

GOVERNMENT OF ODISHHA
WORKS DEPARTMENT

ODISHA STATE ROAD PROJECT
(UNDER WORLD BANK ASSISTANCE)

PIRAHAT-CHANDBALI (SH-09)
KM.27/5 TO KM.45/0

VOLUME - IV
DRAWINGS

INDEX OF DRAWINGS (Pirahat-Chandbali, km 27/500 to km 45/000 of SH-09)

SL. NO	DESCRIPTION	DRAWING NO.	SL. No.	DESCRIPTION	DRAWING NO.
1	Cover Sheet		13	Plan & Profile km 26.000 to km 27.000	OSRP/CEG/SH-09/P &P/26
INDEX SHEETS					
2	Index of Highway Drawings	OSRP/CEG/SH-09/INDEX/01	15	Plan & Profile km 28.000 to km 29.000	OSRP/CEG/SH-09/P &P/28
3	Index of Other Highway & Environment Drawings	OSRP/CEG/SH-09/INDEX/02	16	Plan & Profile km 29.000 to km 30.000	OSRP/CEG/SH-09/P &P/29
4	Index of Drawings of Structures	OSRP/CEG/SH-09/INDEX/03	17	Plan & Profile km 30.000 to km 31.000	OSRP/CEG/SH-09/P &P/30
5	List of Structure (Culverts) (1of2)	OSRP/CEG/SH-09/LOS/01	18	Plan & Profile km 31.000 to km 32.000	OSRP/CEG/SH-09/P &P/31
6	List of Structure (Culverts) (2of2)	OSRP/CEG/SH-09/LOS/02	19	Plan & Profile km 32.000 to km 33.000	OSRP/CEG/SH-09/P &P/32
7	Attempted Sketches of Highway	OSRP/PMU/SH-09/AS/01	20	Plan & Profile km 33.000 to km 34.000	OSRP/CEG/SH-09/P &P/33
HORIZONTAL CURVE DETAILS					
8	Horizontal Curve Details (1 of 2)	OSRP/CEG/SH-09/HC/01	23	Plan & Profile km 36.000 to km 37.000	OSRP/CEG/SH-09/P &P/36
9	Horizontal Curve Details (2 of 2)	OSRP/CEG/SH-09/HC/02	24	Plan & Profile km 37.000 to km 38.000	OSRP/CEG/SH-09/P &P/37
VERTICAL CURVE DETAILS					
10	Vertical Curve Details (1 of 2)	OSRP/CEG/SH-09/VC/01	27	Plan & Profile km 40.000 to km 41.000	OSRP/CEG/SH-09/P &P/40
11	Vertical Curve Details (2 of 2)	OSRP/CEG/SH-09/VC/02	28	Plan & Profile km 41.000 to km 42.000	OSRP/CEG/SH-09/P &P/41
PLAN & PROFILE					
12	Plan & Profile km 25.000 to km 26.000	OSRP/CEG/SH-09/P &P/25	31	Plan & Profile km 44.000 to km 45.000	OSRP/CEG/SH-09/P &P/44

R2 SEP-2015 SECOND REVISION	LUSA	RAJU MAHUR	M.R. MISRA (EE)	O.P. PATEL (CE)	DPR CONSULTANT : C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KMOI COLONY,MALVIYA NAGAR JALPUR-17 tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com
R1 JAN-2013 FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.R. MISRA (EE)	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 .
- JUNE 2008 ORIGINAL	CEG				CLIENT : ODISHA WORKS DEPARTMENT
NO. DATE	REVISION	BY	DRAWN:	CHECKED:	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B
					SCALE : N.T.S
					DRAWING TITLE : INDEX OF DRAWINGS (SHEET 1 OF 2)
					DWG. NUMBER : OSRP/CEG/SH09/P02B/INDEX/ 01
					REV. R2

INDEX OF OTHER HIGHWAY & ENVIRONMENT DRAWINGS (SH-09: Pirhat-Chandbali)

SL. NO	DESCRIPTION	DRAWING NO.	SL. NO	DESCRIPTION	DRAWING NO.
SCHEDULES					
32	Subchedule of Road Sign Post (1 of 2)	OSRP/CEG/SH-09/SCH/01	55	Standards Drawings Details of RPMs & Chevron Markers	OSRP/CEG/RPM
33	Subchedule of Road Sign Post (2 of 2)	OSRP/CEG/SH-09/SCH/02	56	Schedule of RRPMS	OSRP/CEG/RPM/01
34	Schedule of Extra Widening & Guard Posts	OSRP/CEG/SH-09/SCH/03	57	Standards Drawings Typical Road Marking Details (Sheet 1 of 2)	OSRP/CEG/RM/01
35	Subchedule for Pavement Composition	OSRP/CEG/SH-09/SCH/PAV	58	Standards Drawings Typical Road Marking Details (Sheet 2 of 2)	OSRP/CEG/RM/02
36	Subchedule for Pavement & Cross Section Type	OSRP/CEG/SH-09/SCH/TCS	59	Standards Drawings Typical Road Signs (Sheet 1 of 4)	OSRP/CEG/RS/01
			60	Standards Drawings Typical Road Signs (Sheet 2 of 4)	OSRP/CEG/RS/02
			61	Standards Drawings Typical Road Signs (Sheet 3 of 4)	OSRP/CEG/RS/03
			62	Standards Drawings Typical Road Signs (Sheet 4 of 4)	OSRP/CEG/RS/04
TYPICAL X-SECTIONS					
37	Typical Cross Sections	OSRP/CE/TCS/ 2 & 3	63	Standards Drawings Typical Bus Bay Sheet - I	OSRP/CEG/BB/01
38	Typical Cross Sections	OSRP/CE/TCS/ 38& 39	64	Standards Drawings Typical Bus Bay Sheet - II	OSRP/CEG/BB/02
39	Typical Cross Sections	OSRP/CE/TCS/ 18&35	65	Typical Details of Dowel Bar & tie Bar Arrangement	OSRP/CEG/RIGID/-1
40	Typical Cross Sections	OSRP/CE/TCS/ 32&33	66	Typical Details of Transition between Rigid and Flexible Pavement	OSRP/CEG/RIGID/-2
41	Typical Slope Protection work&TCS-40	OSRP/CEG/PW	67	Typical Details of Transition of Road sections	OSRP/CEG/TR
42	Standard Drawings Details of Drains & Kerb	OSRP/CEG/DR			
43	Details of Application of Super Elevation	OSRP/CEG/SE		TOLL PLAZZA DETAILS	
			68	Standard Drawings of Toll Plaza Layout	OSRP/CEG/TP/01
JUNCTION/INTERSECTIONS DETAILS					
			69	Standard Drawings Toll Plaza Main Office	OSRP/CEG/TP/02
44	Typical 4-Legged Intersection with single Lane BT Road	OSRP/CEG/JN/01	70	Standard Drawings Toll Booth	OSRP/CEG/TP/03
45	Typical T-Junction with Single Lane BT Road	OSRP/CEG/JN/02	71	Standard Drawings Barrier ate for Toll Plaza	OSRP/CEG/TP/04
46	Typical Y-Junction With Simle Lane BT/Earthen Road	OSRP/CEG/JN/03	72	Standard Drawings Electrical Layout and Main Office	OSRP/CEG/TP/05
47	Standard Drawings Typical - Cross Drain Single Lane BT Road/Earth Road	OSRP/CEG/CD-JN	73	Standard Drawings Electrical Layout Toll Plaza	OSRP/CEG/TP/06
			74	Standard Drawings Eplumbin Layout <input type="checkbox"/> Toll Plaza	OSRP/CEG/TP/07
ROAD SIGNS, MARKINS & MISC. ROADWAY FURNITURES					
48	Standard Drawings Details of Road Humps & Rumble Strips	OSRP/CEG/RH & RS		ENVIRONMENT DRAWINGS	
49	Schedule of Humps & Rumlbers	OSRP/CEG/SCH-RH&RS	75	Toe Wall for Water Bodies	OSRP/CEG/ENVV-03
50	Standard Drawings Details of Footpath Barriers	OSRP/CEG/FB	76	Interception Barricade for Institutions	OSRP/CEG/ENVV-05
51	Standard Drawings Metal Beam Crash Barrier Details	OSRP/CEG/CB	77	Typical arrangement for Reptile Under Pass	OSRP/CEG/ENVV-14
52	Standard Drawings Typical KM Stone & 5th KM Stone	OSRP/CEG/KM/01	78	Typical Arrangement for Utility Duct	OSRP/CEG/MISC - 01
53	Standards Drawings Typical Details of 200m Stone & Guard post	OSRP/CEG/KM & GP	79	Typical Drawing for Silt Fence Sediment Arrestor	OSRP/PMU/ENVV - 01
54	Standards Drawings Details of Road Delinators	OSRP/CEG/RD	80	Oil & Grease Trap for Plant Site	OSRP/CEG/ENVV/06

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OND	VNAVY	P.K.MISHRA (AE)	M.R. MISRA (EE)	O.P. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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

CLIENT : ODISHA WORKS DEPARTMENT

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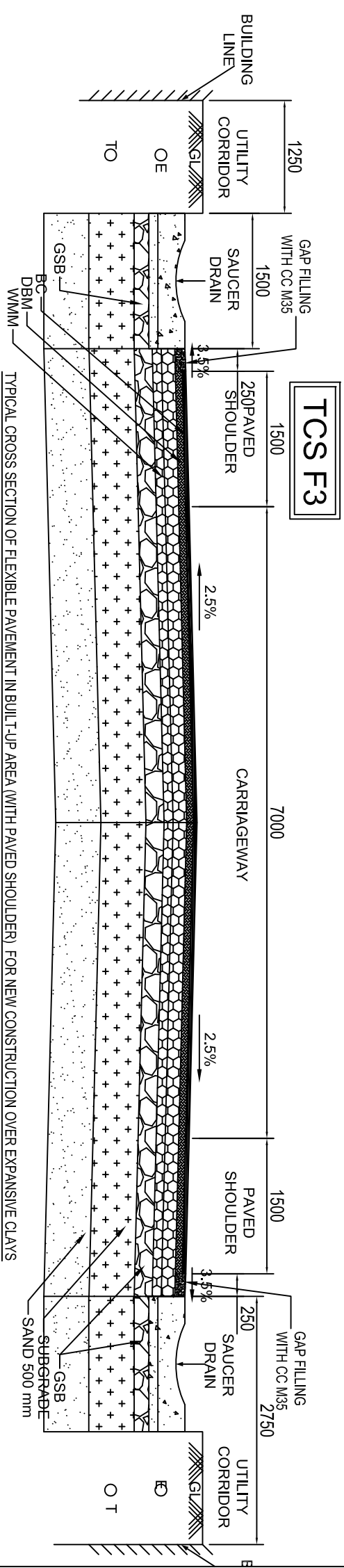
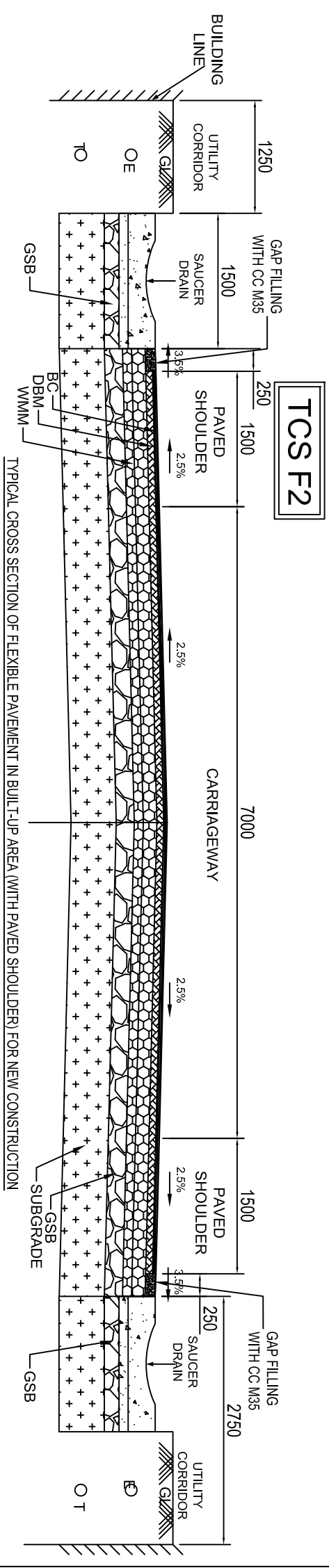
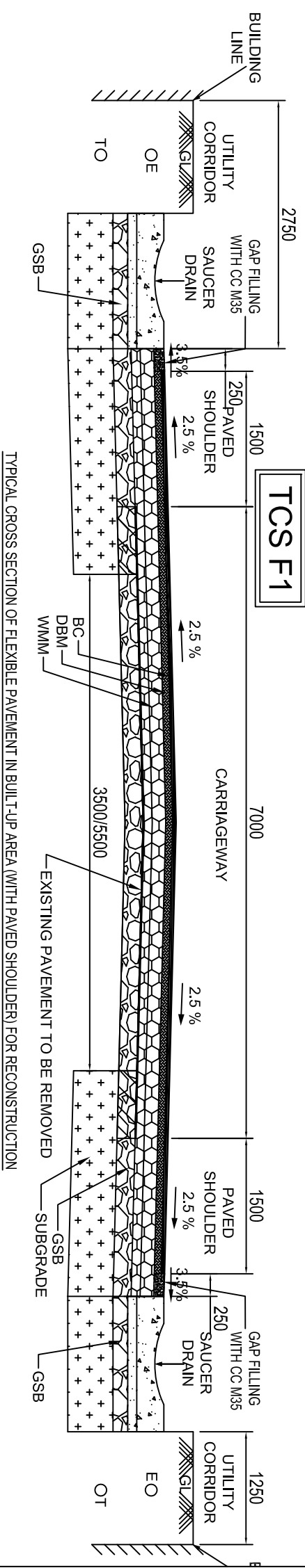
SCALE : N.T.S

DRAWING TITLE : INDEX OF HIGHWAY AND ENVIRONMENT DRAWINGS (SHEET 2 OF 2)

DWG. NUMBER : OSRP/CEG/SH09/P02B/INDEX/2

REV. R2

STAGGERED SPOUTS AT EVERY 50 M



LEGENDS

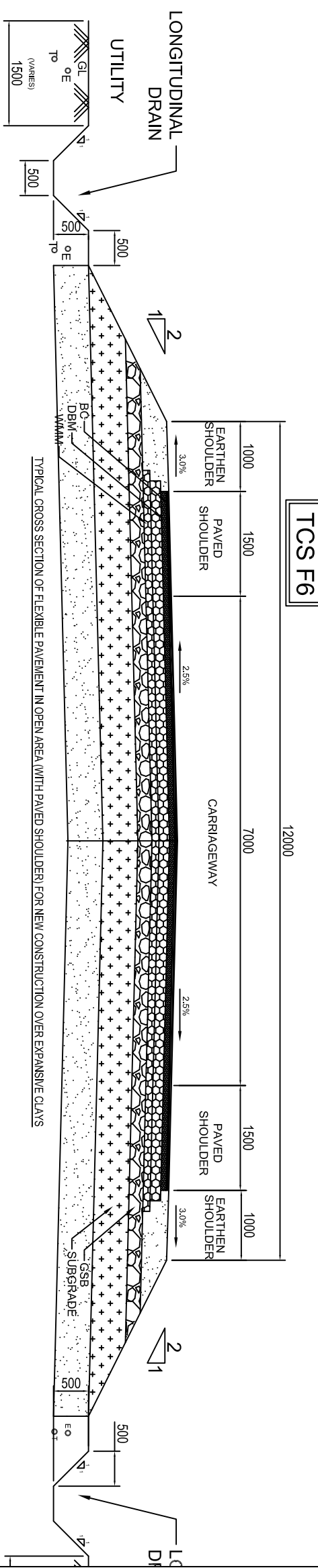
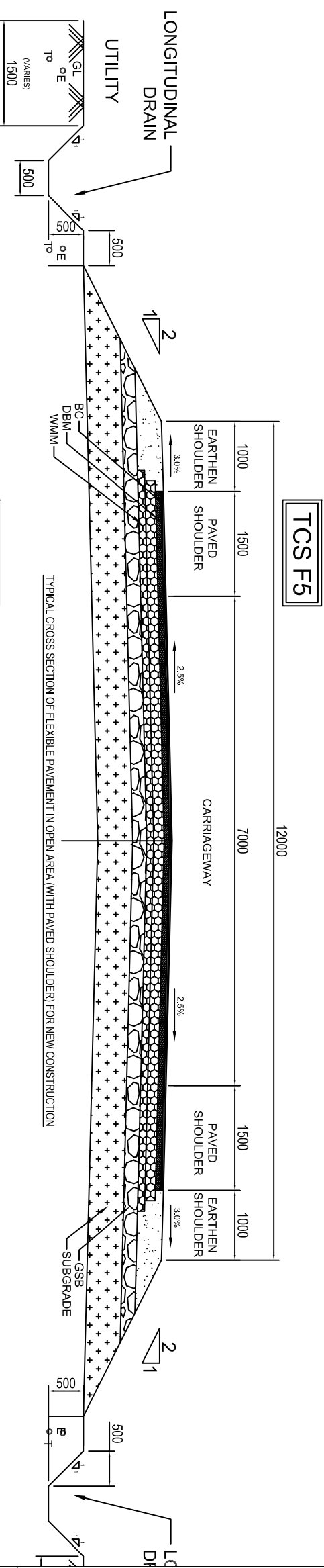
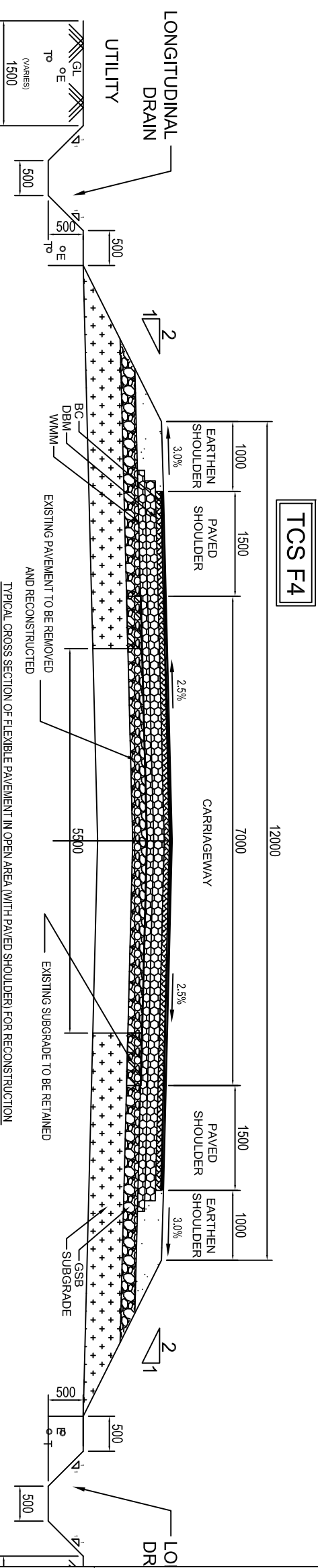
1) BC		9) EMBANKMENT	
2) DBM		10) PC	
3) WMM		11) BM	
4) GSB		12) E-Electrical Cable	
5) SUBGRADE		13) T-Telecom Cable	
6) DLC		14) W-Water Supply Line	
7) PCC		15) G-Gas Line	
8) EARTHILL		16) S-Sewer	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOR DRAIN DETAILS REFER DRAWING NO.OSRP/CEG/DR
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.OSRP/CEG/RIGID 02.
5. FOR PAVEMENT EDGE DETAILS REFER DRAWING NO. OSRP/CEG/ED
6. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
7. IN CASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	<p>DR CONSULTANT :</p> <p>C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KMOI COLONY,MALVIYA NAGAR JAIPUR-17 (tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceeg@cegindia.com)</p>
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (CE)	
-	JUNE 2008	ORIGINAL	CEG				
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	
						APPROVED:	

DESIGN REVIEW CONSULTANT :	CLIENT :	PROJECT :	SCALE :
<p>LEA Associates South Asia Pvt. Ltd., India B-1 E-27, 1ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .</p>	<p>ODISHA WORKS DEPARTMENT</p>	<p>CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B</p>	N.T.S
DRAWING TITLE :	TYPICAL CROSS SECTION - F1, F2 & F3		
DWG. NUMBER :	OSRP/CEG/SH09/P02B/TCS/01		
REV. R2	(SHEET 1 OF 5)		



LEGENDS	
1) BC	9) EMBANKMENT
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4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO.OSRP/CEG/RIGID 02.
5. FOR PAVEMENT EDGE DETAILS REFER DRAWING NO. OSRP/CEG/IOD
6. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
7. IN CASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS

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R1	JAN-2013	FIRST REVISION	OWD	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K. PRADEEN (CE)

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 JAJPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginidia.com

DESIGN REVIEW CONSULTANT :
EA Associates South Asia Pvt. Ltd., India
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 INDUSTRIAL ESTATE, MATHURA ROAD, NEW
 DELHI-110044 .

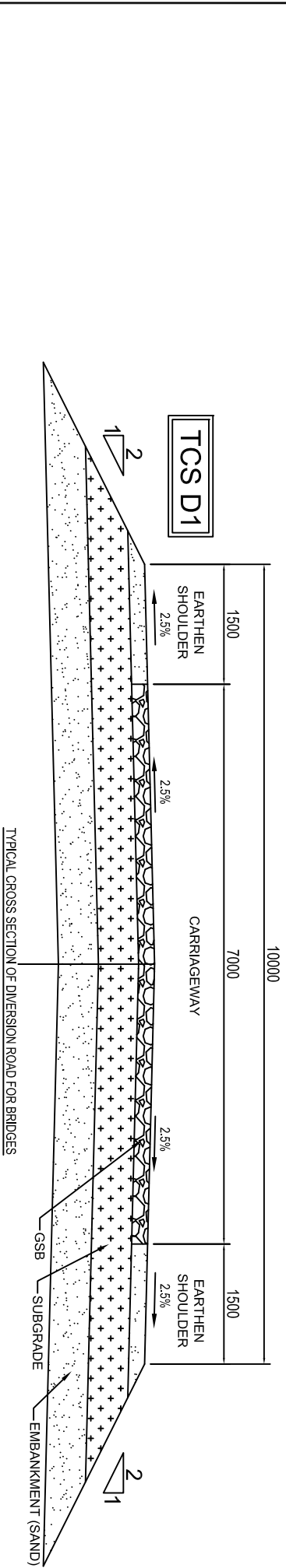
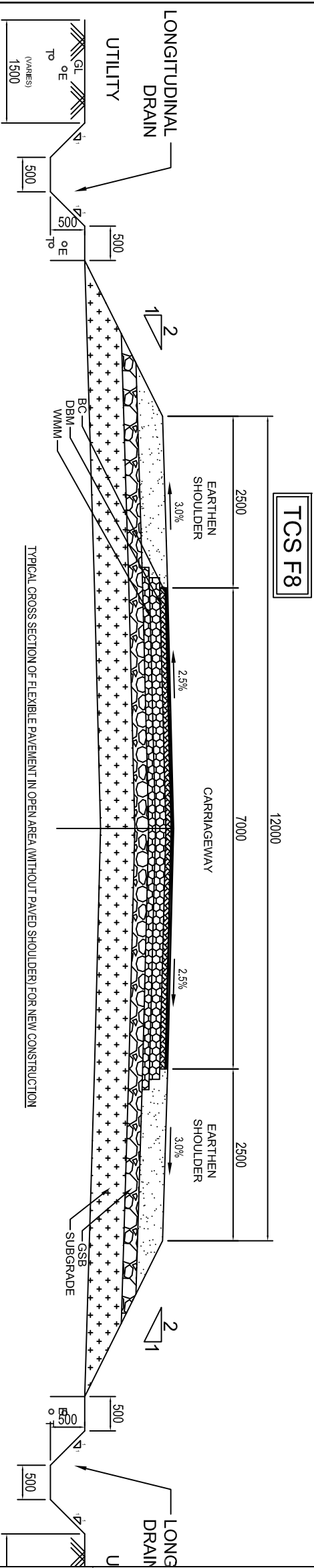
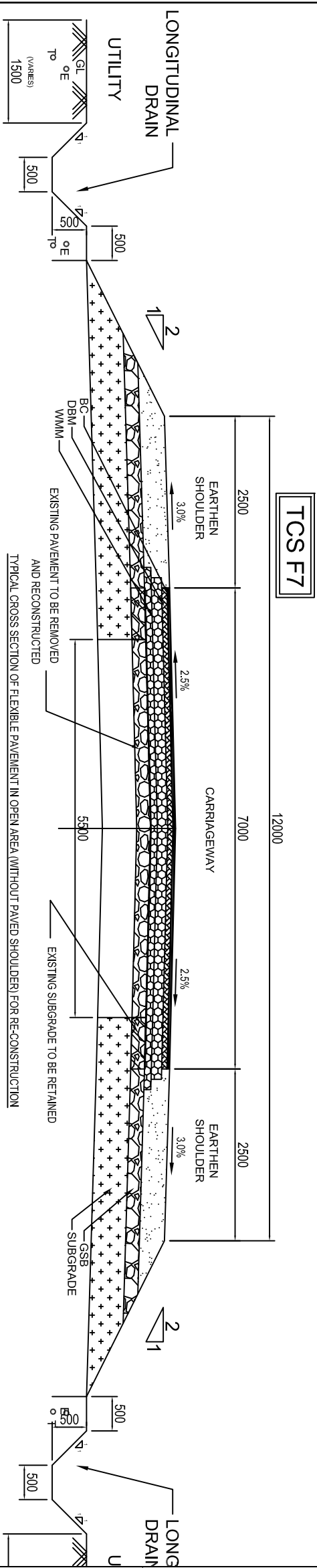
CLIENT :
ODISHA WORKS
 DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING
 OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL CROSS SECTION - F4, F5 & F6

DWG. NUMBER : OSRP/CEG/SH09/P02B/TCS/02 (SHEET 2 OF 9)
 REV. R2



LEGENDS	
1) BC	9) EMBANKMENT
2) DBM	10) PC
3) WMM	11) BM
4) GSB	12) E-Electrical Cable
5) SUBGRADE	13) T-Telecom Cable
6) DLC	14) W-Water Supply Line
7) PCC	15) G-Gas Line
8) EARTH FILL	16) S-Sewer

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOR DRAIN DETAILS REFER DRAWING NO.OSRP/CEG/DR
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.OSRP/CEG/RIGID 02.
5. FOR PAVEMENT EDGE DETAILS REFER DRAWING NO. OSRP/CEG/100
6. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
7. IN CASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OWD	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DFR CONSULTANT :
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DESIGN REVIEW CONSULTANT :
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 B-1, E-27, Ind Floor, MOHAN COOPERATIVE
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 DELHI-110044 .

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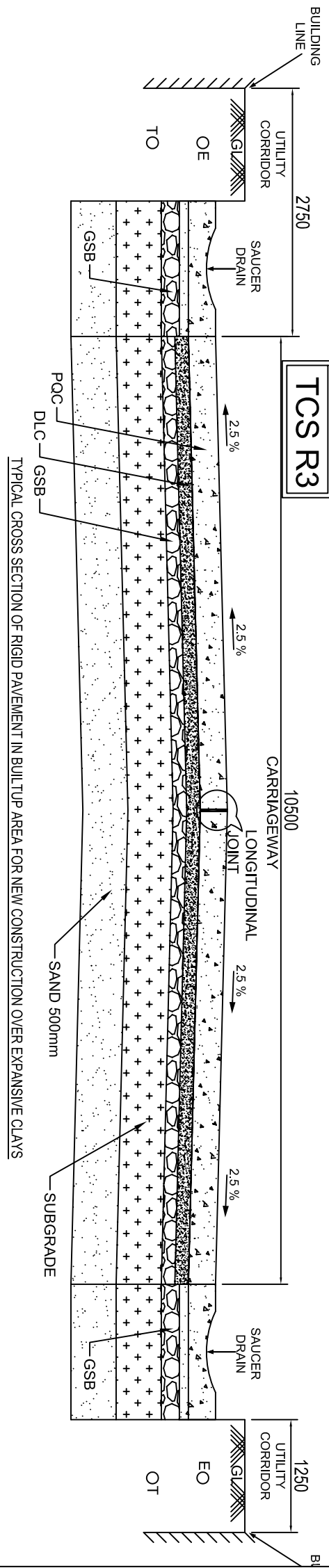
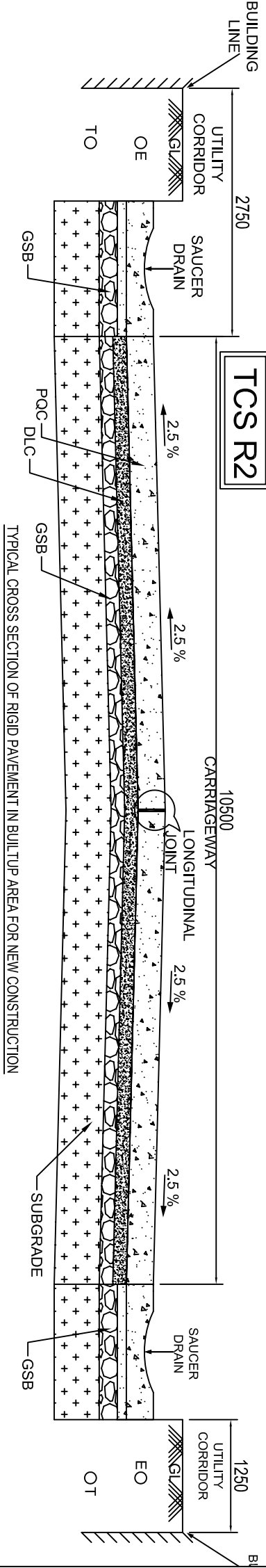
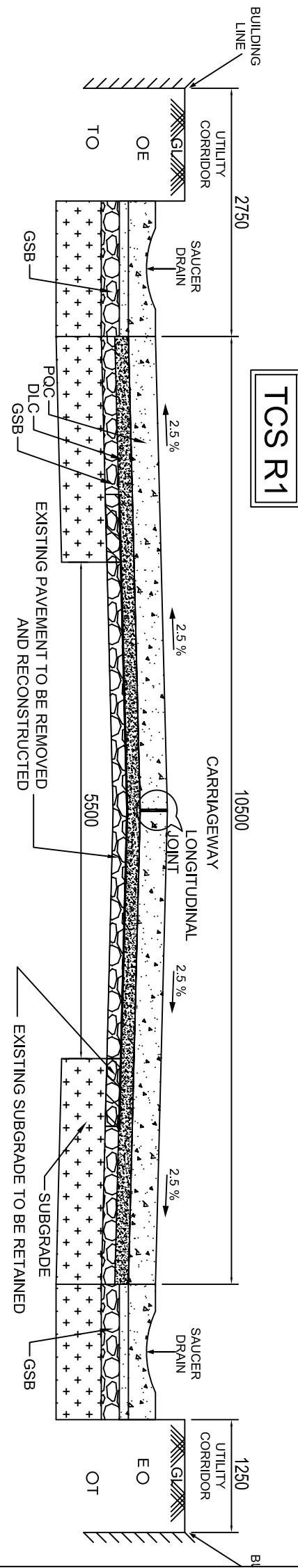
SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL CROSS SECTION - F7, F8 & D1

DWG. NUMBER : OSRP/CEG/SH09/P02B/TCS/03

(SHEET 3 OF 5)

REV. R2

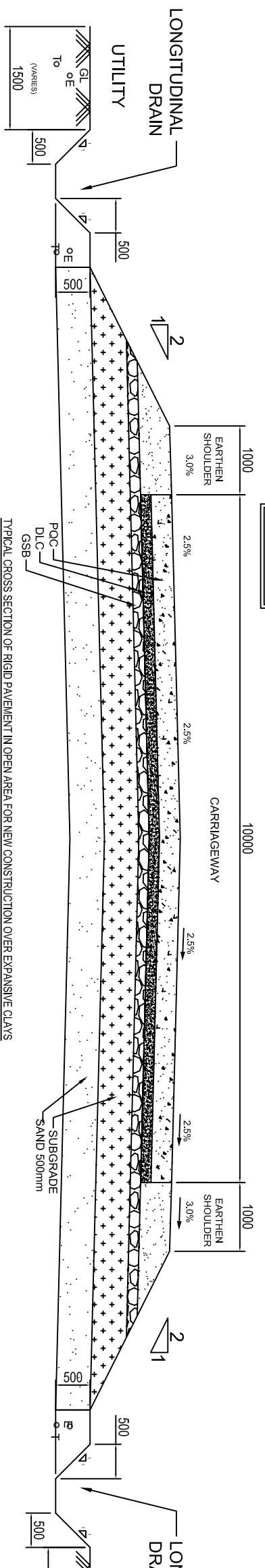
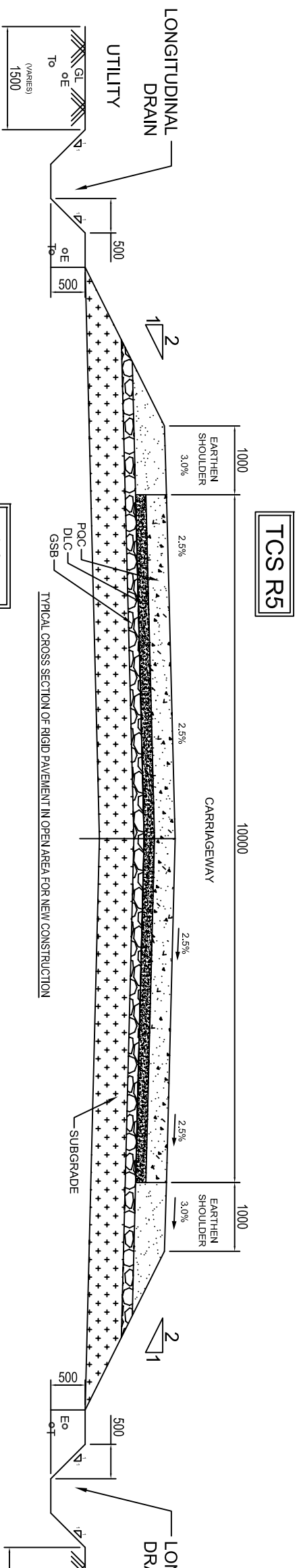
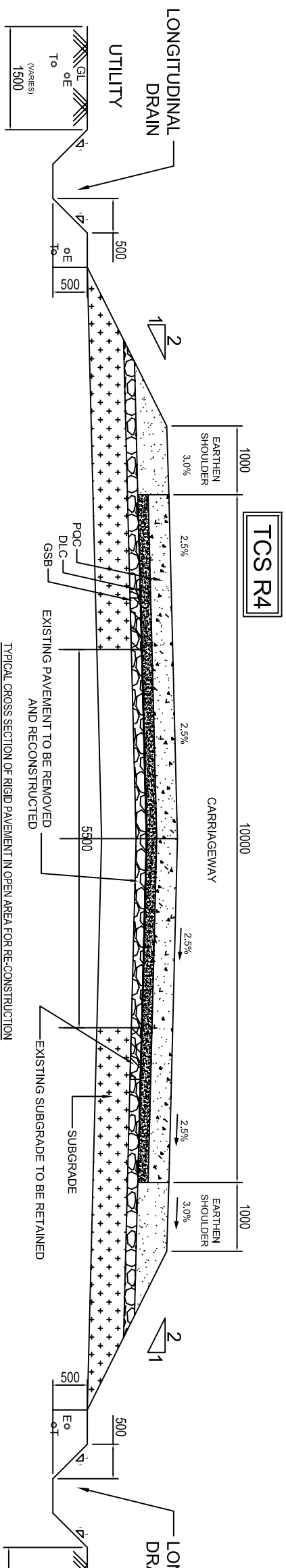


LEGENDS	
1) BC	9) EMBANKMENT
2) DBM	10) PC
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- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS
 2. FOR DRAIN DETAILS REFER DRAWING NO.OSRP/CEG/DR
 3. FOR LAYER THICKNESS DETAILS REFER SCHEDULE OF WIDENING AND LAYER THICKNESS DETAILS
 4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO.OSRP/CEG/RIGID 02.
 5. FOR PAVEMENT EDGE DETAILS REFER DRAWING NO. OSRP/CEG/10D
 6. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
 7. IN CASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.S. MISHRA (EE)	O.P. PATEL (CE)	DPR CONSULTANT : C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KM/01 COLONY,MALVIYA NAGAR JALPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.com
R1	JAN-2013	FIRST REVISION	OND	VINAY	M.S. MISHRA (AE)	M.S. MISHRA (EE) N.K. PRADHAN (CE)	
-	JUNE 2008	ORIGINAL	CEG				
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ODISHA WORKS DEPARTMENT	CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	N.T.S
DESIGN REVIEW CONSULTANT :		DRAWING TITLE :
LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044		TYPICAL CROSS SECTION - R1, R2 & R3
		DWG. NUMBER : OSRP/CEG/SH09/P02B/TCS/04
		(SHEET 4 OF 5)
		REV. R2



LEGENDS	
1) BC	9) EMBANKMENT
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-	JUNE 2008	ORIGINAL	CEG				

DR CONSULTANT :
CONSULTING ENGINEERS GROUP LTD.
 E-12,KMOI COLONY,MALVIYA NAGAR
 JALPUR-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, 1ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL CROSS SECTION - R4, R5 & R6

DWG. NUMBER : OSRP/CEG/SH09/P02B/TCS/05

(SHEET 5 OF 9)

REV. R2


VERTICAL CURVE DETAILS

Curve No.	Curve Type	VIP Details		Curve Length	k	Curve Start		Curve End		Start Gradient (%)	End Gradient (%)	Grade Difference (%)	Remarks
		Chainage	Level			m.	Chainage	Level	Chainage				
1	Valley	27600	7.551	60	242.405	27570	7.555	27630	7.623	-0.011	0.237	-0.248	
2	Summit	27875.155	8.203	60	187.501	27845.155	8.132	27905.155	8.178	0.237	-0.083	0.320	
3	Valley	28120	8	60	722.282	28090	8.025	28150	8	-0.083	0	-0.083	
4	Valley	28300	8	60	1200	28270	8	28330	8.015	0	0.05	-0.050	
5	Summit	28700	8.2	60	372.61	28670	8.185	28730	8.167	0.05	-0.111	0.161	
6	Valley	29066.58	7.793	60	240.012	29036.58	7.826	29096.58	7.835	-0.111	0.139	-0.250	
7	Summit	29254.492	8.054	60	205.907	29224.492	8.012	29284.492	8.008	0.139	-0.152	0.291	
8	Valley	29710	7.36	60	250.347	29680	7.406	29740	7.386	-0.152	0.087	-0.239	
9	Summit	30100	7.7	60	687.798	30070	7.674	30130	7.7	0.087	0	0.087	
10	Summit	30400	7.7	60	767.909	30370	7.7	30430	7.677	0	-0.078	0.078	
11	Valley	30779.924	7.403	60	136.297	30749.924	7.427	30809.924	7.512	-0.078	0.362	-0.440	
12	Summit	31000	8.2	60	165.709	30970	8.091	31030	8.2	0.362	0	0.362	
13	Summit	31675.068	8.2	60	412.397	31645.068	8.2	31705.068	8.156	0	-0.145	0.145	
14	Valley	31950	7.8	60	412.397	31920	7.844	31980	7.8	-0.145	0	-0.145	
15	Valley	32193.389	7.8	60	4032.77	32163.389	7.8	32223.389	7.804	0	0.015	-0.015	
16	Valley	32935.451	7.91	60	1765.39	32905.451	7.906	32965.451	7.925	0.015	0.049	-0.034	
17	Valley	33218.804	8.049	60	1417.25	33188.804	8.034	33248.804	8.076	0.049	0.091	-0.042	
18	Summit	33494.171	8.3	60	657.893	33464.171	8.273	33524.171	8.3	0.091	0	0.091	
19	Summit	34070.173	8.3	60	719.657	34040.173	8.3	34100.173	8.275	0	-0.083	0.083	
20	Valley	34493.145	7.947	60	281.85	34463.145	7.972	34523.145	7.986	-0.083	0.13	-0.213	
21	Summit	34750	8.28	60	463.298	34720	8.241	34780	8.28	0.13	0	0.130	
22	Valley	35050	8.28	60	985.714	35020	8.28	35080	8.298	0	0.061	-0.061	
23	Summit	35740	8.7	60	985.714	35710	8.682	35770	8.7	0.061	0	0.061	
24	Summit	35900	8.7	60	391.722	35870	8.7	35930	8.654	0	-0.153	0.153	
25	Valley	36357.009	8	60	159.651	36327.009	8.046	36387.009	8.067	-0.153	0.223	-0.376	
26	Summit	36779.355	8.94	75	212.864	36741.855	8.857	36816.855	8.892	0.223	-0.13	0.353	
27	Valley	37273.118	8.3	60	910.46	37243.118	8.339	37303.118	8.281	-0.13	-0.064	-0.066	
28	Valley	37686.66	8.036	60	102.754	37656.66	8.055	37716.66	8.192	-0.064	0.52	-0.584	
29	Summit	37902.719	9.16	80	153.808	37862.719	8.952	37942.719	9.16	0.52	0	0.520	
30	Summit	38400	9.16	60	206.626	38370	9.16	38430	9.073	0	-0.29	0.290	
31	Valley	38644.507	8.45	60	174.903	38614.507	8.537	38674.507	8.466	-0.29	0.053	-0.343	
32	Valley	38834.38	8.55	60	265.457	38804.38	8.534	38864.38	8.634	0.053	0.279	-0.226	
33	Summit	39099.52	9.289	70	150.994	39064.52	9.191	39134.52	9.224	0.279	-0.185	0.464	
34	Valley	39418.027	8.7	60	162.716	39388.027	8.755	39448.027	8.755	-0.185	0.184	-0.369	
35	Summit	39635.608	9.1	60	207.377	39605.608	9.045	39665.608	9.068	0.184	-0.105	0.289	
36	Valley	39813.196	8.913	60	335.356	39783.196	8.944	39843.196	8.935	-0.105	0.073	-0.178	
37	Summit	40068.333	9.1	60	166.169	40038.333	9.078	40098.333	9.014	0.073	-0.288	0.361	
38	Valley	40343.464	8.309	60	145.171	40313.464	8.395	40373.464	8.346	-0.288	0.126	-0.414	
39	Valley	40672.888	8.723	60	2873.78	40642.888	8.685	40702.888	8.766	0.126	0.147	-0.021	
40	Summit	41124.316	9.384	60	291.044	41094.316	9.34	41154.316	9.366	0.147	-0.060	0.207	
41	Valley	41682.832	9.051	60	375.976	41652.832	9.069	41712.832	9.081	-0.060	0.100	-0.160	
42	Summit	42156.724	9.525	60	190.085	42126.724	9.495	42186.724	9.46	0.100	-0.216	0.316	
43	Valley	42400	9	60	278.182	42370	9.065	42430	9	-0.216	0.000	-0.216	
44	Summit	42570	9	60	2685.07	42540	9	42600	8.993	0.000	-0.022	0.022	
45	Valley	42913.013	8.923	60	2154.46	42883.013	8.93	42943.013	8.925	-0.022	0.006	-0.028	
46	Valley	43271.962	8.943	60	397.343	43241.962	8.941	43301.962	8.99	0.006	0.157	-0.151	
47	Summit	43500	9.3	60	383.371	43470	9.253	43530	9.3	0.157	0.000	0.157	
48	Summit	43650	9.3	60	140.013	43620	9.3	43680	9.171	0.000	-0.429	0.429	
49	Valley	43860.02	8.4	60	196.884	43830.02	8.529	43890.02	8.363	-0.429	-0.124	-0.305	
50	Valley	44160.493	8.028	60	406.47	44130.493	8.065	44190.493	8.035	-0.124	0.024	-0.148	
51	Valley	44432.373	8.093	60	296.611	44402.373	8.086	44462.373	8.161	0.024	0.226	-0.202	
52	Summit	44833.564	9	70	167.356	44798.564	8.921	44868.564	8.933	0.226	-0.192	0.418	
53	Valley	45197.852	8.3	60	412.544	45167.852	8.358	45227.852	8.286	-0.192	-0.047	-0.145	

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	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, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

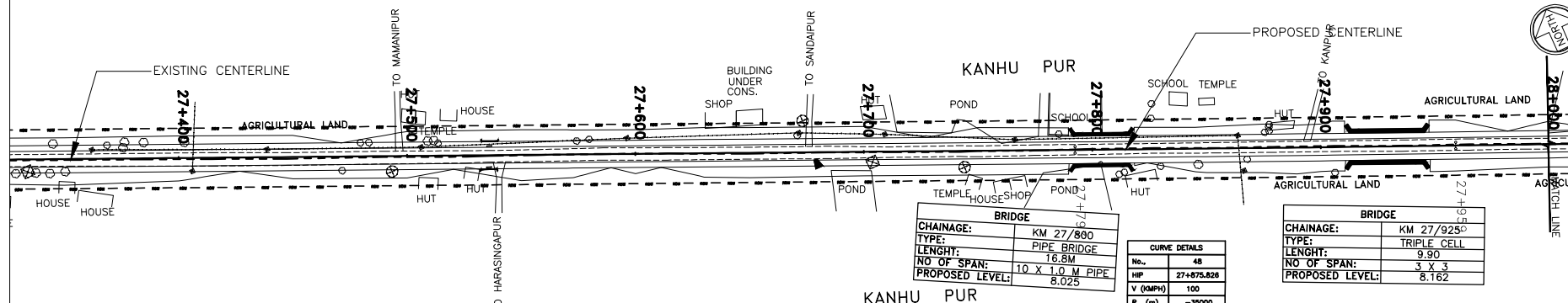
CLIENT

ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
VERTICAL CURVE DETAILS
 (SHEET 1 OF 1)
 DWG. NUMBER : **OSRP/CEG/P02B/STR/3**
 REV. R2

← TO BHADRAK TO CHANDBALI →

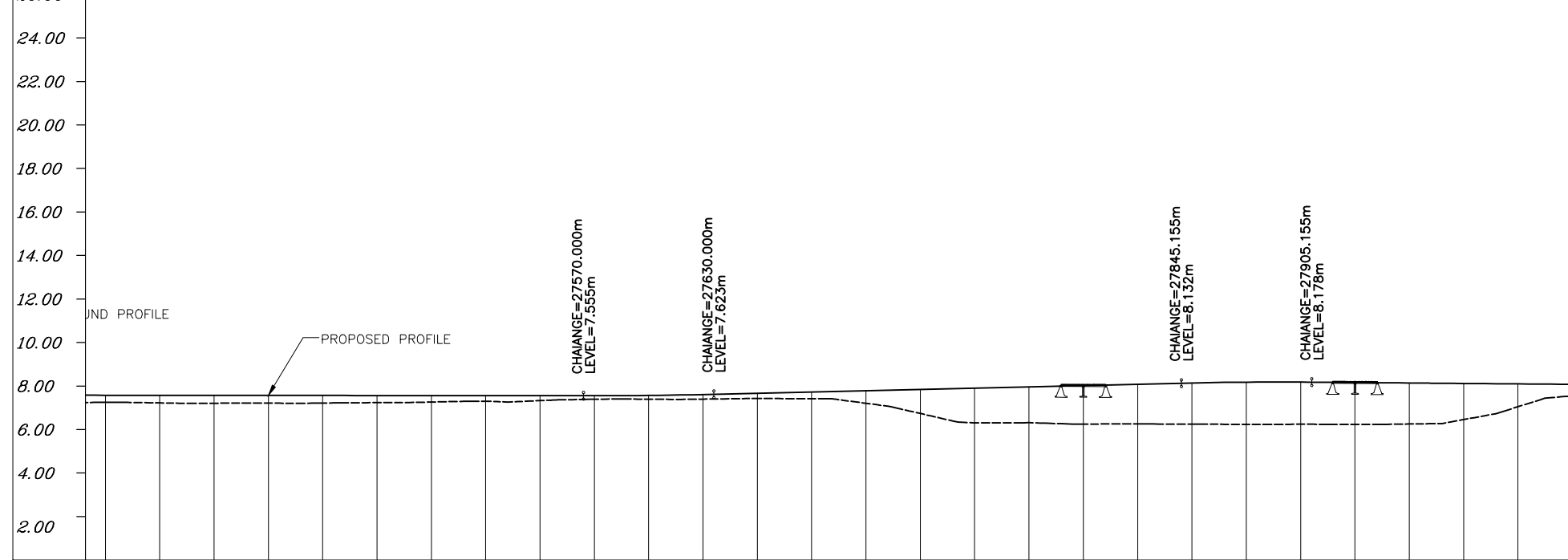


BRIDGE	
CHAINAGE:	KM 27/860
TYPE:	PIPE BRIDGE
LENGTH:	16.8M
NO OF SPAN:	10 X 1.0 M PIPE
PROPOSED LEVEL:	8.025

CURVE DETAILS	
No.	48
HP	27+875.828
V (KMPH)	100
R (m)	-35000
Lo (m)	166.647
La (m)	0
Delta	0° 16' 22.1"
e (to)	E.S
Ta(m)	83.324
Es (m)	0.099

BRIDGE	
CHAINAGE:	KM 27/925
TYPE:	TRIPLE CELL
LENGTH:	9.90
NO OF SPAN:	3 X 3
PROPOSED LEVEL:	8.162

LEGEND	
EXISTING CENTERLINE	—
PROPOSED CENTER LINE	—
EXISTING CARRIAGE WAY	—
PRO. CARRIAGE WAY EDGES	—
PRO. SHOULDER EDGES	—
EXISTING ROW BOUNDARY	—
PRO. ROW BOUNDARY	—
PIPE LINE	—
PROPOSED EARTH WORK	—
BREAK/DULVERT	—
RIVER/WALLA	—
H.T. LINE, TOWER	—
WELL, TAP & HAND PUMP	—
ELECTRIC LINE & POLE	—
TELEPHONE LINE & POLE	—
HOUSE/BUILDING/STRUCTURE	—
PIPE CULVERT	—
BOX/SLAB CULVERT	—
POND	—
START OF SPIRAL CURVE	TS
END OF SPIRAL CURVE	TE
START OF CIRCULAR CURVE	SC
END OF CIRCULAR CURVE	EC
APEX DISTANCE	AC
END OF CIRCULAR CURVE	CS
SUPERELEVATION	ST
DESIGN SPEED	V
HORIZONTAL INTERSECTION POINT	HP
RADIUS OF CURVE	R
DEVIATION ANGLE	S
LENGTH OF SPIRAL CURVE	LS



PROPOSED ROAD LEVEL (m)	7.578	7.575	7.573	7.570	7.567	7.565	7.562	7.559	7.557	7.555	7.570	7.611	7.670	7.729	7.788	7.848	7.907	7.966	8.025	8.085	8.143	8.179	8.182	8.162	8.141	8.120	8.100			
EXISTING LEVEL (m)	7.254	7.225	7.210	7.215	7.219	7.237	7.266	7.305	7.330	7.393	7.396	7.400	7.430	7.418	7.208	6.741	6.313	6.315	6.251	6.265	6.252	6.239	6.244	6.237	6.256	6.459	7.050			
HORIZONTAL ALIGNMENT	L=804.354m										R=-35000.000m L=166.647m																			
VERTICAL PROFILE	L=322.664m G=-0.011					L=60.000m		G=0.237 L=215.155m										L=60.000m		L=184.845m G=-0.083										
SUPERELEVATION /CROSSFALL	Q=2.500																													
CHAINAGE	27350.000	27375.000	27400.000	27425.000	27450.000	27475.000	27500.000	27525.000	27550.000	27575.000	27600.000	27625.000	27650.000	27675.000	27700.000	27725.000	27750.000	27775.000	27800.000	27825.000	27850.000	27875.000	27900.000	27925.000	27950.000	27975.000	28000.000			

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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CLIENT :
ODISHA WORKS DEPARTMENT

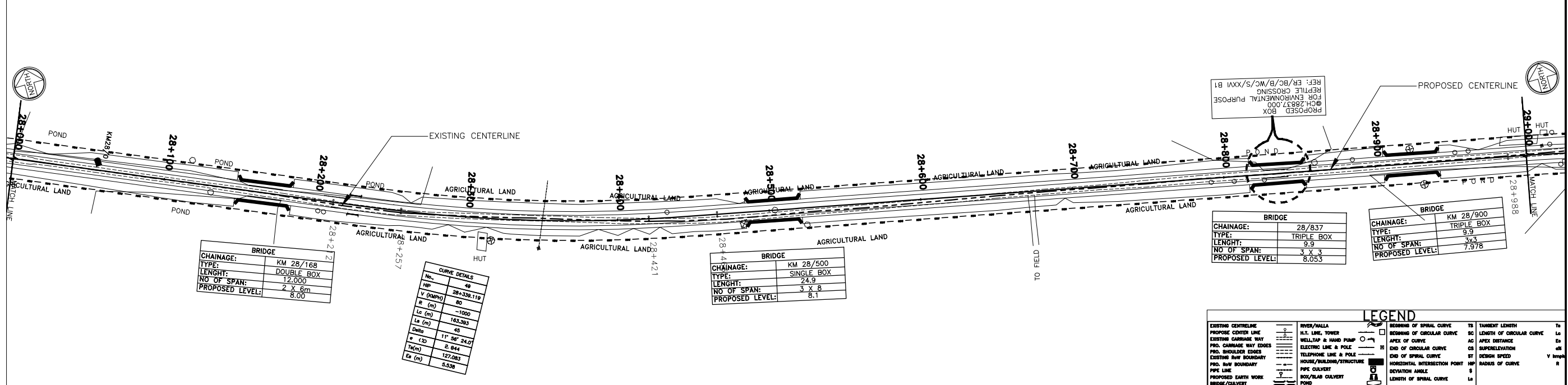
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 27/500 TO KM 28/000
 (SHEET 1 OF 18)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/1 REV. R2

← TO BHADRAK

TO CHANDBALI →



BRIDGE	
CHAINAGE:	KM 28/168
TYPE:	DOUBLE BOX
LENGTH:	12.000
NO OF SPAN:	2 X 6m
PROPOSED LEVEL:	8.00

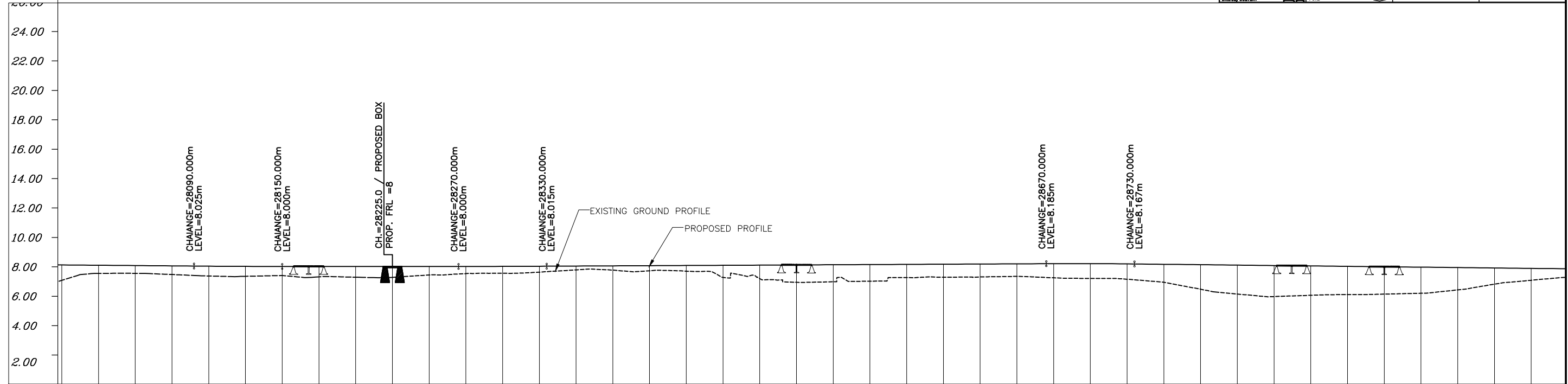
CURVE DETAILS	
No.	48
HP	28+338.118
R (m)	80
Lc (m)	-1000
La (m)	163.393
Delta	45
e (m)	11' 50" 24.07
Ta (m)	2.844
Ca (m)	127.083
Ca (m)	5.338

BRIDGE	
CHAINAGE:	KM 28/500
TYPE:	SINGLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8
PROPOSED LEVEL:	8.1

BRIDGE	
CHAINAGE:	28/837
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3
PROPOSED LEVEL:	8.053

BRIDGE	
CHAINAGE:	KM 28/900
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3
PROPOSED LEVEL:	7.978

LEGEND			
EXISTING CENTERLINE	RIVER/WALLA	STARTING OF SPIRAL CURVE	TANGENT LENGTH
PROPOSED CENTERLINE	H.T. LINE, TOWER	ENDING OF SPIRAL CURVE	SC LENGTH OF CIRCULAR CURVE
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP	APEX OF CURVE	AC APEX DISTANCE
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE	END OF CIRCULAR CURVE	CS SUPERELEVATION
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE	END OF SPIRAL CURVE	ST DESIGN SPEED
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE	HORIZONTAL INTERSECTION POINT	HP
PRO. ROW BOUNDARY	PIPE CULVERT	DEVIATION ANGLE	DA
PROPOSED EARTH WORK	BOX/RAB CULVERT	LENGTH OF SPIRAL CURVE	LS
BRIDGE/CULVERT	POND		

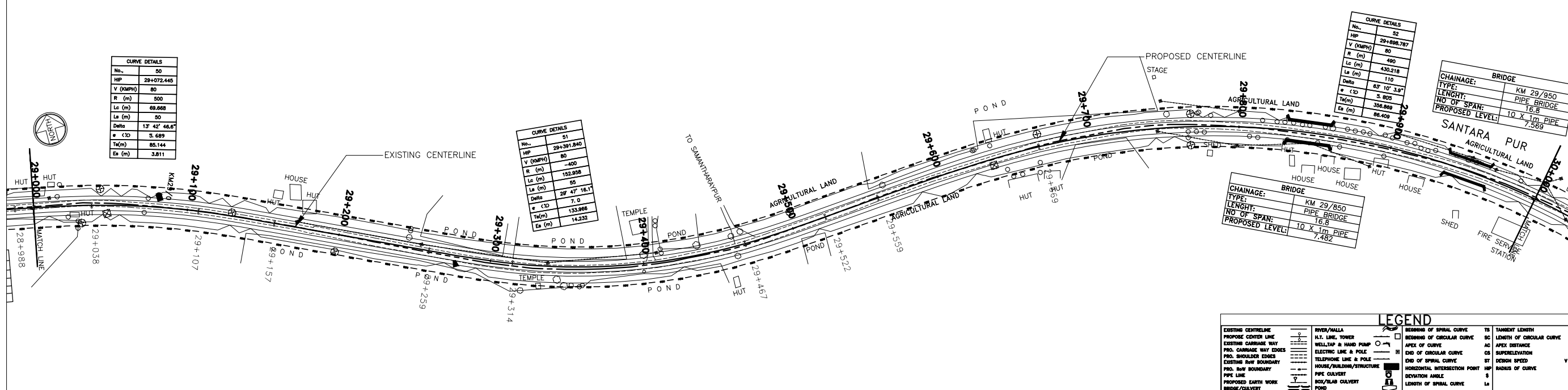


DATUM =0.00	
PROPOSED ROAD LEVEL (m)	8.100 8.079 8.058 8.037 8.017 8.004 8.000 8.000 8.000 8.000 8.000 8.000 8.004 8.013 8.025 8.037 8.050 8.062 8.075 8.087 8.100 8.112 8.125 8.137 8.150 8.162 8.175 8.187 8.188 8.172 8.144 8.117 8.089 8.061 8.033 8.006 7.978 7.950 7.922 7.895 7.867
EXISTING LEVEL (m)	7.050 7.529 7.530 7.449 7.348 7.326 7.380 7.291 7.266 7.253 7.413 7.508 7.533 7.610 7.763 7.746 7.705 7.674 7.252 7.176 6.919 6.954 6.995 7.237 7.265 7.285 7.327 7.224 7.187 7.129 6.917 6.449 6.125 5.948 6.037 6.084 6.116 6.174 6.403 6.793 7.057
HORIZONTAL ALIGNMENT	L=253.091m L=45.000m R=-1000.000m L=163.393m L=45.000m L=521.921m L=50.000
VERTICAL PROFILE	G=0.000 L=120.000m G=0.050 L=340.000m L=60.000m L=60.000m L=306.580m G=-0.111
SUPERELEVATION /CROSSFALL	Q=2.840 Q=2.500
CHAINAGE	28000.000 28025.000 28050.000 28075.000 28100.000 28125.000 28150.000 28175.000 28200.000 28225.000 28250.000 28275.000 28300.000 28325.000 28350.000 28375.000 28400.000 28425.000 28450.000 28475.000 28500.000 28525.000 28550.000 28575.000 28600.000 28625.000 28650.000 28675.000 28700.000 28725.000 28750.000 28775.000 28800.000 28825.000 28850.000 28875.000 28900.000 28925.000 28950.000 28975.000 29000.000

R2 SEP-2015 SECOND REVISION LASA R1 JAN-2013 FIRST REVISION OWD VINAY - JUNE 2008 ORIGINAL CEG	RAJU MATHUR PK.MISHRA (AE) PREPARED :	M.R MISHRA (EE) M.R MISHRA (EE) CHECKED:	O.P. PATEL (CE) N.K PRADHAN (CE) 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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 28/000 TO KM 29/000 (SHEET 2 OF 18)	DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/2 REV. R2
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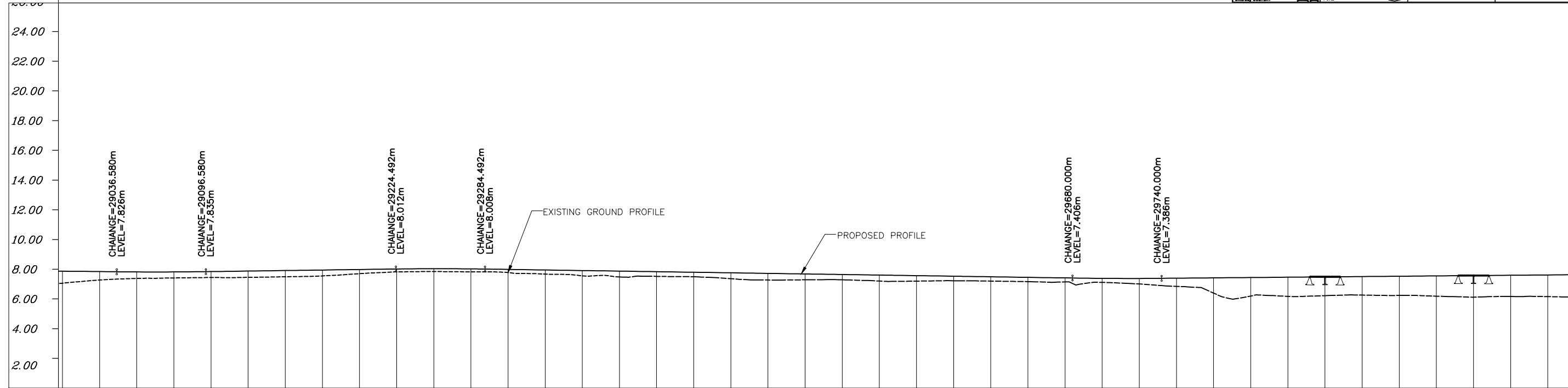
← TO BHADRAK

TO CHANDBALI →



LEGEND

EXISTING CENTERLINE	PROPOSED CENTERLINE	EXISTING CARRIAGE WAY	PROPOSED CARRIAGE WAY EDGES	PROPOSED SHOULDER EDGES	EXISTING ROW BOUNDARY	PROPOSED ROW BOUNDARY	PIPE LINE	PROPOSED EARTH WORK	BRIDGE/CULVERT																															
WELL/TAP & HAND PUMP	ELECTRIC LINE & POLE	TELEPHONE LINE & POLE	HOUSE/BUILDING/STRUCTURE	PIPE CULVERT	BOX/SLAB CULVERT	POND	RIVER/CANAL	H.T. LINE, TOWER	WELL/TAP & HAND PUMP	ELECTRIC LINE & POLE	TELEPHONE LINE & POLE	HOUSE/BUILDING/STRUCTURE	PIPE CULVERT	BOX/SLAB CULVERT	POND	STARTING OF SPIRAL CURVE	ENDING OF SPIRAL CURVE	STARTING OF CIRCULAR CURVE	ENDING OF CIRCULAR CURVE	TANGENT LENGTH	SC	LENGTH OF CIRCULAR CURVE	Lc	AC	APEX DISTANCE	ES	SUPERELEVATION	ST	DESIGN SPEED	V	DESIGN	HP	HORIZONTAL INTERSECTION POINT	HP	RADIUS OF CURVE	R	DELTA ANGLE	Δ	LENGTH OF SPIRAL CURVE	LS



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	7.867 7.839 7.815 7.814 7.839 7.874 7.909 7.944 7.978 8.013 8.032 8.021 7.985 7.947 7.909 7.870 7.832 7.794 7.756 7.718 7.680 7.642 7.604 7.566 7.527 7.489 7.451 7.413 7.383 7.377 7.395 7.416 7.438 7.460 7.482 7.504 7.526 7.547 7.569 7.591 7.613
EXISTING LEVEL (m)	7.057 7.271 7.379 7.411 7.439 7.451 7.490 7.547 7.697 7.817 7.841 7.819 7.771 7.670 7.552 7.484 7.519 7.490 7.360 7.272 7.285 7.285 7.202 7.196 7.223 7.199 7.163 7.142 7.112 7.006 6.845 6.392 6.190 6.171 6.218 6.259 6.237 6.184 6.114 6.162 6.156
HORIZONTAL ALIGNMENT	=50.000m R=500.000m L=50.000m L=69.668m L=102.193m L=55.000m R=-400.000m L=152.958m L=55.000m L=36.331m L=110.000m R=490.000m L=430.218m
VERTICAL PROFILE	L=60.000m G=0.139 L=127.912m L=60.000m L=395.508m G=-0.152 L=60.000m G=0.087 L=330.000m
SUPERELEVATION /CROSSFALL	Q=5.690 Q=2.500 Q=7.000 Q=2.500 Q=5.800
CHAINAGE	29000.000 29025.000 29050.000 29075.000 29100.000 29125.000 29150.000 29175.000 29200.000 29225.000 29250.000 29275.000 29300.000 29325.000 29350.000 29375.000 29400.000 29425.000 29450.000 29475.000 29500.000 29525.000 29550.000 29575.000 29600.000 29625.000 29650.000 29675.000 29700.000 29725.000 29750.000 29775.000 29800.000 29825.000 29850.000 29875.000 29900.000 29925.000 29950.000 29975.000 30000.000

<table border="1"> <tr><td>R2</td><td>SEP-2015</td><td>SECOND REVISION</td><td>LASA</td><td>RAJU MATHUR</td><td>M.R MISHRA (EE)</td><td>O.P. PATEL (CE)</td></tr> <tr><td>R1</td><td>JAN-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></tr> </table>	R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	R1	JAN-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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 29/000 TO KM 30/000 (SHEET 3 OF 18) DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/3 REV. R2
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)																						
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)																					
-	JUNE 2008	ORIGINAL	CEG																									

← TO BHADRAK

TO CHANDBALI →

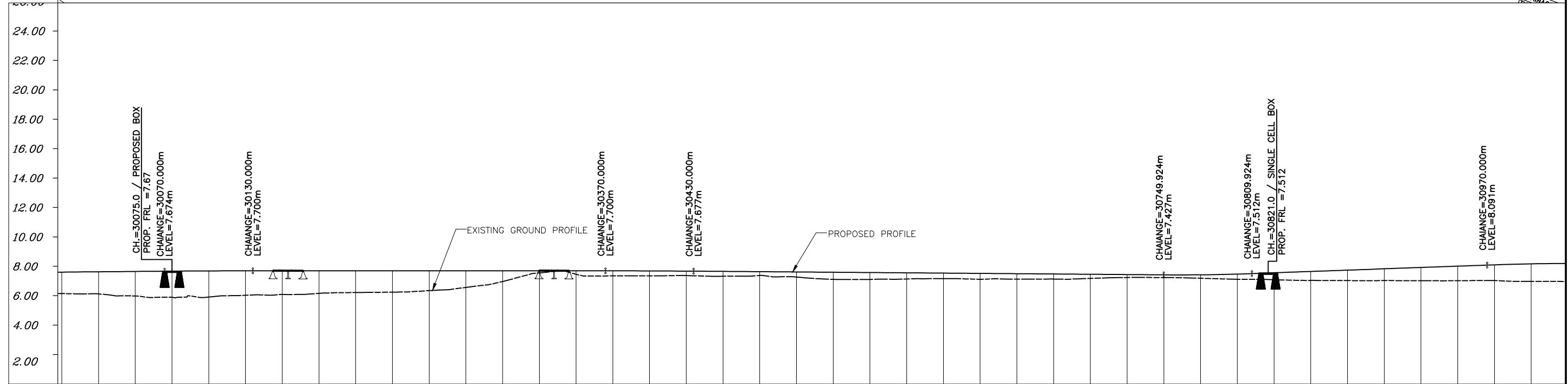
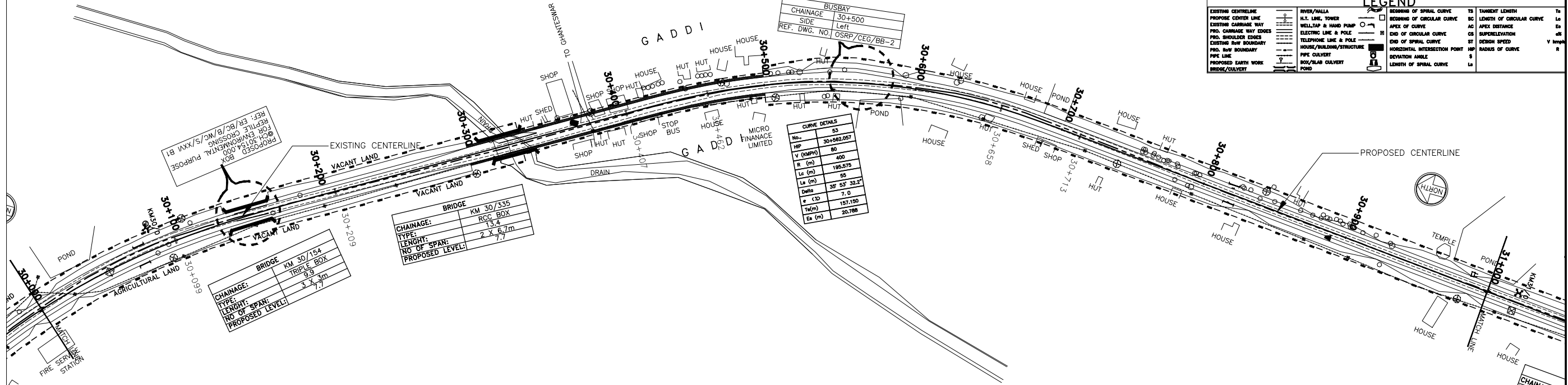
LEGEND	
EXISTING CENTERLINE	RIVER/WALL
PROPOSED CENTERLINE	H.T. LINE, TOWER
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE
EXISTING R/W BOUNDARY	HOUSE/BUILDING/STRUCTURE
PRO. R/W BOUNDARY	PIPE CULVERT
PRO. BOUNDARY	BOX/SLAB CULVERT
PROPOSED EARTH WORK	POND
BRIDGE/CULVERT	

BUSBAY	CHAINAGE	30+500
SIDE	Left	
REF. DWG. NO.	OSRP/CEG/BB-2	

CURVE DETAILS	
No.	53
HP	30+542.057
V (mPH)	80
R (m)	400
Lc (m)	195.575
La (m)	95
Delta	35° 53' 32.4"
+ <CD	7.0
Ta(m)	151.150
Ex (m)	20.788

BRIDGE	
CHAINAGE:	KM 30/335
TYPE:	RCC BOX
LENGTH:	13.4
NO OF SPAN:	2 X 6.7m
PROPOSED LEVEL:	7.7

BRIDGE	
CHAINAGE:	KM 30/154
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	7.7



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	7.613, 7.635, 7.656, 7.678, 7.693, 7.700, 7.700, 7.700, 7.700, 7.700, 7.700, 7.700, 7.700, 7.700, 7.700, 7.694, 7.680, 7.661, 7.641, 7.622, 7.602, 7.583, 7.563, 7.544, 7.524, 7.505, 7.485, 7.466, 7.446, 7.427, 7.430, 7.479, 7.566, 7.657, 7.747, 7.838, 7.928, 8.019, 8.109, 8.173
EXISTING LEVEL (m)	6.156, 6.129, 5.991, 5.905, 5.921, 6.039, 6.097, 6.165, 6.226, 6.251, 6.357, 6.574, 6.973, 7.563, 7.470, 7.356, 7.362, 7.363, 7.333, 7.384, 7.277, 7.119, 7.113, 7.146, 7.169, 7.126, 7.132, 7.139, 7.186, 7.246, 7.243, 7.196, 7.128, 7.091, 7.047, 7.1039, 7.1036, 7.1029, 7.1029, 7.036, 6.981
HORIZONTAL ALIGNMENT	L=110.000m, L=198.351m, L=55.000m, R=400.000m, L=195.575m, L=55.000m, L=444.027m
VERTICAL PROFILE	L=60.000m, L=240.000m G=-0.000, L=60.000m, L=319.924m G=-0.078, L=60.000m, G=0.362 L=160.076m, L=60.000m
SUPERELEVATION /CROSSFALL	Q=2.500, Q=7.000, Q=2.500
CHAINAGE	30000.000, 30025.000, 30050.000, 30075.000, 30100.000, 30125.000, 30150.000, 30175.000, 30200.000, 30225.000, 30250.000, 30275.000, 30300.000, 30325.000, 30350.000, 30375.000, 30400.000, 30425.000, 30450.000, 30475.000, 30500.000, 30525.000, 30550.000, 30575.000, 30600.000, 30625.000, 30650.000, 30675.000, 30700.000, 30725.000, 30750.000, 30775.000, 30800.000, 30825.000, 30850.000, 30875.000, 30900.000, 30925.000, 30950.000, 30975.000, 31000.000

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@cegindia.com

DESIGN REVIEW CONSULTANT :
LEA
 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

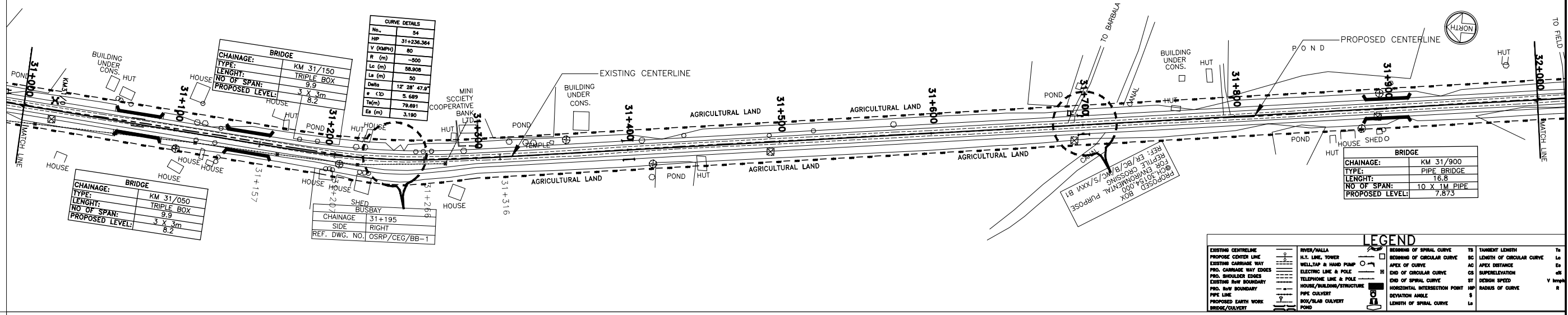
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING
 OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
**PLAN AND LONGITUDINAL SECTION
 (SH-9) KM 30/000 TO KM 31/000**
 (SHEET 4 OF 18)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/ 4
 REV. R2

← TO BHADRAK

TO CHANDBALI →



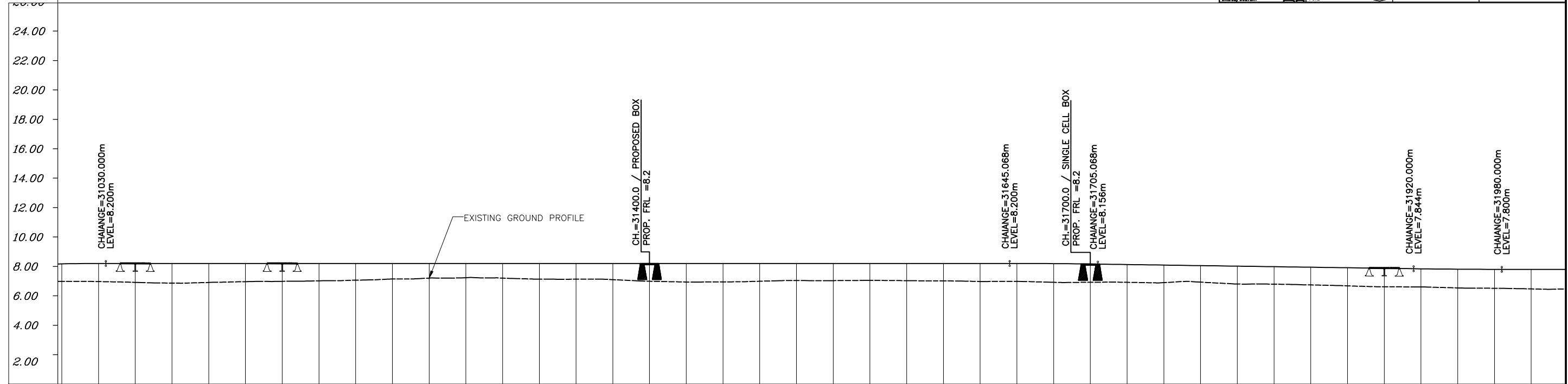
CURVE DETAILS	
No.	54
SP	31+236.364
R (m)	-500
La (m)	58.908
Lc (m)	50
Delta	12° 28' 47.8"
e (m)	5.489
Ta (m)	79.491
Ea (m)	3.190

BRIDGE	
CHAINAGE:	KM 31/050
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.2

CHAINAGE:	31+195
SIDE:	RIGHT
REF. DWG. NO.:	OSRP/CEG/BB-1

BRIDGE	
CHAINAGE:	KM 31/900
TYPE:	PIPE BRIDGE
LENGTH:	16.8
NO OF SPAN:	10 X 1.6m PIPE
PROPOSED LEVEL:	7.873

LEGEND			
EXISTING CENTERLINE	RIVER/WALLA	STARTING OF SPIRAL CURVE	TS
PROPOSED CENTER LINE	H.T. LINE, TOWER	ENDING OF SPIRAL CURVE	SC
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP	STARTING OF CIRCULAR CURVE	AC
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE	ENDING OF CIRCULAR CURVE	AC
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE	APEX DISTANCE	La
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE	END OF SPIRAL CURVE	CS
PRO. ROW BOUNDARY	PIPE CULVERT	HORIZONTAL INTERSECTION POINT	SI
PRO. BRIDGE	BOX/CULVERT	DEVIATION ANGLE	S
PROPOSED EARTH WORK	BRIDGE/CULVERT	LENGTH OF SPIRAL CURVE	LS
BRIDGE/CULVERT			



PROPOSED ROAD LEVEL (m)	EXISTING LEVEL (m)	HORIZONTAL ALIGNMENT	VERTICAL PROFILE	SUPERELEVATION /CROSSFALL	CHAINAGE
8.173	6.981				31000.000
8.199	6.969				31025.000
8.200	6.916				31050.000
8.200	6.866				31075.000
8.200	6.909				31100.000
8.200	6.964				31125.000
8.200	6.988				31150.000
8.200	7.020				31175.000
8.200	7.065				31200.000
8.200	7.149				31225.000
8.200	7.207				31250.000
8.200	7.235				31275.000
8.200	7.205				31300.000
8.200	7.138				31325.000
8.200	7.131				31350.000
8.200	7.102				31375.000
8.200	6.990				31400.000
8.200	6.940				31425.000
8.200	6.948				31450.000
8.200	6.992				31475.000
8.200	7.045				31500.000
8.200	7.034				31525.000
8.200	7.054				31550.000
8.200	7.031				31575.000
8.200	7.019				31600.000
8.200	6.976				31625.000
8.200	6.981				31650.000
8.189	6.921				31675.000
8.163	6.922				31700.000
8.127	6.919				31725.000
8.091	6.900				31750.000
8.055	6.930				31775.000
8.018	6.806				31800.000
7.982	6.794				31825.000
7.945	6.740				31850.000
7.909	6.678				31875.000
7.873	6.615				31900.000
7.837	6.603				31925.000
7.811	6.538				31950.000
7.800	6.515				31975.000
7.800	6.470				32000.000

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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@cegindia.com

DESIGN REVIEW CONSULTANT :
LEA
 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 :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

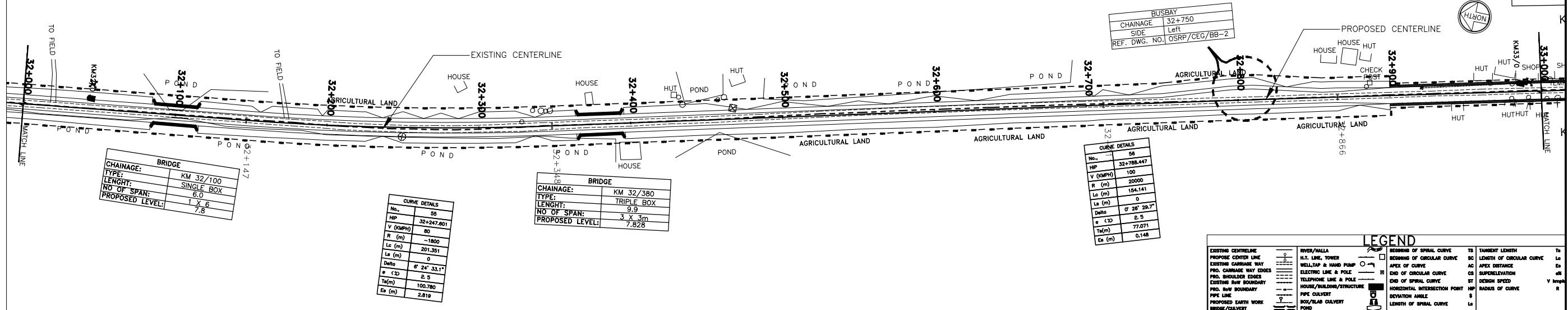
SCALE :
 N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 31/000 TO KM 32/000
 (SHEET 5 OF 18)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/ 5
 REV. R2

