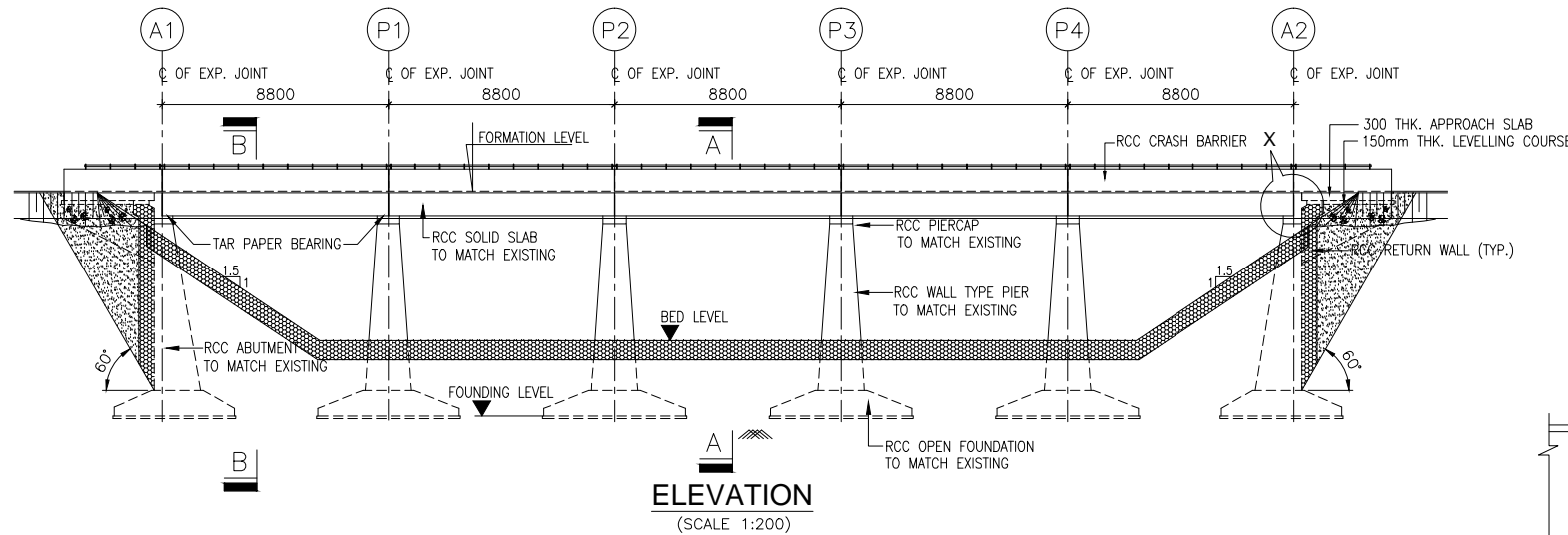
- I. The expansion joints must be robust, durable, water tight and replaceable. It must be provided over the full width of superstructure including kerb and footpath following the profile of the same (where relevant). Expansion joints shall be obtained only from approved manufacturers and should be of proven type. Details of the expansion joint shall be approved by the site engineer before commencement of construction. Site fabricated expansion joints shall be prohibited.
- II. Fabricated steel parts shall be positioned accurately before concreting the portion of deck slab.
- III. Presence of manufacturer's representative at the time of positioning of embedded parts and installation of expansion joints is mandatory.
- IV. For the RCC type structures, asphalt plug type expansion joint shall be provided in accordance with M.O.R.T & H specification and shall be procured from the manufacturers as approved by NHAI.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
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-	JUNE 2008	ORIGINAL	CEG				

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DWG. NUMBER : <b>LASA\73466\GN-01</b>					REV. <b>R1</b>

← JAGATPUR

DUHURIA →



**WIDENING METHODOLOGY:**

**FOR ABUTMENT:**

- DISMANTLE THE PARAPET/RAILING ON TOP OF WING WALL OF THE SIDE WHICH IS PROPOSED FOR WIDENING.
- DISMANTLE TOP 700mm MINIMUM PORTION OF THE EXISTING WING WALLS.
- EXCAVATE THE SIDE OF ABUTMENT/WING WALL UP TO THE FOUNDING DEPTH TO EXPOSE THE FOUNDATION FACE ON WIDENED SIDE.
- MAKE HOLES OF 32# STAGGERED AT THE INTERVAL OF 400mm BOTH HORIZONTALLY AND VERTICALLY IN THE OUTER FACE OF ABUTMENT AND FOUNDATION TO RECEIVE 25# BAR. HACK & ROUGHEN THE REMAINING SURFACE. FIX THE 25# BAR IN HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR. CLEAN THE ENTIRE SURFACE AFTER ROUGHENING. THE SURFACE SHALL BE WETTED BEFORE WIDENING.
- THE ABUTMENT AND WING WALLS SHALL BE WIDENED TO THE REQUIRED WIDTH AS SHOWN UPTO THE SOFFIT OF THE ABUTMENT CAPS.

**FOR PIERS:**

- DEMOLISH THE EXISTING NOSING OF THE PIER UPTO THE TOP OF FOOTING ON WIDENING SIDE.
- EXCAVATE AND EXPOSE PIER FOUNDATION ON THE WIDENING SIDE.
- MAKE HOLES IN THE PROPOSED WIDENING FACE OF THE PIER & ITS FOUNDATION TO ACCOMMODATE 25# BAR ROUGHEN THE REMAINING SURFACE. FIX THE 25# BAR IN THE HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR.
- THE PIER & ITS FOOTING TOGETHER WITH NOSING SHALL BE EXTENDED/WIDENED TO THE REQUIRED WIDTH UPTO THE SOFFIT OF PIER CAP.

**FOR ABUTMENT/PIER CAP:**

- DISMANTLE 500mm WIDTH OF EXISTING ABUTMENT/PIER CAP.
- SURFACE OF EXISTING CONCRETE SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER CONCRETE IS CAST, THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET. THE REINFORCEMENT PROTRUDING FROM OLD CONCRETE SHALL BE CLEANED OF RUST, LOOSE MORTAR OR ANY OTHER CONTAMINATION BEFORE PLACING OF FRESH CONCRETE. OLD SURFACE SHALL BE THOROUGHLY CLEANED AND SOAKED WITH WATER.
- CLEAN & APPLY A COAT OF NEAT CEMENT SLURRY TO THE OLD EXPOSED REINF.
- PLACE THE REINFORCEMENT AS SHOWN AND TIE IT WITH EXISTING REINF.
- CAST THE WIDENED PORTION OF PIER/ABUTMENT CAP WITH CAMBER OF DECK SLAB.

**FOR APPROACH SLAB:**

- THE APPROACH SLAB SHALL BE COMPLETELY DISMANTLED AND COMPACTION BEHIND THE EXISTING ABUTMENT TO BE DONE BEFORE APPROACH SLAB CONSTRUCTION.
- LAY THE P.C.C FOR THE NEW APPROACH SLAB.
- PROVIDE THE REINFORCEMENT FOR THE NEW APPROACH SLAB.
- CAST THE APPROACH SLAB.

**FOR SUPERSTRUCTURE:**

- TWO SPANS SHALL BE COMPLETELY DISMANTLED AND CONSTRUCTED. THE IDENTIFICATION OF THE SPAN SHALL BE DONE DURING CONSTRUCTION STAGE.
- THE EXISTING WEARING COAT AND OVERLAY SHALL BE COMPLETELY REMOVED. ONLY 56mm THICK BITUMINIOUS WEARING COAT SHALL BE LAID.
- THE EXISTING EXPANSION JOINT SHALL BE COMPLETELY REMOVED AND REPLACED WITH 20mm THICK ASPHALTIC PLUG TYPE EXPANSION JOINT.

**FOR FLOOR PROTECTION:**

- DISMANTLE 500mm OR AS REQUIRED ACCORDING TO SITE CONDITION WIDTH OF EXISTING FLOOR PROTECTION.
- SURFACE OF EXISTING FLOOR SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER EXTENSION OF FLOOR. THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET.
- CAST THE THE NEW APRON AS PER DETAILS.

**NOTES:-**

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS & CHAINAGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHANGE.
- THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFIRM TO C=0, φ=30' & DENSITY=18 kN/m<sup>3</sup>.
- THE WEEP HOLES OF 100# SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC: 78.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS  
EARTH FACE = 75mm  
FOUNDATION = 75mm  
TOP SLAB = 40mm  
OUTER SURFACE = 50mm
- THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:  
(a) RCC FOUNDATION - M20  
(b) RCC SUBSTRUCTURE - M20  
(c) RCC PIER / ABUTMENT CAP - M25  
(d) RCC DIRT WALL - M25  
(e) RCC APPROACH SLAB - M30  
(f) RCC SUPERSTRUCTURE - M30  
(g) RCC CRASH BARRIER - M40  
(h) RCC RETURN WALL - M20  
(i) PCC LEVELLING COURSE - M15
- ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFIRMING TO IS:1786.
- THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
- THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
- THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 15 T/m<sup>2</sup>.
- THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.
- FLOOD GAUGE TO BE MARKED ON THE ABUTMENT.
- SIGN BOARD SHALL BE ERRECTED AT THE BRIDGE LOCATION WITH DETAILS OF THE BRIDGE AFTER CONSTRUCTION.
- ALL PCC LEVELLING COURSE SHALL BE 150mm THICK.

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

R1	AUG-2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12,MOJJI COLONY,MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginia.com

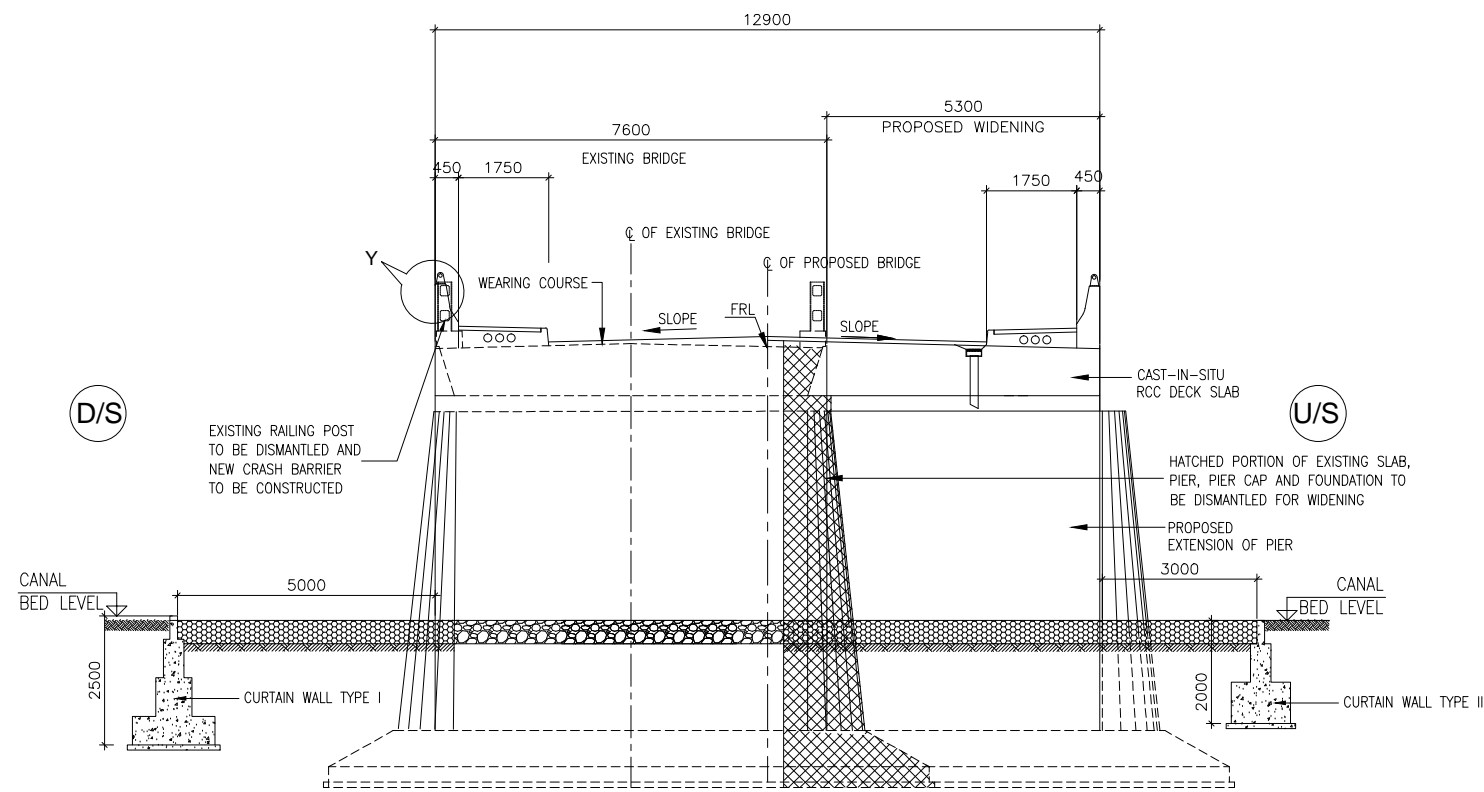
DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

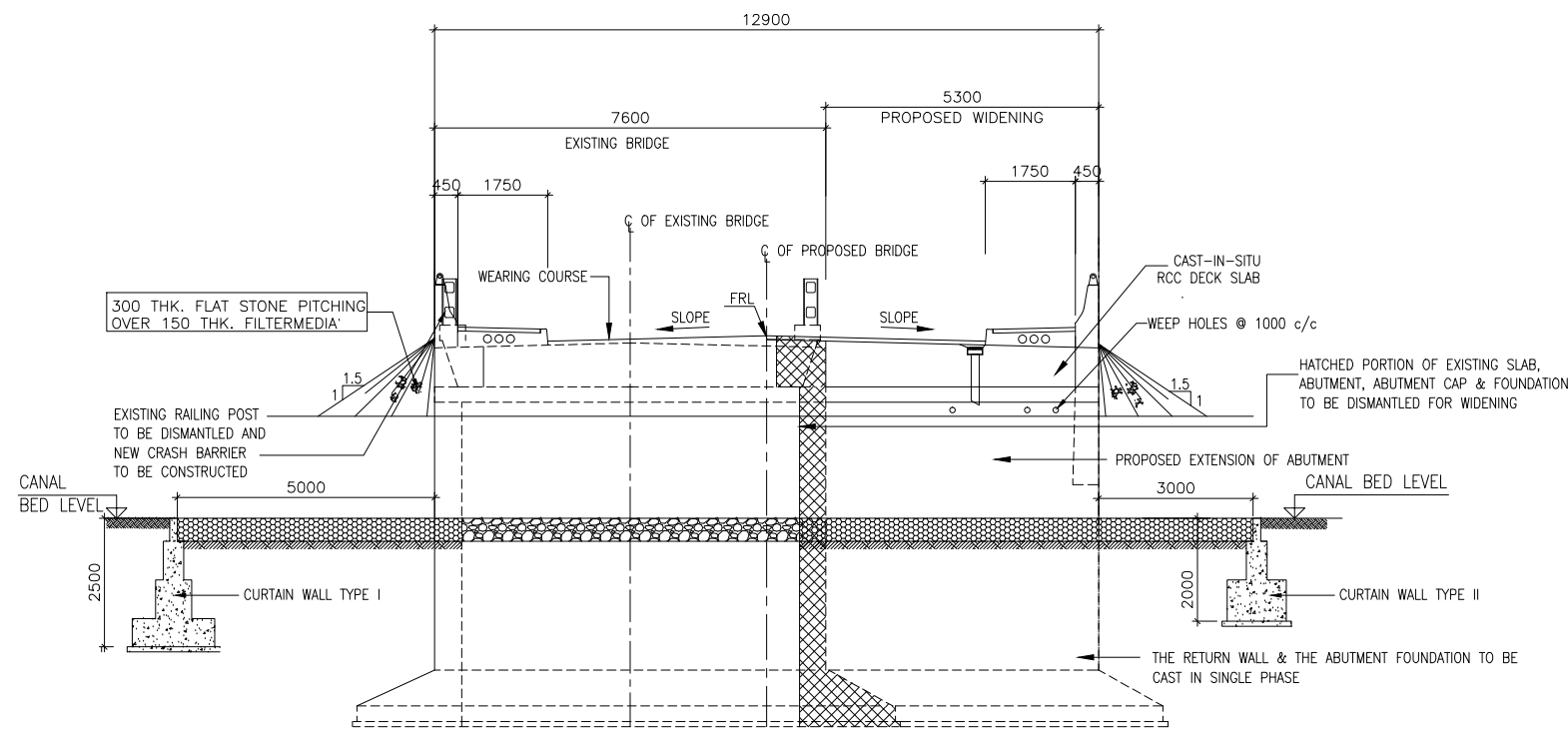
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
**AS SHOWN**

DRAWING TITLE : <b>GENERAL ARRANGEMENT OF DRAWING OF MINOR BRIDGE OVER KHARIA CANAL AT Km. 2+082</b>	
DWG. NUMBER : <b>73466\LASA\GADVMNBR-01</b>	REV : <b>R1</b>



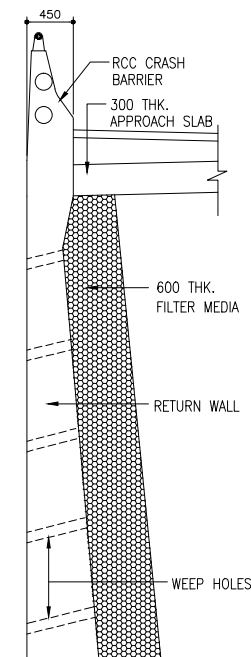
**SECTION A-A**  
(SCALE 1:100)



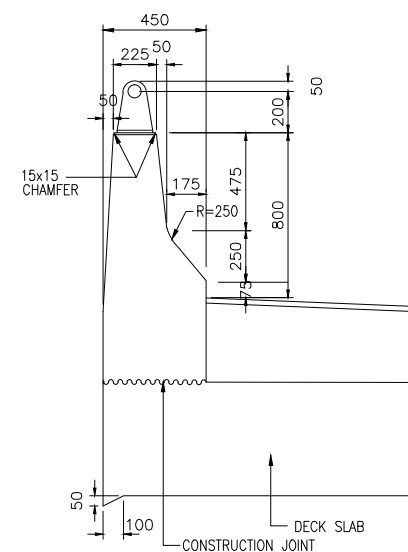
**SECTION B-B**  
(SCALE 1:100)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

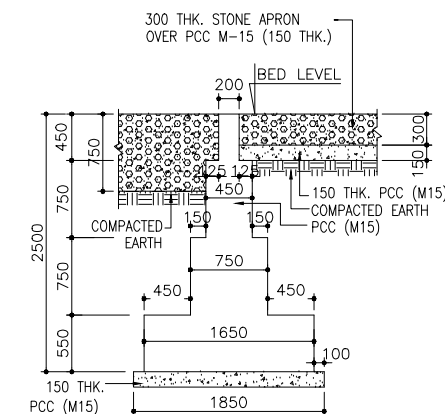
EXISTING BRIDGE DETAILS		
1	Existing Chainage	2/145
2	Proposed Chainage	2/082
3	Name of the nallah	Kharia Bridge
4	Year of construction	-
5	Type of bridge	High level Bridge
6	Existing span arrangement	5 x 8.8 m
7	Existing carriageway width	7.6 m
8	Thickness of superstructure	0.8 m
9	Type of foundation	Open foundation
10	Type of substructure	RCC wall type
11	Type of superstructure	RCC solid slab
12	Existing Formation Level	-
13	Final Formation Level	Follow Highway Plan & Profile
14	Bed Level	Follow Highway Plan & Profile
15	Distance of PCL w.r.t ECL	Follow Highway Plan & Profile



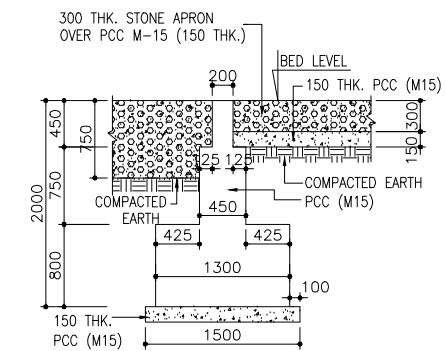
**DETAIL OF CANTILEVER RETURN WALL**  
(SCALE 1:50)



**DETAIL - Y**  
(SCALE 1:25)



**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - I**  
(SCALE 1:50)



**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - II**  
(SCALE 1:50)

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT PLAN AND PROFILE DRAWING OF HIGHWAY AND SHEET 1 OF 2 OF THIS DRAWING.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG-2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D.SARANGI	G.P.SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R.MISRA,EE	N.K.PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

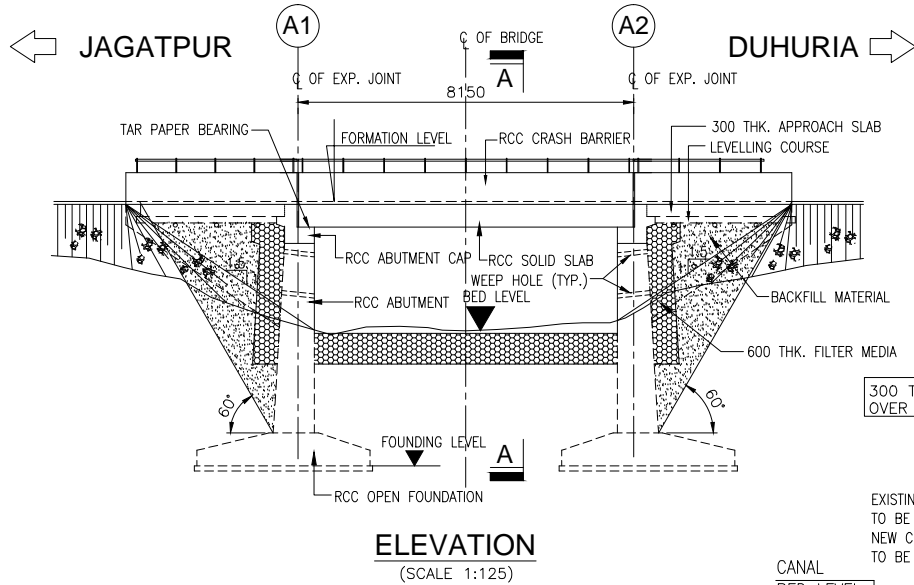
CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

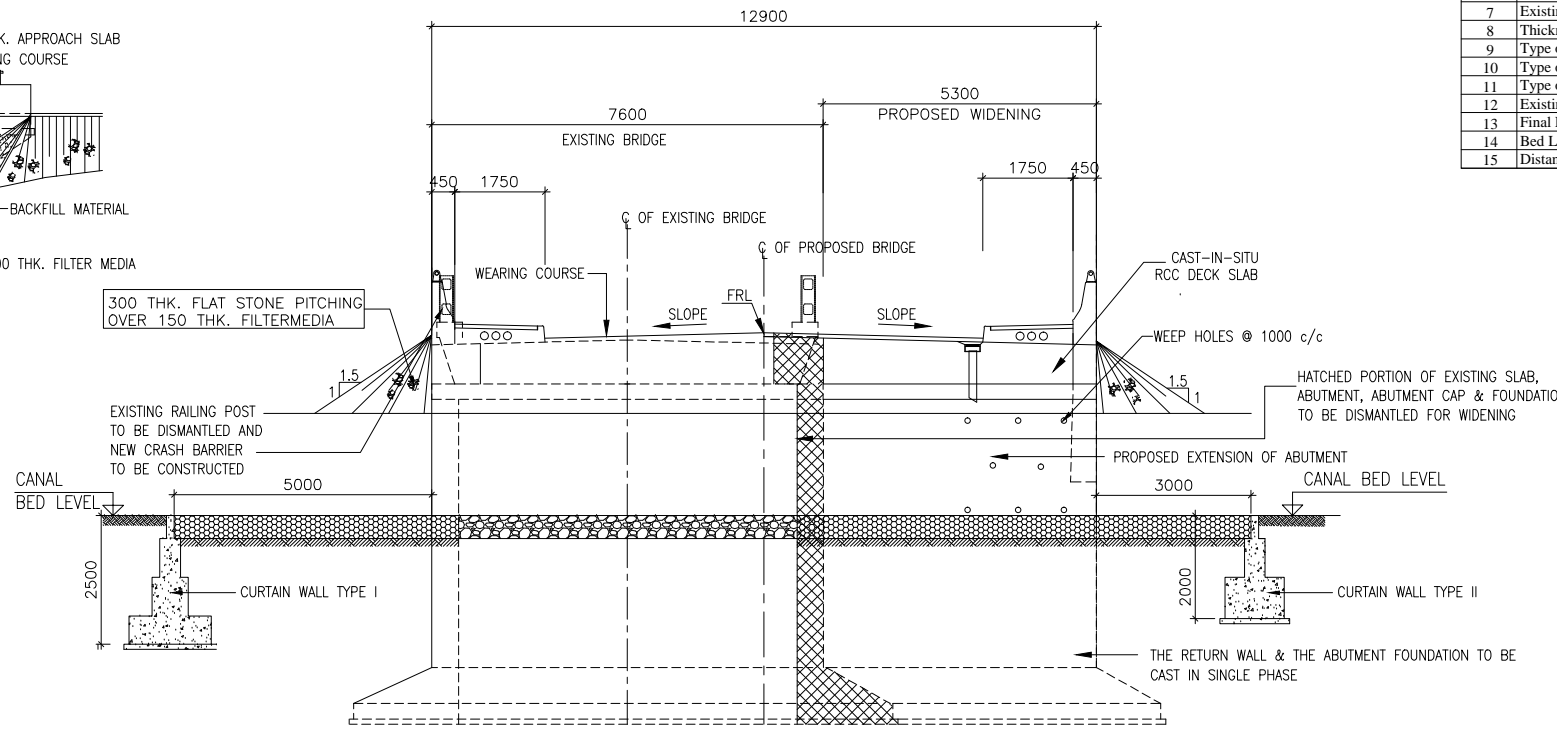
SCALE :  
AS SHOWN

DRAWING TITLE :  
**GENERAL ARRANGEMENT OF DRAWING OF MINOR BRIDGE OVER KHARIA CANAL AT Km. 2+082**

DWG. NUMBER : 73466LASA/GAD/MNBR-01 (SHEET 2 OF 2) REV R1



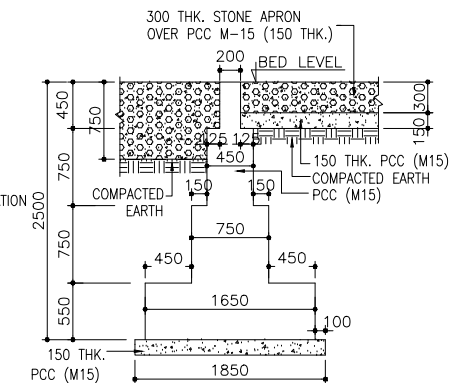
**ELEVATION**  
(SCALE 1:125)



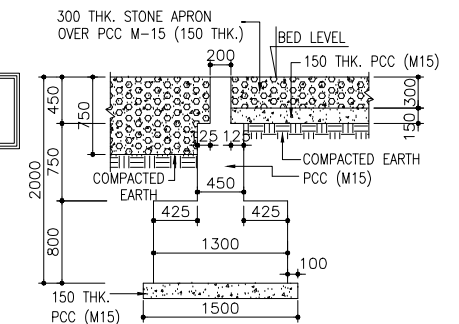
**SECTION A-A**  
(SCALE 1:100)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

EXISTING BRIDGE DETAILS		
1	Existing Chainage	15/900
2	Proposed Chainage	15/857
3	Name of the nallah	Naliamuhan Polo
4	Year of construction	-
5	Type of bridge	High level Bridge
6	Existing span arrangement	1 x 8.75 m
7	Existing carriageway width	7.6 m
8	Thickness of superstructure	0.6 m
9	Type of foundation	Open foundation
10	Type of substructure	PCC wall type
11	Type of superstructure	RCC solid slab
12	Existing Formation Level	Follow Highway Plan & Profile
13	Final Formation Level	Follow Highway Plan & Profile
14	Bed Level	Follow Highway Plan & Profile
15	Distance of PCL w.r.t ECL	Follow Highway Plan & Profile



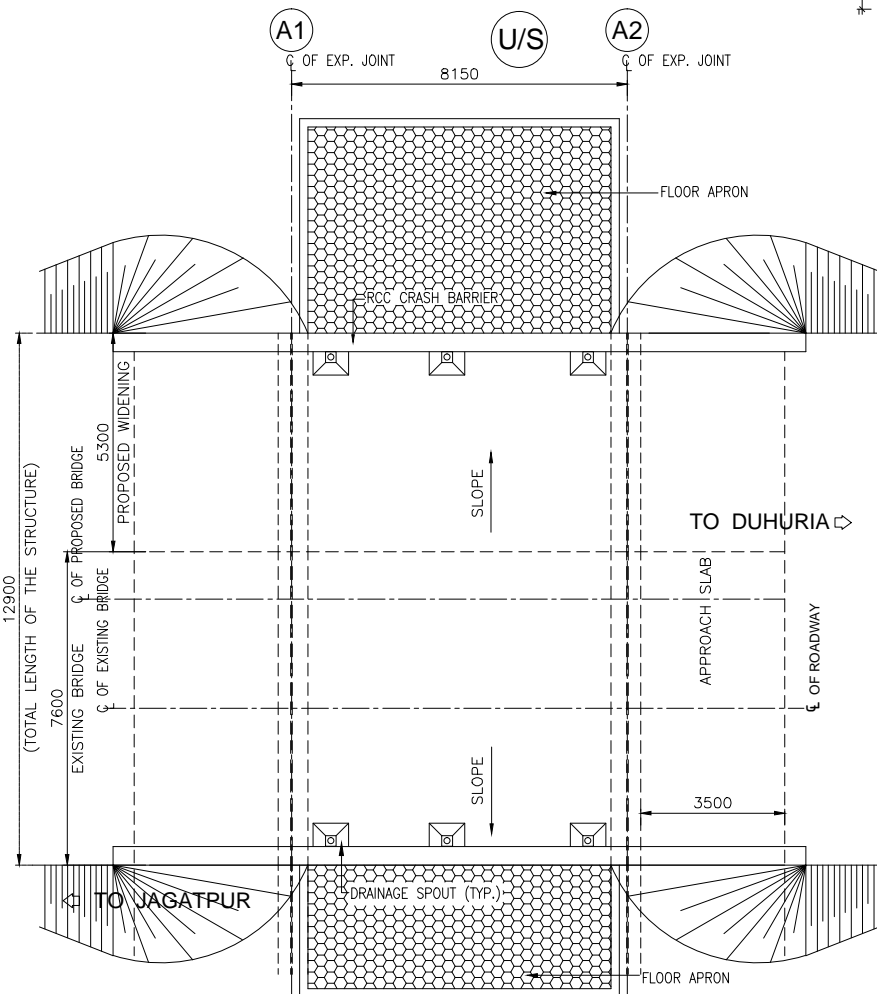
**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - I**  
(SCALE 1:50)



**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - II**  
(SCALE 1:50)

**NOTES:-**

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS & CHAINAGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHAINAGE.
- THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFORM TO C=0, φ=30° & DENSITY=18 kN/m<sup>3</sup>.
- THE WEEP HOLES OF 100# SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC: 78.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS  
EARTH FACE = 75mm  
FOUNDATION = 75mm  
TOP SLAB = 40mm  
OUTER SURFACE = 50mm
- THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:  
(a) RCC FOUNDATION - M20  
(b) RCC SUBSTRUCTURE - M20  
(c) RCC PIER / ABUTMENT CAP - M25  
(d) RCC DIRT WALL - M25  
(e) RCC APPROACH SLAB - M30  
(f) RCC SUPERSTRUCTURE - M30  
(g) RCC CRASH BARRIER - M40  
(h) RCC RETURN WALL - M20  
(i) PCC LEVELLING COURSE - M15
- ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFIRMING TO IS:1786.
- THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
- THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
- THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 15 T/m<sup>2</sup>.
- THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.
- ALL PCC LEVELLING COURSE SHALL BE 150mm THICK.



**PLAN**  
(SCALE 1:125)

**WIDENING METHODOLOGY:**

**FOR ABUTMENT:**

- DISMANTLE THE PARAPET/RAILING ON TOP OF WING WALL OF THE SIDE WHICH IS PROPOSED FOR WIDENING.
- DISMANTLE TOP 700mm MINIMUM PORTION OF THE EXISTING WING WALLS.
- EXCAVATE THE SIDE OF ABUTMENT/WING WALL UP TO THE FOUNDING DEPTH TO EXPOSE THE FOUNDATION FACE ON WIDENED SIDE.
- MAKE HOLES OF 32# STAGGERED AT THE INTERVAL OF 400mm BOTH HORIZONTALLY AND VERTICALLY IN THE OUTER FACE OF ABUTMENT AND FOUNDATION TO RECEIVE 25# BAR. HACK & ROUGHEN THE REMAINING SURFACE. FIX THE 25# BAR IN HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR. CLEAN THE ENTIRE SURFACE AFTER ROUGHENING. THE SURFACE SHALL BE WETTED BEFORE WIDENING.
- THE ABUTMENT AND WING WALLS SHALL BE WIDENED TO THE REQUIRED WIDTH AS SHOWN UP TO THE SOFFIT OF THE ABUTMENT CAPS.

**FOR PIERS:**

- DEMOLISH THE EXISTING NOSING OF THE PIER UP TO THE TOP OF FOOTING ON WIDENING SIDE.
- EXCAVATE AND EXPOSE PIER FOUNDATION ON THE WIDENING SIDE.
- MAKE HOLES IN THE PROPOSED WIDENING FACE OF THE PIER & ITS FOUNDATION TO ACCOMMODATE 25# BAR. ROUGHEN THE REMAINING SURFACE, FIX THE 25# BAR IN THE HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR.
- THE PIER & ITS FOOTING TOGETHER WITH NOSING SHALL BE EXTENDED/WIDENED TO THE REQUIRED WIDTH UP TO THE SOFFIT OF PIER CAP.

**FOR ABUTMENT/PIER CAP:**

- DISMANTLE 500mm WIDTH OF EXISTING ABUTMENT/PIER CAP.
- SURFACE OF EXISTING CONCRETE SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER CONCRETE IS CAST, THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET. THE REINFORCEMENT PROTRUDING FROM OLD CONCRETE SHALL BE CLEANED OF RUST, LOOSE MORTAR OR ANY OTHER CONTAMINATION BEFORE PLACING OF FRESH CONCRETE. OLD SURFACE SHALL BE THOROUGHLY CLEANED AND SOAKED WITH WATER.
- CLEAN & APPLY A COAT OF NEAT CEMENT SLURRY TO THE OLD EXPOSED REINF.
- PLACE THE REINFORCEMENT AS SHOWN AND TIE IT WITH EXISTING REINF.
- CAST THE WIDENED PORTION OF PIER/ABUTMENT CAP WITH CAMBER OF DECK SLAB.

**FOR APPROACH SLAB:**

- THE APPROACH SLAB SHALL BE COMPLETELY DISMANTLED AND COMPACTION BEHIND THE EXISTING ABUTMENT TO BE DONE BEFORE APPROACH SLAB CONSTRUCTION.
- LAY THE P.C.C FOR THE NEW APPROACH SLAB.
- PROVIDE THE REINFORCEMENT FOR THE NEW APPROACH SLAB.
- CAST THE APPROACH SLAB.

**FOR SUPERSTRUCTURE:**

- THE EXISTING WEARING COAT AND OVERLAY SHALL BE COMPLETELY REMOVED. ONLY 56mm THICK BITUMINIOUS WEARING COAT SHALL BE LAID.
- THE EXISTING EXPANSION JOINT SHALL BE COMPLETELY REMOVED AND REPLACED WITH 20mm THICK ASPHALTIC PLUG TYPE EXPANSION JOINT.

**FOR FLOOR PROTECTION:**

- DISMANTLE 500mm OR AS REQUIRED ACCORDING TO SITE CONDITION WIDTH OF EXISTING FLOOR PROTECTION.
- SURFACE OF EXISTING FLOOR SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER EXTENSION OF FLOOR, THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET.
- CAST THE THE NEW APRON AS PER DETAILS.

