Widening Scheme for Main Line															
Design Chainage		Length	Type of C/s	TCS 1	TCS 2	TCS 3	TCS 4	TCS 5	TCS 6	TCS 7	TCS 8	TCS 9	TCS 10	Bridge	Tunnel
From	To														
Flexible Pavement															
	100	100	TCS 4				100.00								
100	350	250	TCS 1	250.00											
350	2100	1750	TCS 2		1750.00										
2100	2142.5	42.5	TCS 8								42.50				
2142.5	2317.5	175	Bridge											175.00	
2317.5	2400	82.5	TCS 6						82.50						
2400	3000	600	TCS 3			600.00									
3000	3350	350	TCS 4				350.00								
3350	3440	90	TCS 5					90.00							
3440	3490	50	Bridge											50.00	
3490	4200	710	TCS 5					710.00							
4200	4320	120	TCS 5					120.00							
4320	4870	550	TCS 3			550.00									
4870	5000	130	TCS 1	130.00											
5000	5250	250	TCS 8								250.00				
5250	5340	90	TCS 6						90.00						
5340	5480	140	Bridge											140.00	
5480	5785	305	TCS 6						305.00						
5785	6275	490	Bridge											490.00	
6275	6320	45	TCS 6						45.00						
6320	6420	100	TCS 4												
6420	6563	143	TCS 8												
6563	6996	433	Tunnel												
6996	7056	60	TCS 8												
7056	7103.5	47.5	TCS 6												
7103.5	7138.5	35	Bridge												
7138.5	7150	11.5	TCS 6												
7150	9099	1949	Tunnel												
9099	9146	47	TCS 8												
9146	9216	70	TCS 4												
9216	9706	490	TCS 6												
9706	9756	50	TCS 4												
9756	9796	40	TCS 8												
9796	10106	310	TCS 9												
10106	10146	40	TCS 8												
10146	10276	130	TCS 6												
10276	10506	230	TCS 9												
10506	10566	60	TCS 8												
10566	11066	500	TCS 6												
11066	11256	190	TCS 8												
11256	11506	250	TCS 9												
11506	11586	80	TCS 8												
11586	12626	1040	TCS 6												
12626	12806	180	TCS 3												
12806	13006	200	TCS 8												
13006	13406	400	TCS 9												
13406	13486	80	TCS 8												
13486	13876	390	TCS 6												
13876	13926	50	TCS 5												
13926	14006	80	TCS 8												
14006	14356	350	TCS 9												
14356	14446	90	TCS 8												
14446	14586	140	TCS 5												
14586	14656	70	TCS 8												
14656	14856	200	TCS 9												
14856	14946	90	TCS 8												
14946	15036	90	TCS 3												
15036	15156	120	TCS 6												
15156	15206	50	TCS 5												
15206	15306	100	TCS 8												
15306	15766	460	TCS 9												
15766	15906	140	TCS 8												
15906	16226	320	TCS 3												
16226	16356	130	TCS 5												
16356	16656	300	TCS 10												
16656	16806	150	TCS 9												
16806	16956	150	TCS 10												
16956	17172.5	216.5	TCS 6												
17172.5	17307.5	135	Bridge												
17307.5	17814.5	507	TCS 6												
Approach road 2		660	TCS 6												
		6320		**380**	**1750**	**1150**	**450**	**920**	**523**		**293**			**855**	
Structure Deduction															
		6320		**380**	**1750**	**1150**	**450**	**920**	**523**		**293**			**855**	
												Cut &Cover	**Snow Gallery**	**Bridges**	**Tunnel**