← TO BHADRAK

TO CHANDBALI →

JUNCTION REF. DWG



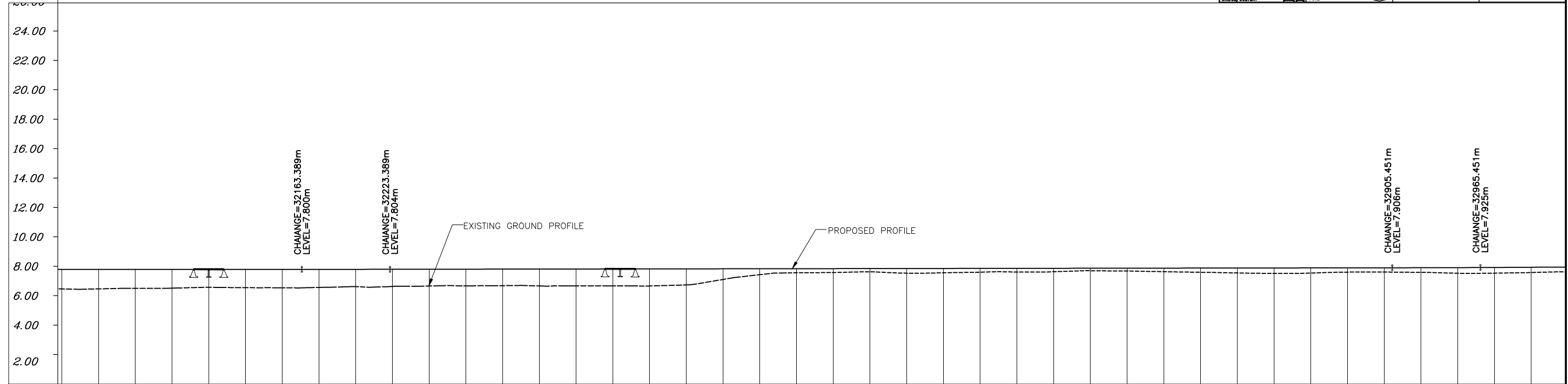
BRIDGE	
CHAINAGE:	KM 32/100
TYPE:	SINGLE BOX
LENGTH:	6.0
NO OF SPAN:	1 X 6
PROPOSED LEVEL:	7.8

CURVE DETAILS	
No.	55
HP	32+247.801
V (MPH)	50
R (m)	-1800
Lc (m)	201.351
La (m)	0
Delta	6° 24' 33.1"
e (m)	2.5
Ta(m)	100.780
Ea (m)	2.819

BRIDGE	
CHAINAGE:	KM 32/380
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	7.828

CURVE DETAILS	
No.	56
HP	32+788.447
V (MPH)	100
R (m)	20000
Lc (m)	154.141
La (m)	0
Delta	0° 20' 29.7"
e (m)	0.5
Ta(m)	77.071
Ea (m)	0.148

LEGEND			
EXISTING CENTERLINE	RIVER/WALLA	BEGINNING OF SPIRAL CURVE	TANGENT LENGTH
PROPOSED CENTER LINE	H.T. LINE, TOWER	END OF SPIRAL CURVE	SC LENGTH OF CIRCULAR CURVE
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP	APEX OF CURVE	AC APEX DISTANCE
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE	END OF CIRCULAR CURVE	ST SUPERELEVATION
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE	END OF SPIRAL CURVE	ST DESIGN SPEED
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE	HORIZONTAL INTERSECTION POINT	MS RADIUS OF CURVE
PRO. ROW BOUNDARY	PIPE CULVERT	DEVIATION ANGLE	LA
PROPOSED EARTH WORK	BOX/R/LAB CULVERT	LENGTH OF SPIRAL CURVE	
BRIDGE/CULVERT	POND		



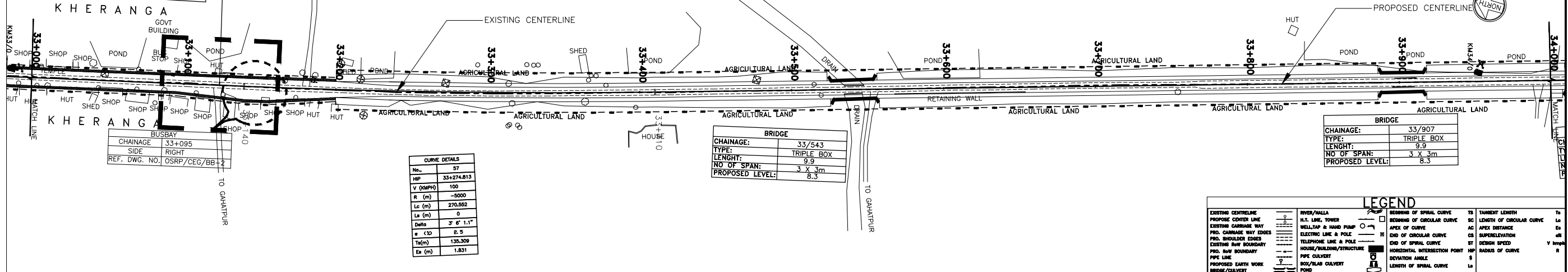
DATUM =0.00	
PROPOSED ROAD LEVEL (m)	7.800 7.800 7.800 7.800 7.800 7.800 7.800 7.800 7.802 7.805 7.808 7.812 7.816 7.820 7.823 7.827 7.831 7.834 7.838 7.842 7.846 7.849 7.853 7.857 7.860 7.864 7.868 7.872 7.875 7.879 7.883 7.887 7.890 7.894 7.898 7.901 7.905 7.910 7.918 7.930 7.942
EXISTING LEVEL (m)	6.470 6.473 6.514 6.521 6.583 6.555 6.545 6.571 6.628 6.639 6.670 6.674 6.686 6.670 6.673 6.677 6.670 6.742 7.113 7.438 7.568 7.584 7.630 7.541 7.567 7.605 7.616 7.640 7.708 7.688 7.641 7.602 7.556 7.527 7.551 7.613 7.622 7.598 7.534 7.542 7.585
HORIZONTAL ALIGNMENT	$R = -1800.000m$ $L = 201.351m$ $L = 363.204m$ $R = 20000.000m$ $L = 154.141m$ $L = 273.986m$
VERTICAL PROFILE	$L = 183.389m$ $G = -0.000$ $L = 60.000m$ $G = 0.015$ $L = 682.063m$ $L = 60.000m$
SUPERELEVATION /CROSSFALL	
CHAINAGE	32000.000 32025.000 32050.000 32075.000 32100.000 32125.000 32150.000 32175.000 32200.000 32225.000 32250.000 32275.000 32300.000 32325.000 32350.000 32375.000 32400.000 32425.000 32450.000 32475.000 32500.000 32525.000 32550.000 32575.000 32600.000 32625.000 32650.000 32675.000 32700.000 32725.000 32750.000 32775.000 32800.000 32825.000 32850.000 32875.000 32900.000 32925.000 32950.000 32975.000 33000.000

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 32/000 TO KM 33/000 (SHEET 6 OF 18)	
R1	JAN-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 : OSRP/CEG/SH9/P02B/P&P/ 6	REV. R2

← TO BHADRAK

TO CHANDBALI →

JUNCTION AT CH: 33126
REF. DWG. No.-OSRP/CEG/JN/02



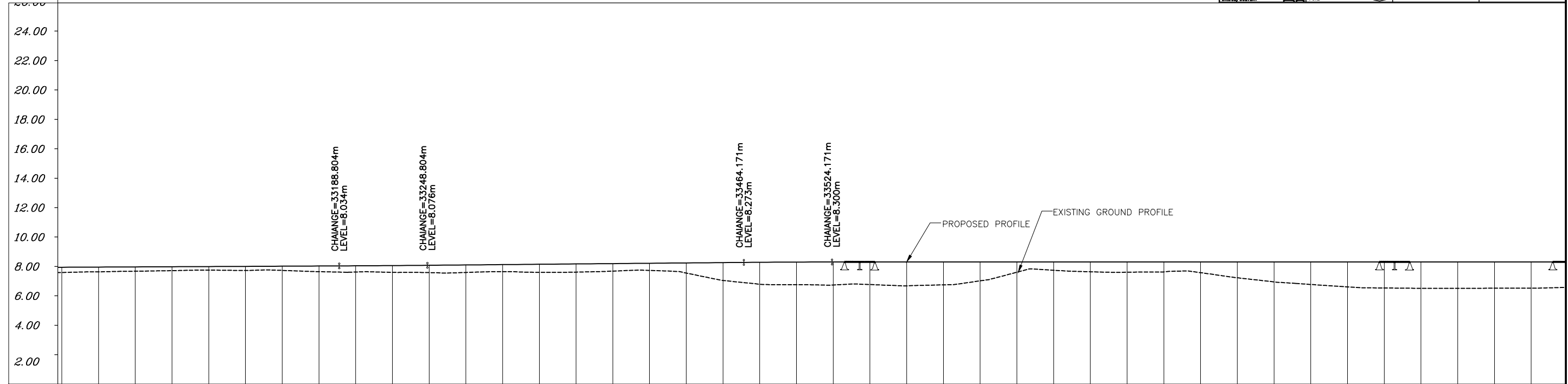
BUSBAY
CHAINAGE: 33+095
SIDE: RIGHT
REF. DWG. NO. OSRP/CEG/BB-2

CURVE DETAILS	
No.	27
HP	33+274.813
V (kmph)	100
R (m)	-5000
Lc (m)	270.552
La (m)	0
Delta	3° 5' 1.1"
± CD	8.5
Ta(m)	135.309
Es (m)	1.831

BRIDGE	
CHAINAGE:	33/543
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.3

BRIDGE	
CHAINAGE:	33/907
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.3

LEGEND			
EXISTING CENTERLINE	RIVER/WALL	BEGINNING OF SPIRAL CURVE	TANGENT LENGTH
PROPOSED CENTERLINE	H.T. LINE, TOWER	END OF SPIRAL CURVE	SC LENGTH OF CIRCULAR CURVE
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP	APEX OF CURVE	AC APEX DISTANCE
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE	END OF CIRCULAR CURVE	CS SUPERELEVATION
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE	END OF SPIRAL CURVE	ST DESIGN SPEED
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE	HORIZONTAL INTERSECTION POINT	MS RADIUS OF CURVE
PRO. ROW BOUNDARY	PIPE CULVERT	DEVIATION ANGLE	LA
PROPOSED EARTH WORK	BOX/RAB CULVERT	LENGTH OF SPIRAL CURVE	
BRIDGE/CULVERT	POND		



PROPOSED ROAD LEVEL (m)	EXISTING LEVEL (m)	HORIZONTAL ALIGNMENT	VERTICAL PROFILE	SUPERELEVATION /CROSSFALL	CHAINAGE
7.942	7.585	3.986m	G=0.049 L=223.352m		33000.000
7.954	7.634				33025.000
7.966	7.674				33050.000
7.979	7.712				33075.000
7.991	7.751				33100.000
8.003	7.723				33125.000
8.015	7.729				33150.000
8.027	7.644		L=60.000m		33175.000
8.040	7.619				33200.000
8.057	7.598				33225.000
8.077	7.578				33250.000
8.100	7.589				33275.000
8.123	7.645				33300.000
8.146	7.597				33325.000
8.169	7.613				33350.000
8.191	7.680				33375.000
8.214	7.728				33400.000
8.237	7.548				33425.000
8.260	7.044				33450.000
8.282	6.790				33475.000
8.296	6.758				33500.000
8.300	6.738				33525.000
8.300	6.767				33550.000
8.300	6.679				33575.000
8.300	6.747				33600.000
8.300	7.021				33625.000
8.300	7.605				33650.000
8.300	7.740				33675.000
8.300	7.636				33700.000
8.300	7.606				33725.000
8.300	7.625				33750.000
8.300	7.575				33775.000
8.300	7.226				33800.000
8.300	6.947				33825.000
8.300	6.773				33850.000
8.300	6.609				33875.000
8.300	6.534				33900.000
8.300	6.510				33925.000
8.300	6.510				33950.000
8.300	6.520				33975.000
8.300	6.521				34000.000
		R=-5000.000m L=270.552m	G=0.091 L=215.367m		
			L=60.000m		
				L=516.003m G=-0.000	
				Q=2.500	

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-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@cegindia.com

DESIGN REVIEW CONSULTANT :
LEA
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 :
CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 33/000 TO KM 34/000
(SHEET 7 OF 18)
DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/7
REV. R2

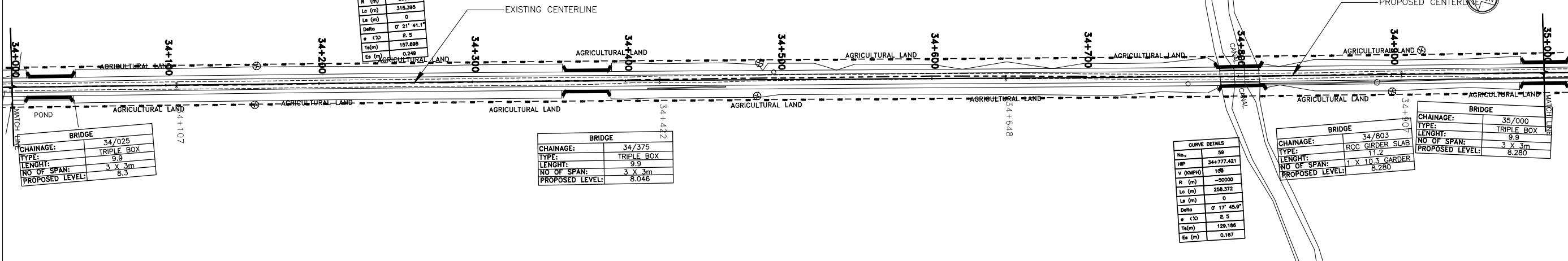
← TO BHADRAK

TO CHANDBALI →

LEGEND

EXISTING CENTERLINE	RYER/HALLA	BEGINNING OF SPIRAL CURVE	TANGENT LENGTH	Ta
PROPOSED CENTERLINE	H.T. LINE, TOWER	END OF SPIRAL CURVE	LENGTH OF CIRCULAR CURVE	Lc
EXISTING CARRIAGE WAY	WELL, TAP & HAND PUMP	APEX OF CURVE	APEX DISTANCE	Ed
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE	END OF CIRCULAR CURVE	SUPERELEVATION	S
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE	END OF SPIRAL CURVE	DESIGN SPEED	V (kmph)
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE	HORIZONTAL INTERSECTION POINT	RADIUS OF CURVE	R
PRO. ROW BOUNDARY	PIPE CULVERT	DEFLECTION ANGLE		
PIPE LINE	BOX/SLAB CULVERT	LENGTH OF SPIRAL CURVE		
PROPOSED EARTH WORK	POND			
DRAIN/CULVERT				

CURVE DETAILS	
No.	58
HP	34+264.827
V (KMPH)	100
R (m)	50000
Lc (m)	315.395
La (m)	0
Delta	0° 21' 41.1"
e (SD)	2.5
Ta(m)	157.888
Ed (m)	0.249



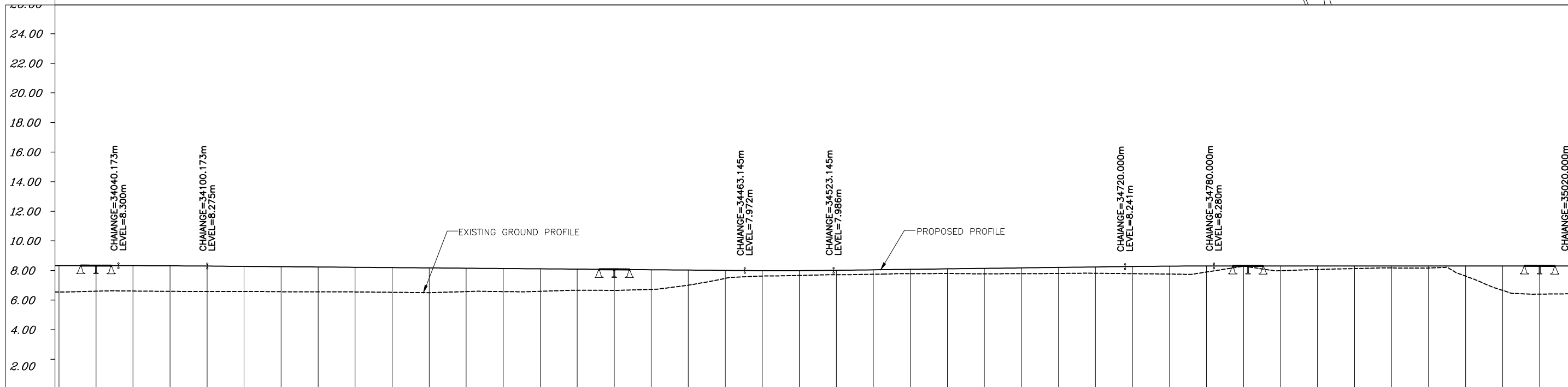
BRIDGE	
CHAINAGE:	34/025
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.3

BRIDGE	
CHAINAGE:	34/375
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.046

CURVE DETAILS	
No.	59
HP	34+777.421
V (KMPH)	100
R (m)	-50000
Lc (m)	258.372
La (m)	0
Delta	0° 17' 45.9"
e (SD)	2.5
Ta(m)	128.186
Ed (m)	0.187

BRIDGE	
CHAINAGE:	34/803
TYPE:	RCC GIRDER SLAB
LENGTH:	11.2
NO OF SPAN:	1 X 10.5 GARDER
PROPOSED LEVEL:	8.280

BRIDGE	
CHAINAGE:	35/000
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.280



DATUM =0.00	
PROPOSED ROAD LEVEL (m)	8.300 8.300 8.299 8.292 8.275 8.254 8.233 8.213 8.192 8.171 8.150 8.129 8.108 8.088 8.067 8.046 8.025 8.004 7.983 7.965 7.966 7.989 8.021 8.053 8.086 8.118 8.150 8.183 8.215 8.247 8.270 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280 8.280
EXISTING LEVEL (m)	6.521 6.575 6.588 6.566 6.555 6.555 6.540 6.534 6.526 6.502 6.478 6.551 6.551 6.569 6.637 6.633 6.699 6.977 7.443 7.601 7.642 7.685 7.721 7.759 7.771 7.752 7.758 7.773 7.787 7.760 7.734 7.873 8.267 7.961 8.044 8.106 8.145 8.141 7.592 6.629 6.378
HORIZONTAL ALIGNMENT	R=50000.000m L=315.395m L=225.911m R=-50000.000m L=258.372m L=139.505m
VERTICAL PROFILE	L=60.000m L=362.971m G=-0.083 L=60.000m G=0.130 L=196.855m L=60.000m G=0.000 L=240.000m
SUPERELEVATION /CROSSFALL	
CHAINAGE	34000.000 34025.000 34050.000 34075.000 34100.000 34125.000 34150.000 34175.000 34200.000 34225.000 34250.000 34275.000 34300.000 34325.000 34350.000 34375.000 34400.000 34425.000 34450.000 34475.000 34500.000 34525.000 34550.000 34575.000 34600.000 34625.000 34650.000 34675.000 34700.000 34725.000 34750.000 34775.000 34800.000 34825.000 34850.000 34875.000 34900.000 34925.000 34950.000 34975.000 35000.000

<p>R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R MISHRA (EE) O.P. PATEL (CE)</p> <p>R1 JAN-2013 FIRST REVISION OWD VINAY PK.MISHRA (AE) M.R MISHRA (EE) N.K PRADHAN (CE)</p> <p>- JUNE 2008 ORIGINAL CEG</p>	<p>DPR CONSULTANT :</p> <p>CEG</p> <p>CONSULTING ENGINEERS GROUP LTD. E-12,MOJJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com</p>	<p>DESIGN REVIEW CONSULTANT :</p> <p>LEA</p> <p>LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .</p>	<p>CLIENT</p> <p>ODISHA WORKS DEPARTMENT</p>	<p>PROJECT :</p> <p>CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B</p>	<p>SCALE :</p> <p>N.T.S</p>	<p>DRAWING TITLE :</p> <p>PLAN AND LONGITUDINAL SECTION (SH-9) KM 34/000 TO KM 35/000 (SHEET 8 OF 18)</p>
<p>NO. DATE REVISION BY DRAWN: PREPARED : CHECKED: APPROVED:</p>				<p>DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/ 8</p>		<p>REV. R2</p>

← TO BHADRAK

TO CHANDBALI →

CURVE DETAILS	
No.	80
HP	35+133.004
V (DMPD)	100
R (m)	75000
Lc (m)	175.584
La (m)	0
Ta (m)	87.792
Delta	7° 8' 2.9"
e (CD)	2.5
Ta (m)	87.792
Ta (m)	0.051

BRIDGE	
CHAINAGE:	35/340
TYPE:	TRIPLE BOX
LENGTH:	16.8
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	8.139

BRIDGE	
CHAINAGE:	35/975
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	8.585

BRIDGE	
CHAINAGE:	35/090
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.292

BRIDGE	
CHAINAGE:	35/280
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.176

BRIDGE	
CHAINAGE:	35/425
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	8.088

BRIDGE	
CHAINAGE:	35/510
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	8.036

BRIDGE	
CHAINAGE:	35/600
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	7.981

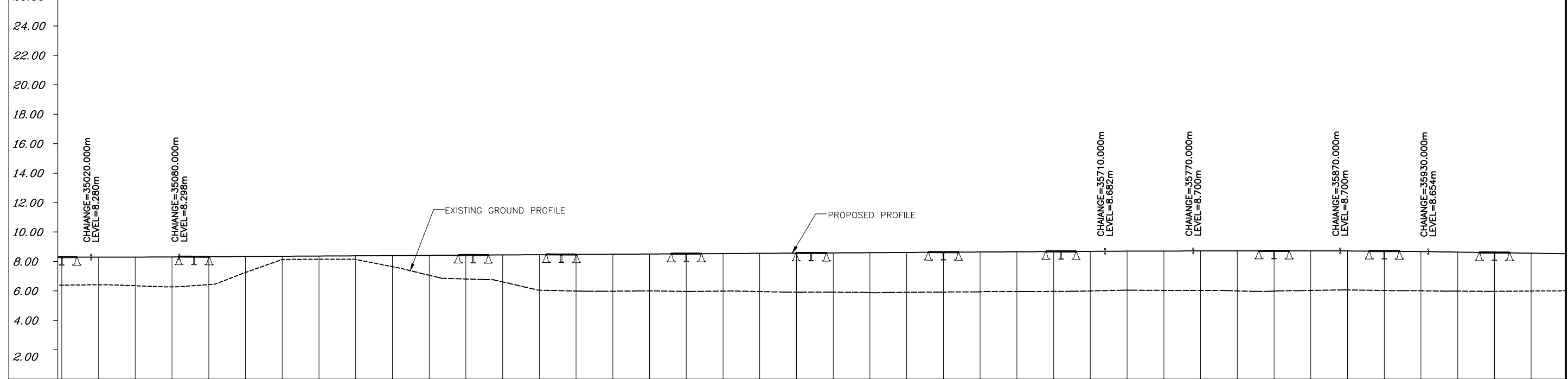
BRIDGE	
CHAINAGE:	35/680
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	7.932

BRIDGE	
CHAINAGE:	35/825
TYPE:	TRIPLE BOX
LENGTH:	9.9
NO OF SPAN:	3 X 3m
PROPOSED LEVEL:	8.7

BRIDGE	
CHAINAGE:	35/900
TYPE:	TRIPLE BOX
LENGTH:	24.9
NO OF SPAN:	3 X 8m
PROPOSED LEVEL:	8.689

BRIDGE	
CHAINAGE:	
TYPE:	
LENGTH:	
NO OF SPAN:	
PROPOSED LEVEL:	

LEGEND	
EXISTING CENTERLINE	—
PROPOSED CENTERLINE	—
EXISTING CARRIAGE WAY	—
PRO. CARRIAGE WAY EDGES	—
PRO. SHOULDER EDGES	—
PRO. ROW BOUNDARY	—
PRO. HWY BOUNDARY	—
PIPE LINE	—
PROPOSED EARTH WORK	—
BRIDGE/CULVERT	—
RIVER/MALLA	—
H.T. LINE, TOWER	—
WELL, TAP & HAND PUMP	—
ELECTRIC LINE & POLE	—
TELEPHONE LINE & POLE	—
HOUSE/BUILDING/STRUCTURE	—
PIPE CULVERT	—
BOX/SLAB CULVERT	—
POND	—
STARTING OF SPIRAL CURVE	—
END OF SPIRAL CURVE	—
STARTING OF CIRCULAR CURVE	—
END OF CIRCULAR CURVE	—
APEX DISTANCE	—
END OF SPIRAL CURVE	—
HORIZONTAL INTERSECTION POINT	—
DEVIATION ANGLE	—
LENGTH OF SPIRAL CURVE	—
TANGENT LENGTH	—
LENGTH OF CIRCULAR CURVE	—
APEX DISTANCE	—
SUPERELEVATION	—
DESIGN SPEED	—
RADIUS OF CURVE	—
LENGTH OF SPIRAL CURVE	—



PROPOSED ROAD LEVEL (m)	
8.280	8.280
8.280	8.285
8.285	8.295
8.295	8.310
8.310	8.326
8.326	8.341
8.341	8.356
8.356	8.371
8.371	8.387
8.387	8.402
8.402	8.417
8.417	8.432
8.432	8.447
8.447	8.463
8.463	8.478
8.478	8.493
8.493	8.508
8.508	8.523
8.523	8.539
8.539	8.554
8.554	8.569
8.569	8.584
8.584	8.600
8.600	8.615
8.615	8.630
8.630	8.645
8.645	8.660
8.660	8.676
8.676	8.690
8.690	8.698
8.698	8.700
8.700	8.700
8.700	8.700
8.700	8.700
8.700	8.689
8.689	8.661
8.661	8.623
8.623	8.585
8.585	8.547

EXISTING LEVEL (m)	
6.378	6.403
6.403	6.338
6.338	6.259
6.259	6.414
6.414	7.237
7.237	8.123
8.123	8.143
8.143	8.123
8.123	7.634
7.634	7.052
7.052	6.797
6.797	6.600
6.600	6.035
6.035	5.980
5.980	5.970
5.970	5.995
5.995	5.948
5.948	5.977
5.977	5.942
5.942	5.902
5.902	5.905
5.905	5.875
5.875	5.894
5.894	5.909
5.909	5.926
5.926	5.942
5.942	5.952
5.952	5.985
5.985	6.038
6.038	6.018
6.018	6.012
6.012	5.989
5.989	5.977
5.977	6.018
6.018	6.057
6.057	6.013
6.013	5.998
5.998	5.976
5.976	5.958
5.958	5.983

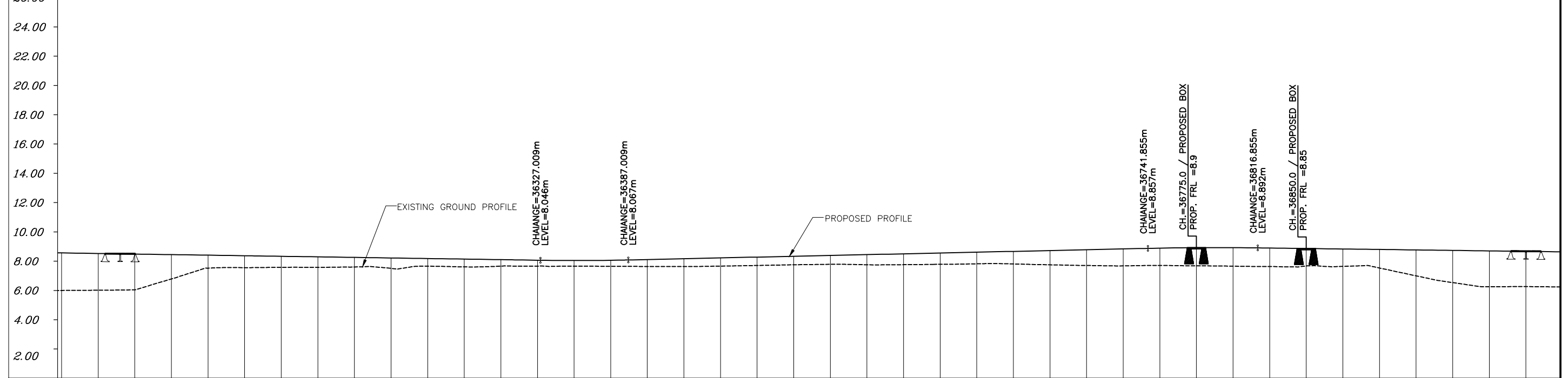
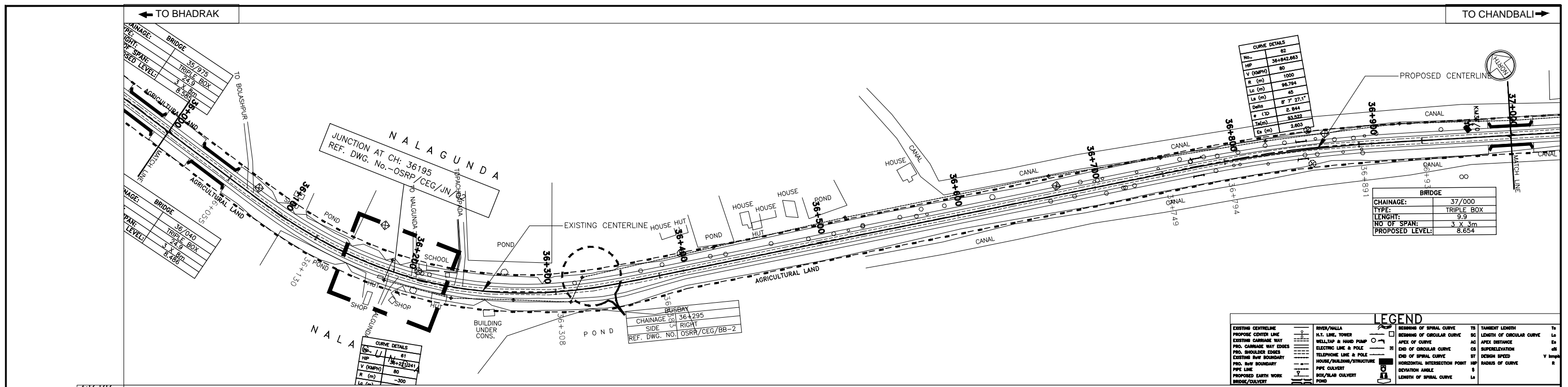
HORIZONTAL ALIGNMENT	
R=75000.000m L=175.584m	
L=832.841m	

VERTICAL PROFILE	
L=60.000m	
G=0.061 L=630.000m	
L=60.000m	
L=100.000m G=-0.000	
L=60.000m	

SUPERELEVATION /CROSSFALL	

CHAINAGE	
35000.000	35025.000
35050.000	35075.000
35100.000	35125.000
35150.000	35175.000
35200.000	35225.000
35250.000	35275.000
35300.000	35325.000
35350.000	35375.000
35400.000	35425.000
35450.000	35475.000
35500.000	35525.000
35550.000	35575.000
35600.000	35625.000
35650.000	35675.000
35700.000	35725.000
35750.000	35775.000
35800.000	35825.000
35850.000	35875.000
35900.000	35925.000
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36000.000	

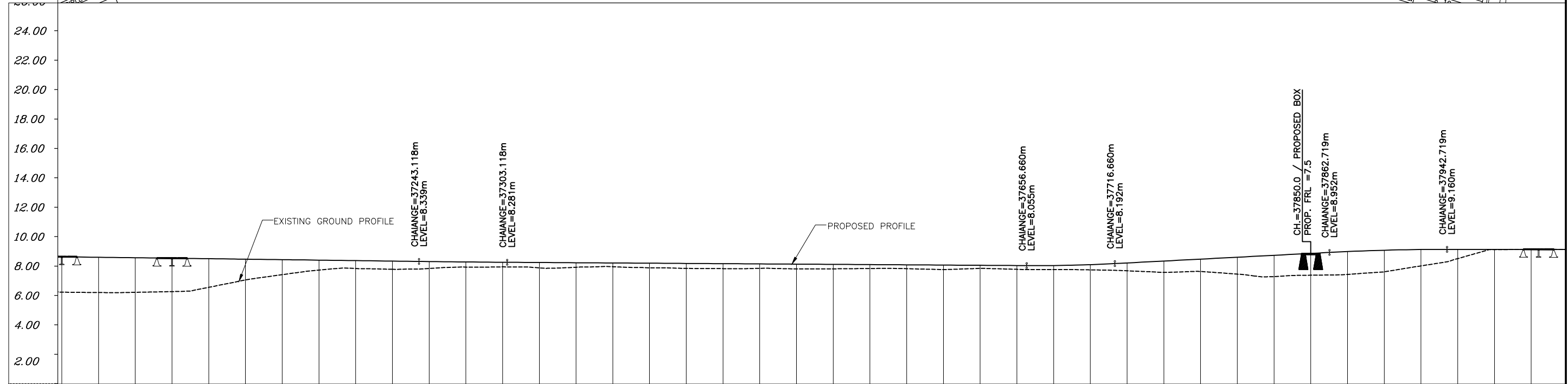
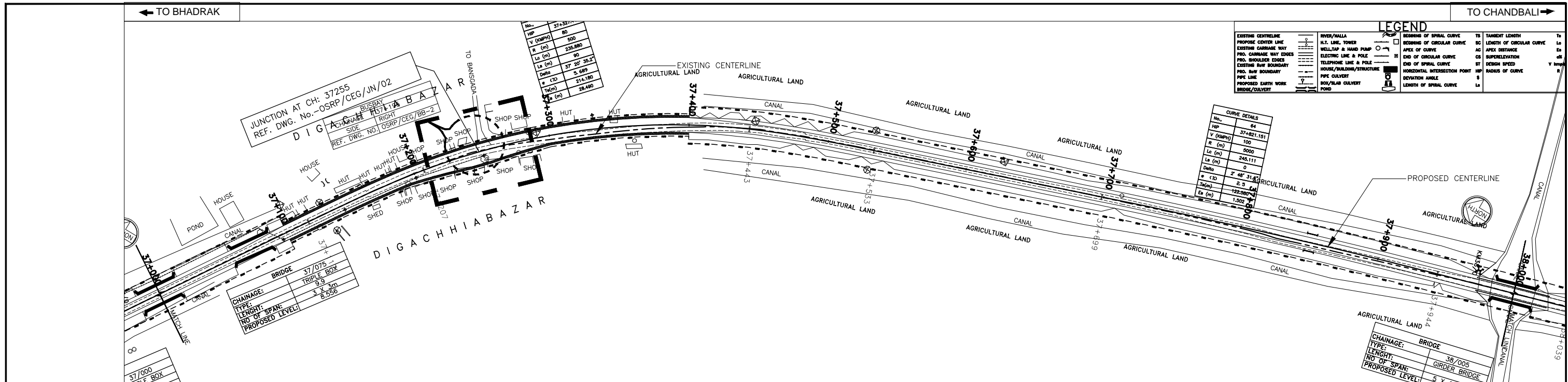
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	DPR CONSULTANT : CEG CONSULTING ENGINEERS GROUP LTD. E-12, MOJI COLONY, MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com	DESIGN REVIEW CONSULTANT : LEA LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1Ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .	CLIENT : ODISHA WORKS DEPARTMENT	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 35/000 TO KM 36/000 (SHEET 9 OF 18)	
R1	JAN-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 : OSRP/CEG/SH9/P02B/P&P/ 9	REV. R2



DATUM = 0.00

PROPOSED ROAD LEVEL (m)	8.547	8.509	8.470	8.432	8.394	8.355	8.317	8.279	8.240	8.202	8.164	8.126	8.087	8.049	8.027	8.045	8.096	8.151	8.207	8.263	8.318	8.374	8.430	8.485	8.541	8.597	8.652	8.708	8.764	8.819	8.875	8.905	8.907	8.881	8.849	8.816	8.784	8.751	8.719	8.687	8.654																																							
EXISTING LEVEL (m)	5.983	6.000	6.027	6.765	7.505	7.542	7.556	7.564	7.587	7.492	7.639	7.593	7.645	7.647	7.647	7.636	7.620	7.623	7.646	7.691	7.739	7.768	7.738	7.744	7.773	7.802	7.794	7.734	7.689	7.662	7.692	7.663	7.642	7.621	7.656	7.628	7.518	6.962	6.521	6.239	6.248																																							
HORIZONTAL ALIGNMENT	L=75.000m										R=-300.000m L=177.997m										L=75.000m										L=366.695m										L=45.000m										R=1000.000m L=96.794m										L=45.000m										L=18									
VERTICAL PROFILE	L=397.009m G=-0.153										L=60.000m										G=0.223 L=354.846m										L=75.000m										L=4 G=																																							
SUPERELEVATION / CROSSFALL	Q=7.000										Q=2.500										Q=2.840										Q=																																																	
CHAINAGE	36000.000	36025.000	36050.000	36075.000	36100.000	36125.000	36150.000	36175.000	36200.000	36225.000	36250.000	36275.000	36300.000	36325.000	36350.000	36375.000	36400.000	36425.000	36450.000	36475.000	36500.000	36525.000	36550.000	36575.000	36600.000	36625.000	36650.000	36675.000	36700.000	36725.000	36750.000	36775.000	36800.000	36825.000	36850.000	36875.000	36900.000	36925.000	36950.000	36975.000	37000.000																																							

R2 SEP-2015 SECOND REVISION LASA R1 JAN-2013 FIRST REVISION OWD VINAY - JUNE 2008 ORIGINAL CEG			RAJU MATHUR M.R. MISHRA (EE) O.P. PATEL (CE)			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@cegindia.com			DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B			SCALE : N.T.S.			DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 36/000 TO KM 37/000 (SHEET 10 OF 18)		
NO.		DATE		REVISION		BY		DRAWN:		PREPARED :		CHECKED:		APPROVED:		DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/10			REV. R2				

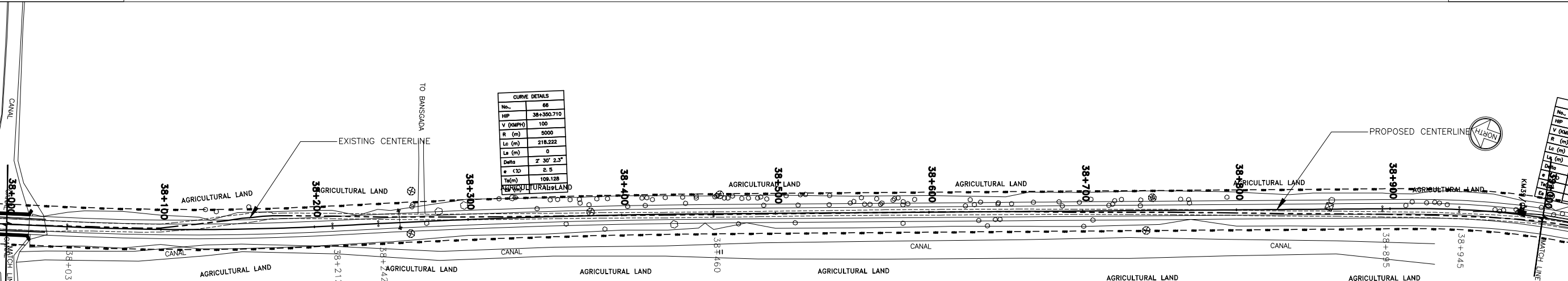


DATUM =0.00	
PROPOSED ROAD LEVEL (m)	8.654, 8.622, 8.589, 8.557, 8.525, 8.492, 8.460, 8.427, 8.395, 8.362, 8.330, 8.303, 8.283, 8.267, 8.251, 8.235, 8.219, 8.203, 8.187, 8.171, 8.155, 8.139, 8.123, 8.107, 8.091, 8.076, 8.060, 8.060, 8.119, 8.236, 8.366, 8.496, 8.626, 8.756, 8.886, 9.011, 9.101, 9.150, 9.160, 9.160, 9.160
EXISTING LEVEL (m)	6.248, 6.224, 6.238, 6.287, 6.577, 7.078, 7.440, 7.752, 7.857, 7.803, 7.861, 7.954, 7.969, 7.899, 7.942, 7.978, 7.902, 7.864, 7.847, 7.868, 7.851, 7.836, 7.857, 7.845, 7.786, 7.865, 7.803, 7.785, 7.766, 7.701, 7.597, 7.656, 7.476, 7.304, 7.402, 7.458, 7.631, 8.036, 8.530, 9.140, 9.161
HORIZONTAL ALIGNMENT	L=181.244m, L=90.000m, R=500.000m, L=235.880m, L=90.000m, L=165.425m, R=5000.000m, L=245.111m, L=95.316m
VERTICAL PROFILE	L=426.263m, G=-0.130, L=60.000m, L=353.542m, G=-0.064, L=60.000m, G=0.520, L=146.059m, L=80.000m
SUPERELEVATION /CROSSFALL	Q=2.500, Q=5.690
CHAINAGE	37000.000, 37025.000, 37050.000, 37075.000, 37100.000, 37125.000, 37150.000, 37175.000, 37200.000, 37225.000, 37250.000, 37275.000, 37300.000, 37325.000, 37350.000, 37375.000, 37400.000, 37425.000, 37450.000, 37475.000, 37500.000, 37525.000, 37550.000, 37575.000, 37600.000, 37625.000, 37650.000, 37675.000, 37700.000, 37725.000, 37750.000, 37775.000, 37800.000, 37825.000, 37850.000, 37875.000, 37900.000, 37925.000, 37950.000, 37975.000, 38000.000

R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R MISHRA (EE) O.P. PATEL (CE) R1 JAN-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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 37/000 TO KM 38/000 (SHEET 11 OF 18)
NO. DATE REVISION BY DRAWN: PREPARED : CHECKED: APPROVED:	DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/11		REV. R2			

← TO BHADRAK

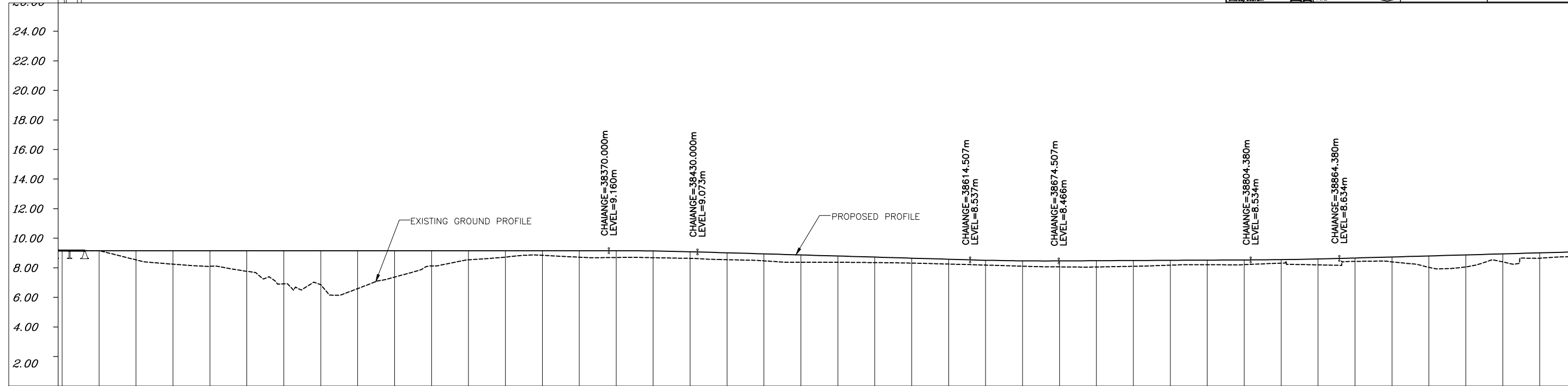
TO CHANDBALI →



CURVE DETAILS	
No.	68
HP	38+350.710
V (KMPH)	100
R (m)	2000
Lc (m)	218.222
La (m)	0
Delta	7° 30' 23"
Δ (°)	2.5
Ta(m)	108.128
Ea (m)	2.074

CURVE DETAILS	
No.	65
HP	38+125.435
V (KMPH)	100
R (m)	-1800
Lc (m)	172.741
La (m)	0
Delta	5° 28' 54.8"
Δ (°)	2.5
Ta(m)	68.437
Ea (m)	2.074

LEGEND							
EXISTING CENTERLINE	—	RIVER/WALLA	—	STARTING OF SPIRAL CURVE	TS	TANGENT LENGTH	Ta
PROPOSED CENTERLINE	- - -	H.T. LINE, TOWER	—	ENDING OF SPIRAL CURVE	TE	LENGTH OF CIRCULAR CURVE	Lc
EXISTING CARRIAGE WAY	—	WELL/TAP & HAND PUMP	—	APEX OF CURVE	AC	APEX DISTANCE	Ea
PRO. CARRIAGE WAY EDGES	—	ELECTRIC LINE & POLE	—	END OF CIRCULAR CURVE	CS	SUPERELEVATION	off
PRO. SHOULDER EDGES	—	TELEPHONE LINE & POLE	—	END OF SPIRAL CURVE	ST	DESIGN SPEED	V design
EXISTING ROW BOUNDARY	—	HOUSE/BUILDING/STRUCTURE	—	HORIZONTAL INTERSECTION POINT	HP	RADIUS OF CURVE	R
PRO. ROW BOUNDARY	—	PIPE CULVERT	—	DEVIATION ANGLE	Δ		
PROPOSED EARTH WORK	—	BOX/SLAB CULVERT	—	LENGTH OF SPIRAL CURVE	LS		
BRIDGE/CULVERT	—	POND	—				



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.160 9.159 9.138 9.087 9.015 8.942 8.870 8.797 8.724 8.652 8.579 8.510 8.470 8.466 8.479 8.492 8.506 8.519 8.532 8.553 8.597 8.663 8.733 8.803 8.872 8.942 9.012
EXISTING LEVEL (m)	9.161 9.157 8.539 8.246 8.096 7.763 6.913 6.863 6.588 7.371 8.124 8.545 8.727 8.847 8.720 8.698 8.653 8.638 8.547 8.472 8.379 8.371 8.351 8.319 8.253 8.184 8.107 8.063 8.055 8.103 8.177 8.207 8.217 8.316 8.199 8.434 8.402 8.034 8.060 8.402 8.651
HORIZONTAL ALIGNMENT	6m R=-1800.000m L=172.741m L R=5000.000m L=218.222m L=435.190m L=50.000m
VERTICAL PROFILE	L=427.281m G=-0.000 L=60.000m L=184.507m G=-0.290 L=60.000m G=0.053 L=129.873m L=60.000m G=0.279 L=200.140m
SUPERELEVATION /CROSSFALL	Q=2.500
CHAINAGE	38000.000 38025.000 38050.000 38075.000 38100.000 38125.000 38150.000 38175.000 38200.000 38225.000 38250.000 38275.000 38300.000 38325.000 38350.000 38375.000 38400.000 38425.000 38450.000 38475.000 38500.000 38525.000 38550.000 38575.000 38600.000 38625.000 38650.000 38675.000 38700.000 38725.000 38750.000 38775.000 38800.000 38825.000 38850.000 38875.000 38900.000 38925.000 38950.000 38975.000 39000.000

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-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@cegindia.com

DESIGN REVIEW CONSULTANT :
LEA
 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 :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 38/000 TO KM 39/000
 (SHEET 12 OF 18)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/12
 REV. R2

← TO BHADRAK

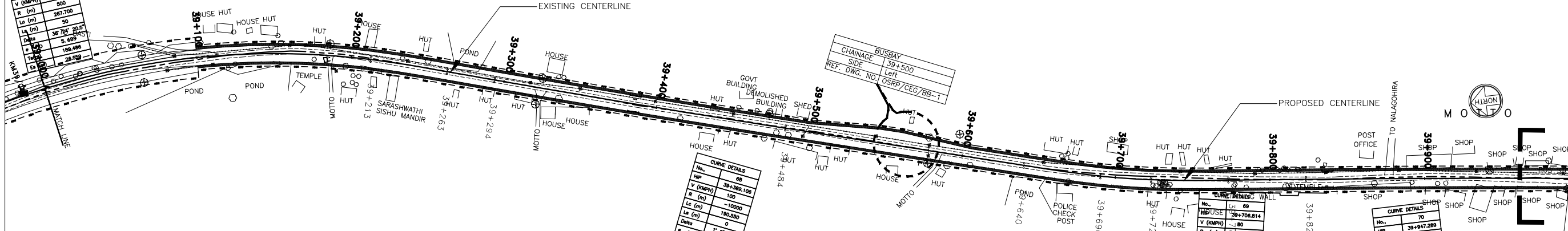
TO CHANDBALI →

CURVE DETAILS	
No.	67
HP	39+082.134
V (KMPH)	80
R (m)	267.700
Lc (m)	50
Δ (°)	36° 28' 20.5"
Δ (rad)	0.639
Ts (m)	189.446
Es (m)	28.538

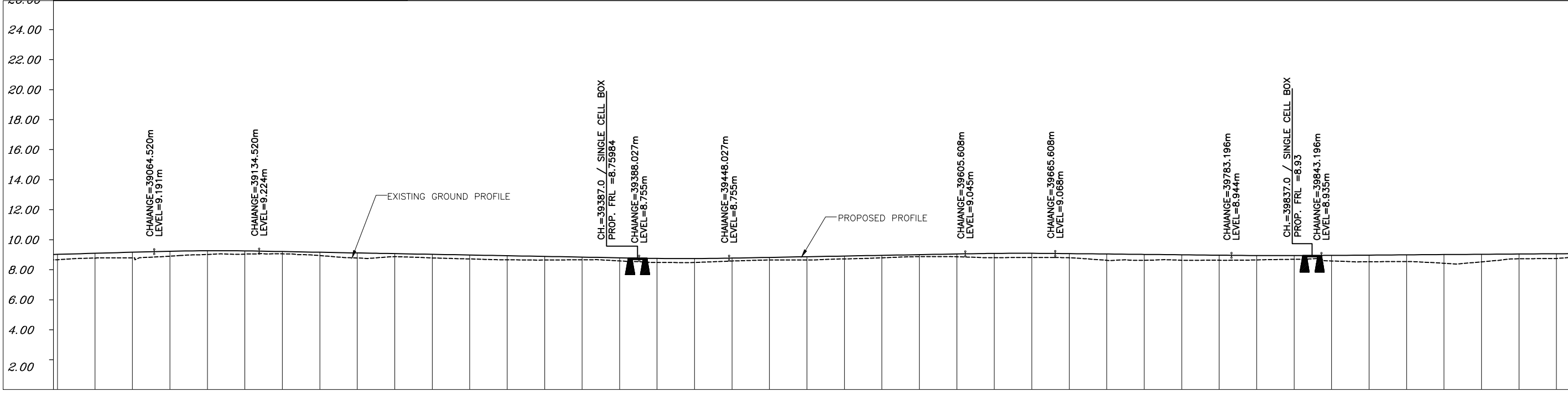
CURVE DETAILS	
No.	68
HP	39+389.106
V (KMPH)	100
R (m)	-10000
Lc (m)	190.550
Δ (°)	0
Δ (rad)	0
Ts (m)	1' 8" 30.4"
Es (m)	8.278
Ex (m)	0.454

CURVE DETAILS	
No.	69
HP	39+708.814
V (KMPH)	80
R (m)	-500
Lc (m)	32.753
Δ (°)	30
Δ (rad)	0.5236
Ts (m)	17.287
Es (m)	8.689
Ex (m)	1.928

CURVE DETAILS	
No.	70
HP	39+947.289
V (KMPH)	100
R (m)	12000
Lc (m)	248.097
Δ (°)	0
Δ (rad)	0
Ts (m)	1' 11" 4.5"
Es (m)	8.5
Ex (m)	124.053



LEGEND	
EXISTING CENTERLINE	PROPOSED CENTERLINE
EXISTING CARRIAGE WAY	PROPOSED CARRIAGE WAY
PRO. SHOULDER EDGES	PRO. SHOULDER EDGES
EXISTING ROW BOUNDARY	PRO. ROW BOUNDARY
PIPE LINE	PROPOSED EARTH WORK
BRIDGE/CULVERT	WELL/TAP & HAND PUMP
TELEPHONE LINE & POLE	ELECTRIC LINE & POLE
HOUSE/BUILDING/STRUCTURE	HOUSE/BUILDING/STRUCTURE
BOX/SLAB CULVERT	BOX/SLAB CULVERT
POUND	POUND
TS	TAMHOOT LENGTH
SC	LENGTH OF CIRCULAR CURVE
AC	APEX DISTANCE
CS	SUPERELEVATION
ST	DESIGN SPEED
HP	HORIZONTAL INTERSECTION POINT
S	DEVIATION ANGLE
Ls	LENGTH OF SPIRAL CURVE



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	9.012 9.081 9.151 9.217 9.249 9.239 9.196 9.149 9.103 9.057 9.011 8.964 8.918 8.872 8.826 8.780 8.738 8.729 8.759 8.805 8.851 8.897 8.943 8.989 9.035 9.071 9.079 9.058 9.032 9.006 8.979 8.953 8.931 8.926 8.940 8.958 8.976 8.995 9.013 9.031 9.050
EXISTING LEVEL (m)	8.651 8.755 8.773 8.888 9.002 9.028 9.045 8.929 8.769 8.858 8.770 8.703 8.646 8.630 8.647 8.572 8.472 8.468 8.567 8.635 8.636 8.705 8.780 8.855 8.851 8.792 8.799 8.780 8.613 8.610 8.617 8.621 8.639 8.681 8.570 8.516 8.530 8.412 8.509 8.714 8.733
HORIZONTAL ALIGNMENT	R=500.000m L=267.700m L=50.000m L R=10000.000m L=190.550m L=156.053m L=50.000m L=32.751 m L=50.000m L=50.052m R=12000.000m L=248.097m
VERTICAL PROFILE	L=70.000m L=253.507m G=-0.185 L=60.000m G=0.184 L=157.581m L=60.000m L=117.588m G=-0.105 L=60.000m G=0.073 L=195.137m
SUPERELEVATION /CROSSFALL	Q=5.690 Q=2.500 Q=5.690
CHAINAGE	39000.000 39025.000 39050.000 39075.000 39100.000 39125.000 39150.000 39175.000 39200.000 39225.000 39250.000 39275.000 39300.000 39325.000 39350.000 39375.000 39400.000 39425.000 39450.000 39475.000 39500.000 39525.000 39550.000 39575.000 39600.000 39625.000 39650.000 39675.000 39700.000 39725.000 39750.000 39775.000 39800.000 39825.000 39850.000 39875.000 39900.000 39925.000 39950.000 39975.000 40000.000

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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@cegindia.com

DESIGN REVIEW CONSULTANT :
LEA
 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 :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

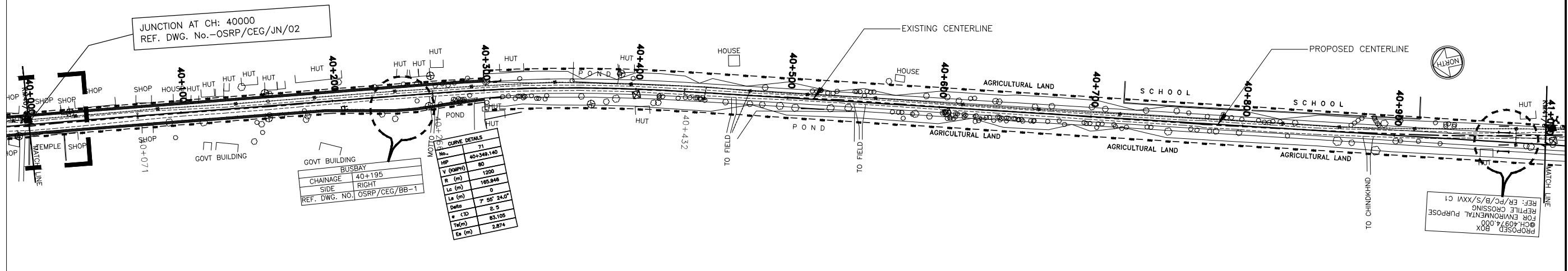
SCALE :
 N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 39/000 TO KM 40/000
 (SHEET 13 OF 18)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/13
 REV. R2

← TO BHADRAK

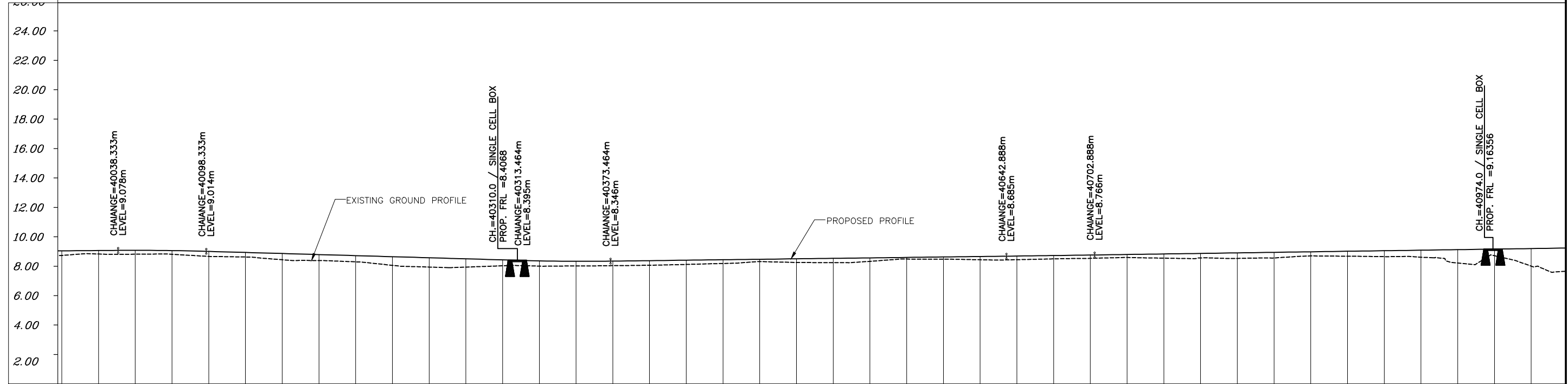
TO CHANDBALI →

LEGEND	
EXISTING CENTERLINE	RIVER/CANAL
PROPOSED CENTERLINE	H.T. LINE, TOWER
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP
PRO. CARRIAGE WAY EDGES	TELEPHONE LINE & POLE
PRO. SHOULDER EDGES	ELECTRIC LINE & POLE
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE
PRO. ROW BOUNDARY	PIPE CULVERT
PROPOSED EARTH WORK	BOX/SLAB CULVERT
BRIDGE/CULVERT	POND
BEGINNING OF SPIRAL CURVE	END OF SPIRAL CURVE
APX OF CURVE	APX OF CURVE
END OF CIRCULAR CURVE	END OF CIRCULAR CURVE
HORIZONTAL INTERSECTION POINT	DEVIATION ANGLE
TANGENT LENGTH	LENGTH OF SPIRAL CURVE
LENGTH OF CIRCULAR CURVE	APX DISTANCE
SUPERELEVATION	DESIGN SPEED
RADIUS OF CURVE	



CURVE DETAILS	
No.	71
CH	40+349.140
R (M)	80
L (m)	1200
Ls (m)	165.946
Delta	7.50° 24.0'
+ CD	2.5
Th(m)	83.105
Es (m)	2.874

BUSBAY	
CHAINAGE	40+195
SIDE	RIGHT
REF. DWG. NO.	OSRP/CEG/BB-1



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	9.050, 9.068, 9.082, 9.064, 9.009, 8.937, 8.865, 8.793, 8.721, 8.649, 8.577, 8.506, 8.434, 8.366, 8.336, 8.348, 8.380, 8.411, 8.442, 8.474, 8.505, 8.537, 8.568, 8.600, 8.631, 8.662, 8.694, 8.727, 8.762, 8.799, 8.836, 8.872, 8.909, 8.945, 8.982, 9.019, 9.055, 9.092, 9.129, 9.165, 9.202
EXISTING LEVEL (m)	8.733, 8.831, 8.818, 8.813, 8.667, 8.630, 8.441, 8.387, 8.299, 8.061, 7.943, 7.941, 8.028, 8.009, 8.019, 8.040, 8.070, 8.124, 8.189, 8.318, 8.258, 8.244, 8.332, 8.489, 8.477, 8.441, 8.446, 8.501, 8.538, 8.594, 8.550, 8.569, 8.533, 8.562, 8.705, 8.682, 8.653, 8.616, 8.220, 8.718, 8.010
HORIZONTAL ALIGNMENT	L=194.702m, R=1200.000m, L=165.946m, L=627.313m
VERTICAL PROFILE	L=60.000m, L=215.131m, G=-0.288, L=60.000m, G=0.126, L=269.423m, L=60.000m, G=0.147, L=391.428m
SUPERELEVATION /CROSSFALL	Q=2.500
CHAINAGE	40000.000, 40025.000, 40050.000, 40075.000, 40100.000, 40125.000, 40150.000, 40175.000, 40200.000, 40225.000, 40250.000, 40275.000, 40300.000, 40325.000, 40350.000, 40375.000, 40400.000, 40425.000, 40450.000, 40475.000, 40500.000, 40525.000, 40550.000, 40575.000, 40600.000, 40625.000, 40650.000, 40675.000, 40700.000, 40725.000, 40750.000, 40775.000, 40800.000, 40825.000, 40850.000, 40875.000, 40900.000, 40925.000, 40950.000, 40975.000, 10000.000

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :
CEG
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DESIGN REVIEW CONSULTANT :
LEA
 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

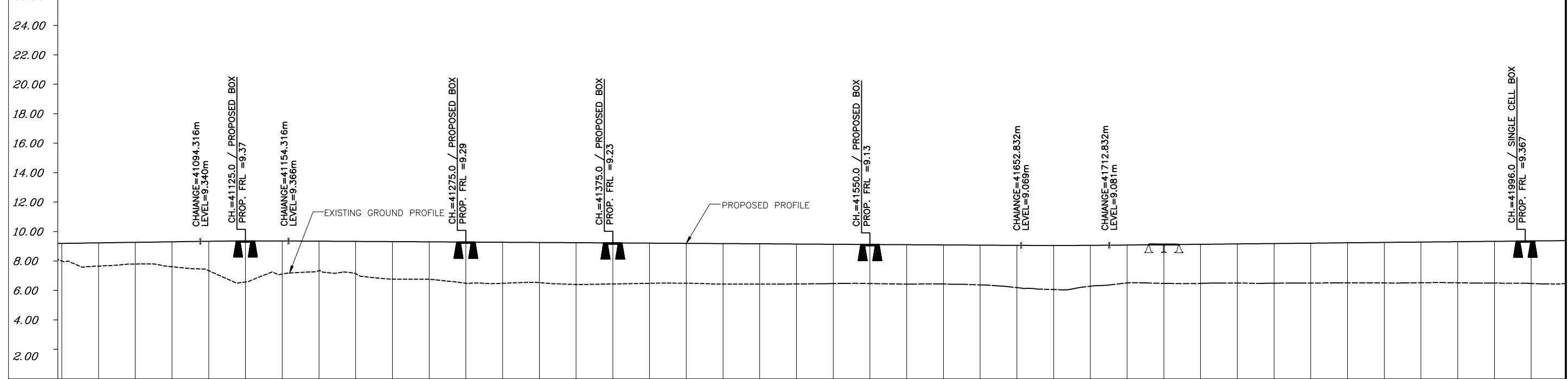
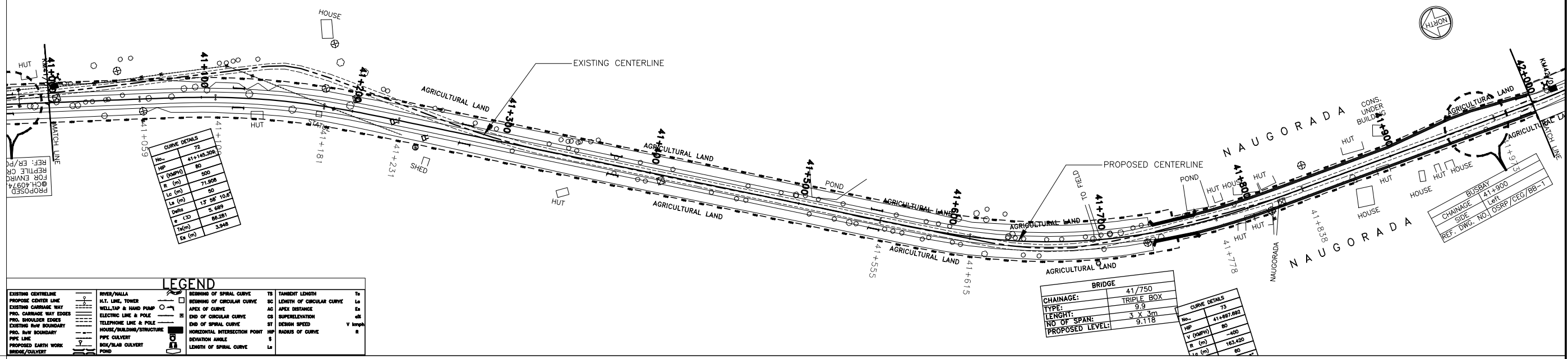
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
PLAN AND LONGITUDINAL SECTION (SH-9) KM 40/000 TO KM 41/000
 (SHEET 14 OF 28)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/14
 REV. R2

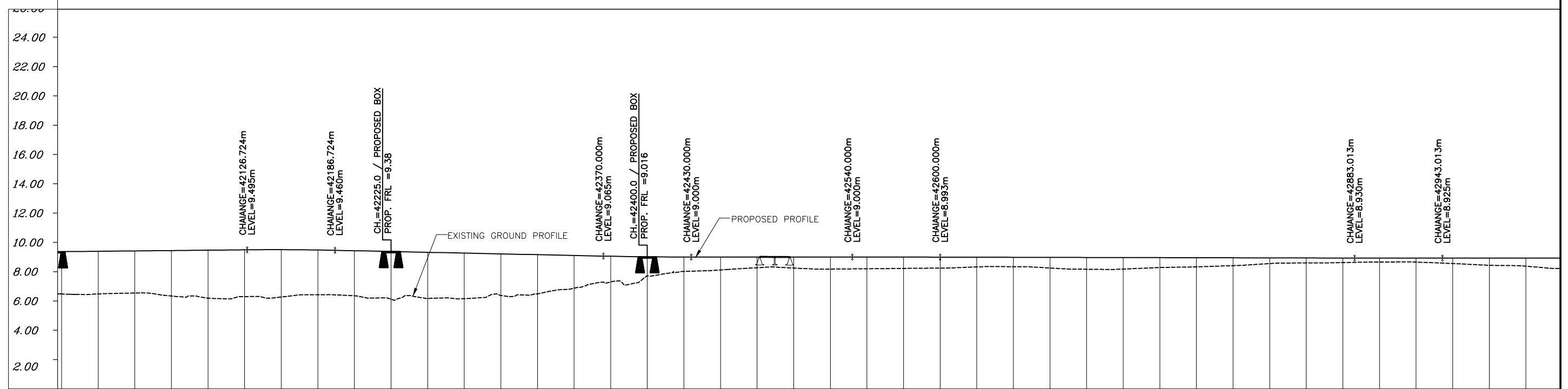
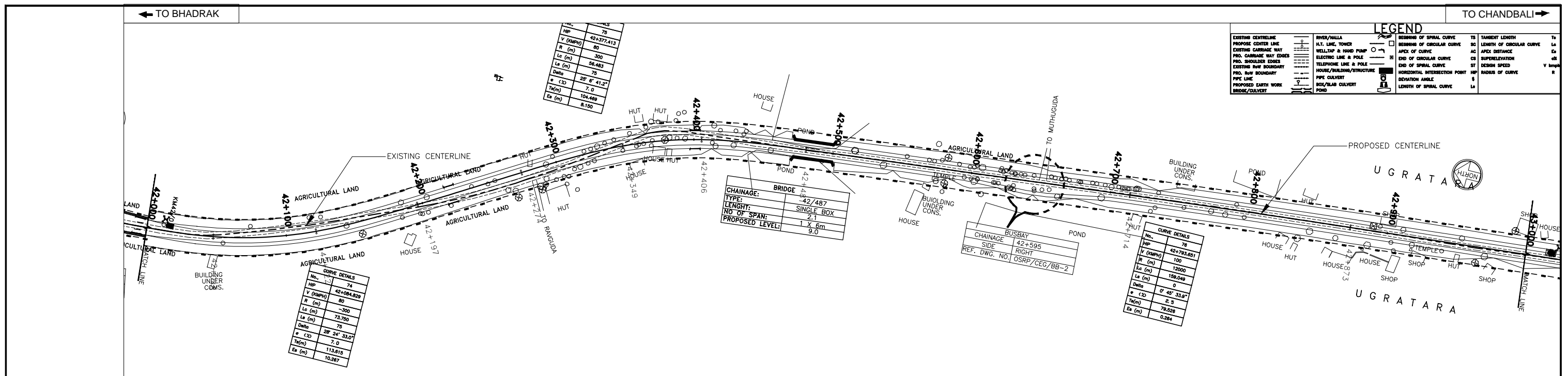
← TO BHADRAK

TO CHANDBALI →



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	9.202 9.238 9.275 9.312 9.348 9.369 9.368 9.354 9.339 9.324 9.309 9.294 9.279 9.264 9.249 9.235 9.220 9.205 9.190 9.175 9.160 9.145 9.130 9.115 9.100 9.085 9.071 9.062 9.070 9.093 9.118 9.143 9.168 9.193 9.218 9.243 9.268 9.293 9.318 9.343 9.368
EXISTING LEVEL (m)	8.010 7.660 7.801 7.619 7.348 6.579 7.120 7.351 7.144 6.779 6.768 6.497 6.494 6.537 6.411 6.449 6.493 6.498 6.439 6.440 6.448 6.474 6.475 6.434 6.445 6.384 6.197 6.068 6.293 6.517 6.487 6.485 6.512 6.502 6.512 6.521 6.516 6.530 6.526 6.505 6.479
HORIZONTAL ALIGNMENT	L=50.000m R=500.000m L=71.908m L=50.000m L=323.625m L=60.000m R=-400.000m L=163.420m L=60.000m L=134.520m L=75.000m
VERTICAL PROFILE	L=60.000m L=498.516m G=-0.060 L=60.000m G=0.100 L=413.892m
SUPERELEVATION / CROSSFALL	Q=5.690 Q=2.500 Q=7.000 Q=2.500
CHAINAGE	41000.000 41025.000 41050.000 41075.000 41100.000 41125.000 41150.000 41175.000 41200.000 41225.000 41250.000 41275.000 41300.000 41325.000 41350.000 41375.000 41400.000 41425.000 41450.000 41475.000 41500.000 41525.000 41550.000 41575.000 41600.000 41625.000 41650.000 41675.000 41700.000 41725.000 41750.000 41775.000 41800.000 41825.000 41850.000 41875.000 41900.000 41925.000 41950.000 41975.000 42000.000

R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R. MISHRA (EE) O.P. PATEL (CE) R1 JAN-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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S.	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 41/000 TO KM 42/000 (SHEET 15 OF 18)
NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:	DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/15		REV. R2			

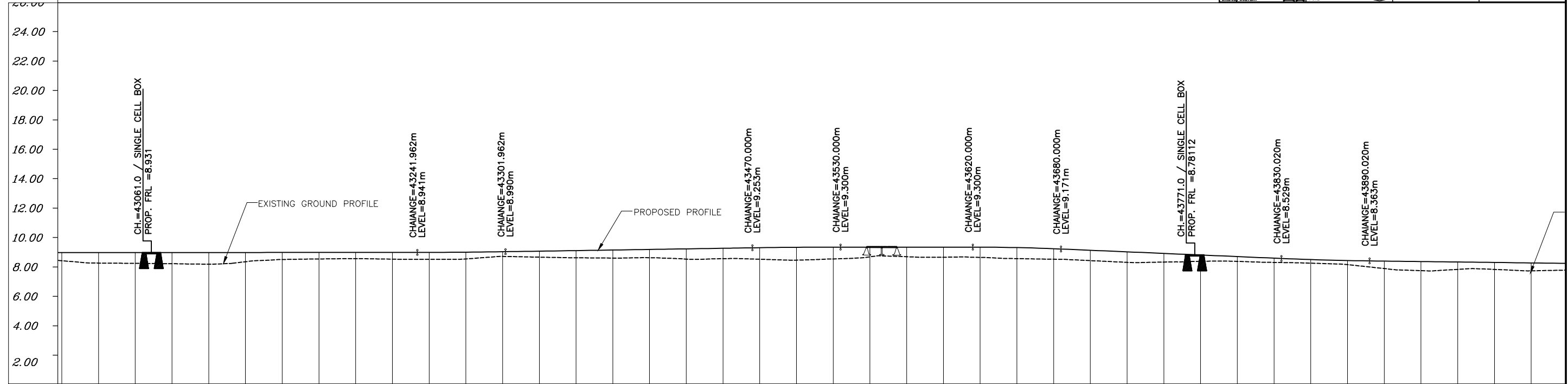
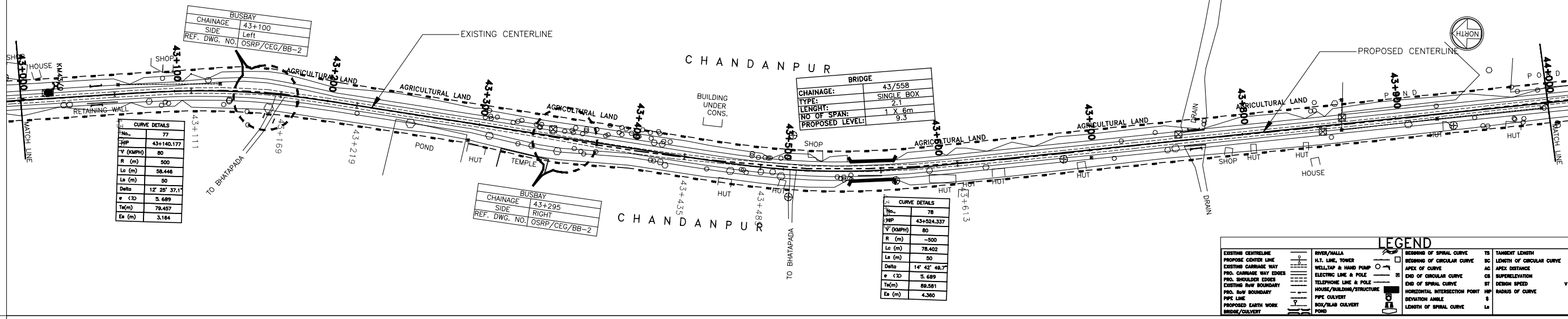


DATUM =0.00	
PROPOSED ROAD LEVEL (m)	9.368, 9.393, 9.418, 9.443, 9.468, 9.493, 9.504, 9.482, 9.431, 9.377, 9.324, 9.270, 9.216, 9.162, 9.108, 9.054, 9.016, 9.000, 9.000, 9.000, 9.000, 9.000, 9.000, 9.000, 9.000, 8.998, 8.993, 8.988, 8.982, 8.977, 8.971, 8.965, 8.960, 8.954, 8.949, 8.943, 8.937, 8.932, 8.927, 8.925, 8.925, 8.927, 8.928
EXISTING LEVEL (m)	6.479, 6.481, 6.543, 6.341, 6.196, 6.302, 6.270, 6.428, 6.358, 6.122, 6.161, 6.157, 6.377, 6.487, 6.877, 7.304, 7.722, 8.019, 8.120, 8.269, 8.249, 8.179, 8.201, 8.224, 8.243, 8.325, 8.343, 8.252, 8.168, 8.179, 8.287, 8.330, 8.412, 8.555, 8.596, 8.623, 8.659, 8.654, 8.558, 8.434, 8.378
HORIZONTAL ALIGNMENT	75.000m, R=-300.000m, L=73.750m, L=75.000m, L=77.571m, L=75.000m, R=300.000m, L=56.483m, L=75.000m, L=233.555m, R=12000.000m, L=159.049m, L=187.747m
VERTICAL PROFILE	L=60.000m, L=183.276m, G=-0.216, L=60.000m, G=0.000, L=110.000m, L=60.000m, L=283.013m, G=-0.022, L=60.000m
SUPERELEVATION /CROSSFALL	Q=7.000, Q=2.500, Q=7.000, Q=2.500
CHAINAGE	42000.000, 42025.000, 42050.000, 42075.000, 42100.000, 42125.000, 42150.000, 42175.000, 42200.000, 42225.000, 42250.000, 42275.000, 42300.000, 42325.000, 42350.000, 42375.000, 42400.000, 42425.000, 42450.000, 42475.000, 42500.000, 42525.000, 42550.000, 42575.000, 42600.000, 42625.000, 42650.000, 42675.000, 42700.000, 42725.000, 42750.000, 42775.000, 42800.000, 42825.000, 42850.000, 42875.000, 42900.000, 42925.000, 42950.000, 42975.000, 43000.000

R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R MISHRA (EE) O.P. PATEL (CE) R1 JAN-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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 42/000 TO KM 43/000 (SHEET 16 OF 18) DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/16 REV. R2
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← TO BHADRAK

TO CHANDBALI →



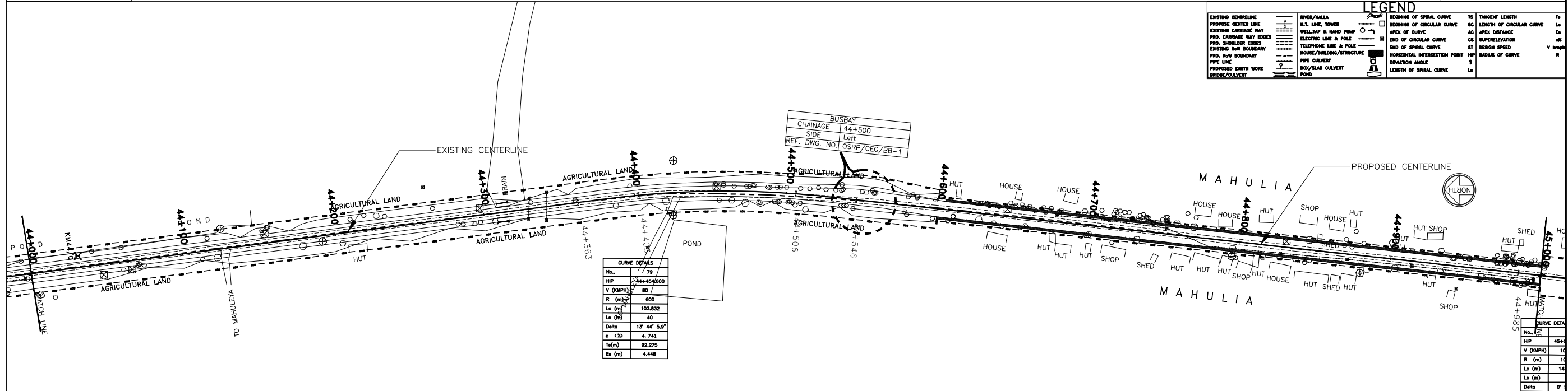
DATUM = 0.00																																									
PROPOSED ROAD LEVEL (m)	8.928	8.930	8.931	8.932	8.934	8.935	8.936	8.938	8.939	8.941	8.943	8.957	8.987	9.026	9.065	9.104	9.143	9.183	9.222	9.261	9.288	9.300	9.300	9.300	9.300	9.299	9.268	9.192	9.086	8.979	8.871	8.764	8.657	8.550	8.453	8.387	8.351	8.320	8.289	8.258	8.227
EXISTING LEVEL (m)	8.378	8.216	8.198	8.172	8.138	8.308	8.459	8.496	8.519	8.480	8.470	8.496	8.667	8.619	8.574	8.555	8.560	8.486	8.517	8.478	8.415	8.499	8.641	8.649	8.613	8.603	8.519	8.476	8.382	8.263	8.284	8.335	8.329	8.260	8.208	8.110	7.843	7.700	7.786	7.784	7.687
HORIZONTAL ALIGNMENT	L=50.000m		R=500.000m L=58.446m			L=50.000m		L=215.688m												L=50.000m		R=-500.000m L=78.402m			L=50.000m		L=749.096m														
VERTICAL PROFILE	G=0.006 L=298.949m						L=60.000m			G=0.157 L=168.038m						L=60.000m			G=0.000 L=90.000m			L=60.000m			L=150.020m G=-0.429			L=60.000m			L=240.473 G=-0.12										
SUPERELEVATION /CROSSFALL	Q=5.690												Q=2.500												Q=5.690												Q=2.500				
CHAINAGE	43000.000	43025.000	43050.000	43075.000	43100.000	43125.000	43150.000	43175.000	43200.000	43225.000	43250.000	43275.000	43300.000	43325.000	43350.000	43375.000	43400.000	43425.000	43450.000	43475.000	43500.000	43525.000	43550.000	43575.000	43600.000	43625.000	43650.000	43675.000	43700.000	43725.000	43750.000	43775.000	43800.000	43825.000	43850.000	43875.000	43900.000	43925.000	43950.000	43975.000	44000.000

R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R MISHRA (EE) O.P. PATEL (CE) R1 JAN-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@cegindia.com		DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B				SCALE : N.T.S		DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 43/000 TO KM 44/000 (SHEET 17 OF 18) DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/17 REV. R2			
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← TO BHADRAK

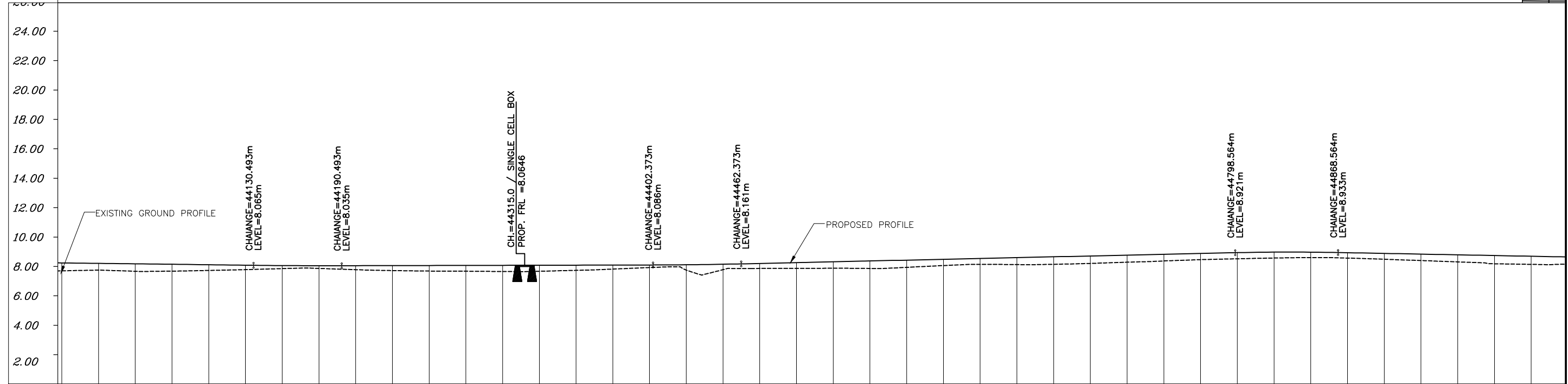
TO CHANDBALI →

LEGEND	
EXISTING CENTERLINE	RIVER/WALLA
PROPOSED CENTERLINE	H.T. LINE, TOWER
EXISTING CARRIAGE WAY	WELL/TAP & HAND PUMP
PRO. CARRIAGE WAY EDGES	ELECTRIC LINE & POLE
PRO. SHOULDER EDGES	TELEPHONE LINE & POLE
EXISTING ROW BOUNDARY	HOUSE/BUILDING/STRUCTURE
PRO. ROW BOUNDARY	PPE VALVE
PROPOSED EARTH WORK	BOX/SLAB VALVE
BRIDGE/CULVERT	POND
BEGINNING OF SPIRAL CURVE	TS
END OF SPIRAL CURVE	SC
BEGINNING OF CIRCULAR CURVE	AC
END OF CIRCULAR CURVE	CS
APEX OF CURVE	ST
HORIZONTAL INTERSECTION POINT	HP
DEVIATION ANGLE	S
LENGTH OF SPIRAL CURVE	LS
TANGENT LENGTH	Ta
LENGTH OF CIRCULAR CURVE	LC
APEX DISTANCE	AD
SUPERELEVATION	SE
DESIGN SPEED	V
RADIUS OF CURVE	R