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG-2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12,MOJJI COLONY,MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cecindia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, 1Ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

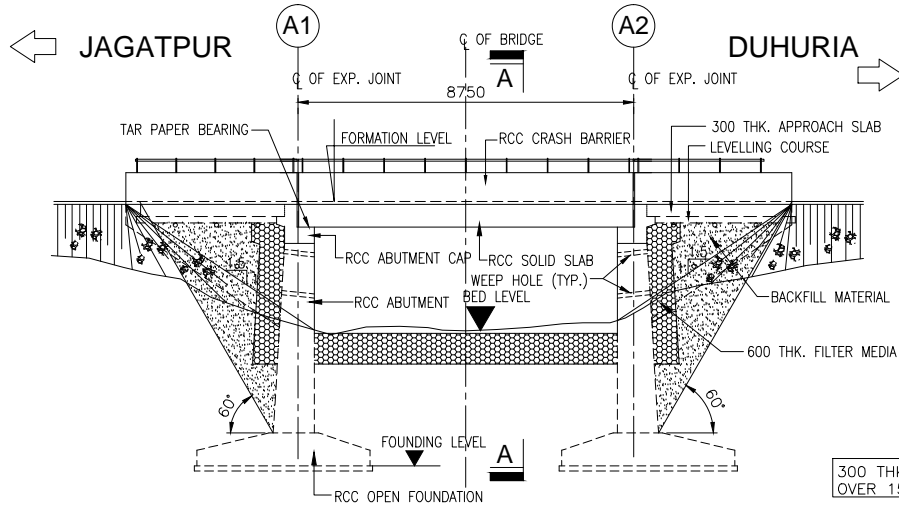
CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

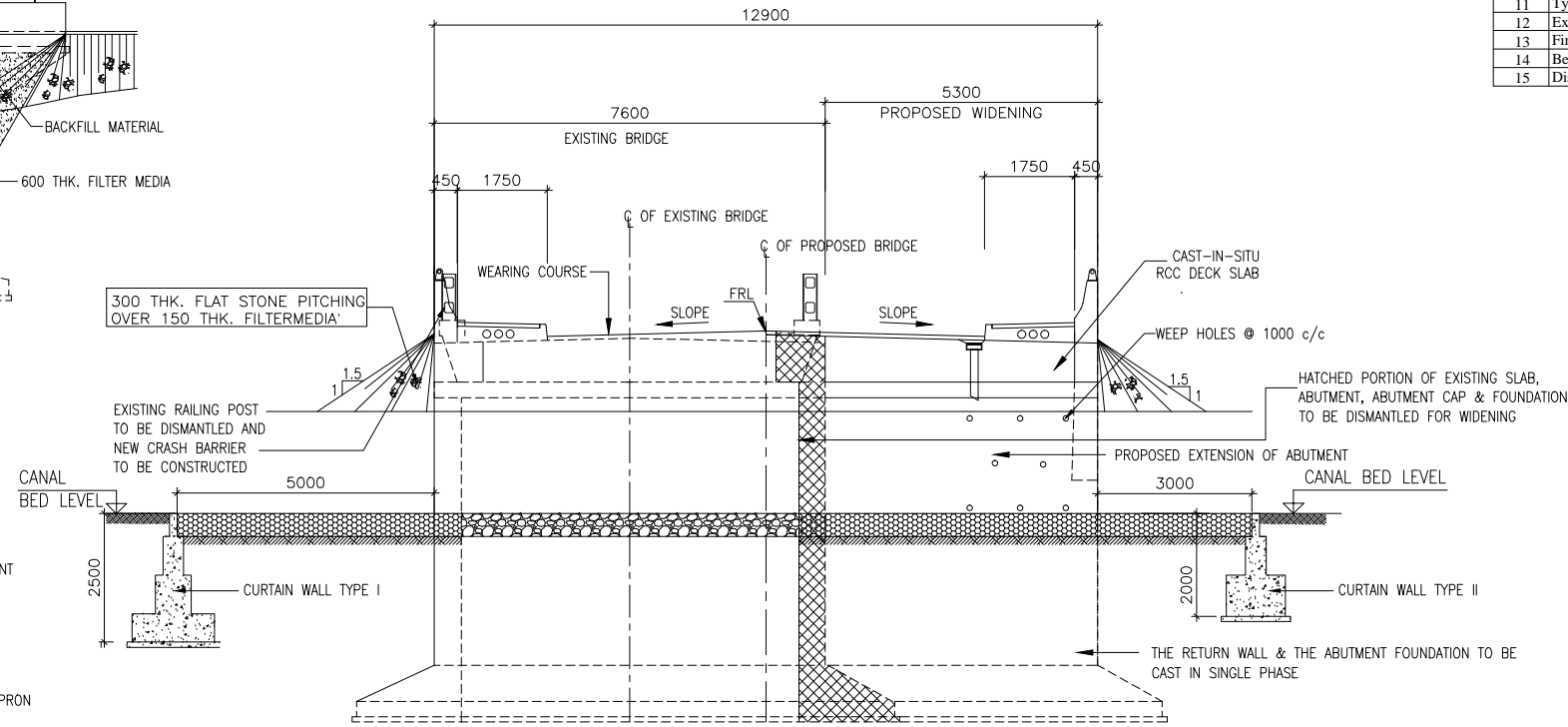
SCALE :  
AS SHOWN

DRAWING TITLE :  
**GENERAL ARRANGEMENT OF DRAWING OF MINOR BRIDGE OVER SUKHABHADRA RIVER AT Km. 10+545**

DWG. NUMBER : 73466\LASA\GADVMNBR-02  
REV. R1



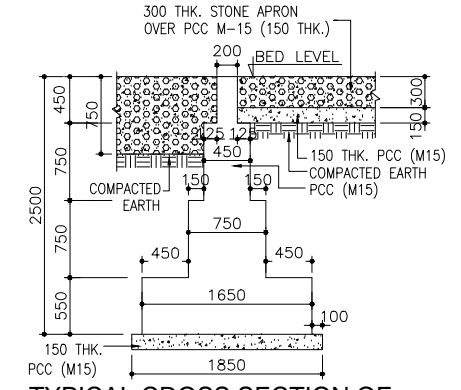
**ELEVATION**  
(SCALE 1:125)



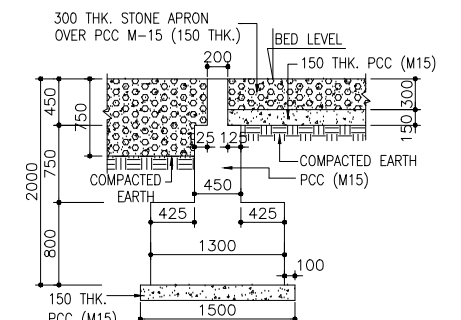
**SECTION A-A**  
(SCALE 1:100)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

EXISTING BRIDGE DETAILS		
1	Existing Chainage	15/900
2	Proposed Chainage	15/857
3	Name of the nallah	Naliamuhan Polo
4	Year of construction	1994
5	Type of bridge	High level Bridge
6	Existing span arrangement	1 x 8.75 m
7	Existing carriageway width	7.6 m
8	Thickness of superstructure	0.6 m
9	Type of foundation	Open foundation
10	Type of substructure	PCC wall type
11	Type of superstructure	RCC solid slab
12	Existing Formation Level	18.240 m
13	Final Formation Level	18.240 m
14	Bed Level	14.870 m
15	Distance of PCL w.r.t ECL	0.02 m Left



**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - I**  
(SCALE 1:50)

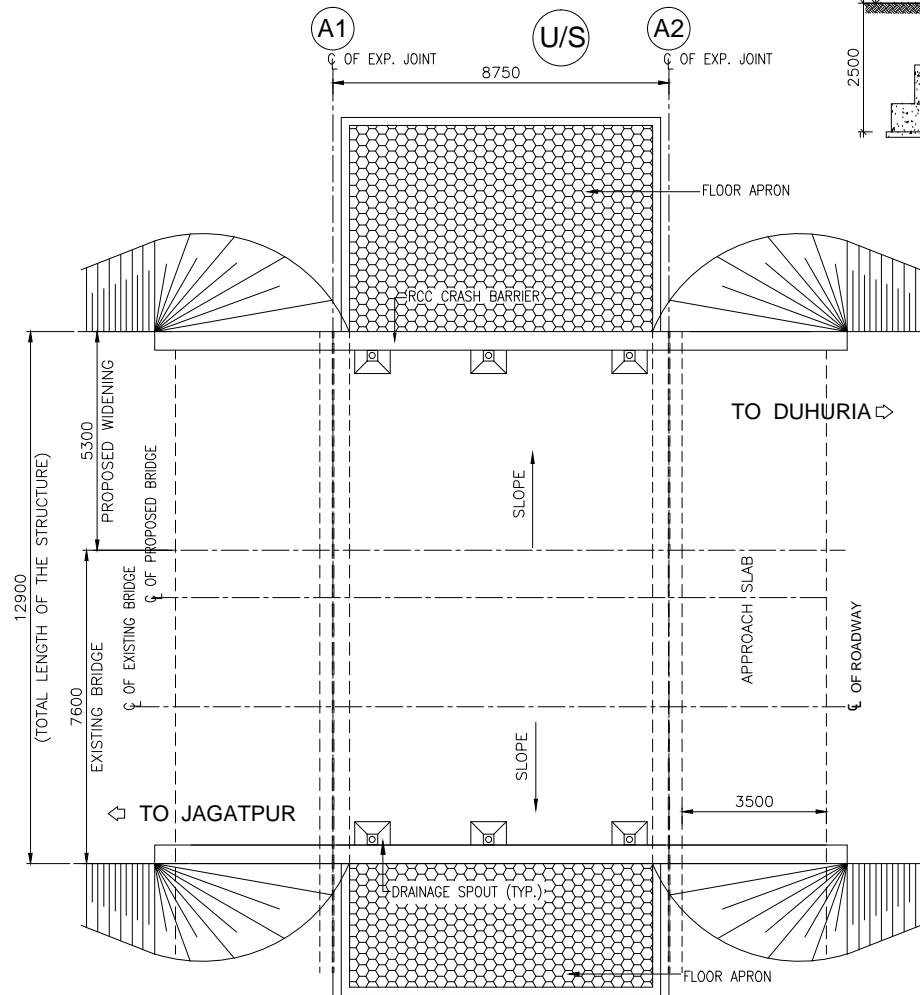


**TYPICAL CROSS SECTION OF CURTAIN WALL TYPE - II**  
(SCALE 1:50)

**NOTES:-**

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS & CHAINAGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHAINAGE.
- THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFORM TO C=0, ϕ=30' & DENSITY=18 kN/m<sup>3</sup>.
- THE WEEP HOLES OF 100mm SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC: 78.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS  
EARTH FACE = 75mm  
FOUNDATION = 75mm  
TOP SLAB = 40mm  
OUTER SURFACE = 50mm
- THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:  
(a) RCC FOUNDATION - M20  
(b) RCC SUBSTRUCTURE - M20  
(c) RCC PIER / ABUTMENT CAP - M25  
(d) RCC DIRT WALL - M25  
(e) RCC APPROACH SLAB - M30  
(f) RCC SUPERSTRUCTURE - M30  
(g) RCC CRASH BARRIER - M40  
(h) RCC RETURN WALL - M20  
(j) PCC LEVELLING COURSE - M15
- ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFIRMING TO IS:1786.
- THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
- THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
- THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 15 T/m<sup>2</sup>.
- THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.
- ALL PCC LEVELLING COURSE SHALL BE 150mm THICK.

PAGE NO.-05



**PLAN**  
(SCALE 1:125)

**WIDENING METHODOLOGY:**

**FOR ABUTMENT:**

- DISMANTLE THE PARAPET/RAILING ON TOP OF WING WALL OF THE SIDE WHICH IS PROPOSED FOR WIDENING.
- DISMANTLE TOP 700mm MINIMUM PORTION OF THE EXISTING WING WALLS.
- EXCAVATE THE SIDE OF ABUTMENT/WING WALL UP TO THE FOUNDING DEPTH TO EXPOSE THE FOUNDATION FACE ON WIDENED SIDE.
- MAKE HOLES OF 32ϕ STAGGERED AT THE INTERVAL OF 400mm BOTH HORIZONTALLY AND VERTICALLY IN THE OUTER FACE OF ABUTMENT AND FOUNDATION TO RECEIVE 25ϕ BAR. HACK & ROUGHEN THE REMAINING SURFACE. FIX THE 25ϕ BAR IN HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR. CLEAN THE ENTIRE SURFACE AFTER ROUGHENING. THE SURFACE SHALL BE WETTED BEFORE WIDENING.
- THE ABUTMENT AND WING WALLS SHALL BE WIDENED TO THE REQUIRED WIDTH AS SHOWN UP TO THE SOFFIT OF THE ABUTMENT CAPS.

**FOR PIERS:**

- DEMOLISH THE EXISTING NOSING OF THE PIER UP TO THE TOP OF FOOTING ON WIDENING SIDE.
- EXCAVATE AND EXPOSE PIER FOUNDATION ON THE WIDENING SIDE.
- MAKE HOLES IN THE PROPOSED WIDENING FACE OF THE PIER & ITS FOUNDATION TO ACCOMMODATE 25ϕ BAR. ROUGHEN THE REMAINING SURFACE, FIX THE 25ϕ BAR IN THE HOLES SO CREATED & GROUT WITH NON SHRINK MORTAR.
- THE PIER & ITS FOOTING TOGETHER WITH NOSING SHALL BE EXTENDED/WIDENED TO THE REQUIRED WIDTH UP TO THE SOFFIT OF PIER CAP.

**FOR ABUTMENT/PIER CAP:**

- DISMANTLE 500mm WIDTH OF EXISTING ABUTMENT/PIER CAP.
- SURFACE OF EXISTING CONCRETE SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER CONCRETE IS CAST, THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET. THE REINFORCEMENT PROTRUDING FROM OLD CONCRETE SHALL BE CLEANED OF RUST, LOOSE MORTAR OR ANY OTHER CONTAMINATION BEFORE PLACING OF FRESH CONCRETE. OLD SURFACE SHALL BE THOROUGHLY CLEANED AND SOAKED WITH WATER.
- CLEAN & APPLY A COAT OF NEAT CEMENT SLURRY TO THE OLD EXPOSED REINF.
- PLACE THE REINFORCEMENT AS SHOWN AND TIE IT WITH EXISTING REINF.
- CAST THE WIDENED PORTION OF PIER/ABUTMENT CAP WITH CAMBER OF DECK SLAB.

**FOR APPROACH SLAB:**

- THE APPROACH SLAB SHALL BE COMPLETELY DISMANTLED AND COMPACTION BEHIND THE EXISTING ABUTMENT TO BE DONE BEFORE APPROACH SLAB CONSTRUCTION.
- LAY THE P.C.C FOR THE NEW APPROACH SLAB.
- PROVIDE THE REINFORCEMENT FOR THE NEW APPROACH SLAB.
- CAST THE APPROACH SLAB.

**FOR SUPERSTRUCTURE:**

- THE EXISTING WEARING COAT AND OVERLAY SHALL BE COMPLETELY REMOVED. ONLY 56mm THICK BITUMINOUS WEARING COAT SHALL BE LAID.
- THE EXISTING EXPANSION JOINT SHALL BE COMPLETELY REMOVED AND REPLACED WITH 20mm THICK ASPHALTIC PLUG TYPE EXPANSION JOINT.

**FOR FLOOR PROTECTION:**

- DISMANTLE 500mm OR AS REQUIRED ACCORDING TO SITE CONDITION WIDTH OF EXISTING FLOOR PROTECTION.
- SURFACE OF EXISTING FLOOR SHALL BE CLEANED WITH MECHANICAL HAND TOOLS. BEFORE FURTHER EXTENSION OF FLOOR, THE SURFACE SHOULD BE THOROUGHLY CLEANED TO REMOVE DEBRIS AND ACCUMULATED RUBBISH BY AIR JET.
- CAST THE THE NEW APRON AS PER DETAILS.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG-2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
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B-1, E-27, 1Ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

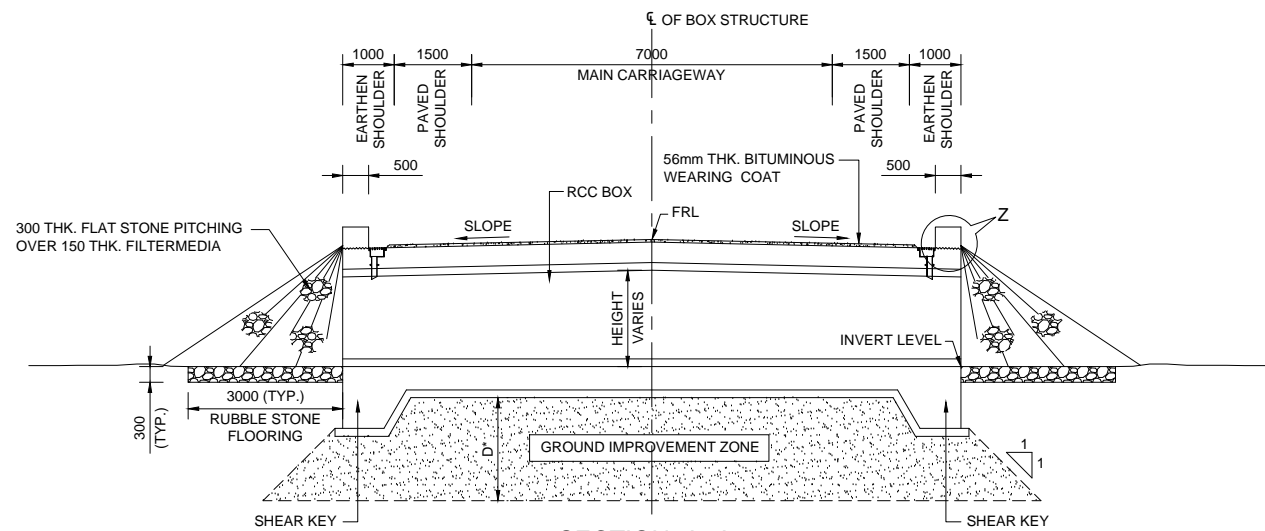
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
**AS SHOWN**

DRAWING TITLE :  
**GENERAL ARRANGEMENT OF DRAWING OF MINOR BRIDGE OVER NALIAMUHAN POLO AT Km. 15+900**

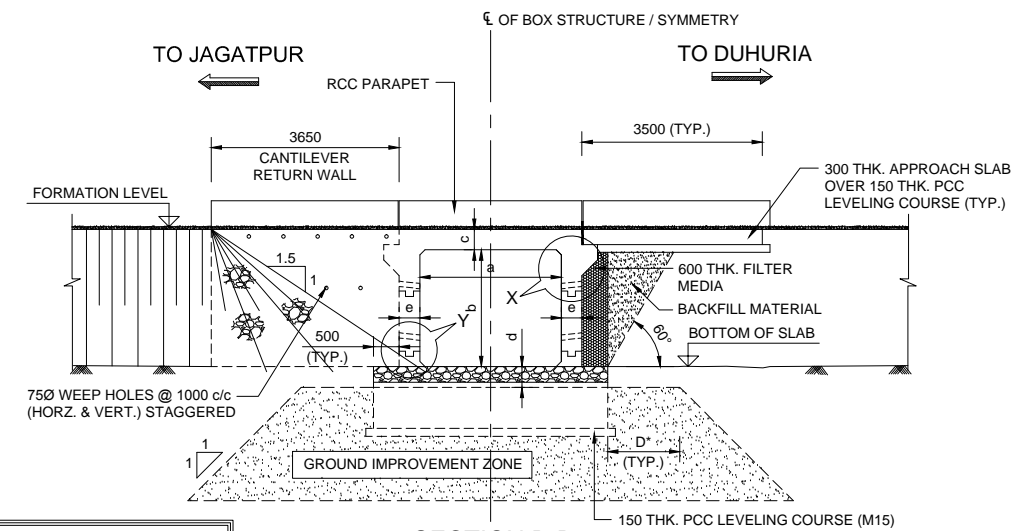
DWG. NUMBER : **73466\LASA\GADVMNBR-03** REV. **R1**





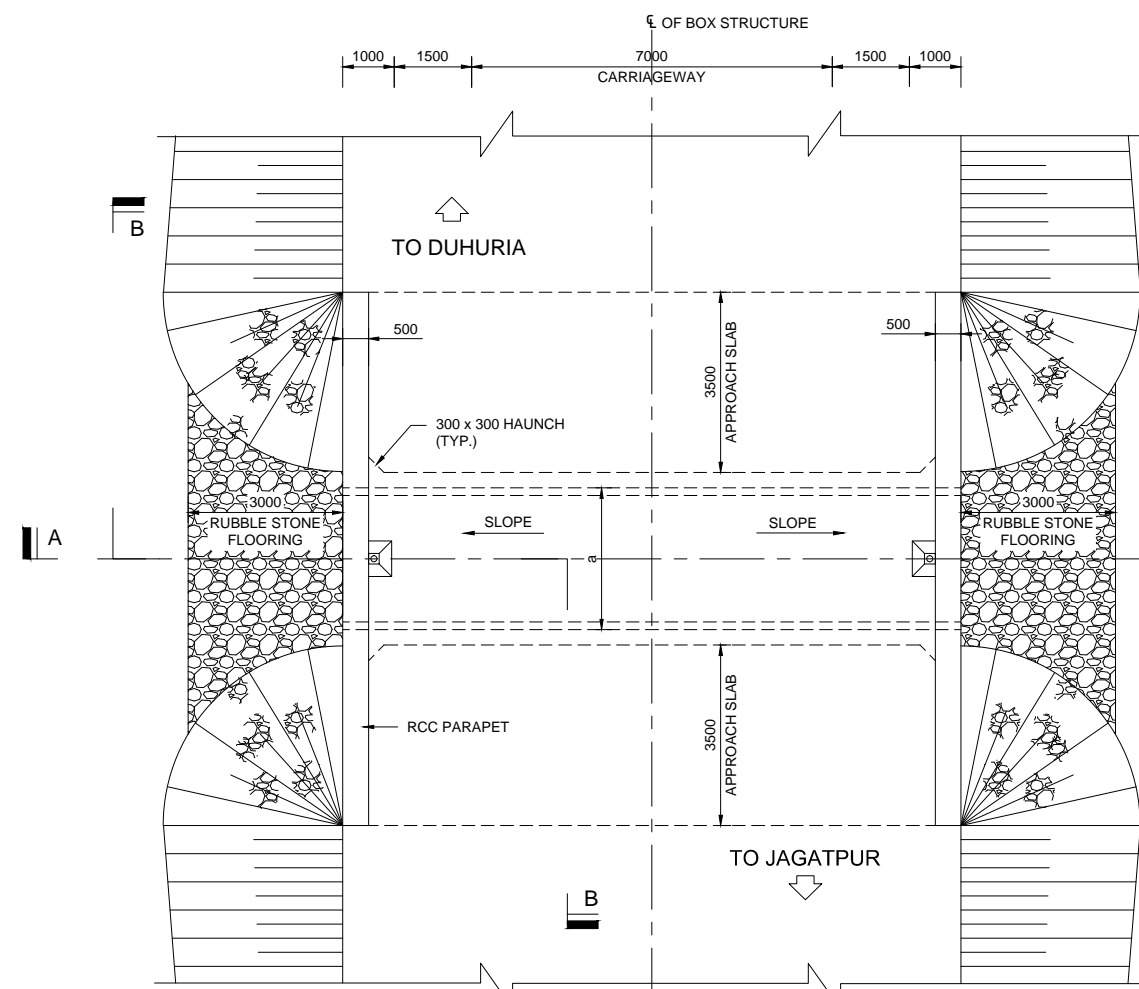
**SECTION A-A**  
(SCALE 1:100)

D\* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

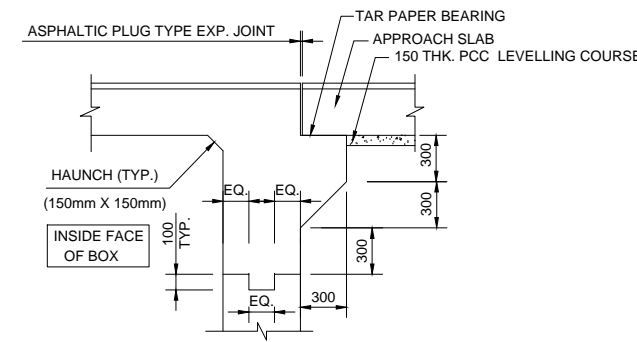


**SECTION B-B**  
(SCALE 1:100)

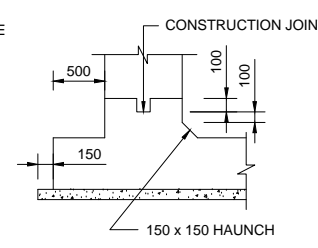
D\* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



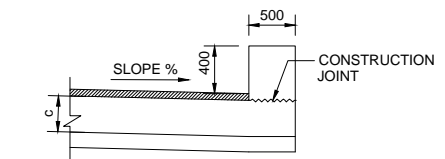
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(SCALE 1:100)



**DETAIL - X**  
(SCALE 1:50)

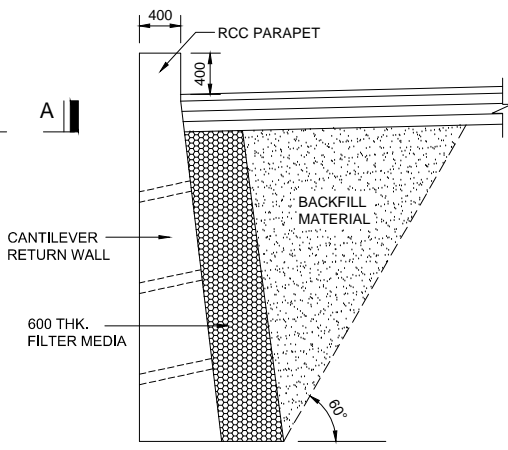


**DETAIL - Y**  
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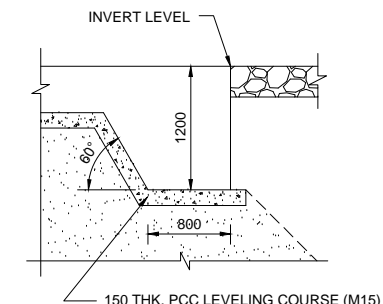


**DETAIL - Z**  
(SCALE 1:50)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION



**DETAIL OF RETURN WALL**  
(SCALE 1:50)



**TYPICAL DETAIL OF SHEAR KEY**  
(SCALE 1:50)

**NOTES:-**

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- THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFIRM TO C=0,  $\phi=30^\circ$  & DENSITY=18 kN/m<sup>3</sup>.
- THE WEEP HOLES OF 75 $\phi$  SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC: 78.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS:
  - EARTH FACE = 75mm
  - FOUNDATION = 75mm
  - TOP SLAB = 40mm
  - WATER SURFACE = 50mm
- THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
  - a. RCC BOX - M20
  - b. RETURN WALL - M20
  - c. APPROACH SLAB - M30
  - d. LEVELLING COURSE - M15
  - e. PCC CONCRETE - M15
  - f. RCC PARAPET - M15
- ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFIRMING TO IS:1786.
- THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
- THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
- THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 9 T/m<sup>2</sup>.
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R1	AUG. 2015	SECOND REVISION	LASA	PARANTAPA	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	PARANTAPA	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

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Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com

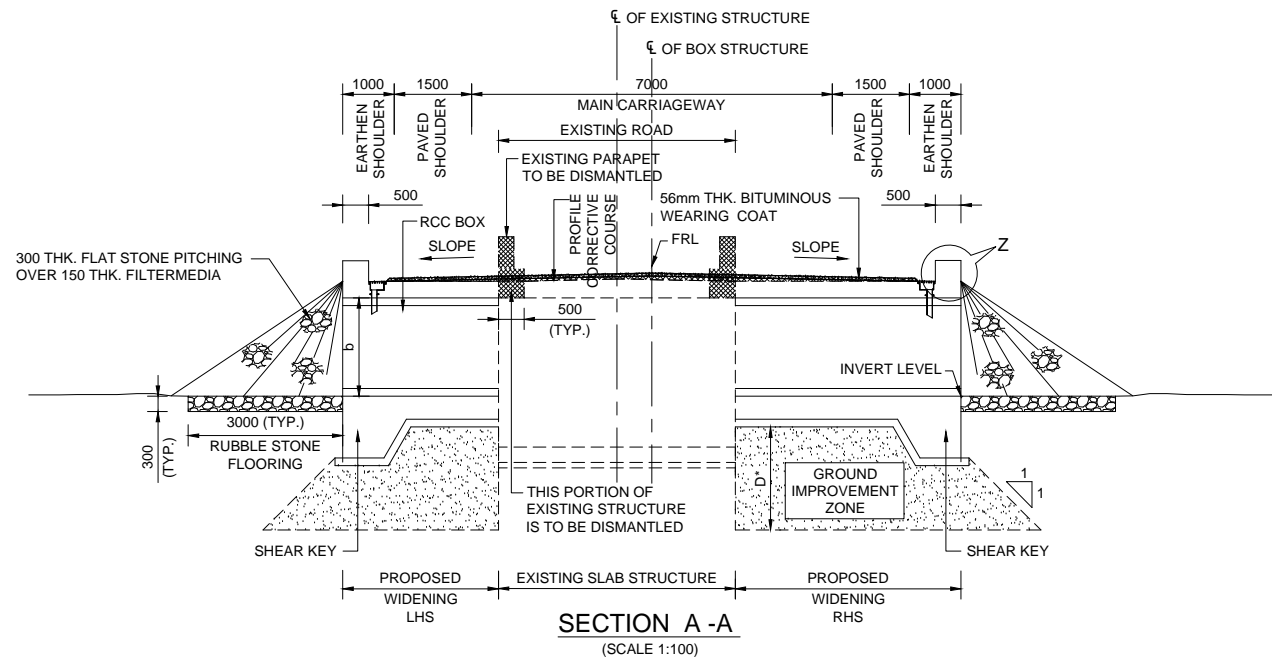
DESIGN REVIEW CONSULTANT :  
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B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

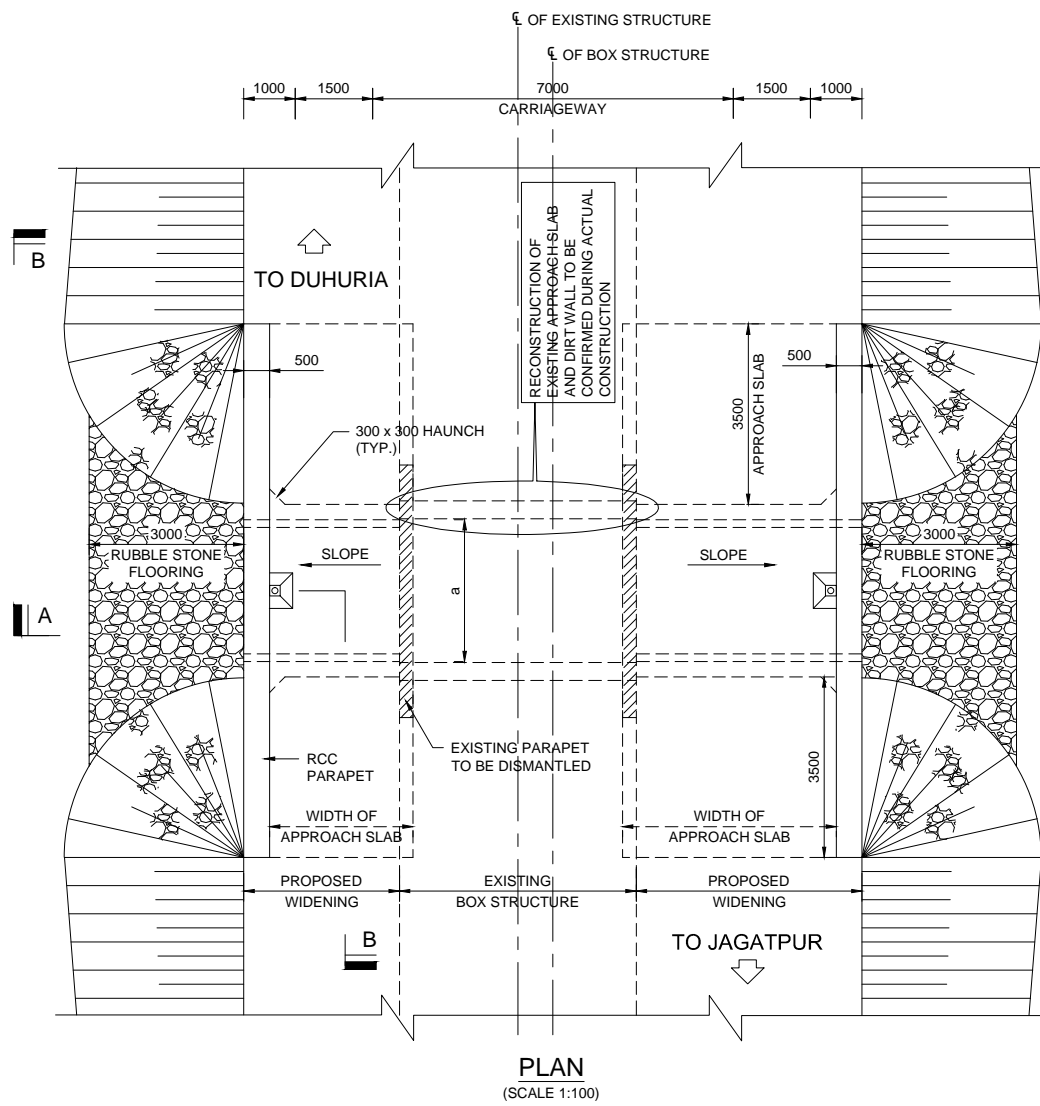
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
AS SHOWN

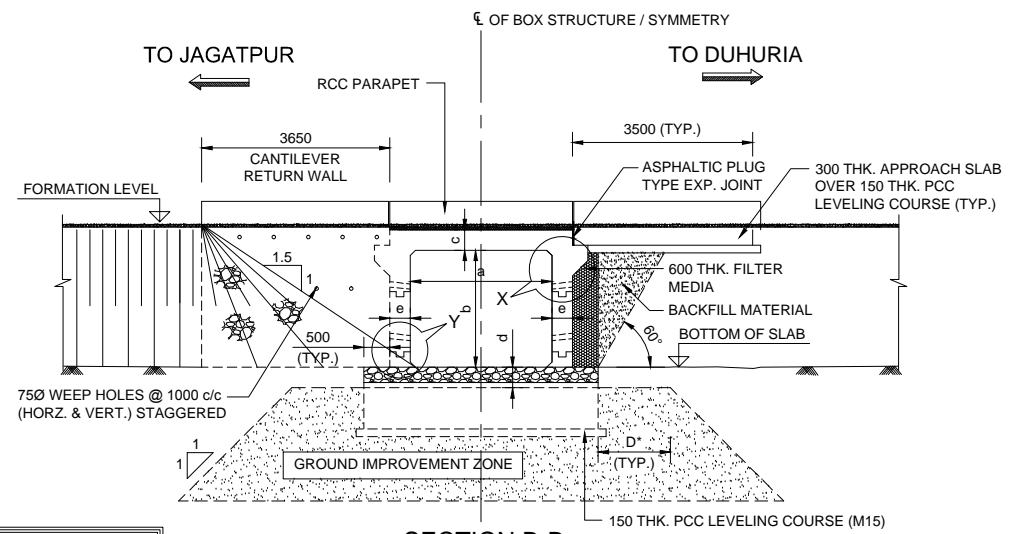
DRAWING TITLE :	
GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION	
DWG. NUMBER :	73466\LASA\GAD\BOX-01
REV :	R1



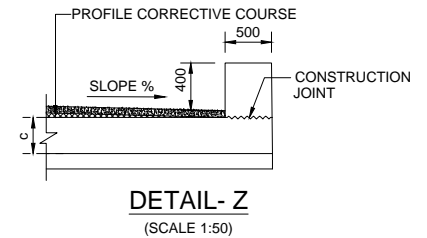
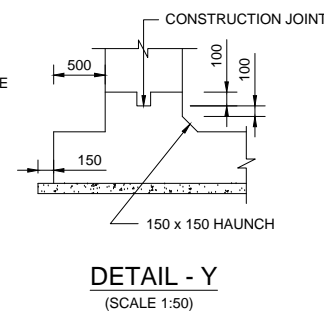
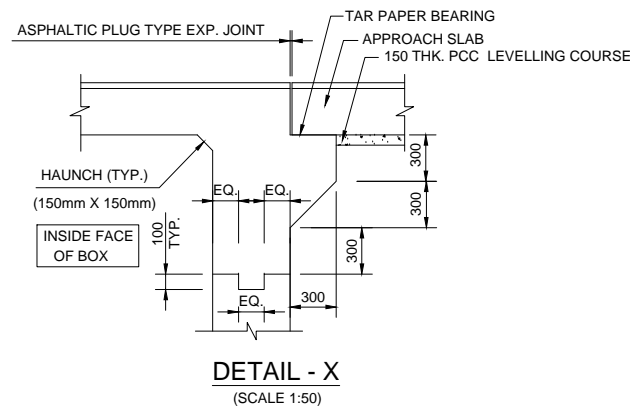
D\* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED BEYOND CANTILEVER RETURN WALL WHEN THE VALUE OF 'b' IS GREATER THAN 2000.