Pavement Quantity

S. No.	Description	Unit	TCS TYPE 1	TCS TYPE 2	TCS TYPE 3	TCS TYPE 4	TCS TYPE 5	TCS TYPE 6	TCS TYPE 8	Intersections	Extra widening	Total Qty
	TCS Length	**m**	**380**	**1750**	**1150**	**450**	**920**	**523**	**293**			**5465**
1	Subgrade	Cum	2242	10063	8050	2453	6440	4311	1682	0	1350	**36590**
2	Cement Treated Sub Base	Cum	1027	4729	3202	1216	2562	1449	790	890	640	**16506**
3	Cement Treated Base	Cum	503	2314	1536	595	1229	709	367	436	320	**8009**
4	Aggregate Layer	Cum	437	1750	1323	518	1058	601	306	284	270	**6546**
5	BC	Cum	219	875	661	259	529	300	153	142	140	**3278**
6	Prime coat	Sq.m	4370	17500	13225	5175	10580	6009	3064	3788	2700	**66411**
7	Tack coat over Granular Surface	Sq.m	4370	17500	13225	5175	10580	6009	3064	3788	2700	**66411**
8	Road marking	Sq.m	304	1138	920	360	736	496	190			**4144**
9	Dismantling of Ex. Bituminous Layer	Cum	272	1348	443	81	97	0	0			**2240**
10	Dismantling of Ex. Granular Layer	Cum	1184	5863	1925	350	420	0	0			**9741**
11	Parapet Wall (M-15)	Cum	103	0	0	122	0	0	0			**224**
12	Utility Duct 300 mm Dia	Rmt	380	3500	2300	450	920	523	293			**8365**
13	EPS Sheet	Sqm	4484	20125	15813	4905	12880	8621	3364	3788	2700	**76680**
14	I Kerb	Cum	0	3500	0	0	0	1045	0			**4545**
15	Painting on I Kerb	Sq.m	0	1346	0	0	0	402	0			**1748**
16	Selected Earth Fill	Cum	0	473	2156	0	1725	1959	0			**6313**
17	Metal Beam Crash Brrier	Rmt					920	1045	0			**1965**
18	Scarification	Cum	0	0	0							**0**
19	Clearing and Grubbing	Hectare	0.23	1.19	1.74	0.58	0.57	1.25	0.36	0.00		**5.93**
20	Cheqqured tiles	Sqm		6125						274		**6399**
21	construction of Reinforced Earth steepened slope	Sqm						10,450				**10450**
22	Supply and laying of PCC leveling pad of M-15 grade	Cum						31				**31**
23	Providing and laying of boulders in front of the Reinforced Earth facia	Cum						3,135				**3135**
24	Needle punched or continuous filament non-woven geotextile	Sqm						26,125				**26125**
25	Drainage board wrapped with non-woven geotextiles (500 mm x 250 mm)	Rm						8,360				**8360**

TYPICAL CROSS-SECTION (CONCENTRIC WIDENING)

TCS TYPE 1

INPUTS		MAIN CARRIAGEWAY	
		LHS	RHS
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	3.115	3.115
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	1.500	0.000
	Drain	0.000	0.900
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500
	Filtermedia	0.600	0.000

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	1800.00	3.115	0.115	644.805
	RHS		1	1800.00	3.115	0.115	644.805
							1289.610
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	1800.00	3.115	0.500	2803.500
	RHS		1	1800.00	3.115	0.500	2803.500
							5607.000
3	**Subgrade**	cum					
	LHS		1	1800.00	5.900	0.500	5310.000
	RHS		1	1800.00	5.900	0.500	5310.000
							10620.000
4	**CTSB**	cum					
	LHS		1	1800.00	6.500	0.235	2749.500
	RHS		1	1800.00	5.000	0.235	2115.000
							4864.500
5	**CTB**	cum					
	LHS		1	1800.00	6.500	0.115	1345.500
	RHS		1	1800.00	5.000	0.115	1035.000
							2380.500
6	**Aggregate layer**	cum					
	LHS		1	1800.00	6.500	0.100	1170.000
	RHS		1	1800.00	5.000	0.100	900.000
							2070.000
7	**BC**	cum					
	LHS		1	1800.00	6.500	0.050	585.000
	RHS		1	1800.00	5.000	0.050	450.000
							1035.000
8	**Prime Coat**	sqm					
	LHS		1	1800.00	6.500		11700.000
	RHS		1	1800.00	5.000		9000.000
							20700.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	1800.00	6.500		11700.000
	RHS		1	1800.00	5.000		9000.000
							20700.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		600	1.50	0.100		90.000
	Edge marking (solid)						
	LHS		3	1800.00	0.150		810.000
	RHS		2	1800.00	0.150		540.000
							1440.000
11	**Parapet wall (M-15)**	Cum					
	LHS		1	1800.00	0.450	0.600	486.000
	RHS		0	1800.00	0.450	0.600	0.000
							486.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		0	1800.00			0.000
	RHS		1	1800.00			1800.000
							1800.000
13	**EPS Sheet**	Sqm					