CURVE DETAILS	
No.	79
HP	44+454.800
V (DMPH)	80
R (m)	600
Lc (m)	103.832
La (m)	40
Delta	13° 44' 5.9"
e (CD)	4.741
Ta(m)	92.275
Es (m)	4.448

CURVE DATA	
No.	80
HP	44+454.800
V (DMPH)	12
R (m)	10
Lc (m)	14
La (m)	0'
Delta	0'



DATUM = 0.00	
PROPOSED ROAD LEVEL (m)	8.227, 8.196, 8.165, 8.134, 8.103, 8.072, 8.046, 8.034, 8.037, 8.043, 8.049, 8.055, 8.061, 8.067, 8.073, 8.079, 8.085, 8.100, 8.135, 8.189, 8.246, 8.302, 8.359, 8.415, 8.472, 8.528, 8.585, 8.641, 8.698, 8.755, 8.811, 8.868, 8.924, 8.960, 8.958, 8.920, 8.872, 8.824, 8.776, 8.728, 8.680
EXISTING LEVEL (m)	7.687, 7.738, 7.657, 7.668, 7.714, 7.769, 7.839, 7.852, 7.765, 7.706, 7.673, 7.661, 7.642, 7.658, 7.720, 7.806, 7.912, 7.739, 7.767, 7.850, 7.856, 7.864, 7.848, 7.925, 8.048, 8.131, 8.112, 8.133, 8.192, 8.278, 8.360, 8.449, 8.507, 8.559, 8.584, 8.554, 8.479, 8.388, 8.294, 8.168, 8.129
HORIZONTAL ALIGNMENT	6m, L=40.000m, R=600.000m, L=40.000m, L=103.832m, L=438.336m
VERTICAL PROFILE	240.473m, L=60.000m, G=0.024, L=211.880m, L=60.000m, G=0.226, L=336.191m, L=70.000m, L=299.2, G=-0.0
SUPERELEVATION /CROSSFALL	Q=2.500, Q=4.740
CHAINAGE	44000.000, 44025.000, 44050.000, 44075.000, 44100.000, 44125.000, 44150.000, 44175.000, 44200.000, 44225.000, 44250.000, 44275.000, 44300.000, 44325.000, 44350.000, 44375.000, 44400.000, 44425.000, 44450.000, 44475.000, 44500.000, 44525.000, 44550.000, 44575.000, 44600.000, 44625.000, 44650.000, 44675.000, 44700.000, 44725.000, 44750.000, 44775.000, 44800.000, 44825.000, 44850.000, 44875.000, 44900.000, 44925.000, 44950.000, 44975.000, 45000.000

R2 SEP-2015 SECOND REVISION LASA RAJU MATHUR M.R MISHRA (EE) O.P. PATEL (CE) R1 JAN-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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : PLAN AND LONGITUDINAL SECTION (SH-9) KM 44/000 TO KM 45/000 (SHEET 18 OF 18) DWG. NUMBER : OSRP/CEG/SH9/P02B/P&P/18 REV. R2
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SHCEDULE OF ROAD DELINEATORS AT CURVES UPTO 300m

ARC		RADIUS	ARC LENGTH
START	END		
30+490.993	30+642.449	350	235.815
36+131.547	36+309.543	300	832.841
42+049.777	42+123.527	300	134.52
42+351.098	42+407.581	300	77.571

SCHEDULE OF ROAD HUMPS

SL NO	CHAINAGE	TYPE OF JUNCTION	LHS/RHS
1	33126	T-Type	RHS
2	36195	T-Type	RHS
3	37255	T-Type	LHS
4	40000	T-Type	RHS

SL NO	CHAINAGE	REMARKS
1	27770	SCHOOL ZONE
2	27830	SCHOOL ZONE
3	36175	SCHOOL ZONE
4	36260	SCHOOL ZONE
5	47770	SCHOOL ZONE
6	47900	SCHOOL ZONE

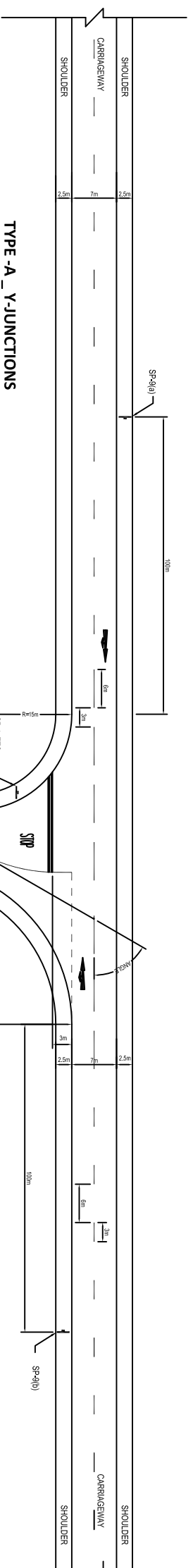
BUILTUP AREA

CHAINAGE		LENGTH
FROM	TO	
30300	30500	200
32900	33200	300
37100	37400	300
39100	40300	1200
44600	45000	400

NOTE:

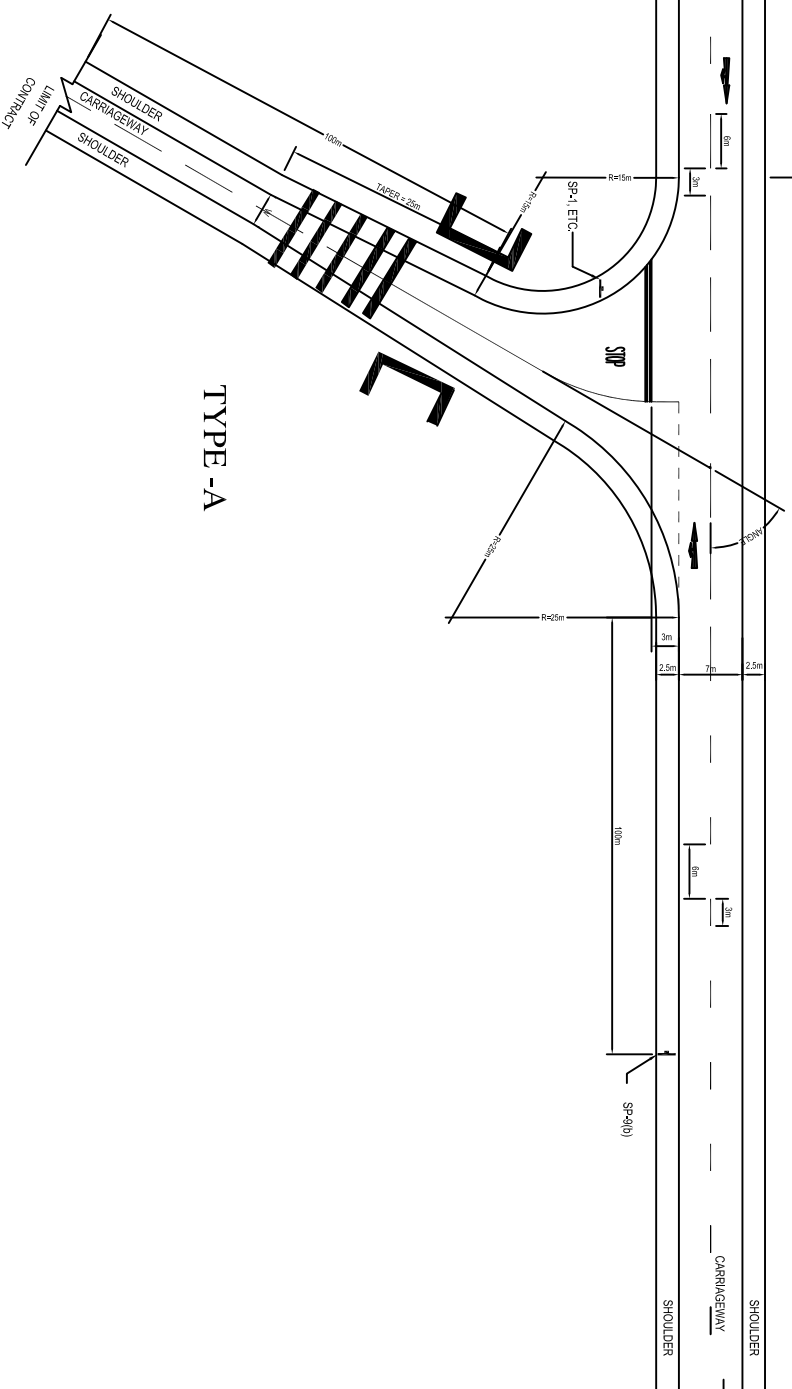
1. JUNCTION SHALL BE IMPROVED AS PER THE DRAWING NO OSRP/CEG/JN/01 TO 03
2. ALL OTHER JUNCTIONS WITH WBM CROSS ROAD, CEMENT, EARTHEN SHALL BE IMPROVED AS PER THE STANDARD DRAWINGS
3. PROPOER SIGNAGE SHALL BE PROVIDED FOR THE SAFETY OF THE TRAFFIC MOVEMENT AT THESE JUNCTIONS

R2 SEP-2015 SECOND REVISION LAGA R1 JAN-2013 FIRST REVISION OMD VINAY - JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED : CHECKED: APPROVED:	RAJU MATHUR M.R. MISHRA (EE) O.P. PATEL (CE)	P.K.MISHRA (AE) M.R. MISHRA (EE) N.K. PRADHAN (CE)	DFR CONSULTANT : C O N S U L T I N G ENGINEERS GROUP LTD. E-12,MOUL COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegin dia.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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : SCHEDULE OF RRPMS,ROAD HUMPS & RUMBLE STRIP (SHEET 1 OF 1)	DWG. NUMBER : OSRP/CEG/SH9/P02B/SCB/ REV. R2
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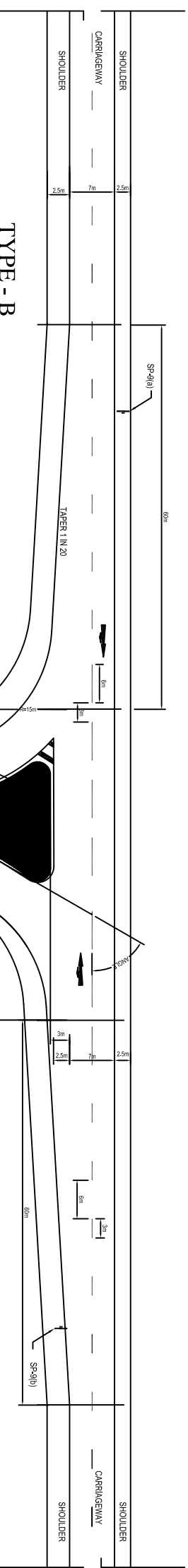


TYPE - A _ Y-JUNCTIONS

Sl No	Chainage	Type of Junction	LHS/RHS	Name of the Village
1	3950	Y-Type	RHS	-
2	6500	Y-Type	LHS	Basudevapur
3	16417	Y-Type	RHS	Bailepalla



TYPE -A



TYPE - B

- NOTE:**
- WHERE THE SIDE ROAD INTERSECTS THE MAIN ROAD AT ANGLES GREATER THAN 60°, THE DESIGN SHOWN AS 'C' CAN BE ADOPTED. WHERE THE ANGLES IS LESS THAN 60°, DESIGN 'A' OR 'B' CAN BE ADOPTED
 - FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELISING ISLAND REFER DRAWING NO. OSRP/CEG/RM/01 TO RM/02
 - FOR DETAILS REGARDING ROAD HUMP & OTHER SIGN BOARDS, MARKING REFER DRAWING NO. OSRP/CEG/RH/RS/01
 - LONGITUDINAL GRADIENT ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD

DETAILS OF CART TRACK

W=EXISTING WIDTH

- NOTE:**
- EXISTING PRE-CAST CEMENT CONCRETE PIPE IN GOOD CONDITION SHALL BE REUSED.

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LUSA				
R1	JAN-2013	FIRST REVISION	OMD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	O.P. PATEL (CE)
-	JUNE 2008	ORIGINAL	CEG			M.R. MISHRA (EE)	N.K. PRADEEN (CE)

DRP CONSULTANT :
C O N S U L T I N G ENGINEERS GROUP LTD.
 E-12,MOJI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfdia.com

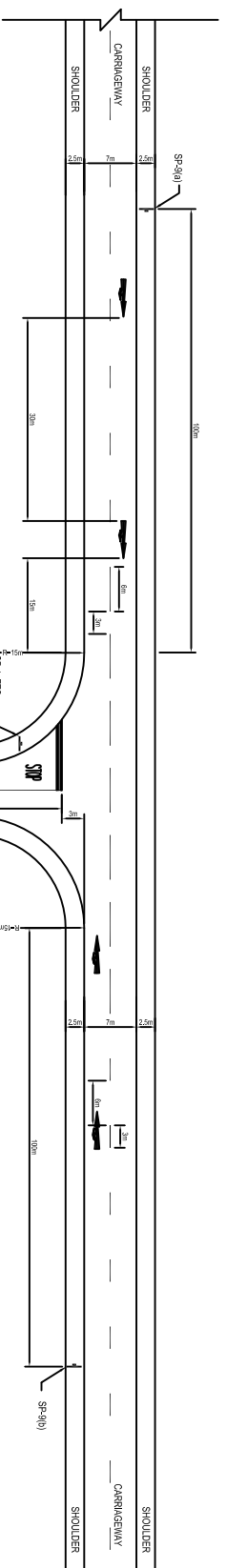
DESIGN REVIEW CONSULTANT :
LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, 1ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

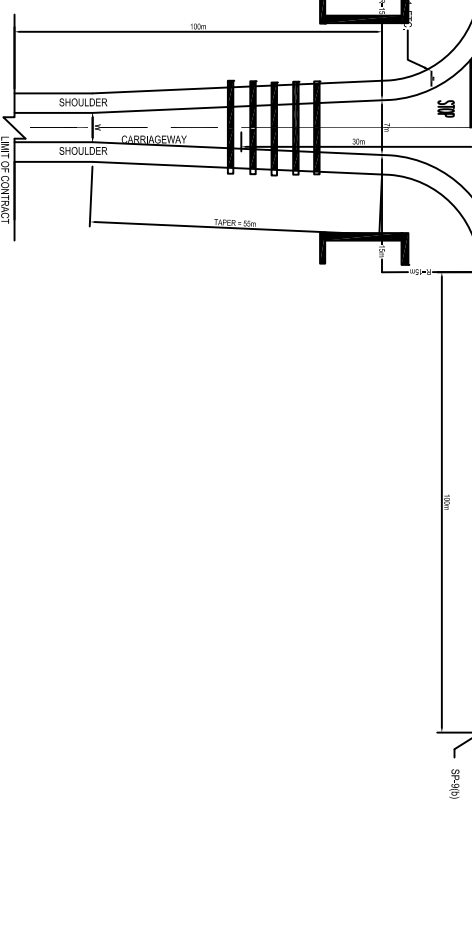
SCALE :
 N.T.S

DRAWING TITLE :
STANDARD DRAWINGS TYPICAL Y JUNCTION WITH SINGLE LANE BT ROAD/ EARTHEN ROAD
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 SHEET 1 OF 1
 REV. R2

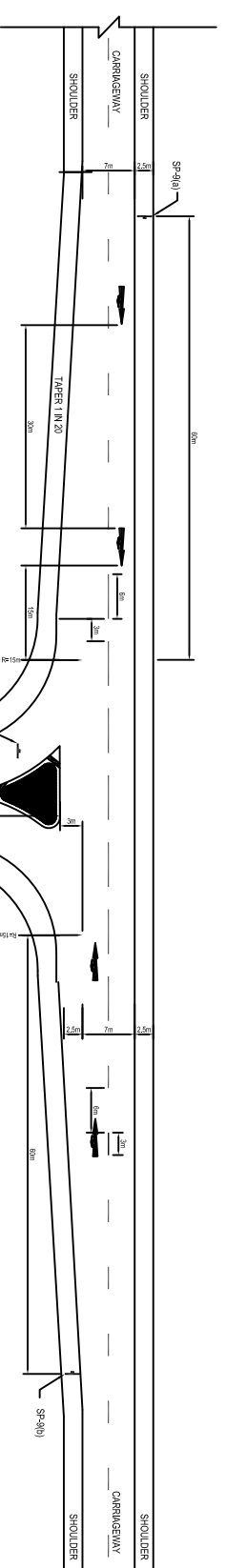


TYPE - A T-JUNCTIONS

Sino	Chaitrage	Type of Junction	LHS/RHS	Name of the Village
1	33126	T-1-type	RHS	Ganhabur
2	36195	T-1-type	RHS	Nalgunda
3	37255	T-1-type	LHS	Bansigada
4	40000	T-1-type	RHS	-



TYPE - A



TYPE - B

- NOTE:**
- FOR DETAILS OF ROAD SIGNS NUMBERED SP-1, ETC. SEE DRAWING NO. OSRP/CEG/RS/01 TO RS/03
 - FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELISING ISLAND REFER DRAWING NO. OSRP/CEG/RM/01 TO RM/02
 - FOR DETAILS REGARDING ROAD HUMP & OTHER SIGN BOARDS, MARKING REFER DRAWING NO. OSRP/CEG/RH/RS/01
 - LONGITUDINAL GRADE ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD

W = EXISTING WIDTH

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA				
R1	JAN-2013	FIRST REVISION	OWN	VINAY	PK.MISHRA (AE)	M.A. MISHRA (CE)	OP. PATEL (CE)
-	JUNE 2008	ORIGINAL	CEG				N.K. PRADHAN (CE)

DR CONSULTANT :
C O N S U L T I N G
ENGINEERS GROUP LTD.
 E-12,KMOI COLONY,MALVIYA NAGAR
 JAIPUR-17 Tel:
 +91-141-2520899,2521899,2520556 Fax:
 2521348, e-mail: ceg@ceginfdia.com



DESIGN REVIEW CONSULTANT :
EA
 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 :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING
 OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
STANDARD DRAWINGS TYPICAL
T-JUNCTION WITH SINGLE LANE BT
ROAD
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 SHEET 1 OF 1)
 REV. R2

SCHEDULE OF SIGN POSTS

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LOCATION				REMARKS
			LL	LR	CR (L)	CR (R)	
SP-1	STOP	33126	✓				
		36195				✓	
		37255					✓
SP-6	SCHOOL ZONE	40000				✓	
		27780	✓				
		27880					
		36210	✓				
		36310				✓	
		40880	✓				
		40980				✓	
SP-9 A	RIGHT SIDE ROAD	37135	✓				
SP-9 B	LEFT SIDE ROAD	33236				✓	
		36305				✓	
		40110				✓	
SP-10 A	RIGHT HAND CURVE	30391	✓				
		36410	✓				
		42224	✓				
		42251	✓				
SP-10 B	LEFT HAND CURVE	36032				✓	
		41950				✓	
		30742				✓	
		42508				✓	
SP-12	PEDESTRIAN CROSSING	27730	✓				
		27830				✓	
		31158	✓				
		31258				✓	
		39442	✓				
		39542				✓	
		40158	✓				
		40258				✓	
		40830	✓				
		40930				✓	
		41842	✓				
		41942				✓	
		44442	✓				
		44542				✓	
SP-14 B	Y-INTERSECTION	49900	✓				
SP-16 A	HUMP OR ROUGH ROAD	37255				✓	

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LOCATION				REMARKS
			LL	LR	CR (L)	CR (R)	
SP-16 A	HUMP OR ROUGH ROAD	33126				✓	
		36195					✓
		40000					✓
SP-20	REASSURANCE SIGN MARKER SIGN	34000	✓				
						✓	
	ENVIRONMENTAL SIGNAGE						
SP-40	ENVIRONMENTAL SIGNAGE	28787	✓				
		28887				✓	
		30104	✓				
		30204				✓	
		31650	✓				
		31750				✓	
		35775	✓				
		35875				✓	
		40924	✓				
		41024				✓	
		45152	✓				
		45252				✓	
SP-49	ENVIRONMENTAL SIGNAGE	28807	✓				
		28867				✓	
		30124	✓				
		30184				✓	
		31670	✓				
		31730				✓	
		35795	✓				
		35855				✓	
		40944	✓				
		41004				✓	
		45172	✓				
		45232				✓	
	SIGNAGE AT NH JN						
SP-1	STOP Sign	0	✓				✓
SP-2	Compulsory Keep Left	15	✓				✓
SP-3	Give Way	0	✓				✓
SP-13(d)	Major Road Ahead	15	✓				✓
SP-15(b)	Dual Carriageway Begins	25				✓	
SP-15(c)	Dual Carriageway Ends	50	✓				✓

NOTE :

1. LL = LEFT LANE
2. RL = RIGHT LANE
3. CR(L) = CROSS ROAD LEFT
4. CR(R) = CROSS ROAD RIGHT
5. SIGN POST SHALL BE INSTALLED AT AN OFFSET DISTANCE OF 2M FROM THE EDGE OF CARRIAGE WAY
6. FOR DETAILS OF ROAD SIGNS REFER DWG. IN STANDARD DRAWINGS

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">R2 SEP-2015 SECOND REVISION LASA</td> <td style="width: 50%;">RAJU MATHUR</td> </tr> <tr> <td>R1 JAN-2013 FIRST REVISION OMD VNAVY</td> <td>PKMISHRA (AE)</td> </tr> <tr> <td>- JUNE 2008 ORIGINAL CEG</td> <td>M.R. MISHRA (EE) N.K. PRADEAN (CE)</td> </tr> <tr> <td>NO. DATE REVISION</td> <td>BY DRAWN: PREPARED: CHECKED: APPROVED:</td> </tr> </table>	R2 SEP-2015 SECOND REVISION LASA	RAJU MATHUR	R1 JAN-2013 FIRST REVISION OMD VNAVY	PKMISHRA (AE)	- JUNE 2008 ORIGINAL CEG	M.R. MISHRA (EE) N.K. PRADEAN (CE)	NO. DATE REVISION	BY DRAWN: PREPARED: CHECKED: APPROVED:	DFR CONSULTANT : C O N S U L T I N G ENGINEERS GROUP LTD. E-12,MOUL COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : SCHEDULE OF SIGN POSTS (SHEET 1 OF 1)
R2 SEP-2015 SECOND REVISION LASA	RAJU MATHUR													
R1 JAN-2013 FIRST REVISION OMD VNAVY	PKMISHRA (AE)													
- JUNE 2008 ORIGINAL CEG	M.R. MISHRA (EE) N.K. PRADEAN (CE)													
NO. DATE REVISION	BY DRAWN: PREPARED: CHECKED: APPROVED:													
DWG. NUMBER : OSRP/CEG/SH9/P02B/SCB/		REV. R2												

SCHEDULE OF PEDESTRIAN CROSSING

SCHEDULE OF PEDESTRIAN CROSSING			
SCHOOL ZOZE	HOSPITAL ZONE	BUS BAYS	
CHAINAGE			
27830	—	39542	31258
40930	—	41942	40258
	—	44542	46238
	—	48942	49718

NOTE:—




1. FOR DETAILS OF PEDESTRAIN CROSSING REFER ROAD MARKINGS
2. FOR DETAILS OF RPMs AT PEDESTRAIN CROSSING REFER STANDARD DRAWINGS
2. THE LOCATION OF THE PEDESTARIAN CROSSING ARE TENTATIVE ONLY.
THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

SCHEDULE OF EXTRA WIDENNING

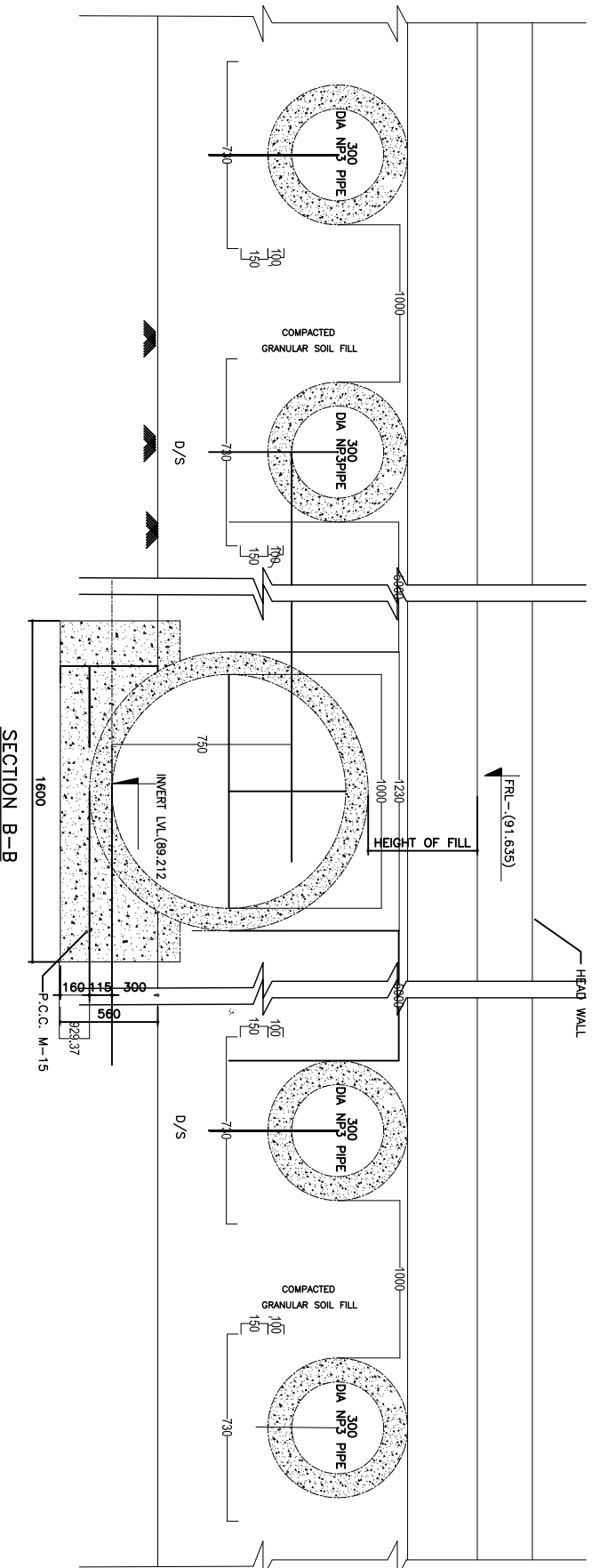
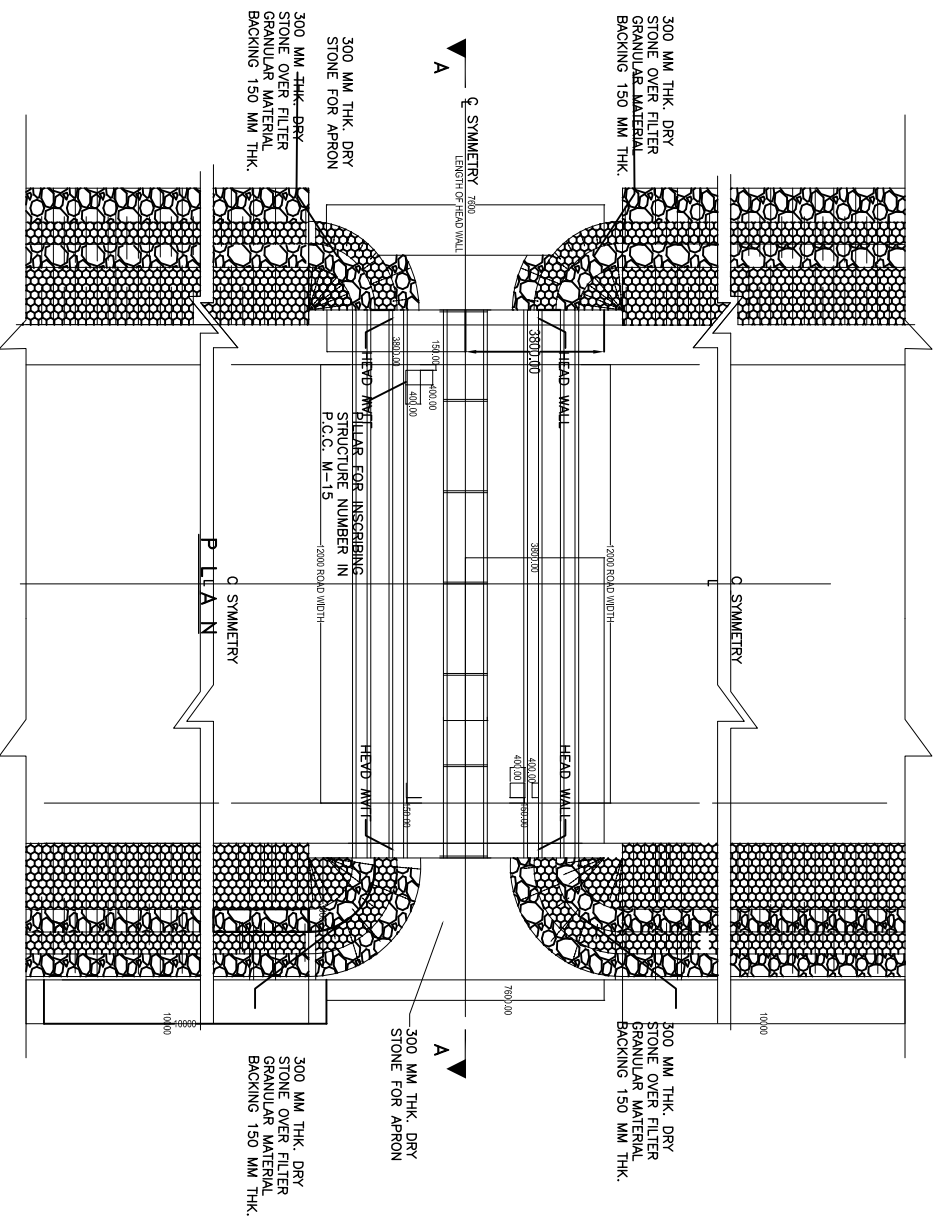
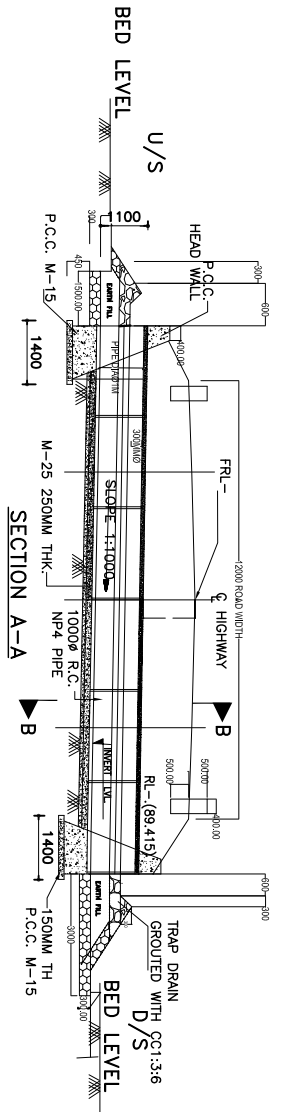
SL NO	CURVE START	CURVE END	RADIUS	CURVE LENGTH	TRANSITION	EXTRA WIDENING
1	36+131.547	36+309.543	300	832.841	75	0.6 M
2	42+049.777	42+123.527	300	134.52	75	0.6 M
3	42+351.098	42+407.581	300	77.571	75	0.6 M

NOTE:

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

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	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	 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	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : SCHEDULE OF GUARD POSTS, PEDESTRIAN - CROSSING & EXTRA WIDENING (SHEET 1 OF 1)
R1	JAN-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 : OSRP/CEG/SH9/P02B/SCH/ 3	REV. R2				

REPTILE UNDER PASS



SCHEDULE	
Sl. Proposed	No Chainage
1	40+974

NO.	DATE	REVISION	BY	DRAWN:	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LISA	RAJU MATHUR	M.R. MISHRA (EE)	OP. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K. MISHRA (AE)	M.R. MISHRA (EE) N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG			

DFR CONSULTANT :
C O N S U L T I N G
ENGINEERS GROUP LTD.
 E-12,KMOJI COLONY,MALVIYA NAGAR
 JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.com

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

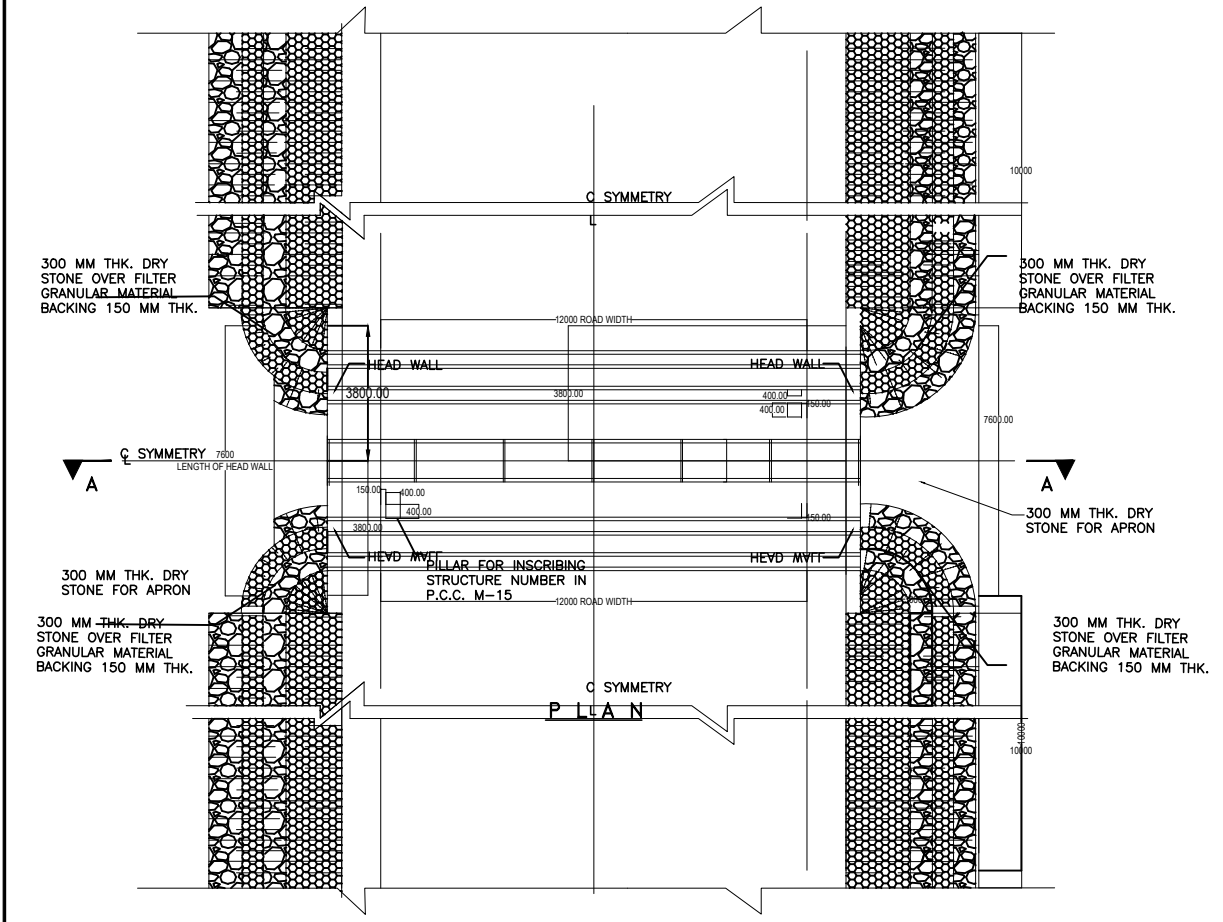
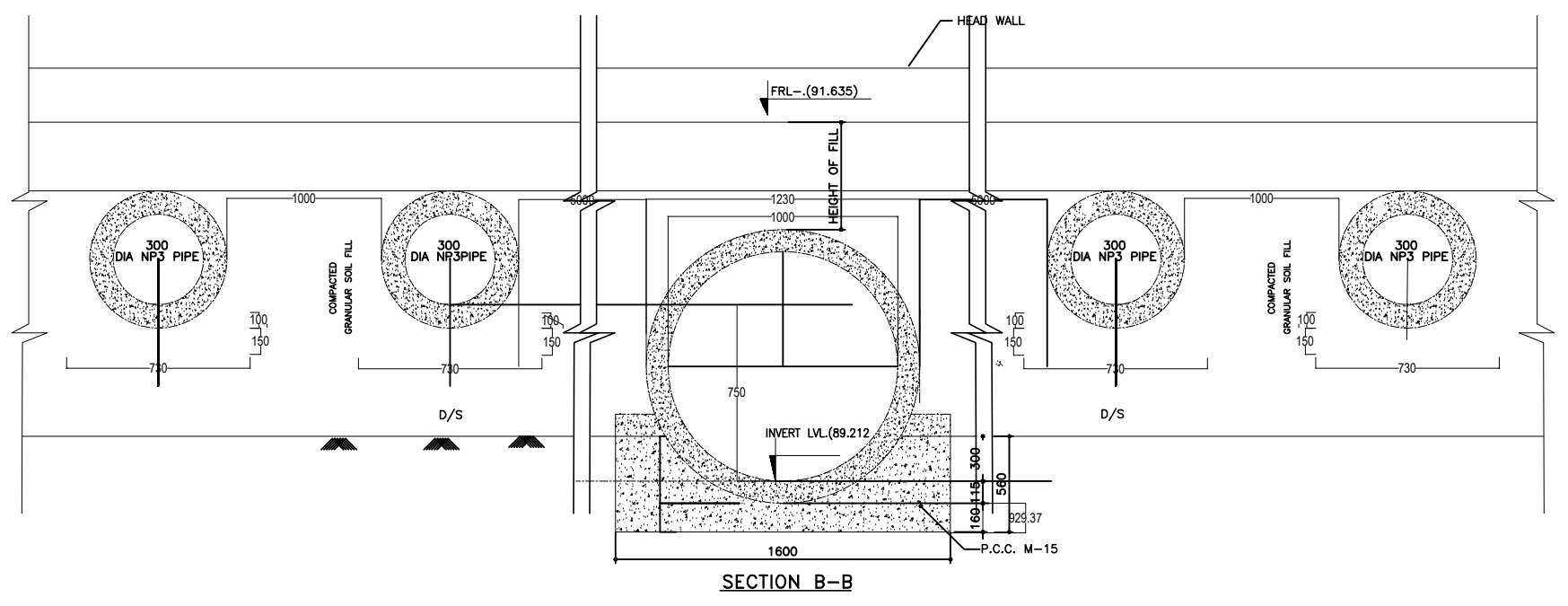
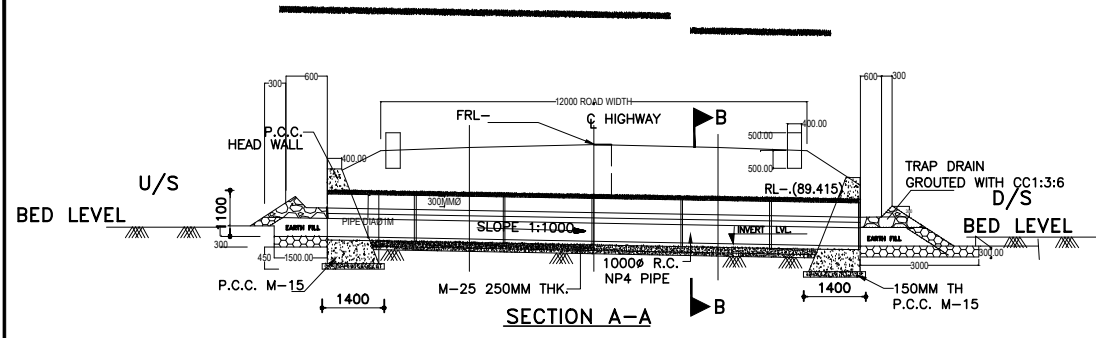
CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
REPTILE UNDER PASS+PIPE CULVERT (GEN.)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/EN8/
 (SHEET 1 OF 1)
 REV. R2

REPTILE UNDER PASS



SCHEDULE	
Sl. No	Proposed Chainage
1	40+974

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-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@cegindia.com

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

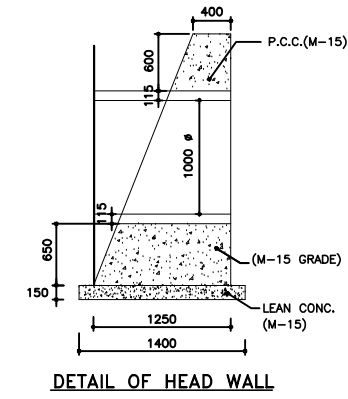
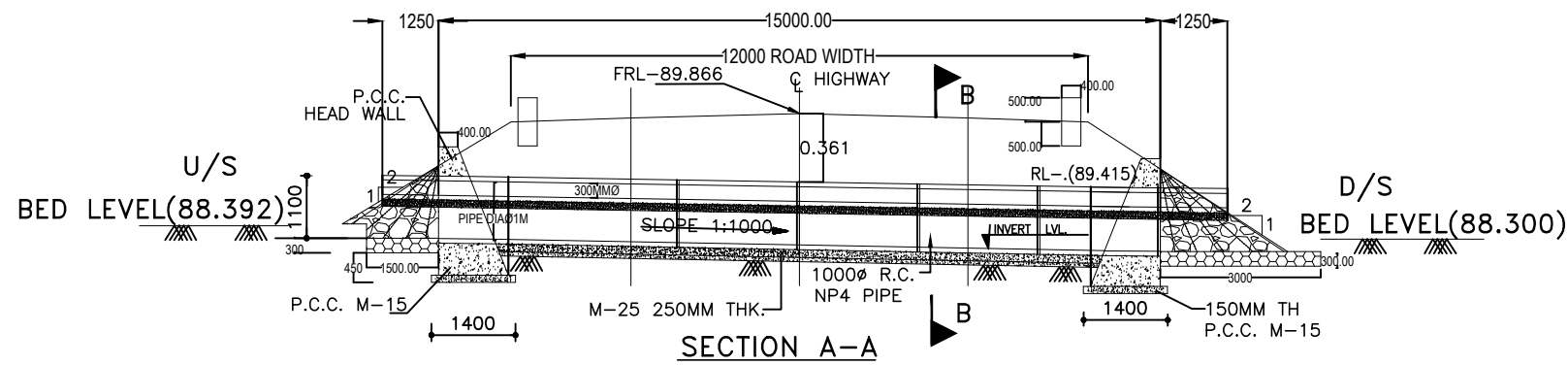
CLIENT :

ODISHA WORKS DEPARTMENT

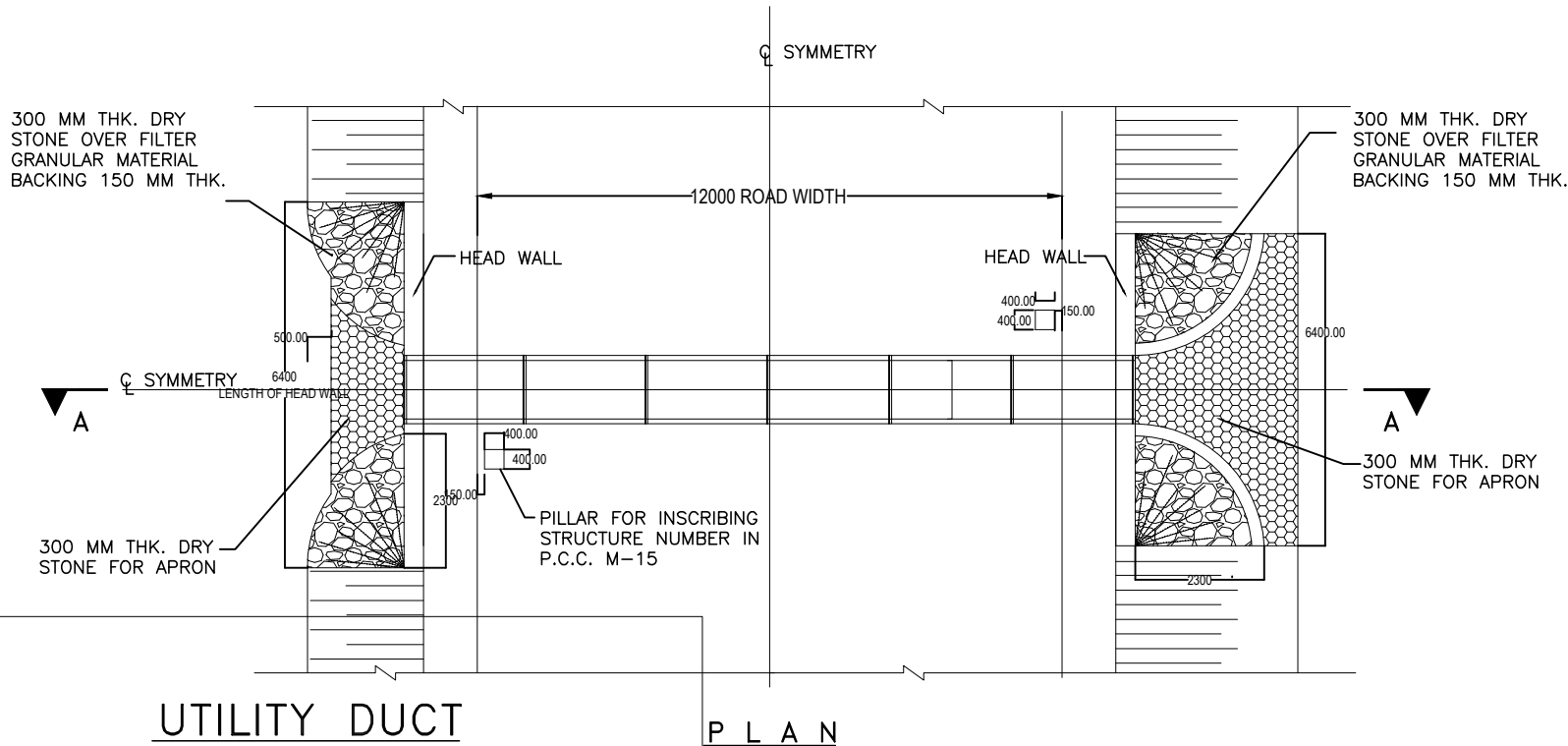
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - PO2B

SCALE :
 N.T.S

DRAWING TITLE :
REPTILE UNDER PASS+PIPE CULVERT (GEN.)
 DWG. NUMBER : OSRP/CEG/SH9/PO2B/EN3/
 (SHEET 1 OF 1)
 REV. R2

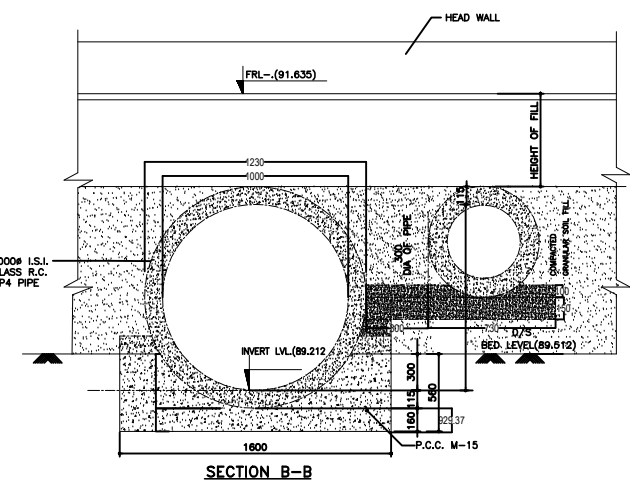


- NOTES:**
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
 3. LOOSE / UNSUITABLE SOIL BELOW CULVERTS IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
 4. CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE.
 5. FOR CULVERTS SKEW TO THE TRAFFIC DIRECTION LENGTH OF CULVERT SHALL BE ADJUSTED AS PER SITE CONDITION.
 6. LONGITUDINAL SLOPE OF PIPE SHALL BE MIN. 1 IN 1000.
 7. FIRST CLASS BEDDING CAN BE USED FOR MAXIMUM HEIGHT OF FILL OF 4.0 M.
 8. THE FINISHED ROAD LEVEL SHALL BE VERIFIED WITH ALIGNMENT DRAWING & GROUND LEVEL WITH SITE CONDITIONS BEFORE EXECUTION.



SCHEDULE OF UTILITY DUCT

Sl. No.	Chainage	Sl. No.	Chainage
1	30+250	6	39+050
2	30+550	7	40+375
3	32+850	8	42+050
4	33+250	9	44+550
5	37+450	10	45+025



NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-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.
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 JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com

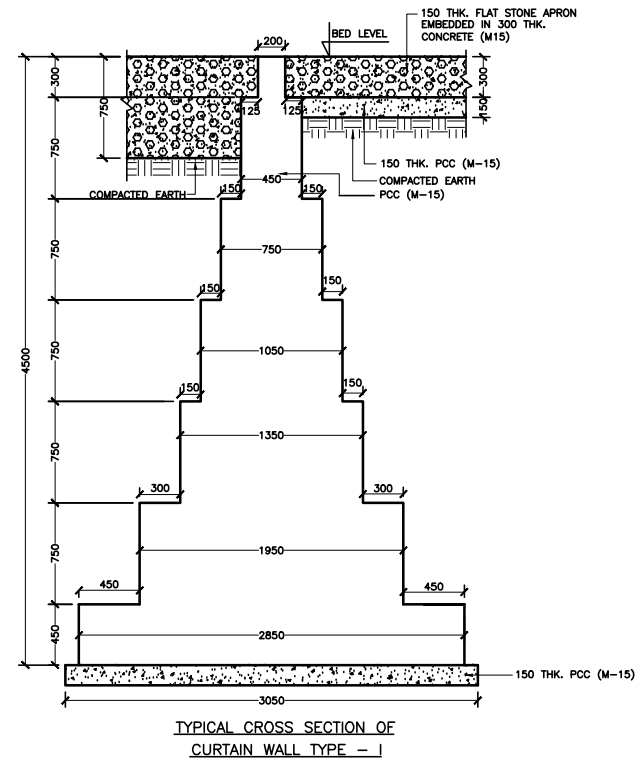
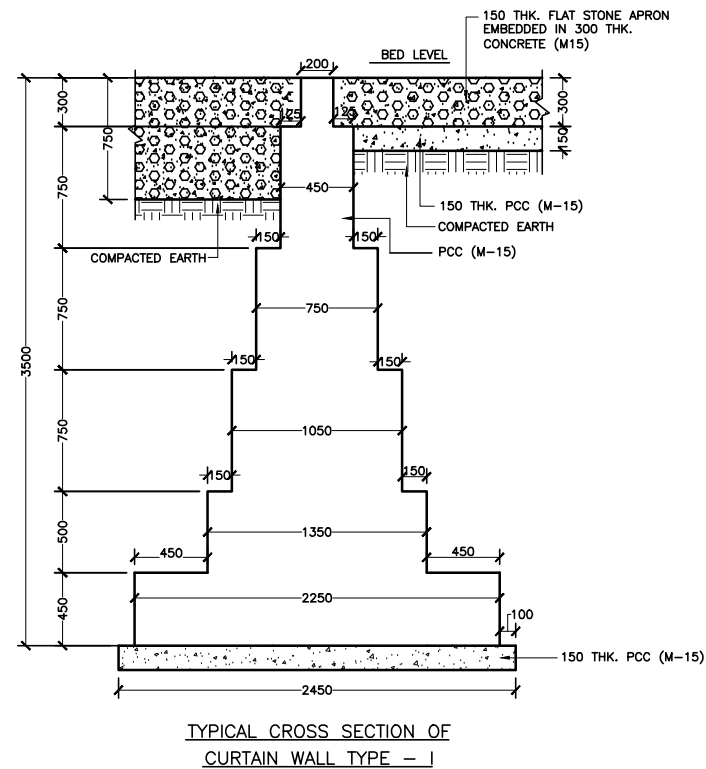
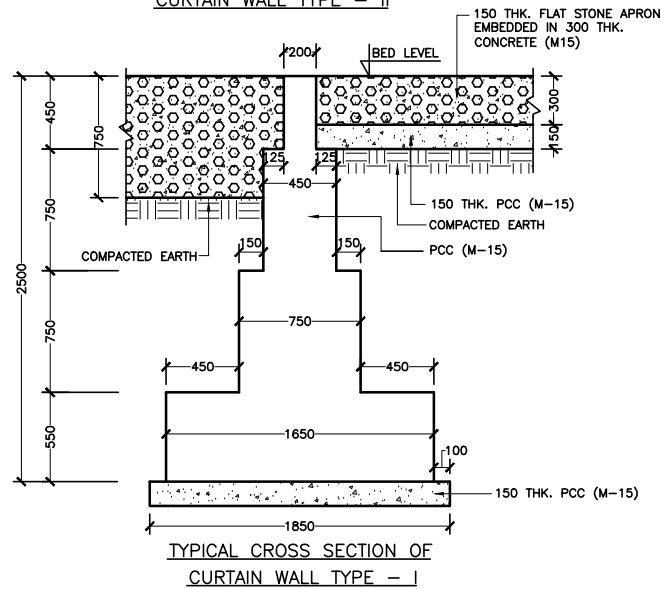
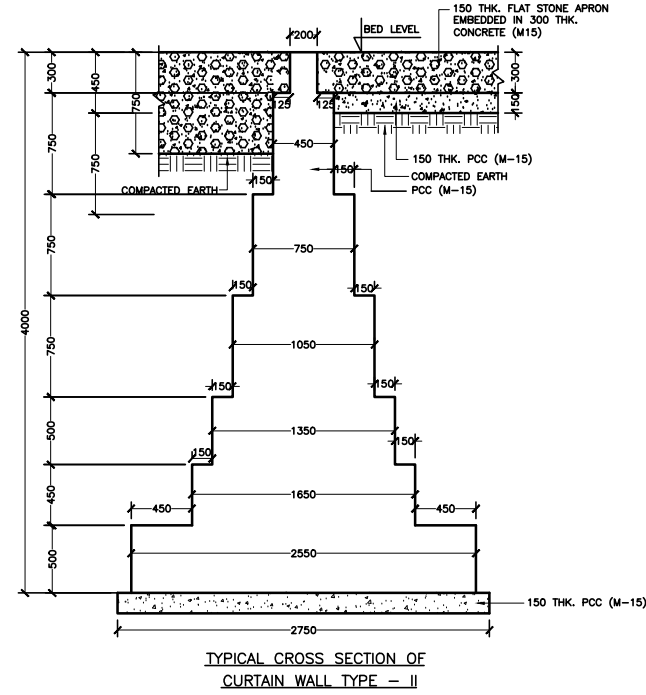
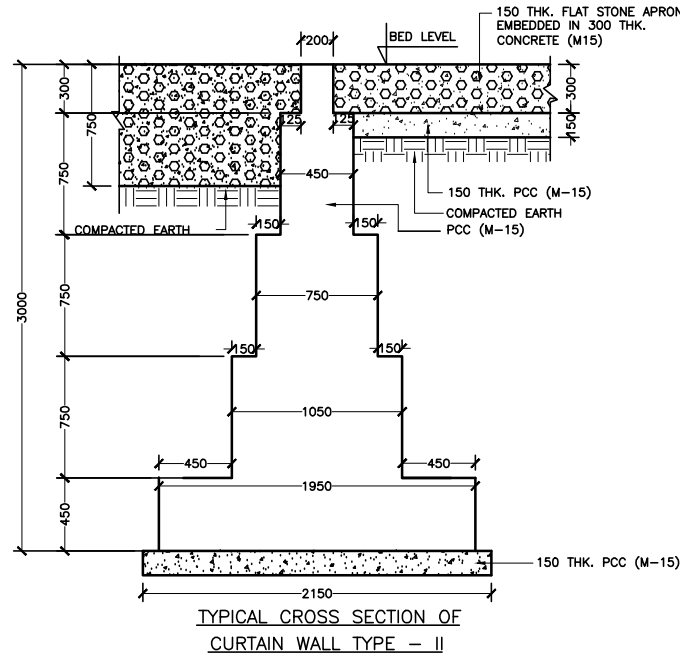
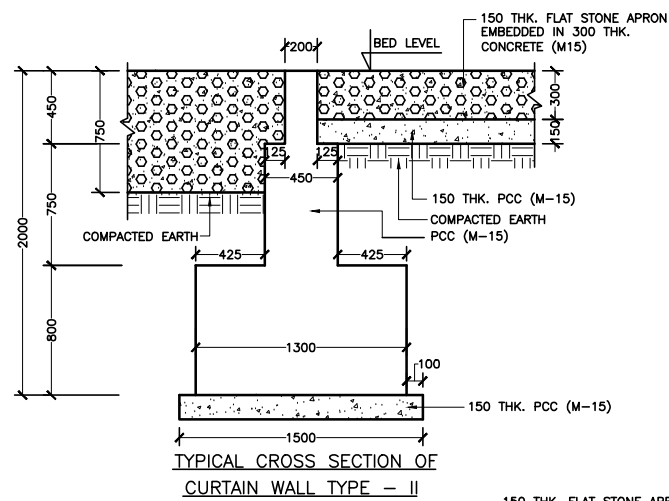
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - PO2B

SCALE :
 N.T.S.

DRAWING TITLE :
UTILITY DUCT+CULVERT (GEN.)
 (SHEET 1 OF 1)
 DWG. NUMBER : OSRP/CEG/SH9/PO2B/EN3/
 REV. R2



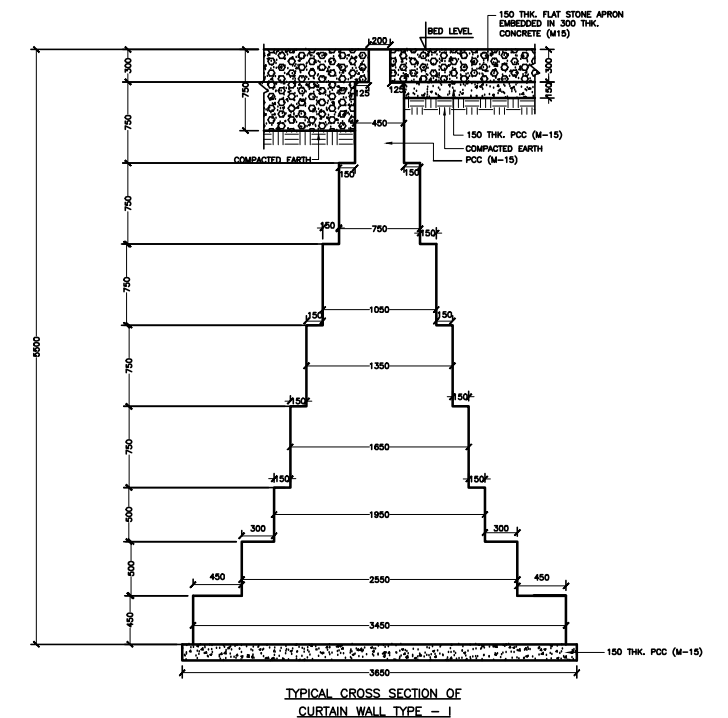
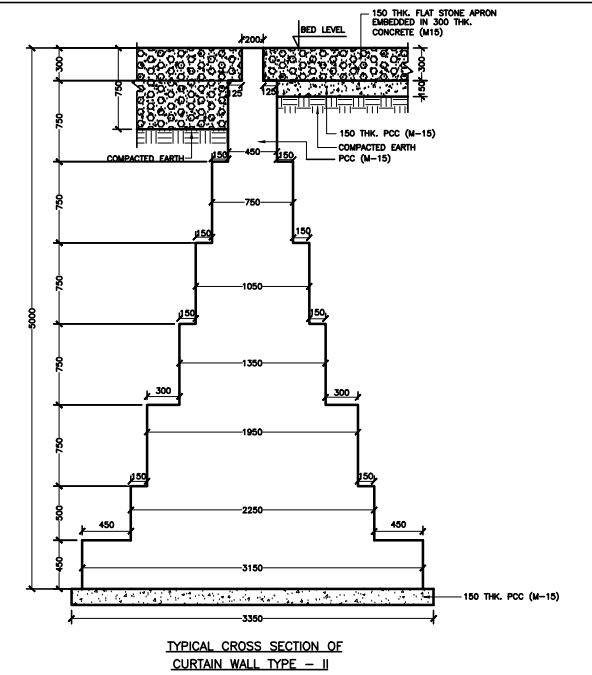
NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.

REFERENCE DRAWING:-

OSRP/CEG/SH-9/BR/FPW/01

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| 1. OSRP/CEG/SH-9/BR/1+005/01 | 13. OSRP/CEG/SH-9/BR/32+100/01 |
| 2. OSRP/CEG/SH-9/BR/1+800/01 | 14. OSRP/CEG/SH-9/BR/33+500/01 |
| 3. OSRP/CEG/SH-9/BR/3+200/01 | 15. OSRP/CEG/SH-9/BR/33+900/01 |
| 4. OSRP/CEG/SH-9/BR/3+900/01 | 16. OSRP/CEG/SH-9/BR/34+700/01 |
| 5. OSRP/CEG/SH-9/BR/6+050/01 | 17. OSRP/CEG/SH-9/BR/36+005/01 |
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| 7. OSRP/CEG/SH-9/BR/9+300/01 | 19. OSRP/CEG/SH-9/BR/42+400/01 |
| 8. OSRP/CEG/SH-9/BR/13+600/01 | 20. OSRP/CEG/SH-9/BR/43+500/01 |
| 9. OSRP/CEG/SH-9/BR/28+100/01 | 21. OSRP/CEG/SH-9/BR/46+700/01 |
| 10. OSRP/CEG/SH-9/BR/28+800/01 | 22. OSRP/CEG/SH-9/TRIPLE CELL/01 |
| 11. OSRP/CEG/SH-9/BR/30+050/01 | 23. OSRP/CEG/SH-9/TRIPLE BOX/01 |
| 12. OSRP/CEG/SH-9/BR/30+200/01 | |



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)

DPR CONSULTANT :
CEG
 CONSULTING ENGINEERS GROUP LTD.
 E-12, MOJI COLONY, MALVIYA NAGAR
 JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: +91-141-2520899

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

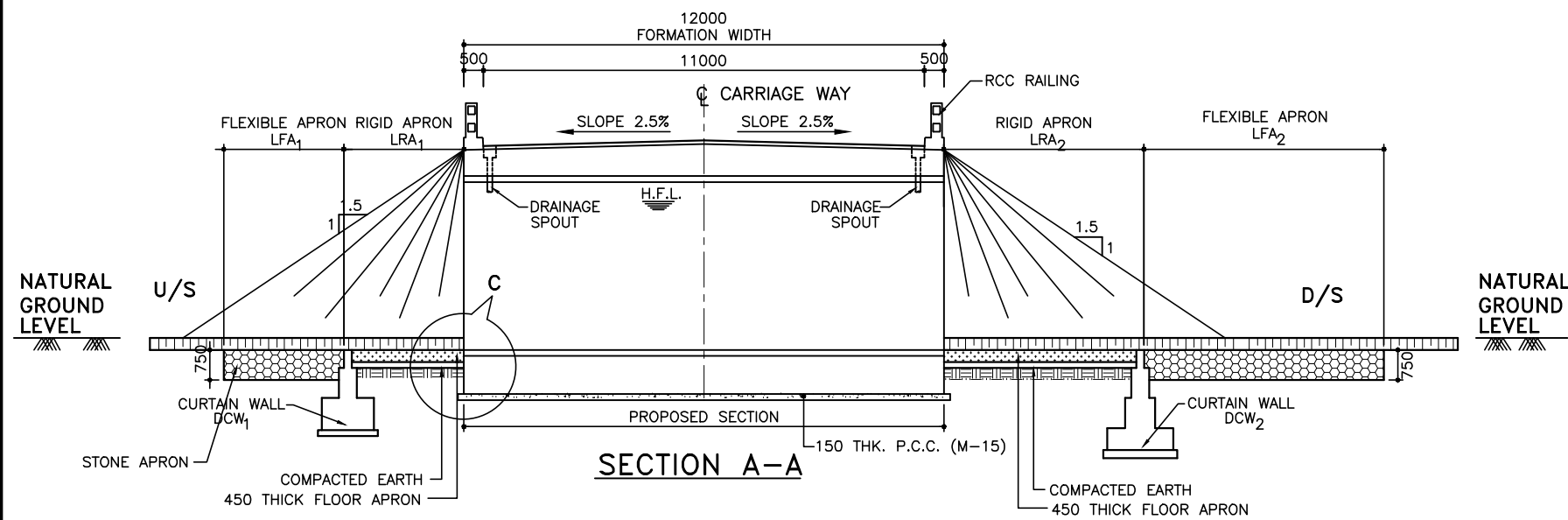
CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL SECTIONS OF CURTAIN WALL
 (SHEET 1 OF 2)
 DWG. NUMBER : OSRP/CEG/P02B/STR/

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:	2521348, e-mail: ceg@ceindia.com	DELHI-110044	REV: R2
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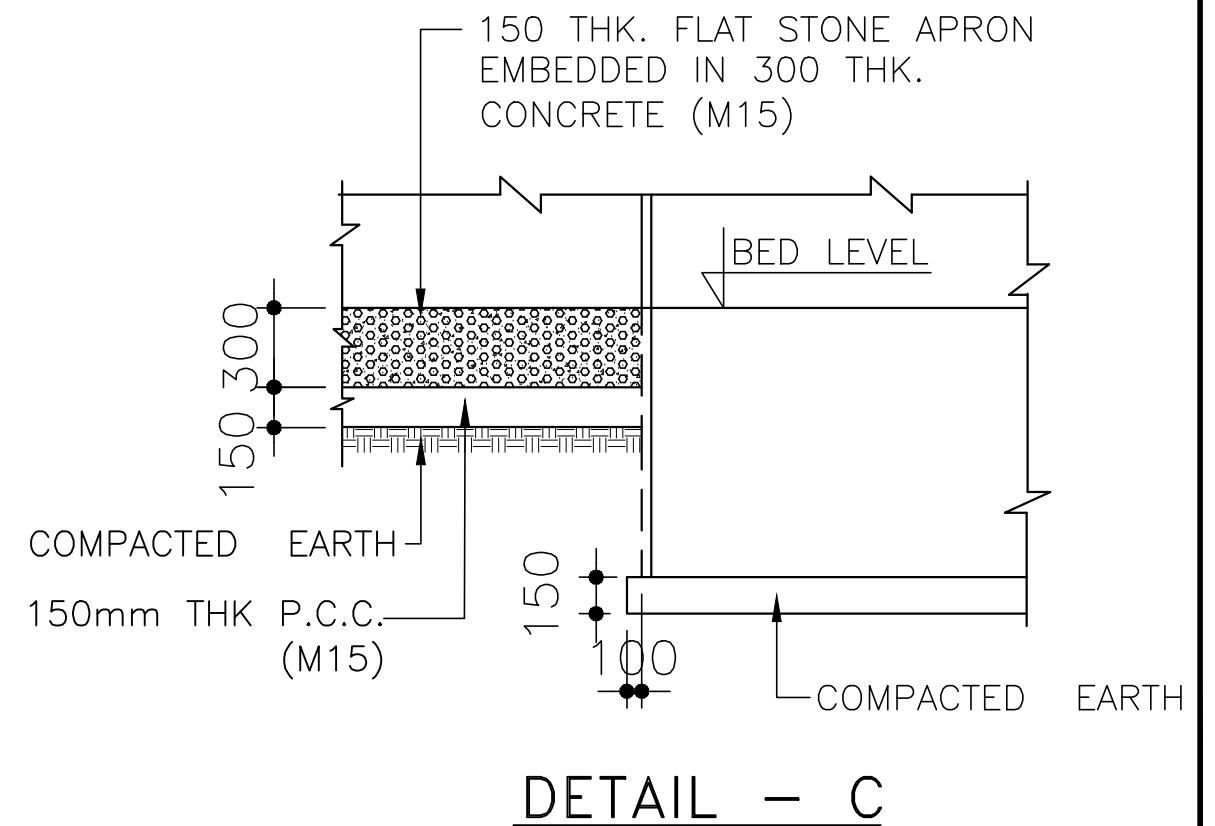
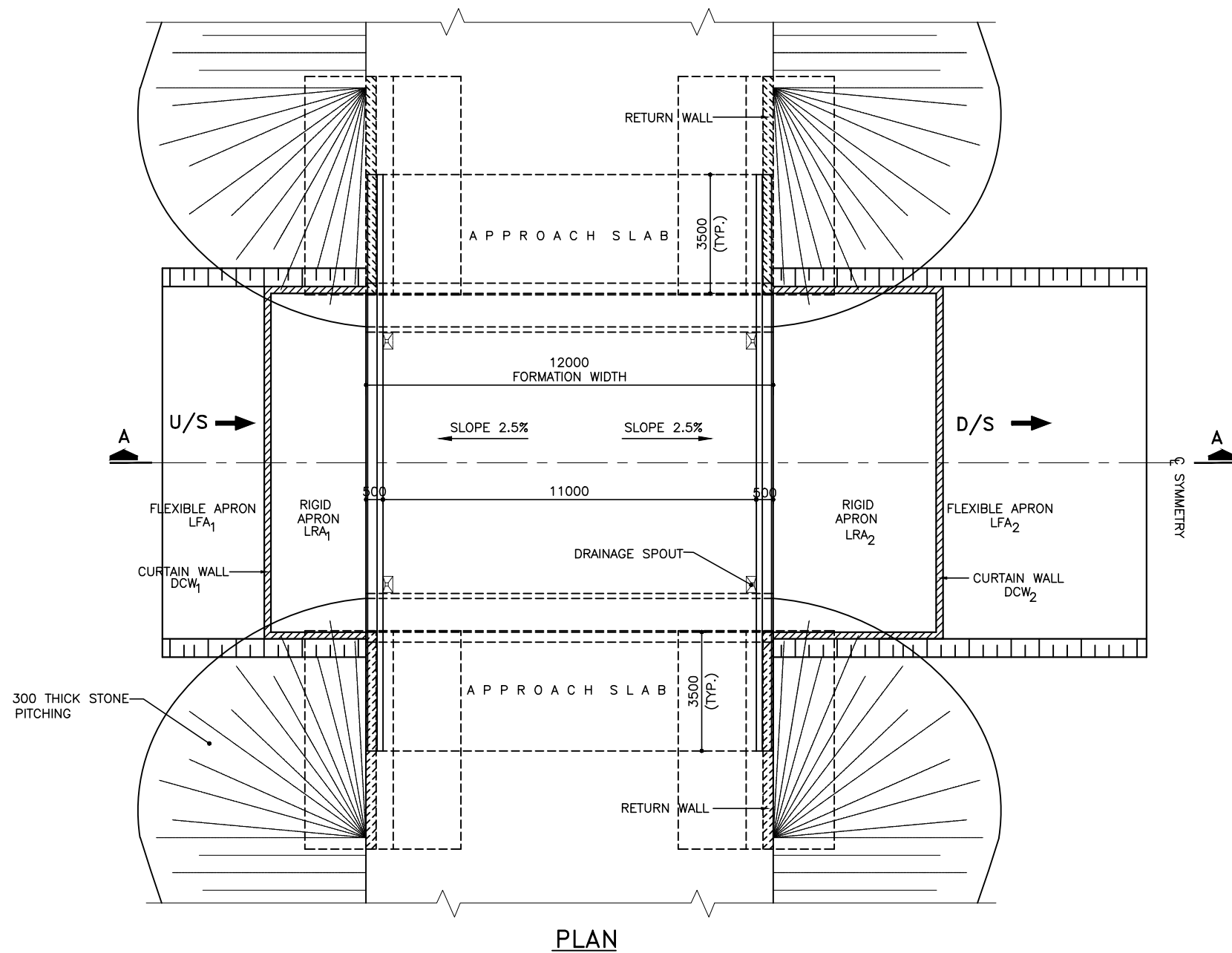


NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. THE LENGTHS OF RIGID AND FLEXIBLE APRONS SHALL BE AS PER AVAILABILITY OF LAND AND DECISION OF THE ENGINEER.