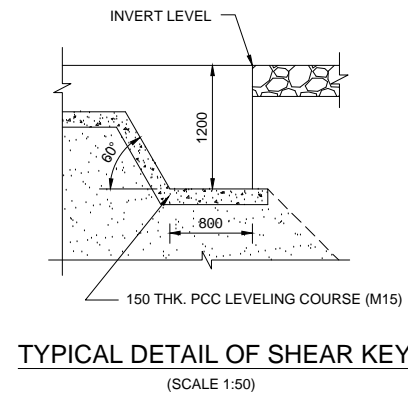
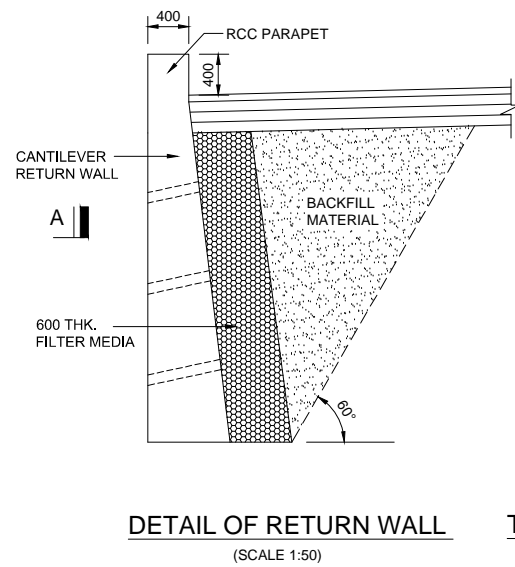
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-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

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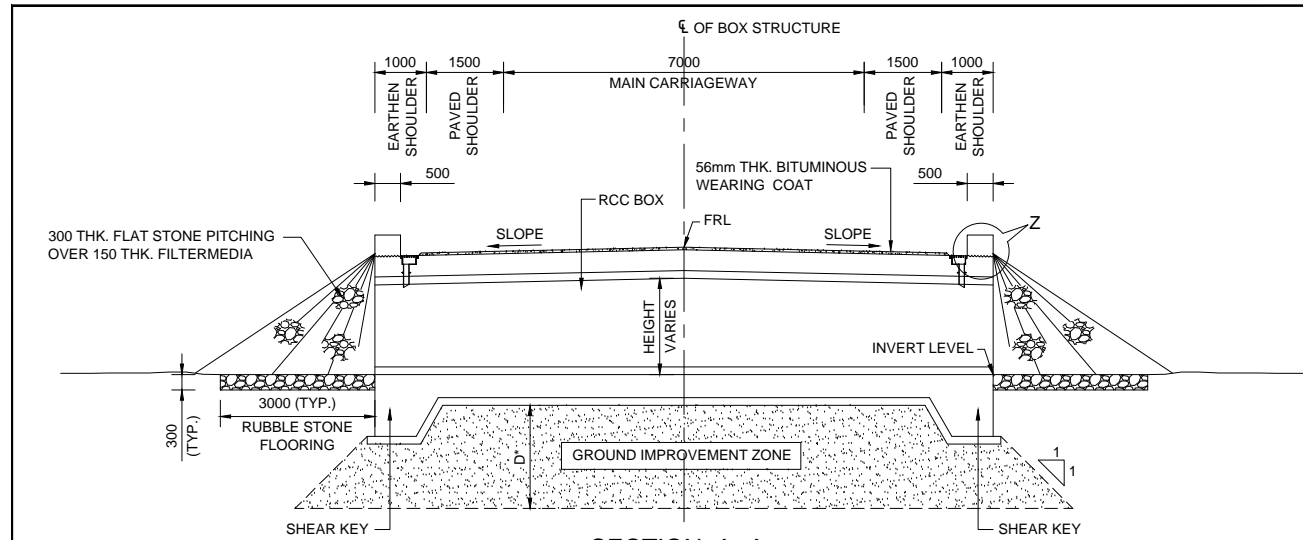
DESIGN REVIEW CONSULTANT :  
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CLIENT :  
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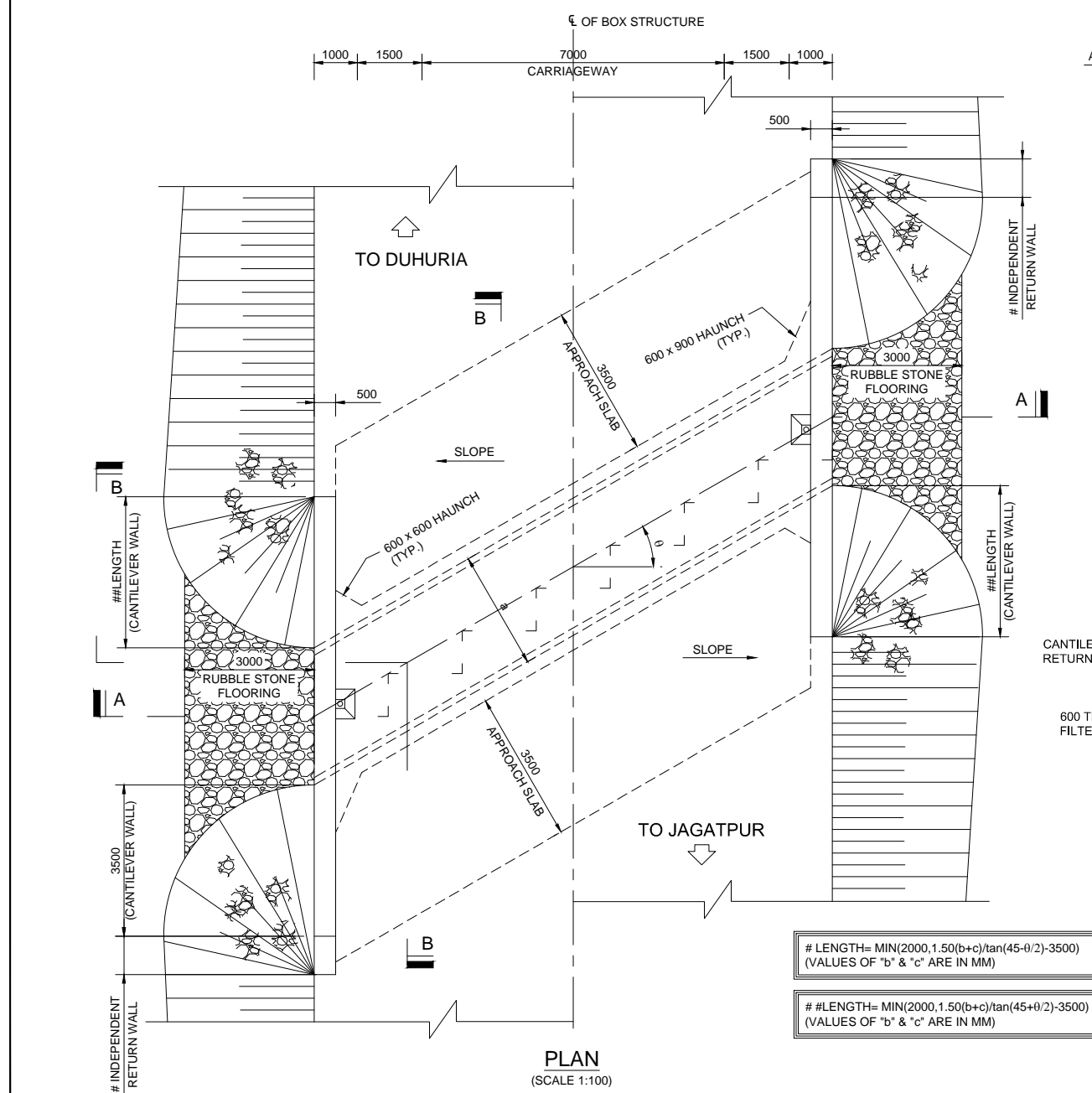
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
 AS SHOWN

DRAWING TITLE :  
**GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL BOX CULVERT UNDER WIDENING**  
 DWG. NUMBER : 73466LASA/GAD/BOX-02  
 REV. R1



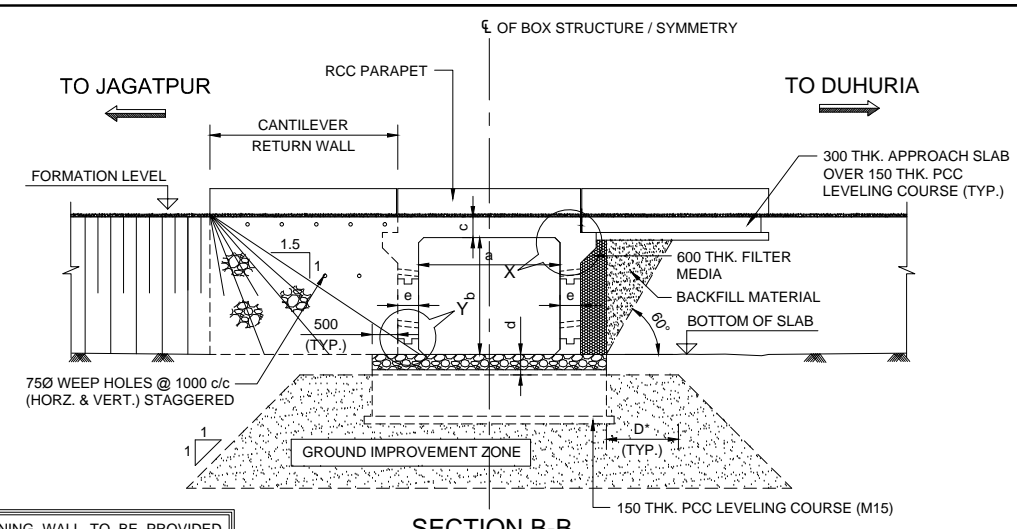
**SECTION A-A**  
(SCALE 1:100)



**PLAN**  
(SCALE 1:100)

# LENGTH= MIN(2000, 1.50(b+c)/tan(45-θ/2)-3500)  
(VALUES OF 'b' & 'c' ARE IN MM)

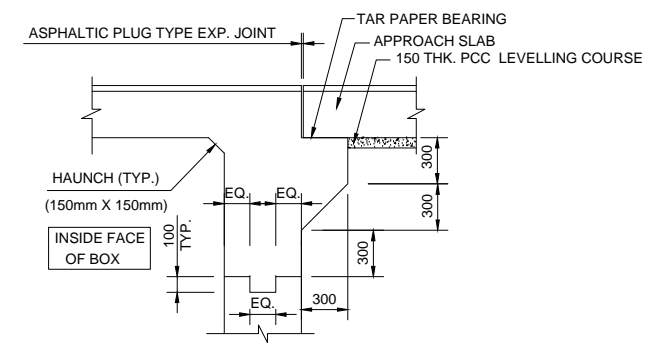
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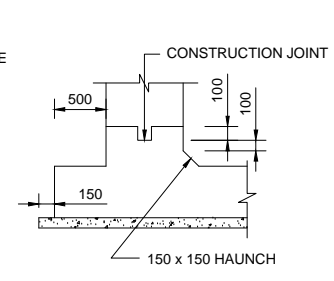
**SECTION B-B**  
(SCALE 1:100)

INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED BEYOND CANTILEVER RETURN WALL WHEN THE VALUE OF 'b' IS GREATER THAN 2000.

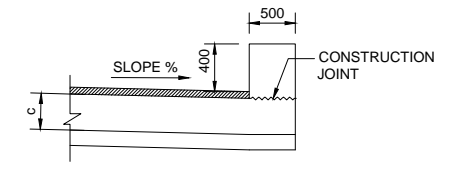
D' = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



**DETAIL - X**  
(SCALE 1:50)

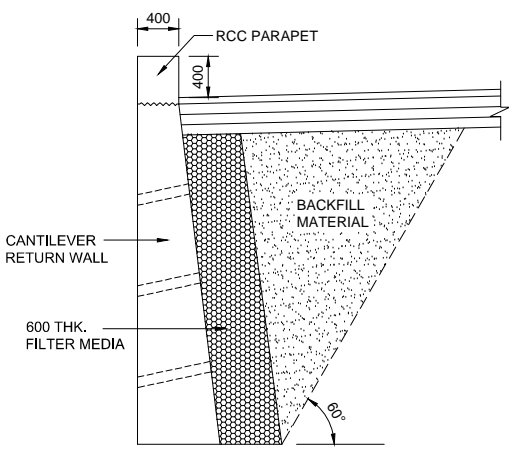


**DETAIL - Y**  
(SCALE 1:50)

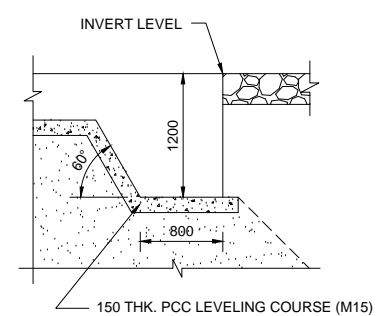


**DETAIL - Z**  
(SCALE 1:50)

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**DETAIL OF RETURN WALL**  
(SCALE 1:50)



**TYPICAL DETAIL OF SHEAR KEY**  
(SCALE 1:50)

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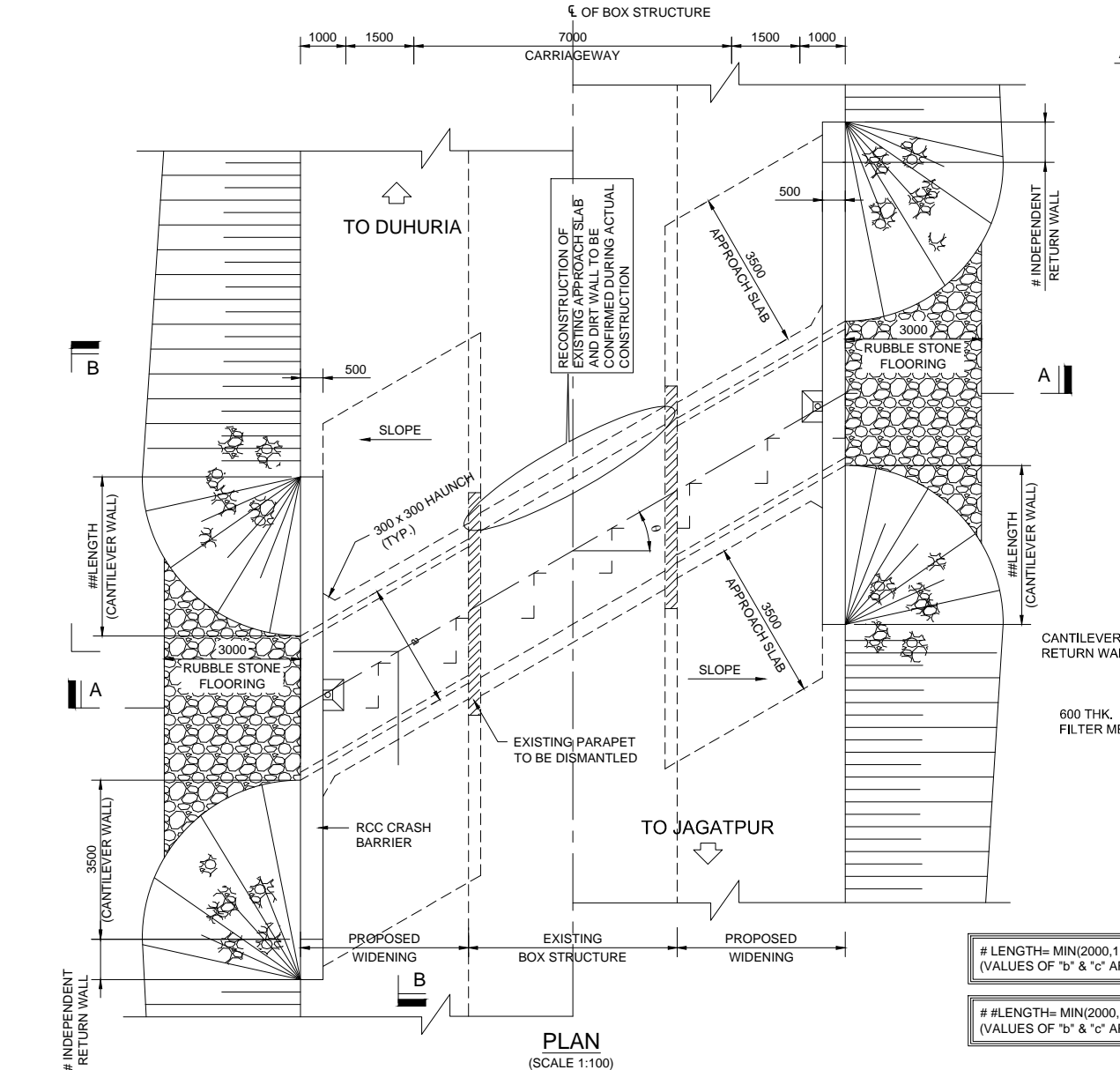
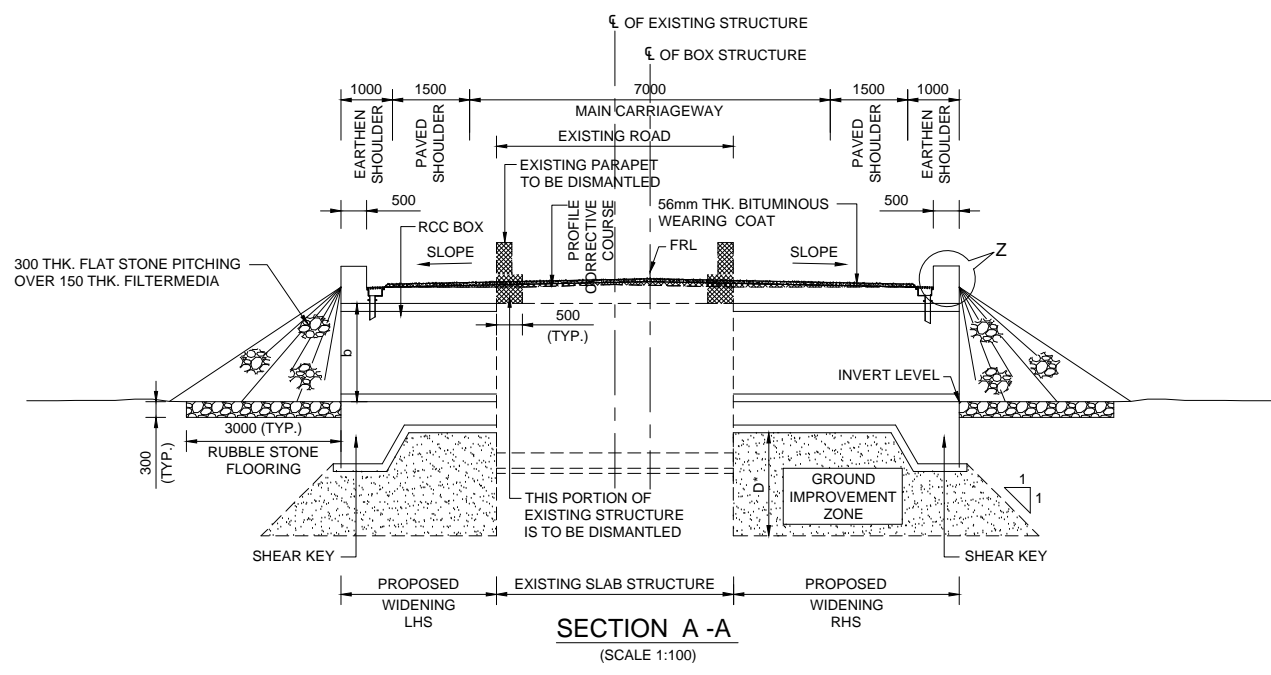
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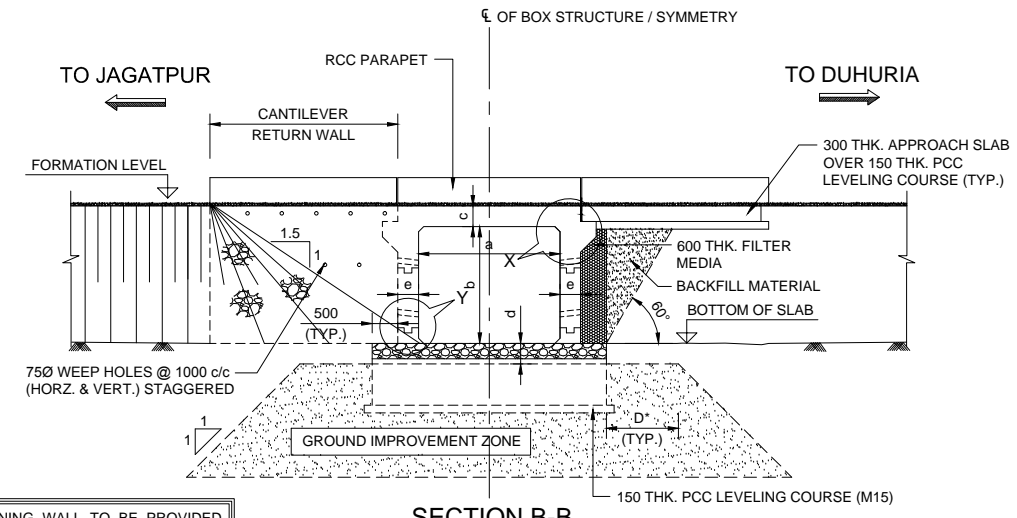
SCALE :  
AS SHOWN

DRAWING TITLE :  
**GENERAL ARRANGEMENT DRAWING OF SKEW SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION**

DWG. NUMBER : 73466LASA/GAD/BOX-03  
REV. R1

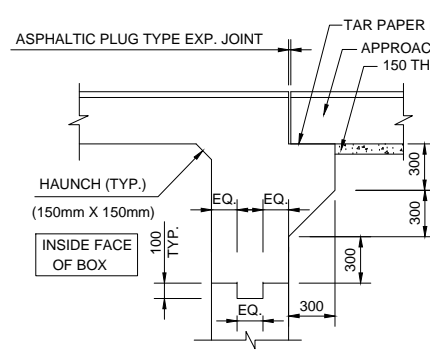


INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED BEYOND CANTILEVER RETURN WALL WHEN THE VALUE OF 'b' IS GREATER THAN 2000.

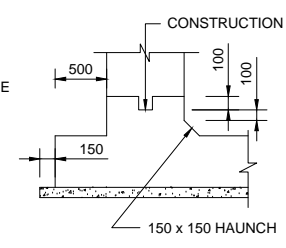


SECTION B-B (SCALE 1:100)

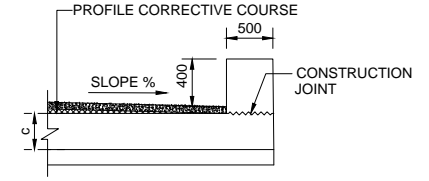
D\* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



DETAIL - X (SCALE 1:50)

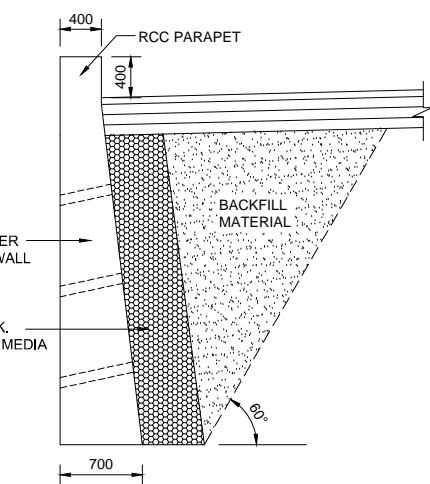


DETAIL - Y (SCALE 1:50)

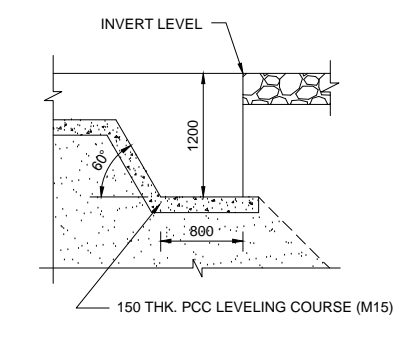


DETAIL - Z (SCALE 1:50)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION



DETAIL OF RETURN WALL (SCALE 1:50)



TYPICAL DETAIL OF SHEAR KEY (SCALE 1:50)

$$\# \text{ LENGTH} = \text{MIN}(2000, 1.50(b+c)/\tan(45-\theta/2)-3500)$$

(VALUES OF 'b' & 'c' ARE IN MM)

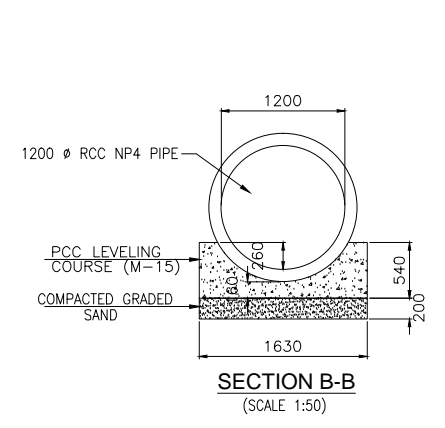
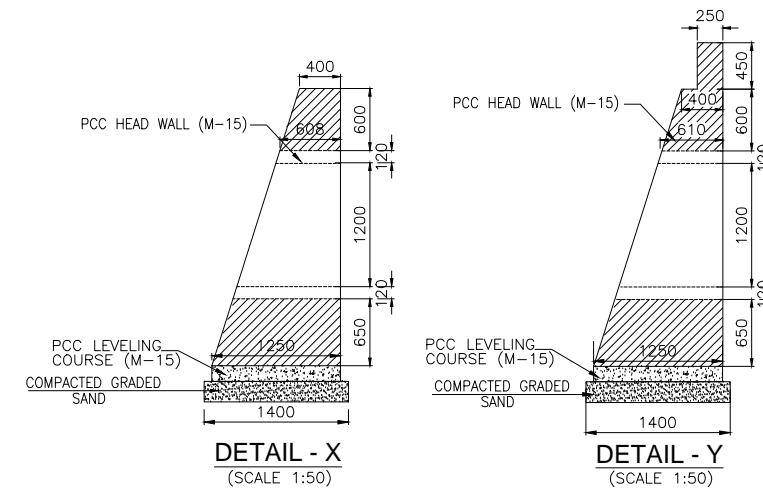
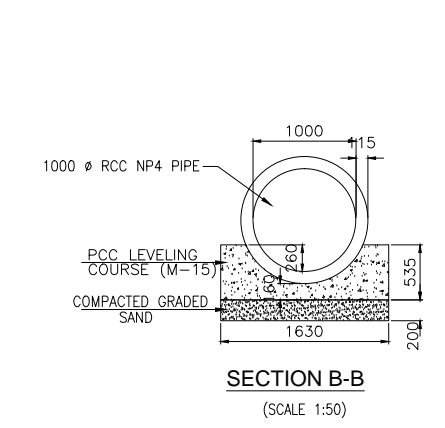
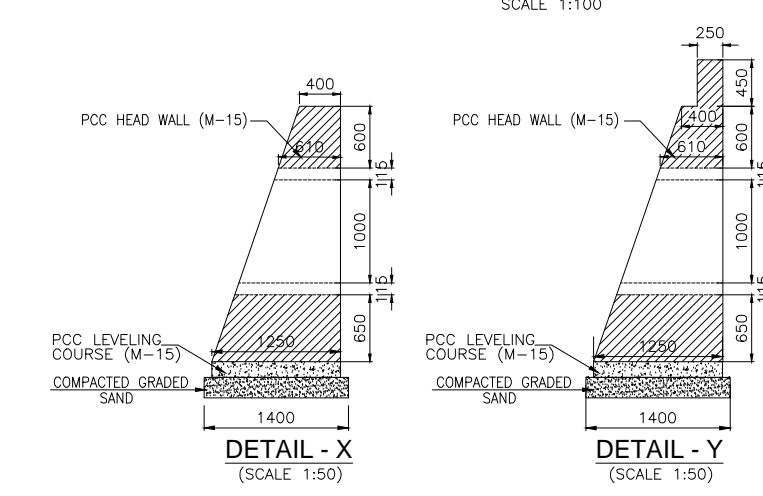
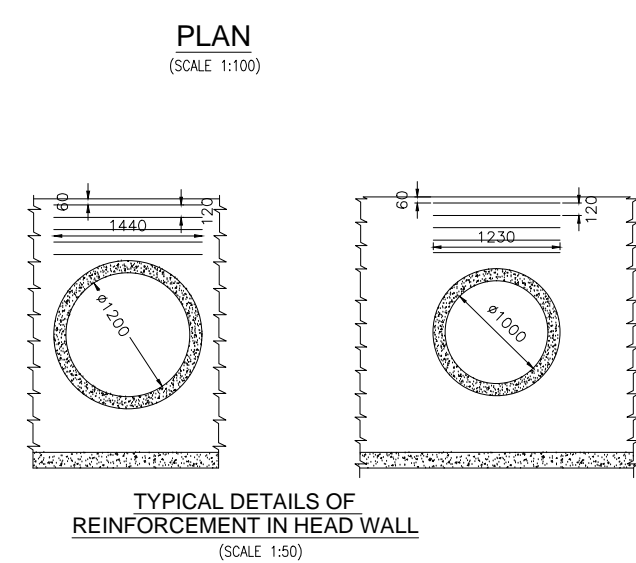
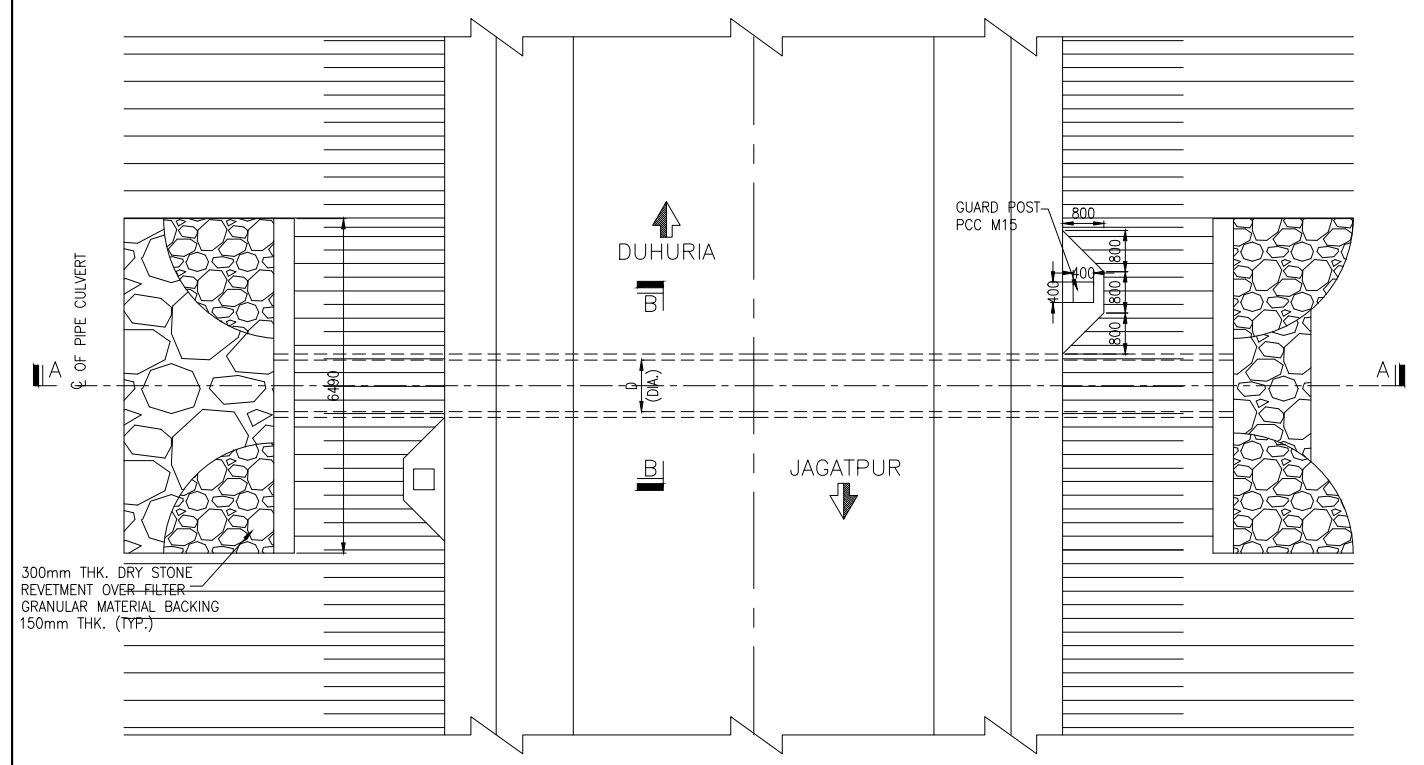
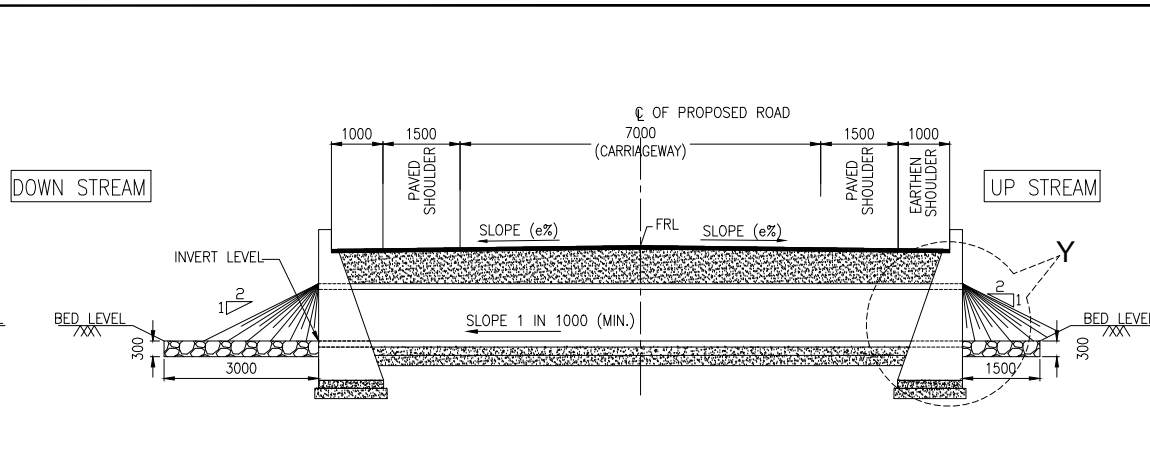
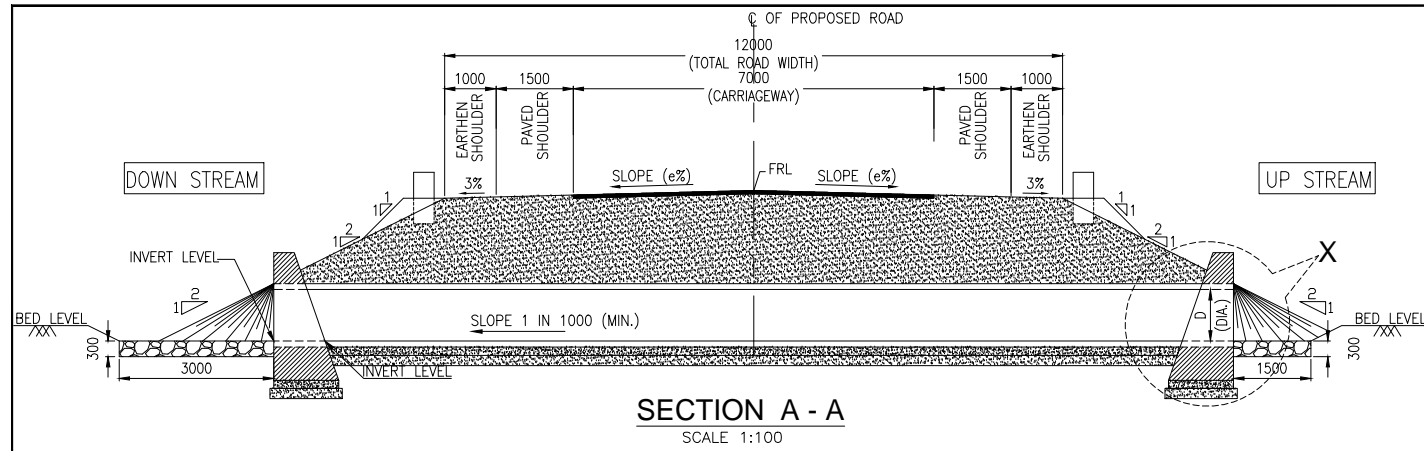
$$\# \text{ LENGTH} = \text{MIN}(2000, 1.50(b+c)/\tan(45+\theta/2)-3500)$$

(VALUES OF 'b' & 'c' ARE IN MM)