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
	LHS		1	1800.00	5.900		10620.000
	RHS		1	1800.00	5.900		10620.000
							21240.000
14	**Kerb**	Rmt					
	LHS		0	1800.00			0.000
	RHS		0	1800.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	1800.00			0.000
	RHS		0	1800.00			0.000
							0.000
16	**Scarification**	Cum					
	LHS		0	1800.00	3.115		0.000
	RHS		0	1800.00	3.115		0.000
							0.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	1800.00	3.385		6093.000
	RHS		1	1800.00	2.785		5013.000
							1.111

TYPICAL CROSS-SECTION (CONCENTRIC WIDENING)

TCS TYPE 1

INPUTS		MAIN CARRIAGEWAY	
		LHS	RHS
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	3.115	3.115
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	1.500	0.000
	Drain	0.000	0.900
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500
	Filtermedia	0.600	0.000

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	380.00	3.115	0.115	136.126
	RHS		1	380.00	3.115	0.115	136.126
							272.251
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	380.00	3.115	0.500	591.850
	RHS		1	380.00	3.115	0.500	591.850
							1183.700
3	**Subgrade**	cum					
	LHS		1	380.00	5.900	0.500	1121.000
	RHS		1	380.00	5.900	0.500	1121.000
							2242.000
4	**CTSB**	cum					
	LHS		1	380.00	6.500	0.235	580.450
	RHS		1	380.00	5.000	0.235	446.500
							1026.950
5	**CTB**	cum					
	LHS		1	380.00	6.500	0.115	284.050
	RHS		1	380.00	5.000	0.115	218.500
							502.550
6	**Aggregate layer**	cum					
	LHS		1	380.00	6.500	0.100	247.000
	RHS		1	380.00	5.000	0.100	190.000
							437.000
7	**BC**	cum					
	LHS		1	380.00	6.500	0.050	123.500
	RHS		1	380.00	5.000	0.050	95.000
							218.500
8	**Prime Coat**	sqm					
	LHS		1	380.00	6.500		2470.000
	RHS		1	380.00	5.000		1900.000
							4370.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	380.00	6.500		2470.000
	RHS		1	380.00	5.000		1900.000
							4370.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		127	1.50	0.100		19.000
	Edge marking (solid)						
	LHS		3	380.00	0.150		171.000
	RHS		2	380.00	0.150		114.000
							304.000
11	**Parapet wall (M-15)**	Cum					
	LHS		1	380.00	0.450	0.600	102.600
	RHS		0	380.00	0.450	0.600	0.000
							102.600
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		0	380.00			0.000
	RHS		1	380.00			380.000
							380.000
13	**EPS Sheet**	Sqm					

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
	LHS		1	380.00	5.900		2242.000
	RHS		1	380.00	5.900		2242.000
							4484.000
14	**Kerb**	Rmt					
	LHS		0	380.00			0.000
	RHS		0	380.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	380.00			0.000
	RHS		0	380.00			0.000
							0.000
16	**Scarification**	Cum					
	LHS		0	380.00	3.115		0.000
	RHS		0	380.00	3.115		0.000
							0.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	380.00	3.385		1286.300
	RHS		1	380.00	2.785		1058.300
							0.234