REFERENCE DRAWING:-

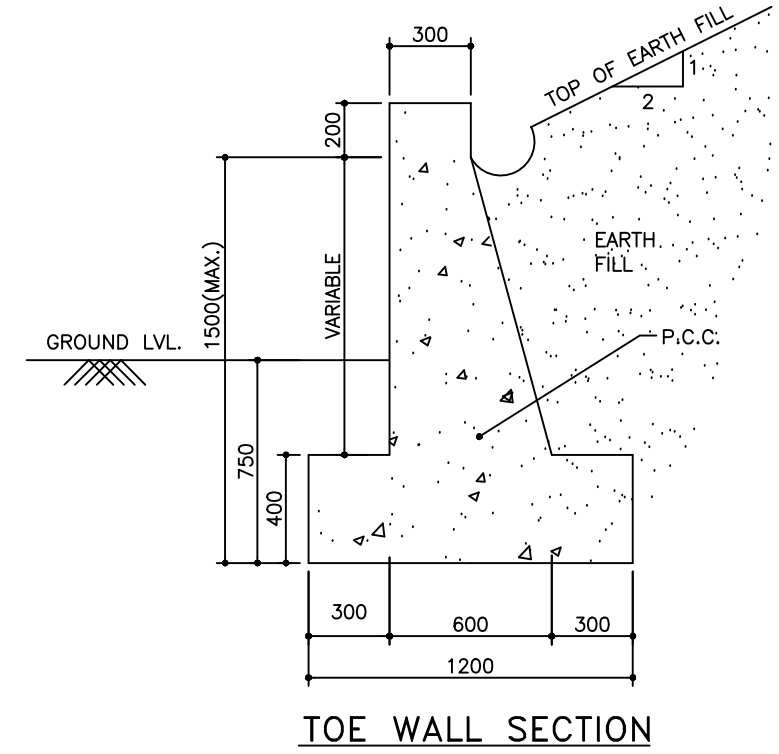
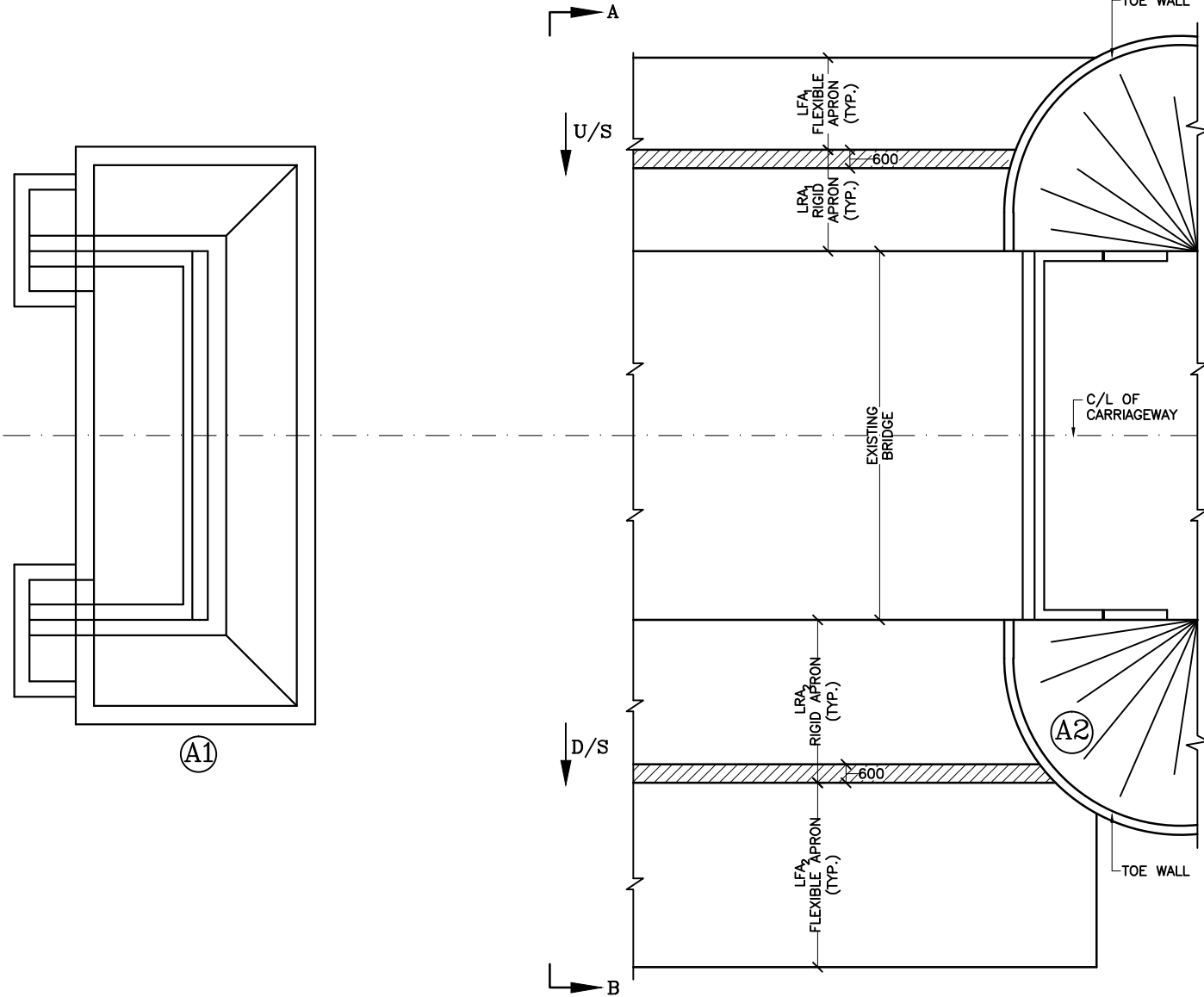
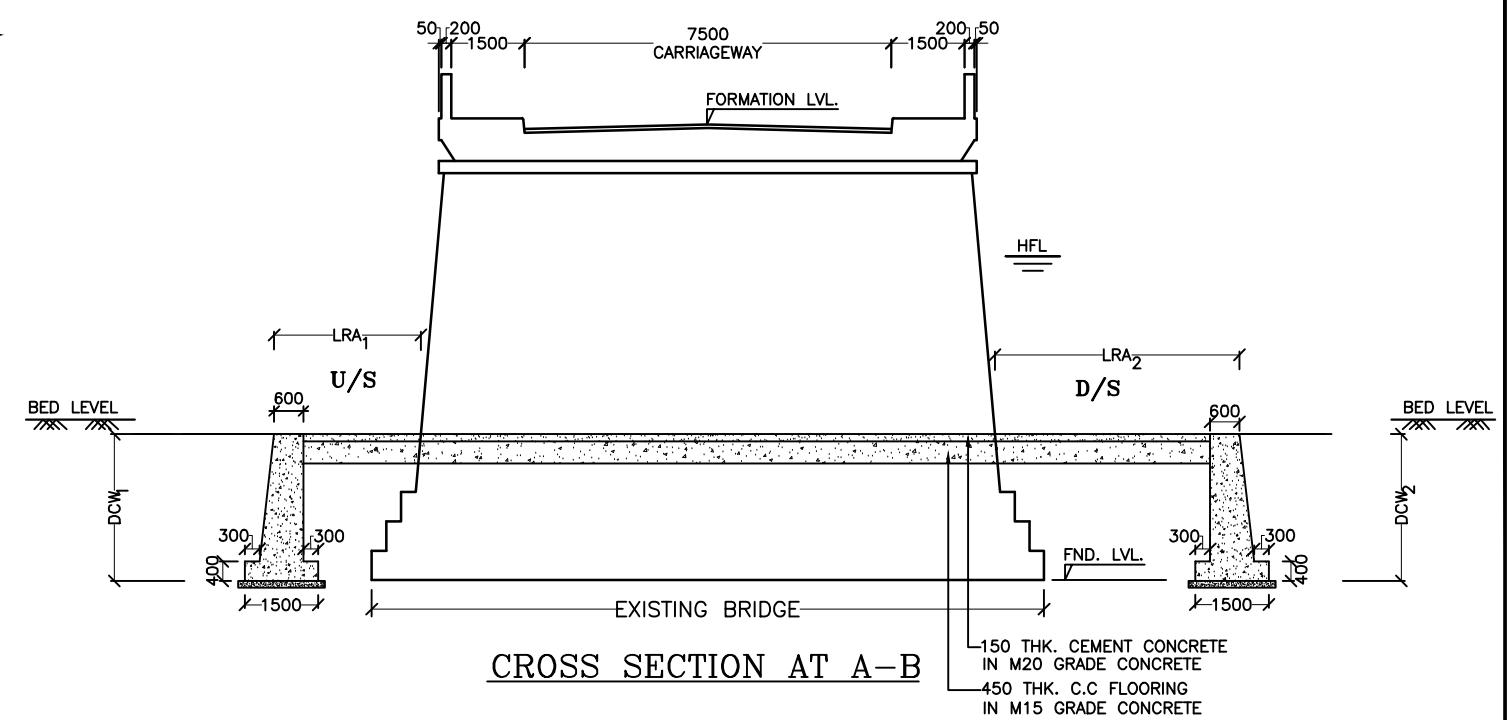
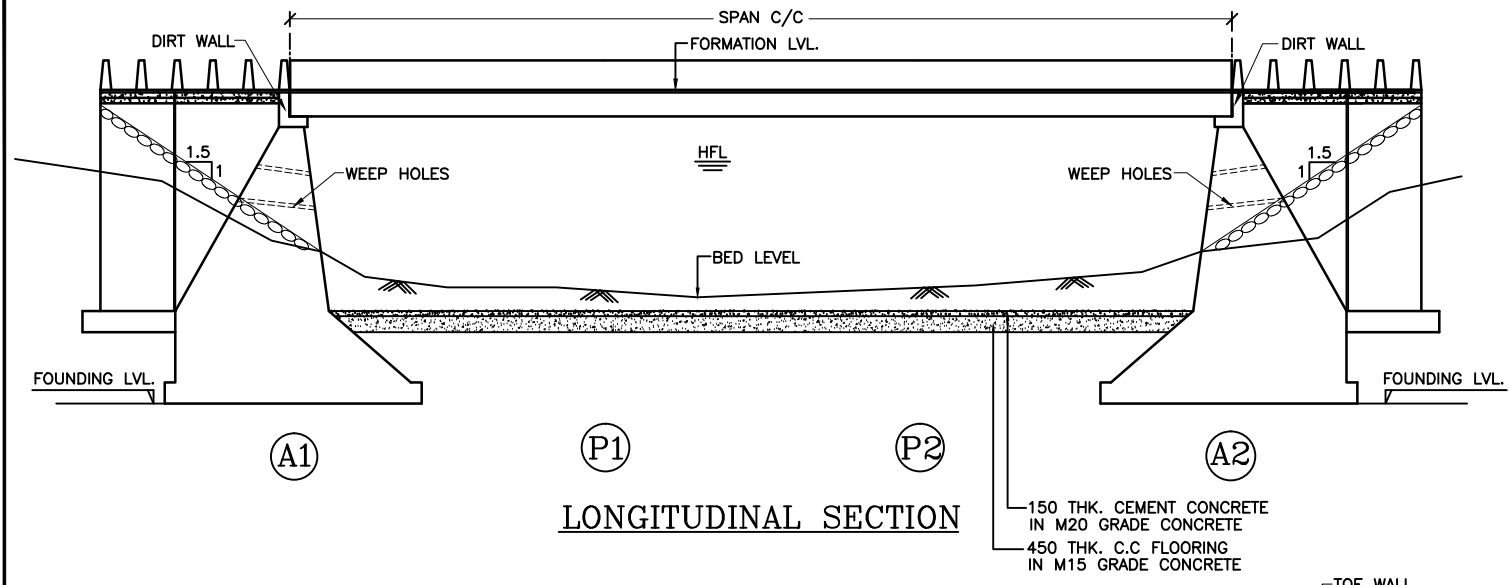
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|--------------------------------|----------------------------------|
| 1. OSRP/CEG/SH-9/BR/1+005/01 | 13. OSRP/CEG/SH-9/BR/32+100/01 |
| 2. OSRP/CEG/SH-9/BR/1+800/01 | 14. OSRP/CEG/SH-9/BR/33+500/01 |
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| 4. OSRP/CEG/SH-9/BR/3+900/01 | 16. OSRP/CEG/SH-9/BR/34+700/01 |
| 5. OSRP/CEG/SH-9/BR/6+050/01 | 17. OSRP/CEG/SH-9/BR/36+005/01 |
| 6. OSRP/CEG/SH-9/BR/9+200/01 | 18. OSRP/CEG/SH-9/BR/38+100/01 |
| 7. OSRP/CEG/SH-9/BR/9+300/01 | 19. OSRP/CEG/SH-9/BR/42+400/01 |
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| 11. OSRP/CEG/SH-9/BR/30+050/01 | 23. OSRP/CEG/SH-9/TRIPLE BOX/01 |
| 12. OSRP/CEG/SH-9/BR/30+200/01 | |



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	DPR CONSULTANT :	CONSULTING ENGINEERS GROUP LTD.	CEG	DESIGN REVIEW CONSULTANT :	LEA	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :		
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	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, 1 st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B	N.T.S	TYPICAL DETAILS OF FLOOR PROTECTION WORK				
-	JUNE 2008	ORIGINAL	CEG												(SHEET 1 OF 2)		
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:								DWG. NUMBER :	OSRP/CEG/P02B/STR/	REV: R2

TO BHADARK

TO CHANDBALI



NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@ceindia.com

DESIGN REVIEW CONSULTANT :

LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st 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 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

DRAWING TITLE :

TYPICAL DETAILS OF FLOOR PROTECTION WORK (SHEET 1 OF 1)

DWG. NUMBER : OSRP/CEG/SH9/P02B/FPW/1

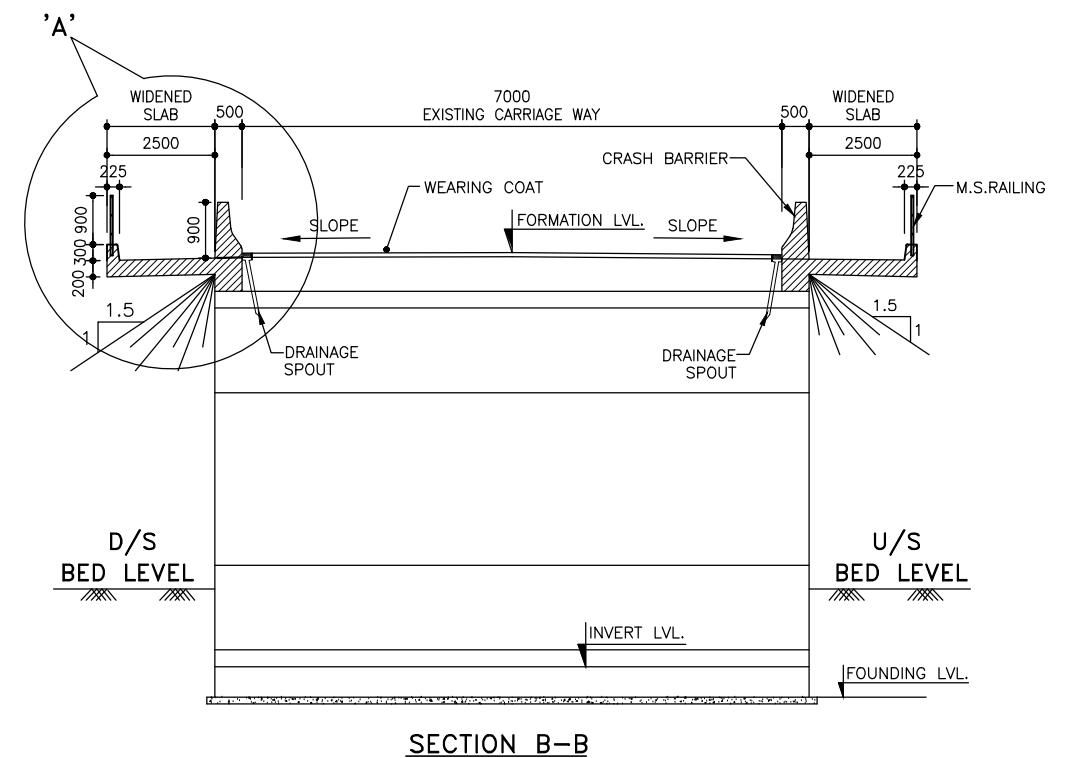
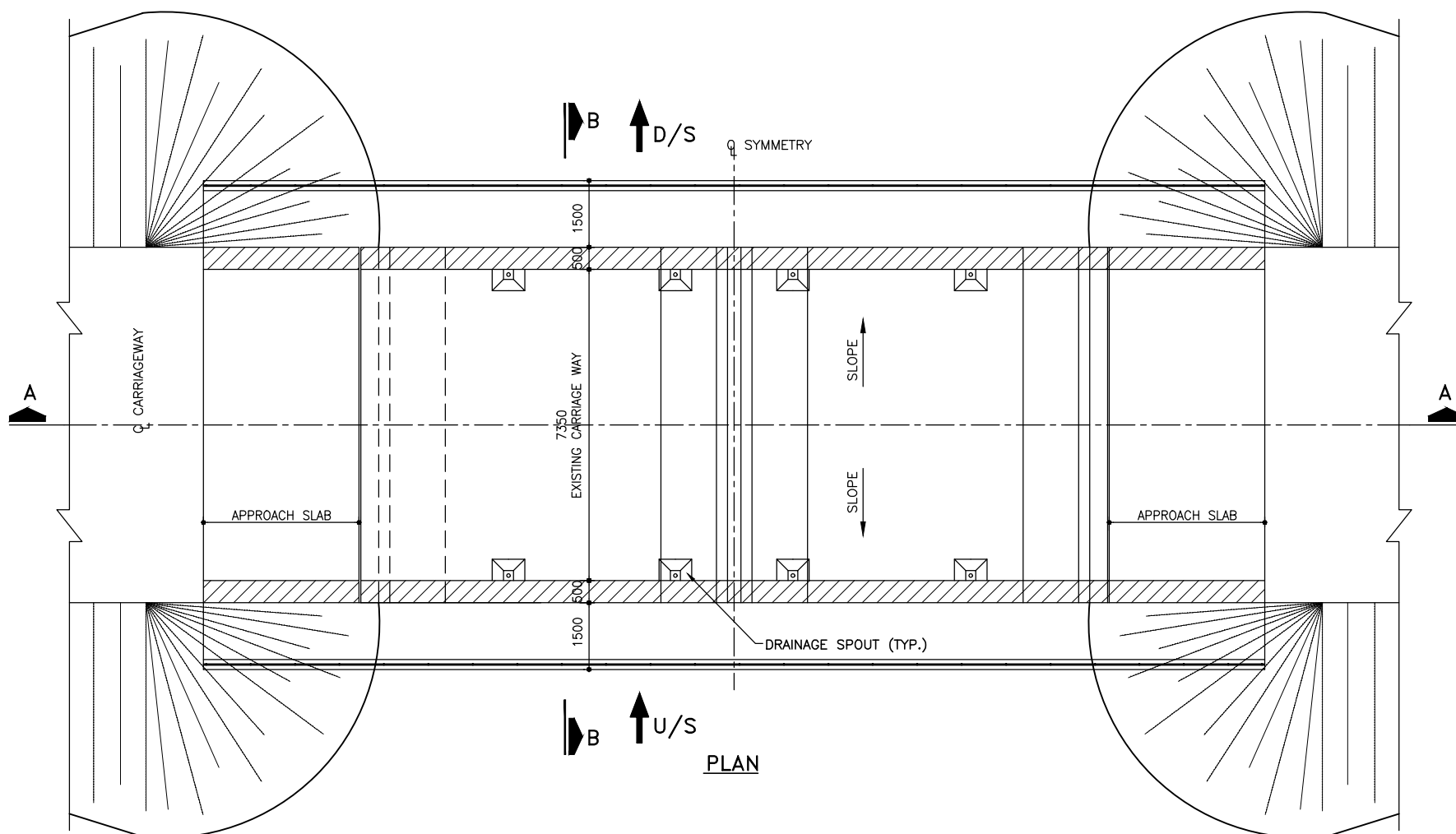
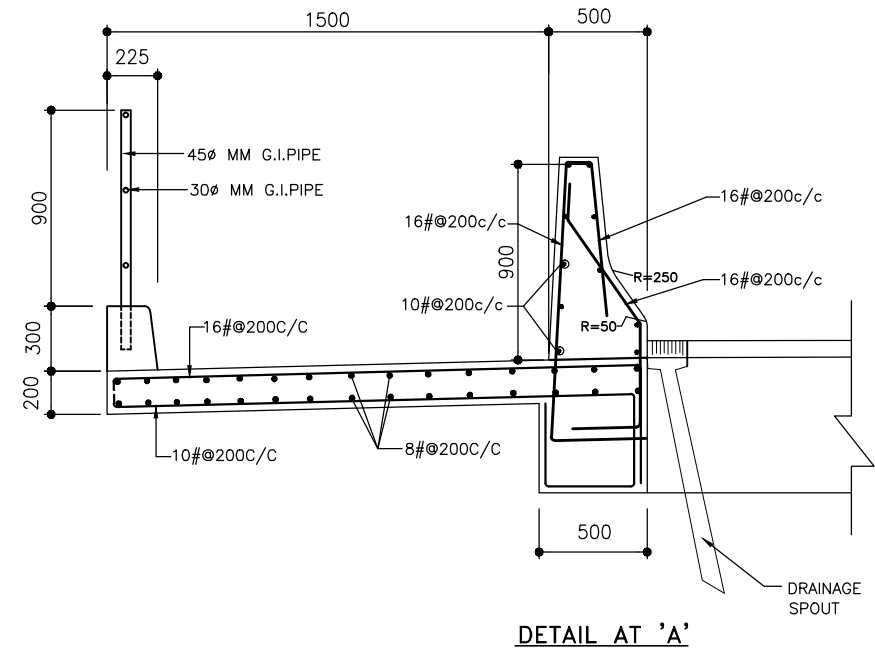
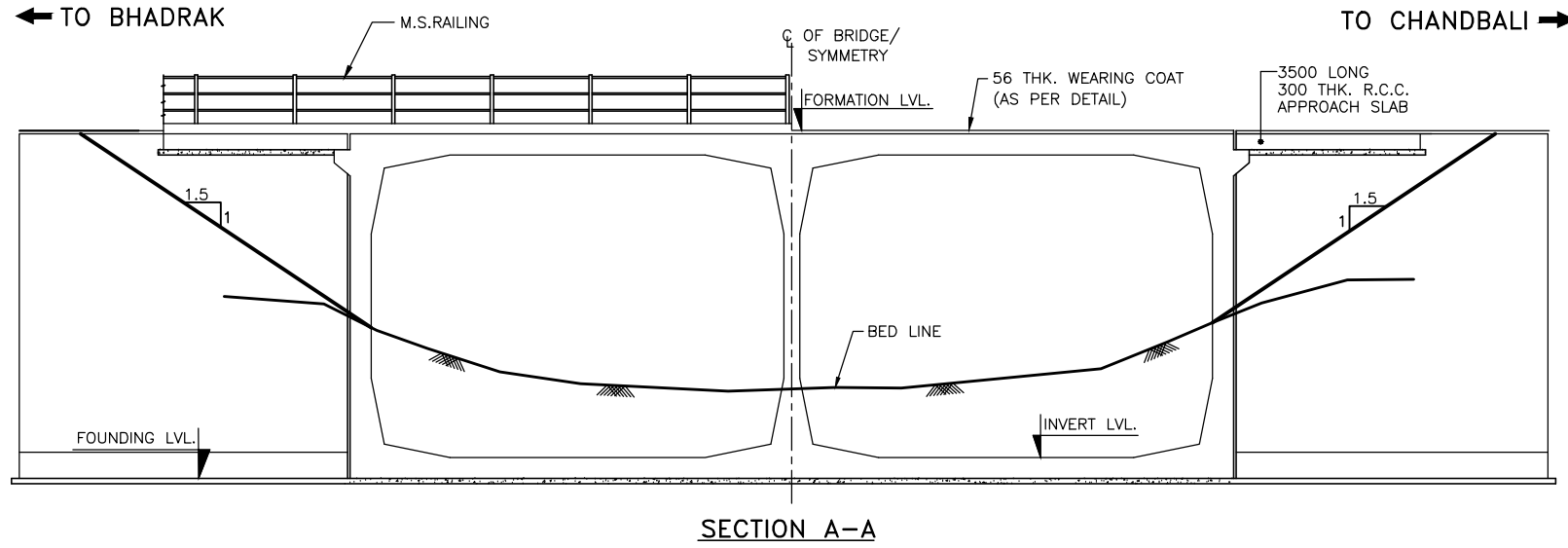
REV. R2

NOTES:

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METERS.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. GRADE OF CONCRETE:-
 SLAB - M-20
 CRASH BARRIER - M-40

REFERENCE DRAWINGS

1. OSRP/CEG/SH-9/BR/30+200/01



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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

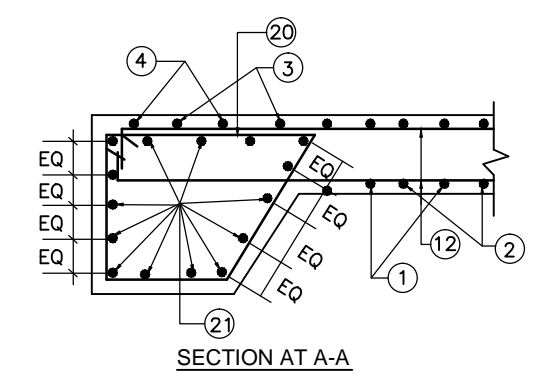
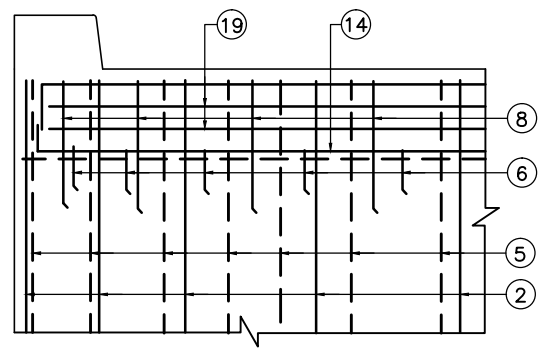
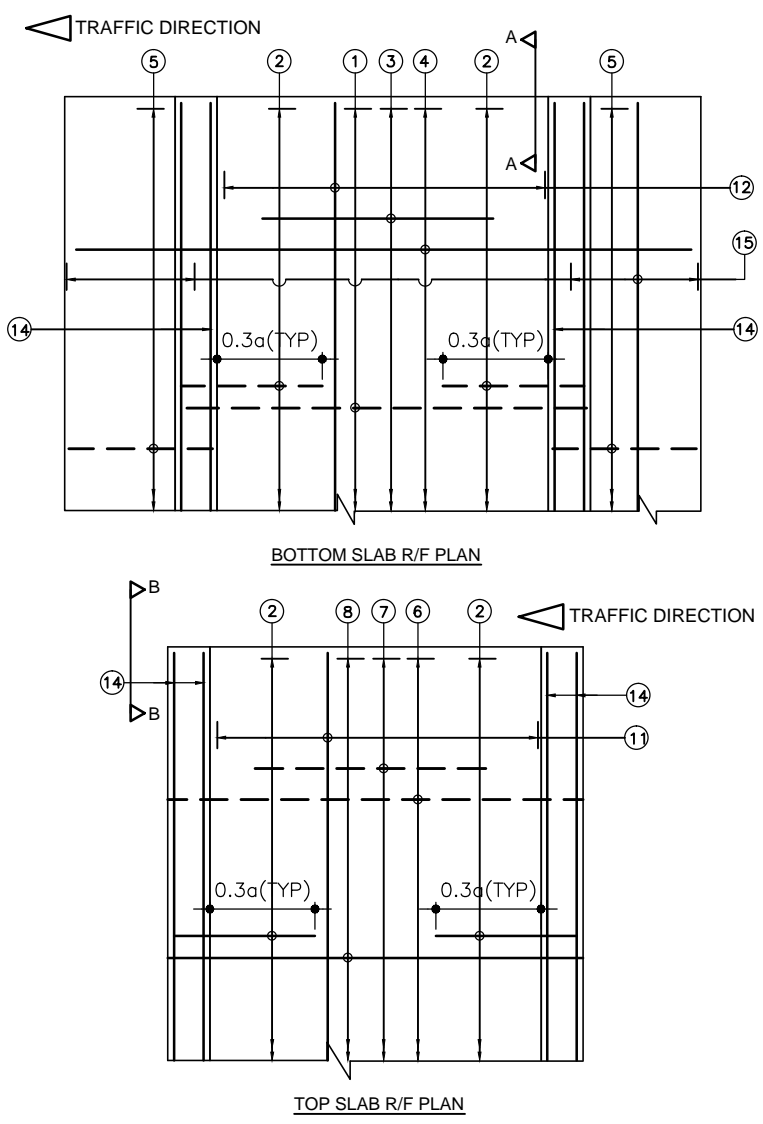
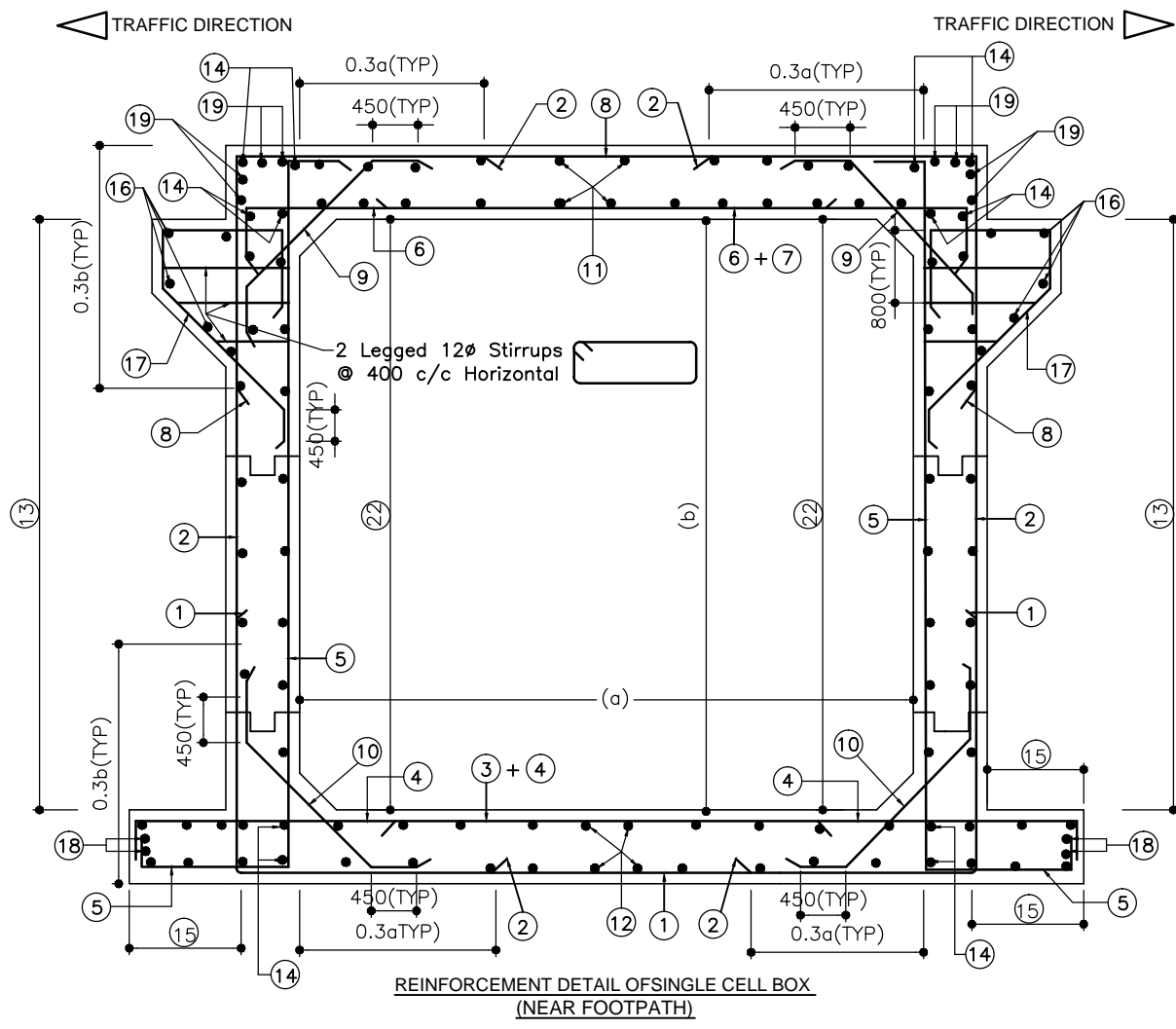
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, 11nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
GENERAL ARRANGEMENT DRAWING BRIDGE AT KM. 30+200
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 (SHEET 1 OF 2)
 REV. R2



LEGEND :-
 ——— TOP FACE BARS/OUTER FACE BARS.
 - - - - - BOTTOM FACE BARS/INNER FACE BARS.

REINFORCEMENT DETAIL OF SINGLE CELL BOX

BAR MARK	BAR SHAPE	1/22/0		1/23/0		1/33/0		1/34/0		1/43/0		1/44/0		1/45/0		1/63/0		1/64/0	
		BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING	BAR DIA.	SPACING
1	[Symbol]	10	250	16	225	10	200	12	225	10	200	12	200	10	200	16	200	20	200
2	[Symbol]	16	250	16	225	16	200	16	225	20	200	20	200	20	200	20	200	20	200
3	[Symbol]	-	-	-	-	12	200	12	225	12	200	12	200	12	200	20	200	20	200
4	[Symbol]	16	250	16	250	16	200	16	225	16	200	16	200	16	200	12	200	16	200
5	[Symbol]	16	250	16	175	12	150	16	175	12	175	12	150	12	150	12	150	12	150
6	[Symbol]	16	250	16	250	16	200	16	225	16	200	16	200	20	200	16	200	20	200
7	[Symbol]	-	-	-	-	-	-	-	-	8	200	8	200	12	200	16	200	16	200
8	[Symbol]	10	250	16	225	10	225	16	225	10	200	16	200	12	200	16	200	16	200
9	[Symbol]	10	250	10	250	10	225	10	225	10	200	10	200	10	200	10	200	10	200
10	[Symbol]	12	250	12	250	10	225	10	225	10	200	10	200	12	200	10	200	10	200
11	[Symbol]	10	250	10	250	10	225	10	225	10	200	10	200	10	200	10	150	10	150
12	[Symbol]	10	250	12	150	12	225	12	225	12	200	12	200	12	175	10	125	12	125
13	[Symbol]	10	250	10	250	12	225	12	225	12	200	12	200	12	200	10	125	10	125
14	[Symbol]	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-
15	[Symbol]	10	250	12	250	10	225	12	225	10	200	10	200	10	200	10	150	10	150
16	[Symbol]	12	-	12	-	12	-	12	-	12	-	12	-	12	-	12	-	12	-
17	[Symbol]	12	250	12	250	12	225	12	225	12	200	12	200	12	200	12	200	12	200
18	[Symbol]	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-
19	[Symbol]	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-
20	[Symbol]	10	150	10	150	10	150	10	150	10	150	10	150	10	150	10	150	10	150
21	[Symbol]	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-	10	-
22	[Symbol]	10	250	10	250	10	250	10	250	10	250	10	230	10	200	10	180	10	170

- NOTES :-**
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRG.NO.OSRP/CEG/SH-16/ BOX CUL-01
 - MINIMUM CLEAR COVER TO MAIN REINFORCEMENT SHALL BE 50mm.
 - MINIMUM LAP LENGTH OF REINFORCEMENT SHALL BE KEPT AS 83 D WHERE D IS THE DIAMETER THE BAR, NOT MORE THAN 50% SHALL BE LAPPED AT ANY ONE LOCATION.
 - LINK SHOULD GO ROUND MAIN BAR AND CONTINUE ALONG BARREL.
 - LINK SHALL BE STARTED AT DISTANCE OF HALF THEIR SPACING FROM THE FACE OF SUPPORT.
 - MAXIMUM SIZE OF AGGREGATE TO BE USED IN RCC IS 20mm.
 - GRADE OF CONCRETE M-25.
 - ALL REINFORCEMENT BARS SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe 500 CONFIRMING TO IS:1786-1985 WITH A MINIMUM YIELD STRENGTH OF 415 N/mm²
 - JOINT OR LAPPING OF BARS SHALL BE SUITABLY STAGGTRED AS PER CLAUSE 304.6 OF IRC:21-2000.

REFERENCE DRAWING:-
 1. OSRP/CEG/SH-9/ BOX CUL-01

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@cegroup.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 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

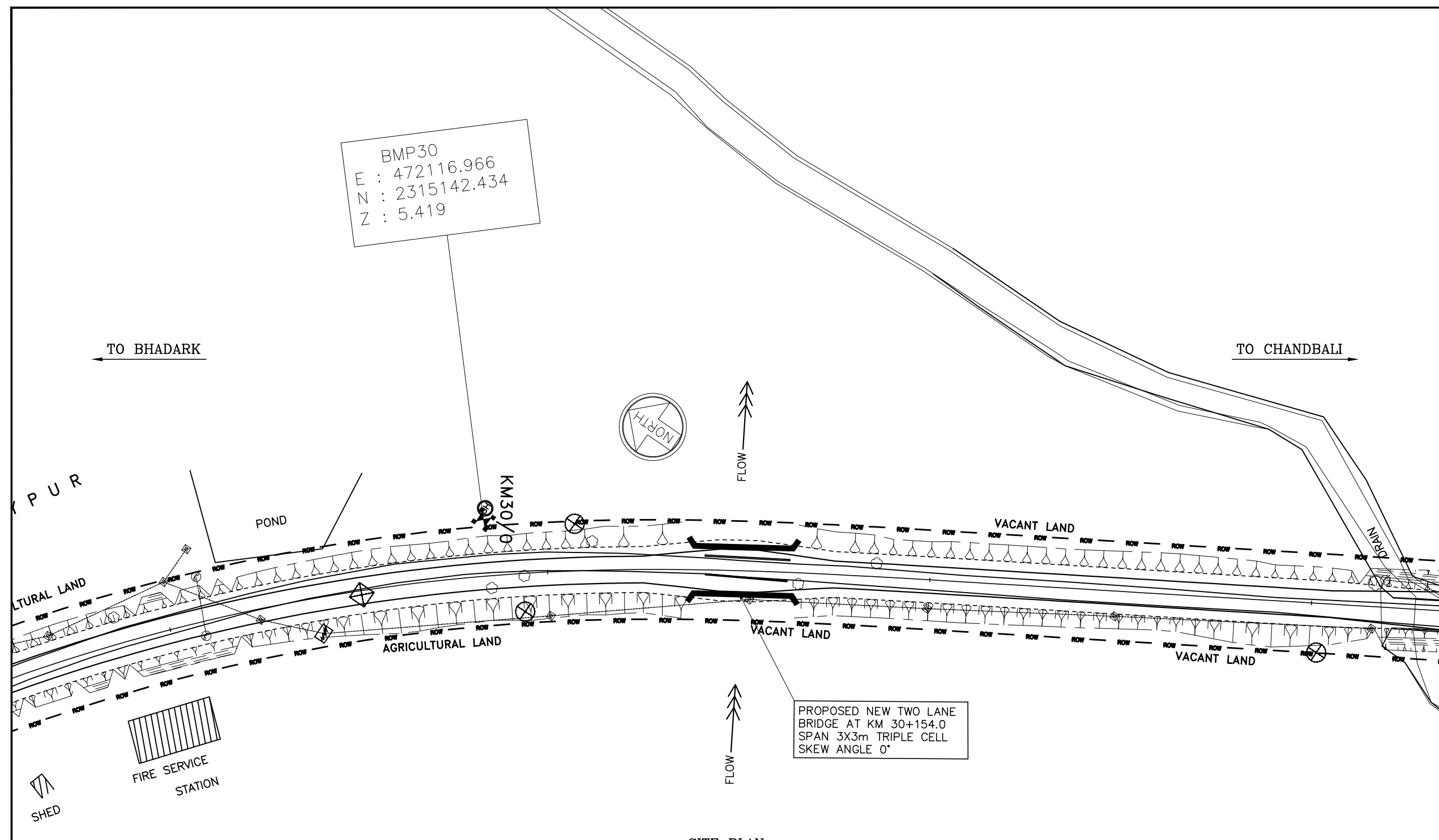
DRAWING TITLE :
REINFORCEMENT DETAIL OF SINGLE CELL BOX SINGLE CELL R.C.C. BOX CULVERT

DWG. NUMBER : OSRP/CEG/P02B/STR/ 3

(SHEET 1 OF 3)

REV. R2

NOTES:-



PROPOSED NEW TWO LANE
BRIDGE AT KM 30+154.0
SPAN 3X3m TRIPLE CELL
SKEW ANGLE 0°

SITE PLAN

R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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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 JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegindia.com

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

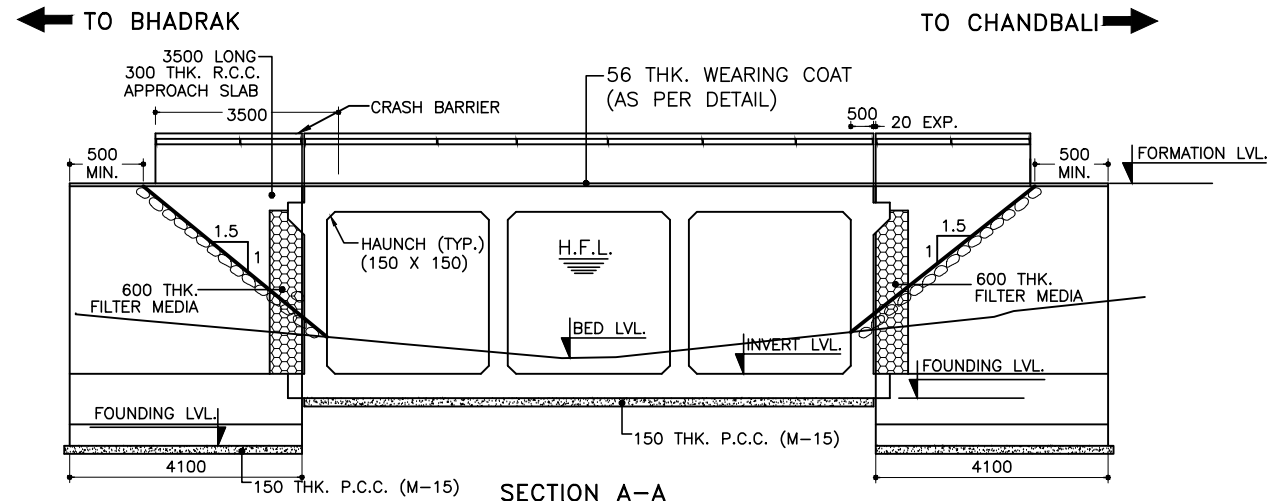
CLIENT

ODISHA WORKS DEPARTMENT

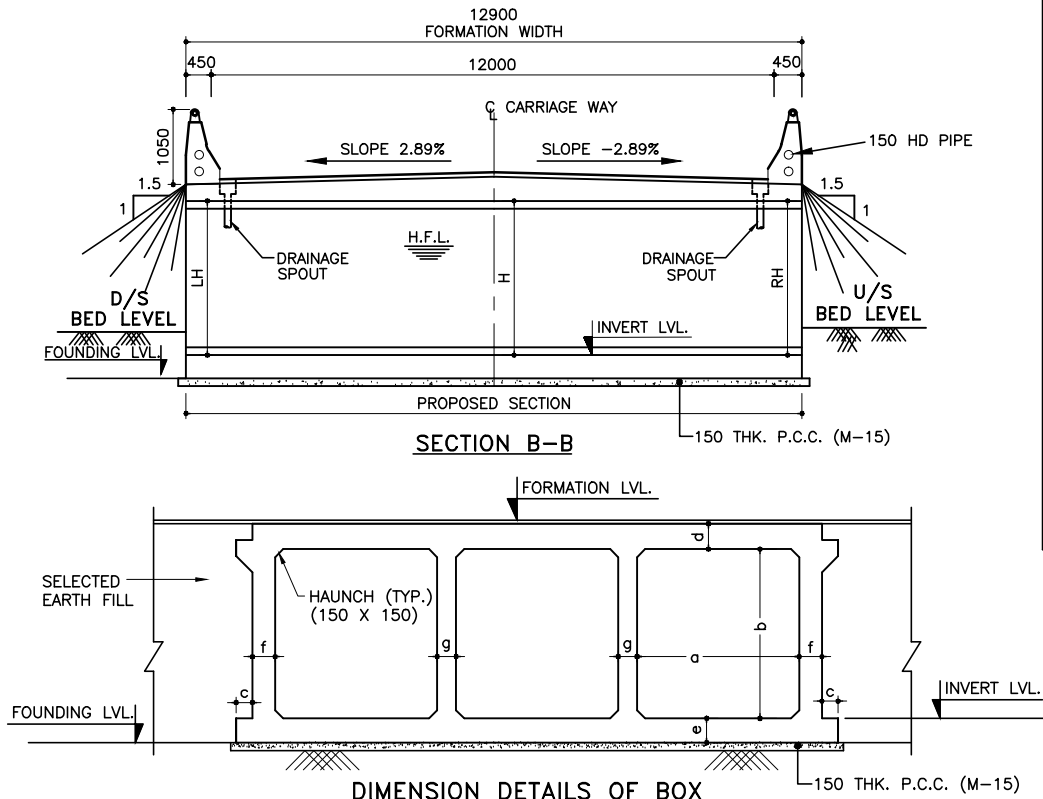
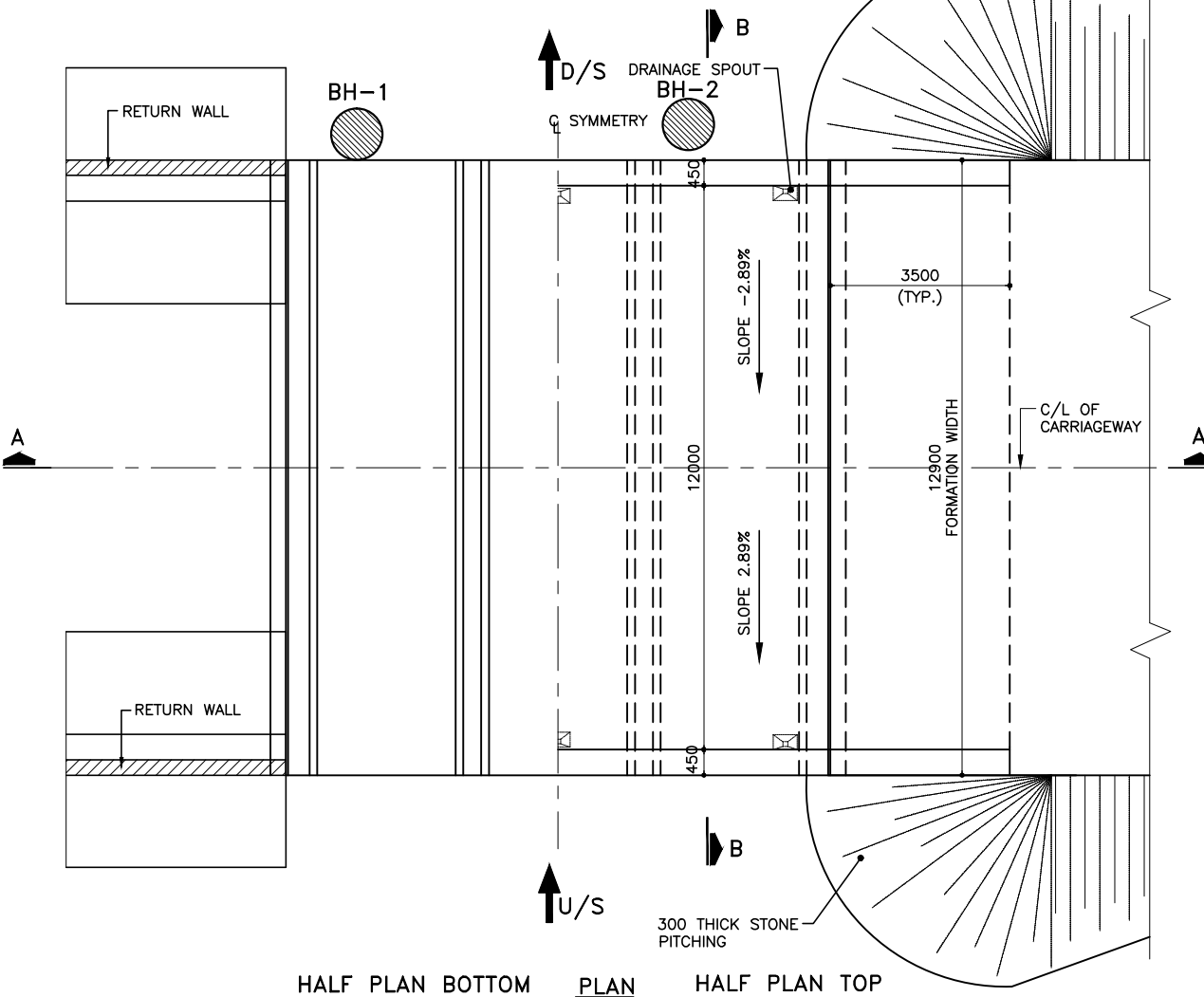
PROJECT :
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 SITE PLAN BRIDGE AT PROPOSED CH. 30+154 (GADI GHUSURA)
 (SHEET 1 OF 3)
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 REV. R2



FORMATION LEVEL (m)	7.700	7.700	7.700
BED LEVEL (m)	5.330	4.753	5.433
CHAINAGE (m)	30+148.63	30+154.0	30+159.37



DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	THICKNESS c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	THICKNESS g (mm)	BEARING CAPACITY
3/33/0	3000	3000	300	450	500	470	400	10 T/M ²

BOX TYPE	EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
								LH (m)	H (m)	RH (m)	
3/33/0	30+050	30+154.0	7.700	6.599	4.753	4.453	3.953	2.914	2.741	2.568	R TO L

HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
36.64	2.723	3.0	3.5	3.0	5.0	4.5	6.0

NOTE:

SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

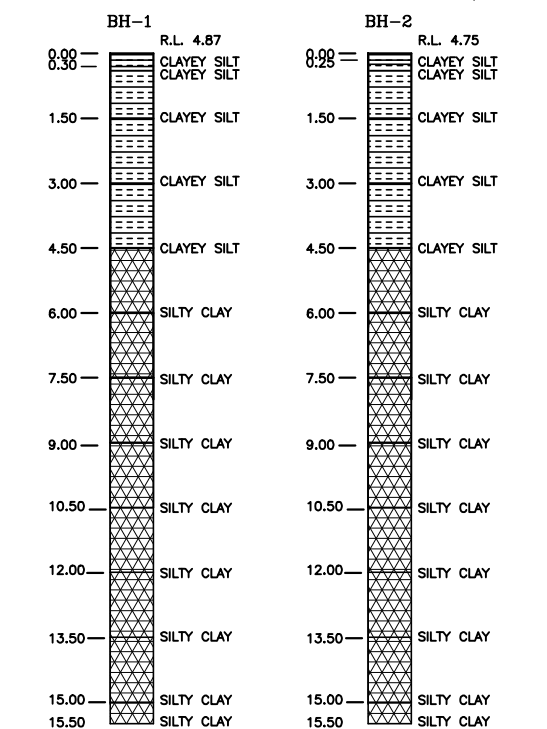
NOTES:

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE CRS Fe500D AS PER IS-1786
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- SITE PLAN ON SEPERATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/106, SD/112 (SHEET 1 OF 2), SD/112 (SHEET 2 OF 2).
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115 (SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4), (SHEET 4 OF 4) & SD/111.
- OSRP/CEG/SH-9/BR/30+050/02
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/BR/MISC-02

LOCATION PLAN OF BORE HOLE AT BRIDGE NO.30/050



NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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:
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2521348, e-mail: ceg@cegroupindia.com

DESIGN REVIEW CONSULTANT :

LEA

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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

DRAWING TITLE :

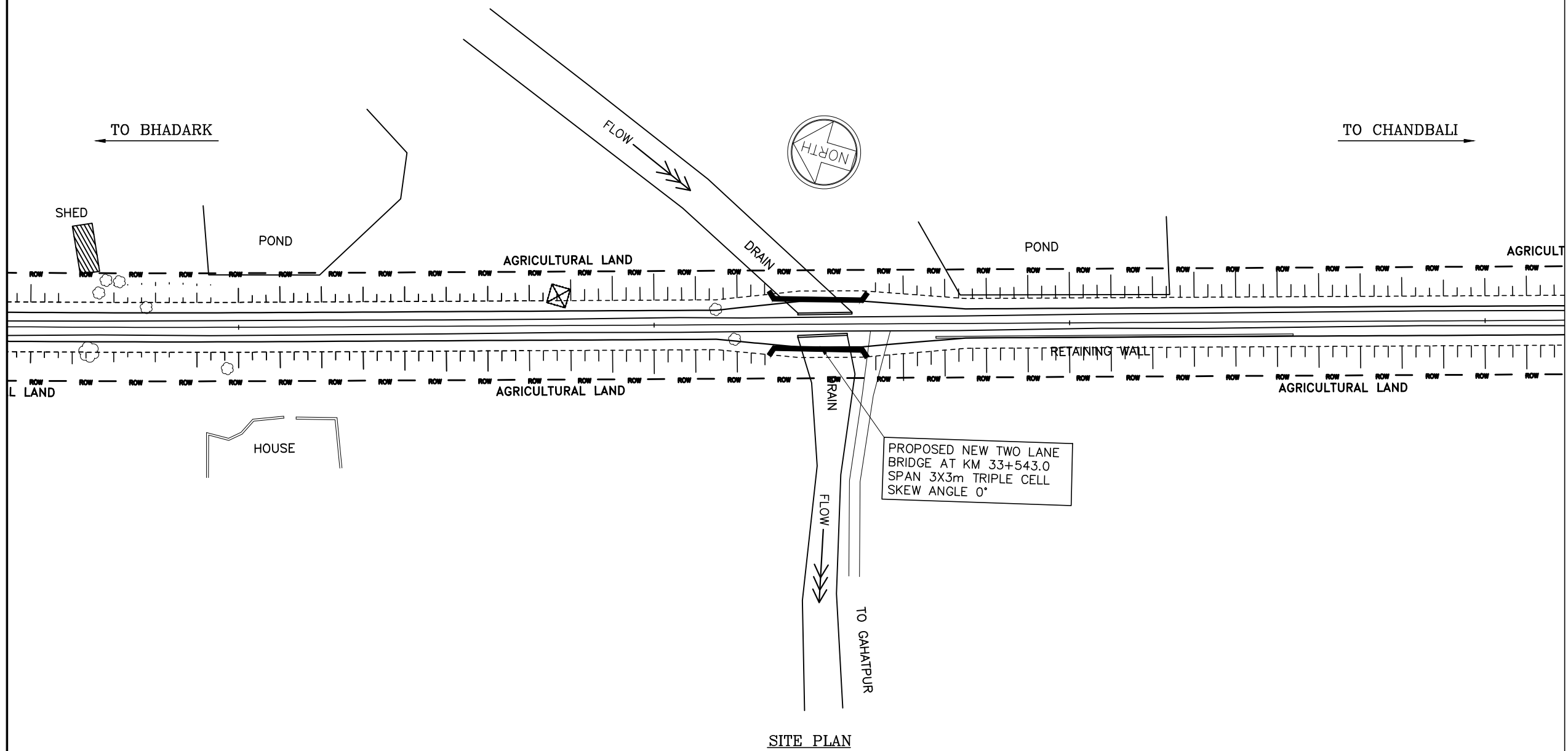
GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 30+154 (GADI GHUSURA)

(SHEET 1 OF 3)

DWG. NUMBER : OSRP/CEG/P02B/STR/3

REV. R2

NOTES:-



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-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 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceindia.com

DESIGN REVIEW CONSULTANT :

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CLIENT

ODISHA WORKS DEPARTMENT

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WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

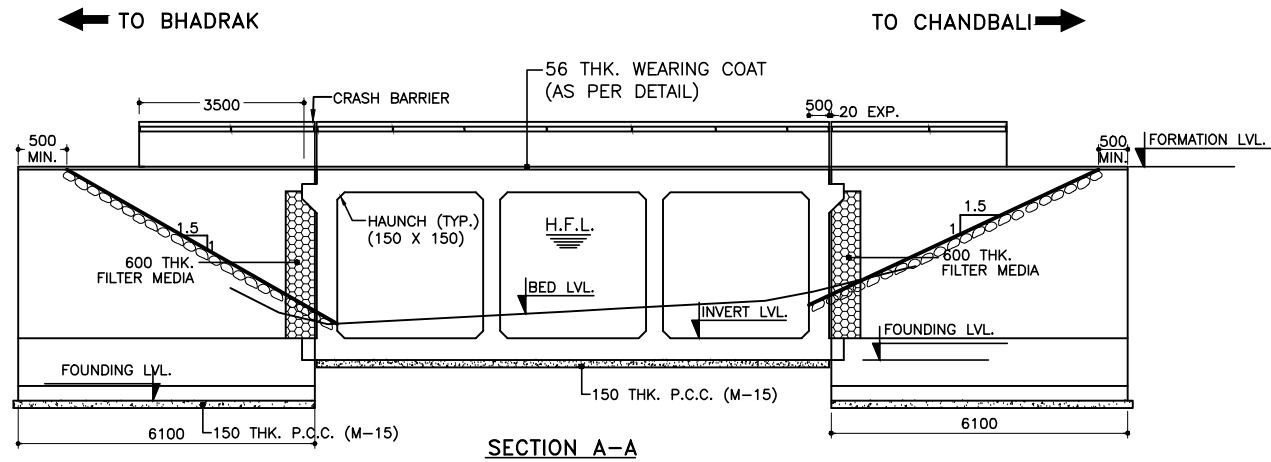
DRAWING TITLE :

SITE PLAN BRIDGE AT PROPOSED CH. 33+543

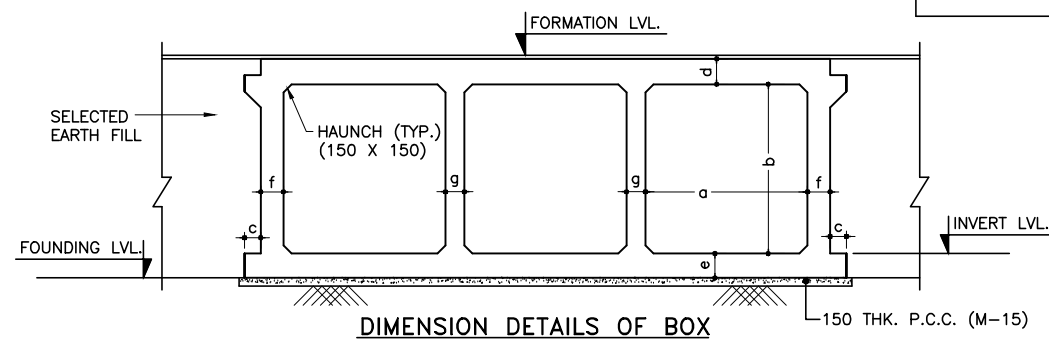
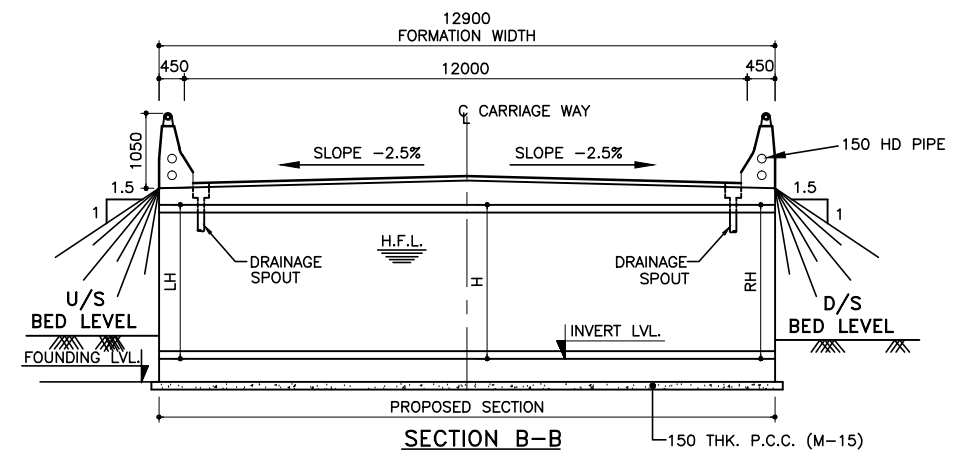
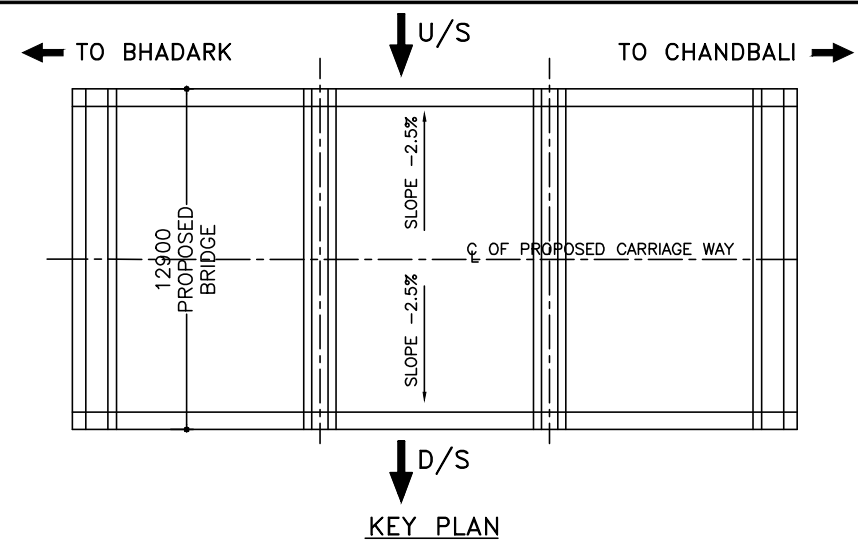
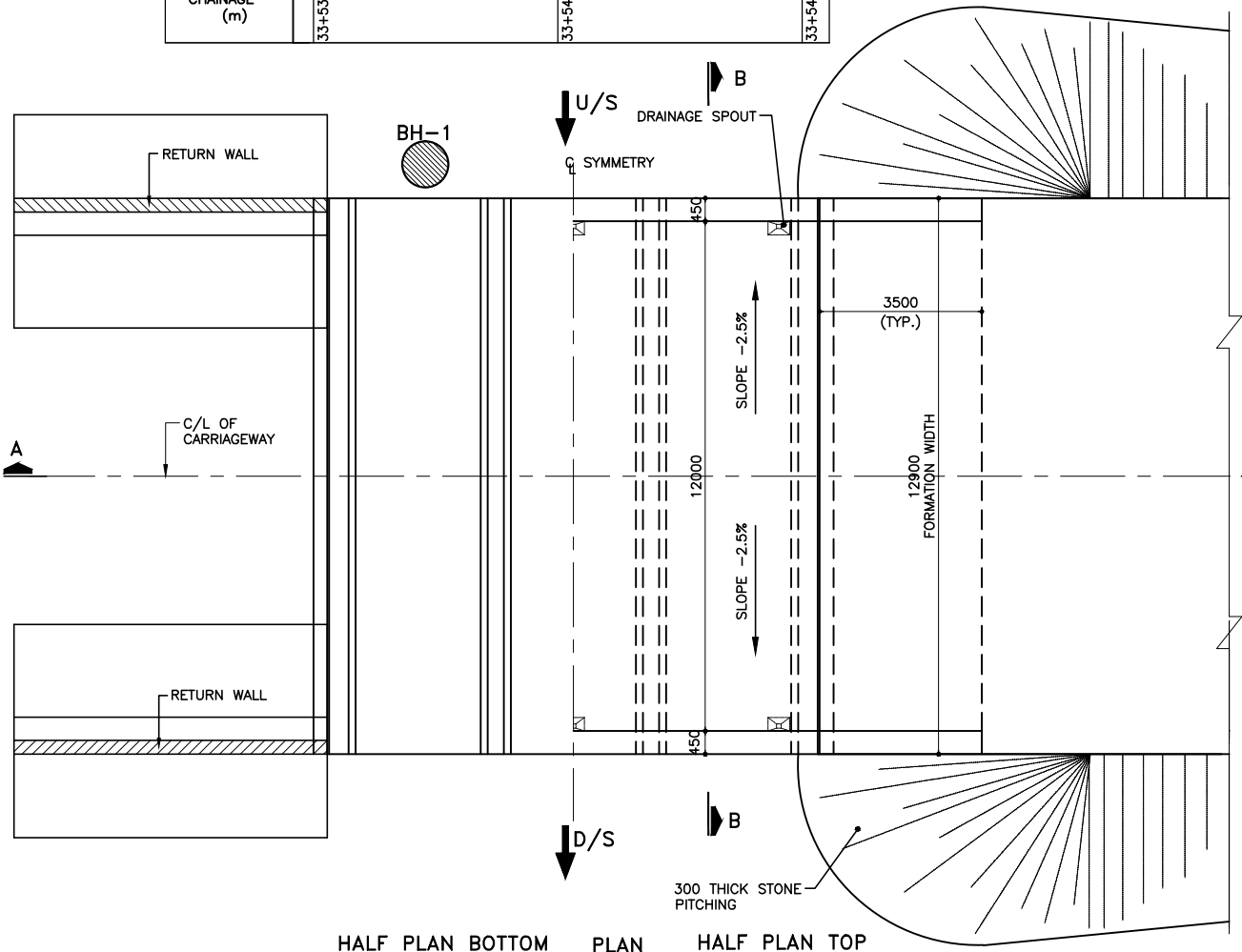
(SHEET 1 OF 3)

DWG. NUMBER : OSRP/CEG/P02B/STR/3

REV. R2



FORMATION LEVEL (m)	8.300	8.300	8.300
BED LEVEL (m)	4.570	4.860	5.053
CHAINAGE (m)	33+537.63	33+543.0	33+548.37



DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	THICKNESS g (mm)	BEARING CAPACITY
3/33/0	3000	3000	300	450	500	470	400	10 T/M ²

BOX TYPE	EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
								LH (m)	H (m)	RH (m)	
3/33/0	33+500	33+543	8.300	7.043	4.860	4.560	4.060	3.084	3.234	3.084	L TO R

HYDROLOGICAL DATA

Design Discharge in (cum)/sec	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
5.22	4.748	2.0	2.5	3.0	5.0	3.0	6.0

NOTE:
SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

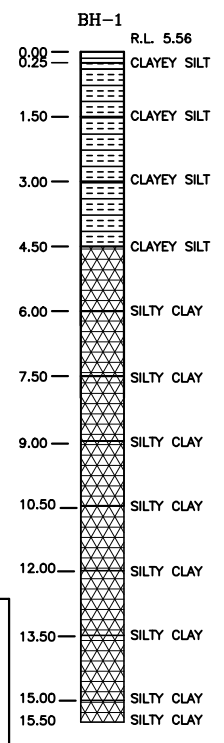
NOTES:

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE CRS Fe500D AS PER IS-1786
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- SITE PLAN ON SEPERATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/106, SD/112 (SHEET 1 OF 2), SD/112 (SHEET 2 OF 2).
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115(SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4), (SHEET 4 OF 4) & SD/111.
- OSRP/CEG/SH-9/BR/33+500/02
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/BR/MISC-02

LOCATION PLAN OF BORE HOLE AT BRIDGE NO.33/500



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K. PRADHAN (CE)
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
LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

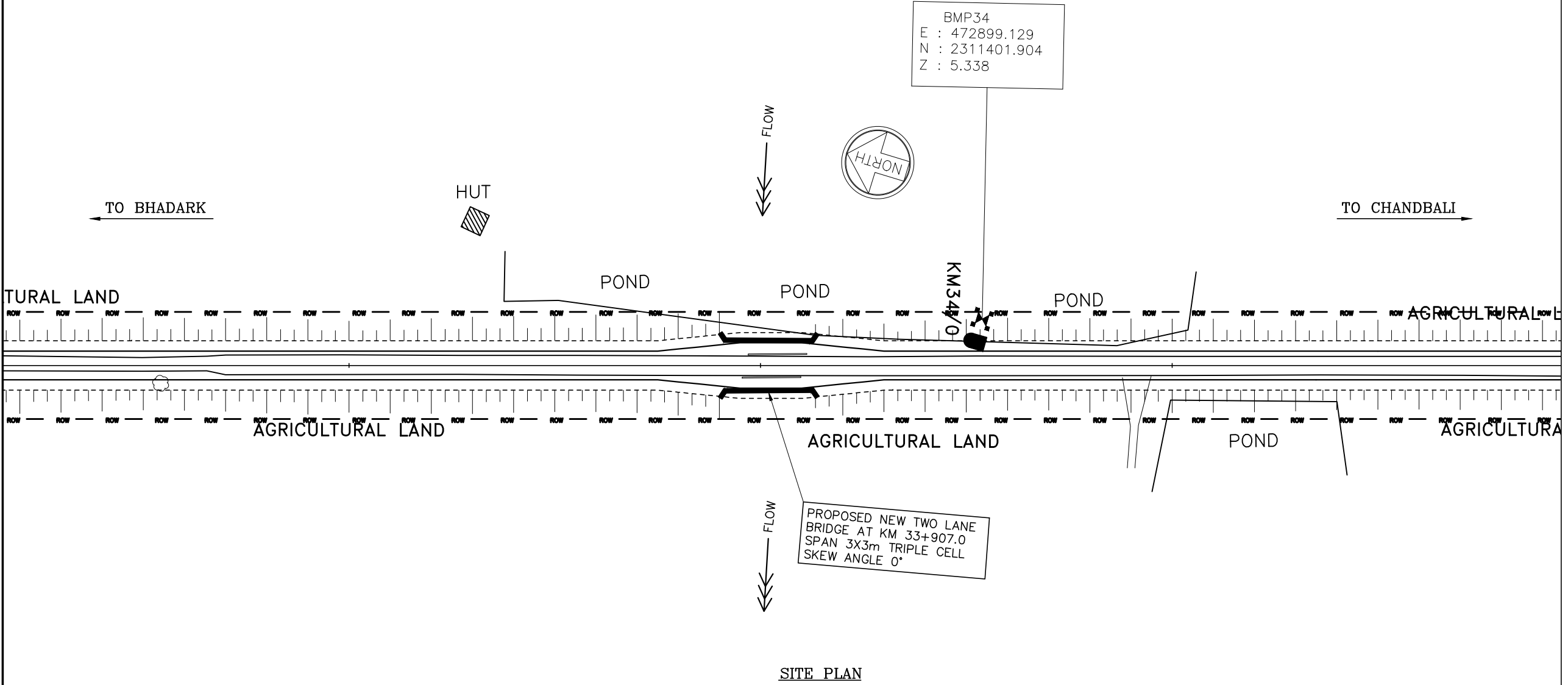
CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 33+543
DWG. NUMBER : OSRP/CEG/P02B/STR/3
REV. R2

NOTES:-



SITE PLAN

R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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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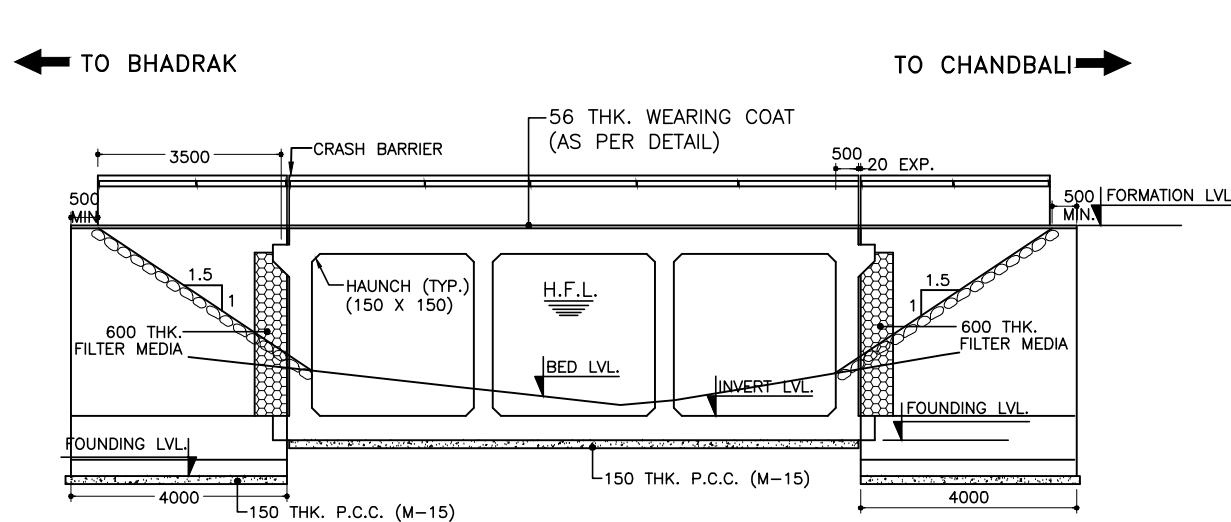
CLIENT

ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

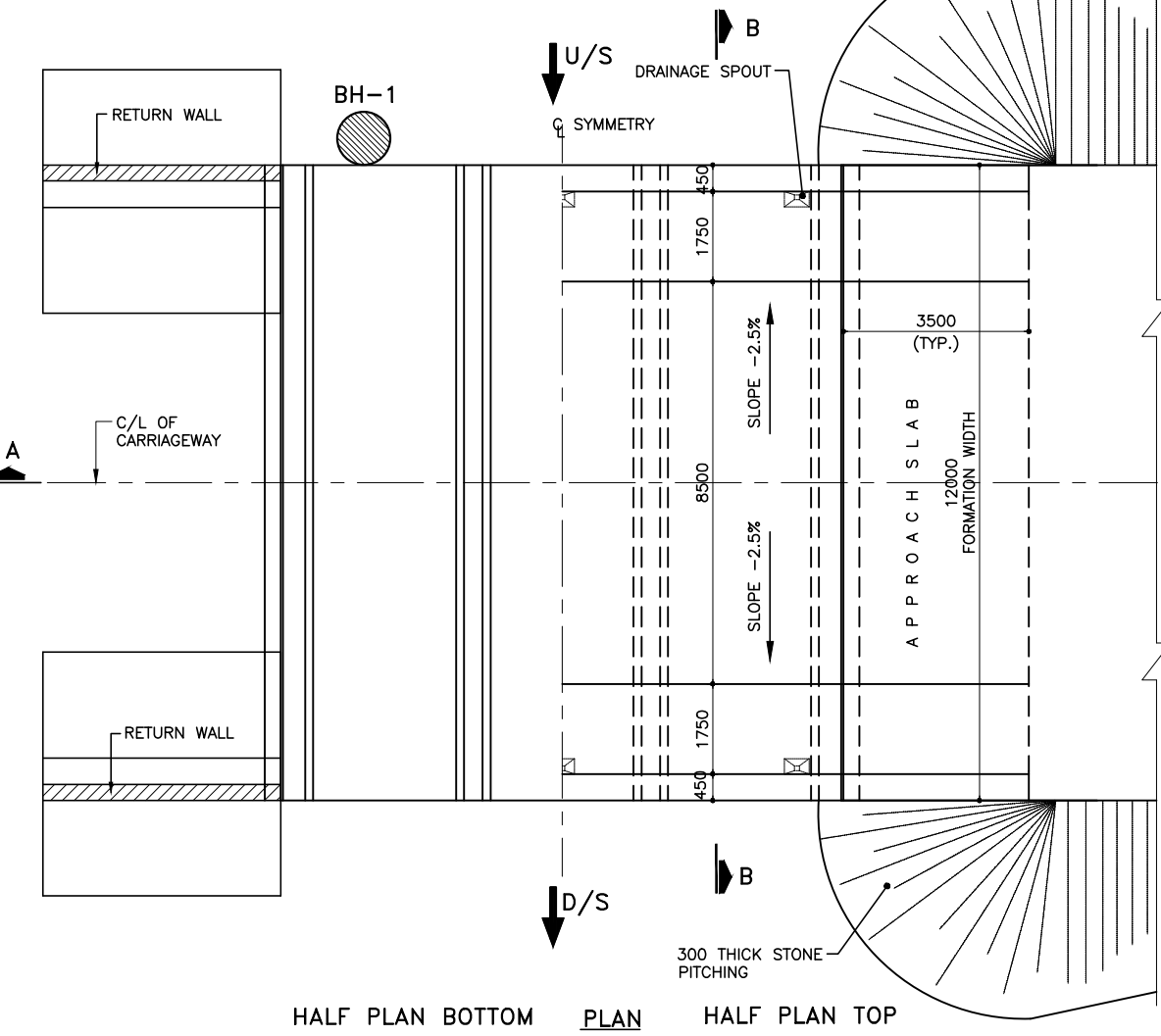
SCALE :
 N.T.S

DRAWING TITLE :
SITE PLAN BRIDGE AT PROPOSED CH. 33+907
 (SHEET 1 OF 3)
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 REV. R2

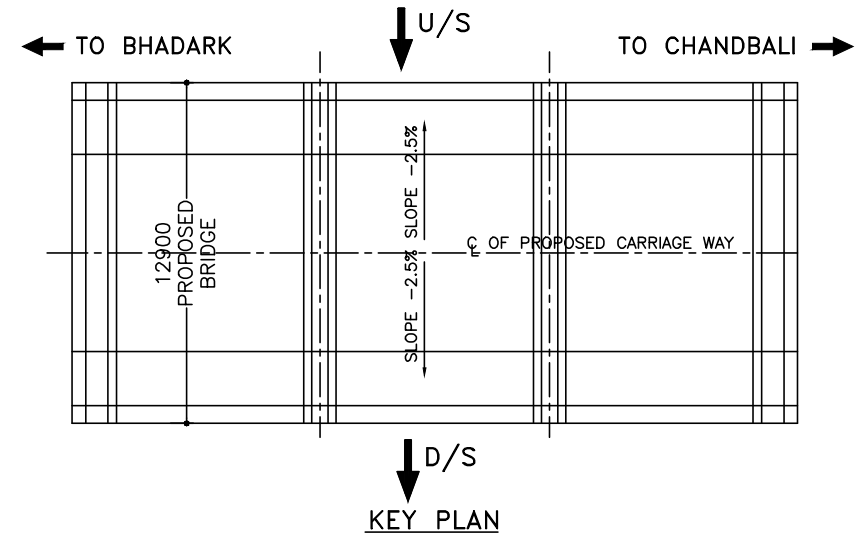


SECTION A-A

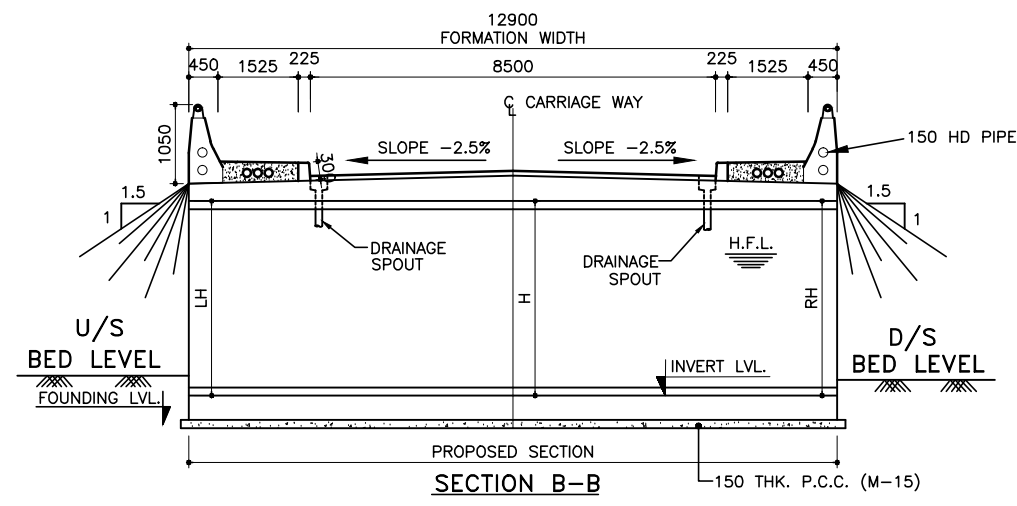
FORMATION LEVEL (m)	8.300	8.300	8.300
BED LEVEL (m)	6.095	5.610	6.021
CHAINAGE (m)	33+901.63	33+907.00	33+912.37



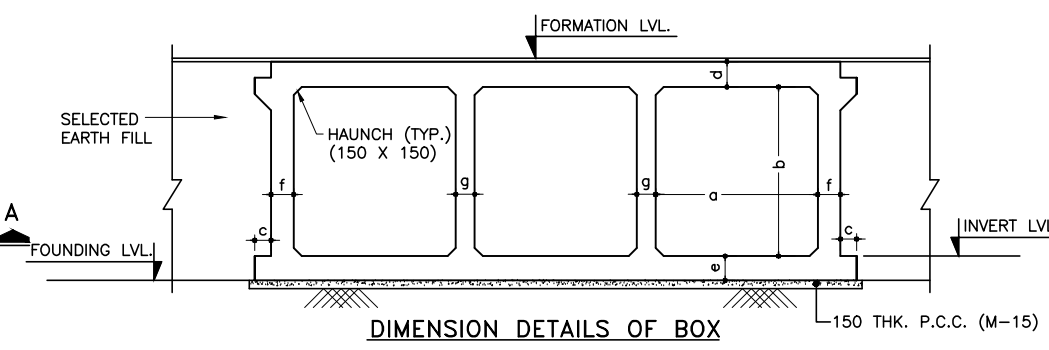
HALF PLAN BOTTOM PLAN HALF PLAN TOP



KEY PLAN



SECTION B-B



DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	THICKNESS g (mm)	BEARING CAPACITY
3/33/0	3000	3000	300	450	500	470	400	10 T/M ²

BOX TYPE	EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
								LH (m)	H (m)	RH (m)	
3/33/0	33+900	33+907	8.300	6.801	5.610	5.310	4.810	2.334	2.484	2.334	L TO R

HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max.scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
4.83	4.362	2.0	2.5	3.0	5.0	3.0	6.0

NOTE:

SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

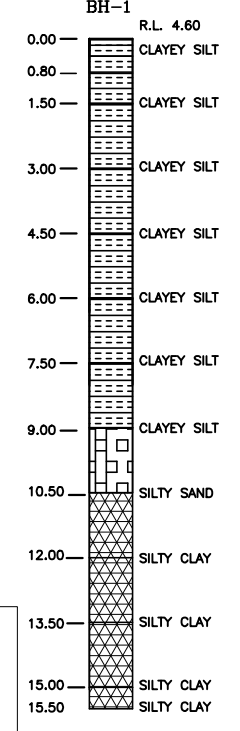
NOTES:

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE CRS Fe500D AS PER IS-1786
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- SITEPLAN ON SEPARATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/106, SD/112 (SHEET 1 OF 2), SD/112 (SHEET 2 OF 2).
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115(SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4), (SHEET 4 OF 4) & SD/111.
- OSRP/CEG/SH-9/BR/33+900/02
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/BR/MISC-02

LOCATION PLAN OF BORE HOLE AT BRIDGE NO.33+900



NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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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JAIPUR-17 Tel:
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2521348, e-mail: ceg@ceginia.com

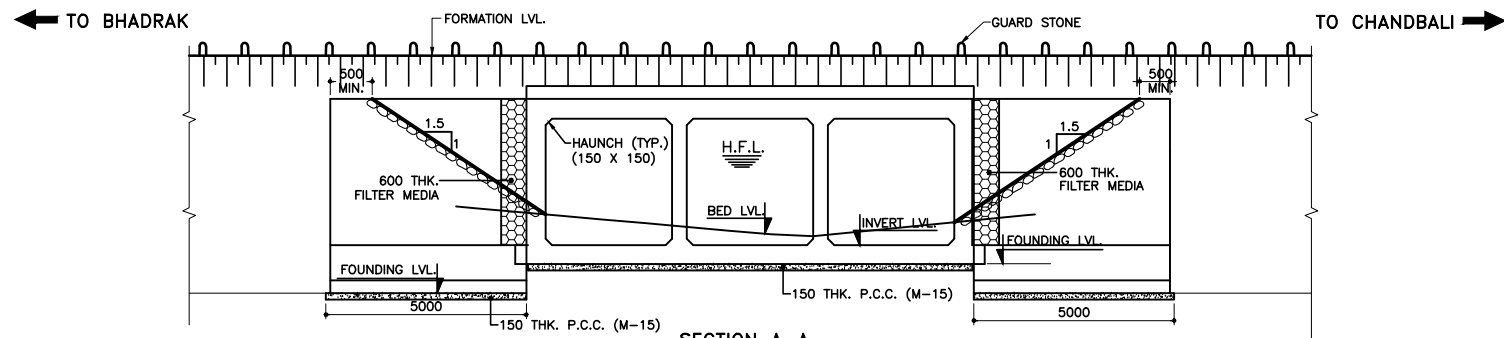
DESIGN REVIEW CONSULTANT :
LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT
ODISHA WORKS DEPARTMENT

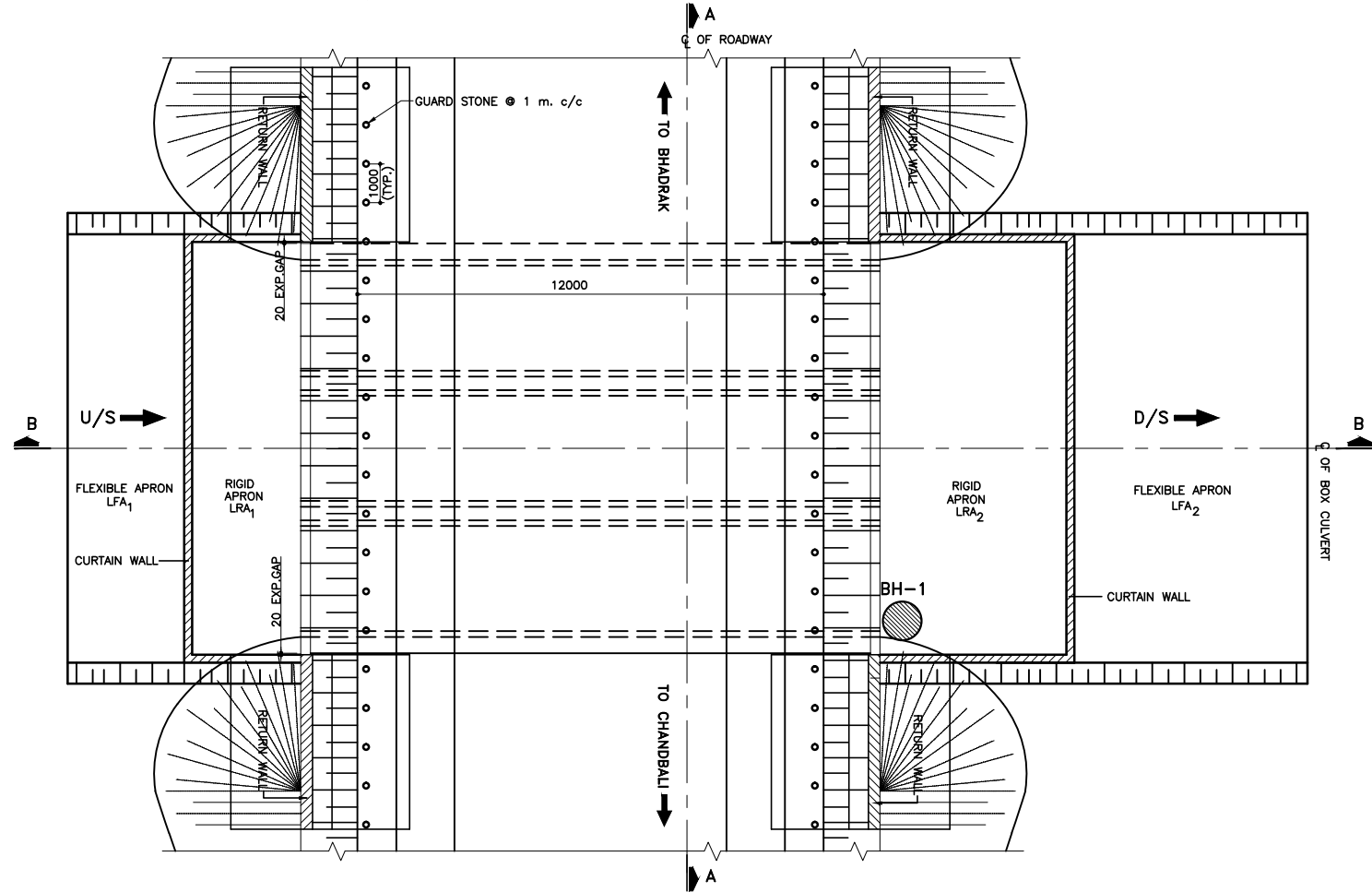
PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

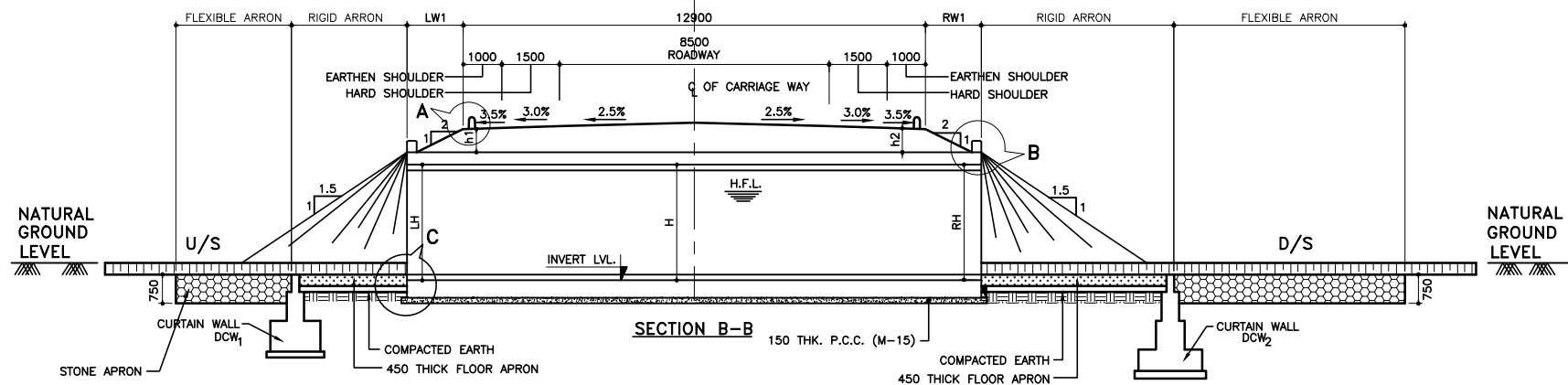
DRAWING TITLE :
GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 33+907
DWG. NUMBER : OSRP/CEG/P02B/STR/3
REV. R2



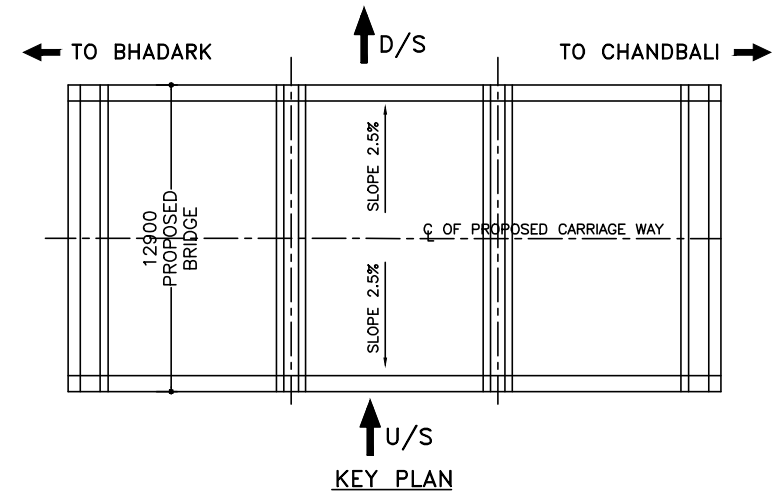
	35+819.9	35+826.0	35+830.1
FORMATION LEVEL (m)	8.700	8.700	8.700
BED LEVEL (m)	5.372	4.772	5.189
CHAINAGE (m)			



PLAN AT ROAD LEVEL



SECTION B-B



KEY PLAN

NOTES:

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
 BOX - M-25
 RETURN WALL - M-25
 APPROACH SLAB - M-30
 CURTAIN WALL - M-20
 P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING.
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- SITE PLAN ON SEPARATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/107, SD/116 (SHEET 1 OF 3), SD/116 (SHEET 3 OF 3).
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101 & SD/111 (SHEET 1 OF 4).
- OSRP/CEG/SH-9/BR/36+005/01 (SHEET 2 OF 2)
- OSRP/CEG/SH-9/BR/36+005/02
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/BR/MISC-02

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	N.K PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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CEG
 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

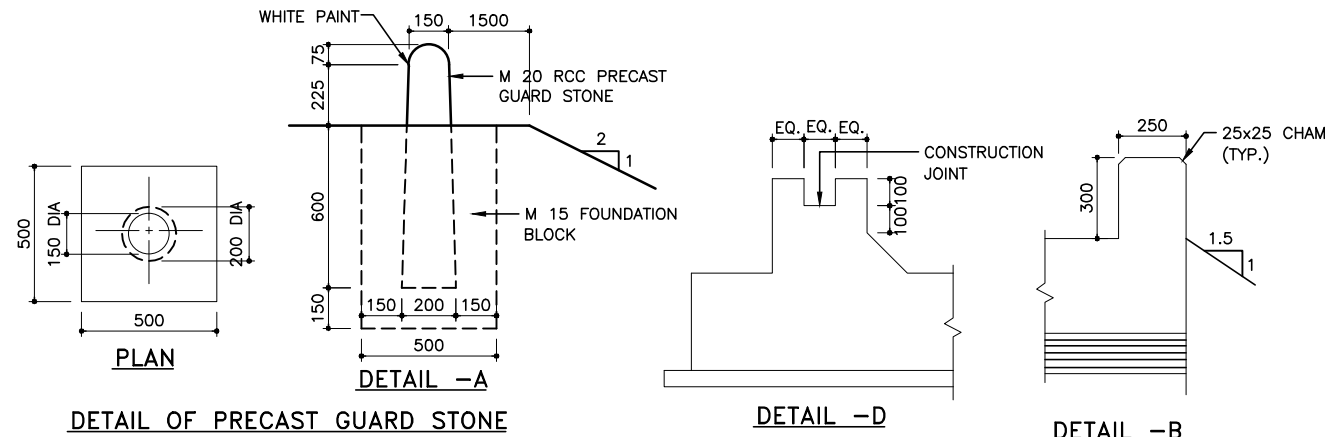
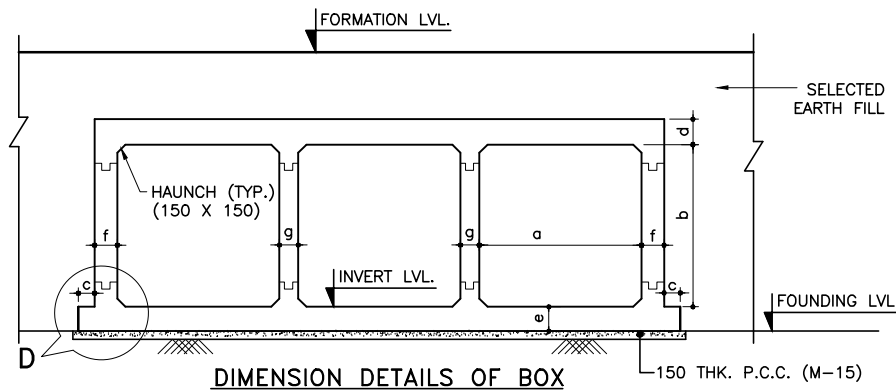
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
GENERAL ARRANGEMENT DRAWING BRIDGE AT KM 36+005 (NALAGANDHA GHUSURA)
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 REV. R2



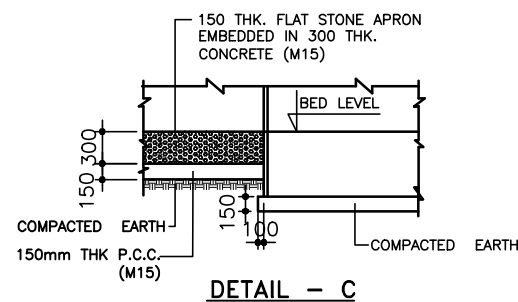
DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	THICKNESS g (mm)	HEIGHT h (mm)	BEARING CAPACITY
3/33/3	3000	3000	300	350	400	350	250	3000	10 T/M ²

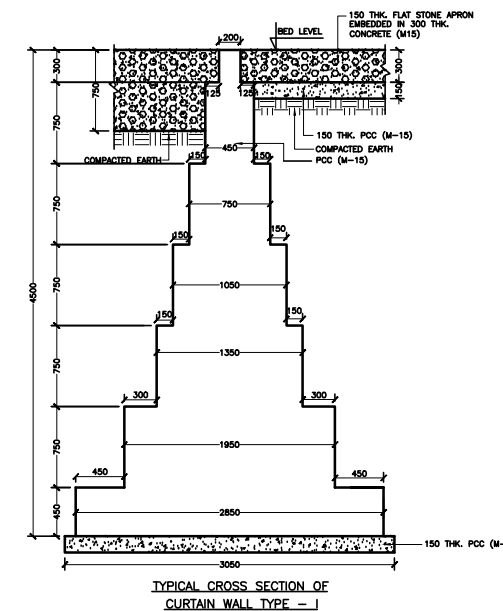
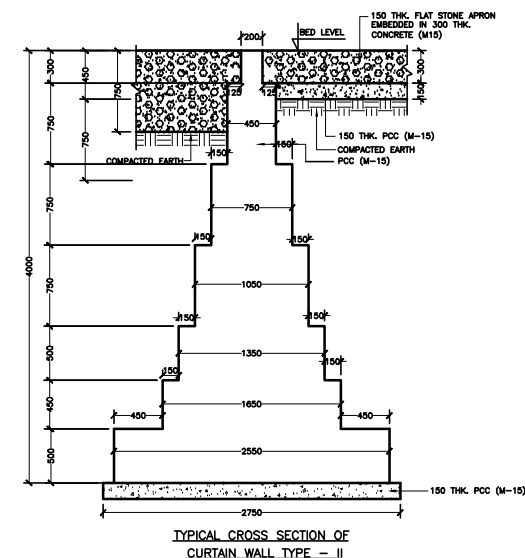
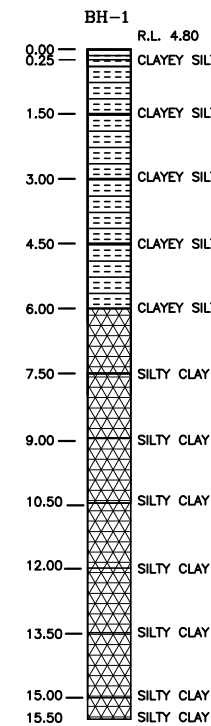
BOX TYPE	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW	CUSHION		LW1	RW1
							LH (m)	H (m)	RH (m)		h1	h2		
3/33/3	35+825.0	8.700	7.490	4.772	4.472	3.972	3.572	3.722	3.572	R TO L	0.57	0.57	1.10	1.10

HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
24.46	1.273	DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
		4.0	4.5	3.0	5.0	7.0	7.0



LOCATION PLAN OF BORE HOLE AT BRIDGE NO.36/005



NOTES:

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
CURTAIN WALL - M-20
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE CRS F6500D AS PER IS-1786
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- INDEX PLAN ON SEPERATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

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- FOR GENERAL NOTES, MISCELLANEOUS DETAILS FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101 & SD/111 (SHEET 1 OF 4).
- OSRP/CEG/SH-9/BR/36+005/01 (SHEET 1 OF 2)
- OSRP/CEG/SH-9/BR/36+005/02
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/BR/MISC-02

NOTE:

SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

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

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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 .