NOTES:-

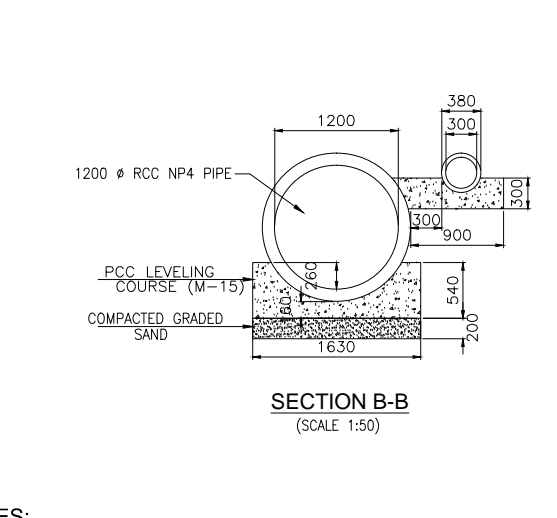
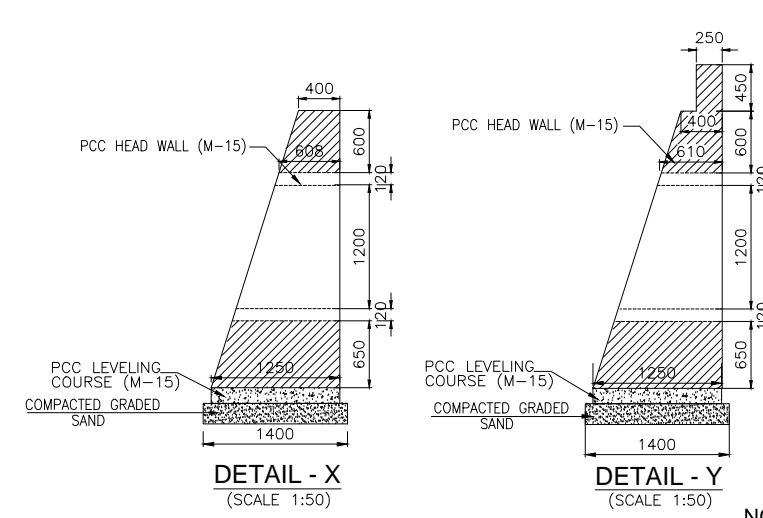
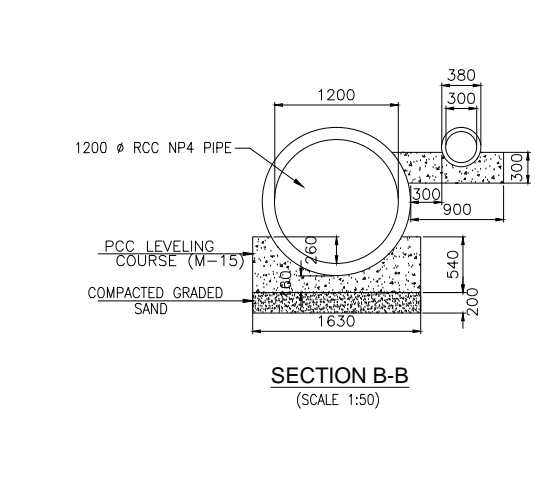
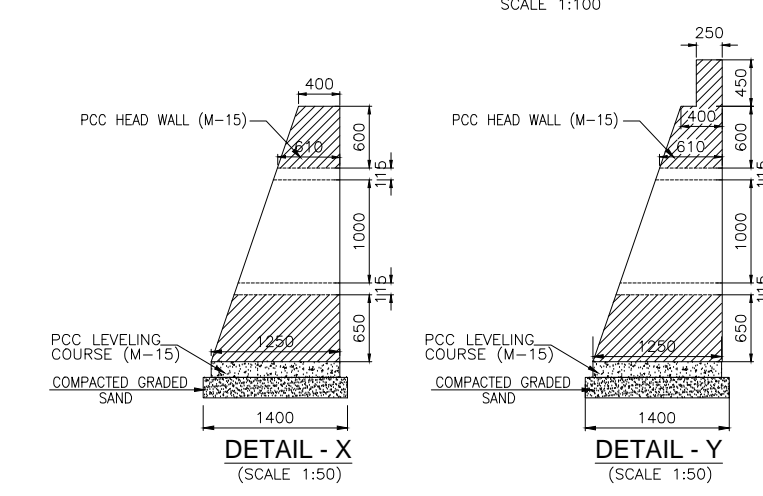
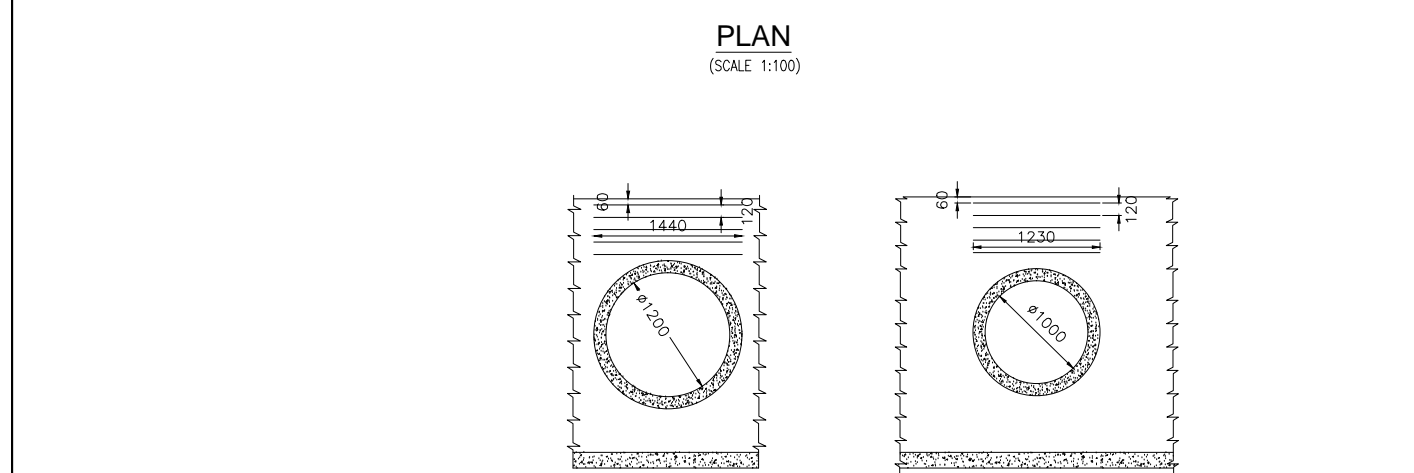
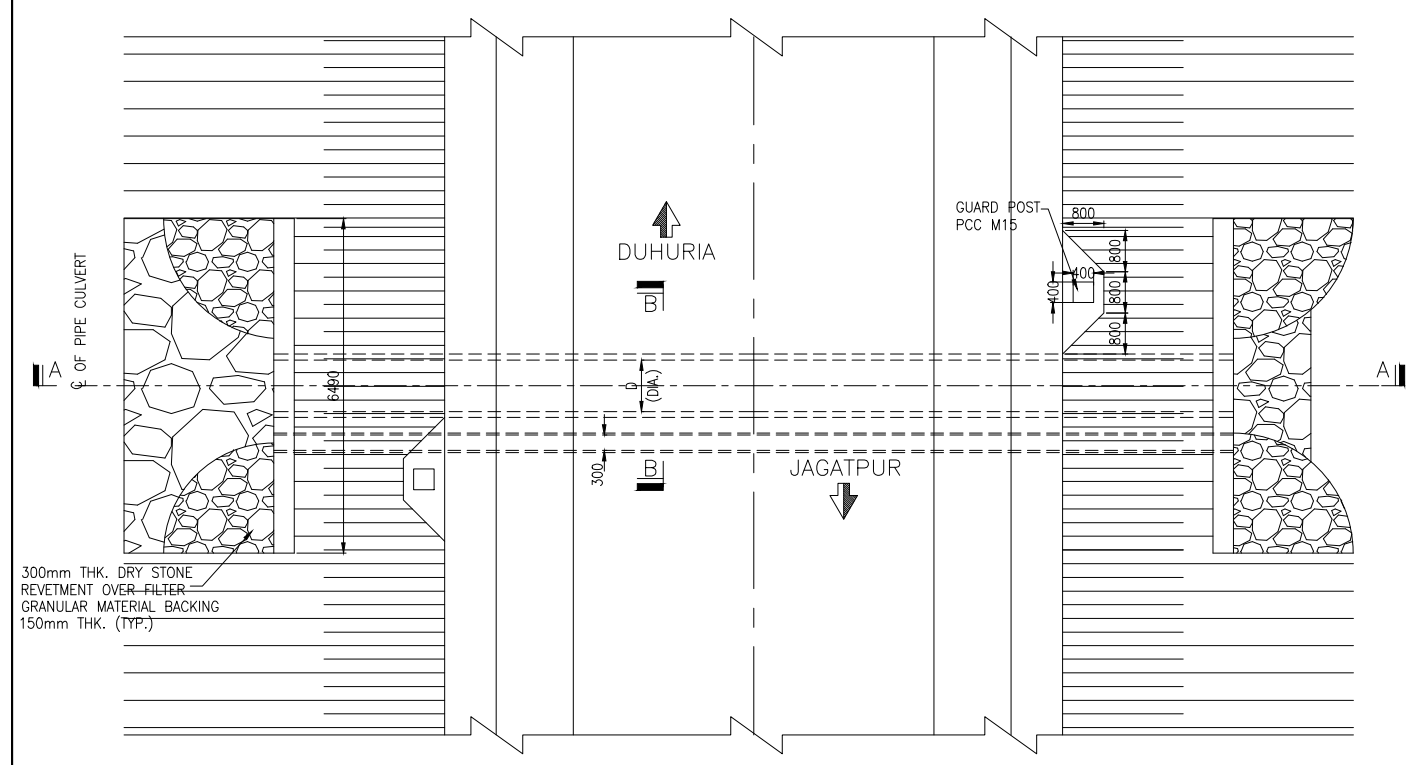
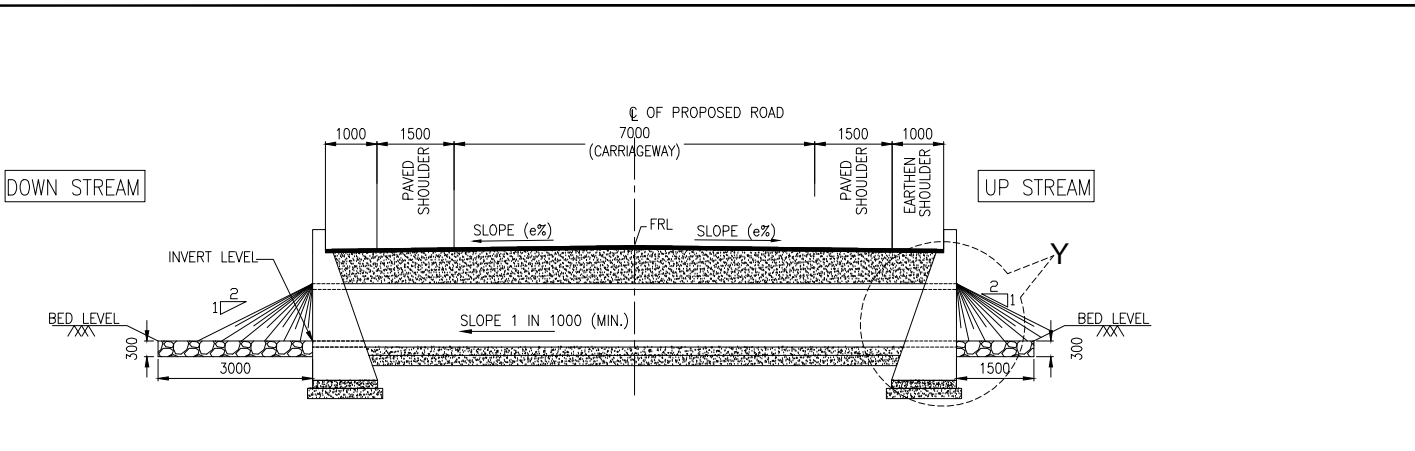
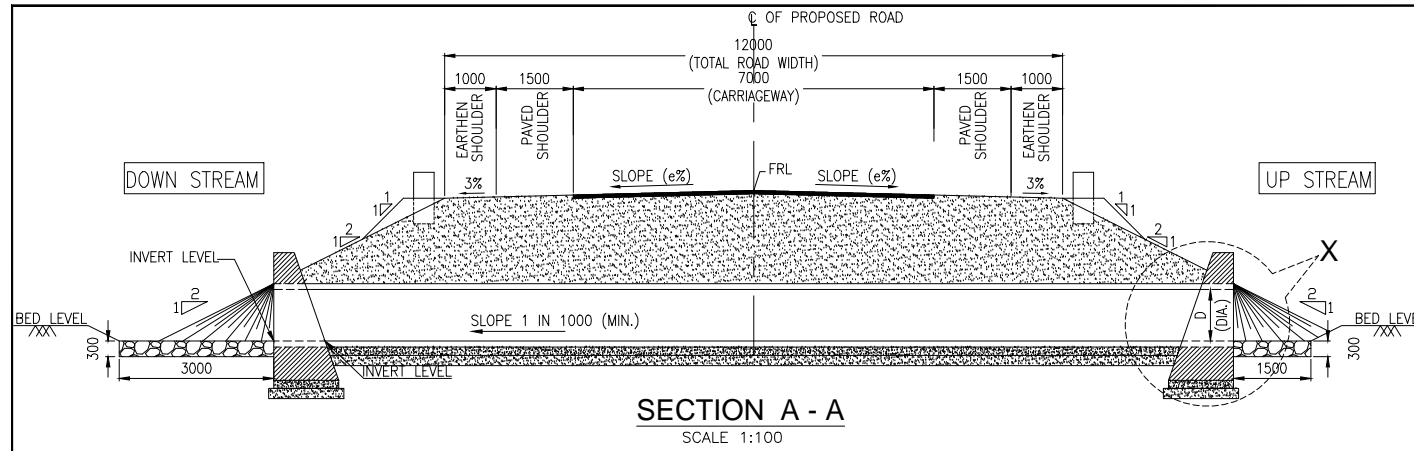
- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS & CHAINAGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHAINAGE.
- THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFIRM TO C=0, Ø=30° & DENSITY=18 kN/m³.
- THE WEEP HOLES OF 75Ø SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
- 600mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC: 78.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS:
  - EARTH FACE = 75mm
  - FOUNDATION = 75mm
  - TOP SLAB = 40mm
  - WATER SURFACE = 50mm
- THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
  - a. RCC BOX - M20
  - b. RETURN WALL - M20
  - c. APPROACH SLAB - M30
  - d. LEVELLING COURSE - M15
  - e. PCC CONCRETE - M15
  - f. RCC PARAPET - M15
- ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFIRMING TO IS:1786.
- THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
- THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
- THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 9 T/m².
- THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.

R1	AUG-2015	SECOND REVISION	LASA	PARANTAPA	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO, TL	DPR CONSULTANT :	<b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com	DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CLIENT : <b>ODISHA WORKS DEPARTMENT</b>	PROJECT : <b>WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)</b>	SCALE : AS SHOWN	DRAWING TITLE : <b>GENERAL ARRANGEMENT DRAWING OF SKEW SINGLE CELL BOX CULVERT UNDER WIDENING</b>	
R0	FEB-2013	FIRST REVISION	OWD	PARANTAPA	PK.MISRA, AE	M.R MISRA, EE	N.K PRADHAN, CE								
	JUNE 2008	ORIGINAL	CEG												
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:							DWG. NUMBER : 73466LASA/GAD/BOX-04	REV. R1



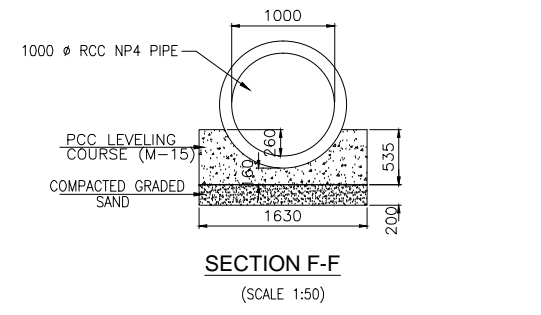
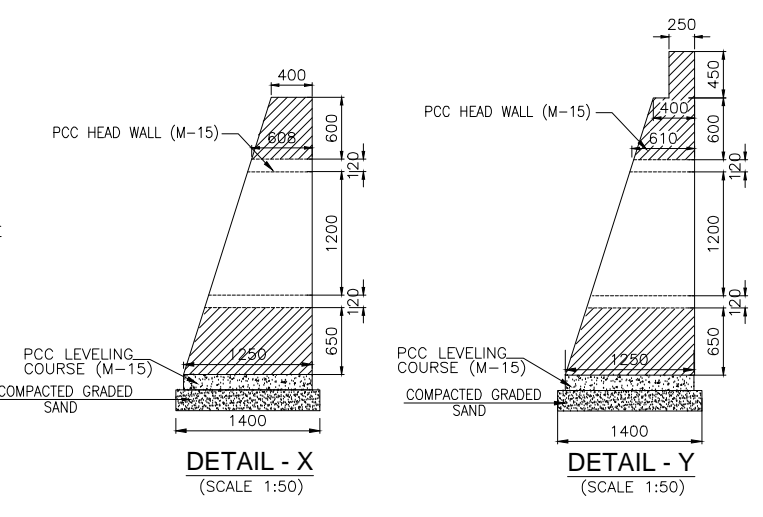
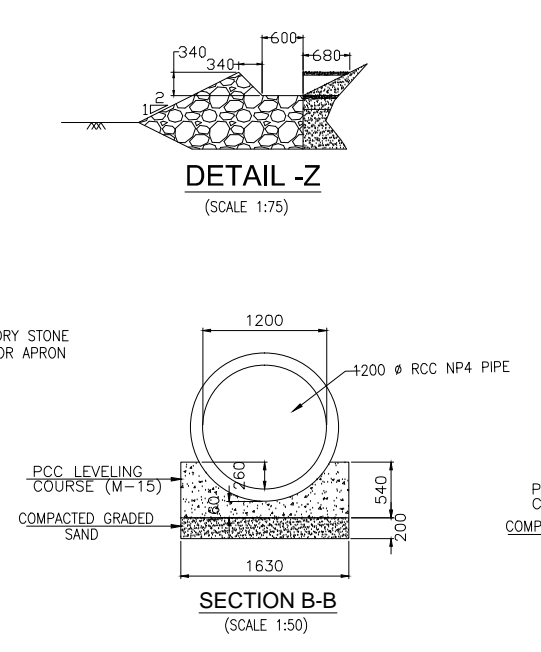
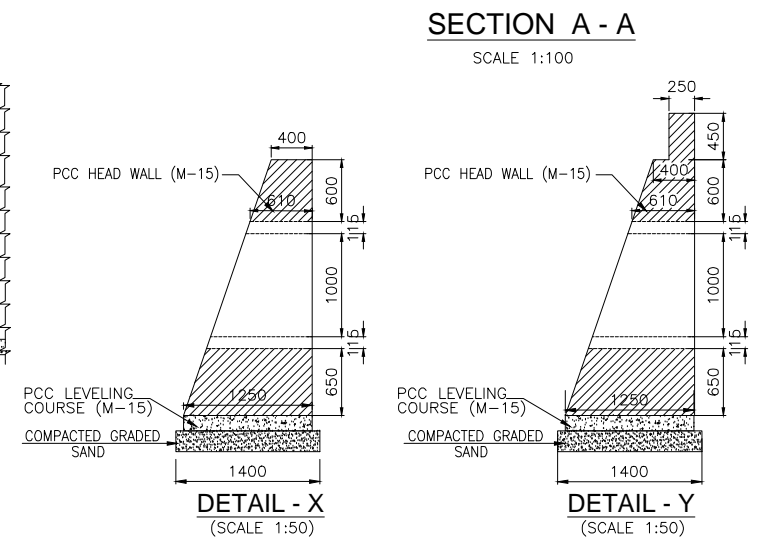
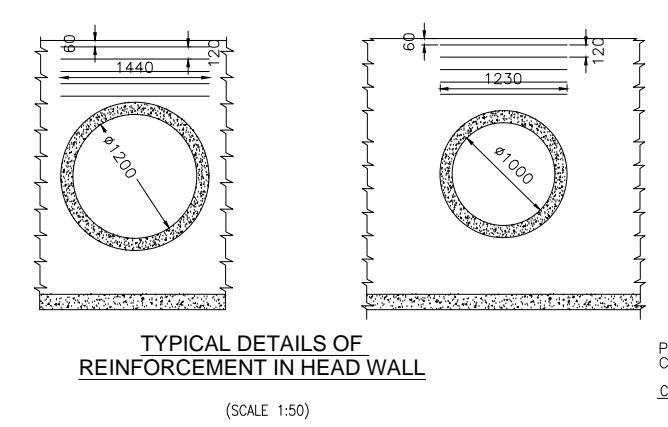
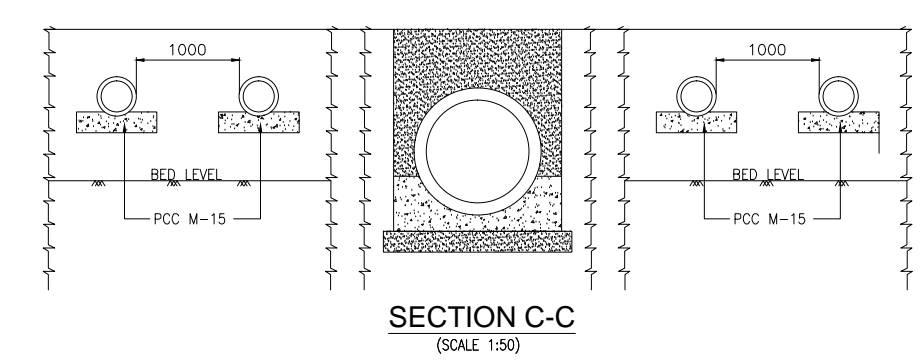
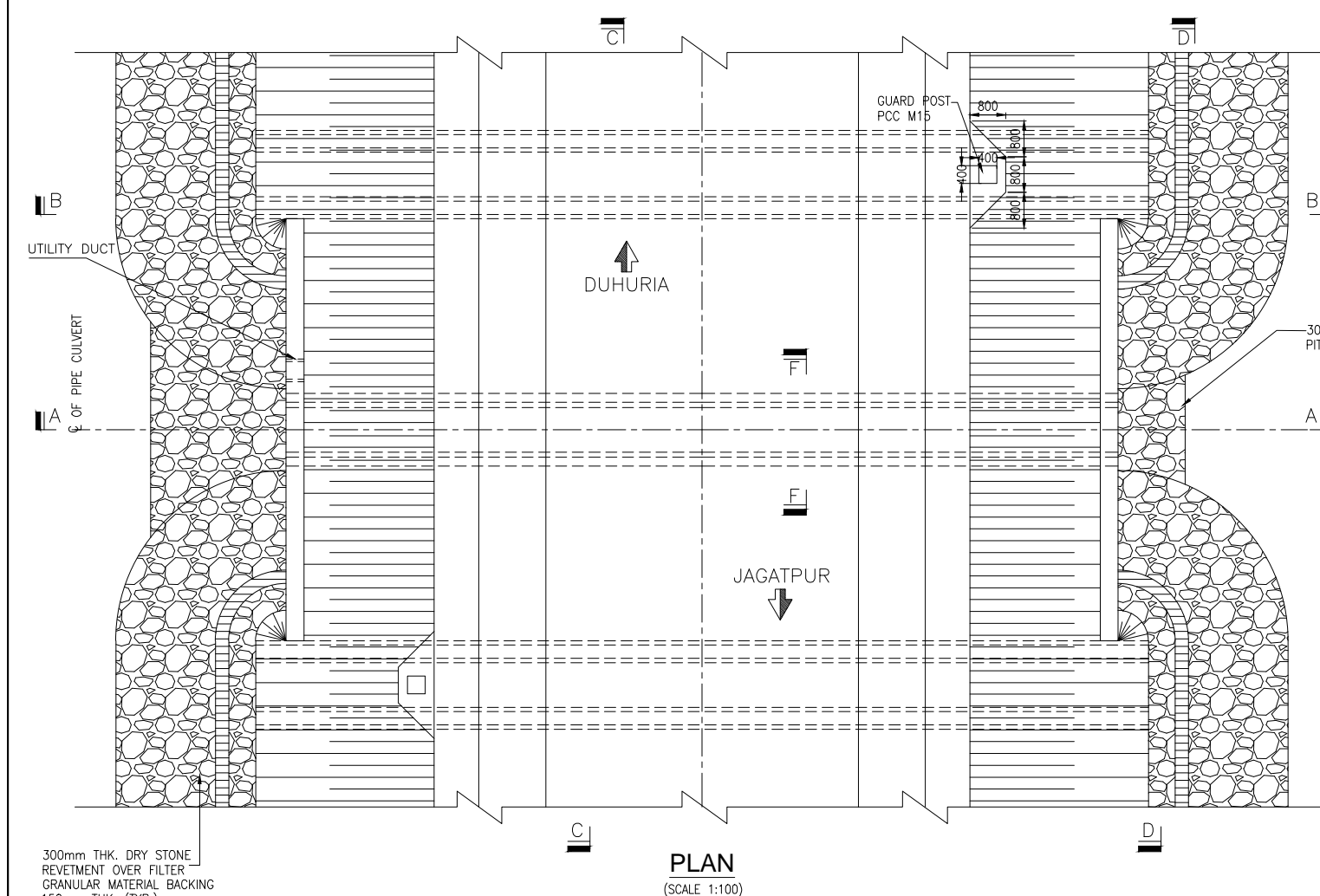
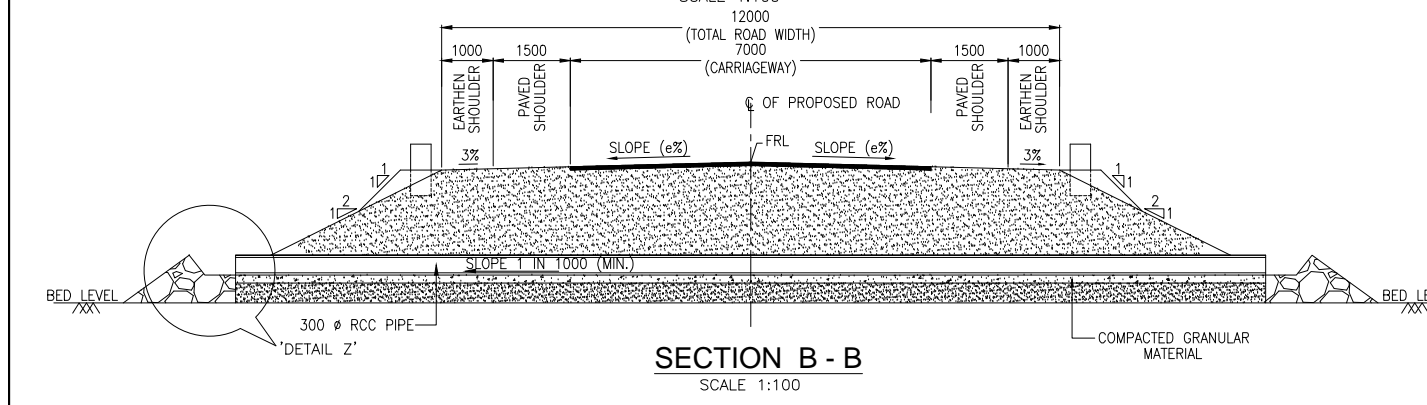
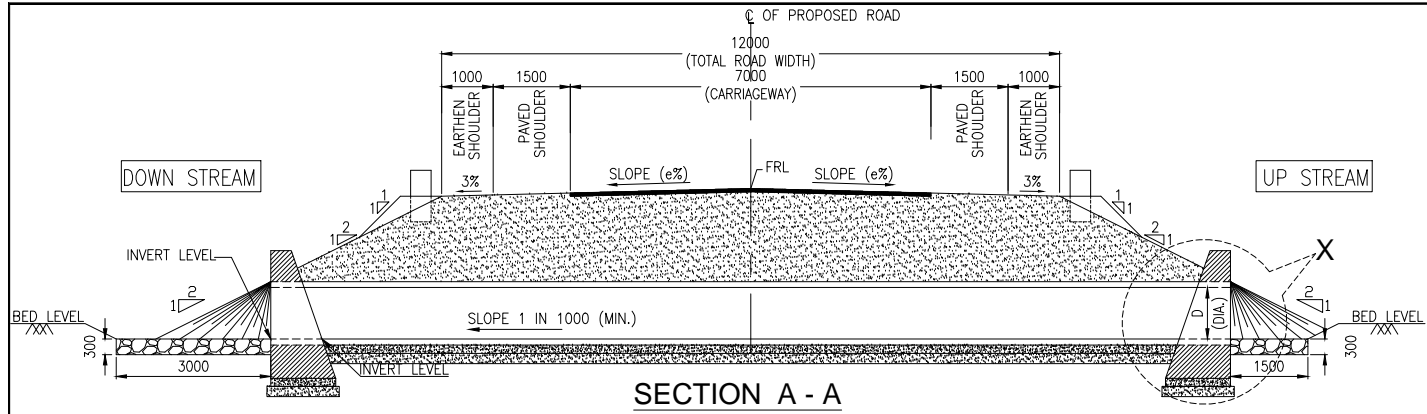
- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
  2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
  3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER/SUPERELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
  4. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS NP4.
  5. LONGITUDINAL SLOPE OF PIPE SHALL BE 1:1000 (MINIMUM).
  6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  7. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

R1 AUG. 2015 SECOND REVISION LASA JOY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO,TL R0 FEB-2013 FIRST REVISION OWD JOY PK.MISRA,AE M.R MISRA,EE N.K PRADHAN,CE JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cecindia.com			DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044			CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : <b>WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)</b>		SCALE : AS SHOWN		DRAWING TITLE : <b>TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL SINGLE CELL PIPE CULVERT (TYPE-1)</b>	
										DWG. NUMBER : <b>73466\LASA\GAD\PIPE-01</b>		(SHEET 1 OF 3) REV. R1							



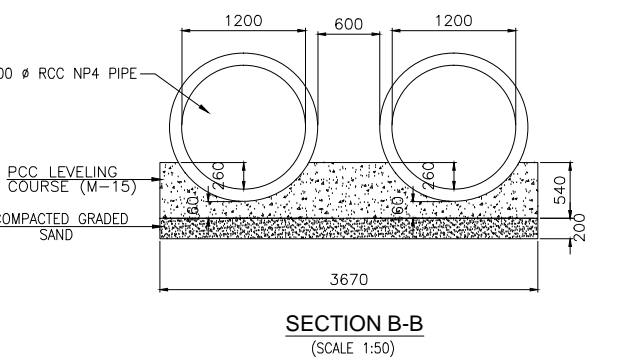
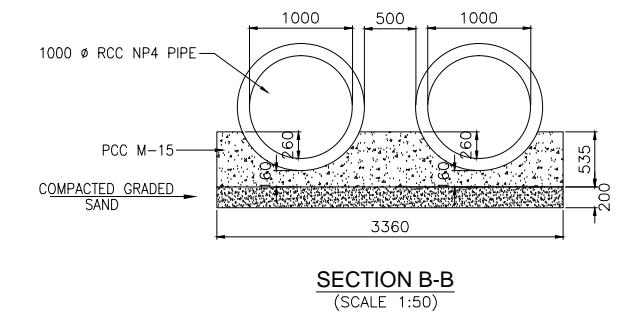
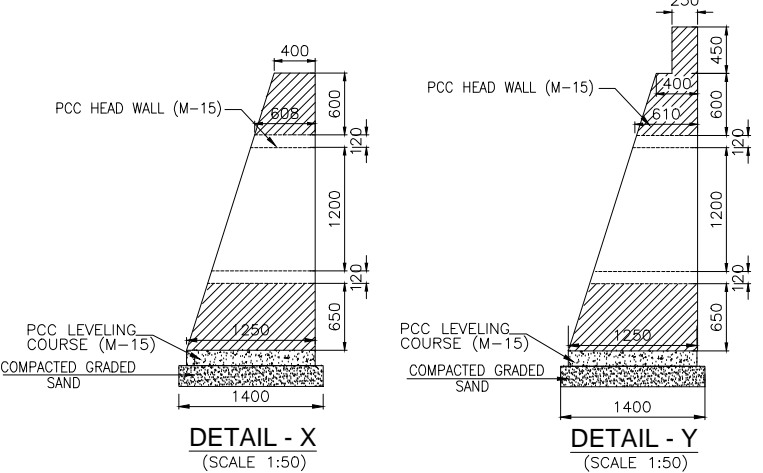
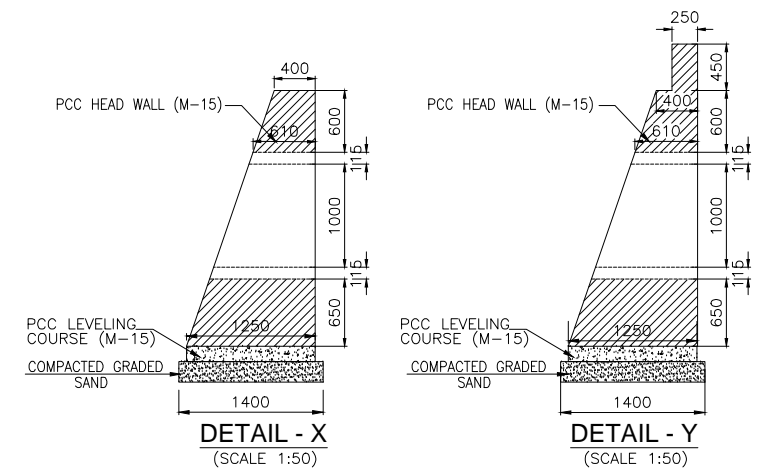
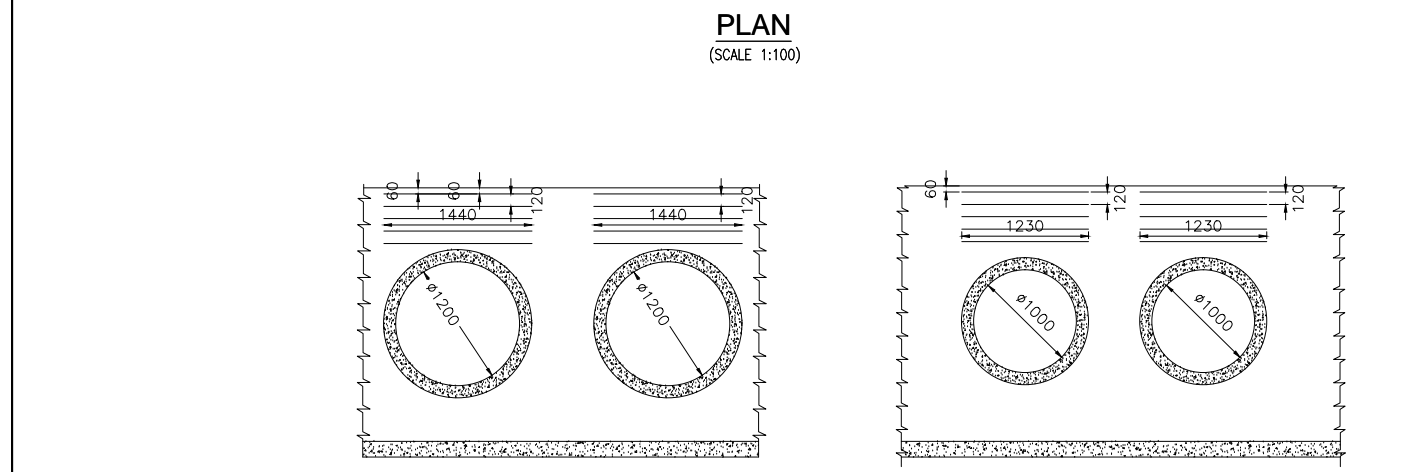
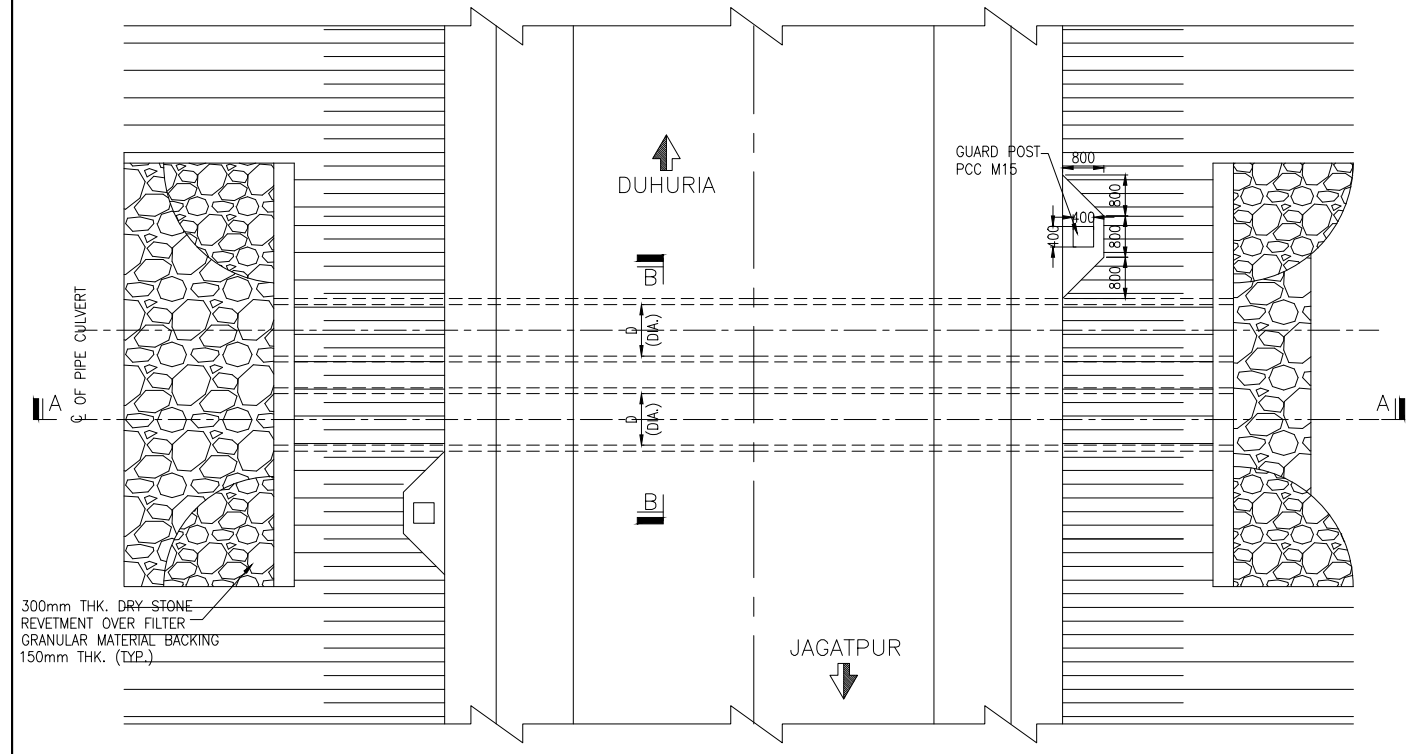
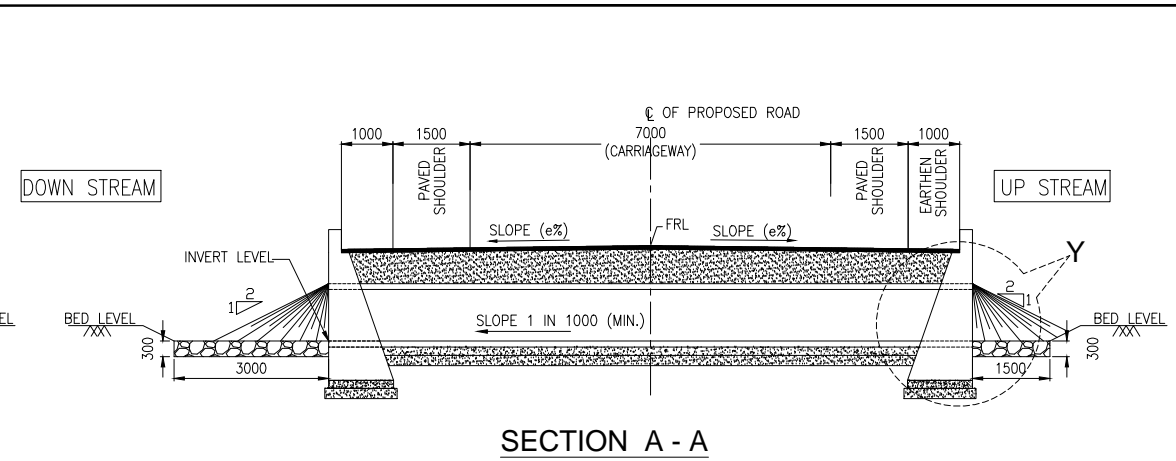
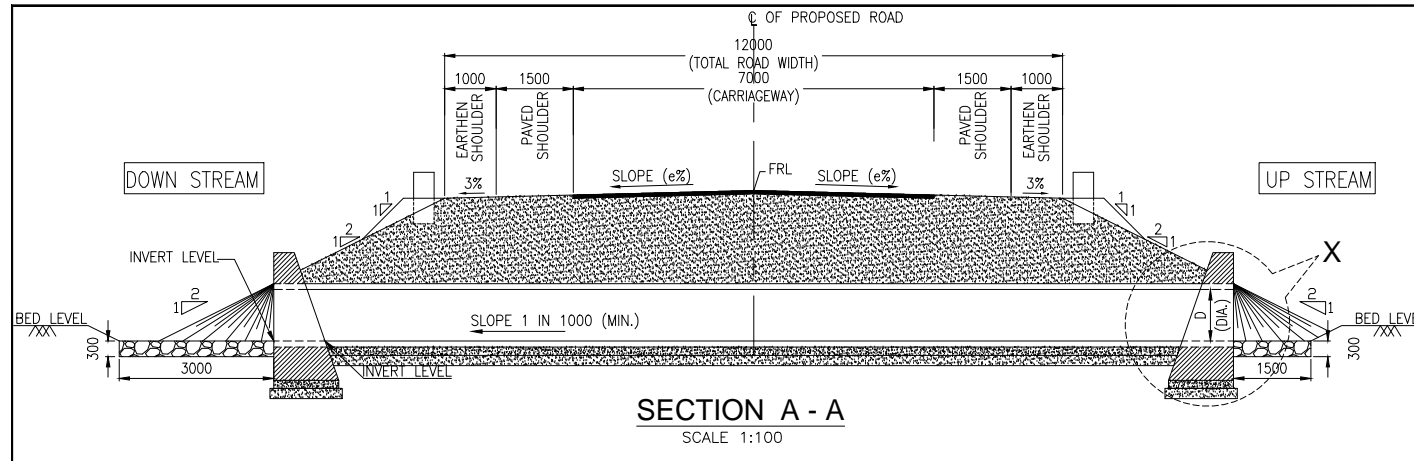
- NOTES:**
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  6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  7. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

R1 AUG. 2015 SECOND REVISION LASA JOY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO,TL R0 FEB-2013 FIRST REVISION OWD JOY PK.MISRA,AE M.R MISRA,EE N.K PRADHAN,CE JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12,MOJJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com		DESIGN REVIEW CONSULTANT : <b>LEA</b> LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		SCALE : AS SHOWN		DRAWING TITLE : TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL SINGLE CELL PIPE CULVERT (TYPE-2)	
DWG. NUMBER: 73466\LASA\GAD\PIPE-01										(SHEET 2 OF 3) REV. R1							