CLIENT

ODISHA WORKS DEPARTMENT

PROJECT :

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

DRAWING TITLE :

GENERAL ARRANGEMENT DRAWING BRIDGE AT KM 36+005 (NALAGANDHA GHUSURA)

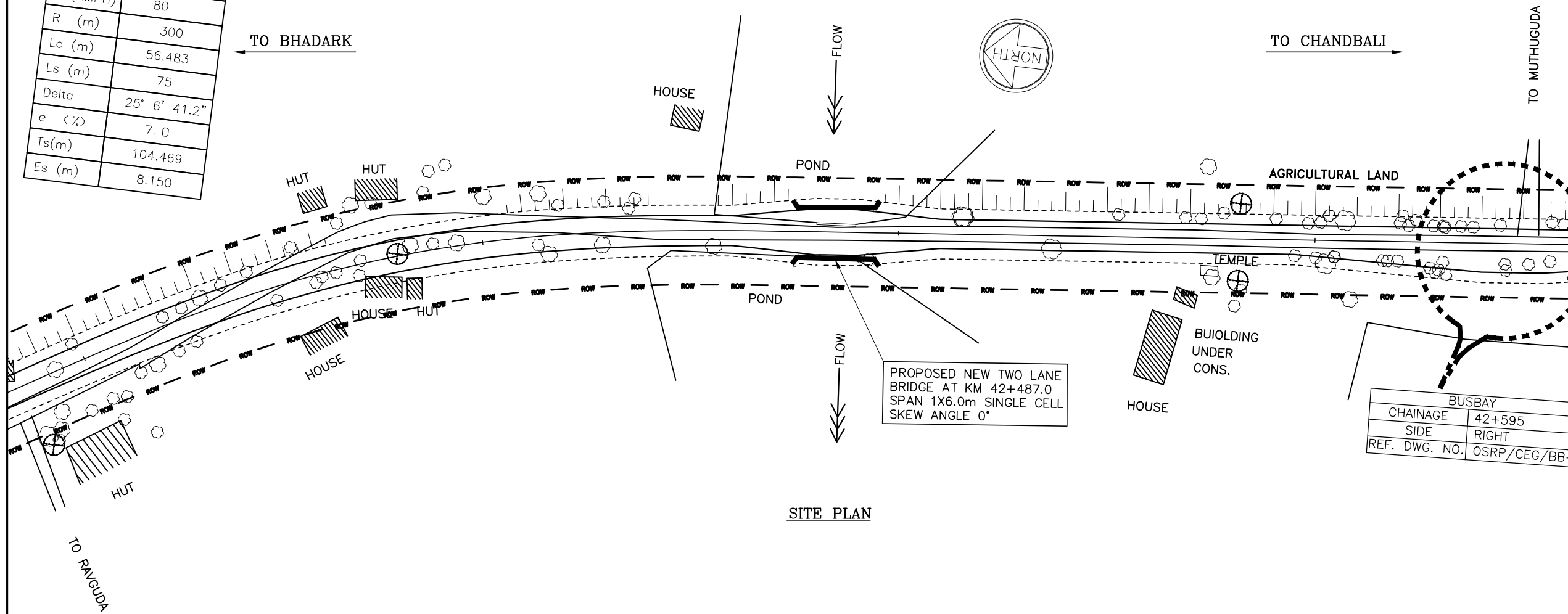
(SHEET 1 OF 3)

DWG. NUMBER : **OSRP/CEG/P02B/STR/3**

REV. R2

NOTES:-

CURVE DETAILS	
No.,	75
HIP	42+377.413
V (KMPH)	80
R (m)	300
Lc (m)	56.483
Ls (m)	75
Delta	25° 6' 41.2"
e (%)	7.0
Ts(m)	104.469
Es (m)	8.150



SITE PLAN

PROPOSED NEW TWO LANE
BRIDGE AT KM 42+487.0
SPAN 1X6.0m SINGLE CELL
SKEW ANGLE 0°

BUSBAY	
CHAINAGE	42+595
SIDE	RIGHT
REF. DWG. NO.	OSRP/CEG/BB-

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
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-	JUNE 2008	ORIGINAL	CEG			
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED: APPROVED:

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CLIENT
ODISHA WORKS DEPARTMENT

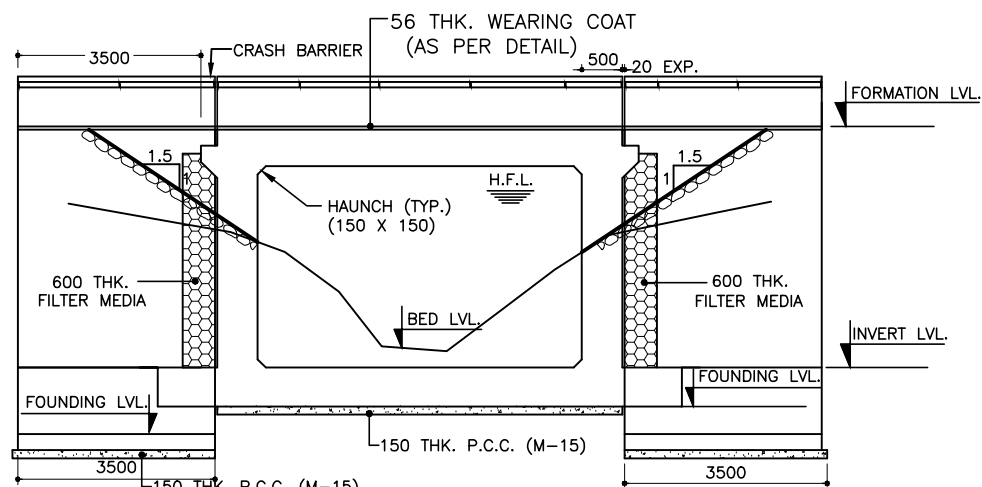
PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
SITE PLAN DRAWING BRIDGE AT PROPOSED CH. 42+487
DWG. NUMBER : OSRP/CEG/P02B/STR/3
REV. R2

← TO BHADRAK

TO CHANDBALI →



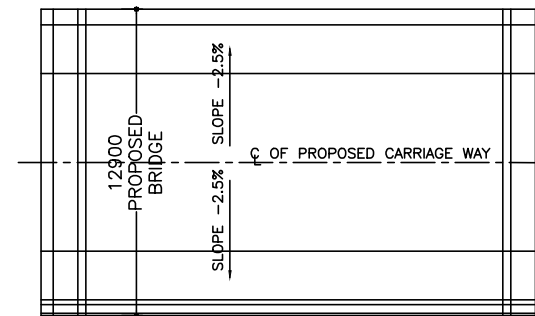
SECTION A-A

FORMATION LEVEL (m)	9.000	9.000	9.000
BED LEVEL (m)	7.814	4.721	7.586
CHAINAGE (m)	42+483.25	42+487.0	42+490.75

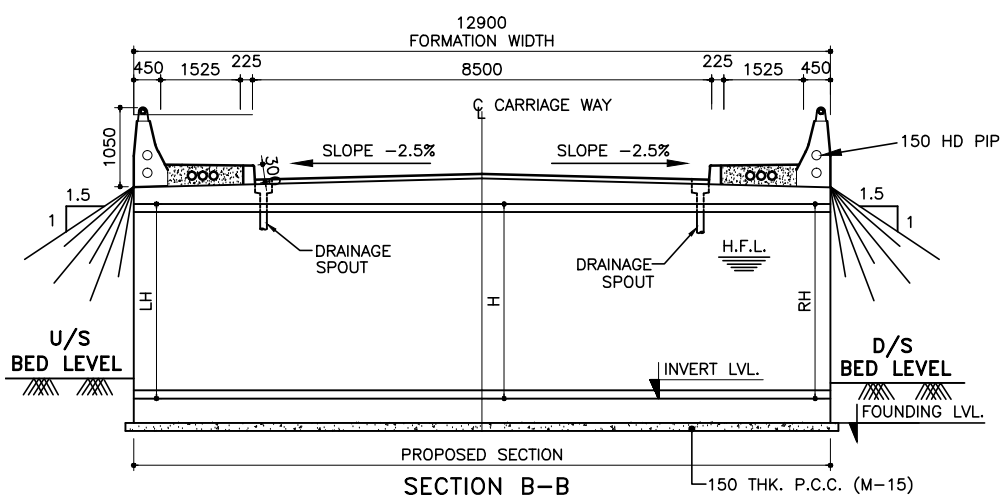
← TO BHADARK

U/S

TO CHANDBALI →



KEY PLAN



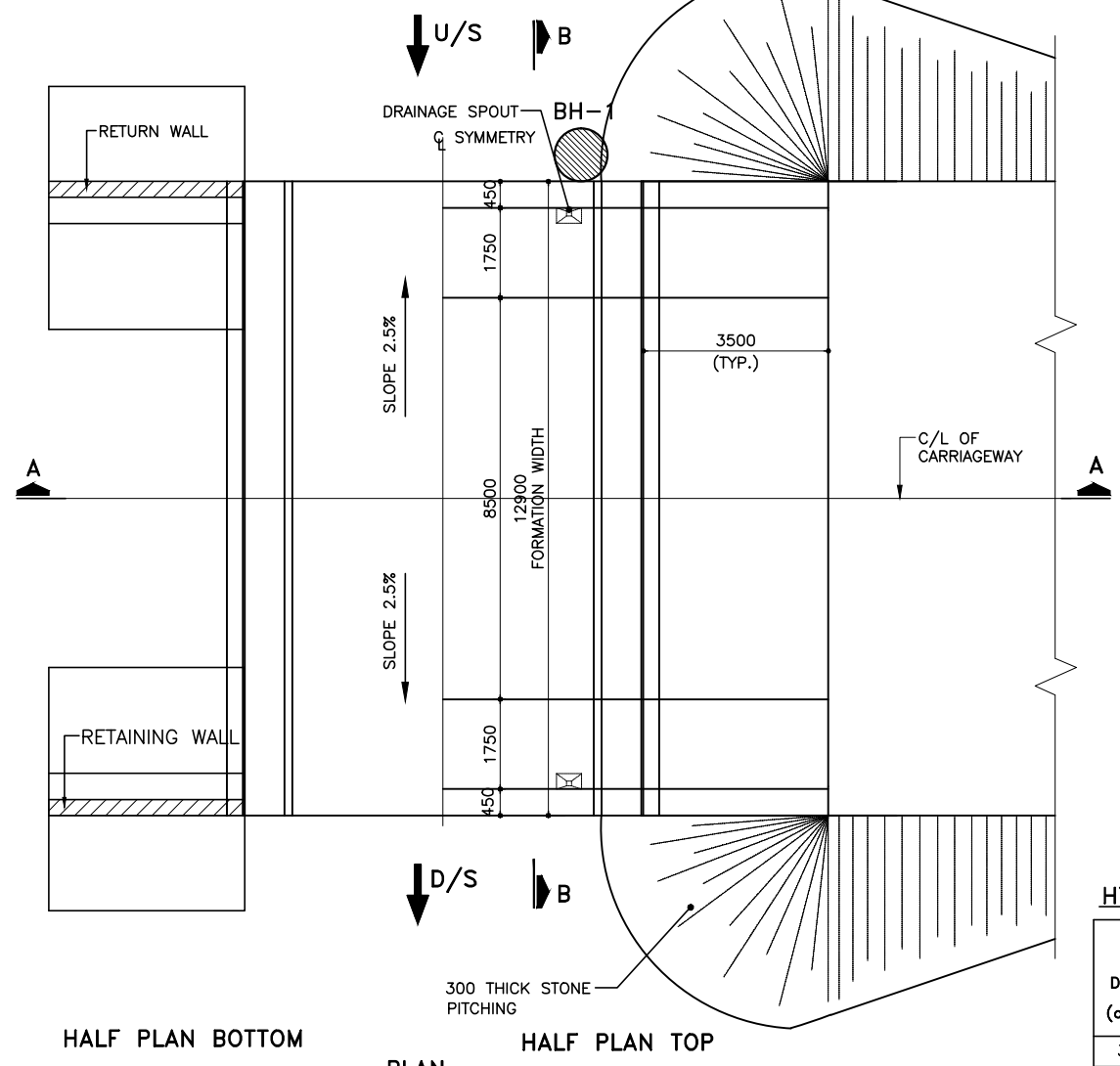
SECTION B-B

NOTES:

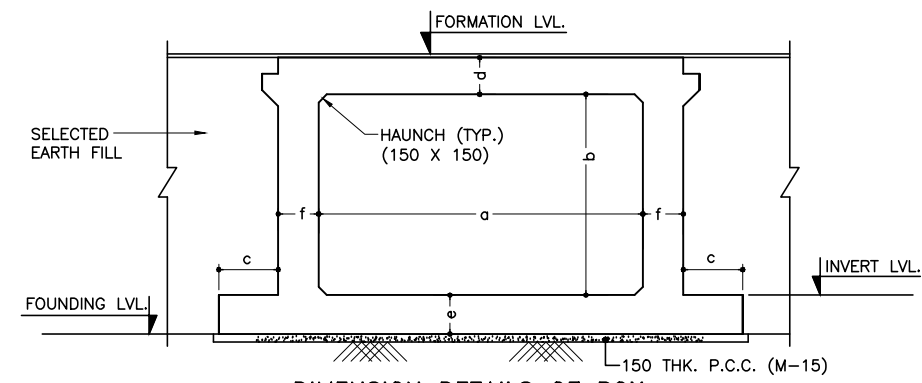
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING.
GRADE OF STEEL SHALL BE CRS Fe500D AS PER IS-1786
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
- SITE PLAN ON SEPARATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/102, SD/108 (SHEET 1 OF 6), SD/108 (SHEET 6 OF 6) & SD/115.
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115(SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4), (SHEET 4 OF 4) & SD/111.
- OSRP/CEG/SH-9/BR/42+400/02
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/BR/MISC-02



PLAN



DIMENSION DETAILS OF BOX

DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	BEARING CAPACITY
1/65/0	6000	5000	1100	680	750	750	15 T/M ²

BOX TYPE	EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
								LH (m)	H (m)	RH (m)	
1/65/0	42+400	42+487.0	9.000	7.811	4.721	3.971	3.221	4.4	4.5	4.4	L TO R

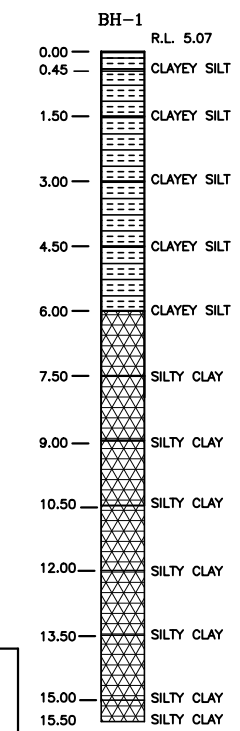
HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
3.29	6.234	2.0	2.5	3.0	5.0	3.0	6.0

NOTE:

SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

LOCATION PLAN OF BORE HOLE AT BRIDGE NO.42/400



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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 :
CONSULTING ENGINEERS GROUP LTD.
E-12, MOJI COLONY, MALVIYA NAGAR
JAIPUR-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@cegroupindia.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 .

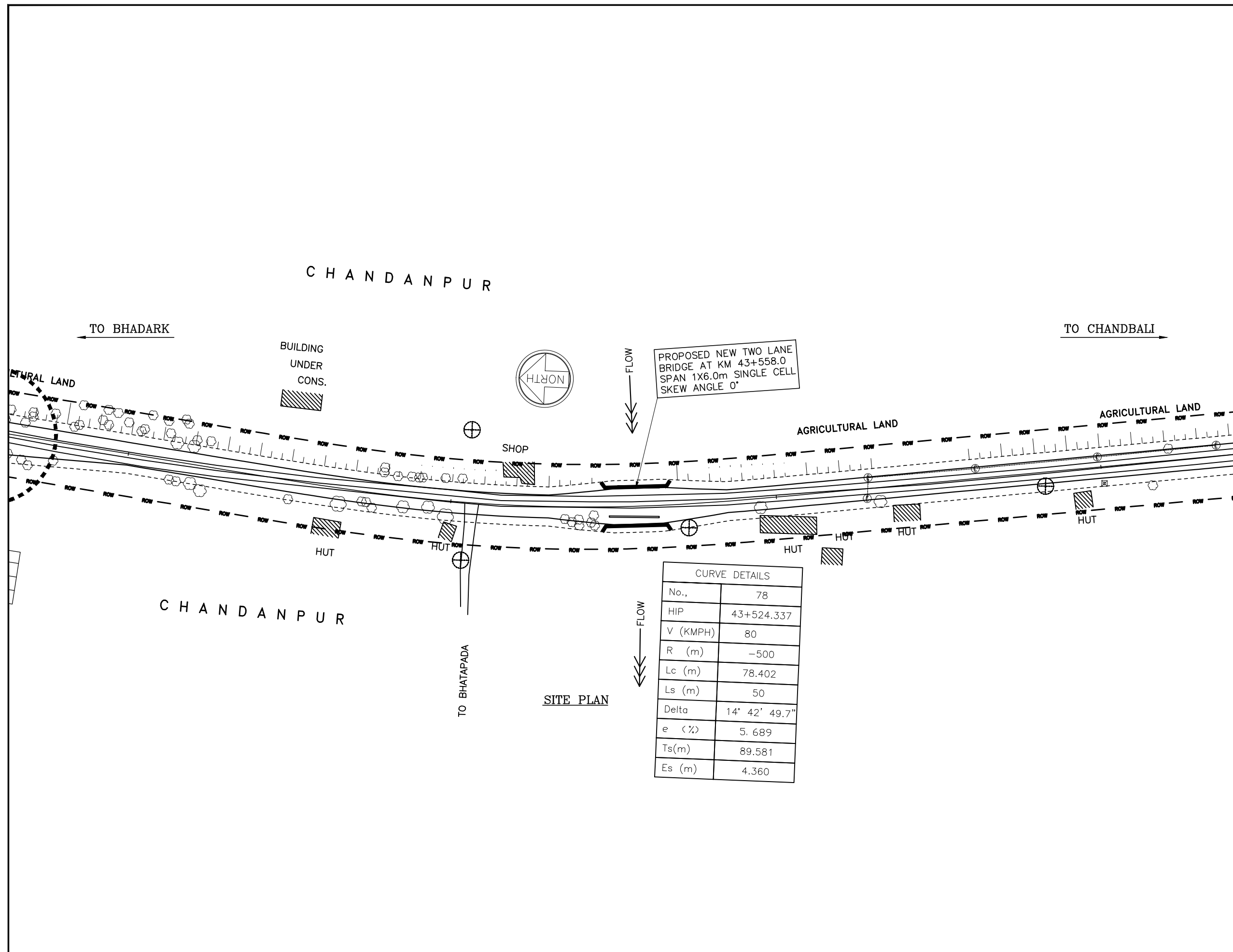
CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 42+487
DWG. NUMBER : OSRP/CEG/P02B/STR/3
REV. R2

NOTES:-



PROPOSED NEW TWO LANE BRIDGE AT KM 43+558.0
SPAN 1X6.0m SINGLE CELL
SKEW ANGLE 0°

CURVE DETAILS	
No.,	78
HIP	43+524.337
V (KMPH)	80
R (m)	-500
Lc (m)	78.402
Ls (m)	50
Delta	14° 42' 49.7"
e (%)	5.689
Ts(m)	89.581
Es (m)	4.360

SITE PLAN

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	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@ceindia.com

DESIGN REVIEW CONSULTANT :
LEA
 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

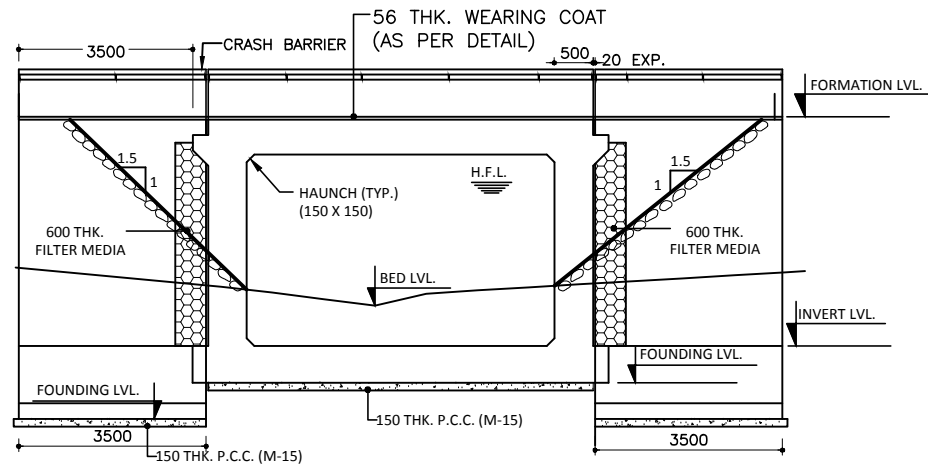
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 SITE PLAN BRIDGE AT PROPOSED CH. 43+558 (CHANDANPUR POLO)
 (SHEET 2 OF 2)
 DWG. NUMBER : OSRP/CEG/SH09/P02B/BR/43+500/2 REV. R2

← TO BHADRAK

TO CHANDBALI →



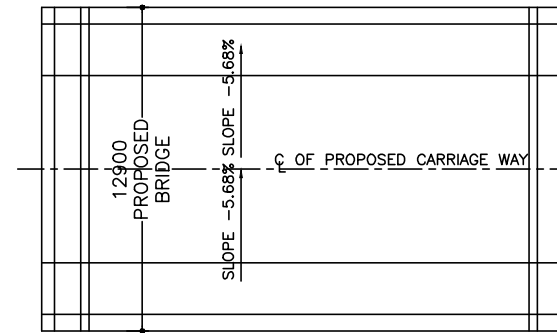
SECTION A-A

FORMATION LEVEL (m)	9.300	9.300	9.300
BED LEVEL (m)	8.326	6.699	8.313
CHAINAGE (m)	43+554.25	43+558.0	43+561.75

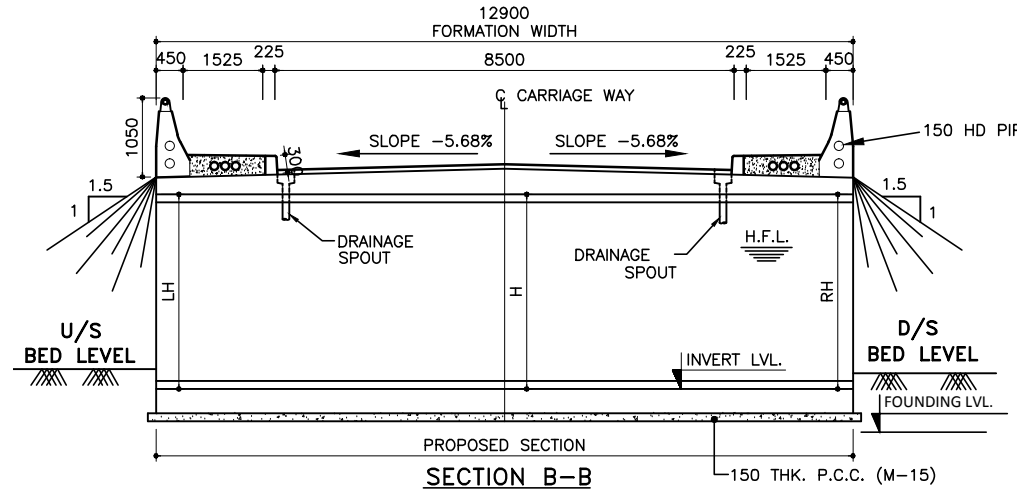
← TO BHADARK

U/S

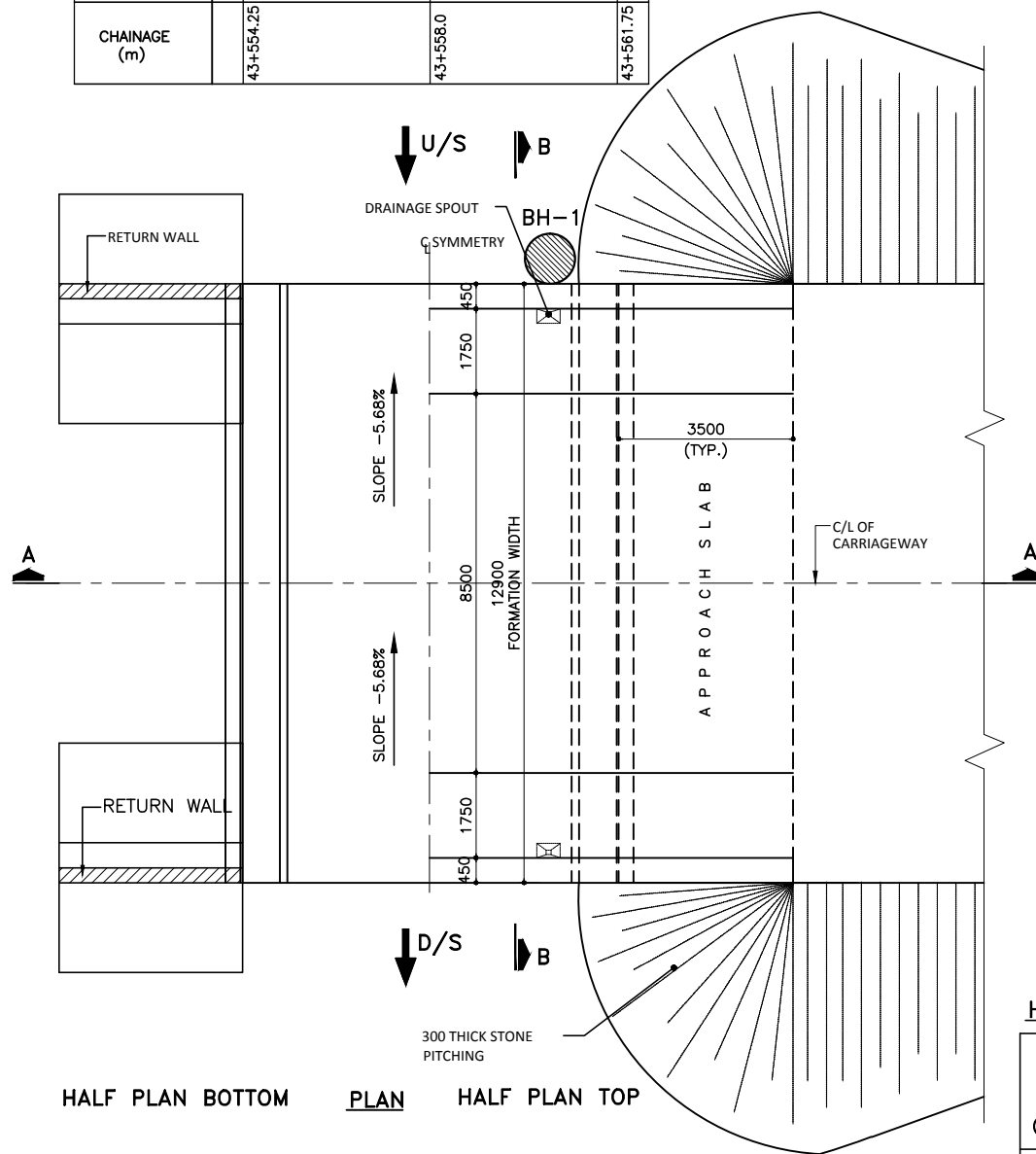
TO CHANDBALI →



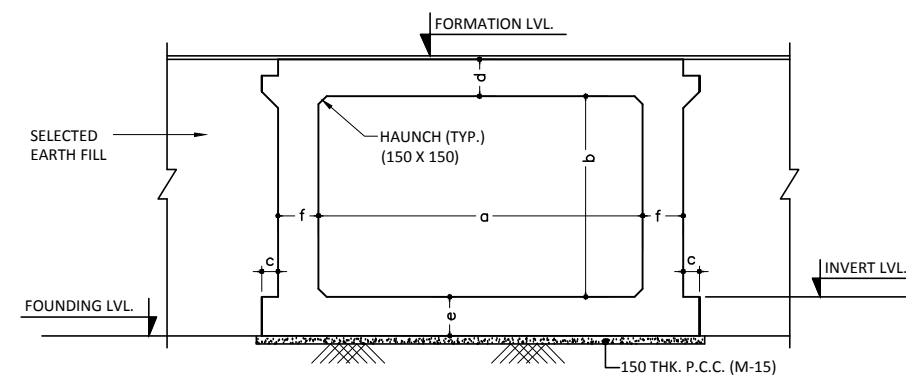
D/S
KEY PLAN



SECTION B-B



HALF PLAN BOTTOM PLAN HALF PLAN TOP



DIMENSION DETAILS OF BOX

DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS e (mm)	THICKNESS f (mm)	BEARING CAPACITY
1/64/0	6000	4000	300	680	720	750	15 T/M ²

BOX TYPE	EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LEVEL (m)	FOUNDING LVL. (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
								LH (m)	H (m)	RH (m)	
1/64/0	43+500	43+558.0	9.300	8.121	6.70	5.92	5.20	2.5	2.9	3.2	L TO R

HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	LRA ₁	LRA ₂	LFA ₁	LFA ₂
2.35	7.033	2.0	2.5	3.0	5.0	3.0	6.0

NOTE:

SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

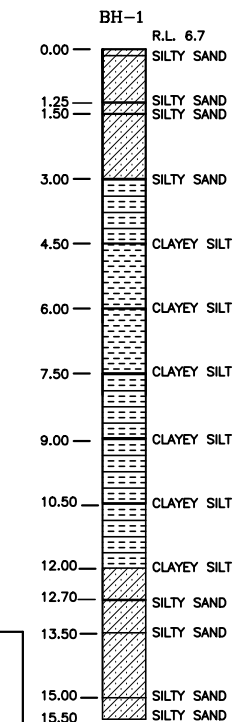
NOTES:-

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
- LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
- GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-35
P.C.C. LEAN CONC. - M-15
- CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
- FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE Fe500 AS PER IS-1786:2008.
- IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
- ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02.
- SITE PLAN ON SEPERATE SHEET.
- FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.
- THE AREA IS UNDER SEVERE EXPOSURE CONDITION.

REFERENCE DRAWING:-

- FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/102, SD/108 (SHEET 1 OF 6), SD/108 (SHEET 6 OF 6) & SD/115.
- FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115 (SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4), (SHEET 4 OF 4) & SD/111
- OSRP/CEG/SH-9/BR/43+500/02
- OSRP/CEG/RW/MISC-01
- OSRP/CEG/SH-9/BR/FPW/01
- OSRP/CEG/SH-9/BR/SCW
- OSRP/CEG/BR/MISC-02

LOCATION PLAN OF BORE HOLE AT BRIDGE NO.43/500



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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
 LEA Associates South Asia Pvt. Ltd., India B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

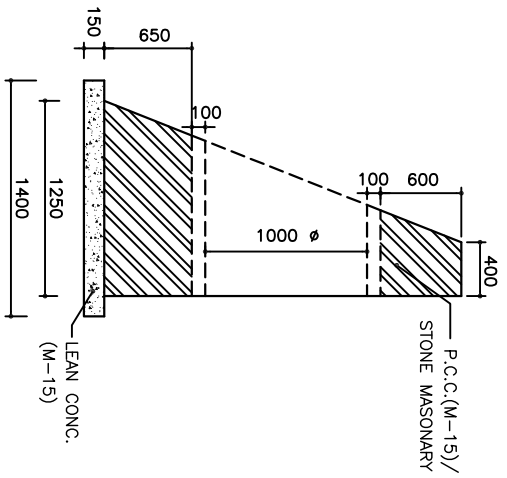
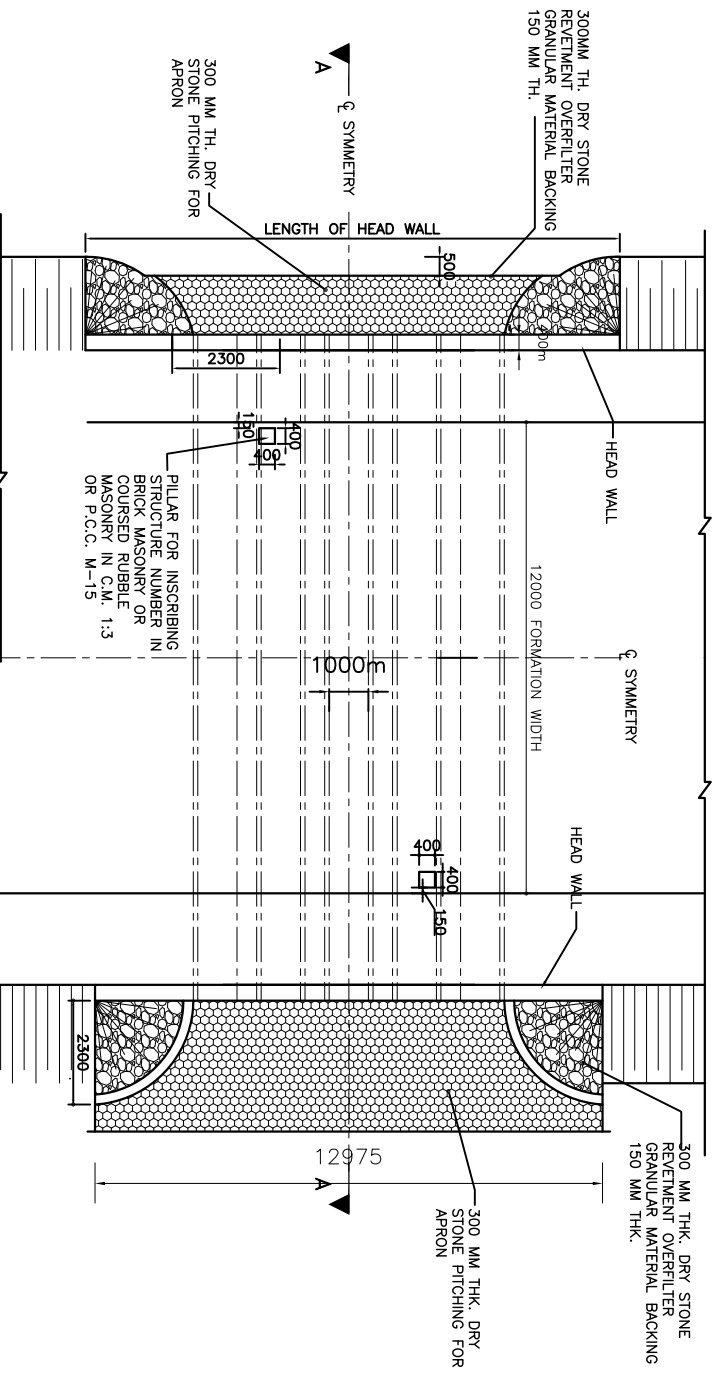
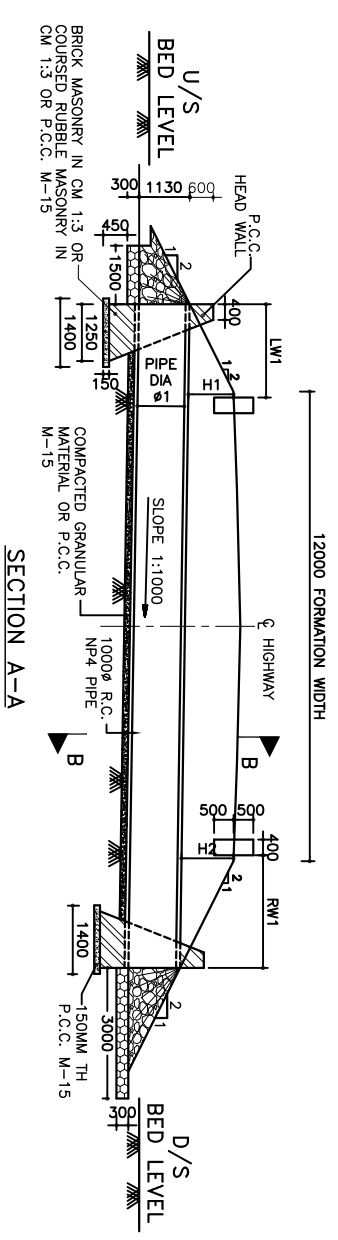
CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 43+558 (CHANDANPUR POLO) (SHEET 1 OF 2)
 DWG. NUMBER : OSRP/CEG/SH09/P02B/BR/1+015/1 REV. R2

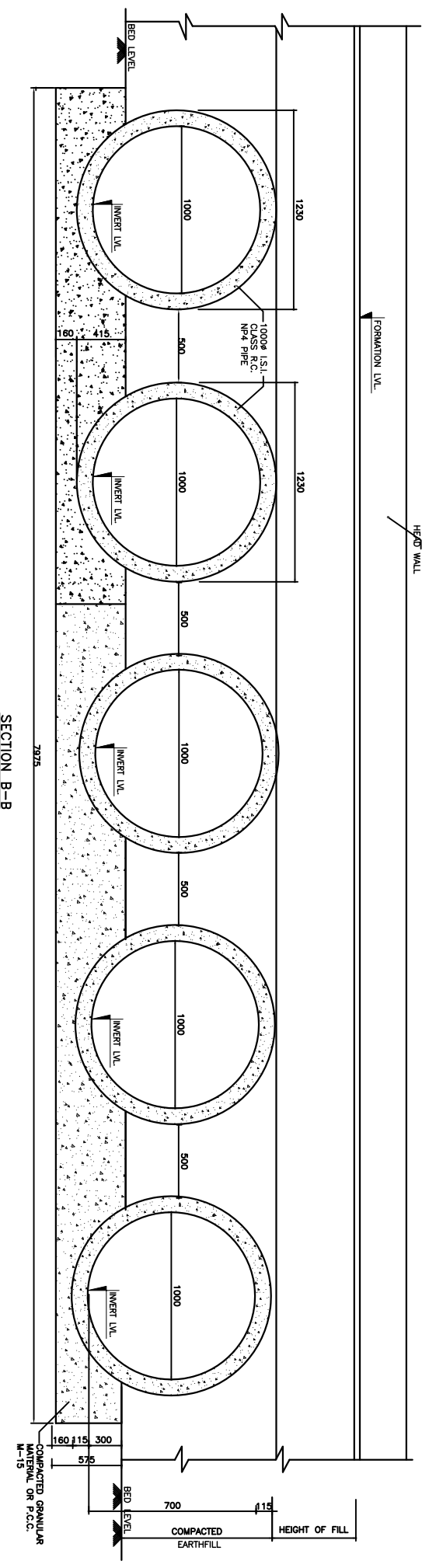
FIVE ROW PIPE CULVERT									
Sl. No.	Location	Proposed Chainage	Proposed Formation Level	Bed Level		Invert Level	Camber/Super Elevation		Direction of flow
				Left	Right		Left	Right	
1	39/300	39387	8.76	6.85	6.85	6.55	-2.5%	-2.5%	RTOL
2	39/800	39837	8.93	7.12	6.79	6.79	-2.5%	-2.5%	L TOR
3	40/350	40310	8.41	6.50	6.50	6.20	-2.5%	-2.5%	RTOL
4	40/950	40974	9.16	6.48	7.10	6.40	-2.5%	-2.5%	RTOL



DETAIL OF HEAD WALL

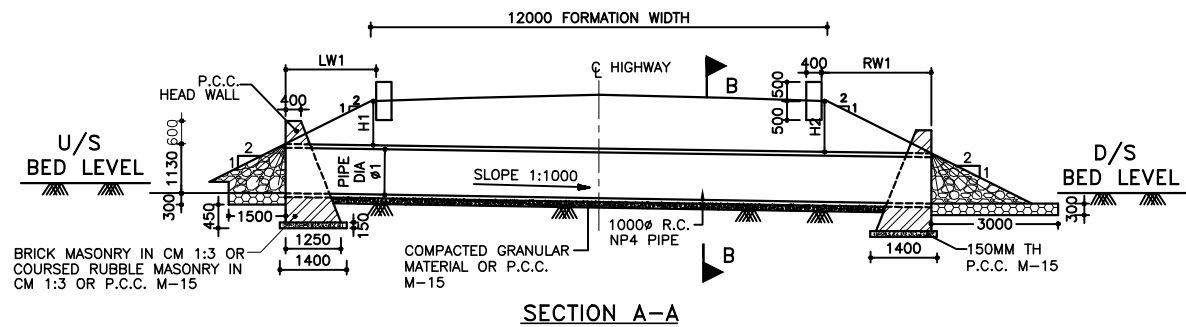
NOTES:

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. LOOSE / UNSUITABLE SOIL BELOW CULVERTS IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
4. CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE.
5. FOR CULVERTS SKEW TO THE TRAFFIC DIRECTION LENGTH OF CULVERT SHALL BE ADJUSTED AS PER SITE CONDITION.
6. LONGITUDINAL SLOPE OF PIPE SHALL BE MIN. 1 IN 1000.
7. FIRST CLASS BEDDING CAN BE USED FOR MAXIMUM HEIGHT OF FILL OF 4.0 M.
8. THE FINISHED ROAD LEVEL SHALL BE VERIFIED WITH ALIGNMENT DRAWING & GROUND LEVEL WITH SITE CONDITIONS BEFORE EXECUTION.

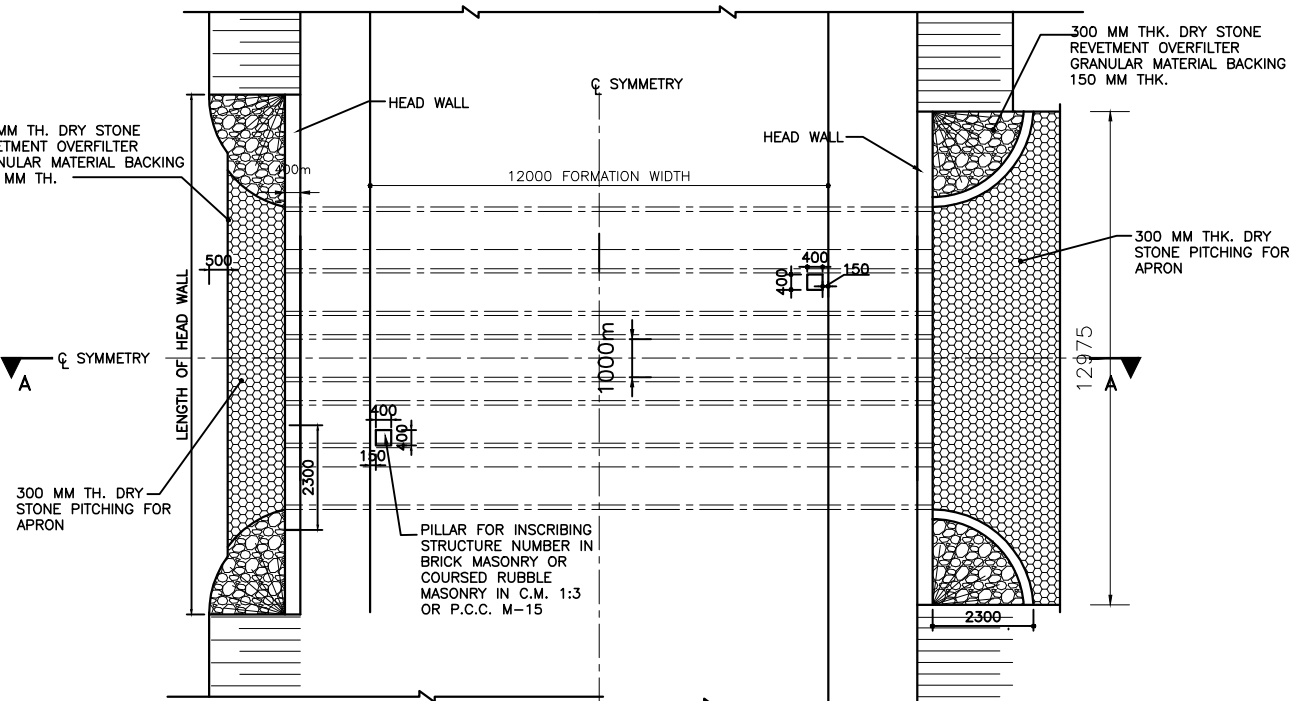


SECTION B-B

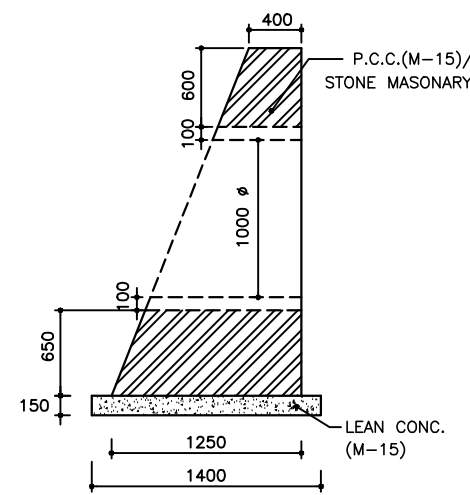
REVISIONS: R2 SEP-2015 SECOND REVISION LUSA R1 JAN-2013 FIRST REVISION OMD - JUNE 2008 ORIGINAL CEG NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:		CLIENT: ODISHA WORKS DEPARTMENT		PROJECT: CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B		SCALE: N.T.S		DRAWING TITLE: TYPICAL ARRANGEMENT FOR R.C.C MULTY PIPE CULVERTS (5X1.0m DIA) (SHEET 1 OF 3)	
DESIGNER/CONSULTANT: C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KM01 COLONY,MALVIYA NAGAR JALPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.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.		DRP CONSULTANT: RAU MATHUR M.A. MISRA (EE) O.P. PATEL (CE) P.K. MISRA (A.E) M.A. MISRA (CE) N.K. PRADHAN (CE)		DWG. NUMBER: OSRP/CEG/SH9/P02A/ 3		REV. R2	



SECTION A-A



PLAN



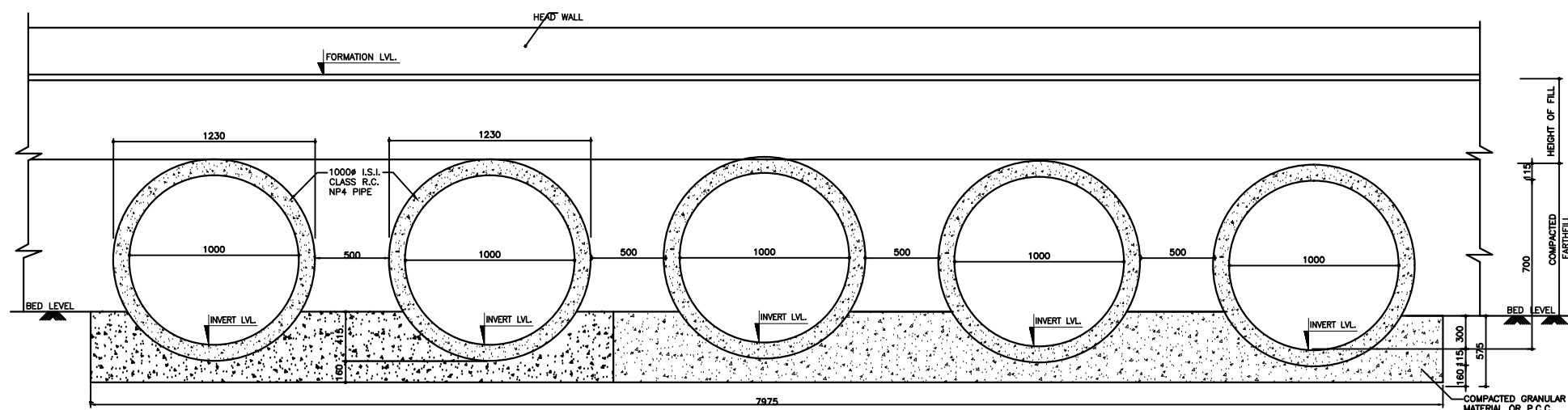
DETAIL OF HEAD WALL

FIVE ROW PIPE CULVERT

Sl. No.	Location	Proposed Chainage	Proposed Formation Level	Bed Level		Invert Level	Camber/Super Elevation		Direction of flow
				Left	Right		Left	Right	
1	39/300	39387	8.76	6.85	6.85	6.55	-2.5%	-2.5%	R TO L
2	39/800	39837	8.93	7.12	6.79	6.79	-2.5%	-2.5%	L TO R
3	40/350	40310	8.41	6.50	6.50	6.20	-2.5%	-2.5%	R TO L
4	40/950	40974	9.16	6.48	7.10	6.40	-2.5%	-2.5%	R TO L

NOTES:

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. LOOSE / UNSUITABLE SOIL BELOW CULVERTS IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
4. CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE.
5. FOR CULVERTS SKEW TO THE TRAFFIC DIRECTION LENGTH OF CULVERT SHALL BE ADJUSTED AS PER SITE CONDITION.
6. LONGITUDINAL SLOPE OF PIPE SHALL BE MIN. 1 IN 1000.
7. FIRST CLASS BEDDING CAN BE USED FOR MAXIMUM HEIGHT OF FILL OF 4.0 M.
8. THE FINISHED ROAD LEVEL SHALL BE VERIFIED WITH ALIGNMENT DRAWING & GROUND LEVEL WITH SITE CONDITIONS BEFORE EXECUTION.



SECTION B-B

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@cegindia.com

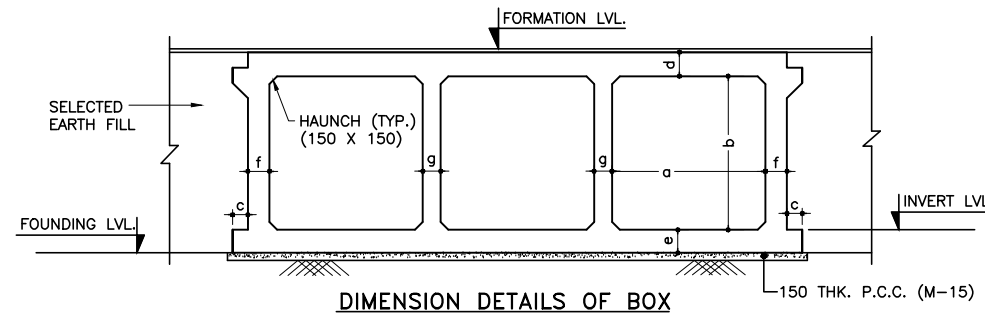
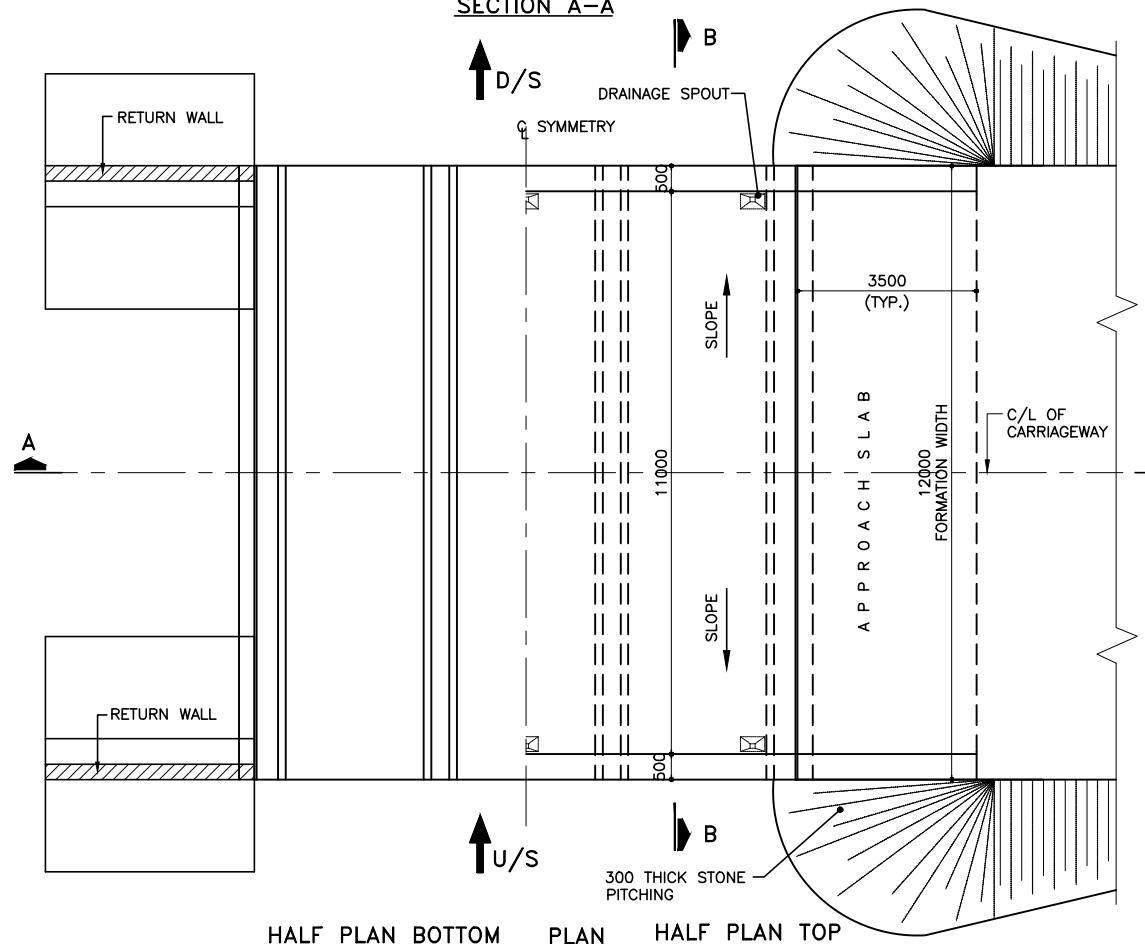
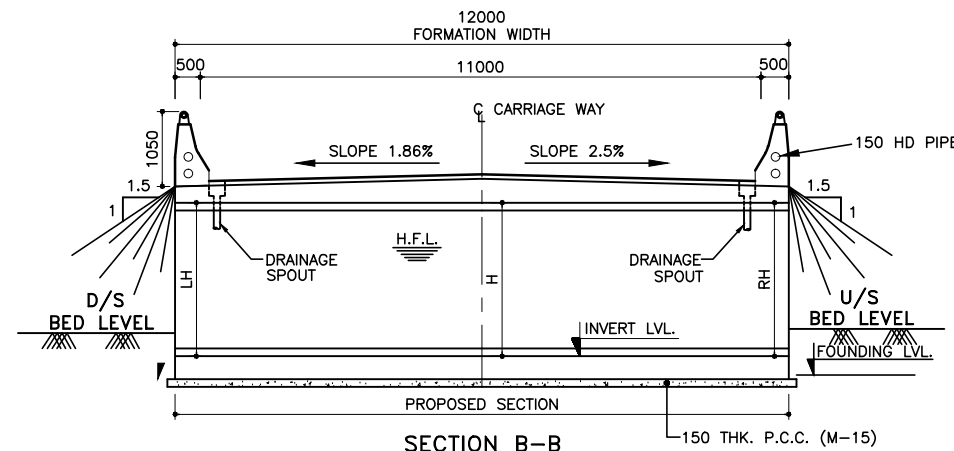
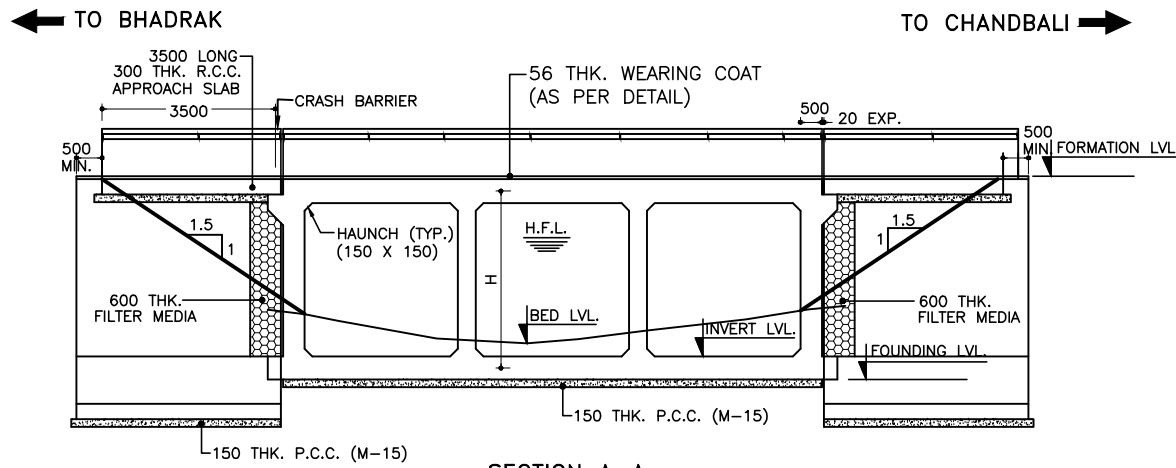
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 TYPICAL ARRANGEMENT FOR R.C.C MULTY PIPE CULVERTS (5X1.0m DIA)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 REV. R2

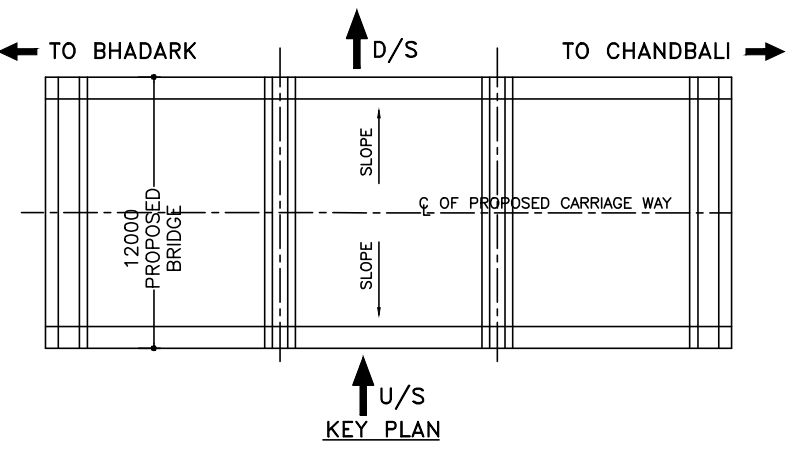


DIMENSION DETAILS OF BOX

BOX TYPE	WIDTH a (mm)	HEIGHT b (mm)	c (mm)	THICKNESS d (mm)	THICKNESS E (mm)	THICKNESS f (mm)	THICKNESS g (mm)	BEARING CAPACITY
3/33/0	3000	3000	300	450	500	470	400	10 T/M ²

LIST OF PROPOSED BRIDGES OF 3 X 3 M BOX (WITHOUT CUSHION)

SI. No.	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	BED LEVEL (m)	FOUNDING LEVEL (m)	SUPER ELEVATION/ CAMBER		INVERT LEVEL (m)	CLEAR HEIGHT (MAX)		
					LEFT	RIGHT		LH (m)	H (m)	RH (m)
1	27925.0	8.162	5.25	4.45	-2.5	0.127	4.95	2.556	2.706	2.714
2	28900.0	7.978	5.02	4.215	-2.5	-2.5	4.715	2.607	2.757	2.607
3	31050.0	8.200	5.78	4.98	-2.5	-2.5	5.48	2.064	2.214	2.064
4	31150.0	8.200	5.87	5.073	-2.5	-2.5	5.573	1.971	2.121	1.971
5	32380.0	7.828	5.46	4.656	-2.5	-2.5	5.156	2.016	2.166	2.016
6	34025.0	8.300	5.63	4.825	-2.5	-2.5	5.325	2.319	2.469	2.319
7	34375.0	8.046	5.58	4.781	0.09	-2.5	5.281	2.264	2.259	2.109
8	35000.0	8.280	5.30	4.504	-2.5	-2.5	5.004	2.620	2.770	2.620
9	35090.0	8.292	5.06	4.26	0.06	-2.5	4.76	3.029	3.026	2.876
10	35280.0	8.176	5.59	4.788	-2.5	-2.5	5.288	2.232	2.382	2.232
11	37000.0	8.654	5.37	4.568	-2.5	-2.5	5.068	2.930	3.080	2.930
12	37075.0	8.556	5.50	4.702	-2.5	-2.5	5.202	2.698	2.848	2.698
13	41750.0	9.118	6.16	5.36	-7	7	5.86	2.332	2.752	3.172



NOTES:

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
3. LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
4. GRADE OF CONCRETE:-
BOX - M-25
RETURN WALL - M-25
P.C.C. LEAN CONC. - M-15
5. CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE DRAWING.
6. ALL REINFORCEMENTS SHALL BE OF GRADE CRS Fe-500D AND AND CONFIRM TO IS-1786
7. IN CASES WHERE INVERT LEVEL IS HIGHER THAN GROUND LEVEL AT ENDS OF STRUCTURE OR WHERE UNSUITABLE SOIL IS TO BE REPLACED BY GRANULAR MATERIAL, PROVIDE ADEQUATE CUT OFF WALLS AT ENDS OF STRUCTURE TO PREVENT SCOUR/EROSION.
8. ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AS PER DRG.NO. OSRP/CEG/BR/MISC-02
9. FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.
10. THE AREA IS UNDER SEVERE EXPOSURE CONDITION.

REFERENCE DRAWING:-

1. FOR DIMENSION & REINFORCEMENT DETAILS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/106, SD/112 (SHEET 1 OF 2), SD/112 (SHEET 2 OF 2).
2. FOR GENERAL NOTES, MISCELLANEOUS DETAILS APPROACH SLAB, RCC RAILING, DRAINAGE SPOUT FLOOR PROTECTION WORKS REFER MOST STANDARD DRAWING OF CULVERTS NO. SD/101, SD/115(SHEET 1 OF 4), (SHEET 2 OF 4), (SHEET 3 OF 4),(SHEET 4 OF 4) & SD/111.
3. OSRP/CEG/SH-9/BR/FPW/01
4. OSRP/CEG/SH-9/BR/SCW
5. OSRP/CEG/RW/MISC-01
6. OSRP/CEG/BR/MISC-02

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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 :

CONSULTING ENGINEERS GROUP LTD.

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

ODISHA WORKS DEPARTMENT

PROJECT :

CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :

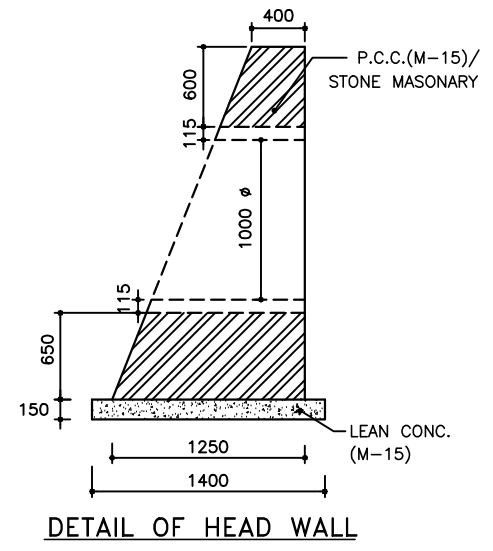
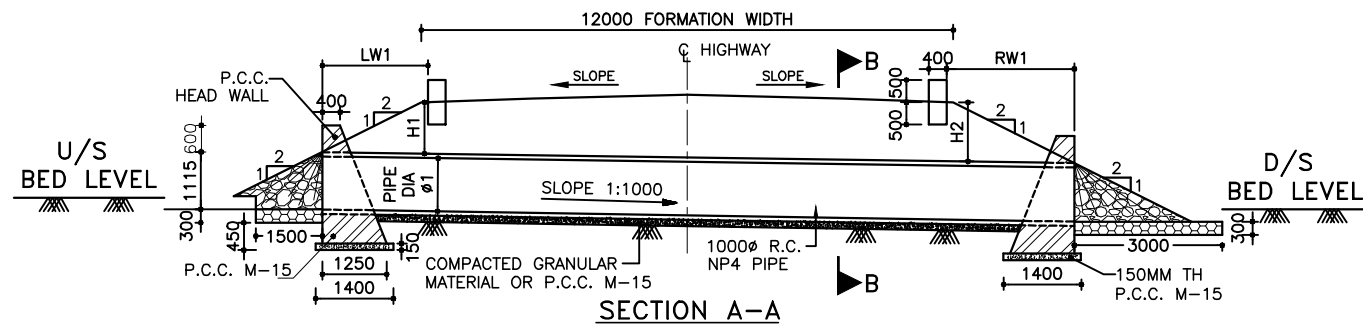
N.T.S

DRAWING TITLE :

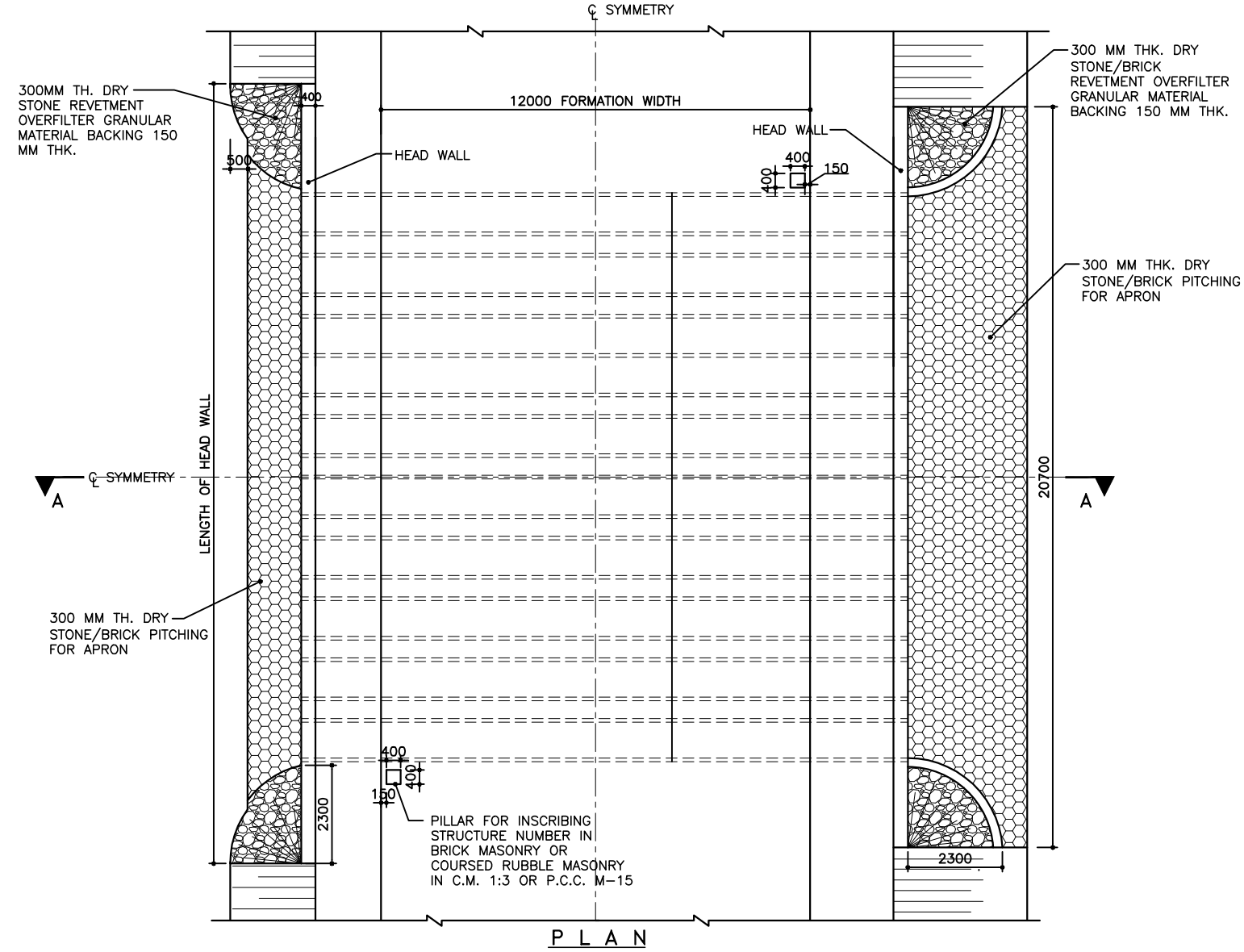
GENERAL ARRANGEMENT DRAWING TRIPPLE CELL R.C.C. BOX CULVERT 3m X3m (WITH OUT CUSHION)

DWG. NUMBER : OSRP/CEG/SH9/P02B/TRIPLE BOX/ 3

REV. R2



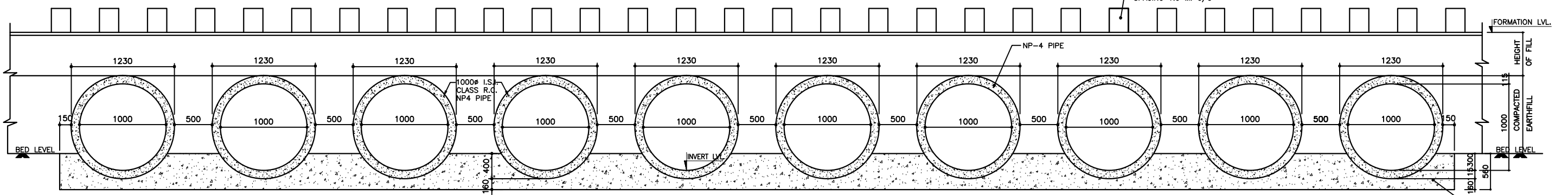
- NOTES:**
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
 3. LOOSE / UNSUITABLE SOIL BELOW CULVERTS IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
 4. CHAINAGE / FORMATION LEVEL IS PROVIDED AS PER APPROVED PLAN & PROFILE.
 5. FOR CULVERTS SKEW TO THE TRAFFIC DIRECTION LENGTH OF CULVERT SHALL BE ADJUSTED AS PER SITE CONDITION.
 6. LONGITUDINAL SLOPE OF PIPE SHALL BE MIN. 1 IN 1000.
 7. FIRST CLASS BEDDING CAN BE USED FOR MAXIMUM HEIGHT OF FILL OF 4.0 M.
 8. THE FINISHED ROAD LEVEL SHALL BE VERIFIED WITH ALIGNMENT DRAWING & GROUND LEVEL WITH SITE CONDITIONS BEFORE EXECUTION.



List of Additional Bridges of 10 x 1.0 m Pipe

S. no.	Proposed Chainage	Formation Level	Bed Level	Superelevation/ Camber		Height of fill		LW1	RW1	Total length	No of pipes
				Left	Right	H1	H2				
1	27+800	8.025	6.28	-2.5	-2.5	0.8	0.8	1.6	1.6	15.2	60
2	29+850	7.482	5.56	5.8	-5.8	1.5	0.8	2.9	1.6	16.5	70
3	29+950	7.569	5.54	5.8	-5.8	1.6	0.9	3.2	1.8	16.9	70
4	31+900	7.873	6.36	-2.5	-2.5	0.6	0.6	1.1	1.1	14.3	60

FOR 15 Row Pipes Spacing and edge distance shall also be same.



SECTION B-B

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@cegindia.com

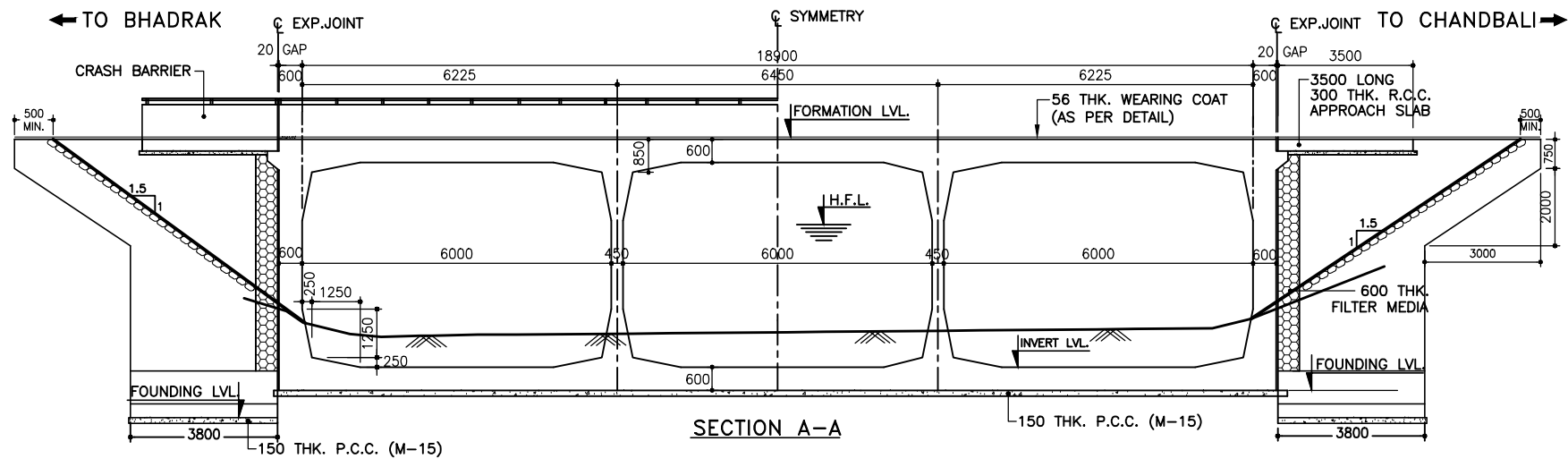
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL ARRANGEMENT FOR R.C.C TEN PIPE BRIDGES (1.0m DIA) (HEIGHT OF FILL VARYING FROM 0.6 TO 4.0 M)
 (SHEET 1 OF 3)
 DWG. NUMBER : OSRP/CEG/P02B/STR/ 3
 REV. R2



FORMATION LEVEL (m)	7.800	7.800	7.800
BED LEVEL (m)	6.415	5.090	6.466
CHAINAGE (m)	32+087	32+100	32+113

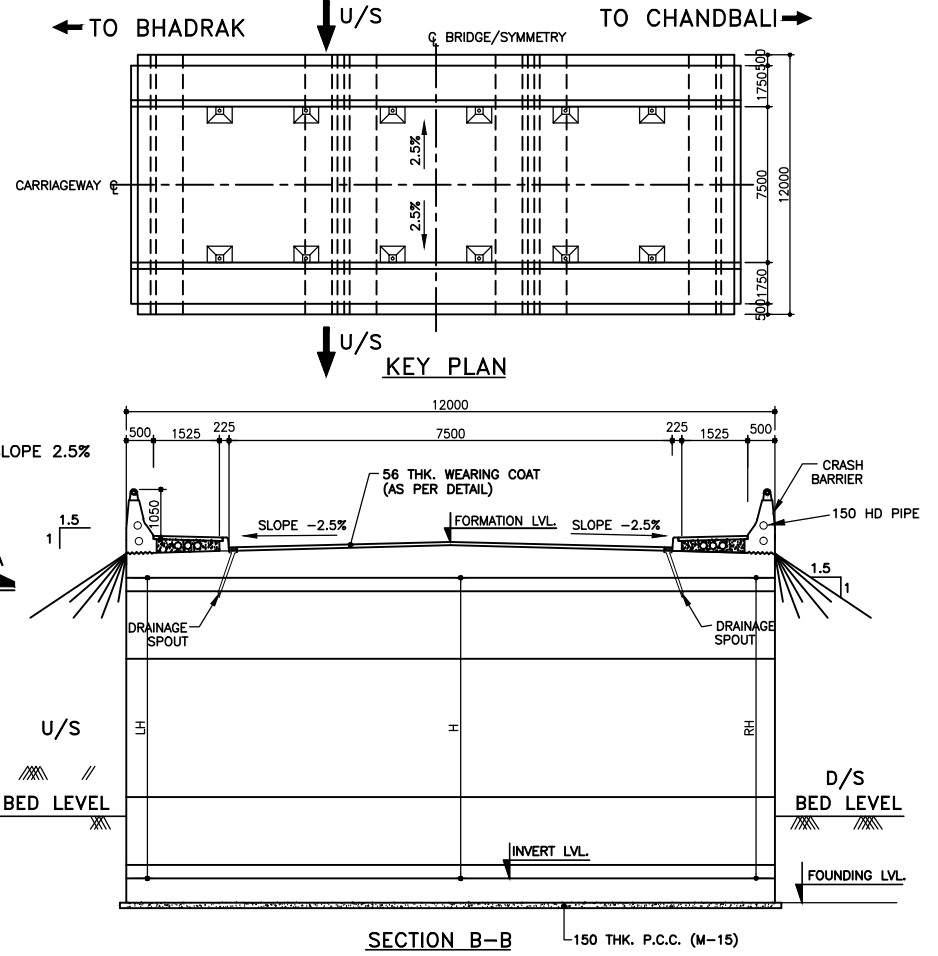
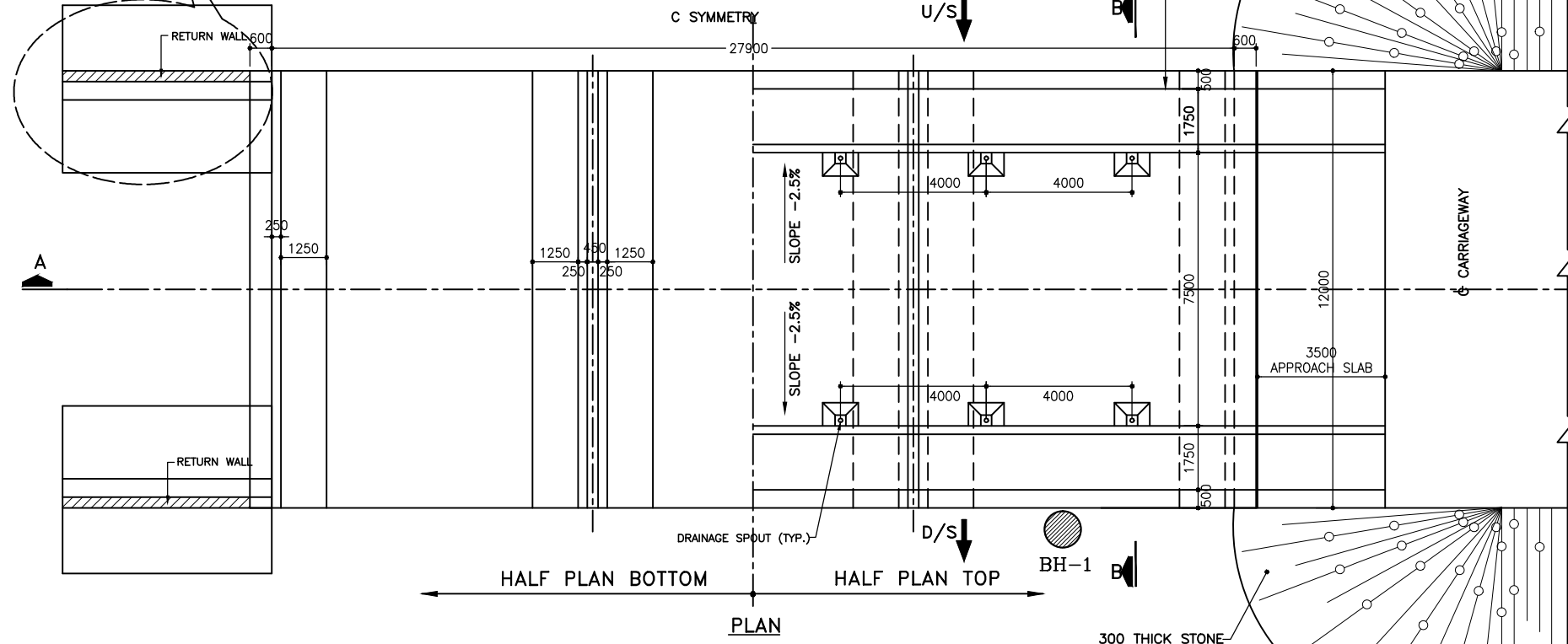
BOX LEVELS DETAILS

EXISTING LOCATION (m)	PROPOSED CHAINAGE (m)	FORMATION LEVEL (m)	DESIGN HFL (m)	BED LVL (m)	INVERT LVL (m)	FOUNDING LVL (m)	CLEAR HEIGHT (MAX)			DIRECTION OF FLOW
							LH (m)	H (m)	RH (m)	
32+100	32+100	7.800	6.226	5.090	4.310	3.590	2.8	3.0	2.8	L TO R

- NOTES:**
- ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METERS.
 - ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, DO NOT SCALE THE DIMENSIONS.
 - CHAINAGES SHOWN ARE C/L OF PROPOSED ROAD.
 - LOOSE / UNSUITABLE SOIL BELOW BOX STRUCTURES IS REPLACED WITH SUITABLE GRANULAR MATERIAL.
 - FORMATION LEVEL & SUPERELEVATION IS PROVIDED AS PER THE APPROVED 'PLAN & PROFILE' DRAWING.
 - ASPHALTIC PLUG TYPE EXPANSION JOINT IS PROVIDED AS PER DRAWING NO. OSRP/CEG/BR/MISC-02
 - GRADE OF CONCRETE:
 P.C.C. LEAN CONC. ----- M-15
 BOX STRUCTURE ----- M-35
 RETURN WALL ----- M-30
 CRASH BARRIER ----- M-40
 - FOR FLOOR PROTECTION DETAILS REFER SEPERATE DRAWING.
 - FOR REINF. DETAILS OF RETURN WALL REFER SEPERATE DRAWING. GRADE OF STEEL SHALL BE CRS Fe500D AS PER IS-1786

- REFERENCE DRAWINGS**
- OSRP/CEG/SH-9/BR/6+050/02
 - OSRP/CEG/SH-9/BR/6+050/03
 - OSRP/CEG/BR/MISC-02
 - OSRP/CEG/SH-9/BR/FPW/01
 - OSRP/CEG/SH-9/BR/SCW
 - OSRP/CEG/SH-9/RW/MISC-02

FOR RETURN WALL REFER SEPERATE DRAWING NO. OSRP/CEG/SH-9/RW/MISC-02



NOTE:
 SOIL BELOW FOUNDING LEVEL UPTO DEPTH OF 2.0 M. SHALL BE REPLACED BY SUITABLE COARSE RIVER SAND TO GET THE REQUIRED S.B.C.

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED: APPROVED:

DPR CONSULTANT :
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 E-12, MOJI COLONY, MALVIYA NAGAR
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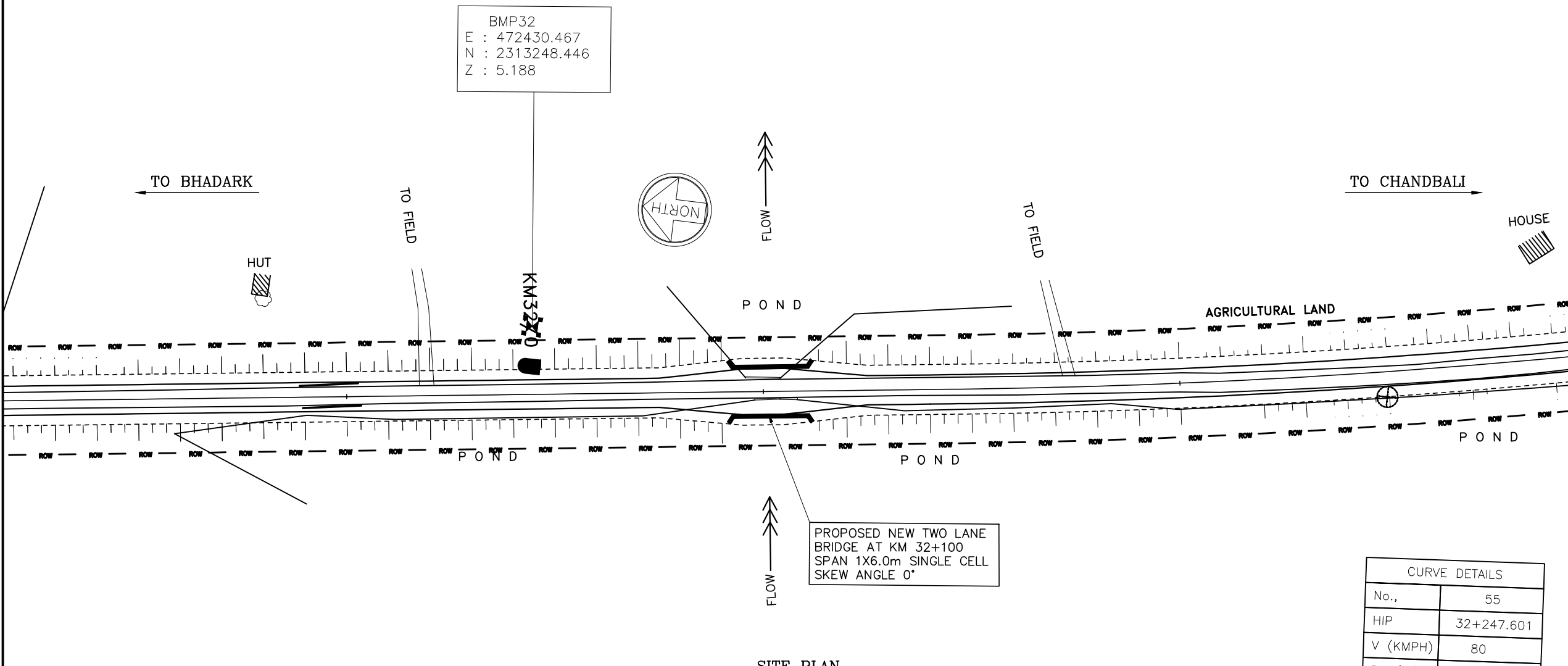
CLIENT
ODISHA WORKS DEPARTMENT

PROJECT :
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRHAT TO CHANDBALI - KM 27+500 TO KM 27+500 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED CH. 32+100 (KALA POLO)
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 REV. R2

NOTES:-



SITE PLAN

CURVE DETAILS	
No.,	55
HIP	32+247.601
V (KMPH)	80
R (m)	-1800
Lc (m)	201.351
Ls (m)	0
Delta	6° 24' 33.1"
e (%)	2.5
Ts(m)	100.780
Es (m)	2.819

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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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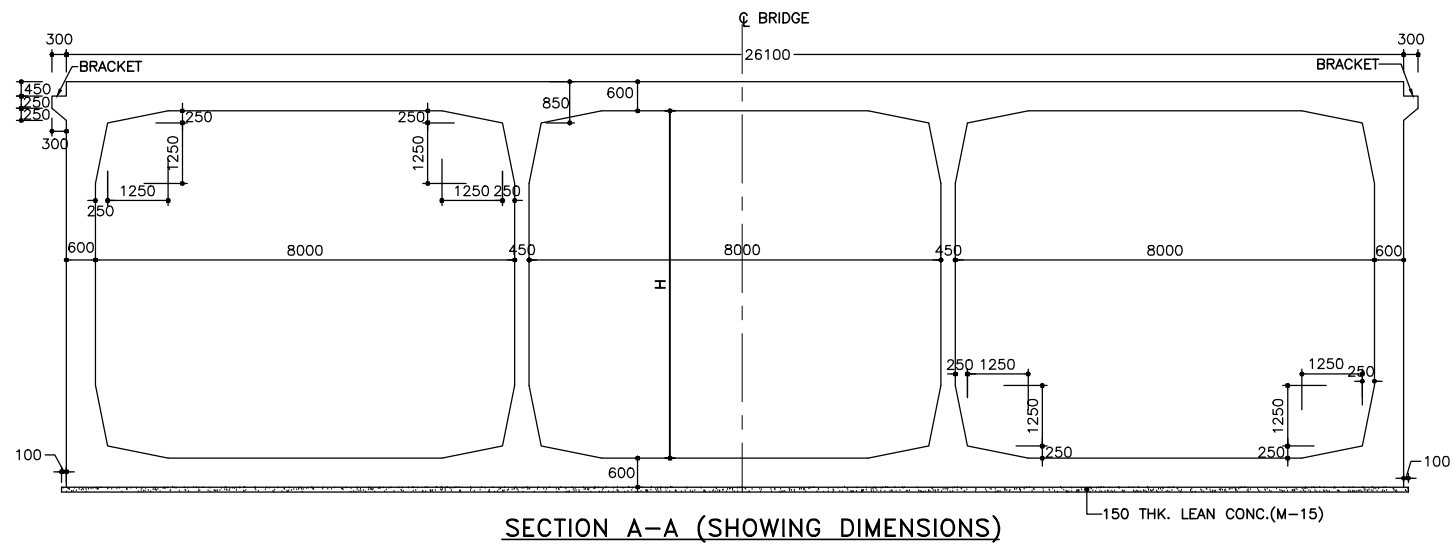
CLIENT

ODISHA WORKS DEPARTMENT

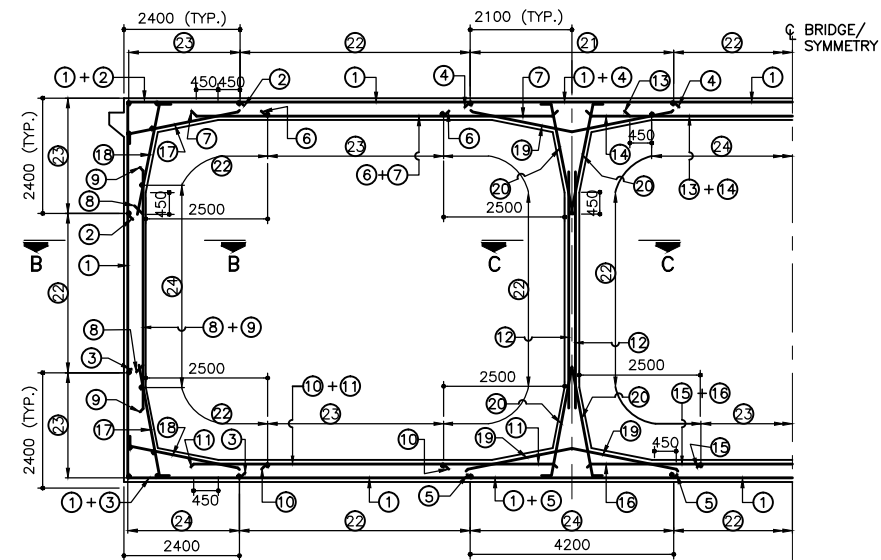
PROJECT :
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM BHADRAK TO PIRHAT - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

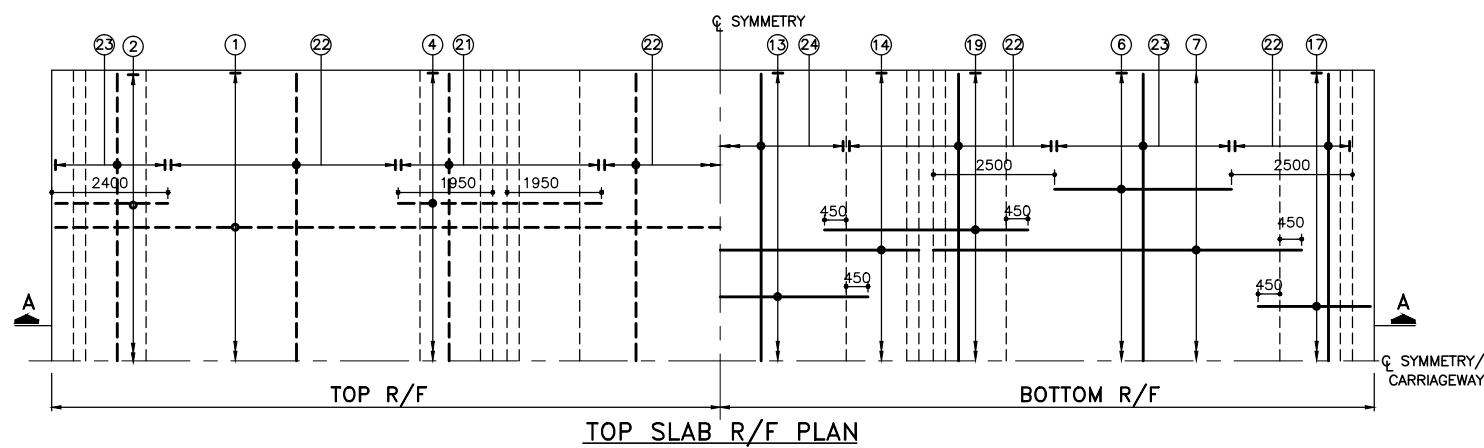
DRAWING TITLE :
SITE PLAN BRIDGE AT PROPOSED CH. 32+100
 (SHEET 1 OF 2)
 DWG. NUMBER : **OSRP/CEG/P02B/STR/3** REV. R2



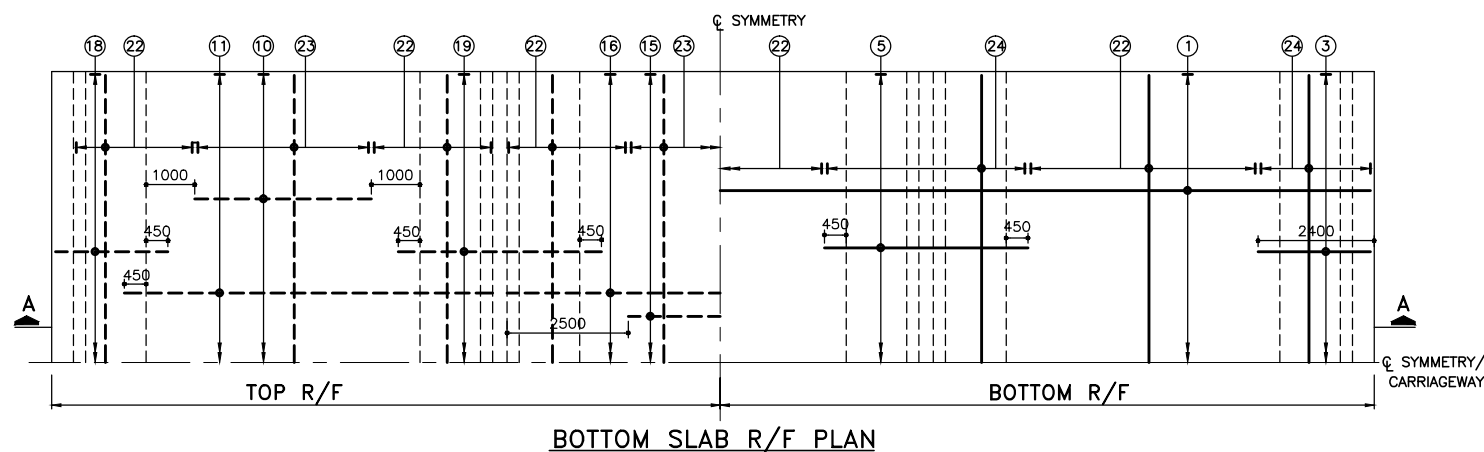
SECTION A-A (SHOWING DIMENSIONS)



SECTION A-A (SHOWING REINFORCEMENT)



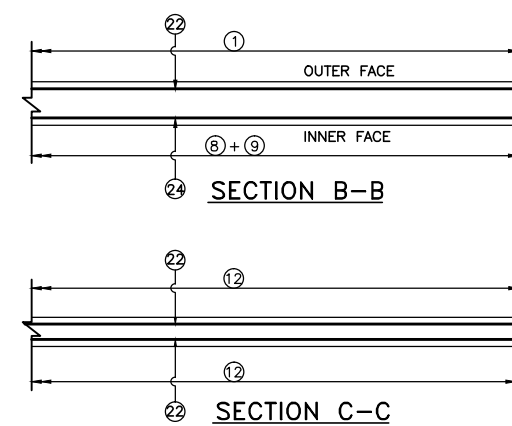
TOP SLAB R/F PLAN



BOTTOM SLAB R/F PLAN

LEGEND:

- BAR ON BOTTOM FACE
- - - BAR ON TOP FACE
- R/F REINFORCEMENT



REINF. DETAILS

BAR NO.	BAR DIA.	SPACING	SHAPE
1	16	150 C/C	—
2	16	150 C/C	—
3	20	150 C/C	—
4	12	150 C/C	—
5	20	150 C/C	—
6	32	300 C/C	—
7			
8	32	300 C/C	—
9			
10	32	300 C/C	—
11			
12	12	150 C/C	—
13	32	600 C/C	—
	25	600 C/C	—
14	16	150 C/C	—
15	16	150 C/C	—
16	12	150 C/C	—
17	16	150 C/C	—
18	16	150 C/C	—
19	12	150 C/C	—
20	12	150 C/C	—
21	10	150 C/C	—
22	10	150 C/C	—
23	12	180 C/C	—
24	12	150 C/C	—

NOTES:

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METERS.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. GRADE OF CONC. FOR R.C.C. WORKS. = M-35
GRADE OF CONC. FOR LEAN CONC. = M-15
4. HYSD REINFORCEMENT IS CONFORMED TO IS:1786 GRADE Fe 500.
5. ANTI CORROSIVE REINFORCING BAR SHALL BE PROVIDE.
6. CLEAR COVER TO ANY REINFORCEMENT:
(a) BASE SLAB =75mm
(b) ALL OTHER COMPONENTS =50mm.
7. NOT MORE THAN 50% OF BAR IS LAPPED AT A SECTION AND LAPPING IS STAGGERED. AND MINIMUM LAP LENGTH IS 63X DIA OF BAR FOR MAIN BARS AND 30 TIMES DIA OF BAR FOR ALL OTHER BARS.
8. FOR DETAILS OF CRASH BARRIER, EXPANSION JOINT, BRACKET, APPROACH SLAB AND WEARING COAT REFER DRAWING No. OSRP/CEG/BR/MISC-02

REFERENCE DRAWINGS:

- (I) OSRP/CEG/SH-9/TRIPLE CELL/01 G. A. D.
- (II) OSRP/CEG/BR/MISC-02 MISC DETAILS

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
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	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED: APPROVED:

DPR CONSULTANT :

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CLIENT

ODISHA WORKS DEPARTMENT

PROJECT :

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM BHADRAK TO PIRHAT - KM 0+000 TO KM 27+500 (BALANCE WORK) PACKAGE - P02A

SCALE :

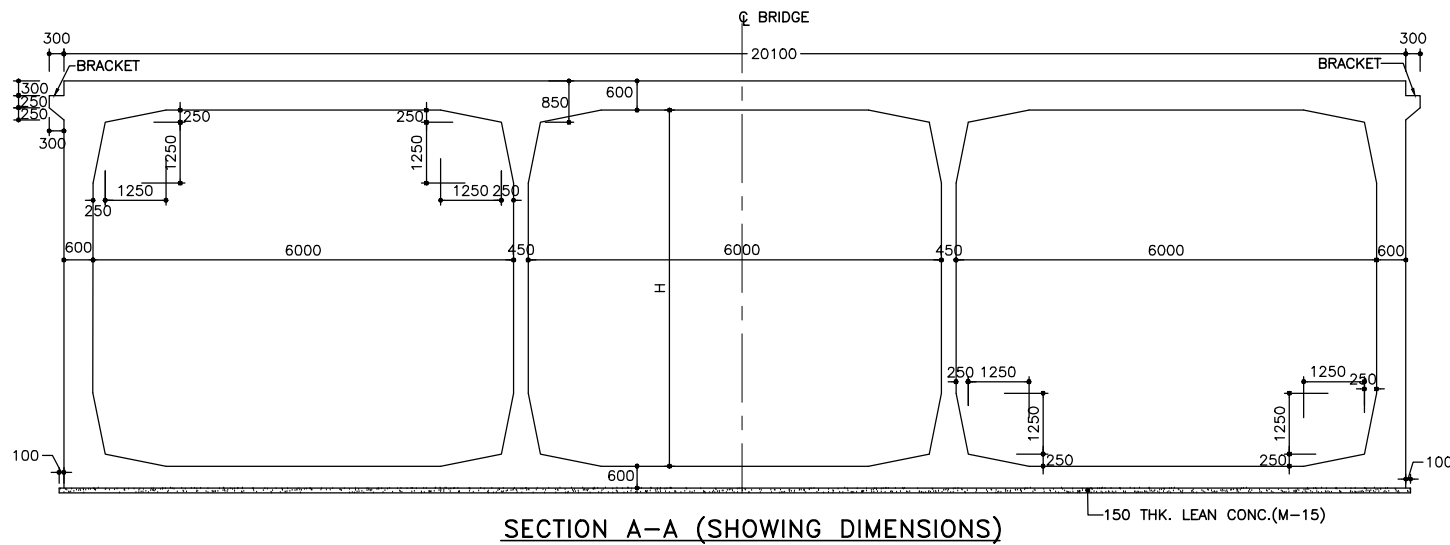
N.T.S

DRAWING TITLE :

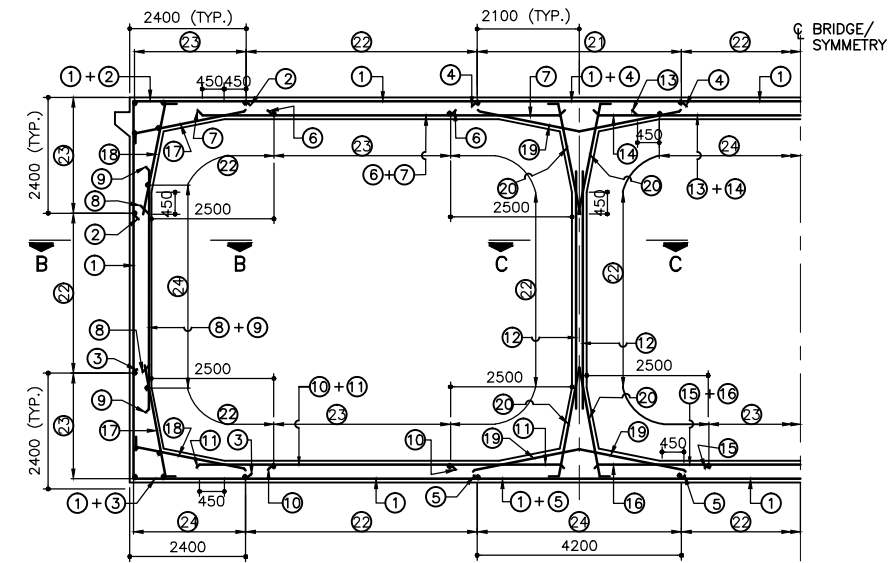
DIMENSION AND REINFORCEMENT DETAILS TRIPLE CELL R.C.C. BOX BRIDGES (WITHOUT EARTH CUSHION)

DWG. NUMBER : OSRP/CEG/P02A/STR/ 3

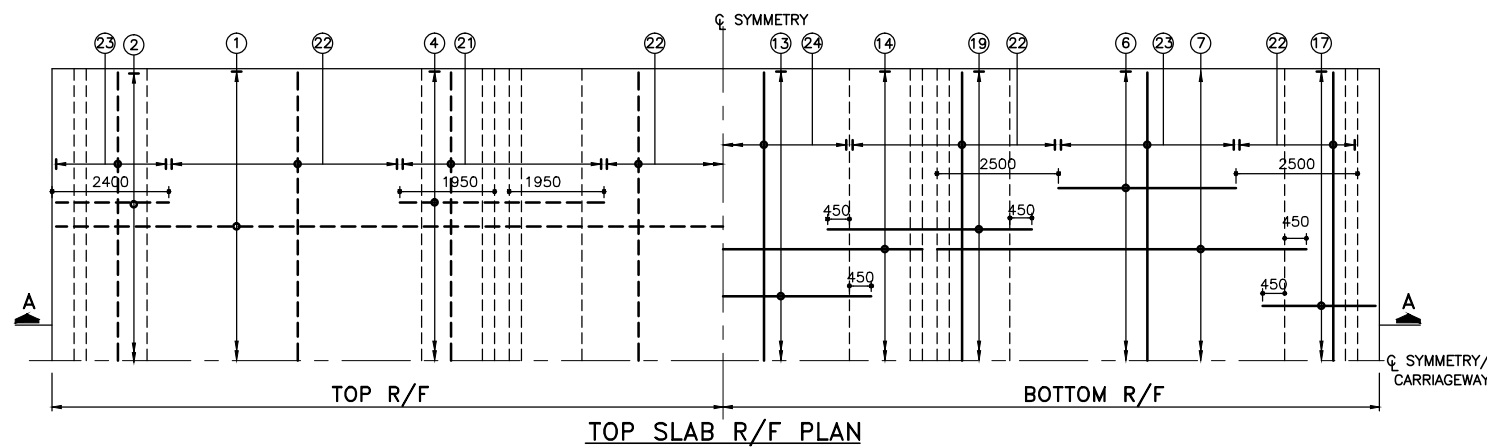
REV. R2



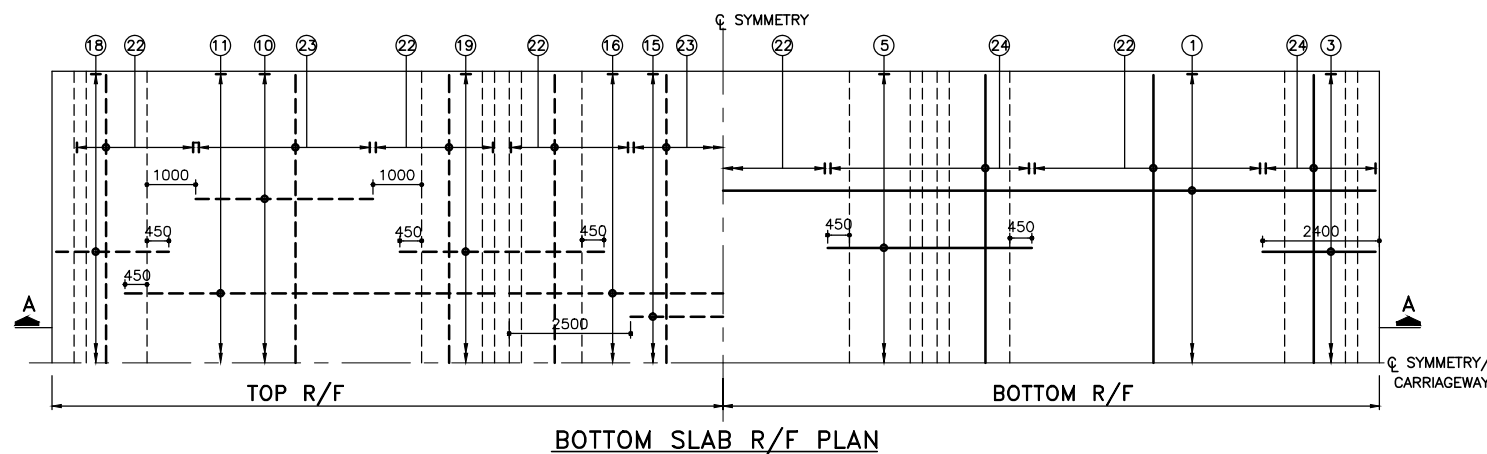
SECTION A-A (SHOWING DIMENSIONS)



SECTION A-A (SHOWING REINFORCEMENT)



TOP SLAB R/F PLAN



BOTTOM SLAB R/F PLAN

LEGEND:

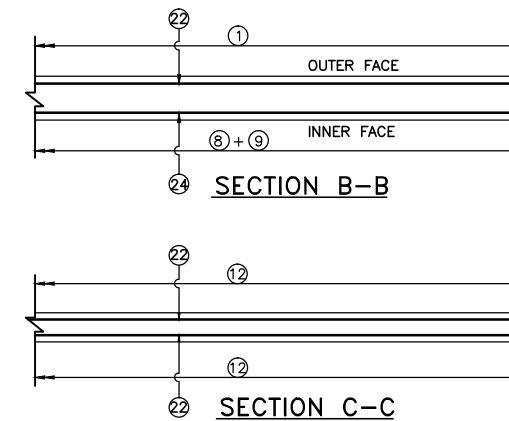
- BAR ON BOTTOM FACE
- - - BAR ON TOP FACE
- R/F REINFORCEMENT

NOTES:

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METERS.
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. GRADE OF CONC. FOR R.C.C. WORKS. = M-35
GRADE OF CONC. FOR LEAN CONC. = M-15
4. HYSD REINFORCEMENT IS CONFORMED TO IS:1786 GRADE Fe 500
5. ANTI CORROSIVE REINFORCING BAR SHALL BE PROVIDE.
6. CLEAR COVER TO ANY REINFORCEMENT:
(a) BASE SLAB =75mm
(b) ALL OTHER COMPONENTS =50mm.
7. NOT MORE THAN 50% OF BAR IS LAPPED AT A SECTION AND LAPPING IS STAGGERED. AND MINIMUM LAP LENGTH IS 63X DIA OF BAR FOR MAIN BARS AND 30 TIMES DIA OF BAR FOR ALL OTHER BARS.
8. FOR DETAILS OF CRASH BARRIER, EXPANSION JOINT, BRACKET, APPROACH SLAB AND WEARING COAT REFER DRAWING No. OSRP/CEG/BR/MISC-02

REFERENCE DRAWINGS:

- (I) OSRP/CEG/SH-9/BR/6+050/01 G. A. D.
- (II) OSRP/CEG/BR/MISC-02 MISC DETAILS



REINF. DETAILS

BAR NO.	BAR DIA.	SPACING	SHAPE
1	16	150 C/C	□
2	16	150 C/C	□
3	20	150 C/C	□
4	12	150 C/C	□
5	20	150 C/C	□
6	32	300 C/C	□
7			□
8	32	300 C/C	□
9			□
10	32	300 C/C	□
11			□
12	12	150 C/C	□
13	32	600 C/C	□
14	25	600 C/C	□
15	16	150 C/C	□
16	12	150 C/C	□
17	16	150 C/C	□
18	16	150 C/C	□
19	12	150 C/C	□
20	12	150 C/C	□
21	10	150 C/C	□
22	10	150 C/C	□
23	12	180 C/C	□
24	12	150 C/C	□

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED: APPROVED:

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CLIENT
ODISHA WORKS DEPARTMENT

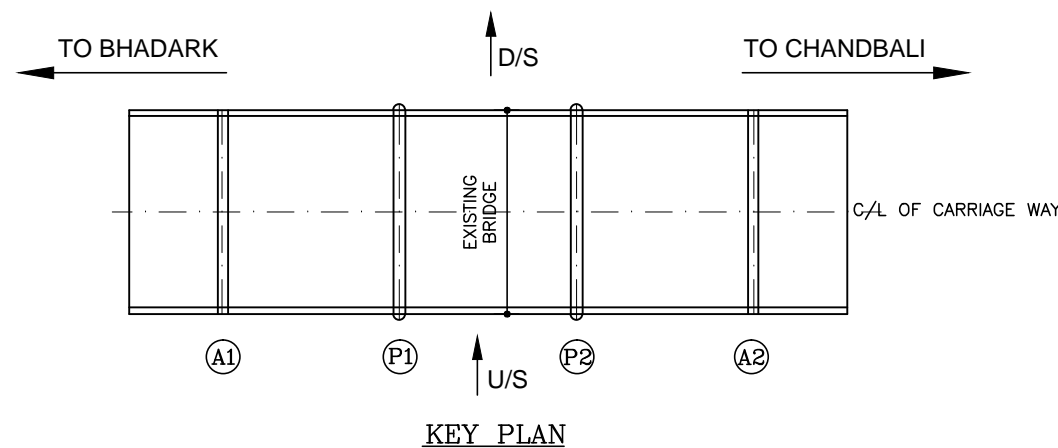
PROJECT :
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO BHADRAK - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 DIMENSION AND REINFORCEMENT DETAILS BRIDGE AT PROPOSED CH. 32+100 (KALA POLO)
 (SHEET 1 OF 2)
 DWG. NUMBER : OSRP/CEG/P02B/STR/3 REV. R2

NOTES:

EXISTING BRIDGE DETAILS			
1	Chainage	9/300	
2	Name of the nallah	Kundi polo	
3	Year of construction	1962 - 63	
4	Type of bridge	High level Bridge	
5	Existing span arrangement	3 x 7.0	
6	Existing carriage way width	7.3 m	
7	Thickness of superstructure	0.55 m	
8	Type of foundation	Open Foundation	
9	Type of substructure	Brick masonry wall type	
10	Type of superstructure	RCC solid slab	
11	Existing Formation Level	11.9 m	
12	Final Formation Level	11.9 m	
13	Bed Level	8.064 m	
14	Distance of PCL w.r.t ECL	0.03 m Right	
REHABILITATION MEASURES SUGGESTED			
S. no.	Items	Rehabilitation Measures	Reference Drawings
1	Jacketing	Jacketing with dowels is suggested in piers and abutments	OSRP/CEG/BR/JT-01
2	Superstructure	Touch up repair to be done in the edge of slab (1.0 sq.mt)	-
3	Expansion Joints	Expansion joint buried due to overlay of BT and shall be replaced by asphaltic plug type	OSRP/CEG/BR/MISC-02
4	Wearing Coat	Existing Bituminous over lay shall be removed	OSRP/CEG/BR/MISC-02
5	Approach slab	Approach slab to be constructed	OSRP/CEG/BR/MISC-02
6	Bed protection	Bed protection and curtain wall shall be provided	OSRP/CEG/SH-53/BR/FPW/02
7	Vegetation growth	Vegetations to be removed from the structure	-



HYDROLOGICAL DATA

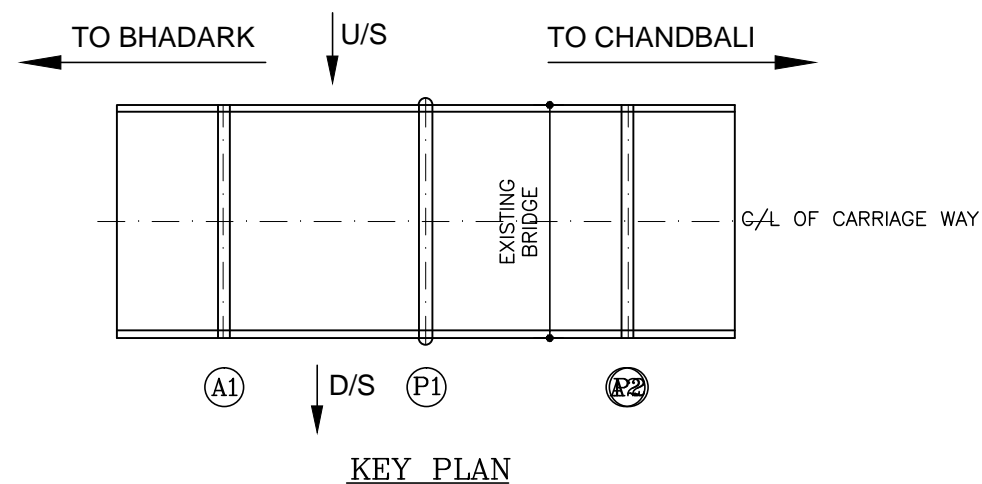
Design Discharge in (cum/sec)	Max. scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)	Length of Flexible Apron in (mts)	
		u/s	d/s		u/s	d/s
		DCW ₁	DCW ₂		LFA ₁	LFA ₂
53.74	6.037	2.0	2.5	6.1	3.0	6.0

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	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 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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : REHABILITATION BRIDGE DETAILS BRIDGE AT KM. 9+300	(SHEET 1 OF 2)	
R1	JAN-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 : OSRP/CEG/P02B/STR/3	REV. R2	

NOTES:

EXISTING BRIDGE DETAILS		
1	Chainage	30/200
2	Name of the nallah	Kadanga Canal
3	Year of construction	1989
4	Type of bridge	High level Bridge
5	Existing span arrangement	2 x 6.7m
6	Existing carriage way width	7.35 m
7	Thickness of superstructure	0.5 m
8	Type of foundation	Raft foundaion
9	Type of substructure	RCC Box cell
10	Type of superstructure	RCC solid slab
11	Existing Formation Level	7.7 m
12	Final Formation Level	7.7 m
13	Bed Level	4.263 m
14	Distance of PCL w.r.t ECL	0.2 mt Left

REHABILITATION MEASURES SUGGESTED			
S. no.	Items	Rehabilitation Measures	Reference Drawings
1	Expansion Joints	Expansion joint shall be replaced by asphalt plug type with approach slab	OSRP/CEG/BR/MISC-02
2	Railing	Existing railings to be dismantled and Foot path shall be provided	OSRP/CEG/SH-9/BR/30+200/02
3	Bed Protection	Bed protection shall be provided	OSRP/CEG/SH-9/BR/FPW/01
4	Vegetation growth	Vegetations to be removed from the structure	-



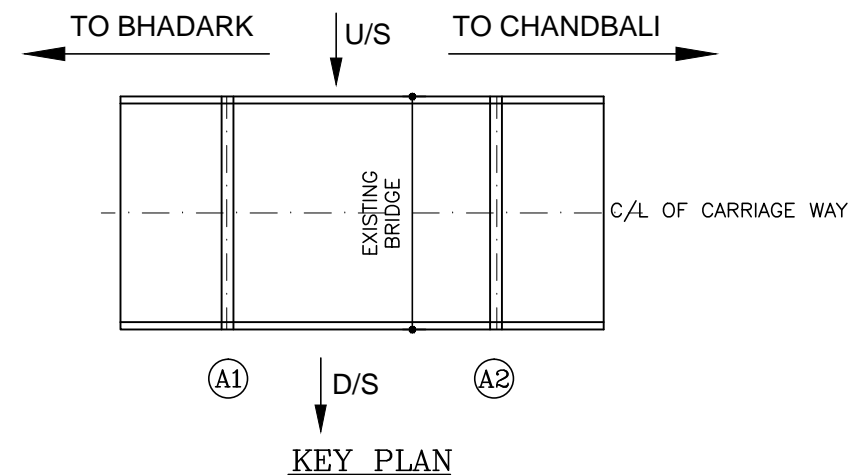
HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max.scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	DCW ₁	DCW ₂	LFA ₁	LFA ₂
15.84	2.735	2.5	3.0	3.0	5.0	3.5	6.0

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA 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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : REHABILITATION BRIDGE DETAILS BRIDGE AT KM. 30+200	
R1	JAN-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:						

NOTES:

EXISTING BRIDGE DETAILS			
1	Chainage	34/700	
2	Name of the nallah	Talajharia Khatha Polo	
3	Year of construction	1975	
4	Type of bridge	High level Bridge	
5	Existing span arrangement	1 x 10.3m	
6	Existing carriage way width	7.25 m	
7	Thickness of superstructure	0.85 m	
8	Type of foundation	Open Foundation	
9	Type of substructure	PCC with skin reinforcement wall type	
10	Type of superstructure	RCC girder with slab	
11	Existing Formation Level	8.3 m	
12	Final Formation Level	8.3 m	
13	Bed Level	4.544 m	
14	Distance of PCL w.r.t ECL	0.375 mt Left	
REHABILITATION MEASURES SUGGESTED			
S. no.	Items	Rehabilitation Measures	Reference Drawings
1	Bed Protection	Bed protection shall be provided	OSRP/CEG/SH-53/BR/FPW/02
2	Railing	Existing Railings shall dismantled and crash barrier shall be provided	OSRP/CEG/BR/MISC-02
3	Expansion joint	Asphaltic plug type expansion joint shall be provided	OSRP/CEG/BR/MISC-02
4	Approach slab	Approach slab to be done by chipping out top 300 mm concrete from top wall	OSRP/CEG/BR/MISC-02
5	Return Wall	Return walls shall be repaired by surface treatment with polymer modified mortar	-



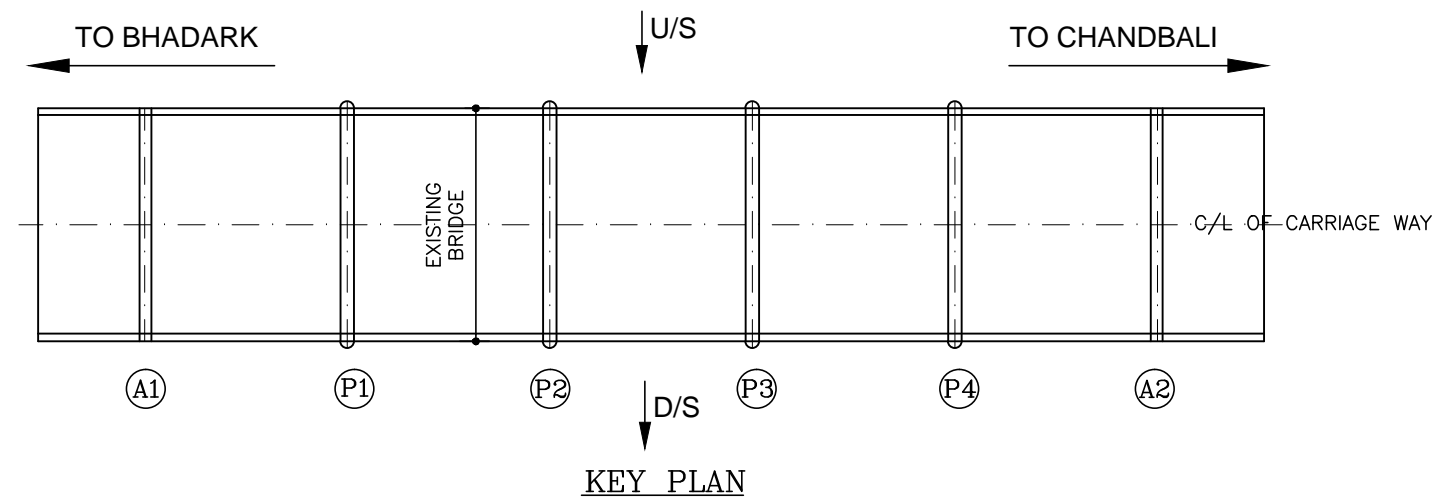
HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Max.scour Level in (mts)	Depth of curtain Wall in (mts)		Length of Rigid Apron in (mts)		Length of Flexible Apron in (mts)	
		u/s	d/s	u/s	d/s	u/s	d/s
		DCW ₁	DCW ₂	DCW ₁	DCW ₂	LFA ₁	LFA ₂
14.33	3.927	2.0	2.5	3.0	5.0	3.5	6.0

R2 SEP-2015 SECOND REVISION LASA		RAJU MATHUR		M.R MISHRA (EE)		O.P. PATEL (CE)		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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B		SCALE : N.T.S		DRAWING TITLE : REHABILITATION BRIDGE DETAILS BRIDGE AT KM. 34+700	
R1 JAN-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:														

NOTES:

EXISTING BRIDGE DETAILS			
1	Chainage	38/100	
2	Name of the nallah	Haladigandha Ghosura	
3	Year of construction	2005	
4	Type of bridge	High level Bridge	
5	Existing span arrangement	5 x 10.45m	
6	Existing carriage way width	8.1 m	
7	Thickness of superstructure	0.6 m	
8	Type of foundation	Pile Foundation	
9	Type of substructure	PCC with skin reinforcement wall type	
10	Type of superstructure	RCC girder with slab	
11	Existing Formation Level	9.2 m	
12	Final Formation Level	9.2 m	
13	Bed Level	3.984 m	
14	Distance of PCL w.r.t ECL	0.01 mt Left	
REHABILITATION MEASURES SUGGESTED			
S. no.	Items	Rehabilitation Measures	Reference Drawings
1	Expansion joint	Expansion joints shall be replaced by asphaltic plug type (6 nos)	OSRP/CEG/BR/MISC-02
2	Bearing	The superstructure shall be lifted from the support at bed level and Neoprene bearing (Size 400 x 250 x 48 mm) shall be placed	MOST STANDARD DRG. NO. SD/204
3	Honey combing	Honeycombing observed on diaphragms and girders, shall be take care by polymer modified concrete	-
4	Bed Protection	Bed protection to be done newly	OSRP/CEG/SH-9/BR/FPW/01
5	Approach Revetment	Approach revetment to be repacked	OSRP/CEG/BR/MISC-02
6	Approach Slab	Approach slab to be constructed	OSRP/CEG/BR/MISC-02



R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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@cegindia.com

DESIGN REVIEW CONSULTANT :

LEA

LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, 1st 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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

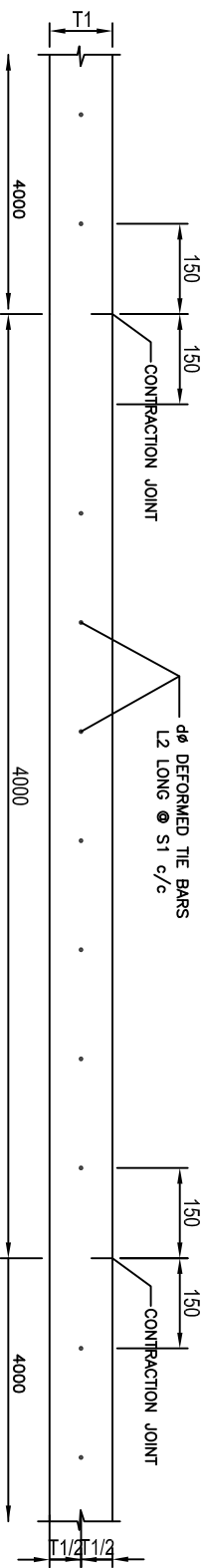
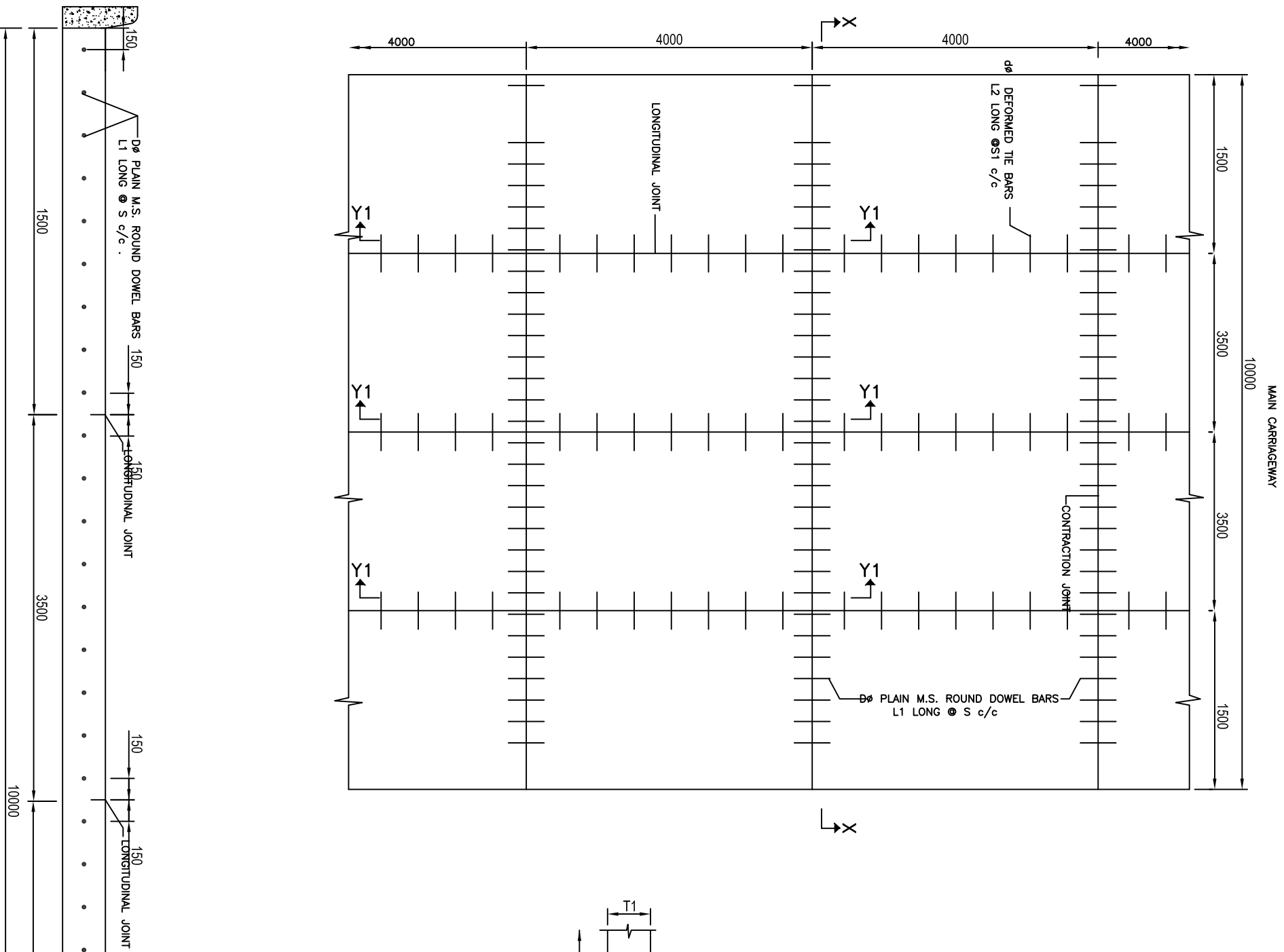
DRAWING TITLE :

REHABILITATION BRIDGE DETAILS
BRIDGE AT KM. 38+100

(SHEET 1 OF 2)

DWG. NUMBER : OSRP/CEG/P02B/STR/3

REV. R2



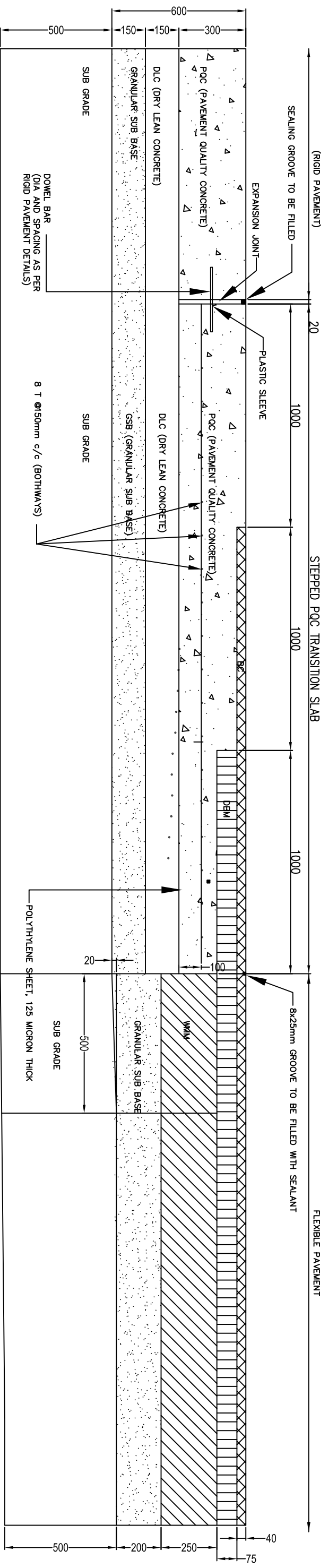
NOTATIONS

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. OSRP/CEG/LS/TR.
 3. FOR PAVEMENT THICKNESS AND OTHER DIMENSIONS REFER PAVEMENT SCHEDULE FOR RIGID PAVEMENT.
 4. ALL REINFORCEMENTS SHALL BE CONFIRMED TO FE-500

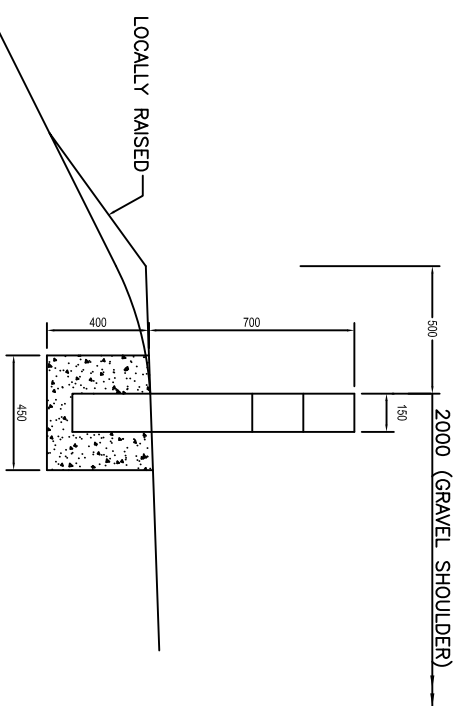
SECTION X-X (SHOWING DOWEL BAR ARRANGEMENT)

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">R2 SEP-2015 SECOND REVISION</td> <td style="width: 50%;">LUSA</td> </tr> <tr> <td>R1 JUN-2013 FIRST REVISION</td> <td>OWN VINAY</td> </tr> <tr> <td>JUNE 2008 ORIGINAL</td> <td>CEG</td> </tr> <tr> <td>NO. DATE REVISION</td> <td>BY DRAWN: PREPARED: CHECKED: APPROVED:</td> </tr> </table>	R2 SEP-2015 SECOND REVISION	LUSA	R1 JUN-2013 FIRST REVISION	OWN VINAY	JUNE 2008 ORIGINAL	CEG	NO. DATE REVISION	BY DRAWN: PREPARED: CHECKED: APPROVED:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">RAJU MATHUR</td> <td style="width: 50%;">M.R. MISHRA (EE)</td> </tr> <tr> <td>M.R. MISHRA (AE)</td> <td>M.R. MISHRA (EE)</td> </tr> <tr> <td>M.R. MISHRA (CE)</td> <td>N.K. PRADHAN (CE)</td> </tr> <tr> <td>OP. PATEL (CE)</td> <td></td> </tr> </table>	RAJU MATHUR	M.R. MISHRA (EE)	M.R. MISHRA (AE)	M.R. MISHRA (EE)	M.R. MISHRA (CE)	N.K. PRADHAN (CE)	OP. PATEL (CE)		<p>DR CONSULTANT :</p> <p>C O N S U L T I N G ENGINEERS GROUP LTD. E-12/M/OJ COLONY, MALVIYA NAGAR JALPUR-17 tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginfdia.com</p>	<p>DESIGN REVIEW CONSULTANT :</p> <p>LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044.</p>	<p>CLIENT :</p> <p>ODISHA WORKS DEPARTMENT</p>	<p>PROJECT :</p> <p>CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B</p>	<p>SCALE :</p> <p style="text-align: center;">N.T.S</p>	<p>DRAWING TITLE :</p> <p style="text-align: center;">TYPICAL DETAILS OF DOWEL BAR AND THE BAR ARRANGEMENT</p> <p>(SHEET 1 OF 1)</p>
R2 SEP-2015 SECOND REVISION	LUSA																						
R1 JUN-2013 FIRST REVISION	OWN VINAY																						
JUNE 2008 ORIGINAL	CEG																						
NO. DATE REVISION	BY DRAWN: PREPARED: CHECKED: APPROVED:																						
RAJU MATHUR	M.R. MISHRA (EE)																						
M.R. MISHRA (AE)	M.R. MISHRA (EE)																						
M.R. MISHRA (CE)	N.K. PRADHAN (CE)																						
OP. PATEL (CE)																							
		<p>DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3</p>			<p>REV. R2</p>																		

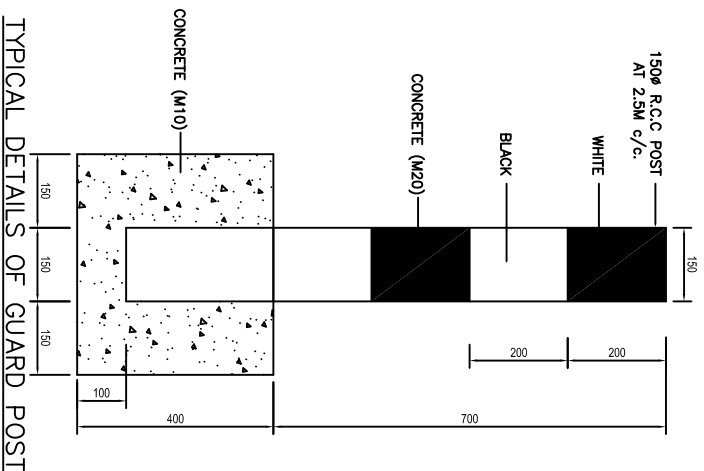


TYP. DETAILS OF TRANSITION SLAB BETWEEN RIGID & FLEXIBLE PAVEMENT
(SCALE : NTS)

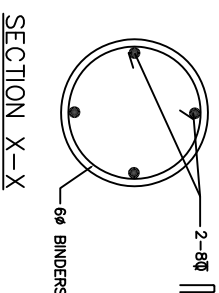
NO.		DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LISA		RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OWN	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADHAN (CE)	
-	JUNE 2008	ORIGINAL	CEG					
DPR CONSULTANT :		C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KMOI COLONY,MALVIYA NAGAR JAIPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.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 :		CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B						
SCALE :		N.T.S						
DRAWING TITLE :		TYPICAL DETAILS OF TRANSITION SLAB BETWEEN RIGID AND FLEXIBLE PAVEMENT						
DWG. NUMBER :		OSRP/CEG/SH9/P02B/ 3						
REV. R2		(SHEET 1 OF 1)						



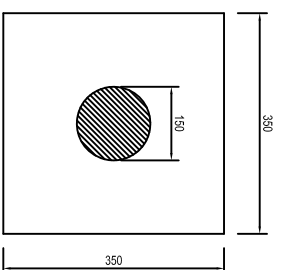
FIXING DETAILS OF GUARD POST



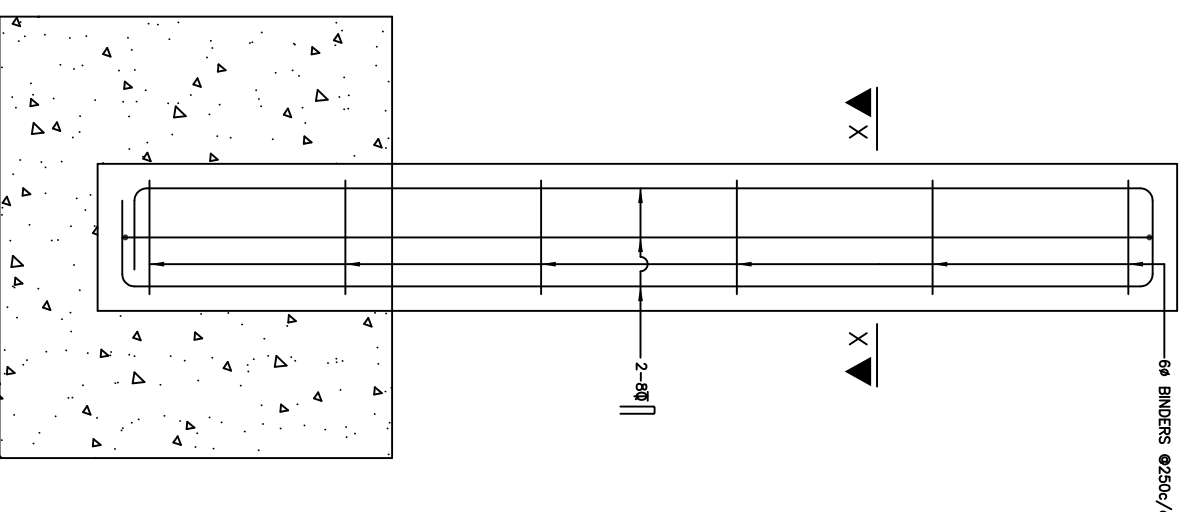
TYPICAL DETAILS OF GUARD POST



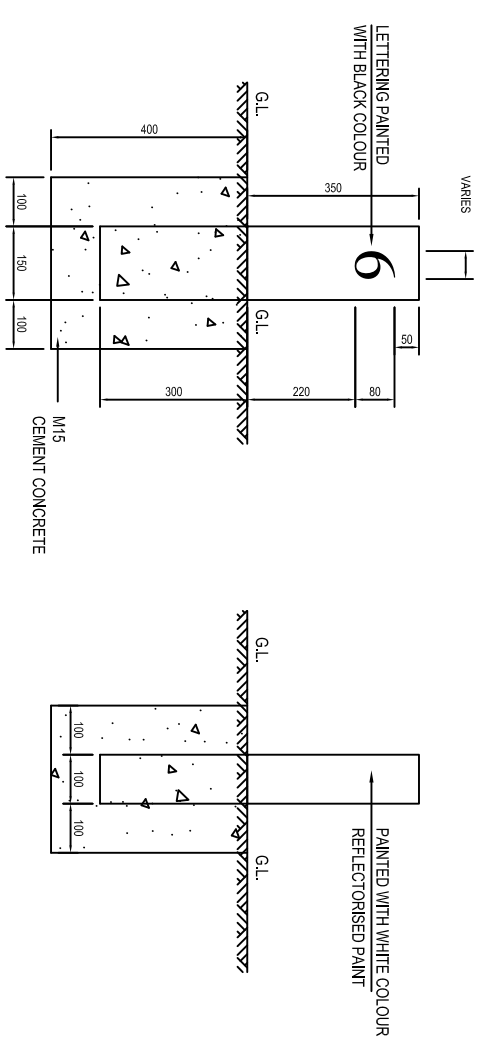
SECTION X-X



PLAN OF GUARD POST

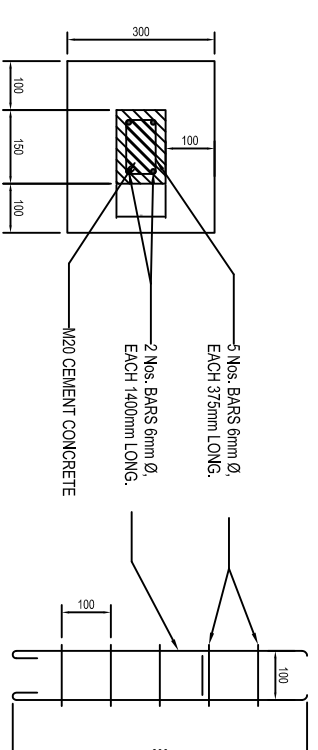


REINFORCEMENT DETAIL OF GUARD POST



FRONT ELEVATION

SIDE VIEW



PLAN

SCHEDULE OF REINFORCEMENT

TYPICAL DESIGN FOR 200m STONES

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFLECTORISED PAINT SHALL BE IN ACCORDANCE WITH CL.803.5 OF M.O.R.T & H SPEC.
3. FOR TYPE & STYLE SIZE OF LETTERING RELEVANT IRC CODE OF PRACTICE SHALL BE REFERRED.
4. LETTERING IS DONE WITH APPROVED QUALITY BLACK ENAMEL PAINT USING STENCIL

- ### NOTES:
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED.
 2. R.C.C. GUARD POSTS IS INSTALLED WHERE EMBANKMENT HEIGHT IS GREATER THAN 3 M AT OTHER HAZARD LOCATIONS.
 3. FOR SCHEDULE REFER DRAWING NO. OSRP/CEG/SH9A & SH-9/SCH-GP

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LUSA	RAJU MATHUR	M.A. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.A. MISHRA (EE)	N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DR CONSULTANT :
C O N S U L T I N G
ENGINEERS GROUP LTD.
 E-12,MOJI COLONY,MALVIYA NAGAR
 JALPUR-17 tel:
 +91-141-2520899,2521899,2520556 Fax:
 2521348, e-mail: ceg@ceginfra.com



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



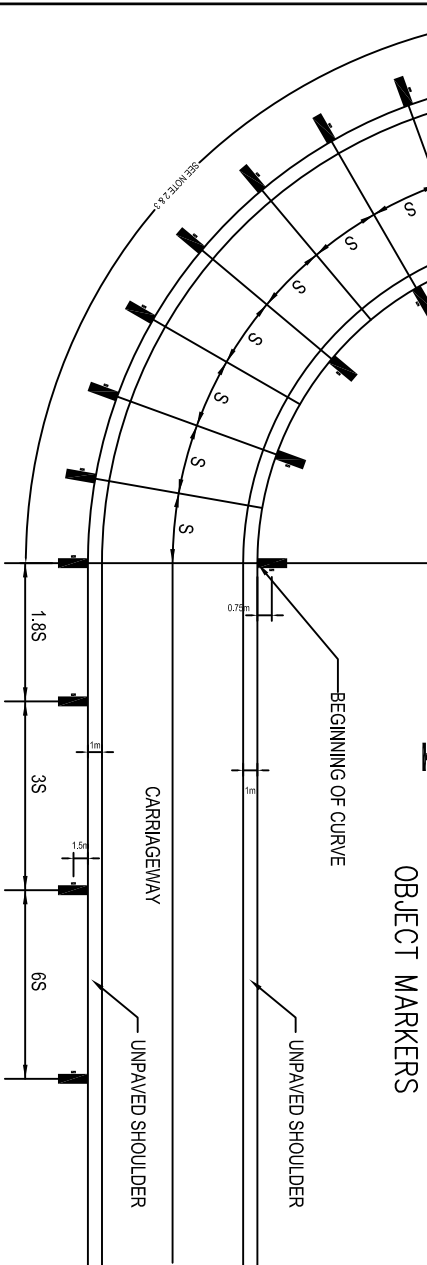
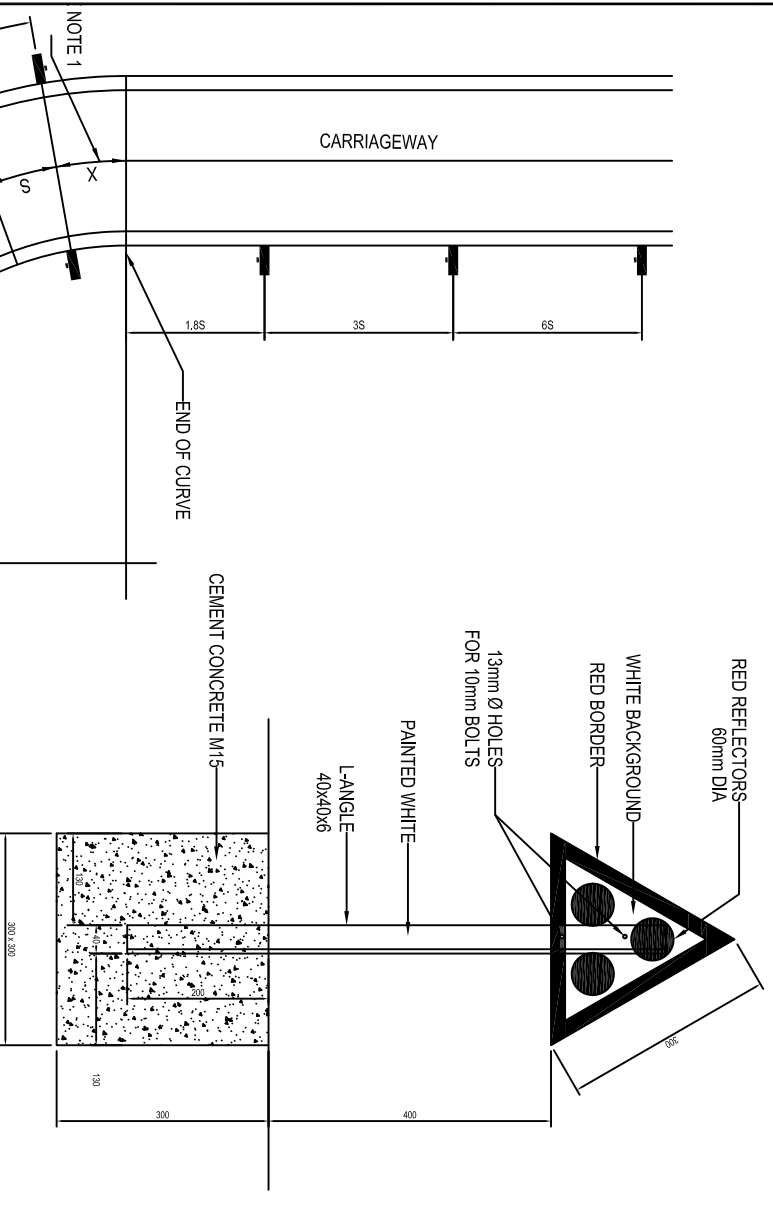
CLIENT :
ODISHA WORKS
 DEPARTMENT



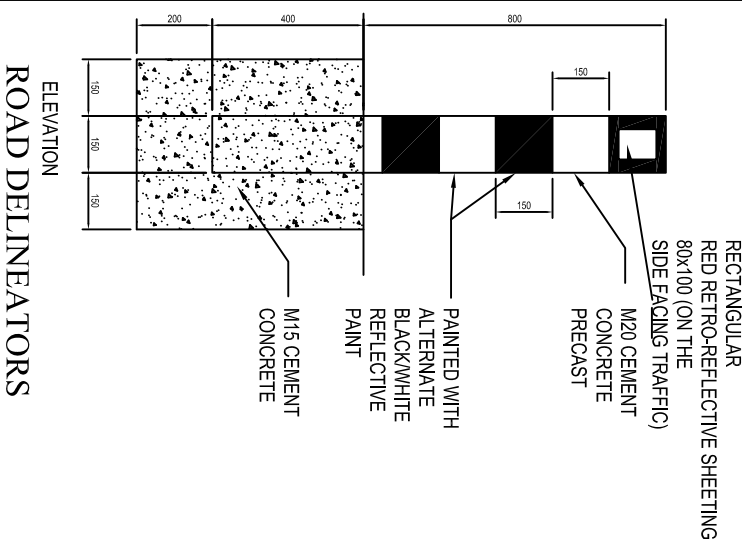
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING
 OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

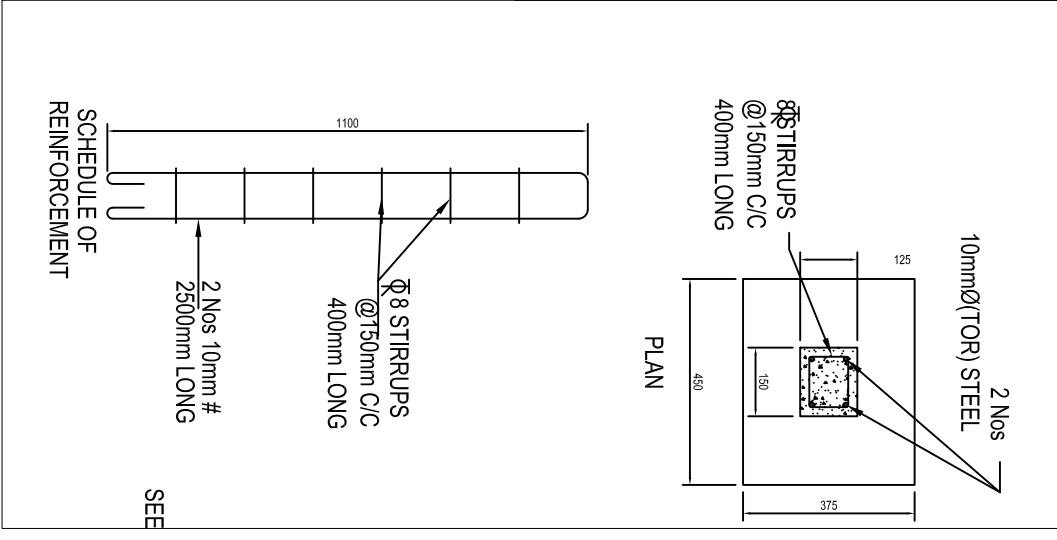
DRAWING TITLE :
**STANDARD DRAWINGS TYPICAL
 DETAILS OF 200M STONE & GUARD
 POST**
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 SHEET 1 OF 1
 REV. R2



SPACING OF DELINEATORS ON CURVES



ROAD DELINEATORS



SCHEDULE OF ROAD DELINEATORS AT CURVES UPTO 1000m

ARC	START	END	RADIUS	ARC LENGTH	SPACING	TOTAL
	28+259.083	28+422.476	1000	253.091	50	14
	29+039.397	29+109.085	500	521.921	30	32
	29+318.832	29+467.715	400	99.767	25	12
	29+633.782	30+140.178	500	56.067	30	9
	30+490.993	30+642.449	350	235.815	25	20
	31+208.886	31+267.795	500	451.438	30	29
	36+131.547	36+309.543	300	832.941	25	56
	36+796.239	36+893.032	1000	366.695	50	17
	37+209.276	37+445.156	500	161.244	30	15
	38+947.005	39+214.704	500	435.19	30	28
	39+692.442	39+725.194	500	156.053	30	14
	41+111.304	41+183.212	500	627.313	30	37
	41+616.836	41+780.257	400	323.625	25	25
	42+049.777	42+123.527	300	134.52	20	16
	42+351.098	42+407.581	300	77.571	20	12
	43+112.932	43+171.377	500	187.747	30	15
	43+487.066	43+565.468	500	215.688	30	17
	44+404.564	44+508.396	600	749.096	38	36

- NOTE:**
- ROAD DELINEATORS SHALL BE PROVIDED AS PER THE GUIDELINES IN IRC:79-1981
 - FOR THE DETAILS OF ROAD DELINEATORS REFER DWG NO OSRPP/CEGR/D

Sl. No.	RADIUS OF CURVE (METRES)	SPACING ON CURVE 'S' (METRES)
1	30	6
2	50	8
3	100	12
4	200	20
5	300	25
6	400	30
7	500	35
8	600	38
9	700	42
10	800	45
11	900	48
12	1000	50

- NOTES:**
- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
 - ADJUST DISTANCE 'X' SUITABLY SO THAT THE LAST ROADWAY DELINEATOR IS AT THE END OF THE CURVE.
 - INSTALL ALL DELINEATORS AT EDGE AS SHOWN IN THE DRAWING PERPENDICULAR TO THE ONCOMING TRAFFIC. SEE TABLE FOR VALUE OF 'S'. I.e. SPACING OF DELINEATORS ON THE CURVE.
 - ON STRAIGHT SECTIONS DELINEATORS SHOULD BE SPACED UNIFORMLY 50m FROM EACH OTHER. THE POSTS BEING IN PARS. ONE ON EACH SIDE OF THE ROADWAY.
 - TRAFFIC ISLANDS AT APPROACHES TO INTERSECTIONS
 - MEDIAN OPENINGS
 - ON MEDIANS & ISLANDS ON FAR SIDE OF THE INTERSECTIONS
 - FACING APPROACHING TRAFFIC AT ISLANDS FORMING LEFT INFILTRATION LANES
 - OBJECT MARKERS SHOULD BE SET BACK FROM THE FACE OF THE KERB A DISTANCE OF ATLEAST 500mm
 - REQUIREMENT OF REFLECTORS SHALL BE IN ACCORDANCE WITH IRC:79-1981 CODE OF PRACTICE.
 - ON EMBANKMENTS WITH HEIGHT MORE THAN 2m CLEAR SPACING OF DELINEATORS SHALL BE 25m.
 - DELINEATORS ARE NOT PROVIDED AT LOCATIONS WHERE CHEVRON SIGN BOARDS ARE PROPOSED
 - GAIRD POSTS ARE PROVIDED ON EMBANKMENTS OF HEIGHT >2m AND <3m AT 5m INTERVAL
 - DELINEATORS ARE PROVIDED BEFORE AND AFTER PARAPET WALL ON BOTH SIDES AT ALL BRIDGE LOCATIONS AND ALSO AT CULVERT LOCATIONS WHOSE WIDTH IS LESS THAN 12m AND MORE THAN 10m.
 - REFLECTIVE PAINT SHALL BE IN ACCORDANCE WITH QL803.5 OF M.O.R.T & H SPEC.