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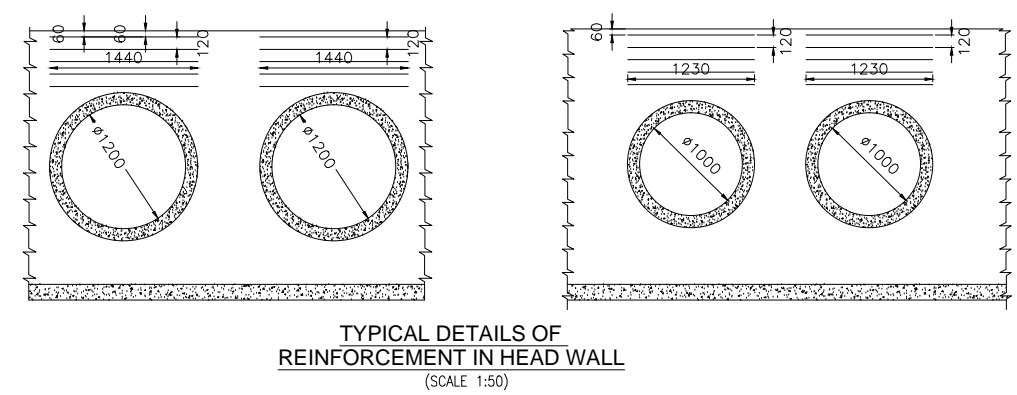
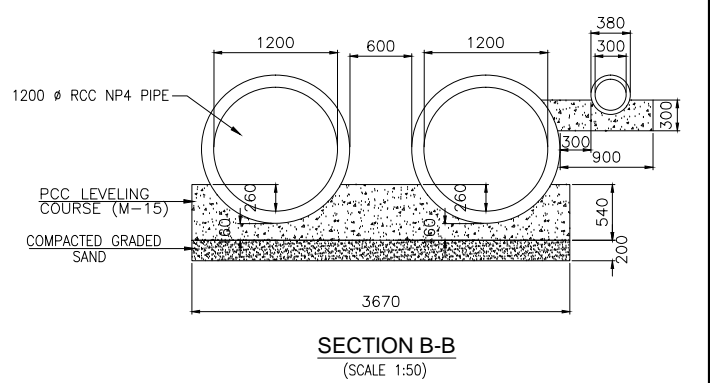
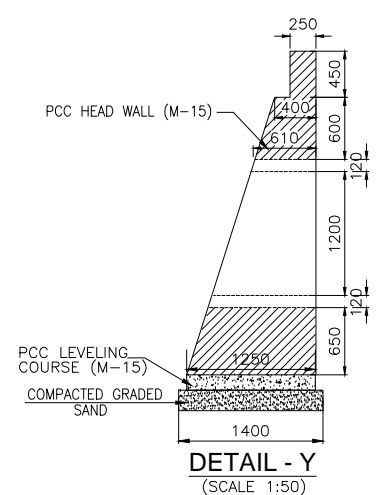
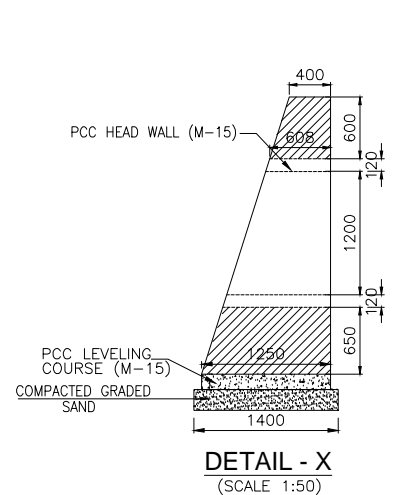
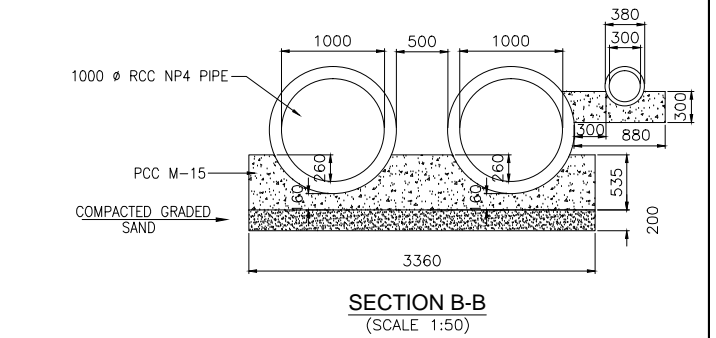
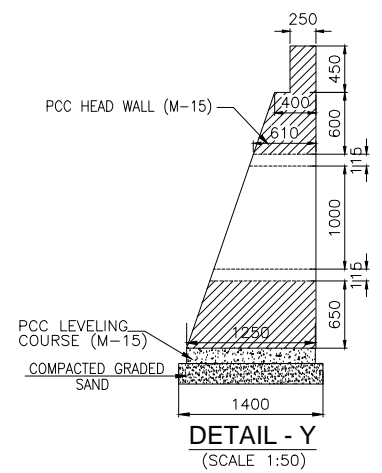
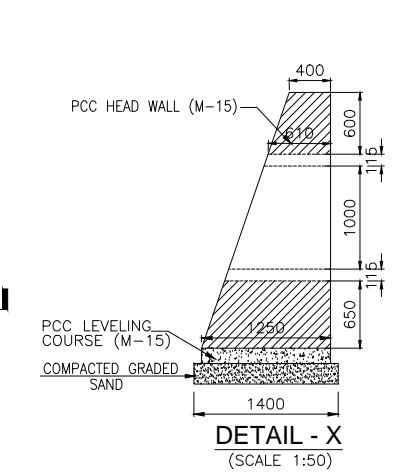
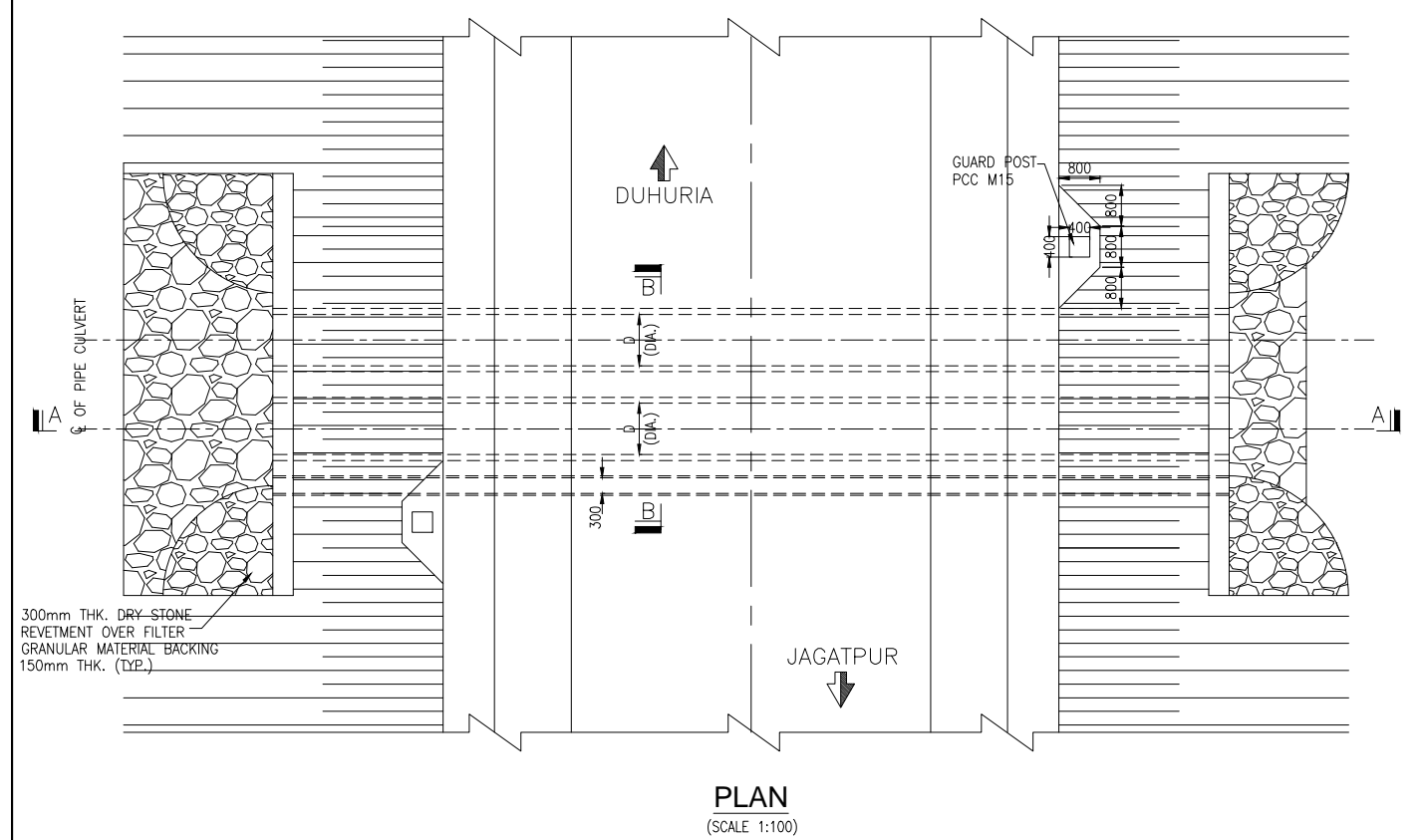
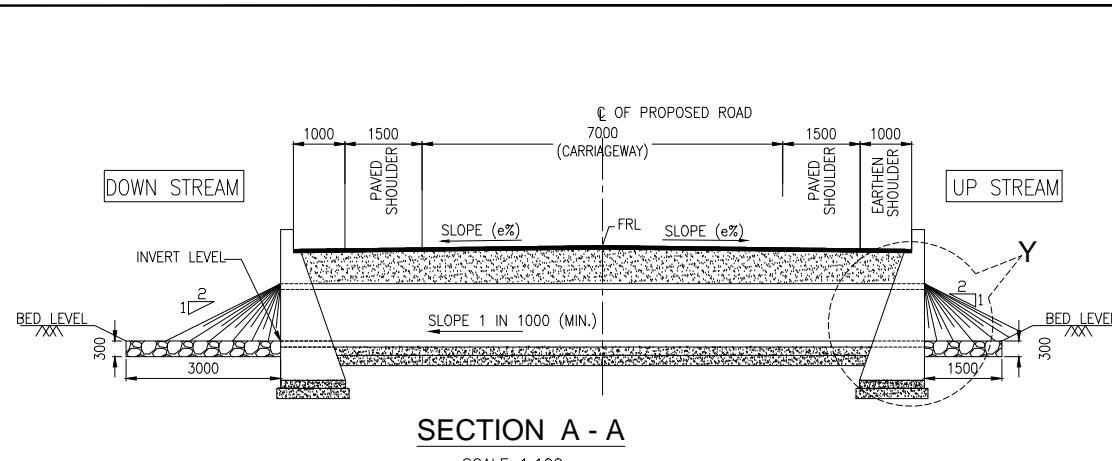
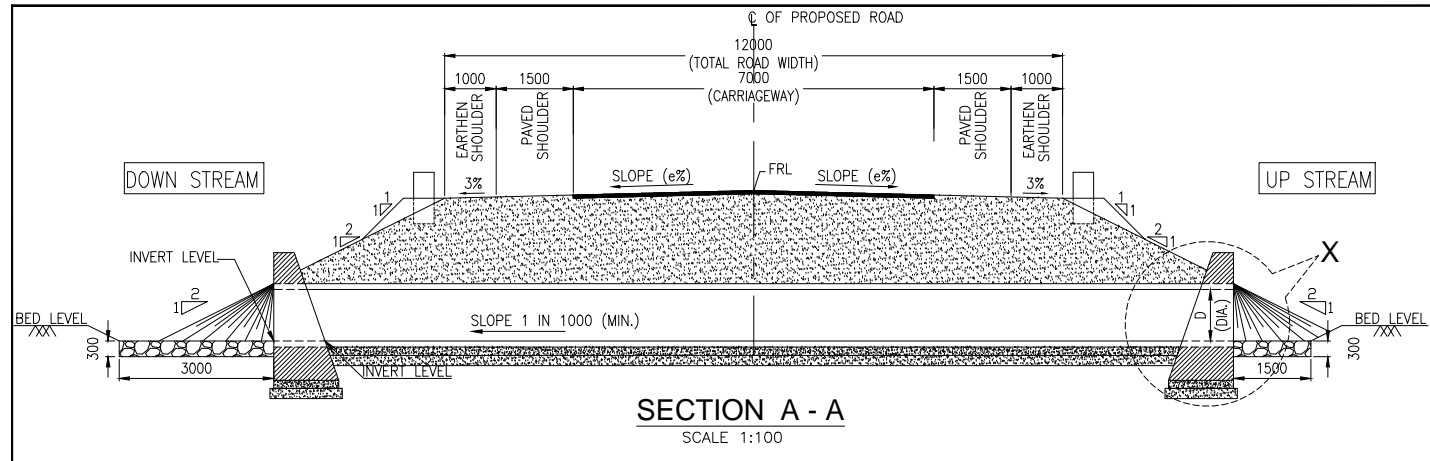
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R1	AUG. 2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL																																		
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE																																		
-	JUNE 2008	ORIGINAL	CEG																																						
300mm THK. DRY STONE REVELTMENT OVER FILTER GRANULAR MATERIAL BACKING 150mm THK. (TYP.)			PLAN (SCALE 1:100)		SECTION B-B (SCALE 1:50)		SECTION F-F (SCALE 1:50)		DWG. NUMBER : <b>73466\LASA\GAD\PIPE-01</b>		(SHEET 3 OF 3) REV. R1																														



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  3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER/SUPERELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
  4. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS NP4.
  5. LONGITUDINAL SLOPE OF PIPE SHALL BE 1:1000 (MINIMUM).
  6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  7. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

R1 AUG. 2015 SECOND REVISION LASA JOY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO,TL R0 FEB-2013 FIRST REVISION OWD JOY PK.MISRA,AE M.R MISRA,EE N.K PRADHAN,CE - JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com		DESIGN REVIEW CONSULTANT : <b>LEA</b> LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		SCALE : AS SHOWN		DRAWING TITLE : TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL DOUBLE CELL PIPE CULVERT (TYPE-1)	
DWG. NUMBER : 73466\LASA\GAD\PIPE-02										(SHEET 1 OF 3) REV. R1							





- NOTES:**
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  3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER/SUPERELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
  4. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS NP4.
  5. LONGITUDINAL SLOPE OF PIPE SHALL BE 1:1000 (MINIMUM).
  6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  7. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

R1	AUG. 2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

DPR CONSULTANT :

**CONSULTING ENGINEERS GROUP LTD. CEC**  
 E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginidia.com

DESIGN REVIEW CONSULTANT :

**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :

**ODISHA WORKS DEPARTMENT**

PROJECT :

**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :

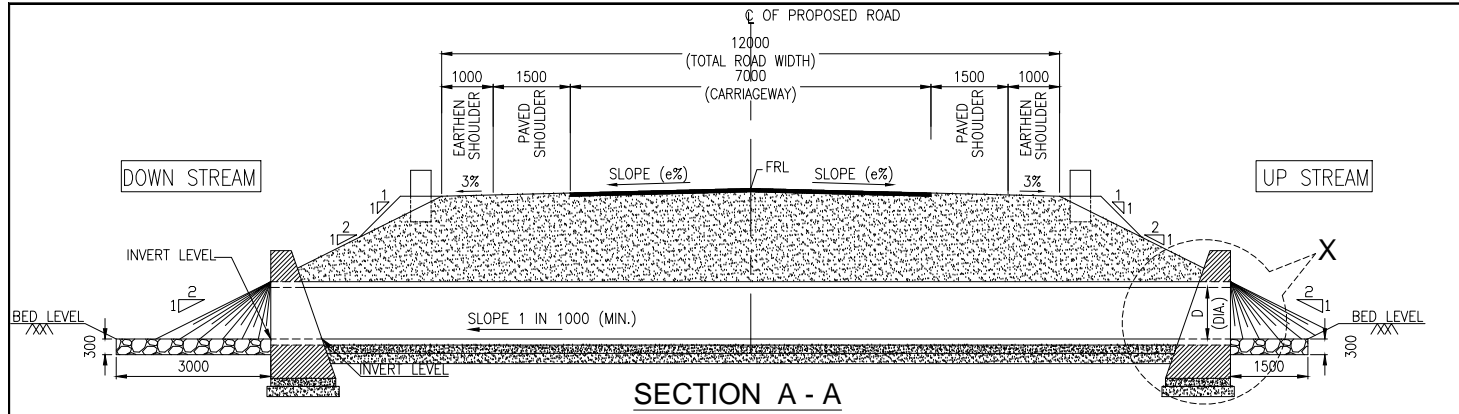
AS SHOWN

DRAWING TITLE :

**TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL DOUBLE CELL PIPE CULVERT (TYPE-2)**

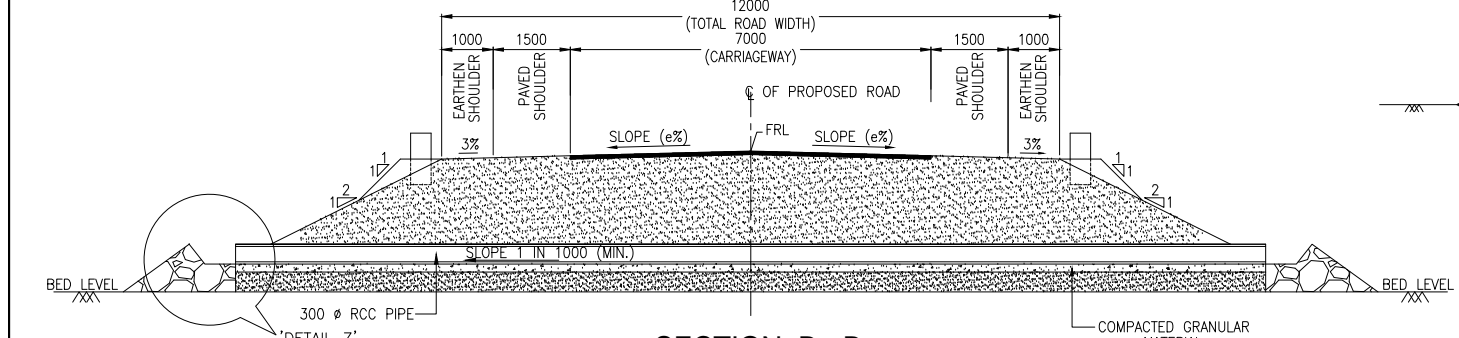
(SHEET 2 OF 3)

DWG. NUMBER: **73466\LASA\GAD\PIPE-02** REV. R1



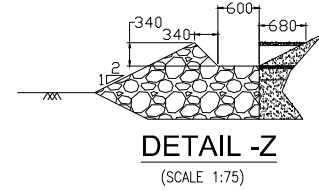
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SCALE 1:100



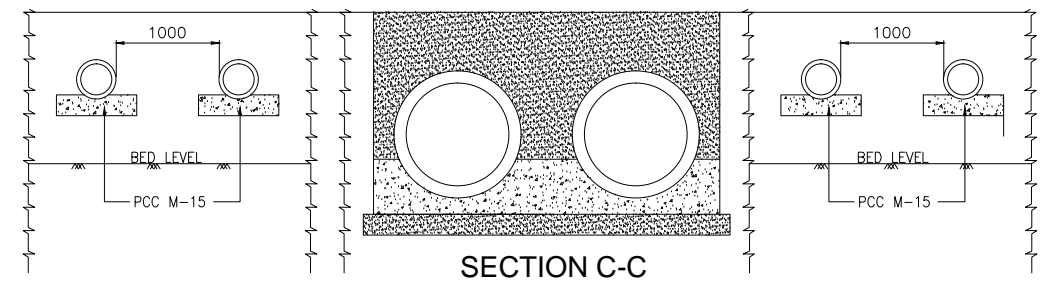
**SECTION B - B**

SCALE 1:100



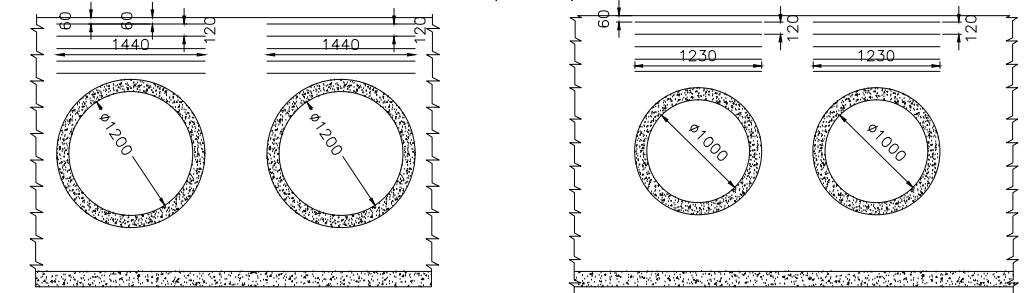
**DETAIL - Z**

(SCALE 1:75)

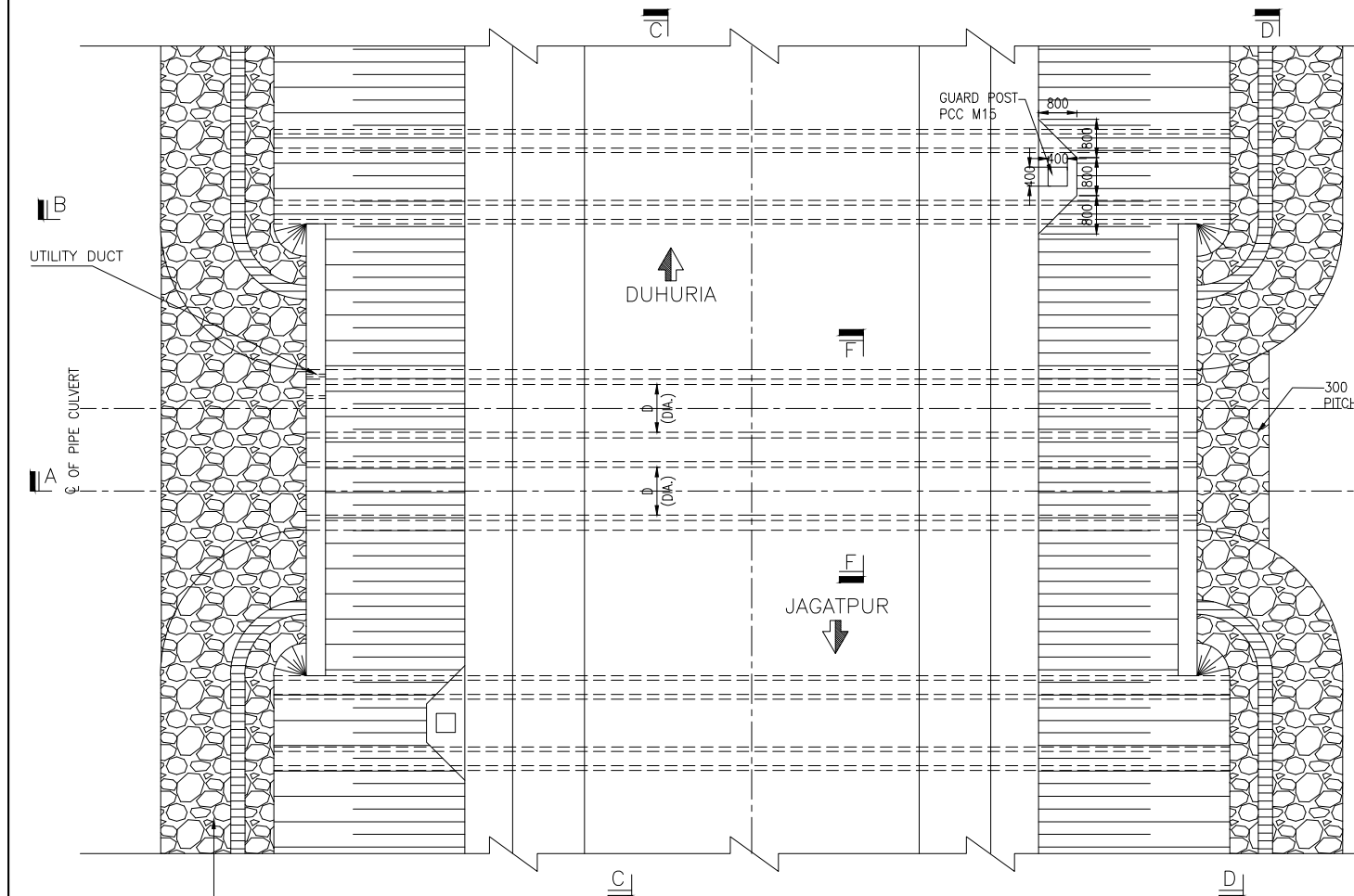


**SECTION C - C**

(SCALE 1:50)

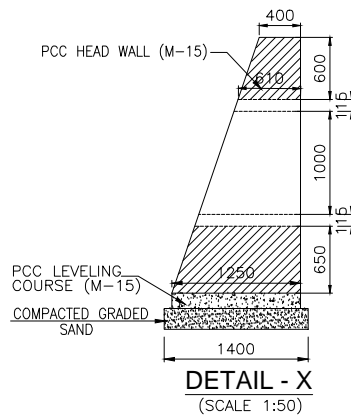


**TYPICAL DETAILS OF REINFORCEMENT IN HEAD WALL**



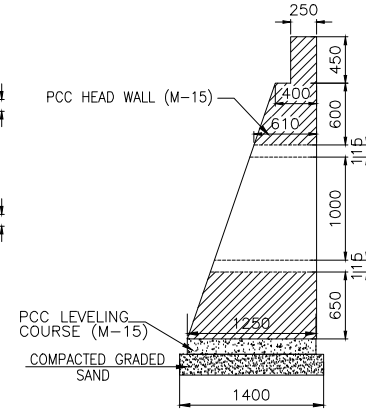
**PLAN**

(SCALE 1:100)



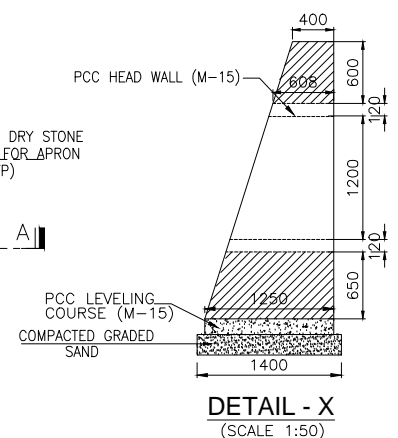
**DETAIL - X**

(SCALE 1:50)



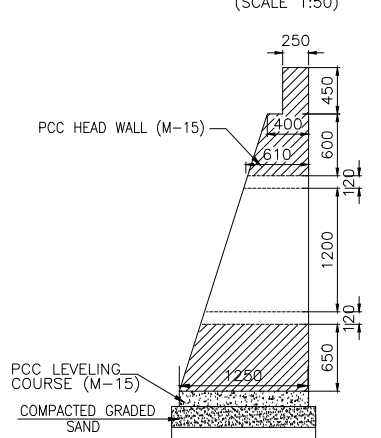
**DETAIL - Y**

(SCALE 1:50)



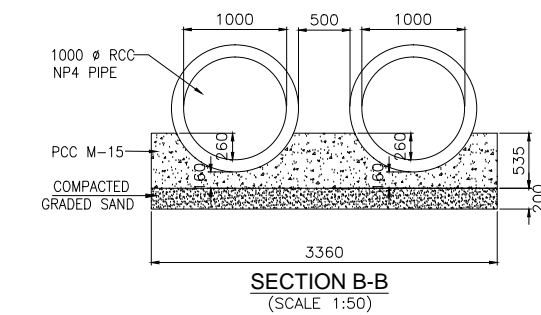
**DETAIL - X**

(SCALE 1:50)



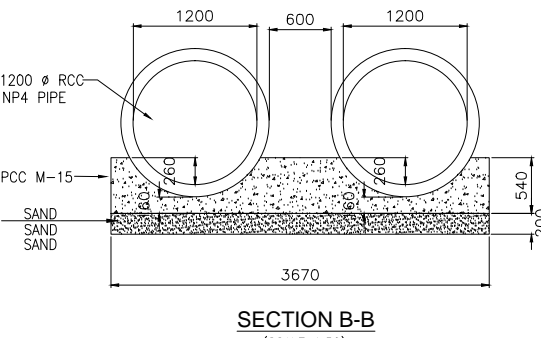
**DETAIL - Y**

(SCALE 1:50)



**SECTION B - B**

(SCALE 1:50)



**SECTION B - B**

(SCALE 1:50)

**NOTES:**

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(PAGE NO.-15)

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

DESIGN CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
 E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17  
 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cecindia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

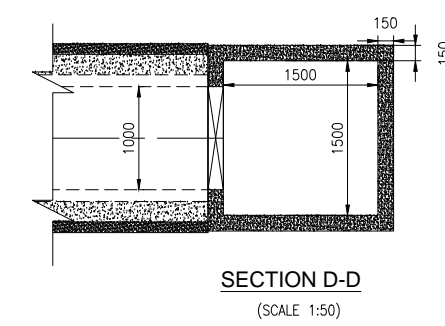
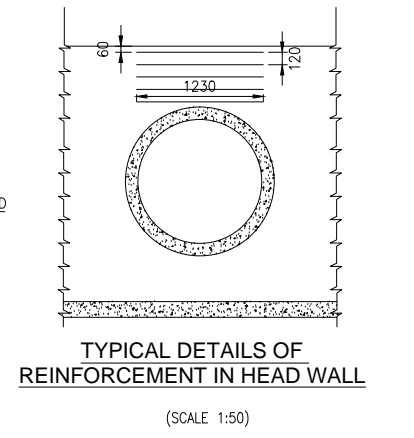
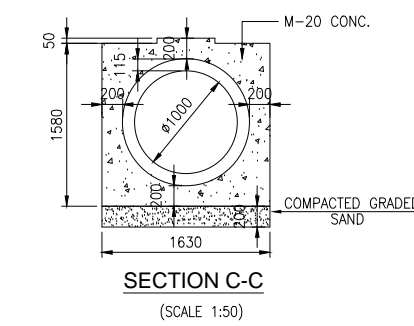
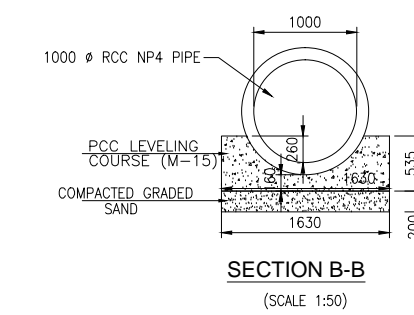
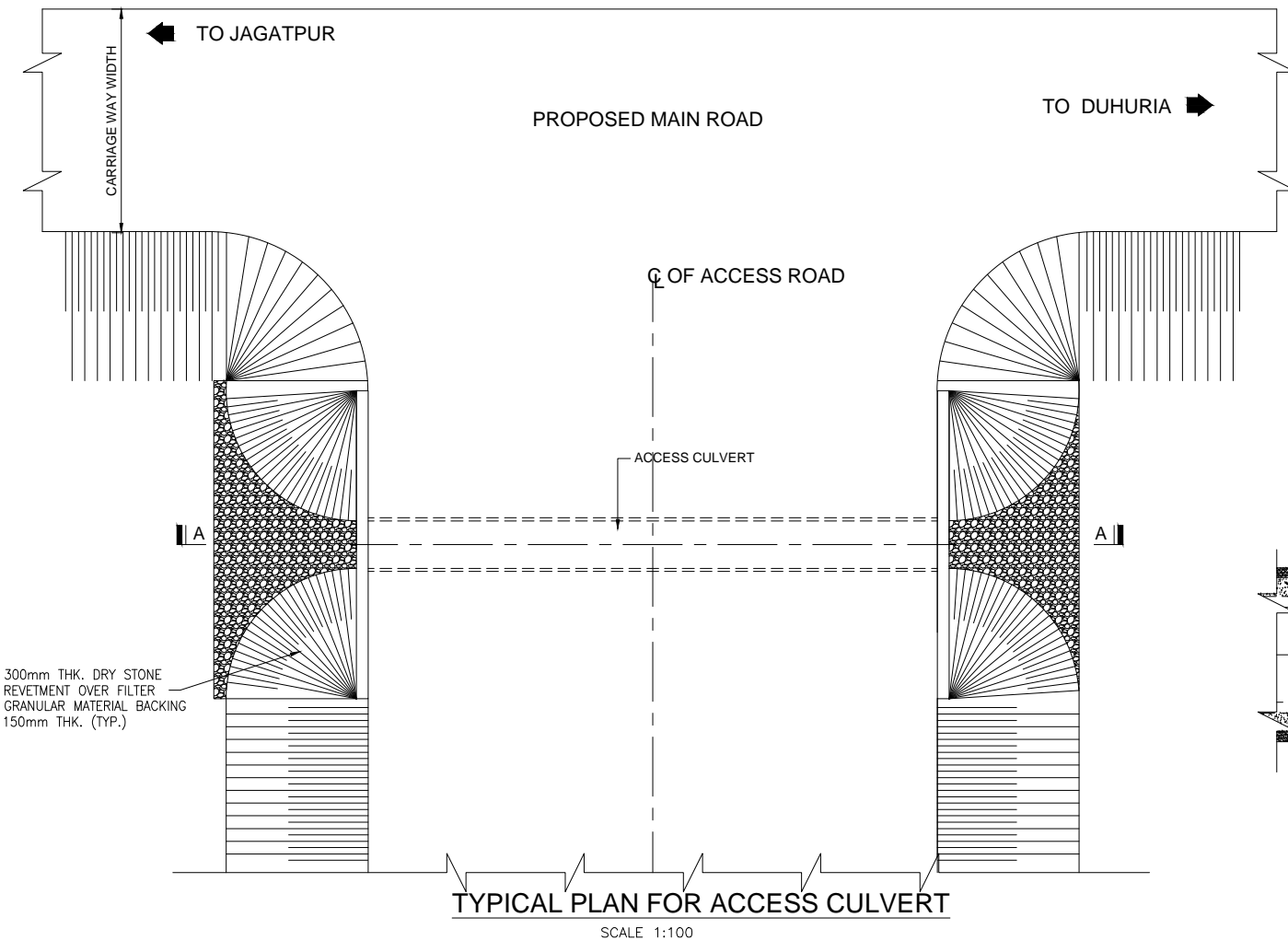
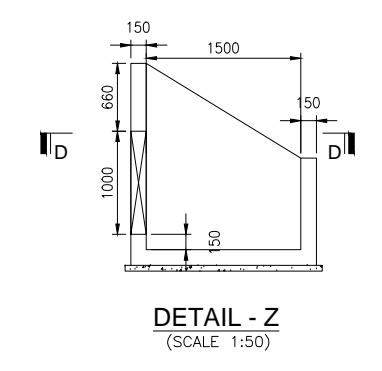
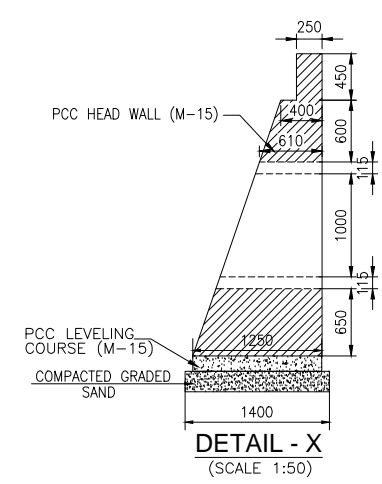
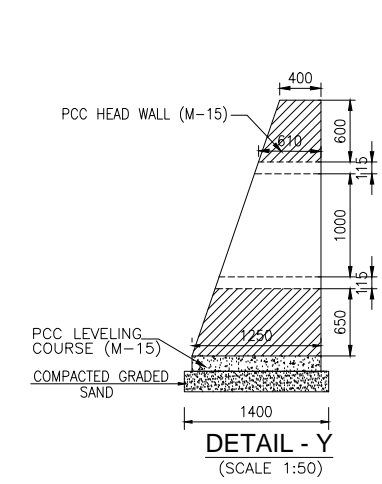
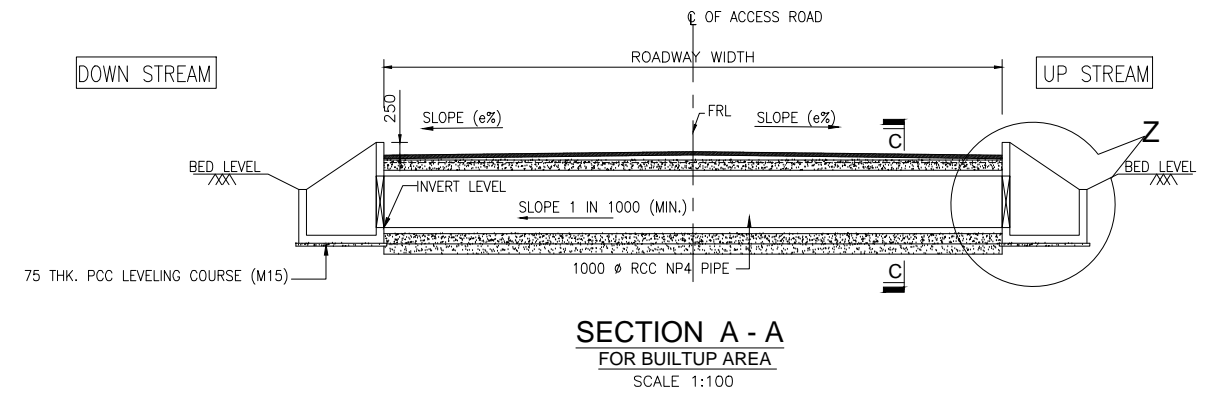
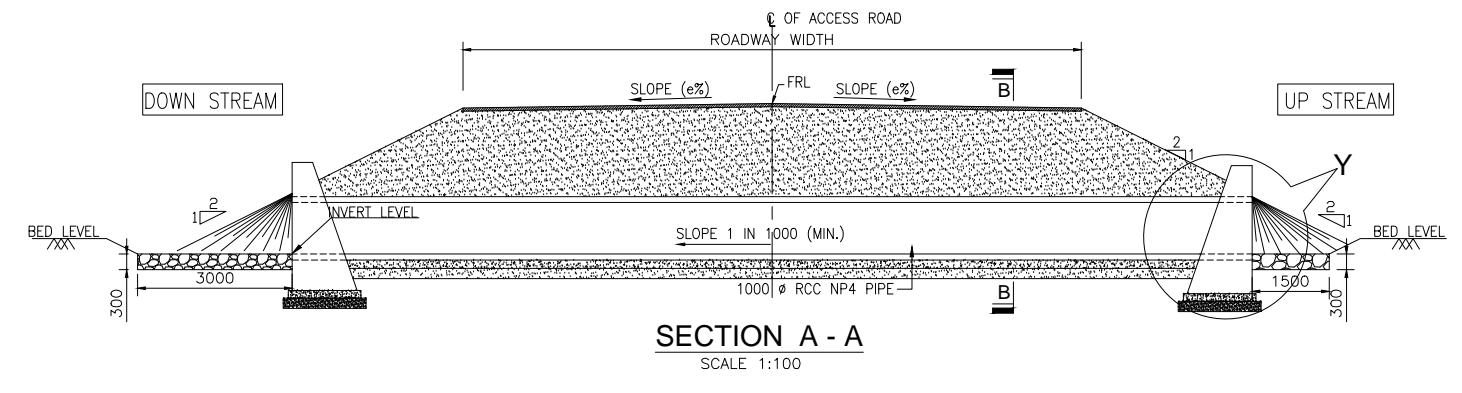
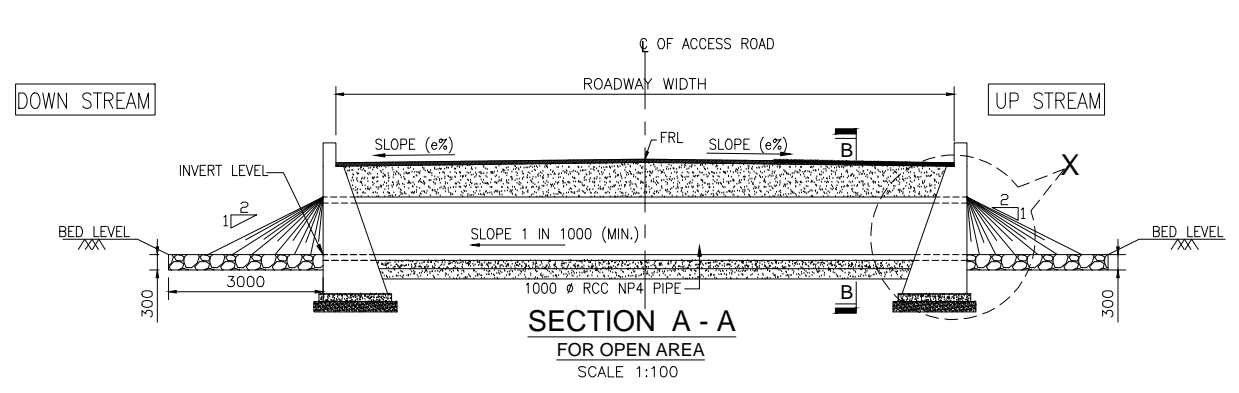
SCALE :  
 AS SHOWN

DRAWING TITLE :  
**TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL DOUBLE CELL PIPE CULVERT (TYPE-3)**

DWG. NUMBER : **73466LASA\GAD\PIPE-02**

REV. **R1**



(SHEET 3 OF 3)



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R1		AUG-2015	SECOND REVISION	LASA	PARANTAPA	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL	DPR CONSULTANT :	CONSULTING ENGINEERS GROUP LTD. <b>CEC</b>		DESIGN REVIEW CONSULTANT :		CLIENT :		PROJECT :		SCALE :		DRAWING TITLE :		
R0		FEB-2013	FIRST REVISION	OWD	PARANTAPA	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE	E-12,MOJJI COLONY,MALVIYA NAGAR JAIPUR-17		LEA Associates South Asia Pvt. Ltd., India		B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		AS SHOWN		TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL ACCESS CULVERT	
-		JUNE 2008	ORIGINAL	CEG					Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com										DWG. NUMBER: 73466LASA\GAD\ACS\PIPE-01		REV: R1	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:															