NO.	DATE	REVISION	BY	DRAWN:	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LUSA			
R1	JAN-2013	FIRST REVISION	OWN	VINAY		
-	JUNE 2008	ORIGINAL	CEG			

DR CONSULTANT :

C O N S U L T I N G
ENGINEERS GROUP LTD.
E-12,KMOI COLONY,MALVIYA NAGAR
JALPUR-17 tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.com

DESIGN REVIEW CONSULTANT :

EA
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 :

CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

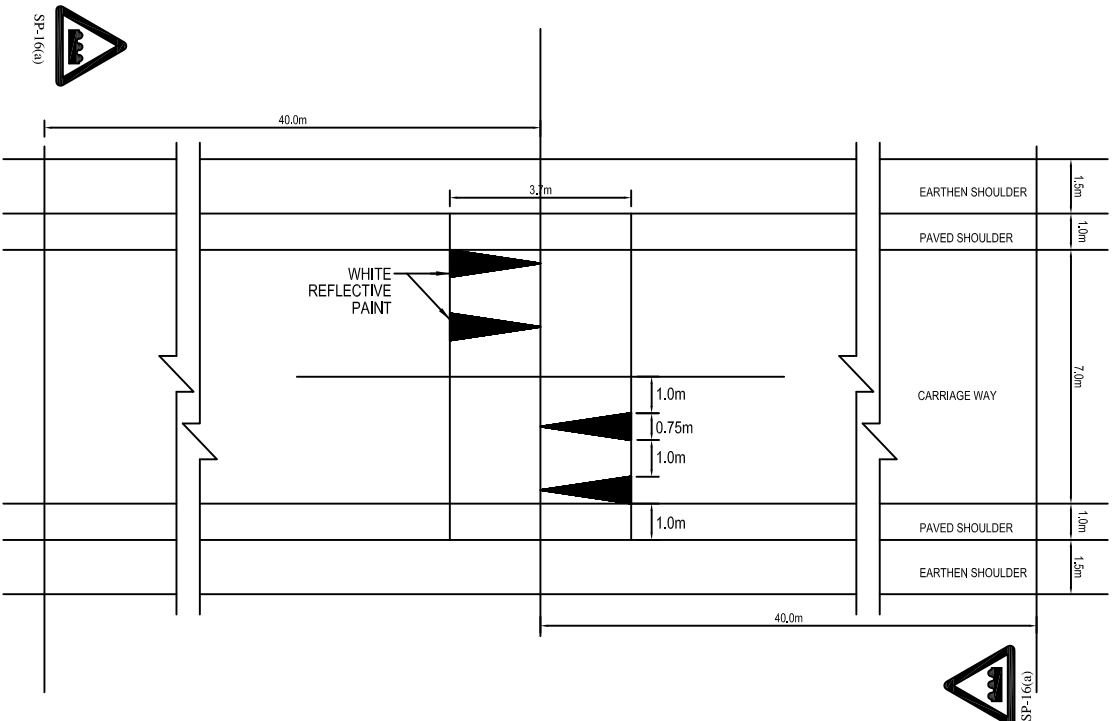
SCALE :

N.T.S

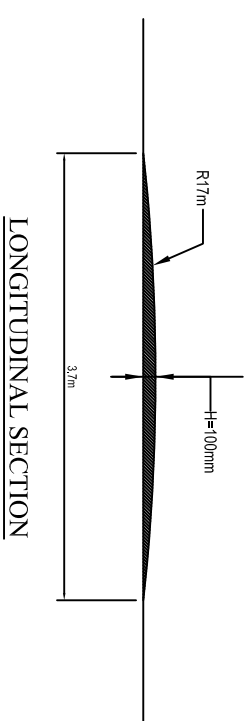
DRAWING TITLE :
STANDARD DRAWINGS
TYPICAL ROAD SIGN
(SHEET 3 OF 4)

DWG. NUMBER : OSRPP/CEG/SH9/P02B/ 3

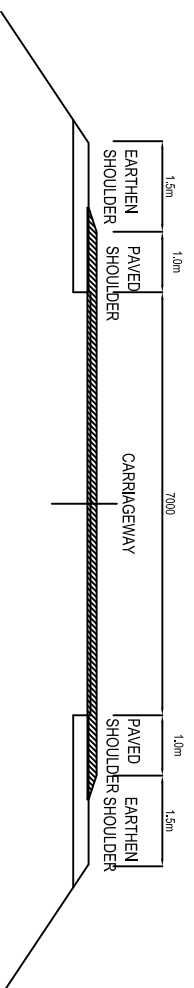
REV. R2



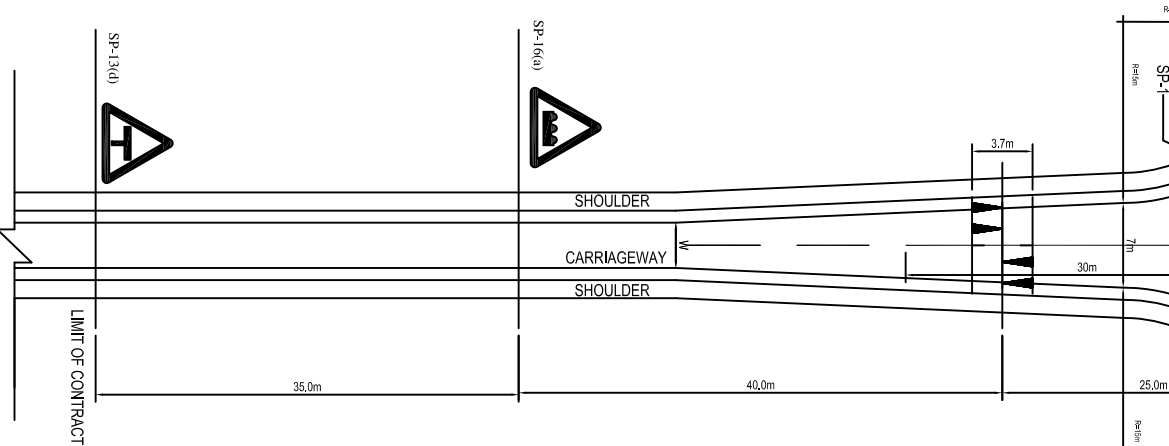
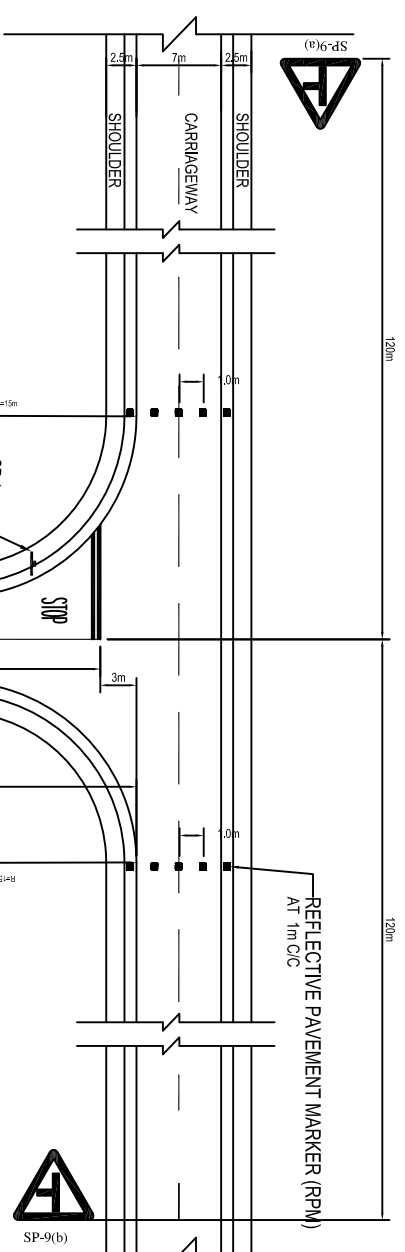
DETAILS OF ROAD HUMPS



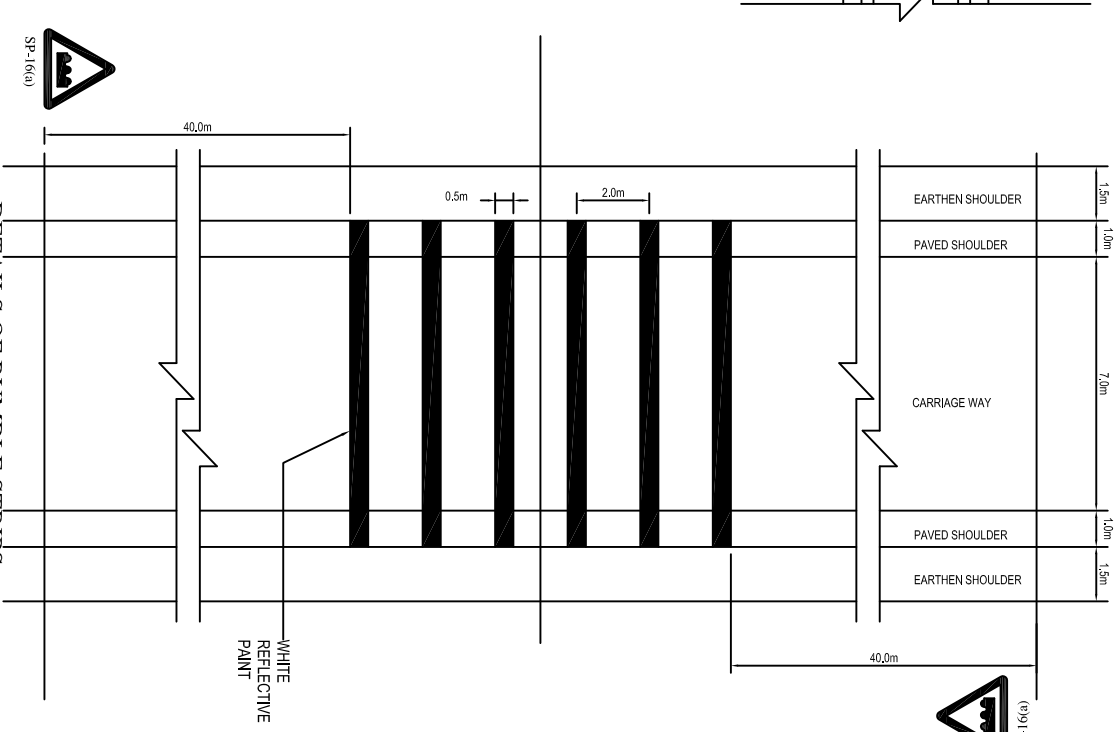
LONGITUDINAL SECTION



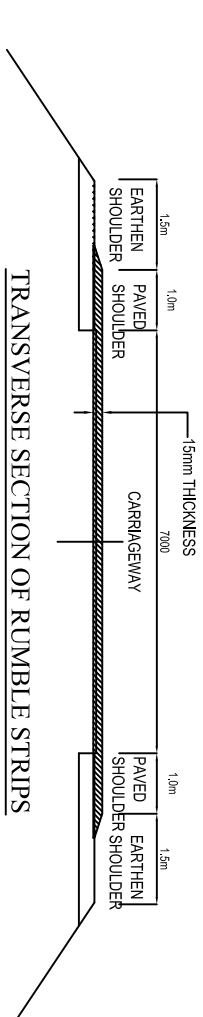
TRANSVERSE SECTION OF ROAD HUMPS



LOCATION OF ROADHUMP AT MINORROAD INTERSECTIONS



DETAILS OF RUMBLE STRIPS



TRANSVERSE SECTION OF RUMBLE STRIPS

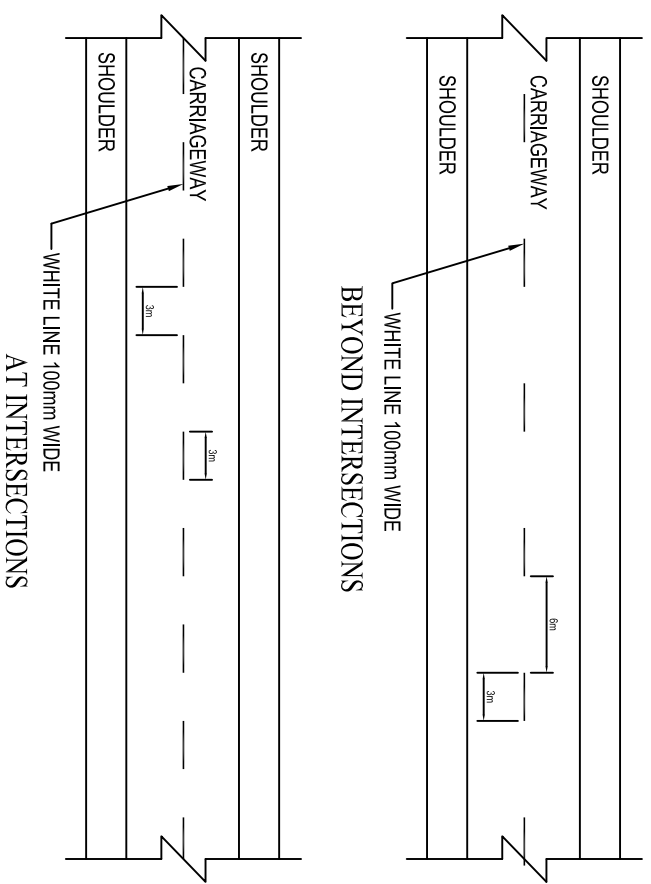
- NOTES:-**
1. THE DESIGN OF ROAD HUMPS IS IN ACCORDANCE WITH IRC: 99-1988 GUIDE LINES.
 2. ROAD HUMPS IS PROPOSED AT UNCONTROLLED INTERSECTIONS OF MINOR ROADS WITH MAJOR ROADS ON THE MINOR ARMS.
 3. THE WARNING SIGNS SHOULD BE OF THE DESIGN HUMPS OR ROUGH ROAD DETAILED IN IRC: 67-2001 SHOULD BE INSTALLED AT SPECIFIED DISTANCE AHEAD OF RUMBLE STRIP/ ROAD HUMPS AS GIVEN IN DWG NO. OSR/PC/GRS/01 TO 03
 4. REFLECTIVE PAINT SHALL BE HOT APPLIED THERMOPLASTIC MATERIAL CONFORMING TO M.O.R.T & H SPEC. CL. 803.4
 5. RUMBLE STRIPS ARE PROVIDED ON ALL SHARP CURVES WITH RADIUS LESS THAN 170m AND AT VILLAGE AND URBAN APPROACHES.
 6. HEIGHT OF RUMBLE STRIP IS 15mm
 7. MATERIAL OF CONSTRUCTION FOR RUMBLE STRIP IS OPEN GRADED PREMIX BITUMINOUS SURFACING (TYPE-B) AS PER TECH SPEC. CL. 512
 8. MATERIAL OF CONSTRUCTION FOR ROAD HUMPS IS BITUMINOUS CONCRETE AS PER TECH SPEC. CL. 509
 9. REFLECTIVE PAVEMENT MARKERS ARE PROVIDED AS SHOWN IN DRAWING NO. OSR/PC/GR/PM BEFORE AND AFTER RUMBLE STRIP/ROAD HUMPS

NO.		DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LISA		RAJU MATHUR	M.A. MISRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K. MISRA (AE)	M.A. MISRA (EE)	N.K. PRADHAN (CE)	
-	JUNE 2008	ORIGINAL	CEG					

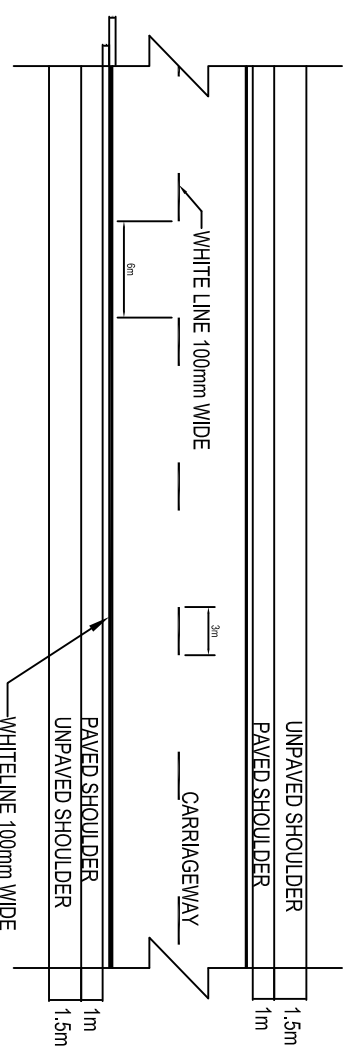
DPR CONSULTANT :		CLIENT :		PROJECT :		SCALE :	
C O N S U L T I N G ENGINEERS GROUP LTD. E-12,MOOI COLONY,MALVIYA NAGAR JALPUR-17 tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegindia.com		LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1ind FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .		CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B		N.T.S	
DESIGN REVIEW CONSULTANT :		ODISHA WORKS DEPARTMENT		DRAWING TITLE :		STANDARD DRAWINGS DETAILS OF ROAD HUMPS AND RUMBLE STRIPS	
				DWG. NUMBER : OSRP/CEG/SH/9/P02B/		3	
				REV. R2			

LONGITUDINAL MARKING

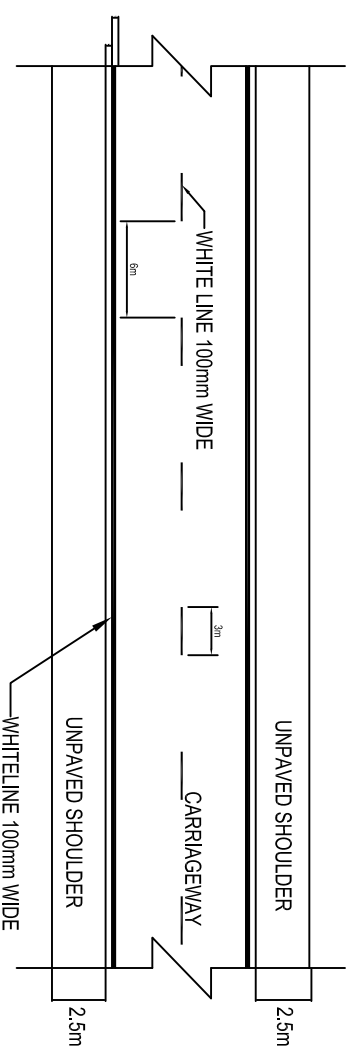
DETAILS OF CENTRE LINE



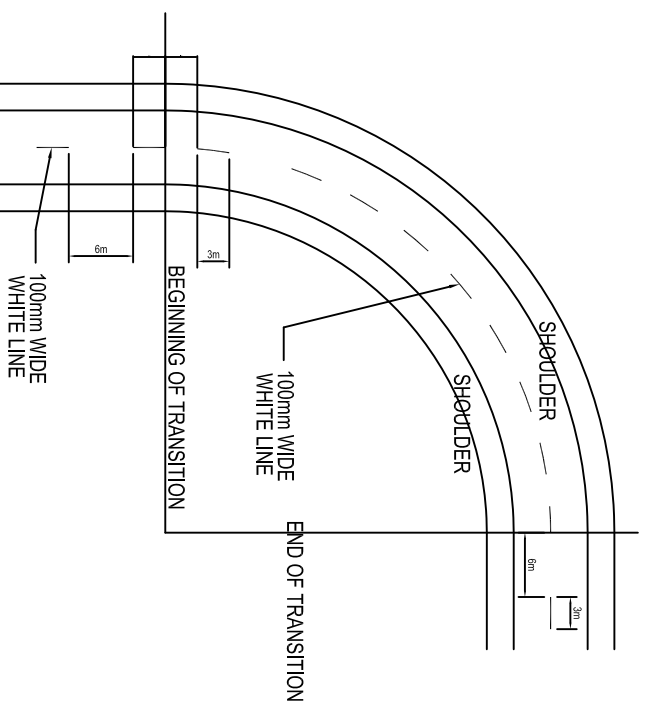
DETAILS OF EDGE LINE MARKING



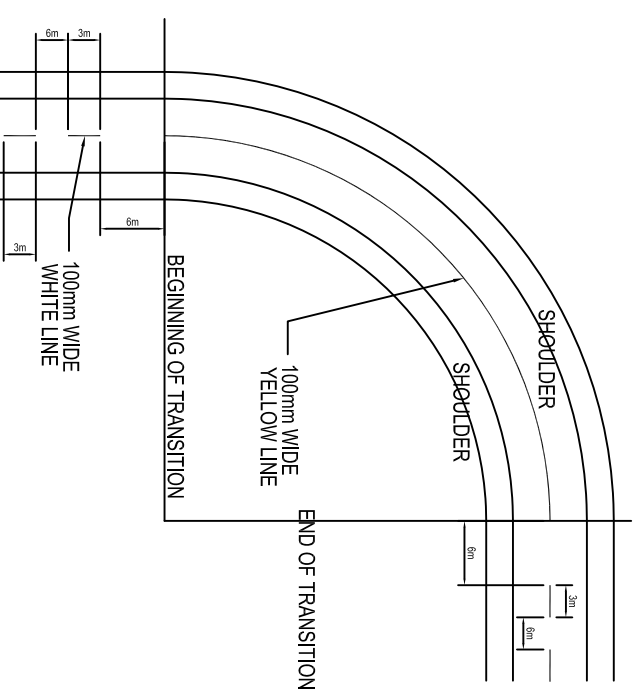
DETAILS OF EDGE LINE MARKING



DETAILS AT CURVES



DETAILS AT SHARP CURVES (NO-OVERTAKING ZONE)



NOTE:

1. EDGE LINE MARKINGS SHOULD NOT BE CARRIED ACROSS THE MOUTHS OF SIDE ROADS
2. CENTRE LINE & EDGE MARK SHALL END AT THE STOP LINE & SHALL NOT BE CONTINUED.
3. ROAD MARKING SHOULD BE DONE WITH THERMOPLASTIC PAINT CONFORMING TO CL. 803.4 OF M.O.R.T & H SPECIFICATIONS
4. DETAILS OF ROAD MARKING ARE AS PER IRC: 35-1997, CODE OF PRACTICE FOR ROAD MARKINGS

R2	SEP-2015	SECOND REVISION	LISA	RAJU MATHUR	M.R. MISRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OMD	VINAY	P.K. MISRA (AE)	M.R. MISRA (CE)
-	JUNE 2008	ORIGINAL	CEG			N.K. PRADEEN (CE)
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:
						APPROVED:

DR CONSULTANT :
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ENGINEERS GROUP LTD.
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 DELHI-110044 .



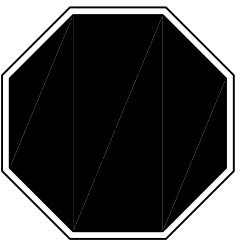
CLIENT :
ODISHA WORKS
DEPARTMENT



PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING
OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
STANDARD DRAWINGS TYPICAL
ROAD MARKING DETAILS
 (SHEET 1 OF 2)
DWG. NUMBER : OSRP/CEG/SH9/P02B/ 1
REV. R2



SP-1

STOP



SP-2

COMPULSORY
KEEP LEFT



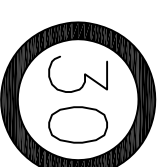
SP-2(a)

RESTRICTION ENDS



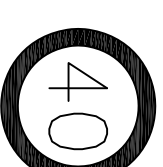
SP-3

GIVE WAY



SP-4(a)

SPEED LIMIT



SP-4(b)

SPEED LIMIT

SP-4(c)



SP-4(d)



SP-4(e)



SPEED LIMIT

SPEED LIMIT

SPEED LIMIT

SP-5(a)



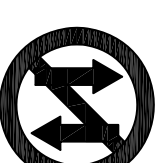
OVERTAKING
PROHIBITED

SP-5(b)



ONE WAY

SP-5(c)



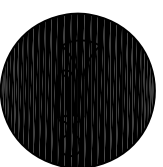
ONE WAY

SP-6



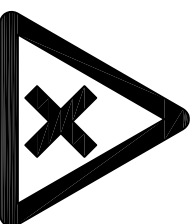
SCHOOL ZONE

SP-7



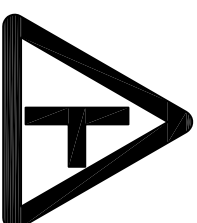
COMPULSORY
SOUND HORN

SP-8



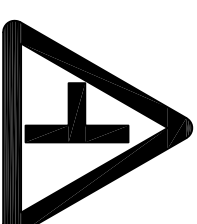
CROSS ROAD

SP-9(a)



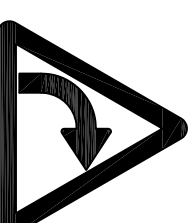
RIGHT SIDE ROAD

SP-9(b)



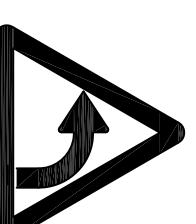
LEFT SIDE ROAD

SP-10(a)



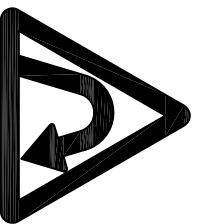
RIGHT HAND
CURVE

SP-10(b)



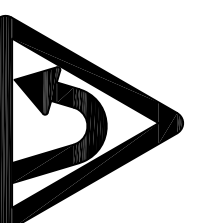
LEFT HAND
CURVE

SP-10(c)



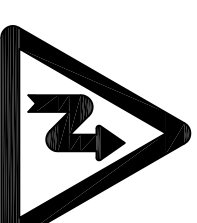
RIGHT HAIR PIN
BEND

SP-10(d)



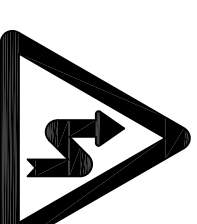
LEFT HAIR PIN
BEND

SP-10(e)



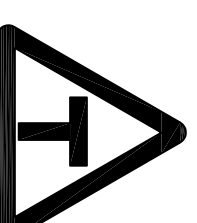
RIGHT REVERSE
BEND

SP-10(f)



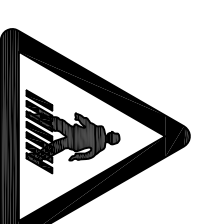
LEFT REVERSE
BEND

SP-11



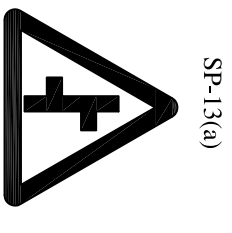
T-INTERSECTION

SP-12

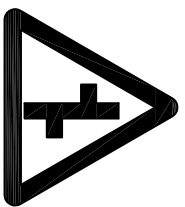


PEDESTRIAN
CROSSING

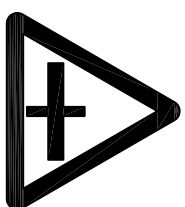
R2	SEP-2015	SECOND REVISION	LISA	RAJU MATHUR	M.R. MISHRA (EE)	OP. PATEL (CE)	DR CONSULTANT :	CLIENT :	PROJECT :	SCALE :	DRAWING TITLE :
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (CE)	C O N S U L T I N G ENGINEERS GROUP LTD. E-12,KMOJI COLONY,MALVIYA NAGAR JALPUR-17 tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginidia.com	ODISHA WORKS DEPARTMENT	CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	N.T.S	STANDARD DRAWINGS TYPICAL ROAD SIGN (SHEET 1 OF 4)
-	JUNE 2008	ORIGINAL	CEG				DESIGN REVIEW CONSULTANT :				DWG. NUMBER : OSRP/CEG/SH9/P02B/ 1
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:				REV. R2



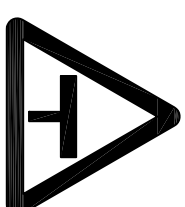
SP-13(a)



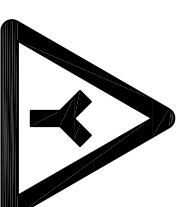
SP-13(b)



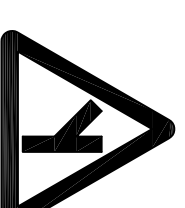
SP-13(c)



SP-13(d)



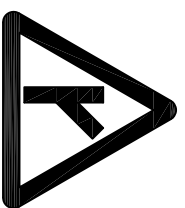
SP-14(a)



SP-14(b)

STAGGERED INTERSECTION

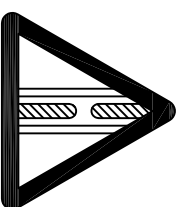
SP-14(c)



Y-INTERSECTION

STAGGERED INTERSECTION

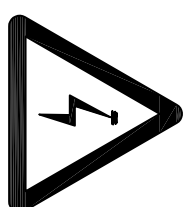
SP-14(d)



GAP IN MEDIAN

MAJOR ROAD AHEAD

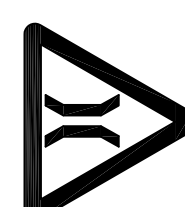
SP-14(e)



OVERHEAD CABLE

MAJOR ROAD AHEAD

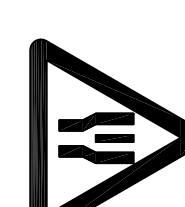
SP-15(a)



NARROW BRIDGE

Y-INTERSECTION

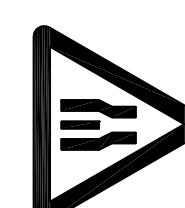
SP-15(b)



DUAL C' WAY STARTS

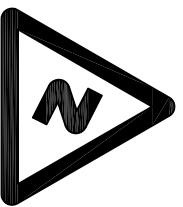
Y-INTERSECTION

SP-15(c)



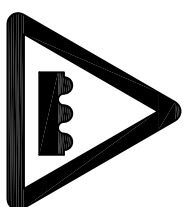
DUAL C' WAY ENDS

SP-15(d)



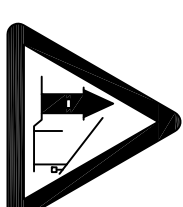
SERIES OF BENDS

SP-16(a)



HUMP OR ROUGH ROAD

SP-16(b)



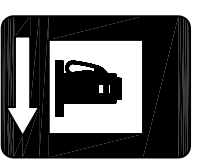
BARRIER AHEAD

SP-24



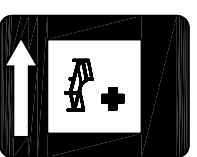
PUBLIC TELEPHONE
SP-25

SP-22



PETROL BUNK
SP-26

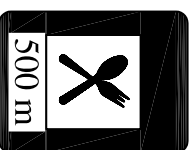
SP-23



HOSPITAL

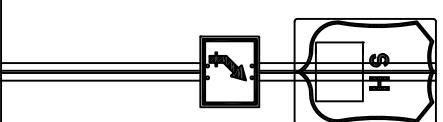


DISPENSARY



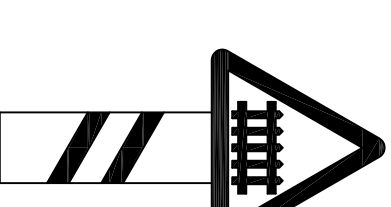
EATING PLACE

STATE ROUTE MARKER SIGN



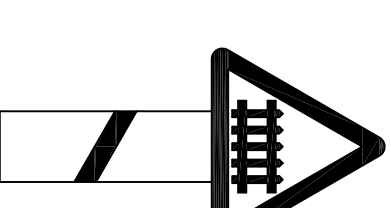
SP-17

GUARDED RAILWAY CROSSING AT 200m



SP-18 (a)

GUARDED RAILWAY CROSSING AT 50-100m



SP-18 (b)

NOTE:

1. DETAILS OF ROAD SIGNS ARE AS PER IRC: 67-2001.
2. DETAIL OF STATEROUTE MARKER SIGN IS AS PER IRC: 31-1969.
3. ALL MANDATORY AND CAUTIONARY SIGNS SHOULD BE HIGH INTENSITY WIDE ANGLE MICRO PRISMATIC SHEETING CONFORMING TO CL-801 OF TECH. SPECIFICATION
4. ALL INFORMATORY SIGNS SHOULD CONFIRM TO STANDARDS OF HIGH INTENSITY ENCAPSULATED TYPE RETRO REFLECTIVE SHEETING AS PER CL. 801.OF TECH. SPECIFICATION

LEGEND

- WHITE SHEET
- BLACK SHEET
- RED SHEET
- BLUE SHEET

NO.		DATE	REVISION	BY	DRAWN:	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LISA		RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OND	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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DESIGN REVIEW CONSULTANT :
EA
 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

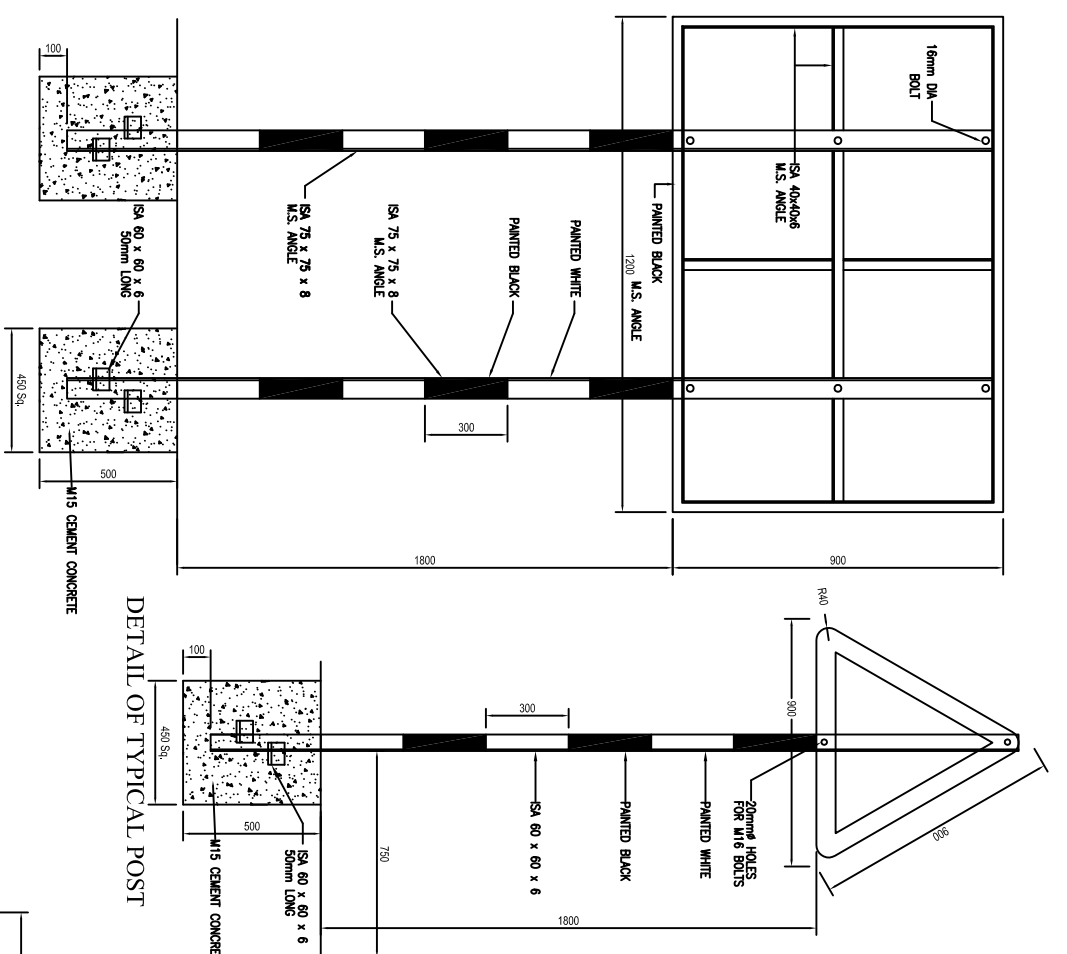
PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

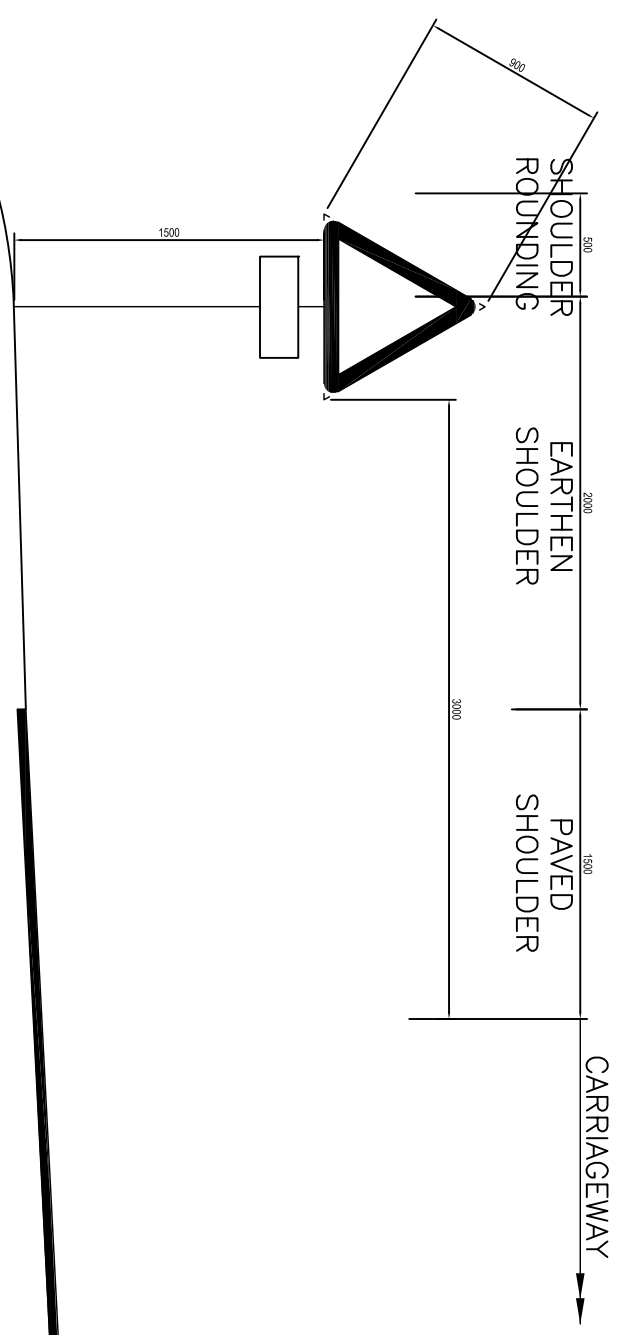
DRAWING TITLE :
STANDARD DRAWINGS
TYPICAL ROAD SIGN
 (SHEET 2 OF 4)

DWG. NUMBER : OSRP/CEG/SH9/P02B/ 2

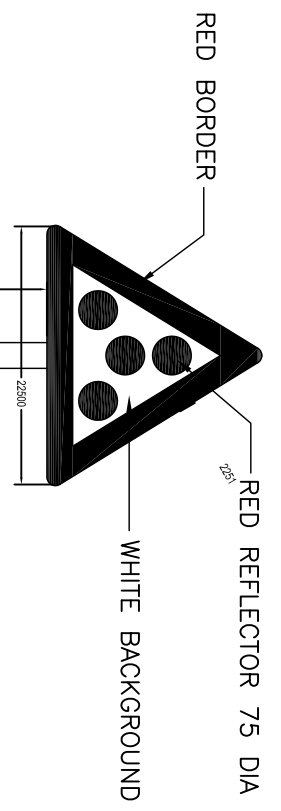
REV. R2



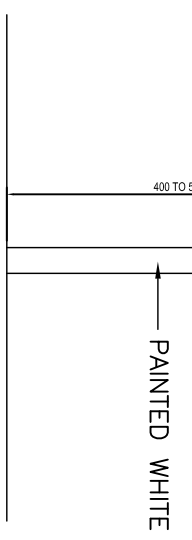
DETAIL OF TYPICAL POST



MINIMUM CLEARANCE OF SIGNS
IN UNKERBED SECTIONS



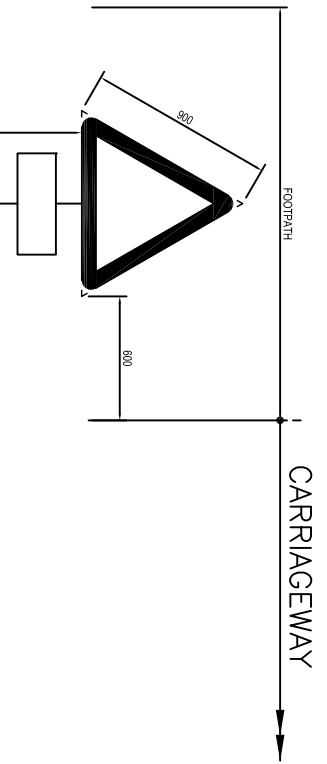
RED REFLECTOR 75 DIA
WHITE BACKGROUND
RED BORDER



CLUSTER OF
RED REFLECTORS

TA 1

MINIMUM CLEARANCE OF SIGNS
IN KERBED SECTIONS



NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS INDICATED OTHERWISE.
2. ROAD SIGNS, SIZES OF ARROWS, LETTERS & NUMERALS IS AS PER IRC:67-2001.
3. ALL ROAD SIGNS ARE NORMALLY BE PLACED AT RIGHT ANGLES TO THE LINE OF TRAVEL OF THE APPROACHING TRAFFIC.
4. ALL WARNING SIGNS ARE NORMALLY BE LOCATED AT 120m IN ADVANCE OF THE HAZARD WARNED AGAINST IN NON-URBAN LOCATIONS, IN URBAN LOCATIONS, THE WARNING SIGNS ARE LOCATED AT ABOUT 50m AWAY FROM THE POINT OF HAZARD.
5. ALL ROAD SIGNS ARE RETRO-REFLECTIVE SHEET OF HIGH INTENSITY GRADE WITH ENCAPSULATED LENSE FIXED OVER ALUMINIUM SHEET AS PER MORTH&H SPECIFICATIONS.
6. ROUTE MARKER SIGN FOR NH IS AS PER IRC :2-1968.
7. SIGNS WITH AN AREA UPTO 0.9sq. m. SHALL BE MOUNTED ON A SINGLE POST, AND FOR GREATER AREA TWO OR MORE SUPPORTS SHALL BE PROVIDED.
8. POST ANGLES USED TO SUPPORT THE SIGN BOARD SHALL BE PAINTED WITH (2-COATS) APPROVED QUALITY (ANTI-CORROSIVE) ENAMEL PAINT OVER TWO COATS OF GOOD QUALITY PRIMER

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LUSA	RAJU WATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG				

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DESIGN REVIEW CONSULTANT :

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DELHI-110044 .

CLIENT :

ODISHA WORKS
DEPARTMENT

PROJECT :

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SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

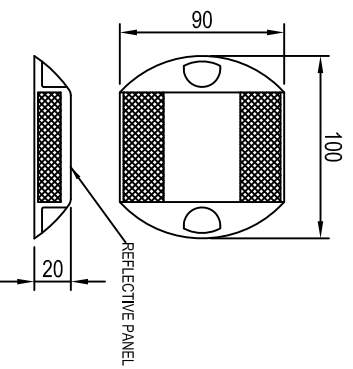
DRAWING TITLE :

STANDARD DRAWINGS
TYPICAL ROAD SIGN

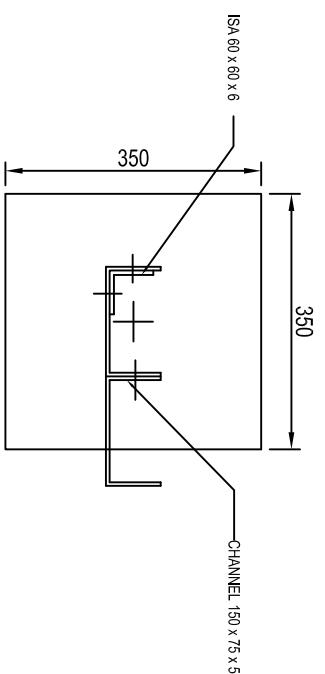
(SHEET 3 OF 4)

DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3

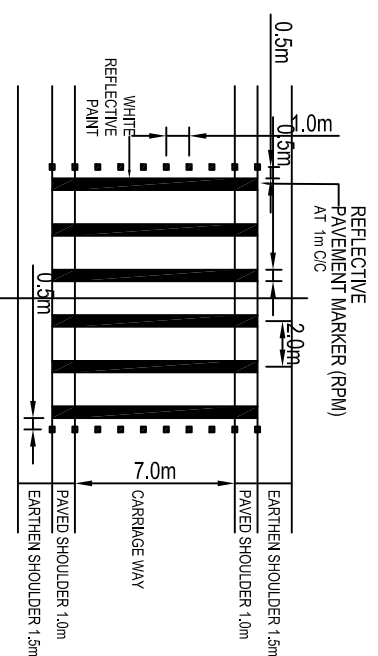
REV. R2



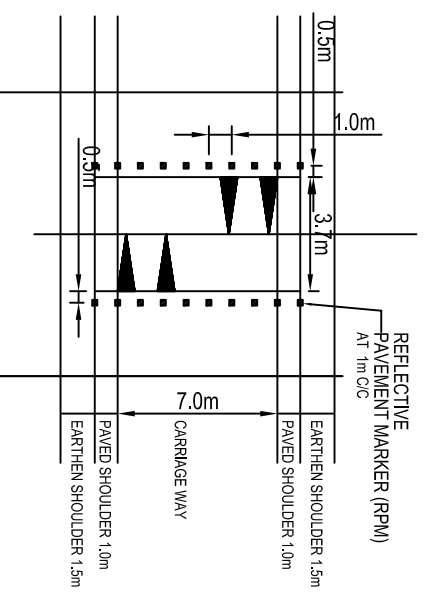
REFLECTIVE PAVEMENT MARKERS (RPM)



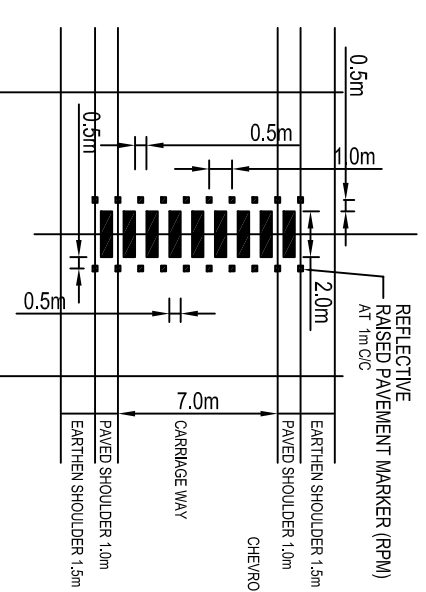
SECTION 'A-A'



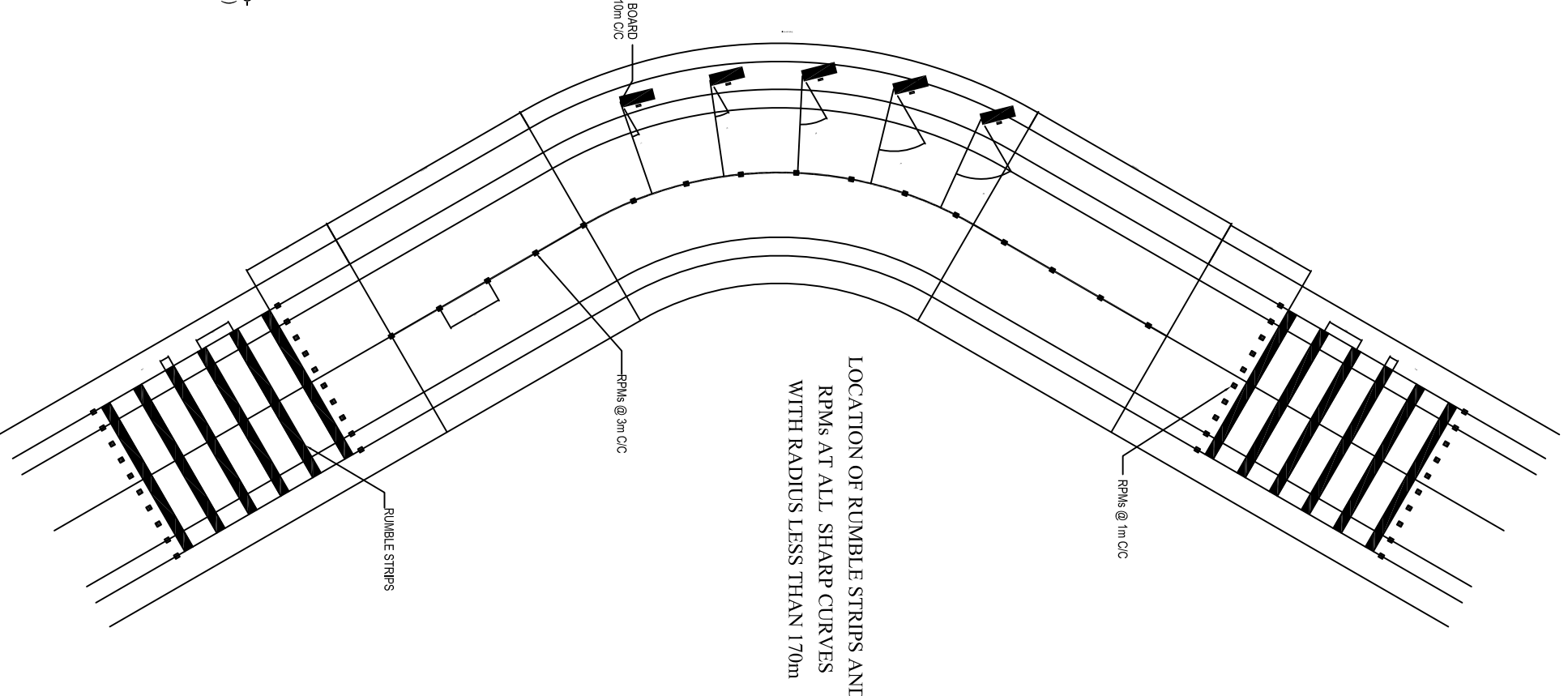
LOCATION OF RPM BEFORE RUMBLE STRIPS



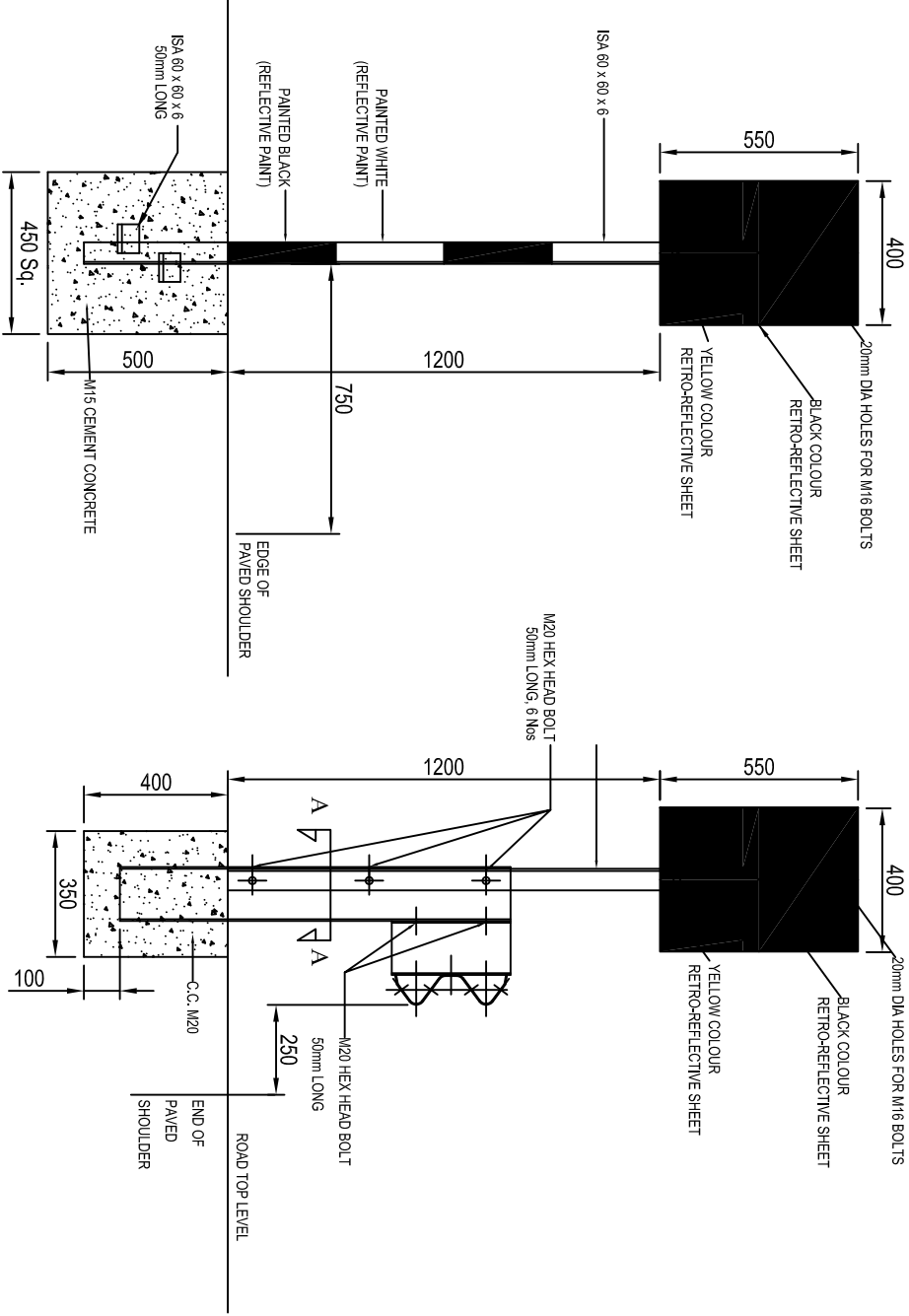
LOCATION OF RPM BEFORE ROAD HUMPS



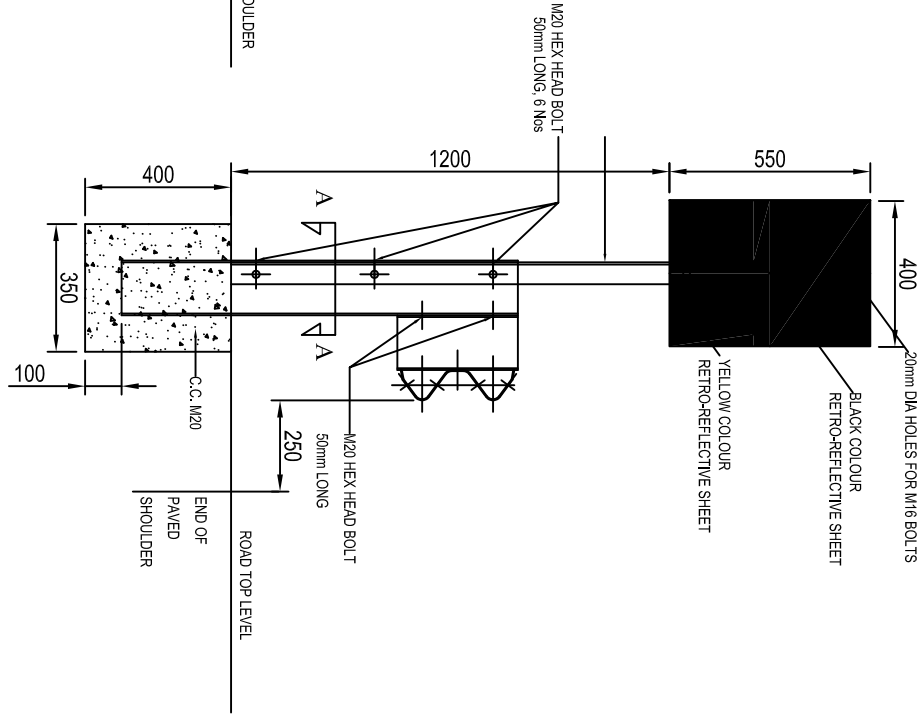
LOCATION OF RPM BEFORE PEDESTRIAN CROSSING



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 HUMPS 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 80' 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.

R2	SEP-2015	SECOND REVISION	LASA	RAJU VAITHUR	M.A. MISRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K. MISRA (A&P)	M.A. MISRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K. PRADHAN (CE)
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:
						APPROVED:

DESIGN CONSULTANT :
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 2521348, e-mail: ceg@cegin dia.com

DESIGN REVIEW CONSULTANT :
EA Associates South Asia Pvt. Ltd., India
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 INDUSTRIAL ESTATE, MATHURA ROAD, NEW
 DELHI-110044 .

CLIENT :
ODISHA WORKS
 DEPARTMENT

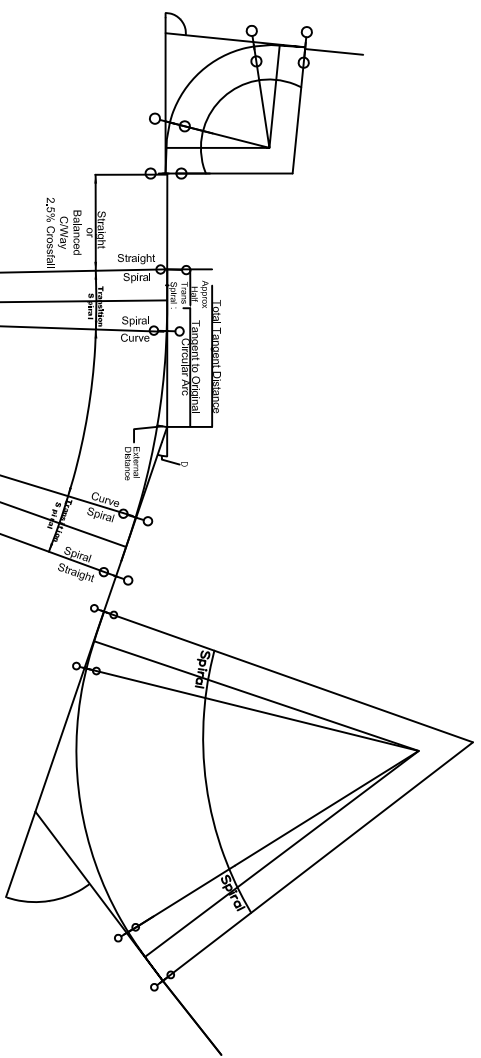
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING
 OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM
 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

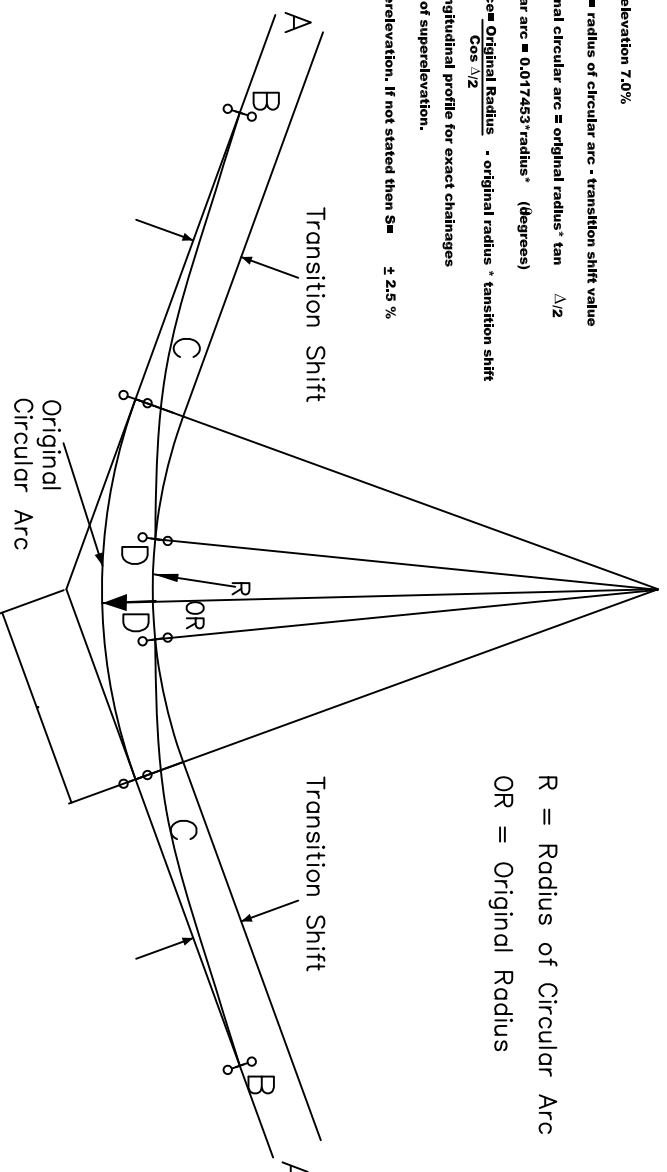
DRAWING TITLE :
**STANDARD DRAWINGS DETAILS OF
 RPPMs & CHEVRON MARKERS**
 (SHEET 3 OF 4)

DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3

REV. R2

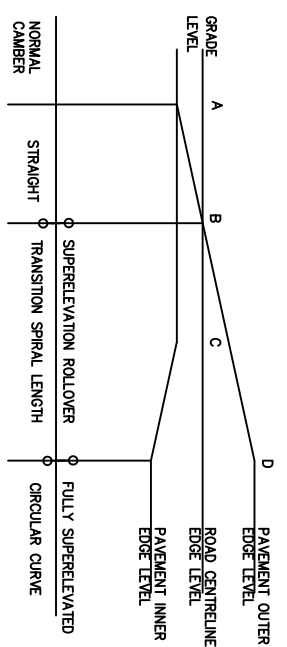


- NOTES:**
1. Maximum super-elevation 7.0%
 2. Original Radius = radius of circular arc - transition shift value
 3. Tangent of original circular arc = original radius * tan Δ/2
 4. Length of circular arc = 0.017453 * radius * (degrees)
 5. External distance = Original Radius * transition shift / Cos Δ/2
 6. See Plan and longitudinal profile for exact chainages for application of super-elevation.
 7. Sa value of super-elevation. If not stated then Sa = ± 2.5 %



R = Radius of Circular Arc
OR = Original Radius

APPLICATION OF SUPERELEVATION



LONGITUDINAL SECTION THROUGH HORIZONTAL CURVE

ROTATION ABOUT PAVEMENT CENTRELINE

Details of points shown thus \bigcirc (Tangent points and circular arc centres) are shown in the horizontal alignment schedule.
The ref element Nos shown 26 on the plan and profile .
Circular arcs are shown R. Straight elements are shown D and Transition spirals are shown CL.
The transitions have no element nos and A is shown for them.
However they may be set out by the following method.
AA constant for the spiral AAR^2L
L= Length along the spiral.
R= Radius at the above length.
L is measured from the start of the spiral.
L is measured from the start of the spiral.
In Profile Box Horizontal Information shown thus:
Circular Curve R= Radius Length, L=Length
Transition Curve CL= Clothoid Length
Straight D= Length

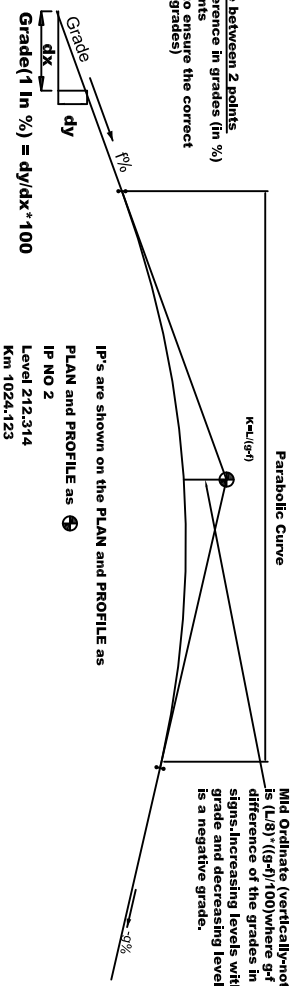
$$x = d \cdot d / (4 \cdot A)^4 + d / (3456 \cdot A)^8 - d / (5999040 \cdot A)^{12}$$

$$y = (d \cdot \delta \cdot A)^2 \cdot d / (386 \cdot A)^6 - d / (12240 \cdot A)^{10}$$

ds Distance along spiral from origin to point where x and y are measured.



*plan distance between 2 points
Algebraic difference in grades (in %)
(Taking care to ensure the correct sign of these grades)



Mid Ordinate (vertically-not square to the curve) is $(L/8) \cdot ((p+q)/100)$ where p,q is the algebraic difference of the grades in % taking care to use correct signs. Increasing levels with increasing station is a positive grade and decreasing levels with increasing station is a negative grade.

PAVED SHOULDER	PAVED SHOULDER	PAVED SHOULDER	PAVED SHOULDER
3.0 %	2.5 %	2.5 %	3.0 %
3.0 %	2.5 %	2.5 %	3.0 %
3.0 %	2.5 %	2.5 %	3.0 %
3.0 %	2.5 %	2.5 %	3.0 %

NO.	DATE	REVISION	BY	DRAWN:	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LUSA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	M.R. MISHRA (AE)	M.R. MISHRA (CE)
-	JUNE 2008	ORIGINAL	CEG			N.K. PRADEEN (CE)

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2521348, e-mail: ceg@ceginfr.com

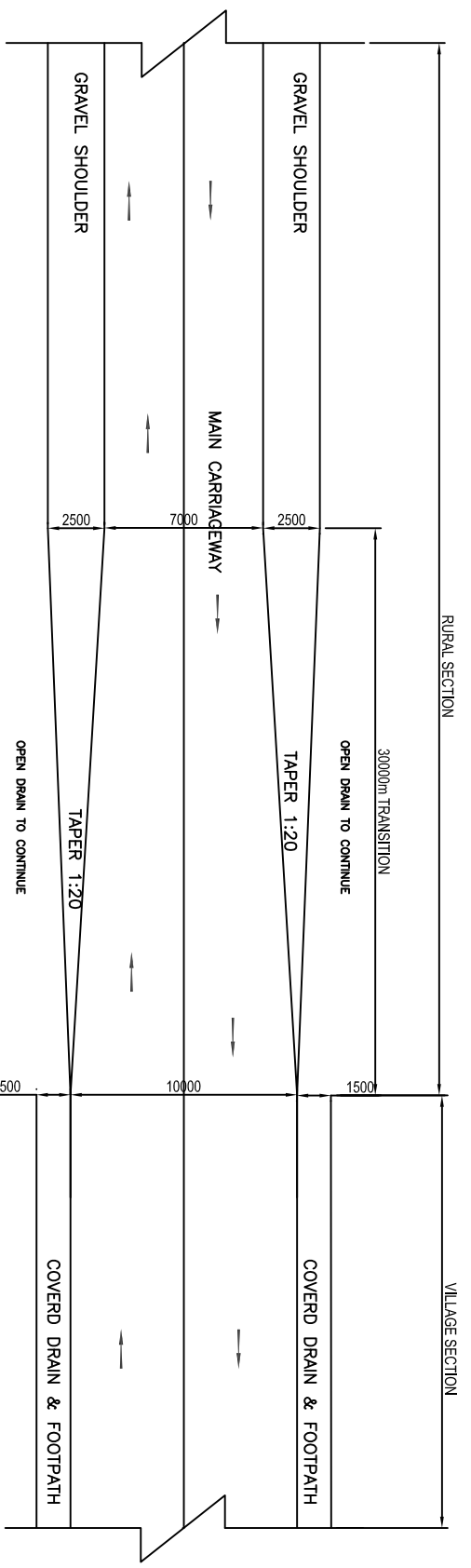
DESIGN REVIEW CONSULTANT :
LEA Associates South Asia Pvt. Ltd. India
B-1, E-27, 1ind FLOOR, MOHAN COOPERATIVE
INDUSTRIAL ESTATE, MATHURA ROAD, NEW
DELHI-110044 .

CLIENT :
ODISHA WORKS
DEPARTMENT

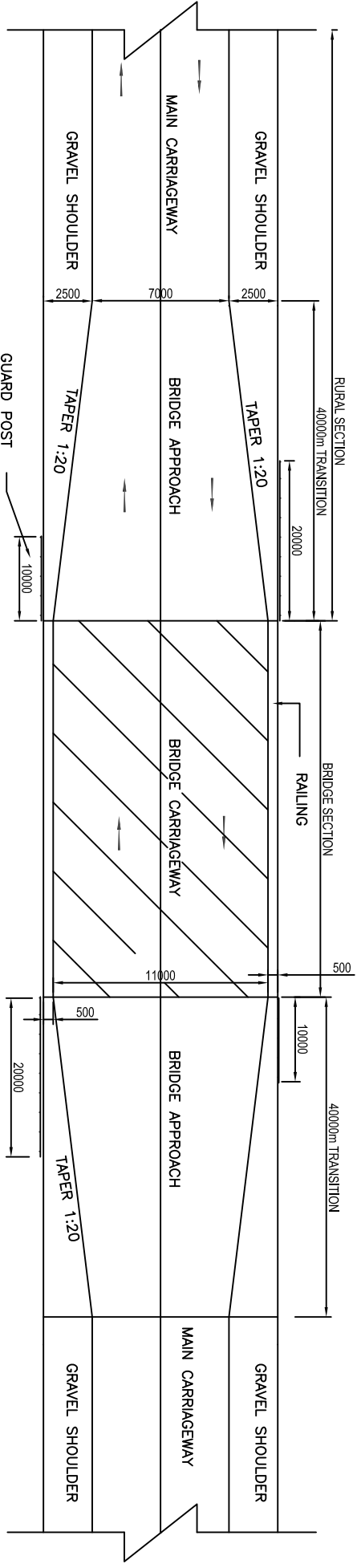
PROJECT :
CONSTRUCTION FOR WIDENING AND STRENGTHENING
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PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

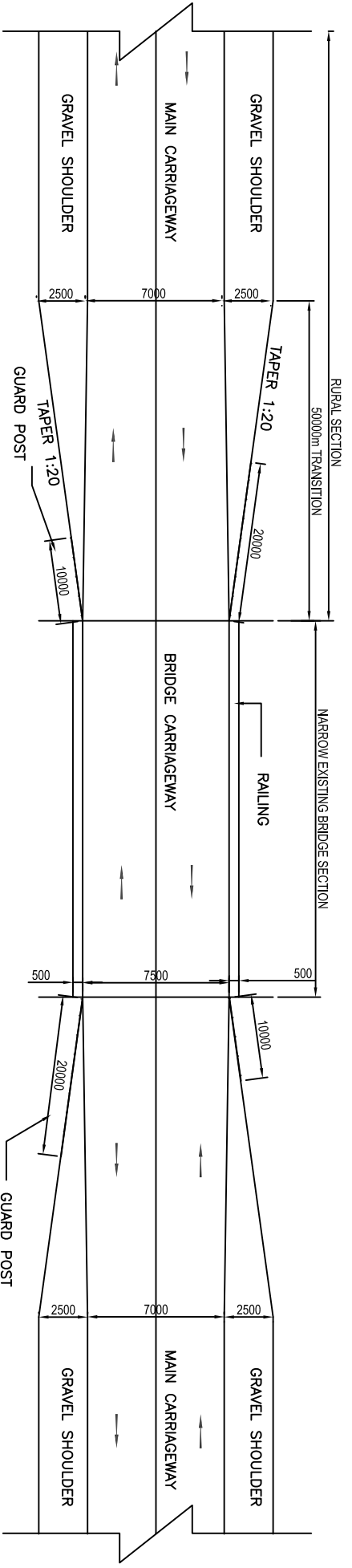
DRAWING TITLE :
DETAILS OF APPLICATION OF
SUPERELEVATION
DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
REV. R2



TRANSITION BETWEEN RURAL 12m SECTION TO VILLAGE 10m WITH DRAIN SECTION 10m



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. GUARD POSTS ARE INSTALLED WHERE EMBANKMENT HEIGHT IS MORE THAN 3 METRES & AT BRIDGE APPROACHES.
 4. FOR GUARD POST DETAIL REFER DWG. NO. OSRP/CEG/KM & GP
 5. FOR HAZARD MARKER DETAIL REFER TYPICAL ROAD SIGN & DETAILS OF ROAD DELINEATORS
 6. DRAWING TO BE READ WITH TCS- 1 TO TCS-16 AND DWG. NO. OSRP/CEG/RIGID/02

R2	SEP-2015	SECOND REVISION	LISA	RAJU MATHUR	M.R. MISRA (EE)	OP. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OMD	VINAY	P.K. MISRA (AE)	M.R. MISRA (EE) N.K. PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG			
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:
				APPROVED:		

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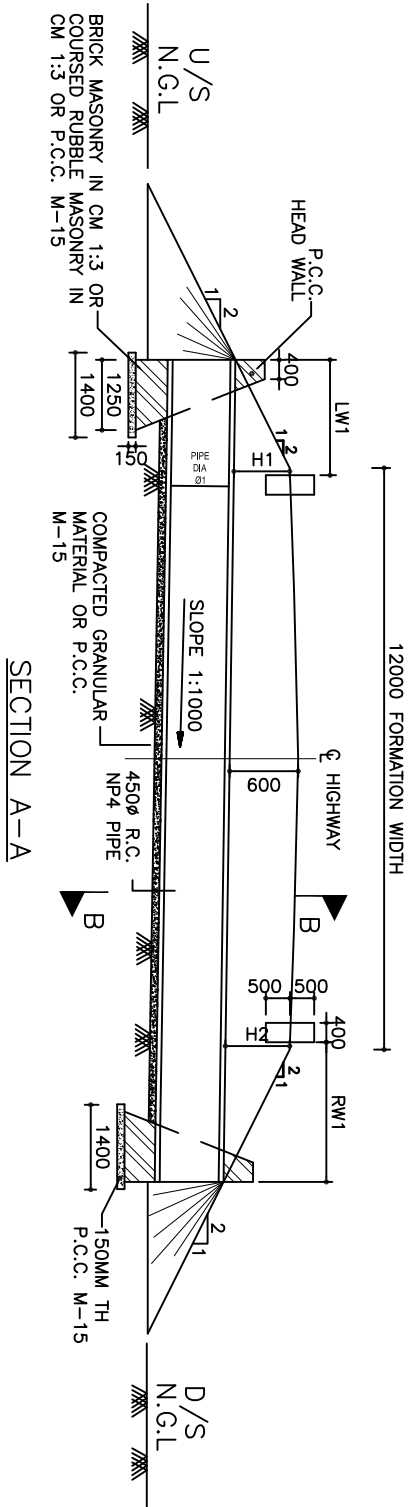
CLIENT :
ODISHA WORKS
 DEPARTMENT



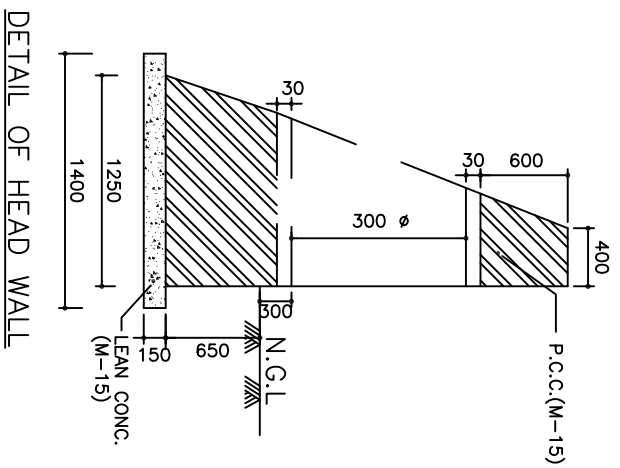
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SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL DETAILS OF TRANSITION
OF DIFFERENT ROAD SECTION
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 SHEET 1 OF 1
 REV. R2



SECTION A-A

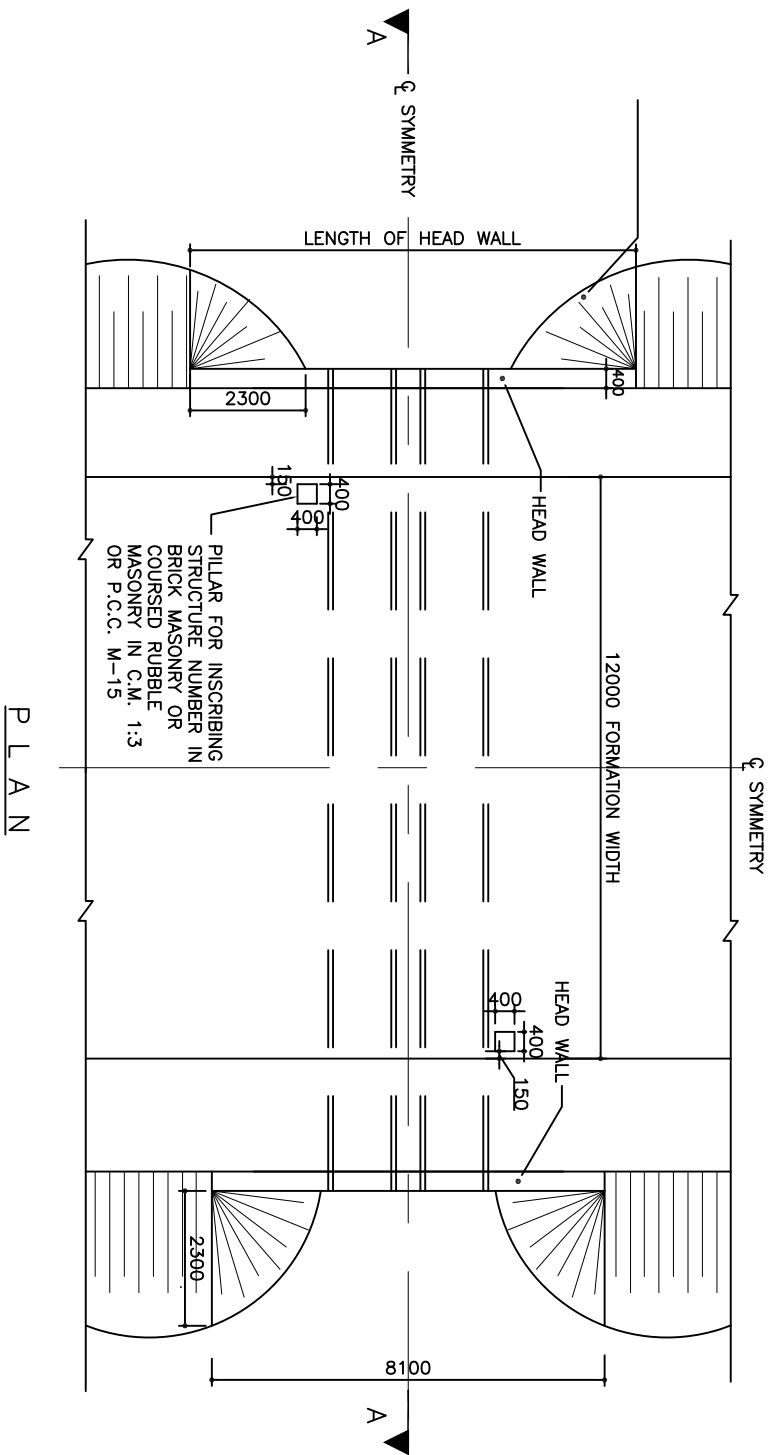


DETAIL OF HEAD WALL

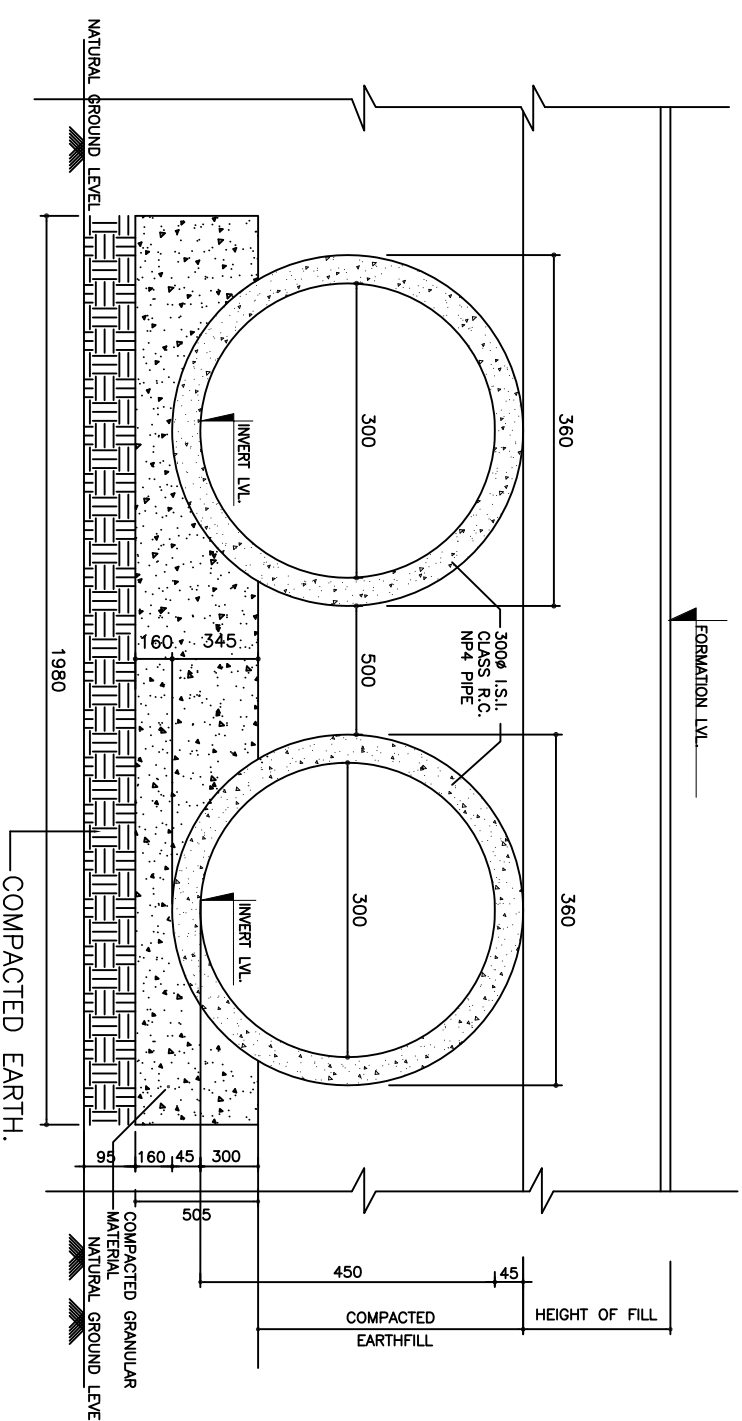
SCHEDULE OF UTILITY DUCTS

Sl. No.	Chainage	Sl. No.	Chainage
1	14840	10	44980
2	15225	11	49900
3	20300	12	50340
4	21050	13	56880
5	26940	14	57340
6	27200	15	60620
7	43120	16	61860
8	44080	17	65600
9	44500	18	66060

- NOTES:
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. DO NOT SCALE THE DIMENSIONS.
 3. LOOSE / UNSUITABLE SOIL BELOW DUCT IS REPLACED WITH COMPACTED EARTH.
 4. LONGITUDINAL SLOPE OF PIPE SHALL BE MIN. 1 IN 1000.
 5. THE FINISHED ROAD LEVEL SHALL BE VERIFIED WITH ALIGNMENT DRAWING & GROUND LEVEL WITH SITE CONDITIONS BEFORE EXECUTION.
 6. HEIGHT OF FILL SHALL NOT BE LESS THAN 0.6M.



PLAN



SECTION B-B

R2 SEP-2015 SECOND REVISION LISA RAJU MATHUR M.A. MISHRA (EE) O.P. PATEL (CE)
 R1 JAN-2013 FIRST REVISION OMD VINAY P.K. MISHRA (A.E) M.A. MISHRA (EE) N.K. PRADHAN (CE)
 - JUNE 2008 ORIGINAL CEG
 NO. DATE REVISION BY DRAWN: PREPARED: CHECKED: APPROVED:

DFR CONSULTANT :
**C O N S U L T I N G
 ENGINEERS GROUP LTD.**
 E-12,KMOI COLONY,MALVIYA NAGAR
 JALPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginidia.com

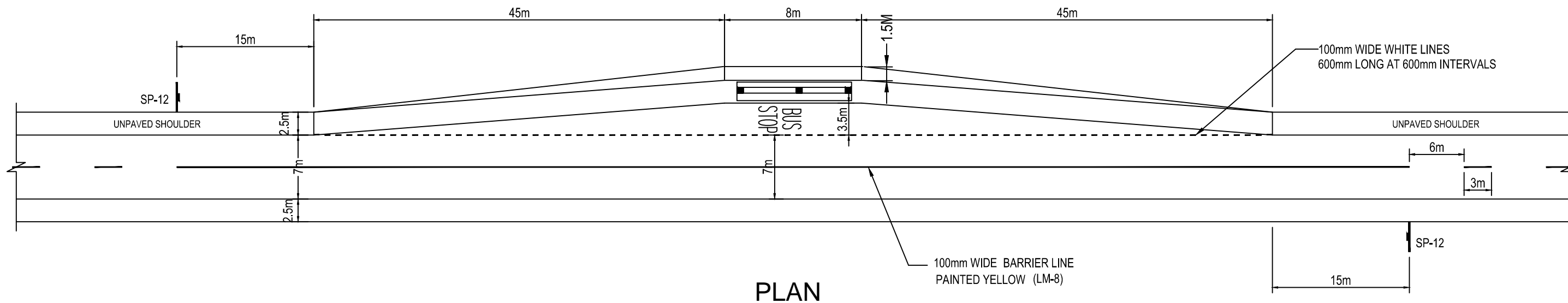
DESIGN REVIEW CONSULTANT :
EA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE
 INDUSTRIAL ESTATE, MATHURA ROAD, NEW
 DELHI-110044 .