MAIN ROAD PIPE CULVERT DETAIL								
Sl. No.	CD Chainage	Pipe Dia, d	Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Type of Culvert	Pipe Length
		(m)	(m)	(m)				
<b>PIPE-CROSS DRAINAGE NEW CONSTR.</b>								
1	0+390.000	1.00	0.115	1.23	1	0	Encase	15
2	0+690.000	1.00	0.115	1.23	1	0	Encase	17.5
3	1+020.000	1.00	0.115	1.23	1	0	Encase	17.5
4	1+440.000	1.00	0.115	1.23	1	0	Encase	17.5
5	1+800.000	1.00	0.115	1.23	1	0	Encase	17.5
6	3+120.000	1.00	0.115	1.23	1	0	Encase	20
7	3+360.000	1.00	0.115	1.23	1	0	Normal DN	20
8	5+059.000	1.00	0.115	1.23	2	0	Normal	55
9	5+415.000	1.00	0.115	1.23	1	0	Encase	20
10	5+875.000	1.00	0.115	1.23	1	0	Normal DN	17.5
11	6+151.000	1.00	0.115	1.23	1	0	Normal DN	17.5
12	6+345.000	1.00	0.115	1.23	1	0	Encase	17.5
13	6+800.000	1.00	0.115	1.23	1	0	Normal DN	17.5
14	7+850.000	1.00	0.115	1.23	1	28.85	Encase	20
15	8+367.000	1.00	0.115	1.23	1	0	Normal	30
16	8+660.000	1.00	0.115	1.23	1	0	Normal	22.5
17	8+840.000	1.00	0.115	1.23	1	0	Normal	27.5
18	9+900.000	1.00	0.115	1.23	1	0	Normal DN	22.5
19	11+250.000	1.20	0.12	1.44	1	0	Normal	27.5
20	11+500.000	1.20	0.12	1.44	2	0	Normal	50
21	11+815.000	1.20	0.12	1.44	2	0	Normal	55
22	12+010.000	1.20	0.12	1.44	2	0	Normal	62.5
23	12+648.000	1.20	0.12	1.44	2	0	Normal	55
24	12+983.000	1.20	0.12	1.44	2	0	Normal	52.5
25	13+100.000	1.20	0.12	1.44	1	0	Normal	27.5
26	13+150.000	1.20	0.12	1.44	1	0	Normal	27.5
27	13+345.000	1.20	0.12	1.44	1	0	Normal	25
28	14+064.000	1.00	0.115	1.23	1	0	Normal DN	20
29	14+250.000	1.20	0.12	1.44	1	0	Normal	25
30	14+550.000	1.20	0.12	1.44	2	0	Normal	55
31	14+800.000	1.20	0.12	1.44	2	0	Normal	67.5
32	15+230.000	1.00	0.115	1.23	1	0	Normal	27.5
33	15+400.000	1.00	0.115	1.23	1	0	Normal DN	20
34	16+129.000	1.00	0.115	1.23	1	0	Encase	17.5
35	16+352.000	1.00	0.115	1.23	1	0	Normal DN	20
36	17+960.000	1.00	0.115	1.23	1	0	Encase	17.5
37	18+165.000	1.00	0.115	1.23	1	0	Encase	17.5
38	18+800.000	1.00	0.115	1.23	1	0	Encase	17.5
39	19+276.000	1.00	0.115	1.23	2	0	Normal DN	37.5
40	19+650.000	1.00	0.115	1.23	1	0	Encase	17.5
41	20+420.000	1.00	0.115	1.23	2	0	Encase	32.5
42	20+615.000	1.00	0.115	1.23	2	0	Encase	32.5
43	21+268.000	1.00	0.115	1.23	2	0	Normal	47.5
44	21+520.000	1.00	0.115	1.23	2	0	Normal	55
45	21+752.000	1.00	0.115	1.23	1	0	Normal DN	22.5
46	22+400.000	1.00	0.115	1.23	2	35.3	Encase	40
47	22+895.000	1.20	0.12	1.44	2	0	Normal DN	50
48	23+158.000	1.20	0.12	1.44	1	5	Normal DN	22.5
49	23+360.000	1.20	0.12	1.44	1	0	Normal	25
50	23+580.000	1.20	0.12	1.44	1	0	Normal	25
51	24+732.000	1.20	0.12	1.44	1	35	Normal DN	22.5

R1		AUG-2015	SECOND REVISION	LASA	PARANTAPA	SUBRAT/D.GHATAK	S.D.SARANGI	G.P.SAHOO,TL	DPR CONSULTANT :		CONSULTING ENGINEERS GROUP LTD. 		DESIGN REVIEW CONSULTANT :		CLIENT :		PROJECT :		SCALE :		DRAWING TITLE :		
R0		FEB-2013	FIRST REVISION	OWD	PARANTAPA	PK.MISRA,AE	M.R.MISRA,EE	N.K.PRADHAN,CE	CONSULTING ENGINEERS GROUP LTD. 		LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044				WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		AS SHOWN		SCHEDULE OF PIPE CULVERT NEW CONSTRUCTION				
-		JUNE 2008	ORIGINAL	CEG					Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com										DWG. NUMBER : 73466\LASA\SCHPIPE-01		REV: R1		
NO.		DATE		REVISION		BY		DRAWN:		PREPARED :		CHECKED:		APPROVED:									





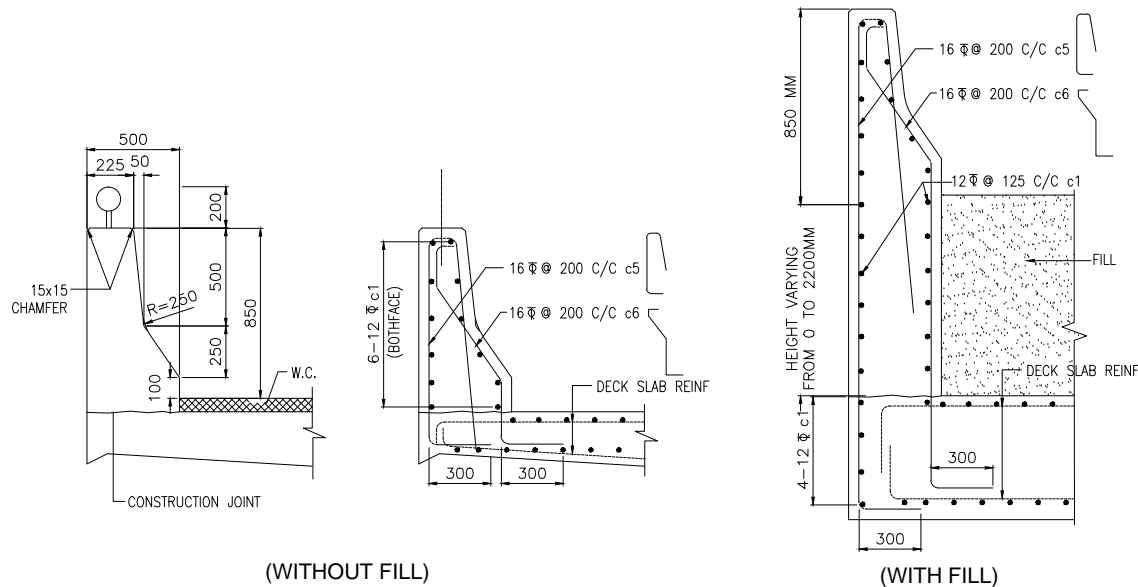
MAIN ROAD PIPE CULVERT DETAIL								
Sl. No.	CD Chainage	Pipe Dia, d	Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Type of Culvert	Pipe Length
		(m)	(m)	(m)		(deg)		1.0m dia
<b>PIPE-WITH UTILITY</b>								
1	0+190.000	1.00	0.115	1.23	1	0	Encase	18
2	1+921.000	1.00	0.115	1.23	2	0	Normal	55
3	2+400.000	1.00	0.115	1.23	1	0	Encase	20
4	2+800.000	1.00	0.115	1.23	1	0	Normal DN	18
5	3+850.000	1.00	0.115	1.23	1	0	Encase	18
6	4+300.000	1.00	0.115	1.23	1	0	Normal DN	18
7	5+650.000	1.00	0.115	1.23	1	0	Normal DN	23
8	6+450.000	1.00	0.115	1.23	1	0	Normal DN	18
9	7+473.000	1.00	0.115	1.23	1	0	Normal DN	23
10	8+200.000	1.00	0.115	1.23	1	0	Normal	28
11	9+265.000	1.00	0.115	1.23	1	0	Normal DN	20
12	10+100.000	1.00	0.115	1.23	1	0	Encase	18
13	13+820.000	1.00	0.115	1.23	1	0	Encase	20
14	16+608.000	1.00	0.115	1.23	2	0	Normal DN	43
15	17+315.000	1.00	0.115	1.23	1	0	Normal DN	23
16	17+500.000	1.00	0.115	1.23	2	0	Normal	55
17	18+381.000	1.00	0.115	1.23	1	0	Normal DN	18
18	21+060.000	1.00	0.115	1.23	1	0	Normal DN	23
19	22+050.000	1.00	0.115	1.23	1	0	Normal DN	20
20	22+648.000	1.20	0.12	1.44	2	0	Normal	53
21	23+853.000	1.20	0.12	1.44	2	0	Normal DN	53
22	24+470.000	1.00	0.115	1.23	2	0	Normal	50

MAIN ROAD PIPE CULVERT DETAIL (WIDENING)										
Sl. No.	CD Chainage	Pipe Dia, d	Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Widen-Left	Widen-Right	Pipe Length	
		(m)	(m)	(m)	(no.)	(deg)	(m)	(m)	(m)	(m)
<b>REPTILE CULVERT</b>										
1	0+190.000	0.30	0.05	0.4	1	0	7.5	7.5	18	
2	1+921.000	0.30	0.05	0.4	1	0	10	10	29	
3	2+400.000	0.30	0.05	0.4	1	0	7.5	10	20	
4	2+800.000	0.30	0.05	0.4	1	0	6.75	6.75	18	
5	3+850.000	0.30	0.05	0.4	1	0	7.5	7.5	18	
6	4+300.000	0.30	0.05	0.4	1	0	7.5	6.75	17	
7	5+650.000	0.30	0.05	0.4	1	0	7.5	10	20	
8	6+450.000	0.30	0.05	0.4	1	0	7.5	6.75	18	
9	7+473.000	0.30	0.05	0.4	1	0	7.5	10	21	
10	8+200.000	0.30	0.05	0.4	1	0	10	10	30	
11	9+265.000	0.30	0.05	0.4	1	0	7.5	7.5	21	
12	10+100.000	0.30	0.05	0.4	1	0	7.5	7.5	18	
13	13+820.000	0.30	0.05	0.4	1	0	7.5	10	20	
14	16+608.000	0.30	0.05	0.4	1	0	7.5	10	22	
15	17+315.000	0.30	0.05	0.4	1	0	7.5	10	23	
16	17+500.000	0.30	0.05	0.4	1	0	10	10	30	
17	18+381.000	0.30	0.05	0.4	1	0	6.75	6.75	18	
18	21+060.000	0.30	0.05	0.4	1	0	7.5	10	23	
19	22+050.000	0.30	0.05	0.4	1	0	7.5	7.5	19	
20	22+648.000	0.30	0.05	0.4	1	0	10	10	29	
21	23+853.000	0.30	0.05	0.4	1	0	10	10	28	
22	24+470.000	0.30	0.05	0.4	1	0	10	10	27	

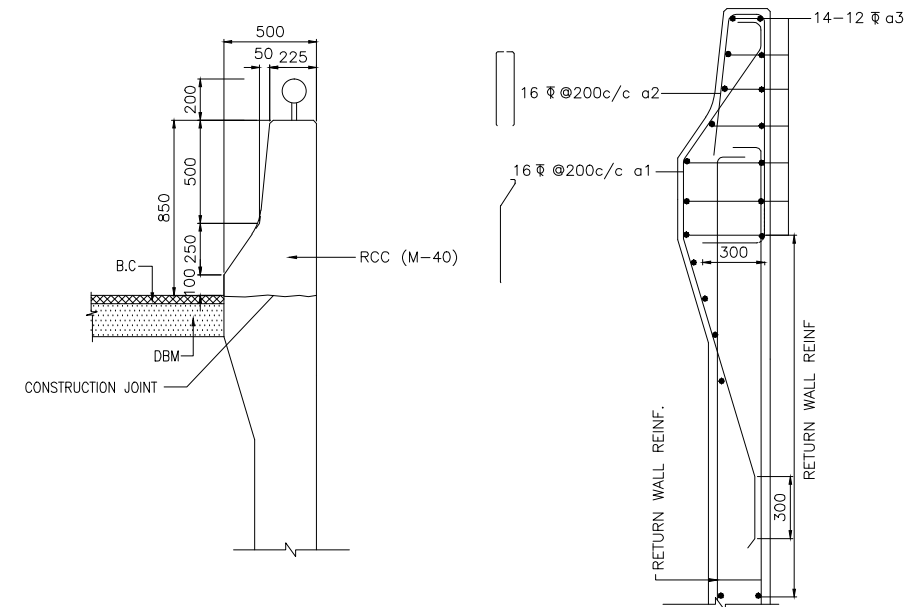
R1 AUG. 2015 SECOND REVISION LASA PARANTAPA SUBRAT/D.GHATAK S.D.SARANGI G.P.SAHOO,TL		R0 FEB-2013 FIRST REVISION OWD PARANTAPA PK.MISRA,AE M.R.MISRA,EE N.K.PRADHAN,CE		JUNE 2008 ORIGINAL CEG		NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:		DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD.</b>  E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegroup.com		DESIGN REVIEW CONSULTANT :  LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		SCALE : AS SHOWN		DRAWING TITLE : SCHEDULE OF PIPE CULVERT WITH UTILITY	
								DWG. NUMBER : 73466\LASA\SCHPIPE-03		REV: R1									

MAIN ROAD PIPE CULVERT DETAIL								
Sl. No.	CD Chainage	Pipe Dia, d	Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Type of Culvert	Pipe Length
		(m)	(m)	(m)				(deg)
<b>PIPE-ACCESS ROAD</b>								
1	0+182.000	1.00	0.115	1.23	1	0	Encase	15
2	0+510.000	1.00	0.115	1.23	1	0	Encase	15
3	1+000.000	1.00	0.115	1.23	1	0	Normal DN	15
4	1+183.000	1.00	0.115	1.23	1	0	Encase	15
5	1+366.000	1.00	0.115	1.23	1	0	Encase	15
6	1+405.000	1.00	0.115	1.23	1	0	Encase	15
7	1+806.000	1.00	0.115	1.23	1	0	Encase	15
8	2+148.000	1.00	0.115	1.23	1	0	Normal	25
9	2+184.000	1.00	0.115	1.23	1	0	Normal	25
10	2+854.000	1.00	0.115	1.23	1	0	Normal DN	20
11	3+330.000	1.00	0.115	1.23	1	0	Encase	20
12	3+880.000	1.00	0.115	1.23	1	0	Encase	25
13	3+980.000	1.00	0.115	1.23	1	0	Encase	25
14	4+200.000	1.00	0.115	1.23	1	0	Encase	25
15	4+450.000	1.00	0.115	1.23	1	0	Encase	20
16	4+730.000	1.00	0.115	1.23	1	0	Normal DN	20
17	5+160.000	1.00	0.115	1.23	1	0	Encase	20
18	5+230.000	1.00	0.115	1.23	1	0	Normal	23
19	5+695.000	1.00	0.115	1.23	1	0	Encase	20
20	5+885.000	1.00	0.115	1.23	1	0	Normal DN	28
21	6+075.000	1.00	0.115	1.23	1	0	Encase	25
22	6+105.000	1.00	0.115	1.23	1	0	Normal	28
23	6+315.000	1.00	0.115	1.23	1	0	Encase	25
24	6+550.000	1.00	0.115	1.23	1	0	Encase	25
25	6+800.000	1.00	0.115	1.23	1	0	Encase	25
26	7+640.000	1.00	0.115	1.23	1	0	Encase	25
27	7+880.000	1.00	0.115	1.23	1	0	Encase	25
28	9+050.000	1.00	0.115	1.23	1	0	Normal	25
29	9+070.000	1.00	0.115	1.23	1	0	Normal	28
30	9+445.000	1.00	0.115	1.23	1	0	Encase	25
31	9+486.000	1.00	0.115	1.23	1	0	Encase	25
32	10+440.000	1.00	0.115	1.23	1	0	Normal DN	28
33	10+858.000	1.00	0.115	1.23	1	0	Normal DN	20
34	10+878.000	1.00	0.115	1.23	1	0	Encase	20
35	13+120.000	1.00	0.115	1.23	1	0	Normal	25
36	13+530.000	1.00	0.115	1.23	1	0	Normal	23
37	13+896.000	1.00	0.115	1.23	1	0	Encase	15
38	13+904.000	1.00	0.115	1.23	1	0	Encase	15
39	15+646.000	1.00	0.115	1.23	1	0	Encase	20
40	16+650.000	1.00	0.115	1.23	1	0	Normal DN	25
41	16+891.000	1.00	0.115	1.23	1	0	Encase	25
42	18+658.000	1.00	0.115	1.23	1	0	Encase	25
43	18+817.000	1.00	0.115	1.23	1	0	Encase	25
44	19+556.000	1.00	0.115	1.23	1	0	Encase	25
45	19+642.000	1.00	0.115	1.23	1	0	Encase	25
46	19+771.000	1.00	0.115	1.23	1	0	Encase	25
47	20+028.000	1.00	0.115	1.23	1	0	Encase	25
48	20+075.000	1.00	0.115	1.23	1	0	Encase	25
49	20+440.000	1.00	0.115	1.23	1	0	Encase	25
50	21+312.000	1.00	0.115	1.23	1	0	Normal DN	20
51	21+350.000	1.00	0.115	1.23	1	0	Normal	23
52	21+890.000	1.00	0.115	1.23	1	0	Normal	25
53	22+400.000	1.00	0.115	1.23	1	0	Encase	15
54	24+120.000	1.00	0.115	1.23	1	0	Encase	15
55	24+430.000	1.00	0.115	1.23	1	0	Normal DN	20
56	24+680.000	1.00	0.115	1.23	1	0	Normal	23
57	24+685.000	1.00	0.115	1.23	1	0	Normal DN	20
58	24+880.000	1.00	0.115	1.23	1	0	Normal	23

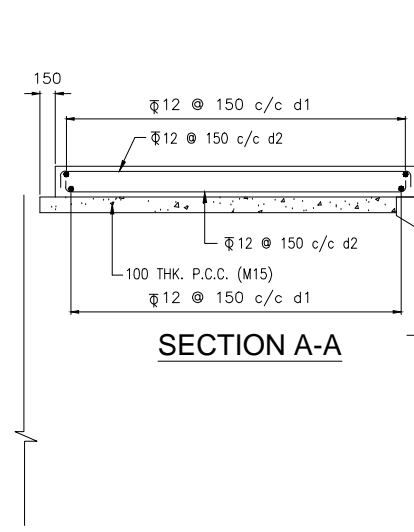
							DPR CONSULTANT :		CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :	
R1	AUG. 2015	SECOND REVISION	LASA	PARANTAPA	SUBRAT/D.GHATAK	S.D.SARANGI	G.P.SAHOO,TL	<b>C CONSULTING ENGINEERS GROUP LTD.</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceindia.com	 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	 ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)	AS SHOWN	SCHEDULE OF ACCESS PIPE CULVERT
R0	FEB-2013	FIRST REVISION	OWD	PARANTAPA	PK.MISRA,AE	M.R.MISRA,EE	N.K.PRADHAN,CE					DWG. NUMBER : 73466\LASA\SCHPIPE-04	
	JUNE 2008	ORIGINAL	CEG									REV : R1	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:						



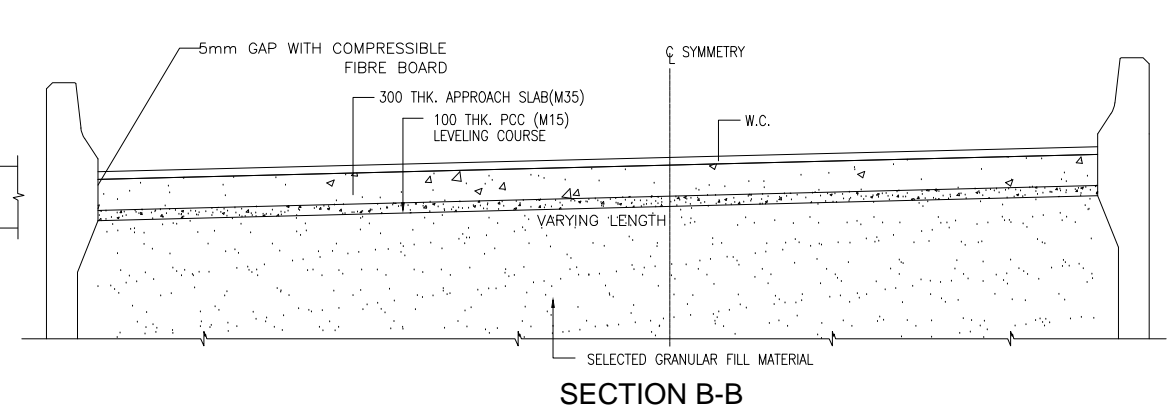
DETAILS OF CRASH BARRIER FOR DIFFERENT LOCATION



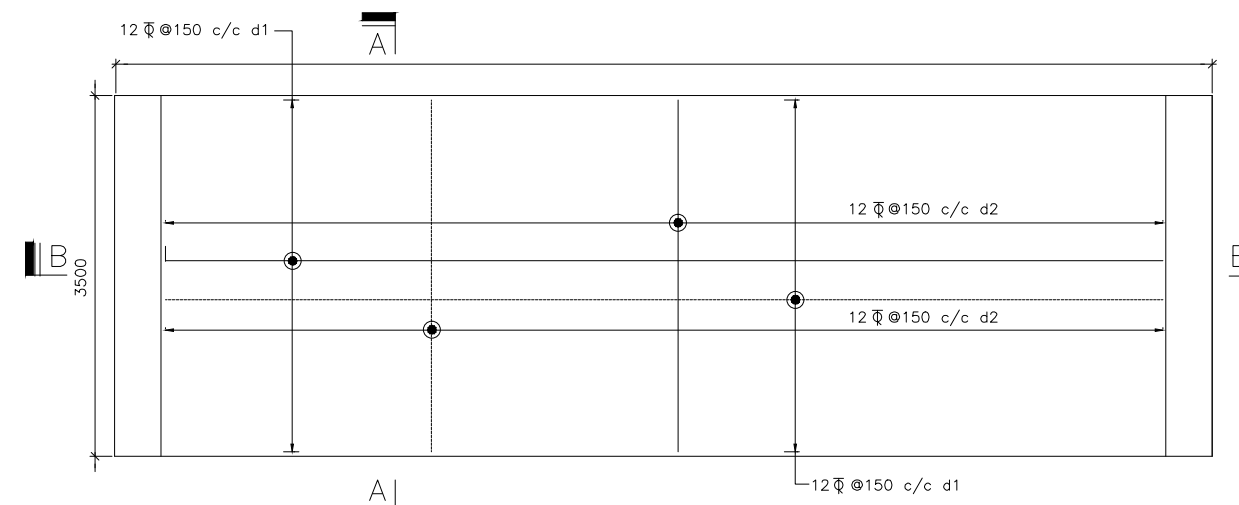
DIMENSION DETAIL REINFORCEMENT DETAIL  
DETAILS OF CRASH BARRIER OVER RETURN WALL



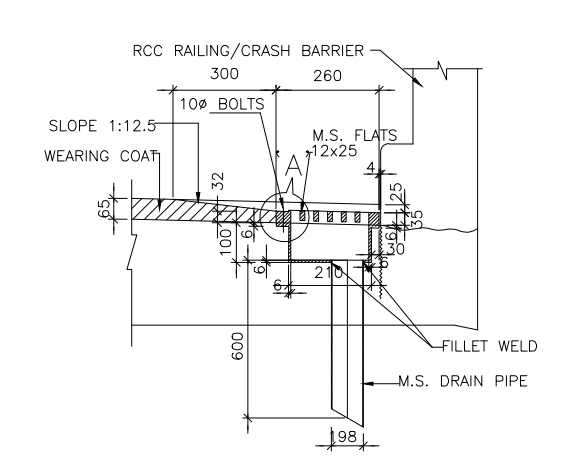
SECTION A-A



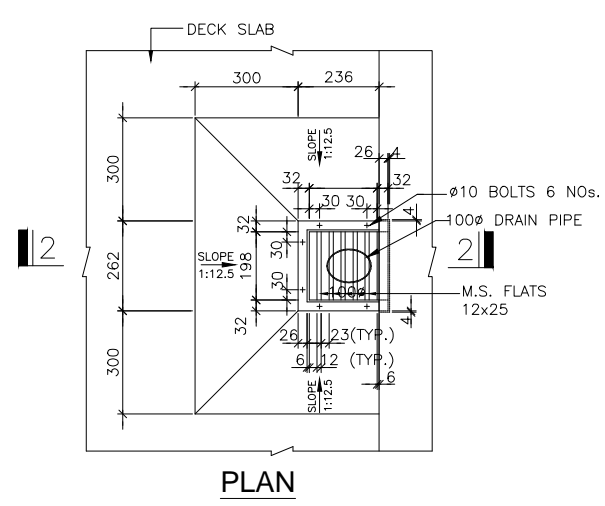
SECTION B-B



R.C. DETAILS OF APPROACH SLAB  
(AT FINISHED ROAD LEVEL)

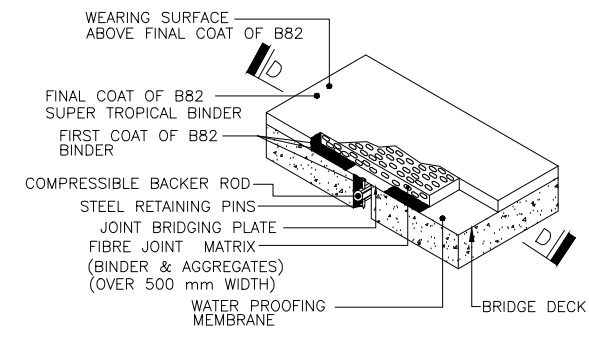


SECTION 2-2

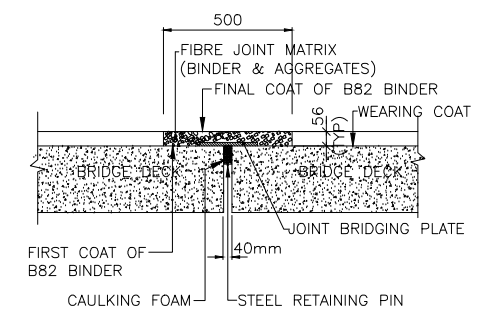


PLAN

TYPICAL DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT



ASHPALTIC PLUG JOINT  
DETAILS OF ASPHALTIC PLUG TYPE EXPANSION JOINT  
(FOR SUPERSTRUCTURE WITH RCC DECK)  
(SCALE 1:20)



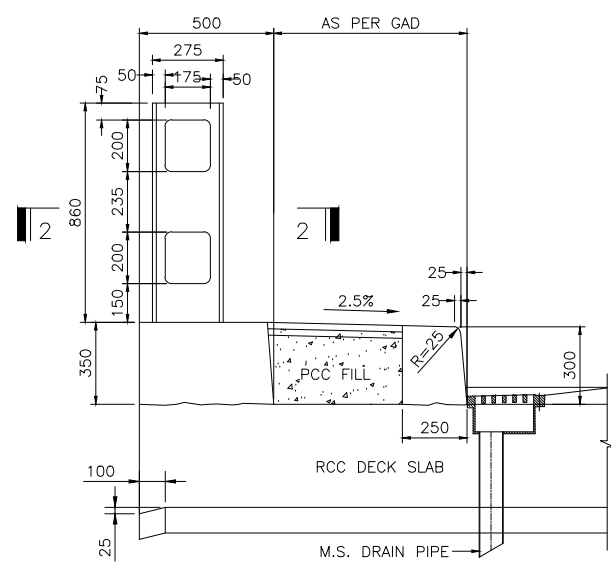
SECTION D-D

NOTES:-

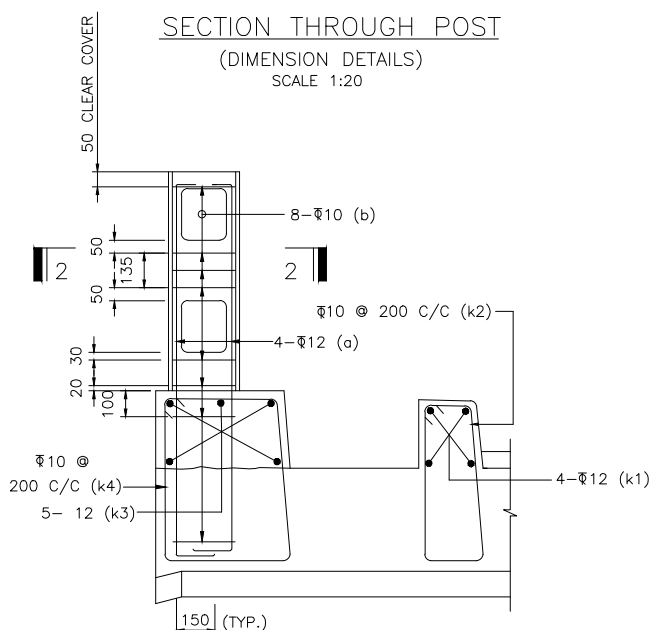
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS MENTIONED OTHERWISE. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RELEVANT G.A. & REINF. DETAIL DRAWINGS.

R1 AUG-2015 SECOND REVISION LASA JOY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO,TL R0 FEB-2013 FIRST REVISION OWD JOY PK.MISRA,AE M.R MISRA,EE N.K PRADHAN,CE JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEC</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com			DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		SCALE : AS SHOWN		DRAWING TITLE : MISCELLANEOUS DRAWING DETAILS OF CRASH BARRIER, RCC APPROACH SLAB, DRAINAGE SPOUT AND EXPANSION JOINT	
DWG. NUMBER : 73466\LASA\MISC-01										REV. R1								

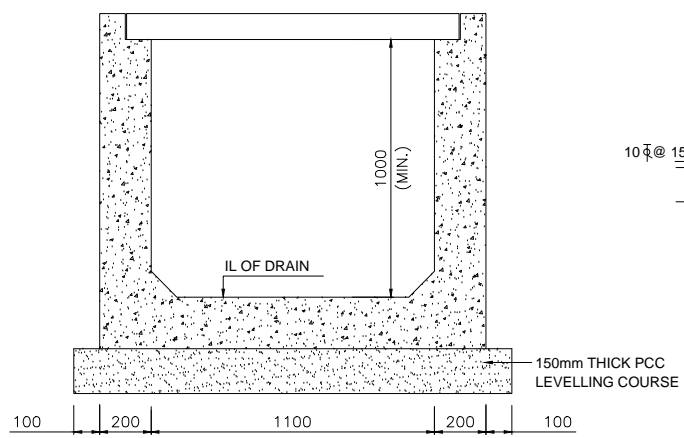




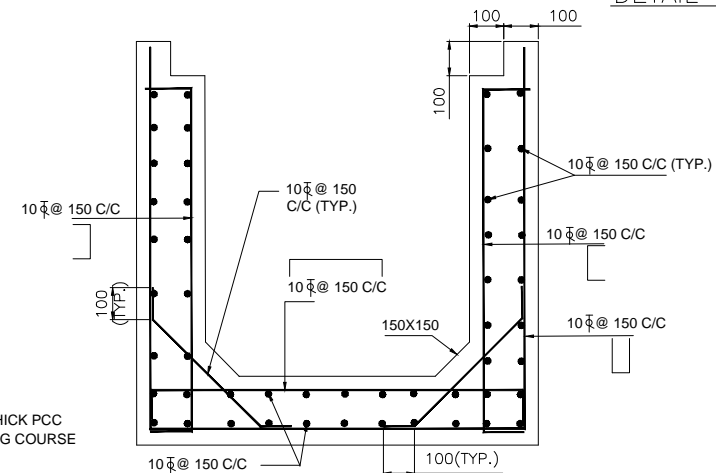
SECTION THROUGH POST  
(DIMENSION DETAILS)  
SCALE 1:20



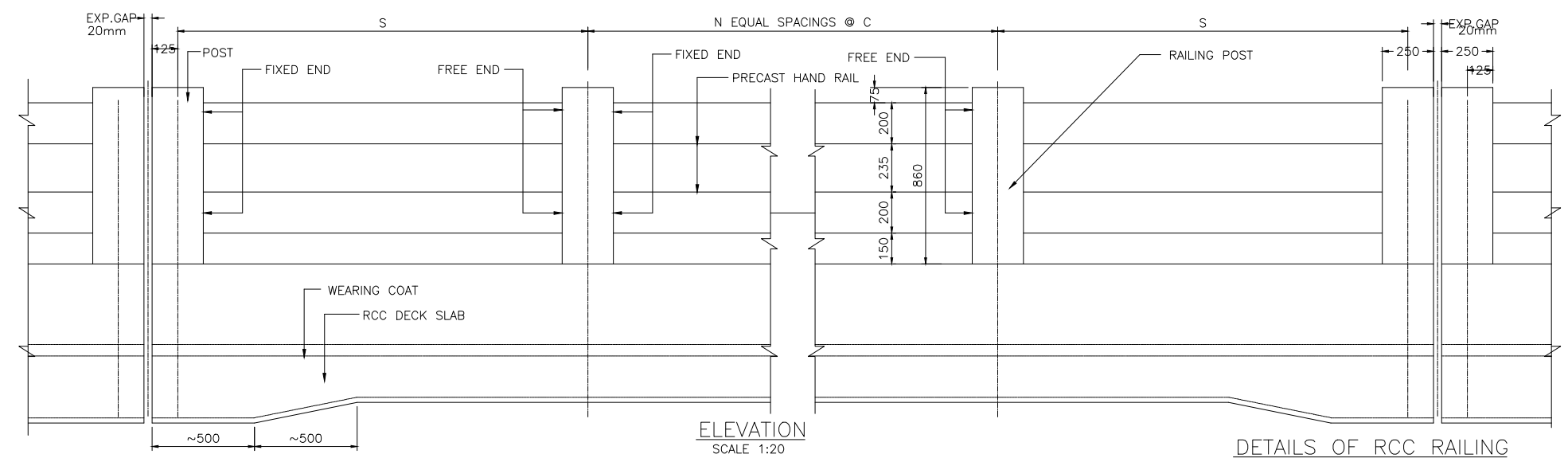
SECTION THROUGH POST  
(REINFORCEMENT DETAILS)  
SCALE 1:20



DIMENSION DETAIL OF DRAIN  
SCALE 1:20

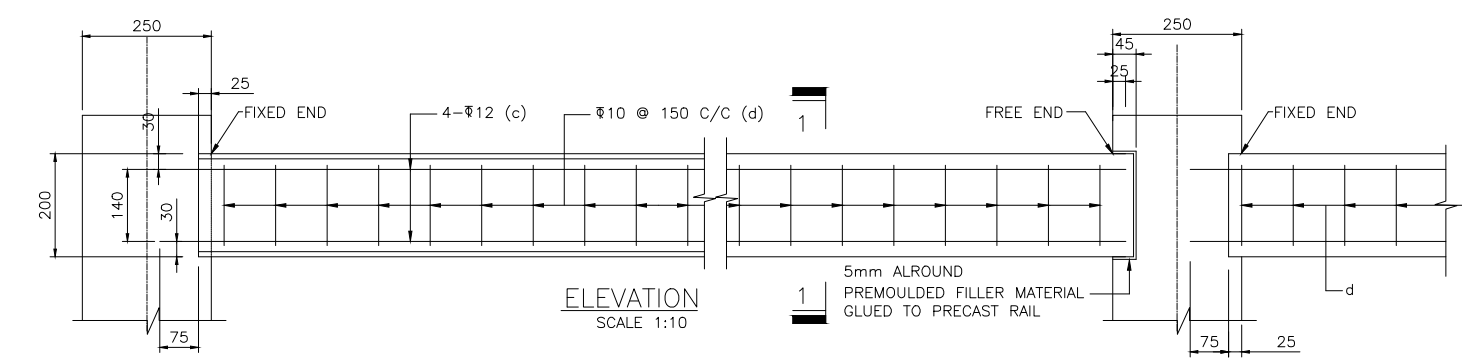


REINFORCEMENT DETAIL OF DRAIN

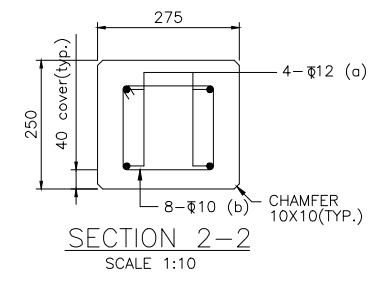


ELEVATION  
SCALE 1:20

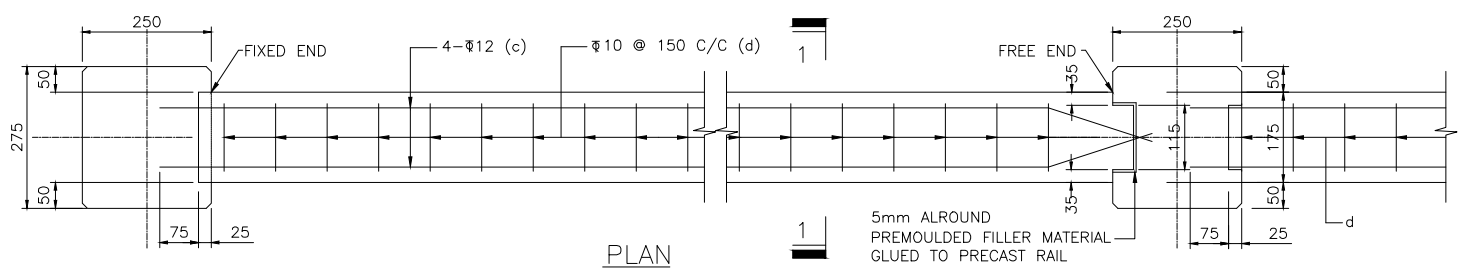
DETAILS OF RCC RAILING



ELEVATION  
SCALE 1:10

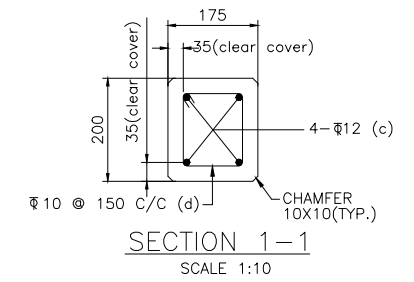


SECTION 2-2  
SCALE 1:10

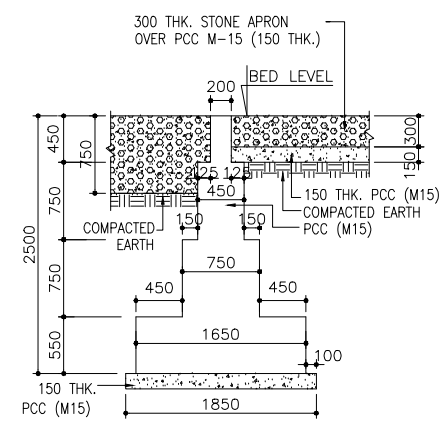


PLAN  
SCALE 1:10

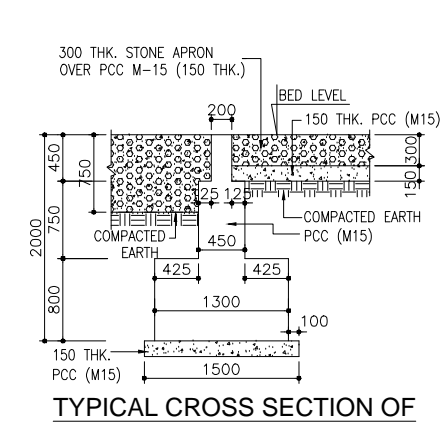
DETAIL OF PRECAST HAND RAIL



SECTION 1-1  
SCALE 1:10



TYPICAL CROSS SECTION OF  
CURTAIN WALL TYPE - I  
(SCALE 1:50)



TYPICAL CROSS SECTION OF  
CURTAIN WALL TYPE - II  
(SCALE 1:50)

- NOTES:-
1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS UNLESS MENTIONED OTHERWISE.
  2. REINFORCEMENT OF RAILING POST SHALL BE SUITABLY ANCHORED IN DECK SLAB.
  3. CASTING OF POST SHALL BE DONE IN SINGLE POUR AFTER ACCURATELY POSITIONING THE PRE CAST HANDRAIL.
  4. RAILING SHALL BE CONSTRUCTED ONLY AFTER THE STRUCTURAL CONCRETE OF SUPERSTRUCTURE HAS HARDENED AND SHUTTERING IS REMOVED.
  5. EXPANSION JOINT IN RAILING SHALL BE PROVIDED AT THE SAME LOCATIONS AS IN THE DECK SLAB.

R1	AUG-2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cecindia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

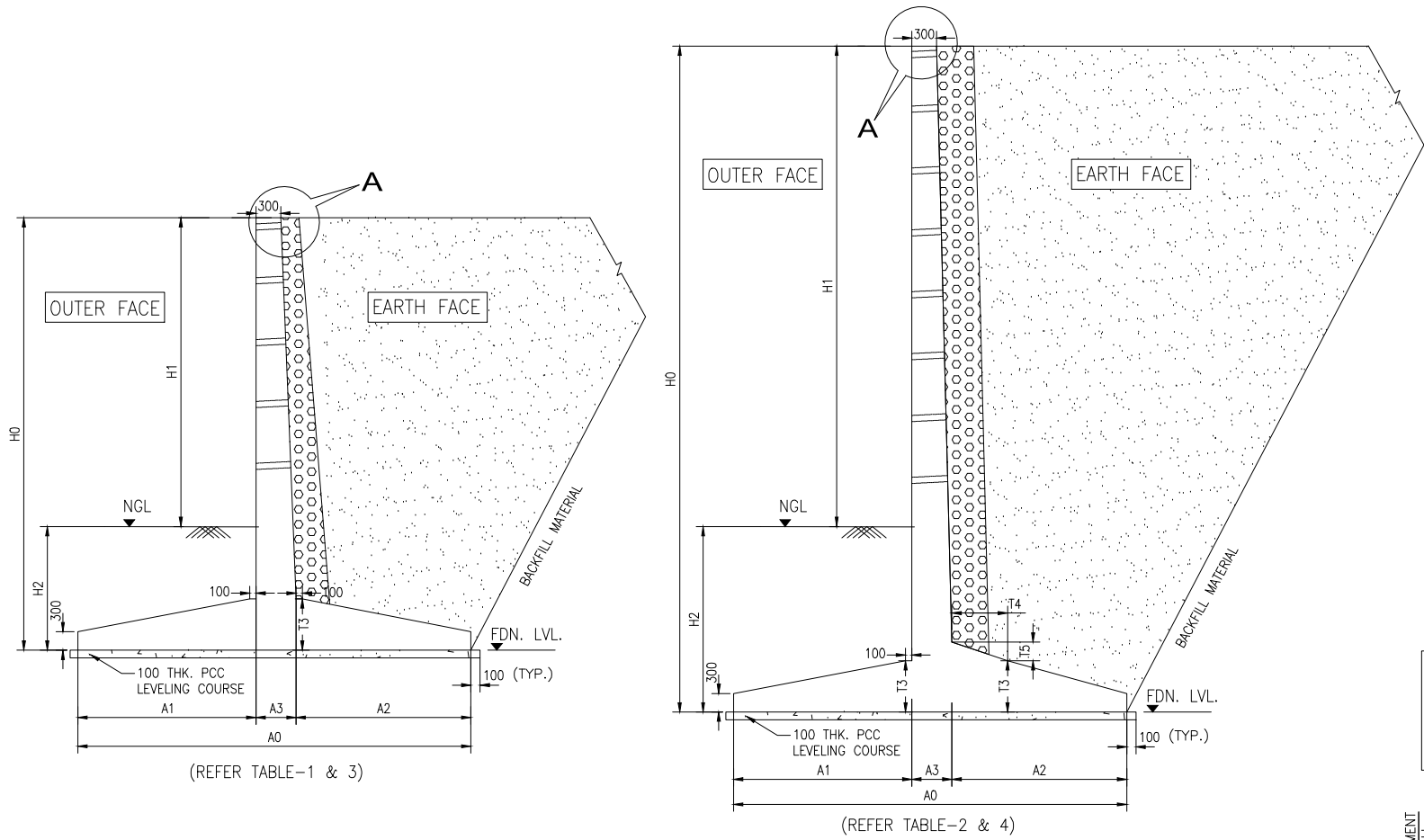
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
AS SHOWN

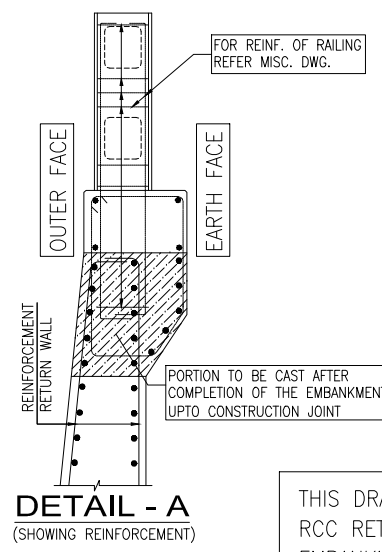
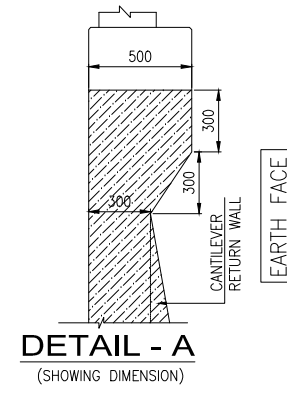
DRAWING TITLE :  
**MISCELLANEOUS DRAWING DETAILS OF RCC RAILING & POST , RCC DRAIN, FLOOR PROTECTION & CURTAIN WALL**

DWG. NUMBER : 73466\LASA\MISC-02

REV. R1



**DIMENSION DETAIL OF RCC RETAINING WALL**  
(SCALE 1:75)



THIS DRAWING IS NOT VALID FOR RCC RETAINING WALL ON SLOPED EMBANKMENT

**TABLE-1: DIMENSION DETAILS OF RCC RETURN/RETAINING WALL WITH NORMAL BACKFILL**

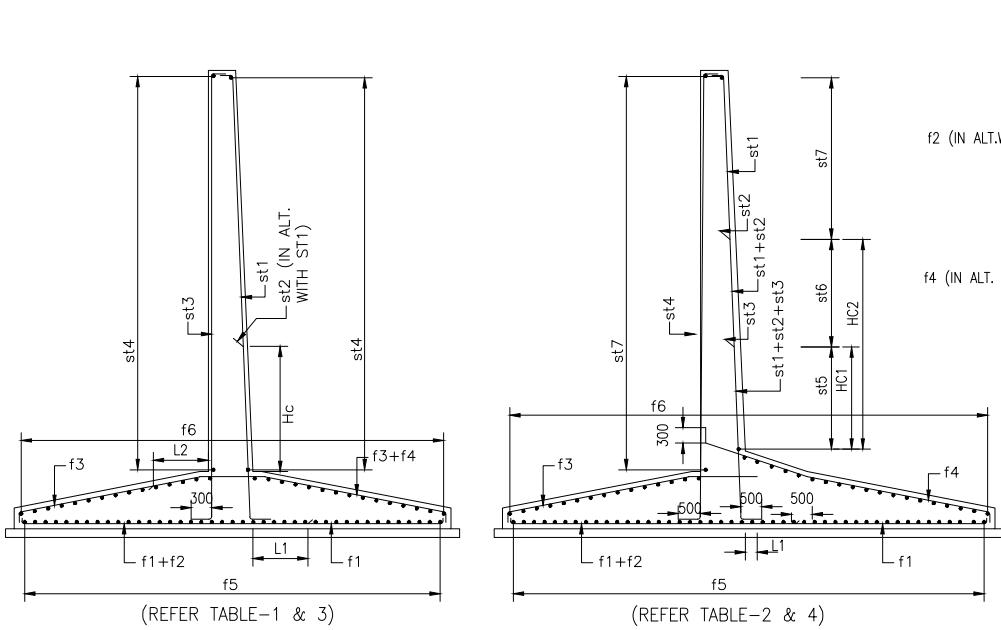
Type	H0	H1	H2	T3	A0	A1	A2	A3	NET SBC	GROSS SBC
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(T/m <sup>2</sup> )	(T/m <sup>2</sup> )
T-1N	2200	1000	1200	300	1900	350	1100	450	7	9.40
T-2N	3200	2000	1200	300	2530	750	1100	680	10	12.40
T-3N	4200	3000	1200	700	3250	800	1700	750	10	12.40
T-4N	5500	4000	1500	800	4500	1350	2300	850	10	13.00
T-5N	6500	5000	1500	900	5500	2000	2500	1000	10	13.00

**TABLE-2: DIMENSION DETAILS OF RCC RETURN/RETAINING WALL WITH NORMAL BACKFILL**

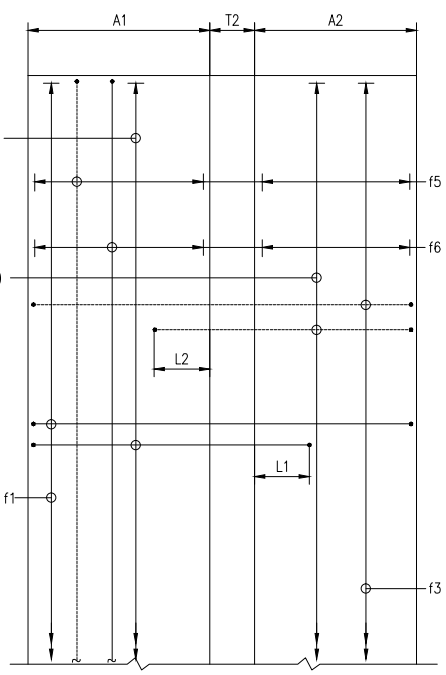
Type	H0	H1	H2	T3	A0	A1	A2	A3	T4	T5	NET SBC	GROSS SBC
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(T/m <sup>2</sup> )	(T/m <sup>2</sup> )
T-6N	8000	6000	2000	800	6250	2500	2700	1050	0	0	10	14.00
T-7N	9000	7000	2000	1000	7700	3500	3000	1200	900	300	10	14.00
T-8N	10000	8000	2000	1000	8300	3500	3500	1300	0	0	10	14.00
T-9N	11000	9000	2000	1200	9425	4000	3825	1600	900	300	10	14.00

**TABLE-3: R/F DETAILS OF RCC RETURN/RETAINING WALL IN TABLE-1**

S NO.	BAR MARK	T-1N		T-2N		T-3N		T-4N		T-5N		BAR SHAPE	
		DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING		
1	f1	10	200	c/c	10	125	c/c	10	200	c/c	12	100	c/c
2	f2	-	-	c/c	-	-	c/c	-	-	c/c	-	-	c/c
3	f3	10	200	c/c	10	200	c/c	10	100	c/c	12	125	c/c
4	f4	-	-	c/c	-	-	c/c	-	-	c/c	-	-	c/c
5	f5	10	300	c/c	10	300	c/c	10	300	c/c	10	300	c/c
6	f6	10	300	c/c	10	300	c/c	10	300	c/c	10	300	c/c
7	st1	10	300	c/c	10	170	c/c	12	250	c/c	12	200	c/c
8	st2	-	-	c/c	-	-	c/c	10	250	c/c	12	200	c/c
9	st3	10	300	c/c	10	300	c/c	10	300	c/c	10	275	c/c
10	st4	10	300	c/c	10	300	c/c	10	300	c/c	10	275	c/c
11	Hc	-	-	-	-	-	-	-	1000	-	2075	-	2300
12	L1	-	-	-	-	-	-	-	-	-	-	-	-
13	L2	-	-	-	-	-	-	-	-	-	-	-	-



**REINF. DETAIL**  
(SCALE 1:75)

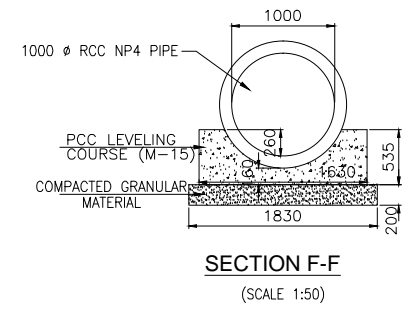
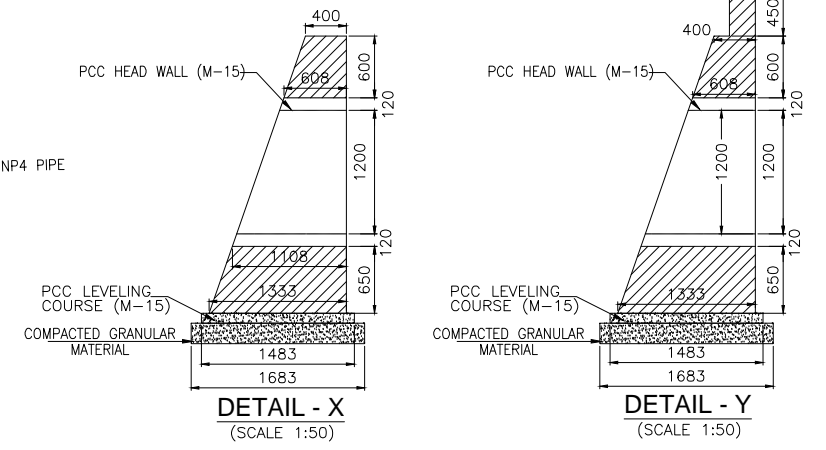
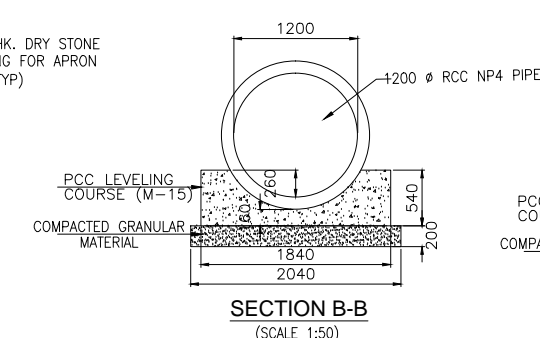
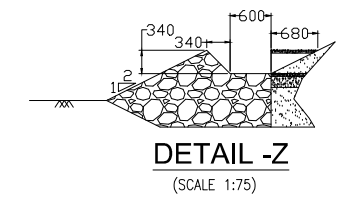
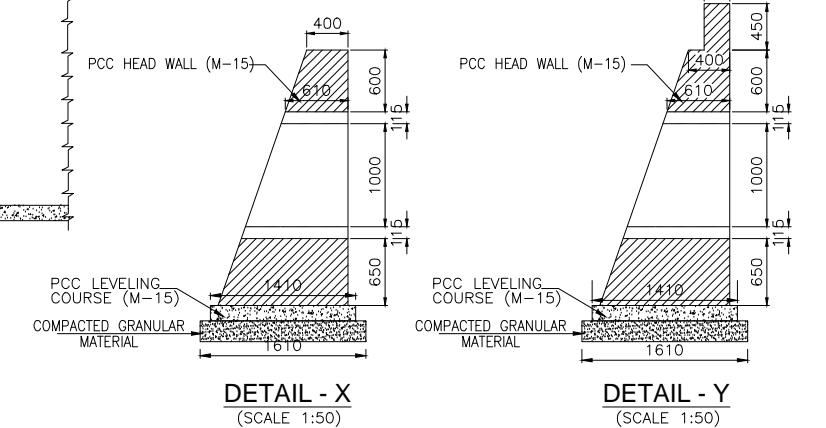
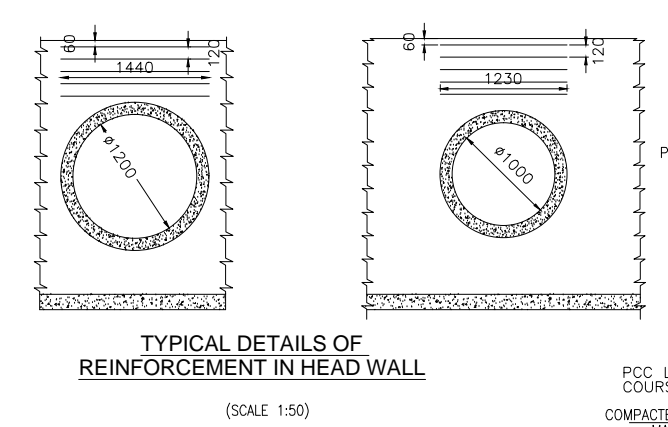
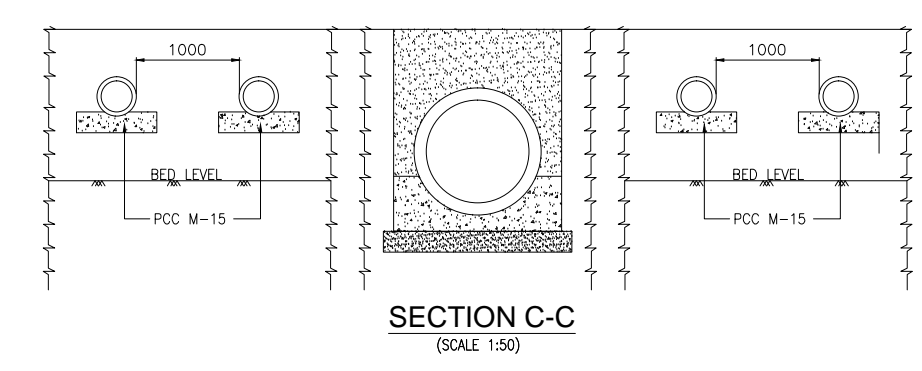
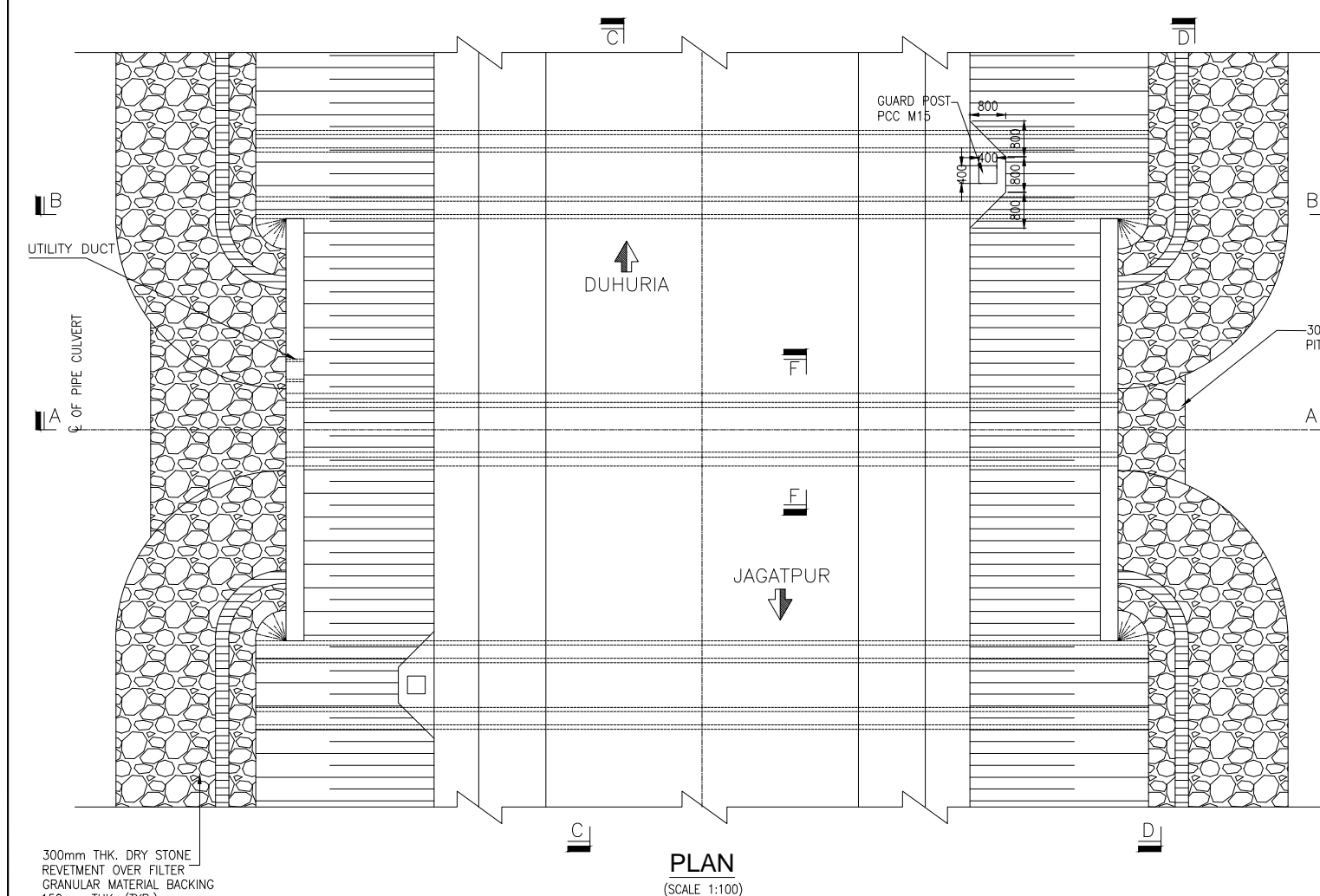
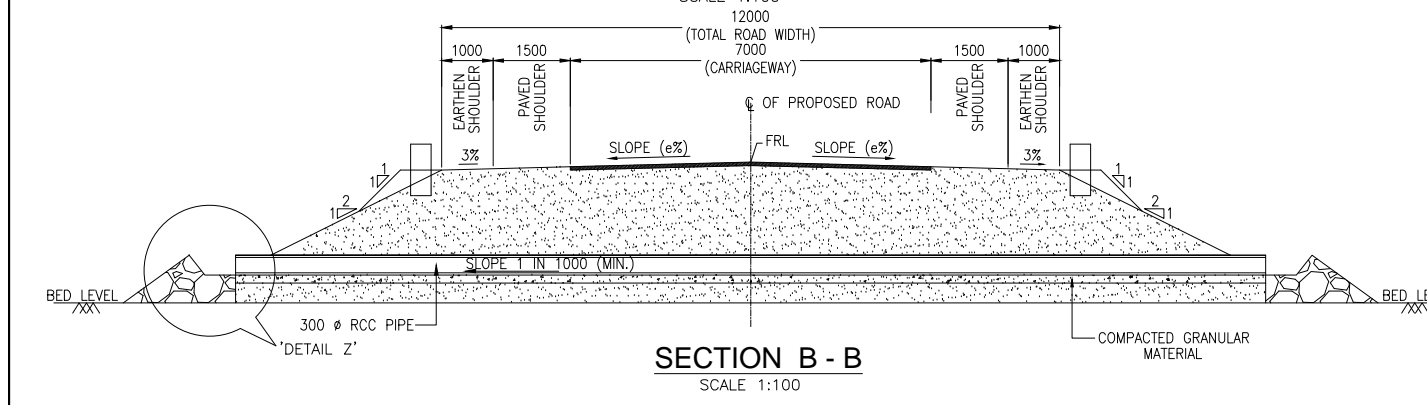
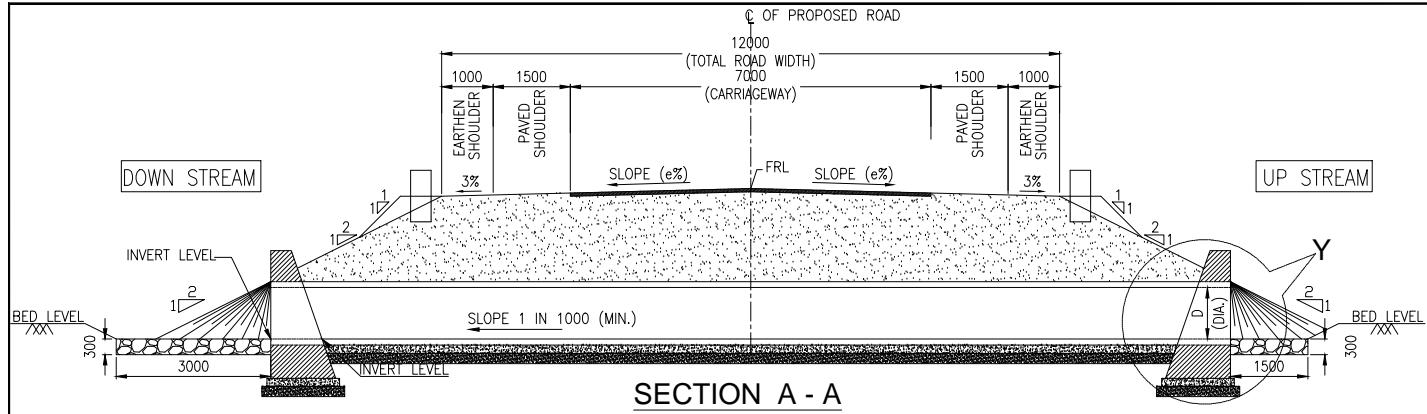


**PLAN OF FOOTING**  
(SCALE 1:100)

**TABLE-4: R/F DETAILS OF RCC RETURN/RETAINING WALL IN TABLE-2**

S NO.	BAR MARK	T-6N		T-7N		T-8N		T-9N		BAR SHAPE			
		DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING	DIA.	NUMBER/SPACING				
1	f1	16	250	c/c	16	190	c/c	16	175	c/c	16	150	c/c
2	f2	20	250	c/c	20	190	c/c	20	175	c/c	20	150	c/c
3	f3	12	190	c/c	12	150	c/c	12	125	c/c	10	100	c/c
4	f4	20	150	c/c	20	150	c/c	20	125	c/c	20	100	c/c
5	f5	10	200	c/c	10	150	c/c	10	150	c/c	10	125	c/c
6	f6	10	200	c/c	10	150	c/c	10	150	c/c	10	125	c/c
7	st1	12	290	c/c	12	270	c/c	12	290	c/c	12	295	c/c
8	st2	20	290	c/c	20	270	c/c	20	290	c/c	20	295	c/c
9	st3	25	290	c/c	25	270	c/c	25	290	c/c	32	295	c/c
10	st4	12	150	c/c	12	150	c/c	12	150	c/c	12	150	c/c
11	st5	10	100	c/c	12	125	c/c	12	125	c/c	12	100	c/c
12	st6	10	200	c/c	10	200	c/c	12	200	c/c	12	225	c/c
13	st7	10	300	c/c	10	300	c/c	10	300	c/c	10	300	c/c
15	Hc1	-	3450	-	-	3750	-	-	3650	-	-	5750	-
16	Hc2	-	5700	-	-	7550	-	-	7450	-	-	8200	-
17	L1	-	300	-	-	300	-	-	300	-	-	300	-

- LEGEND:**  
TOP BAR SHOWN THUS .....  
BOTTOM BAR SHOWN THUS .....
- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
  - THE GRADE OF CONCRETE SHALL BE M20.
  - BACK FILLING & FRONT FILLING SHOULD BE DONE SIMULTANEOUSLY.
  - LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND ABUTMENT & WING WALL SHALL CONSISTS OF SELECTED EARTH CONFIRMING TO APPENDIX-6 OF IRC:78-2000 HAVING PROPERTIES C=0, φ =30° & DENSITY=18 kn/m<sup>3</sup>.
  - 600mm THK. FILTER MEDIA SHALL BE PROVIDED BEHIND VERTICAL SHAFT.
  - ADEQUATE NUMBER OF WEEP HOLES CONSISTING OF 100Ø PIPES SHALL BE PROVIDED IN STAGGERED MANNER AT A SPACING NOT MORE THAN 1000mm IN BOTH VERTICALLY & HORIZONTALLY AT A SLOPE OF 1 VERTICAL : 20 HORIZONTAL FROM 150mm ABOVE GROUND LEVEL TO 150mm BELOW TOP.
  - COMPRESSIBLE FIBRE BOARD SHALL BE USED AT THE EXPANSION GAP.
  - THE GROSS SAFE BEARING CAPACITY SHOULD BE ENSURED AT SITE BEFORE START OF ANY CONSTRUCTION. SHORTFALL IN THE GROSS SAFE BEARING CAPACITY IF IDENTIFIED AT ANY LOCATION, SUITABLE GROUND IMPROVEMENT TECHNIQUE AS APPROVED BY ENGINEER SHALL BE FOLLOWED. IF THE ESTABLISHED GROSS SAFE BEARING CAPACITY IS MORE THAN THE DESIGN VALUE THEN THE SECTION SHOULD BE MODIFIED AS PER THE ACTUAL SITE CONDITION.
  - CLEAR COVER TO OUTERMOST REINFORCEMENT SHALL BE AS FOLLOWS:  
a) FOUNDATION ..... 75mm  
b) SUBSTRUCTURE ..... 75mm
  - THE REINFORCEMENT GRADE SHALL BE F<sub>500</sub> CONFORMING TO IS:1786
  - THE LAPPING OF REINFORCEMENT SHALL BE DONE AS PER CLAUSE 304.6.6.2 OF IRC:21-2000. WELDING OF REINFORCEMENT CAN BE DONE AS PER CLAUSE 304.6.6.5 OF IRC:21-2000.



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
  2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
  3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER/SUPERELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
  4. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF REPTILE UNDERPASS SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  5. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	JOY	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	JOY	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17  
Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cecindia.com

DESIGN REVIEW CONSULTANT :  
**LEA Associates South Asia Pvt. Ltd., India**  
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT :  
**ODISHA WORKS DEPARTMENT**

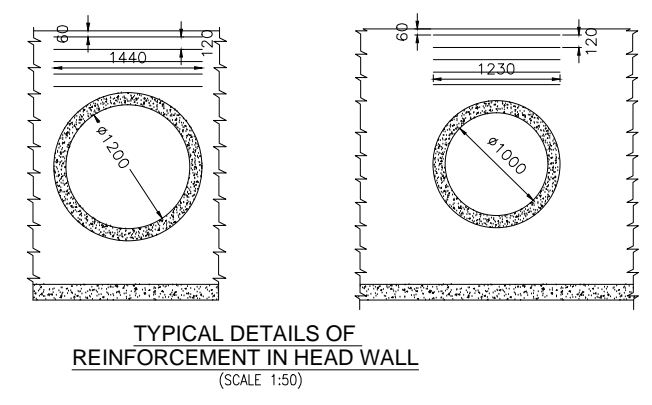
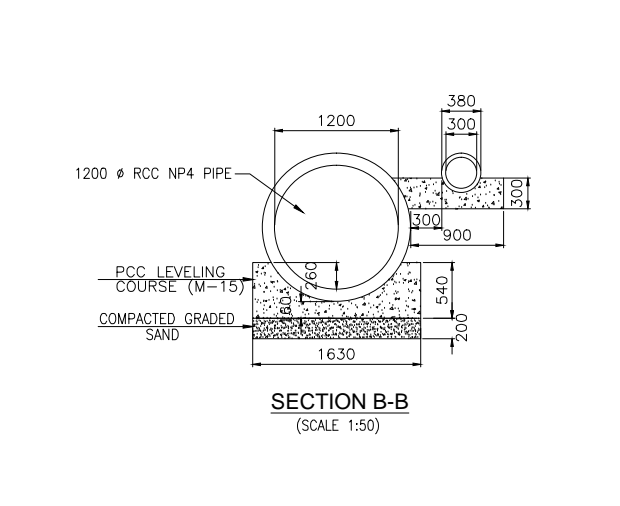
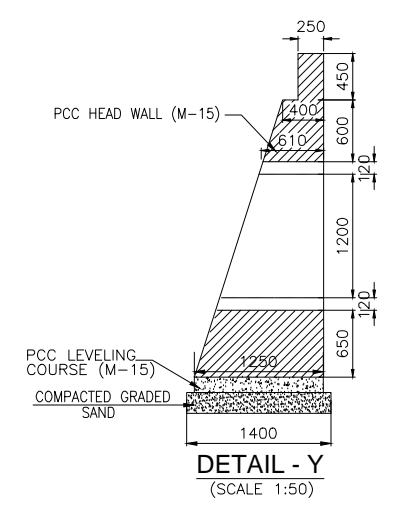
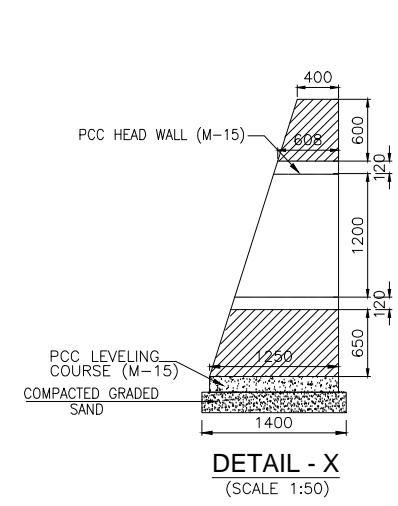
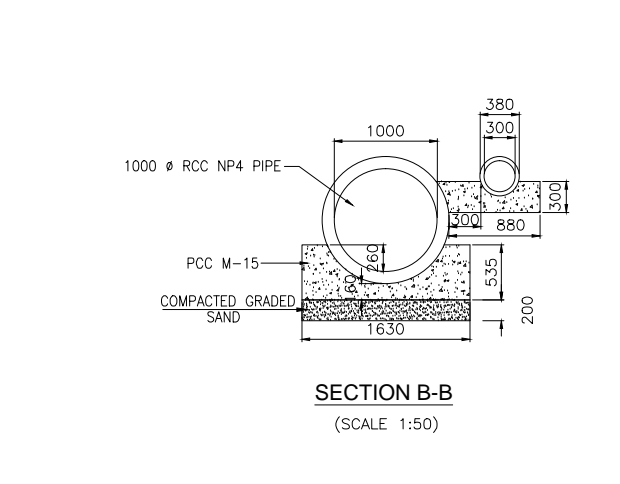
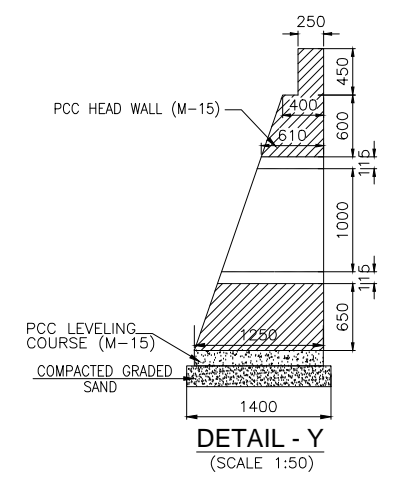
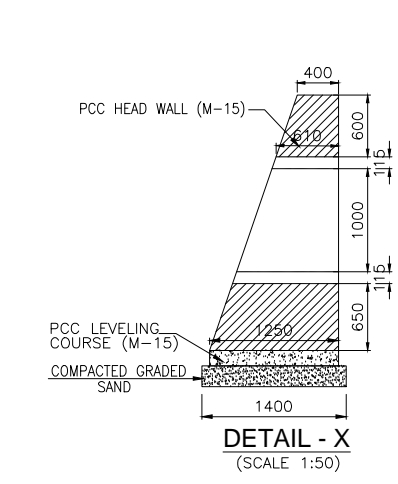
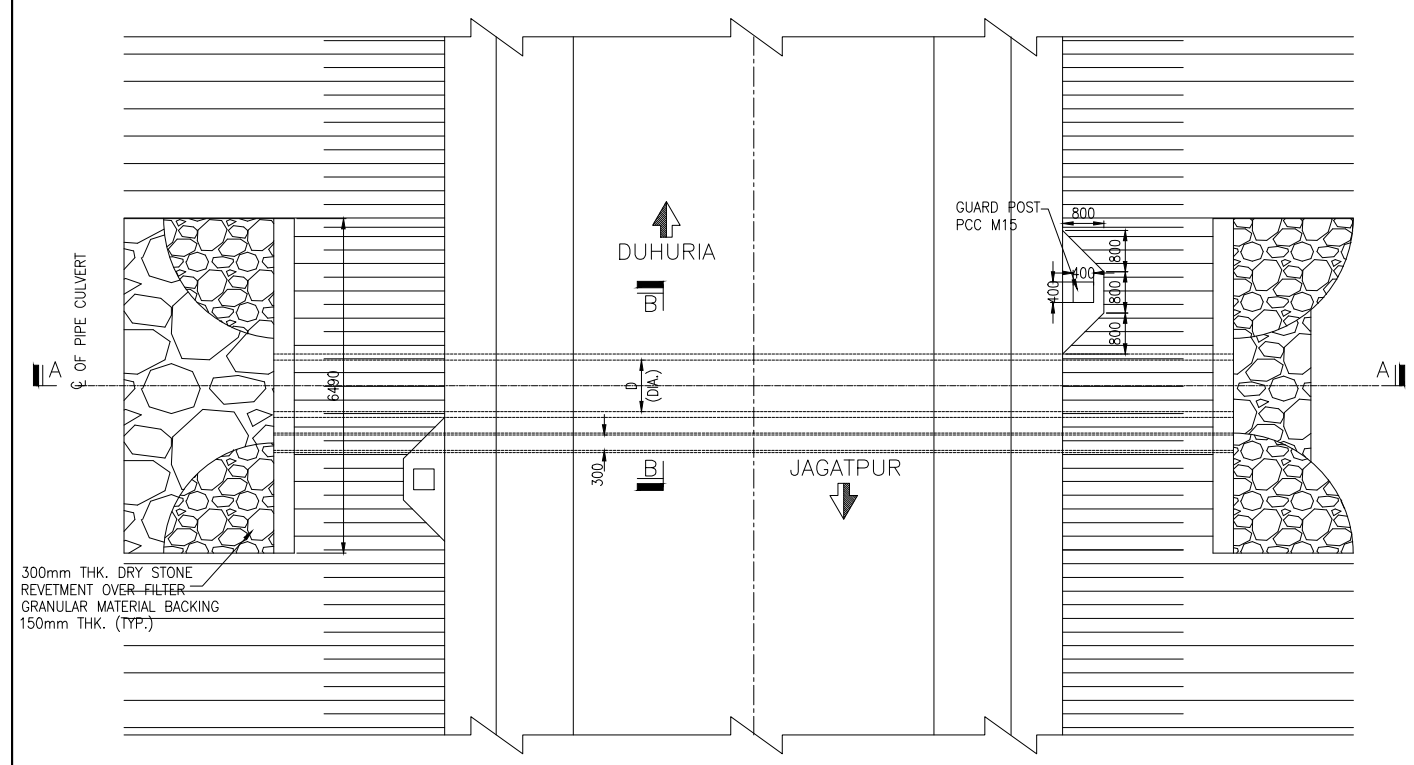
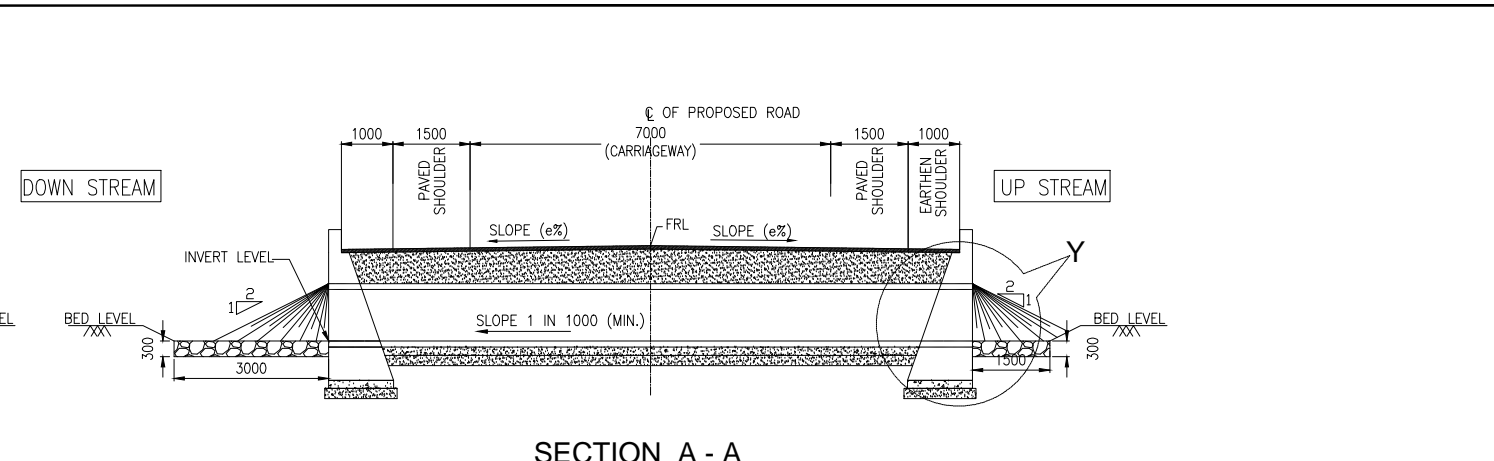
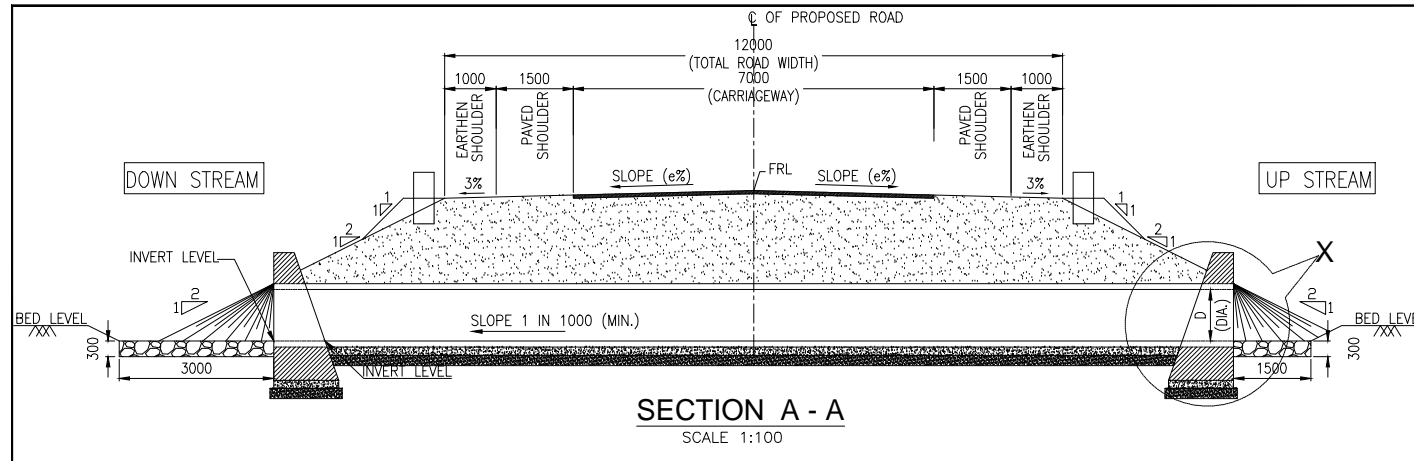
PROJECT :  
**WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)**