CLIENT :
**ODISHA WORKS
 DEPARTMENT**

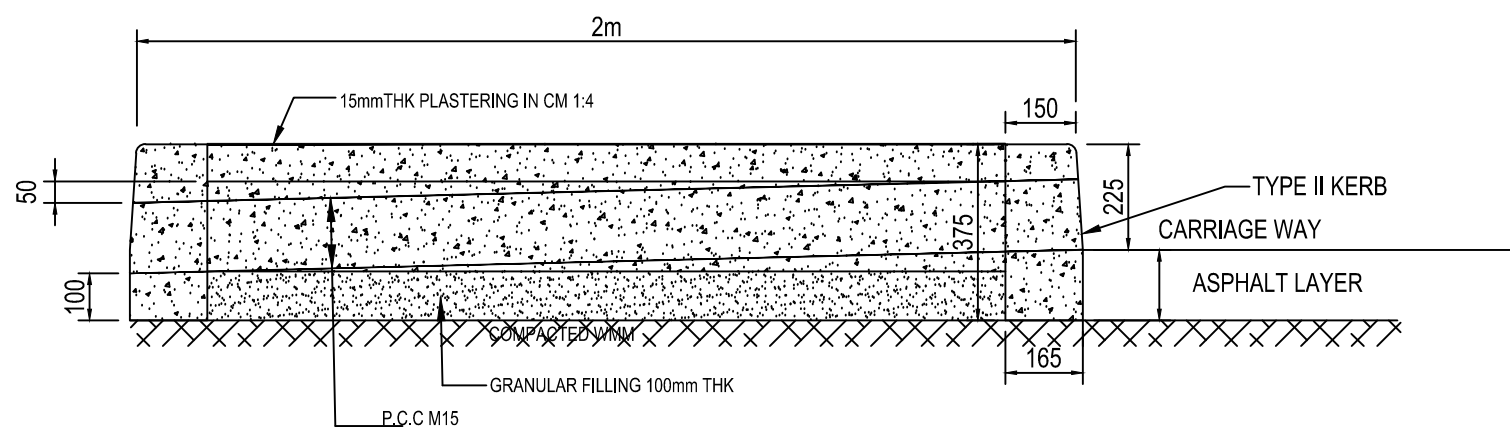
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 PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF
 SH-09 (BALANCE WORK) PACKAGE - P02B**

SCALE : N.T.S
 DRAWING TITLE : **UTILITY DUCT**
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 1 (SHEET OF 1)
 REV. R2

BUS BAY DETAILS



BUS BAY DETAILS



SECTION ON A-A

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 BUSBAY ARE THE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)
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@cegindia.com

DESIGN REVIEW CONSULTANT :

LEA

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 :

CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :

N.T.S

DRAWING TITLE :

TYPICAL BUS BAY

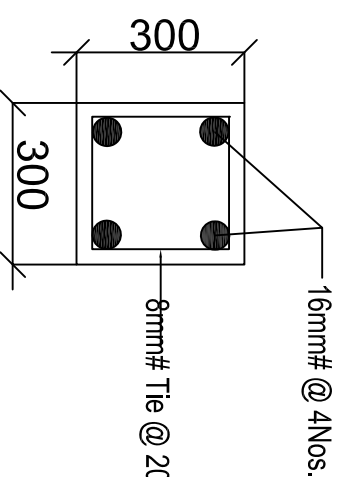
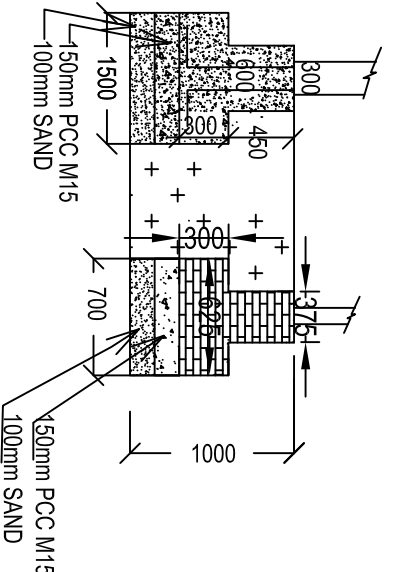
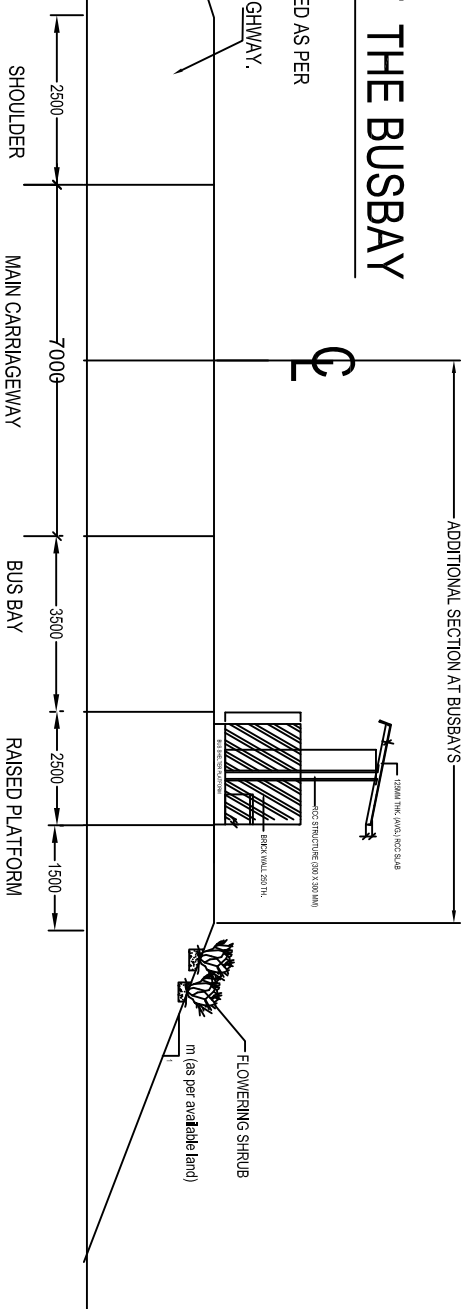
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DWG. NUMBER : OSRP/CEG/SH9/P02B/ 1

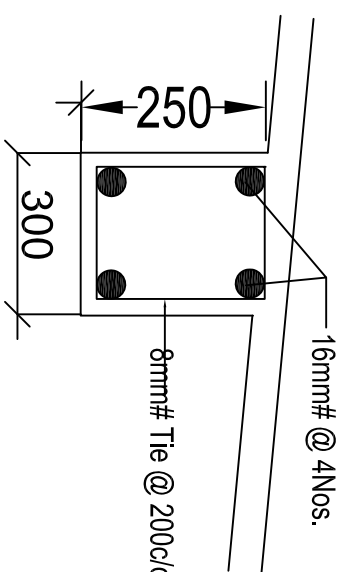
REV. R2

SECTION AT THE BUSBAY

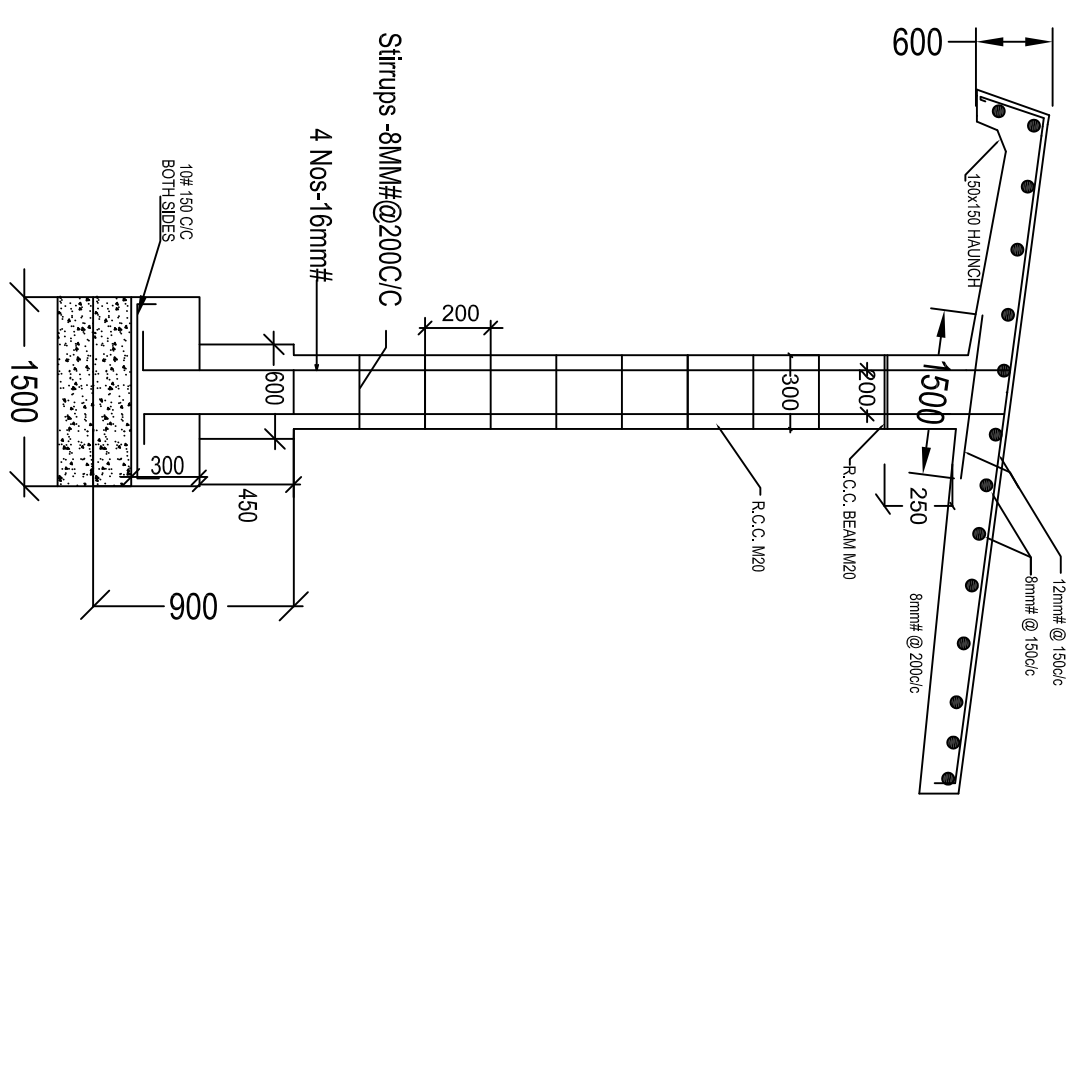
SECTION TO BE ADOPTED AS PER THE SECTION OF THE HIGHWAY.



REINFORCEMENT PLAN of COLUMN

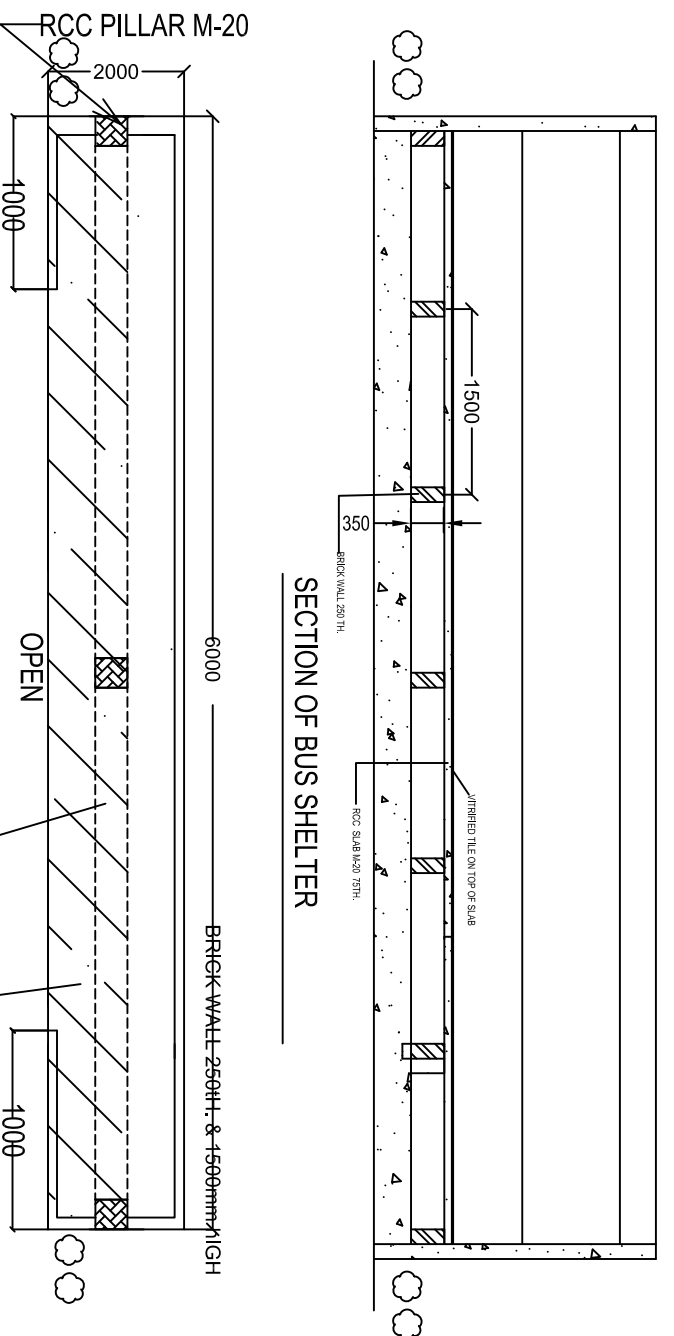


REINFORCEMENT of BEAM



SCHEDULE OF BUSBAYS			
SL. NO.	START	END	SIDE
1	30500	30605	LHS
2	31195	31300	RHS
3	32750	32855	LHS
4	33095	33200	RHS
5	36295	36400	RHS
6	37195	37300	RHS
7	39500	39605	LHS
8	40195	40300	RHS
9	41900	42005	LHS
10	42595	42700	RHS
11	43100	43205	LHS
12	43295	43400	RHS
13	44500	44605	LHS

- NOTE:
- FOR DETAILS OF BUS BAYS REFER DWG NO. OSRP/CEG/SH/9/P02B AND 02
 - LOCATIONS OF THE BUS BAYS MAY BE CHANGED AT SITE AS PER THE REQUIREMENTS
 - LOWER BUS BAYS STANDARDS SHALL BE ADOPTED AS PER THE REQUIREMENTS
 - REQUIRED SLOPE PROTECTION/RETAINING WALL SHALL BE ADOPTED AT STAND.
 - THE REINFORCEMENTS MODIFIED BY ENGINEER MUST BE ADHERED TO.
 - ALL REINFORCEMENTS SHALL BE CONFIRMED TO FE-500



PLAN FOR BUS SHELTER

SECTION OF BUS SHELTER

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA	RAJU MAHUR	M.A. MISHRA (EE)	O.P. PATEL (CE)	
R1	JAN-2013	FIRST REVISION	OWD	VINAY	M.A. MISHRA (AE)	M.A. MISHRA (EE)	N.K. PRADHAN (CE)
-	JUNE 2008	ORIGINAL	CEG				

DPR CONSULTANT :
CONSULTING ENGINEERS GROUP LTD.
 E-12/KM01 COLONY MALVIYA NAGAR
 JALPUR-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, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044.

CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

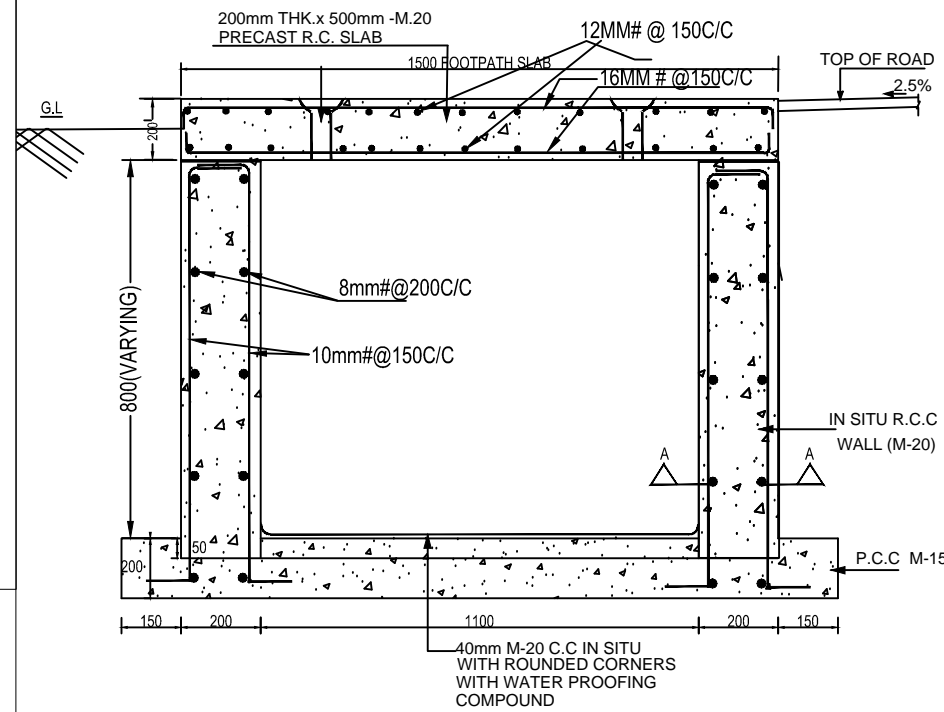
SCALE :
 N.T.S

DRAWING TITLE :
TYPICAL BUS BAY

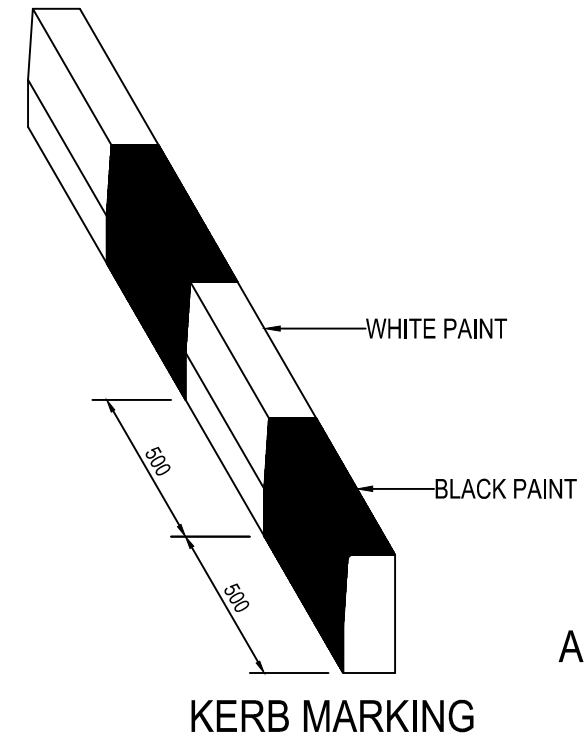
SCHEDULE OF LINED DRAIN			
FROM	TO	LENGTH	LHS/RHS
30300	30500	200	BOTH
32900	33200	300	BOTH
37100	37400	300	BOTH
39100	40300	1200	BOTH
44600	45000	400	BOTH

NOTE:-

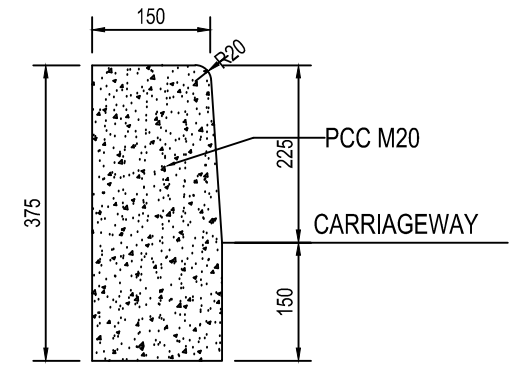
- FOR DETAILS OF LINED DRAINS REFER DWG. NO. OSRP/CEG/DR.
- THE PROVISION AND LENGTH OF THE LINED DRAIN SHALL BE REASSESSED DURING THE TIME OF CONSTRUCTION.
- FOOTPATH BARRIER SHALL BE PROVIDED AS PER DWG. NO. OSRP/CEG/FB
- FOR BARRICADES OPENING SHALL BE PROVIDED.
- LINED DRAIN SCHEDULE SUPERSEED THE PLAN.
- ALL REINFORCEMENTS SHALL BE CONFIRMED TO FE-500.
- THE LOCATION OF LINED DRAIN ARE TENTATIVE ONLY. IT MAY BE CHANGE AS PER SITE REQUIREMENT/CONDITION.



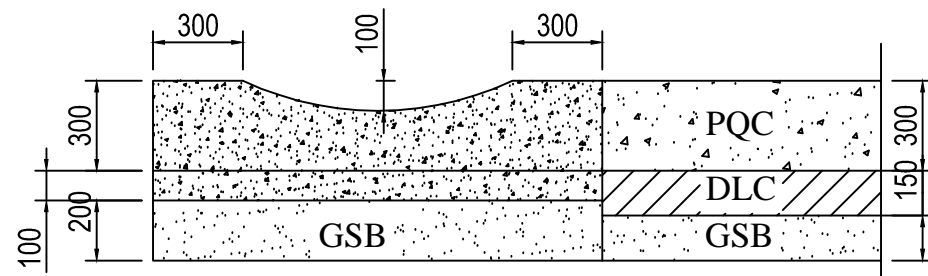
DETAIL OF BOX DRAIN



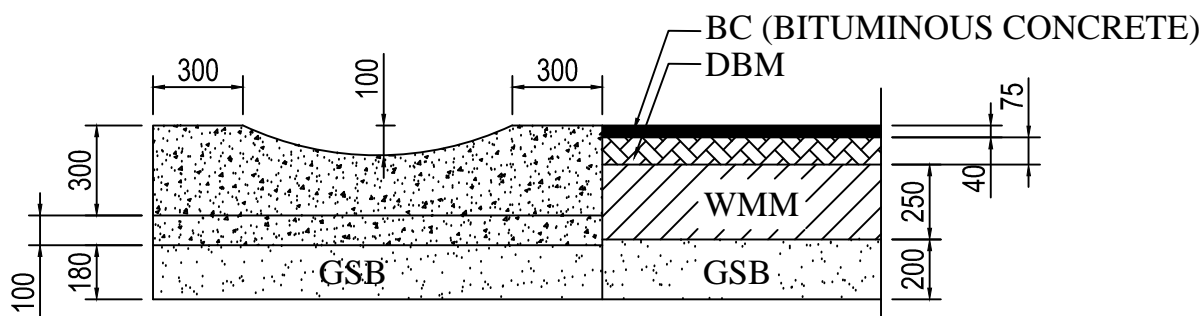
KERB MARKING



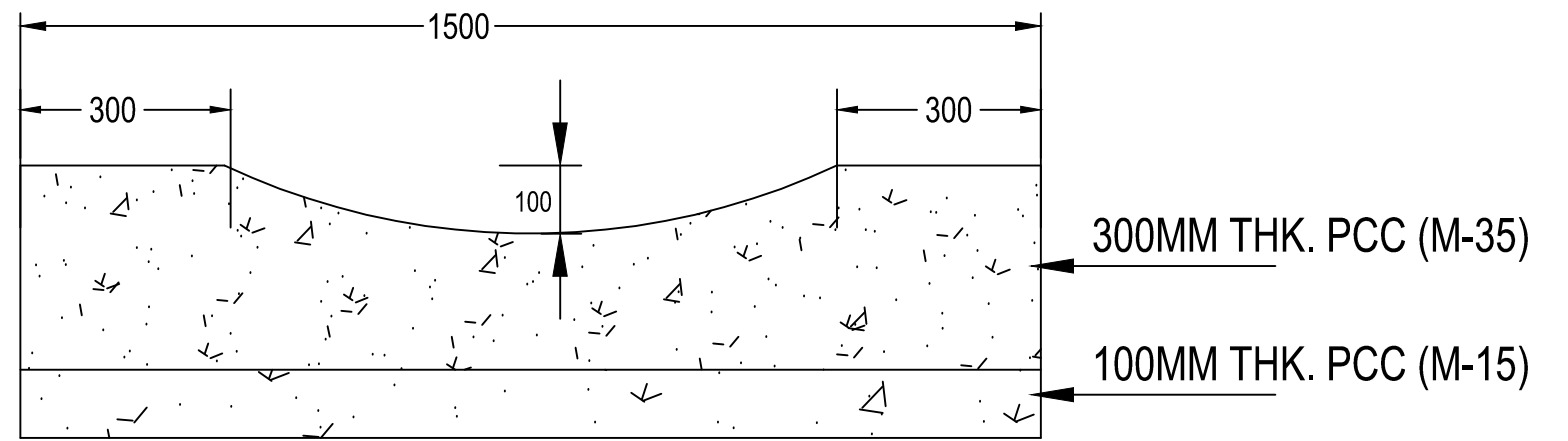
**TYPE - I
KERB FOR CENTRAL
AND DIRECTIONAL ISLAND**



**PRECAST SAUCER DRAIN IN RIGID PAVEMENT
(Scale 1:20)**



**PRECAST SAUCER DRAIN IN FLEXIBLE PAVEMENT
(Scale 1:20)**



PRECAST SAUCER DRAIN

NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:
R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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@cegindia.com

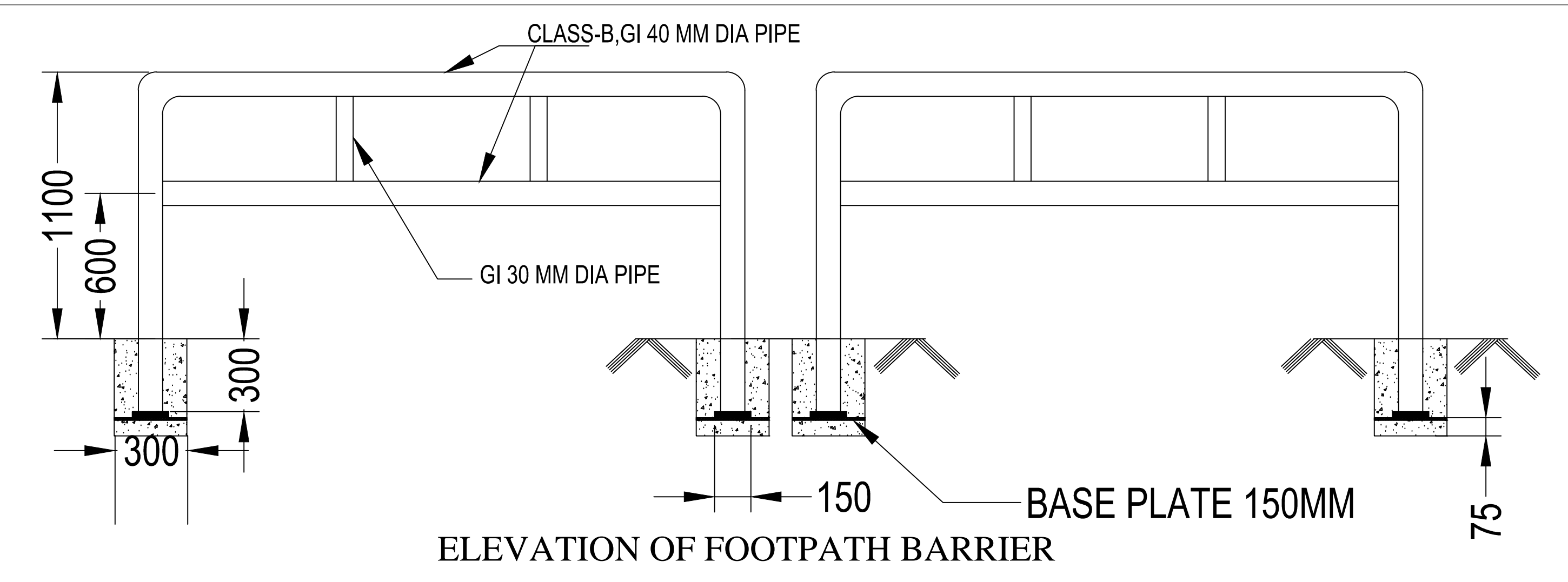
DESIGN REVIEW CONSULTANT :
LEA
 LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IInd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .

CLIENT :
ODISHA WORKS DEPARTMENT

PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S.

DRAWING TITLE :
STANDARD DRAWINGS DETAILS OF DRAIN AND KERB
 DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3
 REV. R2

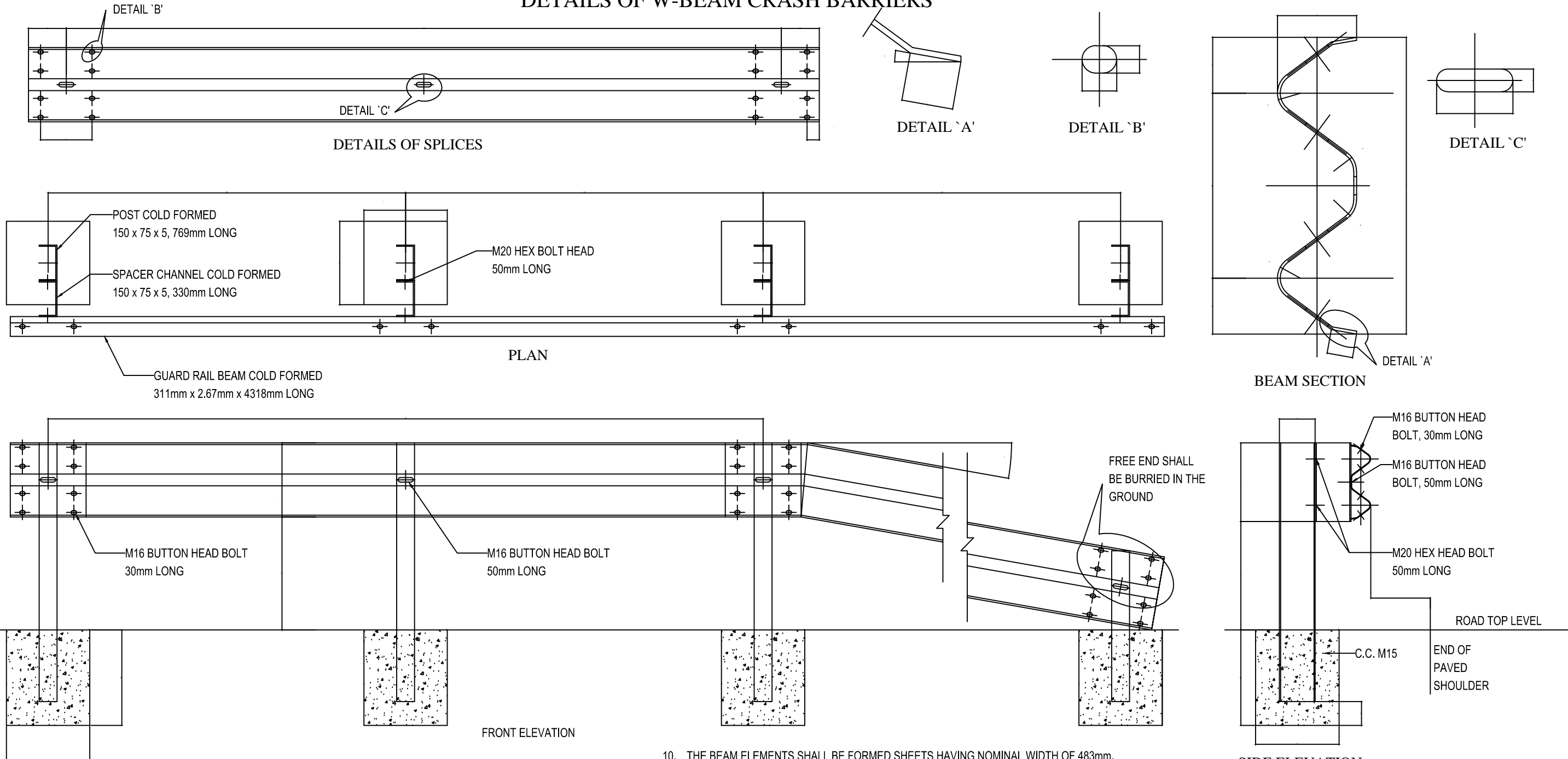


NOTES:-

1. LENGTH OF FOOTPATH BARRIER AT EACH BUSBAY SHALL BE 15 M(MIN).
2. TOTAL LENGTH OF FOOTPATH BARRIER AT BUILTUP/VILLAGE AREA SHALL BE 3498 M.
3. THE LOCATION OF FOOTPATH BARRIER AT BUILTUP/VILLAGE AREA SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

R2		SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	DPR CONSULTANT : CEC 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 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 : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE :		
R1		JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R. MISHRA (EE)						N.K. PRADHAN (CE)	STANDARD DRAWINGS DETAILS OF FOOTPATH BARRIER	
-		JUNE 2008	ORIGINAL	CEG										(SHEET 1 OF 1)	
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:						DWG. NUMBER :	OSRP/CEG/SH9/P02B/ 3	REV:

DETAILS OF W-BEAM CRASH BARRIERS



NOTE:

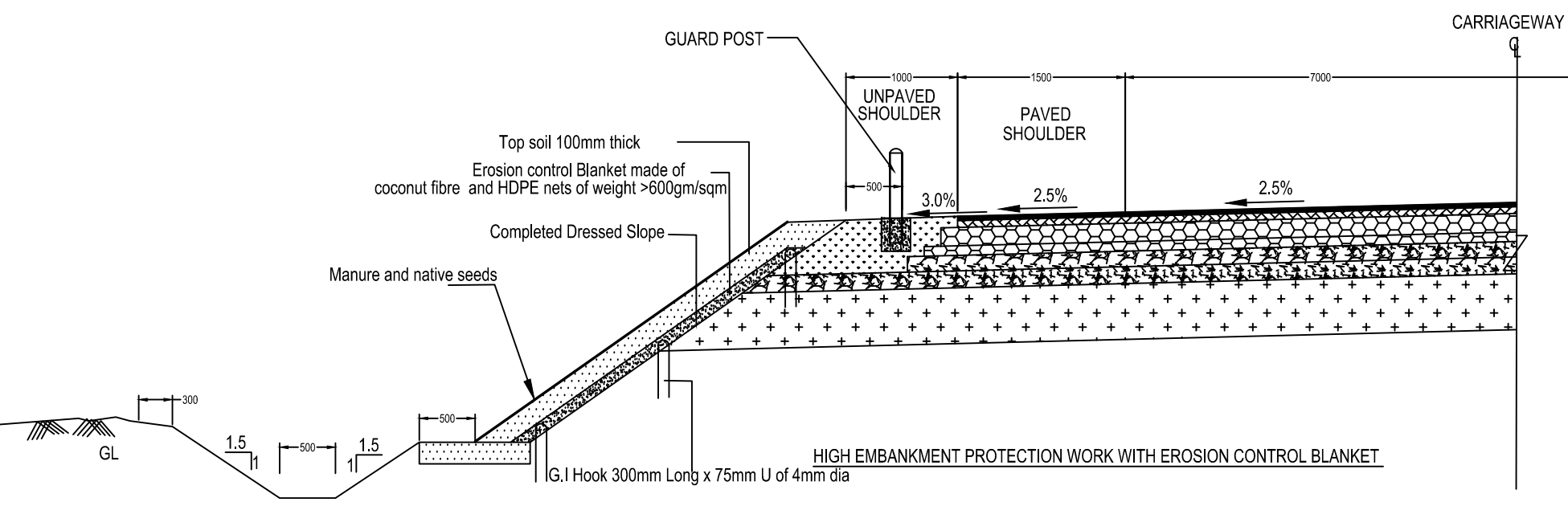
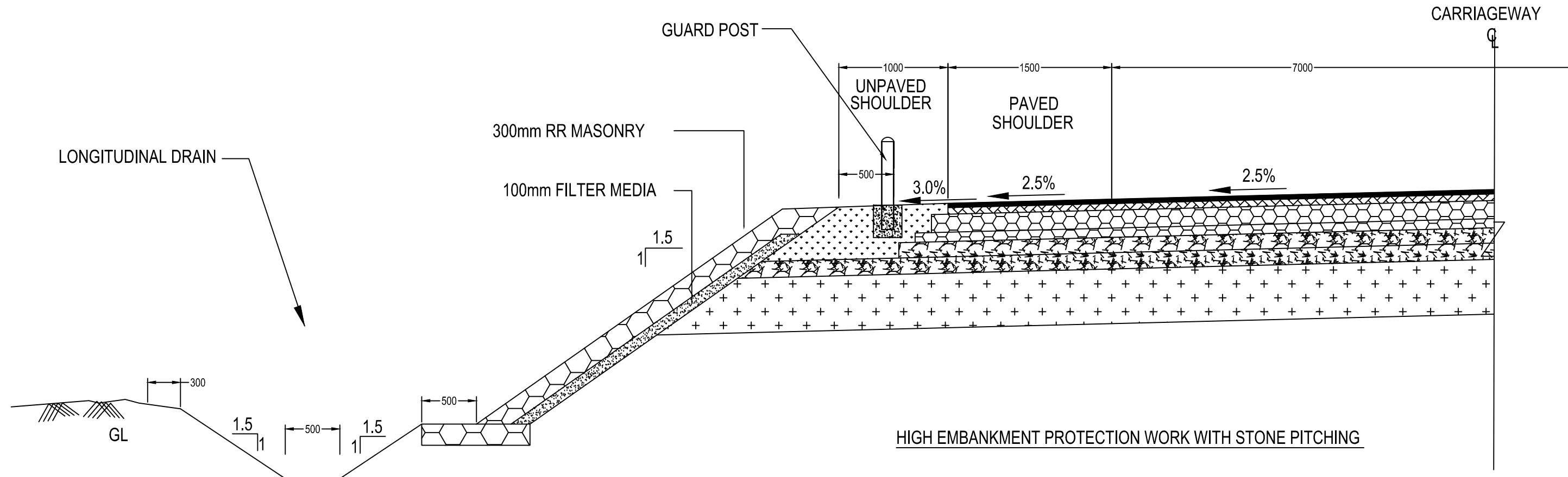
1. HEIGHT OF POSTS SHOULD BE 785mm LONG ABOVE THE FINISHED ROAD LEVEL.
2. SPACING OF POSTS SHOULD BE 2.0m C/C.
3. 1 No. SPACER CHANNEL SHOULD BE PLACED AT EACH POST.
4. W-PROFILE FORMED CORRUGATED BEAMS (EFFECTIVE LENGTH OF 4318mm), 311mm x 83mm.
5. POST CONSISTS OF FORMED CHANNEL OF SIZE 150 x 75 x 5, 785mm LONG ABOVE GROUND LVL.
6. SPACER CONSISTS OF FORMED CHANNEL OF SIZE 150 x 75 x 5, 330mm LONG.
7. BUTTON HEAD BOLTS M16 x 30mm LONG, 8 Nos FOR THE SPLICING OF THE W PROFILE AT EACH LOCATION.
8. BUTTON HEAD BOLTS M16 x 50mm LONG, 1 Nos AT THE CONNECTION OF THE W BEAM TO SPACER.
9. HEX HEAD BOLTS M20 x 50mm LONG , 2 Nos AT THE CONNECTION OF THE SPACER TO POST.

10. THE BEAM ELEMENTS SHALL BE FORMED SHEETS HAVING NOMINAL WIDTH OF 483mm.
11. THE BASE MATERIAL OF THE CORRUGATED BEAM SHALL COMPLY TO FOLLOWING MECHANICAL PROPERTIES:-
 - I. TENSILE STRENGTH, MIN=483 MPA.
 - II. ELONGATION, in 2 inches, MIN = 12%
 - III. YIELD, MIN=345 MPA.
12. ALL MEMBERS OF THE SYSTEM SHOULD BE HOT DIPPED GALVANIZED AND TO HAVE A MINIMUM COATING OF 550g/Sq m, EACH FACE IN CONFORMANCE TO M.O.R.T & H. SPECIFICATIONS (CLAUSE 810).
13. BEAMS TO BE ERECTED ON A RADIUS OF 46m (150') OR LESS SHALL BE SHAPE CURVED TO APPROPRIATE CURVATURE.
14. CRASH BARRIERS ARE POSTED ON ALL SECTION OF EMBANKMENT WHOSE HEIGHT IS >= TO 3m, HORIZONTAL CURVES OF RADIUS < 170m AND ALSO AT ALL BRIDGE APPROACHES FOR LENGTH OF 20m ON BOTH SIDES.
15. BEAM SURFACE FACING THE TRAFFIC IS PAINTED WITH ALTERNATE BANDS (500mm WIDE) OF BLACK & YELLOW COLOR REFLECTORIED PAINT CONFORMING CL.803.5 OF M.O.R.T & H SPEC.

SCHEDULE :

THE LOCATION OF THE METAL BEAM CRASH BARRIER ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">R2</td> <td style="width: 10%;">SEP-2015</td> <td style="width: 10%;">SECOND REVISION</td> <td style="width: 10%;">LASA</td> <td style="width: 10%;">RAJU MATHUR</td> <td style="width: 10%;">M.R MISHRA (EE)</td> <td style="width: 10%;">O.P. PATEL (CE)</td> </tr> <tr> <td>R1</td> <td>JAN-2013</td> <td>FIRST REVISION</td> <td>OWD</td> <td>VINAY</td> <td>PK.MISHRA (AE)</td> <td>M.R MISHRA (EE)</td> </tr> <tr> <td>-</td> <td>JUNE 2008</td> <td>ORIGINAL</td> <td>CEG</td> <td></td> <td></td> <td>N.K PRADHAN (CE)</td> </tr> </table>	R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)	R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)	-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)	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@cegindia.com	DESIGN REVIEW CONSULTANT : LEA LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1 st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CLIENT : ODISHA WORKS DEPARTMENT	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : STANDARD DRAWINGS METAL BEAM CRASH BARRIER DETAILS (SHEET 1 OF 1) DWG. NUMBER : OSRP/CEG/SH9/P02B/ 3 REV. R2
R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)																					
R1	JAN-2013	FIRST REVISION	OWD	VINAY	PK.MISHRA (AE)	M.R MISHRA (EE)																					
-	JUNE 2008	ORIGINAL	CEG			N.K PRADHAN (CE)																					



NOTES:-

1. THE LOCATION OF HIGH EMBANKMENT PROTECTION WORK SHALL BE FINALISED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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@cegindia.com

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

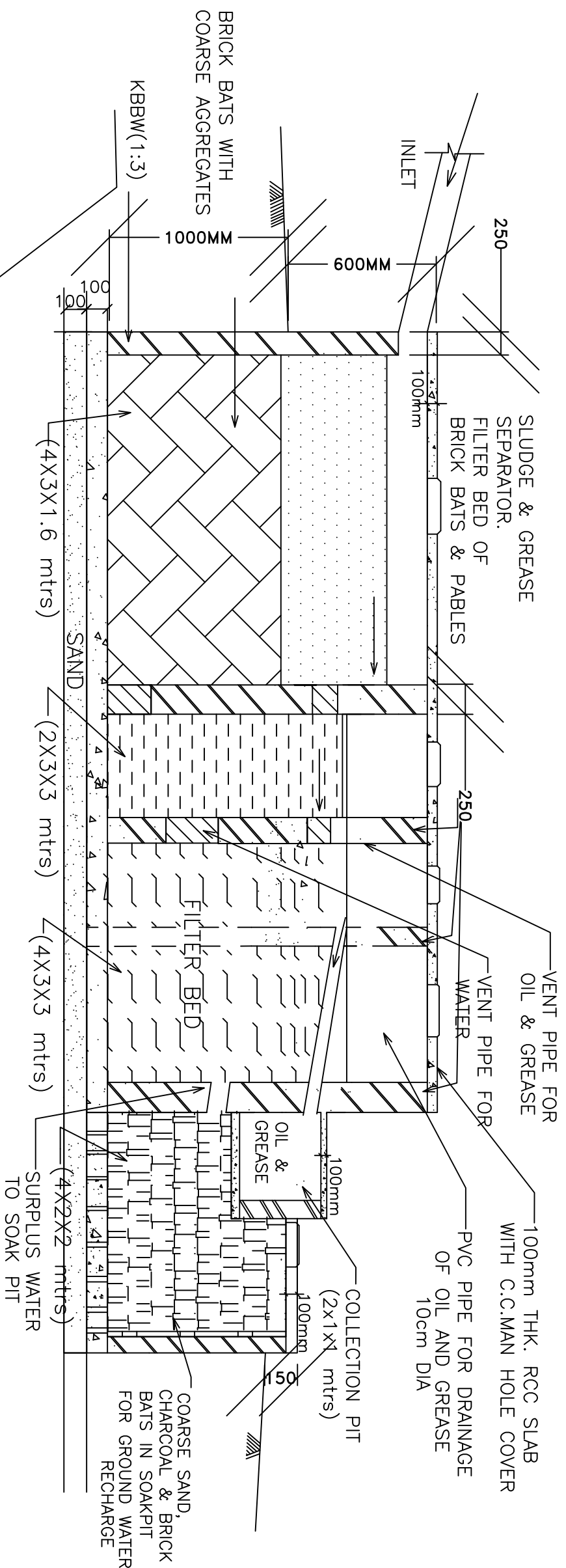
CLIENT :

 ODISHA WORKS DEPARTMENT

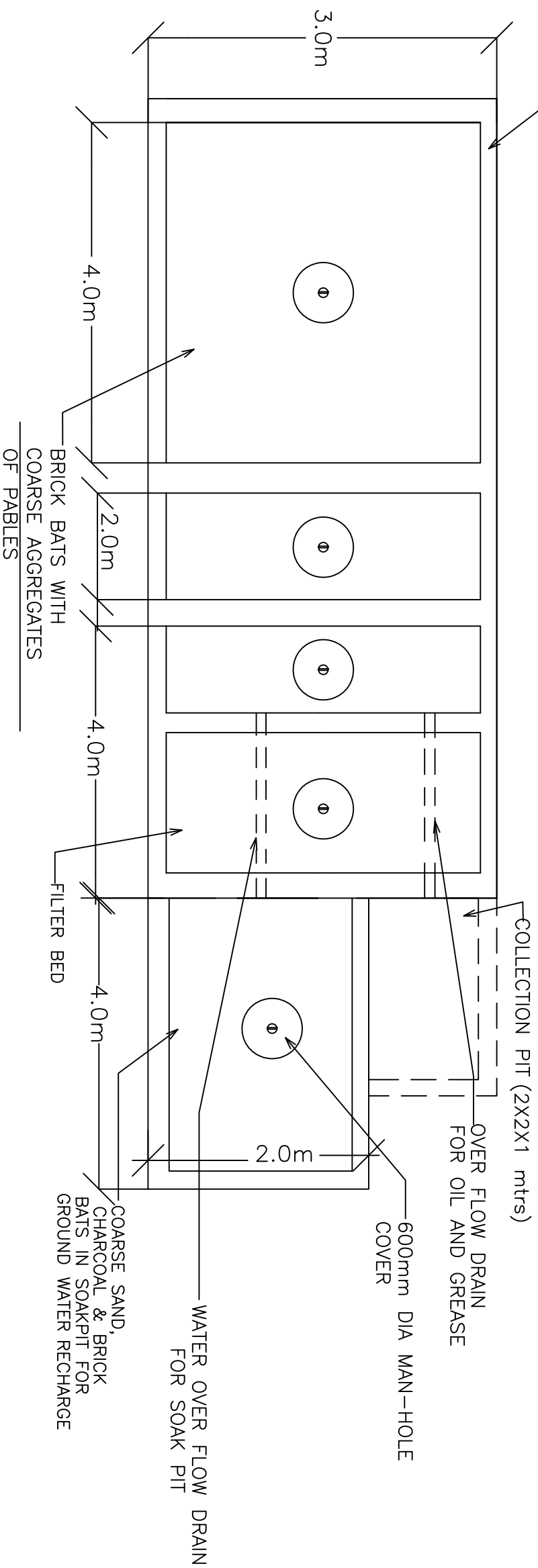
PROJECT :
 CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
 STANDARD DRAWINGS PROTECTION WORK & WITH EROSION BLANKET
 (SHEET 1 OF 1)
 DWG. NUMBER : OSRP/CEG/SH9/P02B/03
 REV. R2



SECTION OF SOAK PIT



PLAN OF SOAK PIT

NOTE: PROVIDE AT CONTRACTOR'S PLANT SITE.

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.A. MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K. MISHRA (AE)	M.A. MISHRA (EE) N.K. PRADEEN (CE)
-	JUNE 2008	ORIGINAL	CEG			
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:
						APPROVED:

DFR CONSULTANT :
C O N S U L T I N G
ENGINEERS GROUP LTD.
 E-12, MOULI COLONY, MALVIYA NAGAR
 JAIPUR-302017 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@ceginfra.com

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

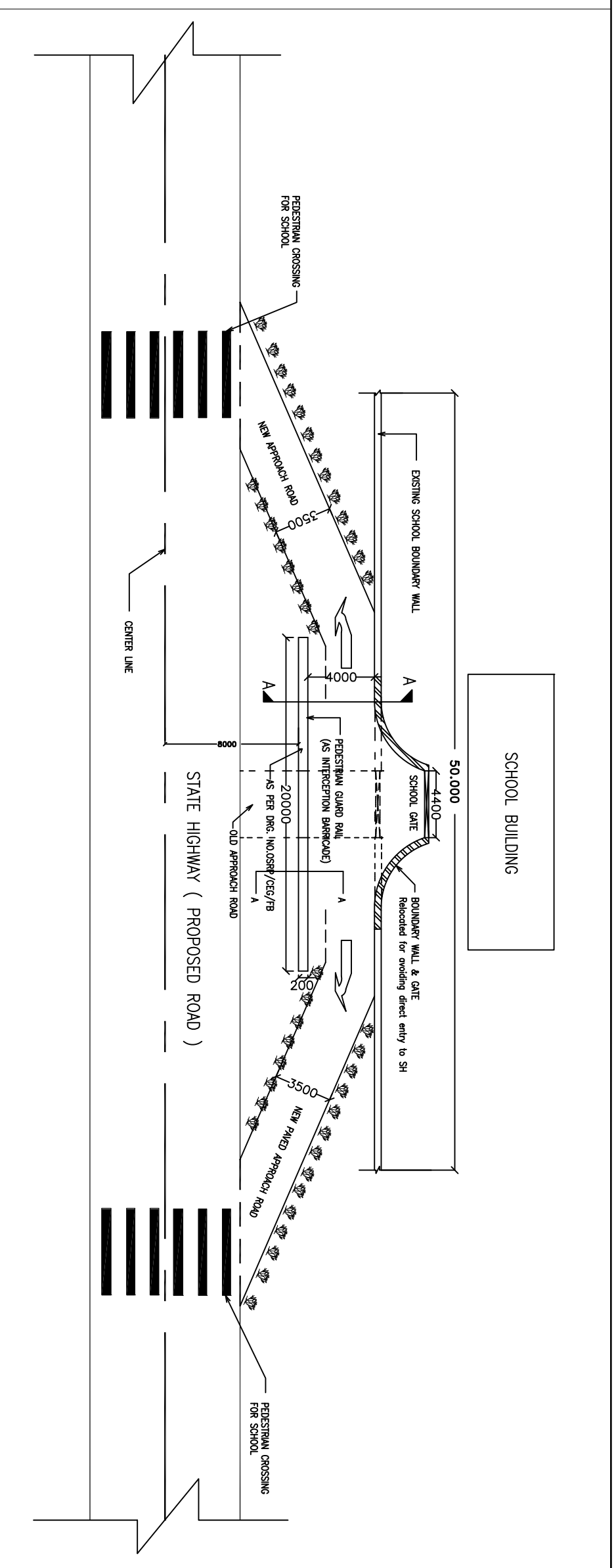
CLIENT :
ODISHA WORKS
 DEPARTMENT

PROJECT :
CONSTRUCTION FOR WIDENING AND
STRENGTHENING OF EXISTING CARRIAGEWAY TO 2
LANE ROAD FROM PIRAHAT TO CHANDBALI - KM
27+500 TO KM 45+000 OF SH-09 (BALANCE WORK)
 PACKAGE - P02B

SCALE :
 N.T.S

DRAWING TITLE :
OIL & GREASE TRAP FOR PLANT SITE
 DWG. NUMBER : OSRP/CEG/SH9/P02B/EN/1/ (SHEET 1 OF 1)
 REV. R2

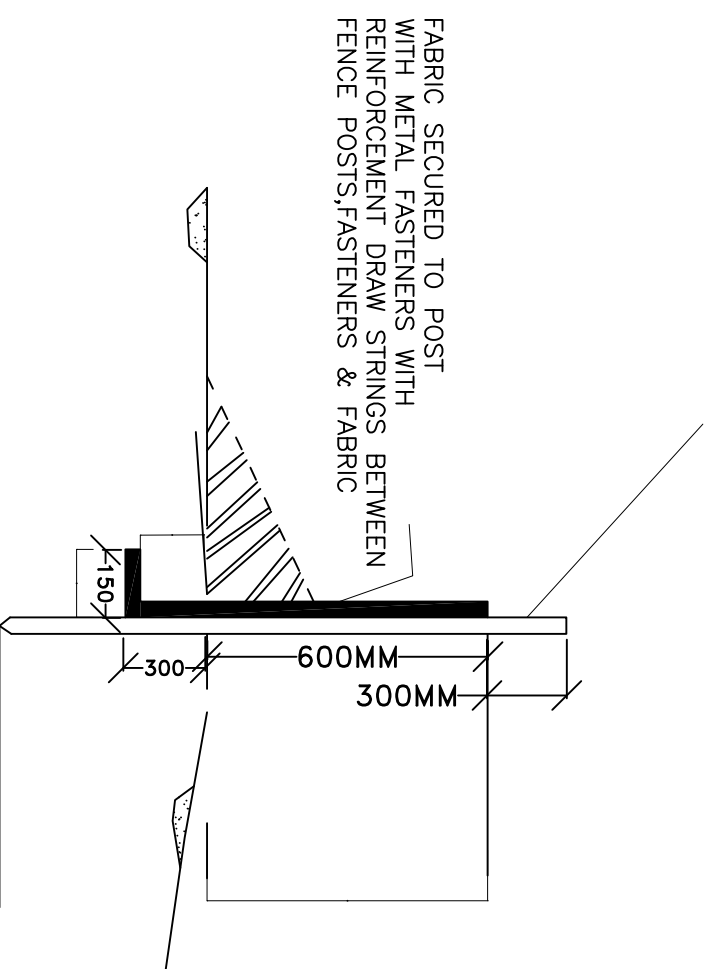
SCHEDULE FOR INTERCEPTIVE BARRICADE		
1	School	29.950
2	School	40.720
3	School	41.800



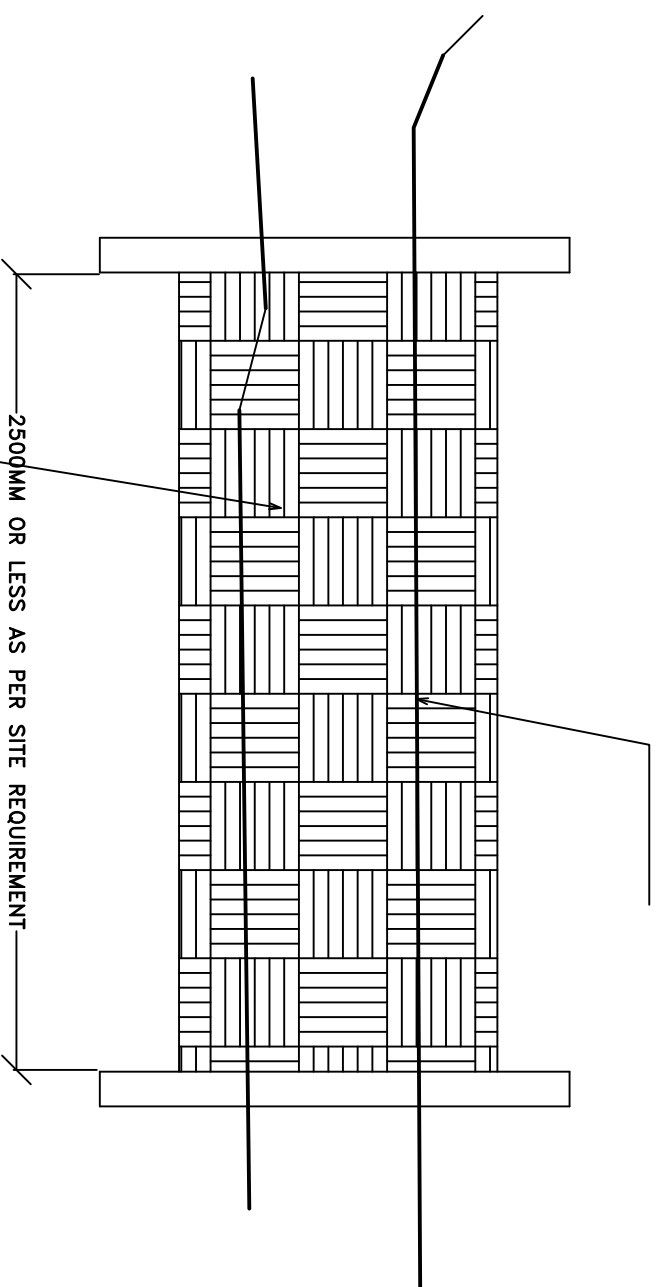
- THERE SHALL BE RUMBLER STRIPS & SPEED BREAKERS 150m & 10m AWAY FROM PEDESTRIAN CROSSINGS NEAR SCHOOLS, COLLEGES, HOSTELS, TEMPLES, HOSPITALS, DISPENSARIES AND OLD AGE HOMES, WEEKLY MARKET AREA, G.P MARKET COMPLEX ADJACENT TO THE ROAD WITHIN 25m TO 50m DISTANCE FROM CENTRE LINE. THE BOUNDARY WALL SHOULD 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 ERRECTED 4m AWAY FROM THE ENTRY POINT INFRONT OF THE GATE

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	G.P. PATEL (CE)	DRP CONSULTANT :		DESIGN REVIEW CONSULTANT : 	CLIENT : 	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : METAL BARRICADES FOR EDUCATIONAL AND MEDICAL INSTITUTIONAL APPROACHES AS ENVIRONMENTAL MITIGATION PLAN
R1	JAN-2013	FIRST REVISION	OND	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)	ONSULTING ENGINEERS GROUP LTD. E-12,MDOI COLONY,MALVIYA NAGAR JALPUR-77 tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@cegroupindia.com						
-	JUNE 2008	ORIGINAL	CEG										
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:						

FENCE POST 75MM DIA @ 2500MM C/C



DRAW STRING RUNNING THROUGH FABRIC



SHEET MADE OF COCONUT
FIBER WITH HDPE NETS OF WEIGHT >6000GM/SQM

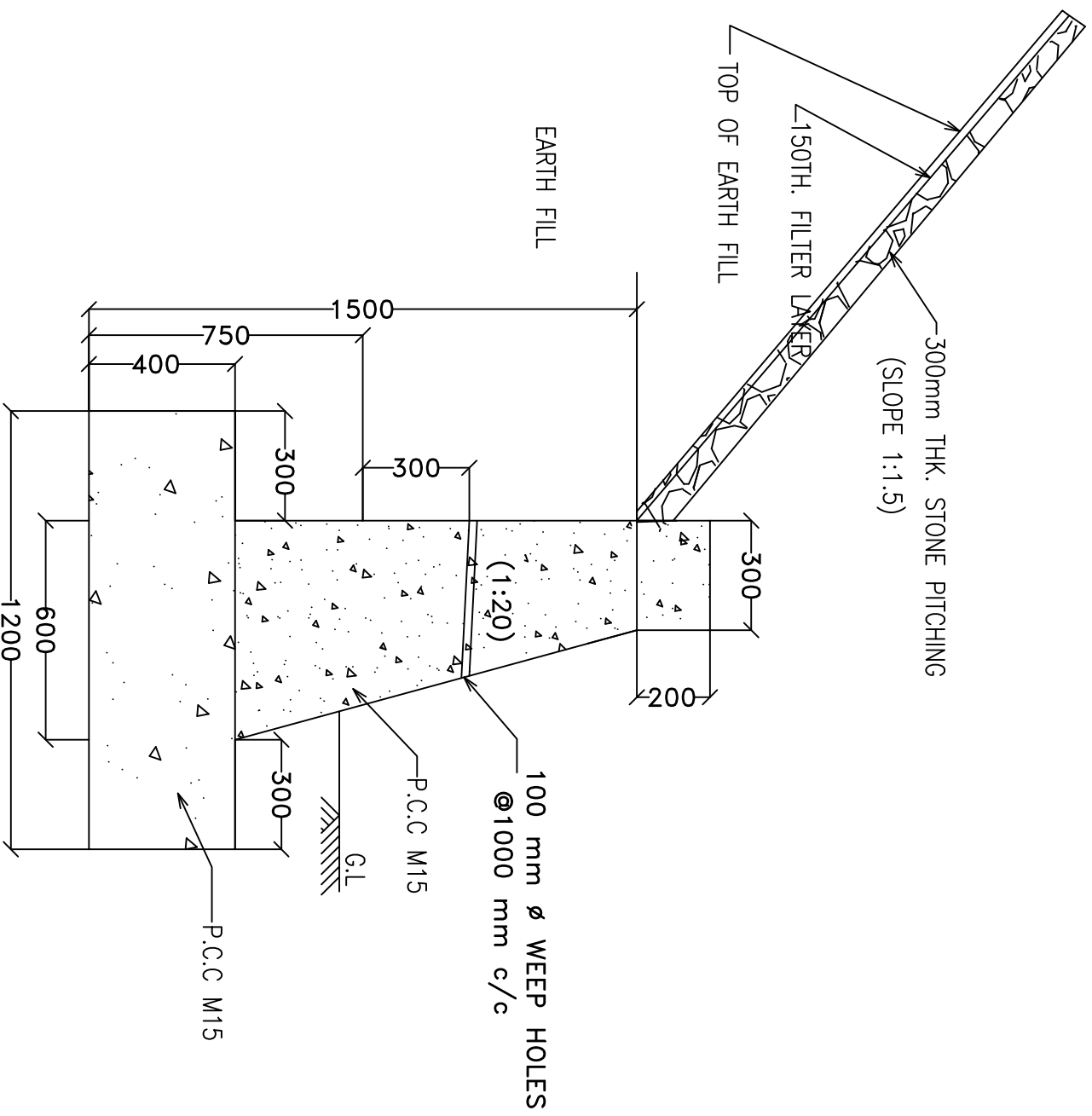
SILT FENCE SEDIMENT BARRIER

NO SCALE

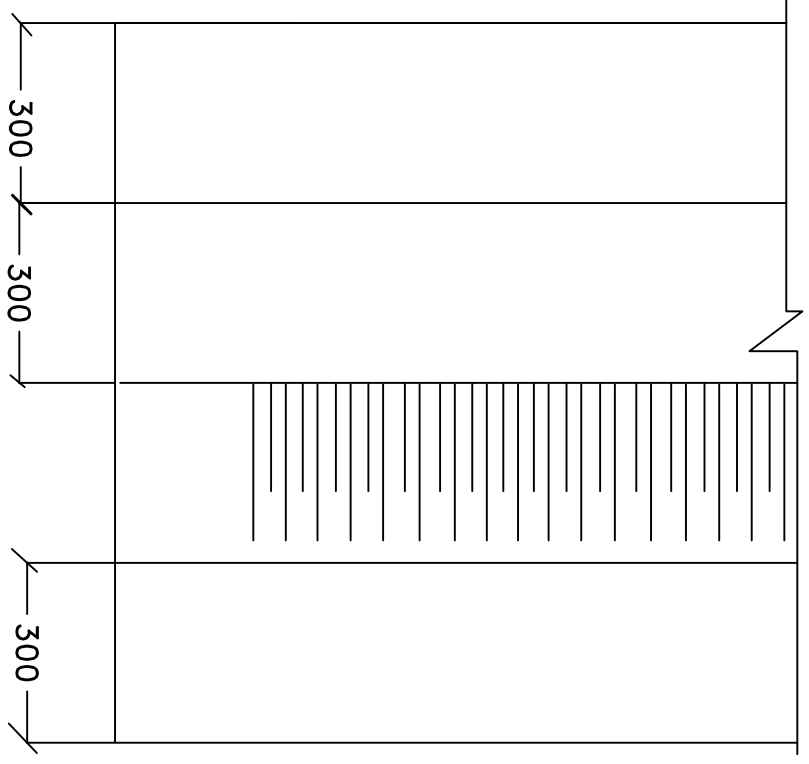
SCHEDULE:

LENGTH :- LUMP SUM QNTY - 20000M

R2	SEP-2015	SECOND REVISION	LASA		RAJU MATHUR	M.R. MISHRA (EE)	O.P. PATEL (CE)	DFR CONSULTANT :	<p>ONSULTING ENGINEERS GROUP LTD. E-12,KMOJI COLONY,MALVIYA NAGAR JALPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.com</p>	CLIENT :	<p>ODISHA WORKS DEPARTMENT</p>	PROJECT :	<p>CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B</p>	SCALE :	<p>N.T.S</p>	DRAWING TITLE :	<p>TYPICAL STANDARD DRAWING FOR SILT FENCE.</p>	
R1	JAN-2013	FIRST REVISION	OWN	VINAY	P.K.MISHRA (AE)	M.R. MISHRA (EE)	N.K. PRADHAN (CE)	DESIGN REVIEW CONSULTANT :		<p>LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 .</p>		<p>ONSULTING ENGINEERS GROUP LTD. E-12,KMOJI COLONY,MALVIYA NAGAR JALPUR-17 Tel: +91-141-2520899,2521899,2520556 Fax: 2521348, e-mail: ceg@ceginfra.com</p>		<p>ODISHA WORKS DEPARTMENT</p>		<p>CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B</p>		<p>N.T.S</p>
-	JUNE 2008	ORIGINAL	CEG															
NO.	DATE	REVISION	BY	DRAWN:	PREPARED :	CHECKED:	APPROVED:											



TOE WALL FOR POND
(CROSS SECTION)

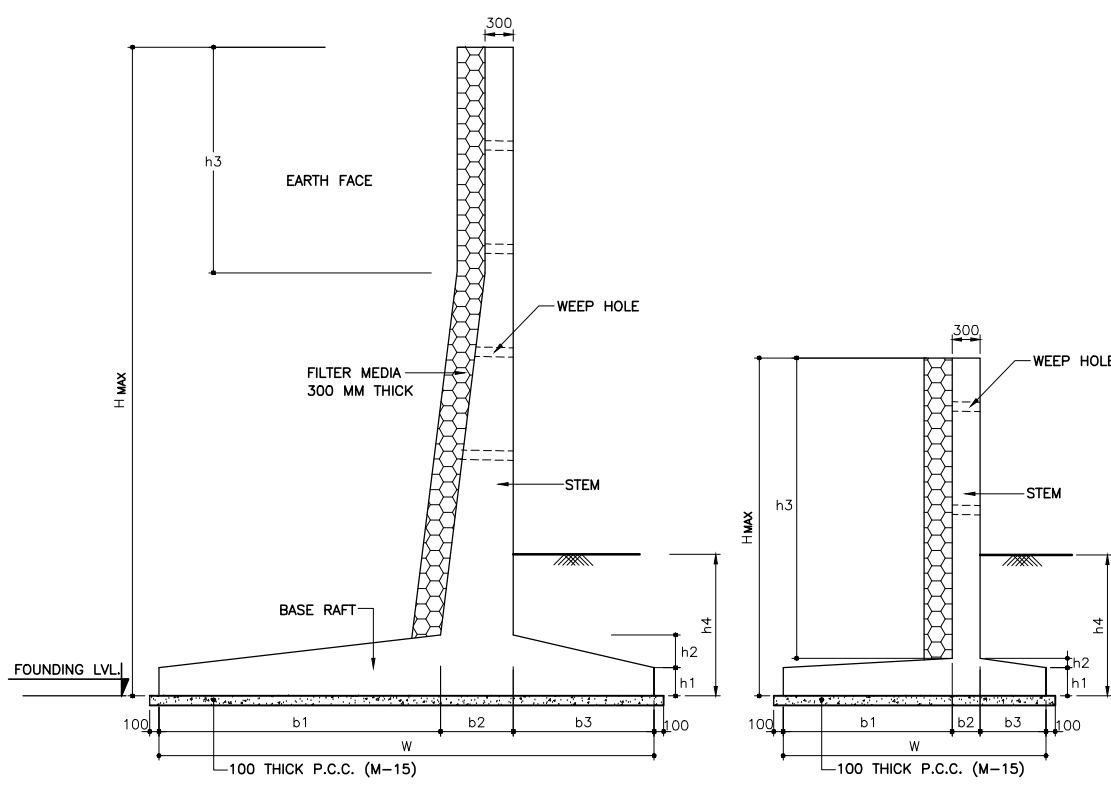


PLAN OF TOE WALL FOR WATER BODY

Sl No.	Items	Chainage at km	Location left /right	Length of toe wall in Mtrs.
1	Pond	27.7	R	20
2	Pond	27.705	L	65
3	Pond	27.79	R	30
4	Pond	28	L	270
5	Pond	28.062	R	115
6	Pond	28.8	L	80
7	Pond	29.147	R	315
8	Pond	29.25	L	55
9	Pond	29.3	L	70
10	Pond	29.4	L	30
11	Pond	29.5	R	15
12	Pond	29.555	L	75
13	Pond	29.715	L	50
14	Pond	29.7	R	45
15	Pond	30.013	L	30
16	Pond	30.565	R	30
17	Pond	30.683	L	15
18	Pond	30.97	L	45
19	Pond	31.3	L	40
20	Pond	31.417	R	30
21	Pond	31.823	R	35
22	Pond	31.96	R	440
23	Pond	32.1	L	30
24	Pond	32.45	R	25
25	Pond	32.49	L	210
26	Pond	33.2	L	25
27	Pond	33.6	L	55
28	Pond	33.87	L	135
29	Pond	34	R	45
30	Pond	36.1	L	40
31	Pond	36.104	R	70
32	Pond	36.428	L	15
33	Pond	39.1	R	55
34	Pond	39.263	L	20
35	Pond	39.64	R	20
36	Pond	40.266	R	25
37	Pond*	40.36	L	30
38	Pond	41.5	L	25

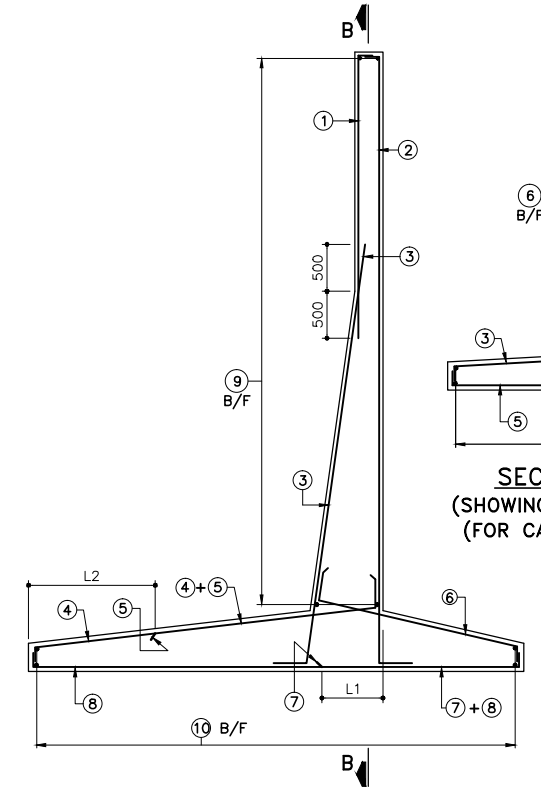
TO MINIMISE IMPACT ON STORAGE CAPACITY & WATER SPREAD OF PONDS, WATER BODY, NALA BED, TOE WALLS TO BE ERECTED SUCH THAT IT PREVENTS ACCIDENTAL FALL INTO THE DEPRESSION AND WASHING OF VEHICLES/BATHING/ WASHING ON THE ROAD SIDE

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R. MISHRA (EE)	G.P. PATEL (CE)	DR CONSULTANT :		ONSULTING ENGINEERS GROUP LTD. E-12, MOULI COLONY, MALVIYA NAGAR JAIPUR-31 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceeg@ceginfdia.com		DESIGN REVIEW CONSULTANT : LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044.		CLIENT : ODISHA WORKS DEPARTMENT	PROJECT : CONSTRUCTION FOR WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM PIRAHAT TO CHANDBALI - KM 27+500 TO KM 45+000 OF SH-09 (BALANCE WORK) PACKAGE - P02B	SCALE : N.T.S	DRAWING TITLE : TYPICAL PCC TOE WALL WITH STONE PITCHING FOR WATER BODIES AS ENVIRONMENTAL MITIGATION	DMC NUMBER : OSRP/CEG/SH9/P02B/ENV/ 3	REV. R2
R1	JAN-2013	FIRST REVISION	OWN	VINAY	P.K. MISHRA (AE)	M.R. MISHRA (EE)	DR CONSULTANT :											ONSULTING ENGINEERS GROUP LTD. E-12, MOULI COLONY, MALVIYA NAGAR JAIPUR-31 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceeg@ceginfdia.com
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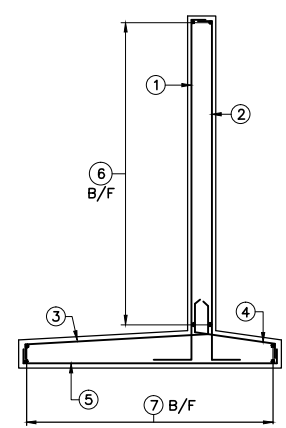


CROSS SECTION OF RETAINING WALL (FOR CATEGORY C, D, E)

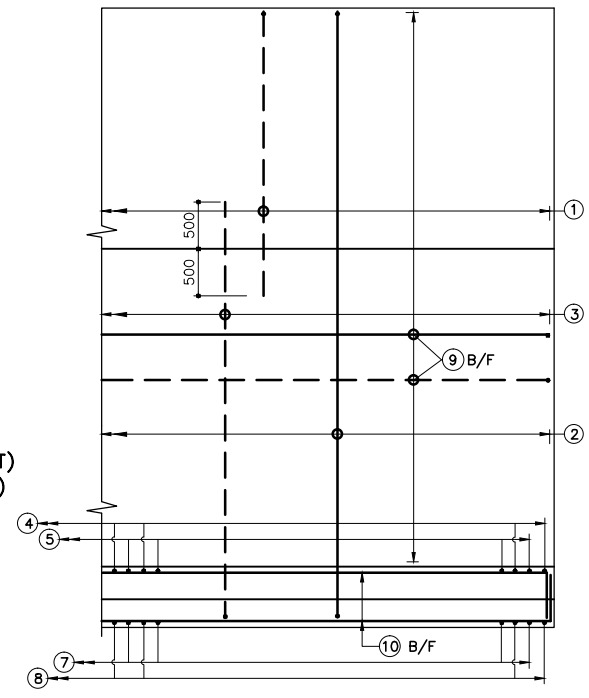
CROSS SECTION OF RETAINING WALL (FOR CATEGORY A TO B)



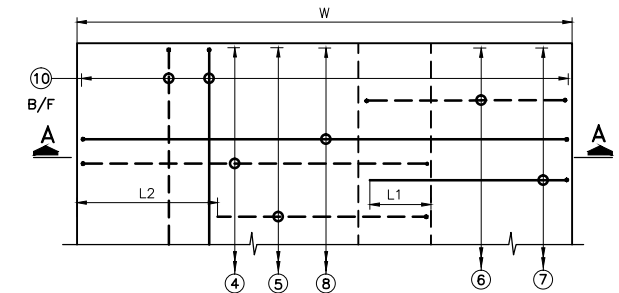
SECTION A-A (SHOWING REINFORCEMENT) (FOR CATEGORY C, D, E)



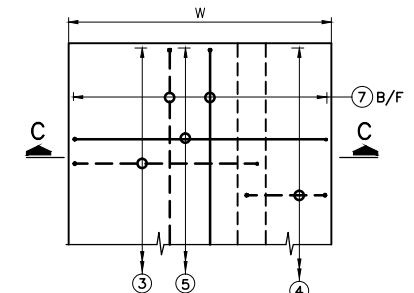
SECTION C-C (SHOWING REINFORCEMENT) (FOR CATEGORY A TO B)



SECTION B-B (SHOWING REINFORCEMENT) (FOR CATEGORY C, D, E)



PLAN SHOWING REINFORCEMENT IN BASE RAFT (FOR CATEGORY C TO E)



PLAN SHOWING REINFORCEMENT IN BASE RAFT (FOR CATEGORY A TO B)

LENGTH OF CURTAILMENT

CATEGORY	L1	L2
C	-	-
D	-	800
E	500	1200

DIMENSIONAL DETAILS

CATEGORY	Hmax	W	h1	h3	h4	b1	b2	b3
A	2000	2000	300	1700	1000	1300	300	400
B	3000	2650	300	2700	1200	1750	300	600
C	4000	3150	300	2400	1200	2040	410	700
D	5000	4230	300	2400	1500	2680	550	1000
E	6000	4935	300	2400	1500	3060	700	1175

LEGENDS:
 --- BAR ON TOP/ EARTH FACE
 --- BAR ON BOTTOM/ OUTER FACE
 B/F BAR ON BOTH FACE

REINFORCEMENT DETAILS

BAR MKD.	①	②	③	④	⑤	⑥	⑦
BAR SHAPE							
A	8 ϕ @ 130C/C	8 ϕ @ 200C/C	8 ϕ @ 150C/C	8 ϕ @ 200C/C	8 ϕ @ 200C/C	8 ϕ @ 200C/C	8 ϕ @ 200C/C
B	12 ϕ @ 100C/C	8 ϕ @ 200C/C	12 ϕ @ 125C/C	8 ϕ @ 200C/C	10 ϕ @ 200C/C	8 ϕ @ 200C/C	8 ϕ @ 200C/C

REINFORCEMENT DETAILS

BAR MKD.	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
BAR SHAPE										
C	12 ϕ @ 150C/C	10 ϕ @ 200C/C	16 ϕ @ 150C/C	16 ϕ @ 180C/C	-	10 ϕ @ 200C/C	-	12 ϕ @ 180C/C	10 ϕ @ 200C/C	10 ϕ @ 200C/C
D	12 ϕ @ 150C/C	10 ϕ @ 200C/C	20 ϕ @ 150C/C	16 ϕ @ 200C/C	12 ϕ @ 200C/C	10 ϕ @ 200C/C	10 ϕ @ 200C/C	12 ϕ @ 200C/C	10 ϕ @ 200C/C	10 ϕ @ 200C/C
E	12 ϕ @ 150C/C	10 ϕ @ 200C/C	20 ϕ @ 130C/C	16 ϕ @ 200C/C	16 ϕ @ 200C/C	10 ϕ @ 200C/C	10 ϕ @ 150C/C	12 ϕ @ 150C/C	10 ϕ @ 200C/C	10 ϕ @ 200C/C

NOTES

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
- DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- GRADE OF CONC. FOR R.C.C. WORKS -----M25. GRADE OF CONC. FOR P.C.C. WORKS -----M15.
- ALL HYSD BARS IS CONFORMED TO IS 1786 GRADE Fe-415.
- CLEAR COVER TO ANY REINF: IN BASE RAFT = 75 mm. ALL OTHER COMPONENTS = 40mm.
- LAPPING IS STAGGERED AND NOT MORE THAN 50% OF BAR IS LAPPED AT A SECTION.
- THE BEARING CAPACITY SHALL NOT BE LESS THAN THE FOLLOWING.
 CATEGORY - A = 7t/m²
 CATEGORY - B = 10t/m²
 CATEGORY - C = 12.5t/m²
 CATEGORY - D = 13t/m²
 CATEGORY - E = 15t/m²

REFERENCE DRAWING:-

- OSRP/CEG/SH-9/BOX CUL-01
- OSRP/CEG/SH-9/BR/1+005/01
- OSRP/CEG/SH-9/BR/1+800/01
- OSRP/CEG/SH-9/BR/9+200/01
- OSRP/CEG/SH-9/BR/13+600/01
- OSRP/CEG/SH-9/BR/28+100/01
- OSRP/CEG/SH-9/BR/28+800/01
- OSRP/CEG/SH-9/BR/32+100/01
- OSRP/CEG/SH-9/BR/33+500/01
- OSRP/CEG/SH-9/BR/33+900/01
- OSRP/CEG/SH-9/BR/36+005/01
- OSRP/CEG/SH-9/BR/42+400/01
- OSRP/CEG/SH-9/BR/43+500/01
- OSRP/CEG/SH-9/BR/46+700/01
- OSRP/CEG/SH-9/TRIPLE BOX/01

BHADRAK - CHANDBALI

S. no.	Proposed Chainage	Proposed Span	Height of Return wall		Maximum height of Return Wall	Length of Return wall		Category for the max. height
			Left	Right		Left	Right	
1	27925.0	3 x 3 m Triple Box	4.26	4.42	4.42	5.0	5.5	D
2	28168.0	2 x 6.0 m Box	5.30	5.30	5.30	4.0	4.0	E
3	28837.0	3 x 3 m Triple Box	4.85	4.85	4.85	4.75	4.75	D
4	28900.0	3 x 3 m Triple Box	4.31	4.31	4.31	5.0	5.0	D
5	30154.0	3 x 3 m Triple Box	4.62	4.27	4.62	4.1	4.1	D
6	31050.0	3 x 3 m Triple Box	3.77	3.77	3.77	4.5	4.5	C
7	31150.0	3 x 3 m Triple Box	3.68	3.68	3.68	4.5	4.5	C
8	32100.0	1 x 6.0 m Box	4.06	4.06	4.06	3.5	3.5	D
9	32380.0	3 x 3 m Triple Box	3.72	3.72	3.72	4.5	4.5	C
10	33543.0	3 x 3 m Triple Box	4.79	4.79	4.79	6.1	6.1	D
11	33907.0	3 x 3 m Triple Box	4.04	4.04	4.04	4.0	4.0	D
12	34025.0	3 x 3 m Triple Box	4.03	4.03	4.03	5.0	5.0	D
13	34375.0	3 x 3 m Triple Box	3.97	3.82	3.97	5.0	5.0	C
14	35000.0	3 x 3 m Triple Box	4.33	4.33	4.33	5.0	5.0	D
15	35090.0	3 x 3 m Triple Box	4.74	4.58	4.74	6.0	6.0	D
16	35280.0	3 x 3 m Triple Box	3.94	3.94	3.94	5.0	5.0	C
17	35825.0	3 x 3 m Triple Box	5.28	5.28	5.28	5.0	5.0	E
18	37000.0	3 x 3 m Triple Box	4.64	4.64	4.64	6.0	6.0	D
19	37075.0	3 x 3 m Triple Box	4.40	4.40	4.40	5.5	5.5	D
20	41750.0	3 x 3 m Triple Box	4.04	4.88	4.88	5.0	6.0	D
21	42487.0	1 x 6.0 m Box	5.63	5.63	5.63	3.5	3.5	E
22	43558.0	1 x 6.0 m Box	3.76	4.44	4.44	3.5	3.5	D

R2	SEP-2015	SECOND REVISION	LASA	RAJU MATHUR	M.R MISHRA (EE)	O.P. PATEL (CE)
R1	JAN-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 :
LEA
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 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 PIRHAT TO CHANDBALI - KM 27+500 TO KM 45+000 (BALANCE WORK) PACKAGE - P02B

SCALE :
N.T.S

DRAWING TITLE :
DIMENSION & REINFORCEMENT DETAILS OF RETURN WALL
 DWG. NUMBER : OSRP/CEG/P02B/STR/3
 REV. R2