SCALE :  
AS SHOWN

DRAWING TITLE :  
**TYPICAL GENERAL ARRANGEMENT DRAWING FOR REPTILE UNDERPASS**

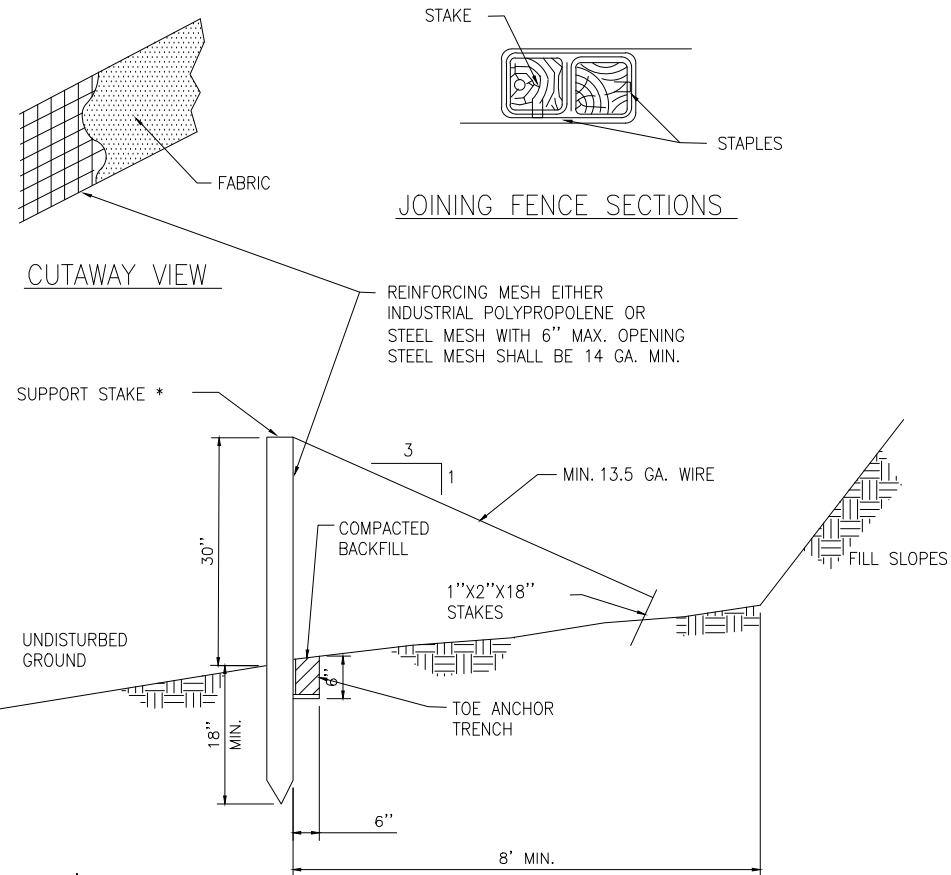
DWG. NUMBER : **73466\LASA\GAD\ENV-01** REV. R1

PAGE NO.- 24

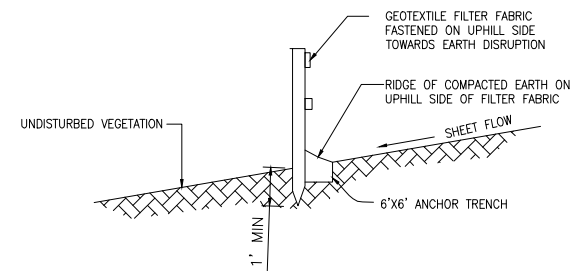
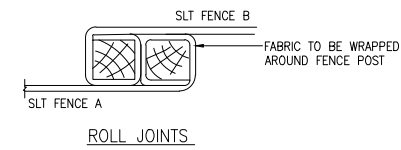
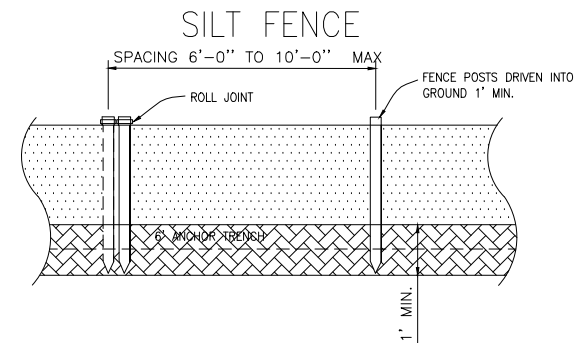


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  3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER/SUPERELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
  4. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF UTILITY DUCT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
  5. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD AND BRIDGE WORKS

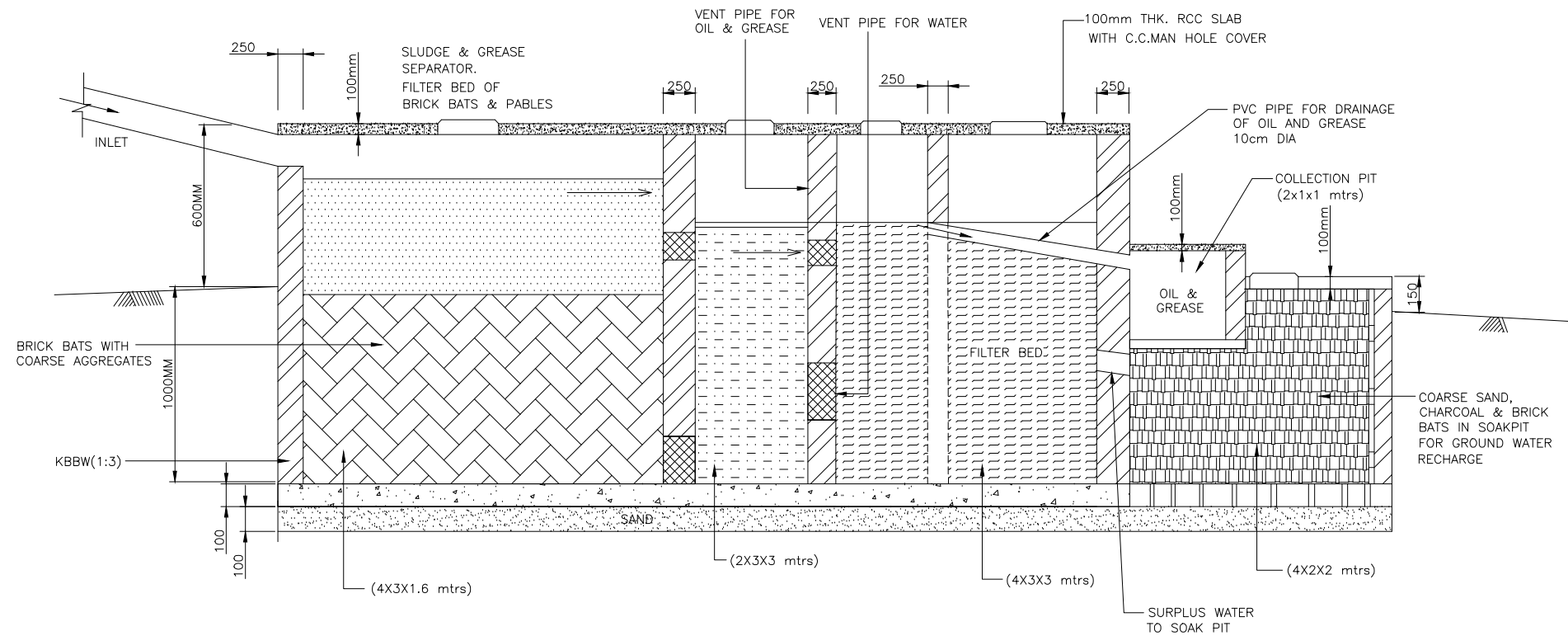
R1 AUG. 2015 SECOND REVISION LASA JOY SUBRAT/D.GHATAK S.D SARANGI G.P SAHOO,TL R0 FEB-2013 FIRST REVISION OWD JOY PK.MISRA,AE M.R MISRA,EE N.K PRADHAN,CE JUNE 2008 ORIGINAL CEG						DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD. CEG</b> E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginia.com			DESIGN REVIEW CONSULTANT : <b>LEA</b> LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		CLIENT : <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)		SCALE : AS SHOWN		DRAWING TITLE : TYPICAL GENERAL ARRANGEMENT DRAWING FOR UTILITY DUCT	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:	DWG. NUMBER : 73466\LASA\GAD\ENV-02		REV.	R1							



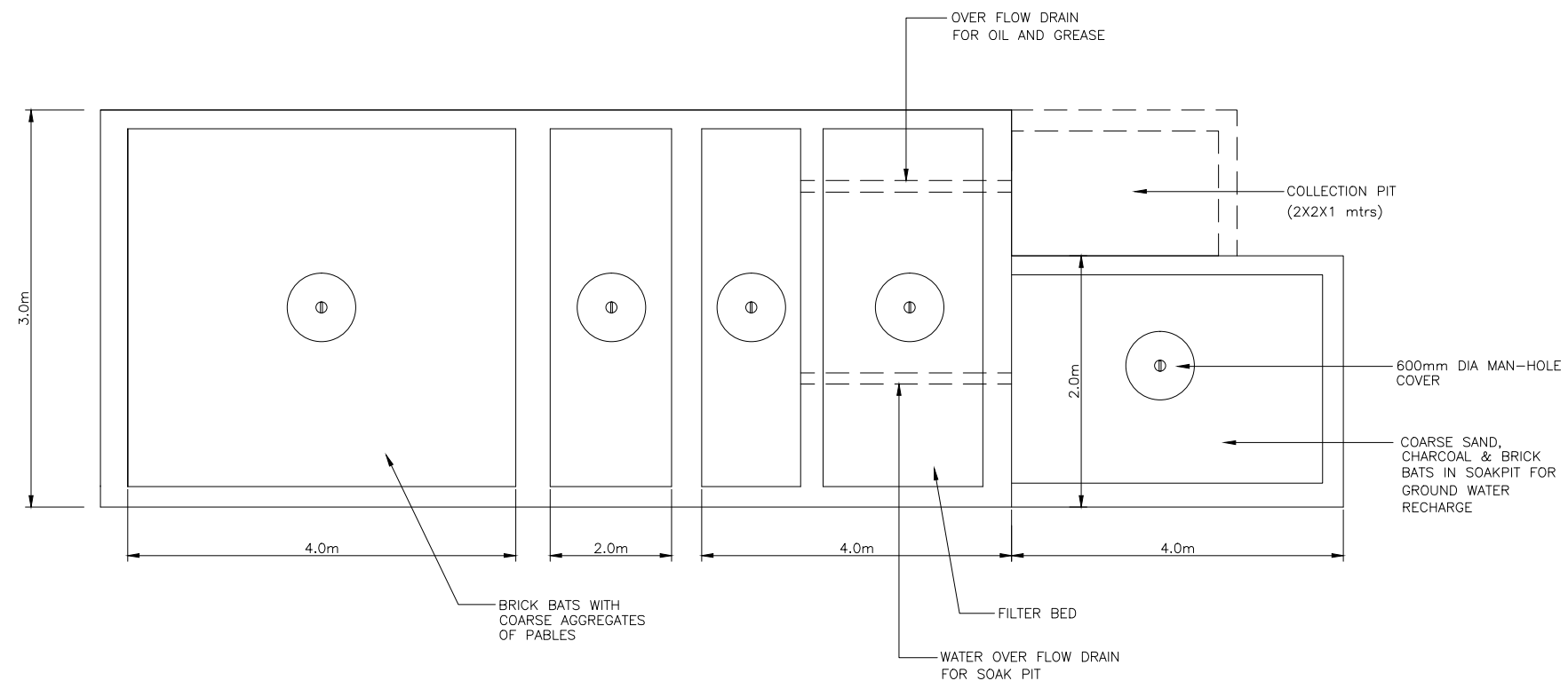
\* STAKES SPACED @ 8' MAX.  
USE 2"x2"x48" (± 3/8") WOOD OR  
EQUIVALENT STEEL (U OR T ) STAKES



DPR CONSULTANT : <b>CONSULTING ENGINEERS GROUP LTD.</b> E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com							DESIGN REVIEW CONSULTANT : <b>LEA Associates South Asia Pvt. Ltd., India</b> B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044			CLIENT :  <b>ODISHA WORKS DEPARTMENT</b>		PROJECT : <b>WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)</b>		SCALE : <b>AS SHOWN</b>		DRAWING TITLE : <b>TYPICAL DRAWING FOR SILT FENCE SEDIMENT ARRESTOR</b>	
R1	AUG. 2015	SECOND REVISION	LASA	PARDEEP	SUBRAT/D.GHATAK	S.D.SARANGI	G.P.SAHOO,TL										
R0	FEB-2013	FIRST REVISION	OWD	PARDEEP	PK.MISRA,AE	M.R.MISRA,EE	N.K.PRADHAN,CE										
	JUNE 2008	ORIGINAL	CEG														
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:										
DWG. NUMBER : <b>73466LASA\GAD\ENV-03</b>										REV.	R1						



**SECTION OF SOAK PIT**



**PLAN OF SOAK PIT**

NOTE: PROVIDE AT CONTRACTOR'S PLANT SITE.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED:	CHECKED:	APPROVED:
R1	AUG. 2015	SECOND REVISION	LASA	MANPREET SINGH	SUBRAT/D.GHATAK	S.D SARANGI	G.P SAHOO,TL
R0	FEB-2013	FIRST REVISION	OWD	MANPREET SINGH	PK.MISRA,AE	M.R MISRA,EE	N.K PRADHAN,CE
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT:  
**CONSULTING ENGINEERS GROUP LTD. CEC**  
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DESIGN REVIEW CONSULTANT:  
**LEA Associates South Asia Pvt. Ltd., India**  
 B-1, E-27, IIInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT:  
**ODISHA WORKS DEPARTMENT**

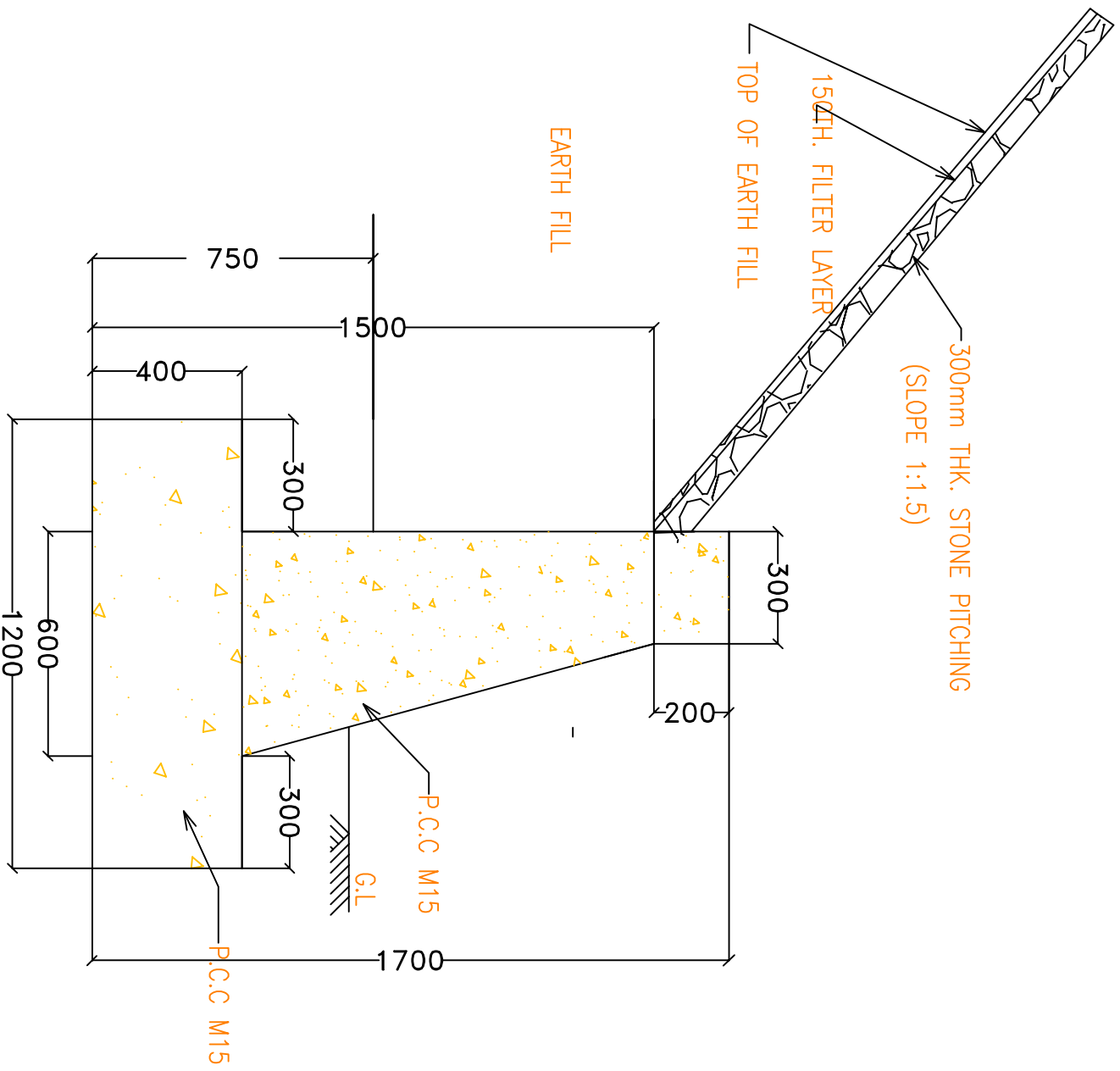
PROJECT:  
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOILI - KM 0+000 TO KM 25+000 BALANCE WORK (PACKAGE - P04A-1)

SCALE:  
 AS SHOWN

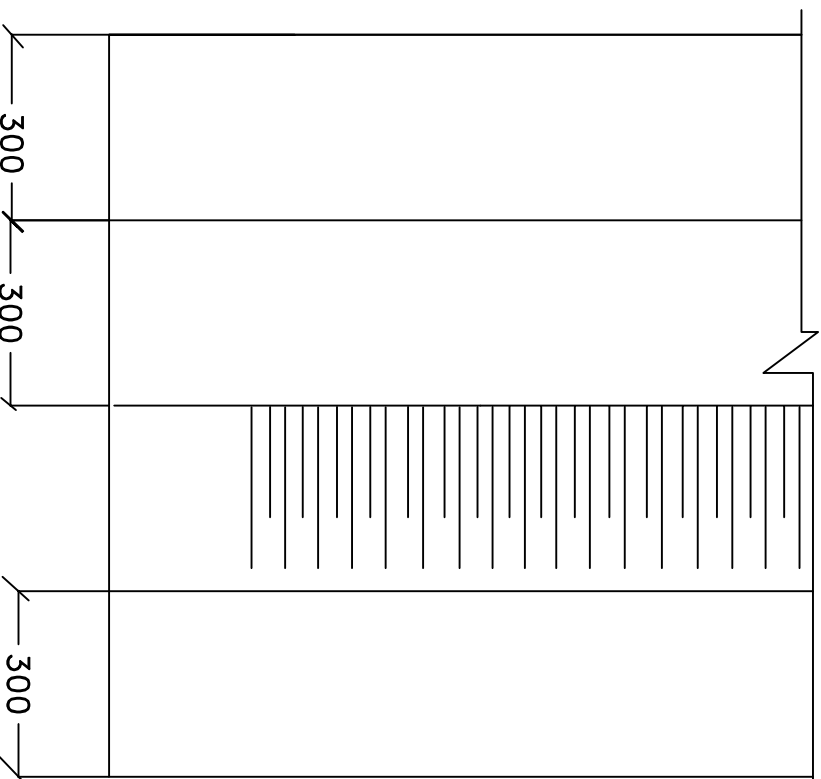
DRAWING TITLE:  
**TYPICAL DRAWING FOR OIL AND GREASE TRAP**

DWG. NUMBER: 73466\LASA\GAD\ENV-04

REV. R1



TOE WALL FOR POND  
( CROSS SECTION )



PLAN OF TOE WALL FOR WATER BODY

Sl No.	Items	Chainage at km	Location left /right	Mtrs.
1	Pond	4.477	R	30
2	Pond	5.305	R	25
3	Pond	7.411	L	15
4	Pond	7.459	R	35
5	Pond	11.585	R	95
6	Pond	34.424	L	25
7	Pond	38.56	L	30
8	Pond	45.928	R	20

Length of toe wall in

TO MINIMISE IMPACT ON STORAGE CAPACITY & WATER SPREAD OF PONDS, WATER BODY, NALA BED, TOE WALLS TO BE ERECTED SUCH THAT IT PREVENTS ACCIDENTAL FALL INTO THE DEPRESSION AND WASHING OF VEHICLES/BATHING/ WASHING ON THE ROAD SIDE

TYPICAL PCC TOE WALL WITH STONE PITCHING FOR WATER BODIES AS ENVIRONMENTAL MITIGATION.

(JAGATPUR - DUHURIA)

DRG NO.	OSRP/CEG/JD-49KM/ENV/03	DESIGNED BY	DRAMN BY	REV/R1	APPROVED
SH. NO.	DATE	DEC.12	REV	R-1	
SCALE	NTS		CEG	CEG	EE(PMU)
					CE,WBP



**CONSULTING ENGINEERS GROUP LTD.**

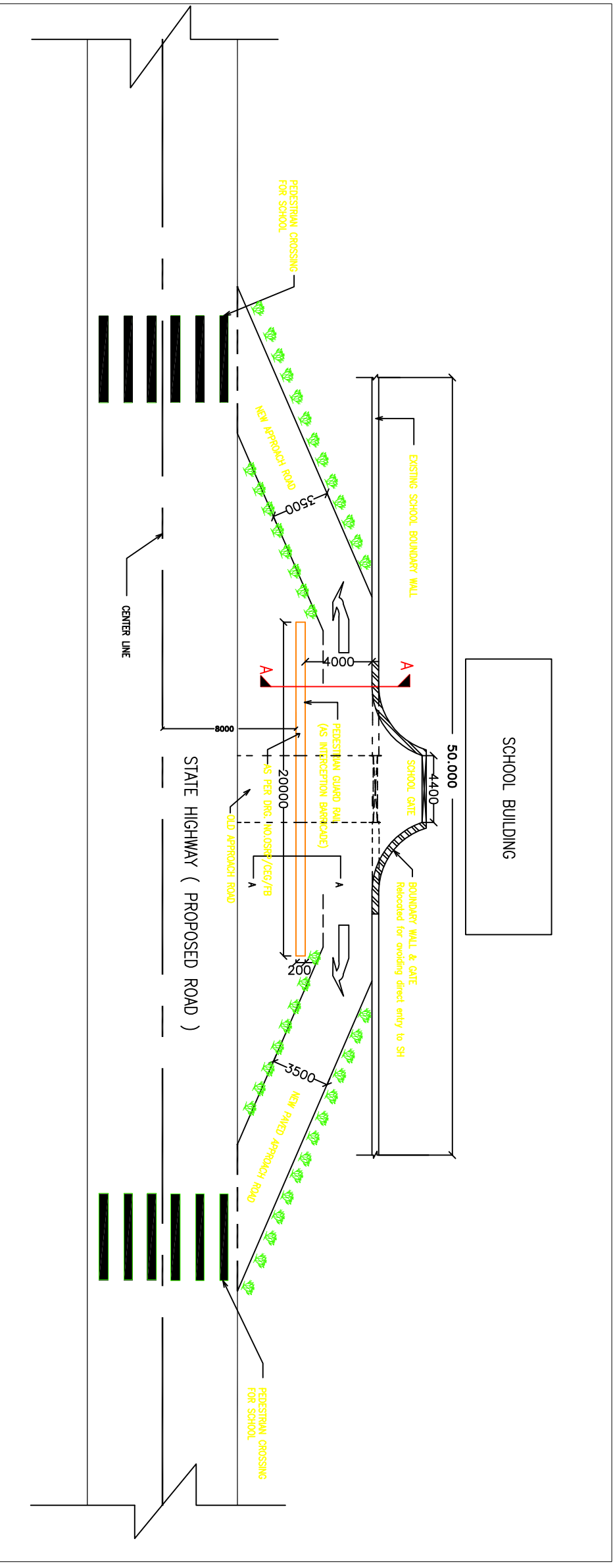
E-12, Moji Colony, Malviya Nagar Jaipur-17  
Tel: +91-141-2520899, 2521899, 2520556  
Fax: 2521348, e-mail: ceg@cegindia.com

PROJECT:-

ODISHA STATE ROAD PROJECT

UNDER WORLD BANK ASSISTANCE

Sl No	Item	Chainage	Location L/R	Affected Length in mtrs
1	School, Gujarpur	4.33	Left	40
2	School	5.382	Left	58
3	School	5.7	Left	34
4	School	10.275	Right	20
5	School	19.565	Left	41
6	School	50.36	Right	10
7	Hospital	2.3	Left	
8	Hospital	26.695	Left	78
9	Temple	6.120	Left	15



- THERE SHALL BE RUMBLER STRIPS & SPEED BREAKERS 150m & 10m AWAY FROM PEDESTRIAN CROSSINGS NEAR SCHOOLS, COLLEGES, HOSTELS, TEMPLES, HOSPITALS, DISPENSARIES AND OLD AGE HOMES, WEEKLY MARKET AREA, G.P MARKET COMPLEX ADJACENT TO THE ROAD WITHIN 25m TO 50m DISTANCE FROM CENTRE LINE. THE BOUNDARY WALL SHOULD HAVE G.I ANGLE POSTS WITH G.I WIRE MESH GRILL/ STRINGS FOR GROWING CREEPERS TO MUFFLE NOISE AND DUST.
- CREEPERS WITH SCENTED/COLOURFUL FLOWERS TO BE PLANTED WHICH HAVE TOMENTOSE LEAVES TO ABSORB MORE DUST AND NOISE.
- THE BOUNDARY WALL PLASTERING TO HAVE VERTICAL GROOVES TO DEFELECT NOISE TOWARDS THE ROAD WHICH WILL ACT AS A COUNTER NOISE SOURCE TO DAMPEN THE HIGH WAY NOISE LEVEL.
- VEGETATIVE SHRUBS AND BUSHES WHICH ARE NON BROWSABLE AND HAVING SCENTED FLOWERS TO BE PLANTED ON THE PERIPHERY OR EDGE OF THE APPROACH ROAD TO SUCH PLACES. THE BOUNDARY ENTRY POINT TO BE SHIFTED IN WORDS IN CASE OF CLOSE WITH NAME OF THE INSTITUTION ENGRAVED.
- PROXIMITY AND DIRECT ENTRY TO THE ROAD WITH AND A BARRICADE WALL SHALL BE ERECTED 4m AWAY FROM THE ENTRY POINT INFRONT OF THE GATE

**PROJECT:-**

ODISHA STATE ROAD PROJECT  
 UNDER WORLD BANK ASSISTANCE

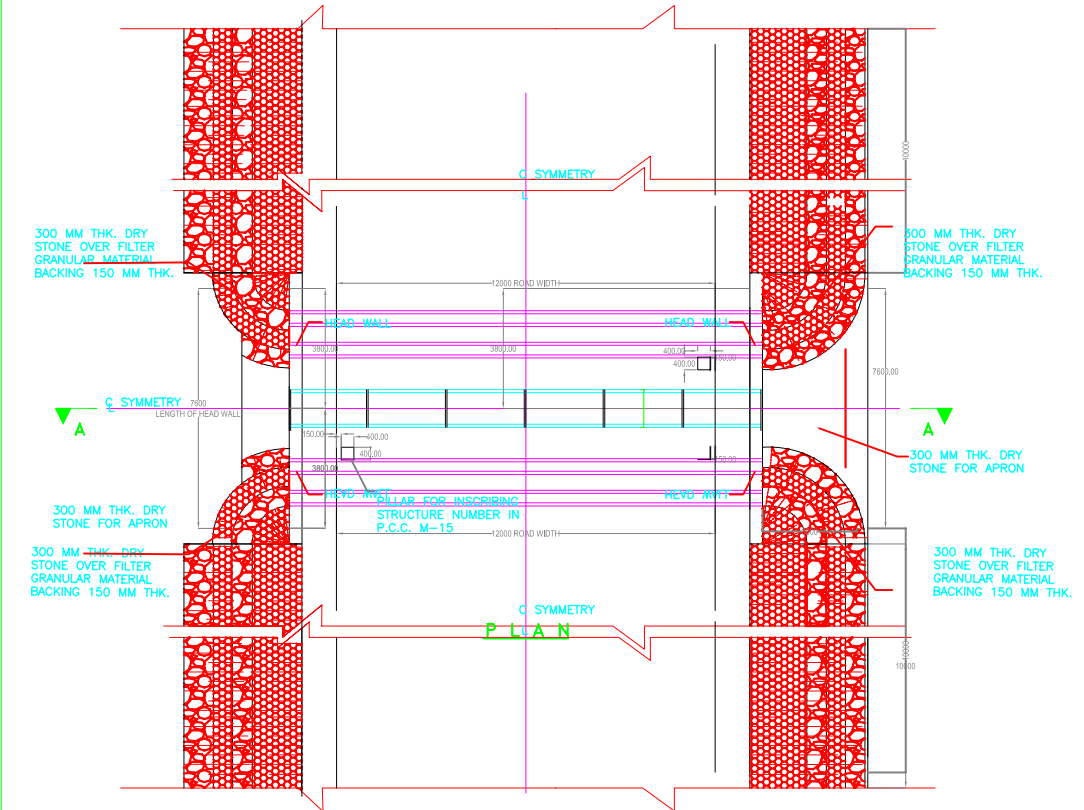
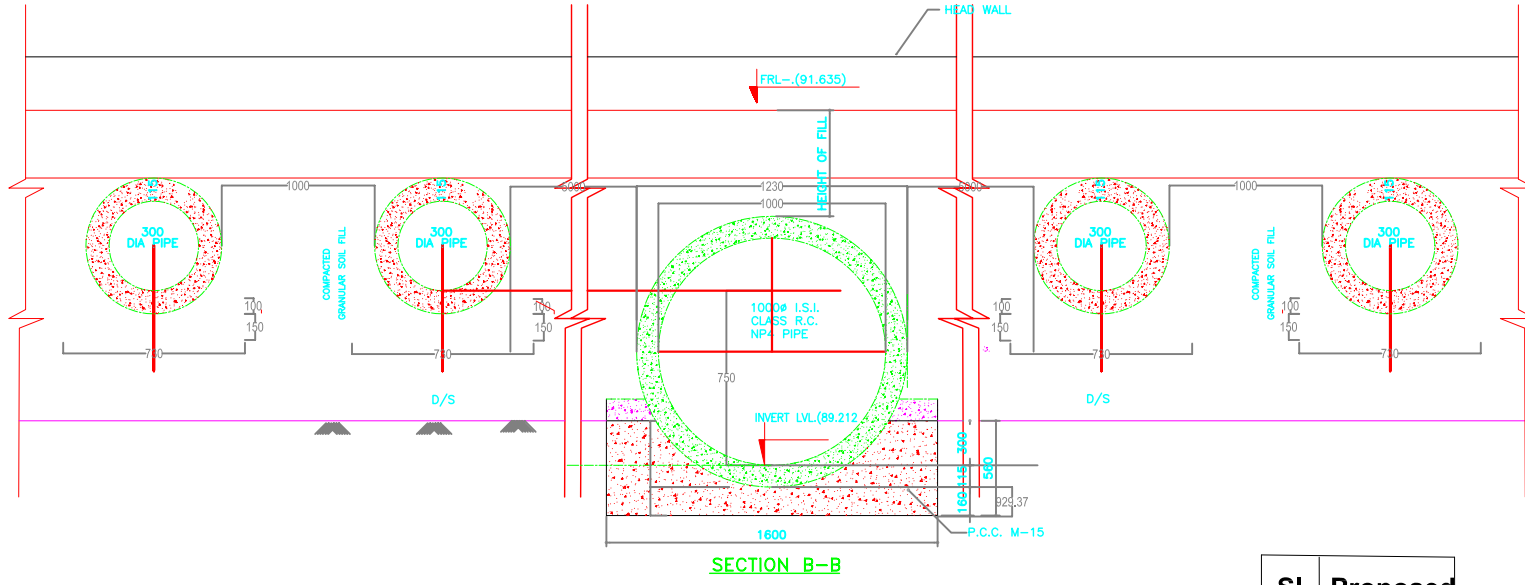
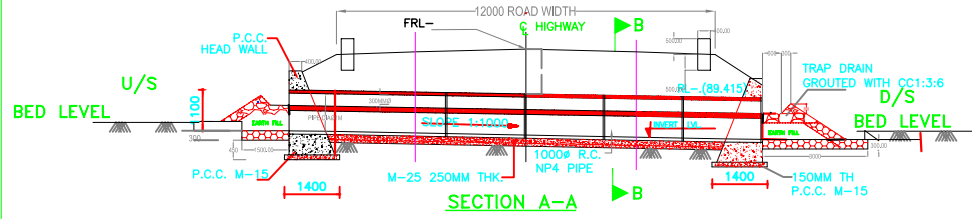
INTERCEPTIVE BARRICADES FOR EDUCATIONAL AND MEDICAL INSTITUTIONAL APPROACHES AS ENVIRONMENTAL MITIGATION PLAN.

(JAGATPUR - DUHURIA)

DRG. NO.	OSRP/CEG/JD-49KM/ENV/05	DESIGNED BY	CEG	DRAWN BY	CEG	REV/R1	REV/R1	APPROVED	CE, WBP
SH. NO.	DATE	DEC, 12	REV	R-1					
SCALE	NTS								



# REPTILE UNDER PASS



Sl. No	Proposed Chainage
1	9+030
2	12+326
3	16+423
4	25+000
5	31+100
6	33+950
7	40+174
8	43+780

ORISSA STATE ROADS PROJECT Works Department, Govt. of Orissna		ORISSA STATE ROADS PROJECT Works Department, Govt. of Orissna			REPTILE UNDERPASS+PIPE CULVERT (GEN.)				
		Rev No.:		DATE : 12/12/12	DRG.NO. : OSRP/ENV-14		DRAWN BY	DESIGNED BY	REVISION-1
PREPARED BY		CHECKED BY		ISSUED BY		CEG	CEG	EE,PMU	CE,WBP