TYPICAL CROSS-SECTION BUILT UP AREA (WITH PAVED SHOULDER) (RECONSTRCTION)

TCS TYPE 2

INPUTS		MAIN CARRIAGEWAY	
		LHS	RHS
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	3.350	3.350
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.750	0.750
	Drain	1.000	1.000
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Laye**	cum					
	LHS		1	1750.00	3.350	0.115	674.188
	RHS		1	1750.00	3.350	0.115	674.188
							1348.375
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	1750.00	3.350	0.500	2931.250
	RHS		1	1750.00	3.350	0.500	2931.250
							5862.500
3	**Subgrade**	cum					
	LHS		1	1750.00	5.750	0.500	5031.250
	RHS		1	1750.00	5.750	0.500	5031.250
							10062.500
4	**CTSB**	cum					
	LHS		1	1750.00	5.750	0.235	2364.688
	RHS		1	1750.00	5.750	0.235	2364.688
							4729.375
5	**CTB**	cum					
	LHS		1	1750.00	5.750	0.115	1157.188
	RHS		1	1750.00	5.750	0.115	1157.188
							2314.375
6	**Aggregate layer**	cum					
	LHS		1	1750.00	5.000	0.100	875.000
	RHS		1	1750.00	5.000	0.100	875.000
							1750.000
7	**BC**	cum					
	LHS		1	1750.00	5.000	0.050	437.500
	RHS		1	1750.00	5.000	0.050	437.500
							875.000
8	**Prime Coat**	sqm					
	LHS		1	1750.00	5.000		8750.000
	RHS		1	1750.00	5.000		8750.000
							17500.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	1750.00	5.000		8750.000
	RHS		1	1750.00	5.000		8750.000
							17500.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		583	1.50	0.100		87.500
	Edge marking (solid)						
	LHS		2	1750.00	0.150		525.000
	RHS		2	1750.00	0.150		525.000
							1137.500
11	**Parapet wall (M-15)**	Cum					
	LHS		0	1750.00	0.450	0.600	0.000
	RHS		0	1750.00	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	1750.00			1750.000
	RHS		1	1750.00			1750.000
							3500.000
13	**EPS Sheet**	Sqm					
	LHS		1	1750.00	5.750		10062.500
	RHS		1	1750.00	5.750		10062.500
							20125.000
14	**Kerb**	Rmt					
	LHS		1	1750.00			1750.000
	RHS		1	1750.00			1750.000
							3500.000
15	**Selected Earth Fill**	Cum					
	LHS		1	1750.00	0.600	0.225	236.250
	RHS		1	1750.00	0.600	0.225	236.250
							472.500
16	**Scarification**	Cum					
	LHS		0	1750.00	3.350		0.000
	RHS		0	1750.00	3.350		0.000
							0.000

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
17	**Clearing and Grubbing**	Hect					
	LHS		1	1750.00	3.400		5950.000
	RHS		1	1750.00	3.400		5950.000
							1.190
18	**Cheqqured Tiles**	Sqm					
	LHS		1	1750.00	1.750		3062.500
	RHS		1	1750.00	1.750		3062.500
							6125.000

TYPICAL CROSS-SECTION COCENTRIC WIDENING IN RURAL AREA ON MILD SLOPE TERRAIN

TCS TYPE 3

INPUTS		MAIN CARRIAGEWAY	
		LHS	RHS
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.000	1.500
	Drain	0.900	0.000
	Earthen Shoulder	0.000	1.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Laye**	cum					
	LHS		1	550.00	3.500	0.115	221.375
	RHS		1	550.00	3.500	0.115	221.375
							442.750
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	550.00	3.500	0.500	962.500
	RHS		1	550.00	3.500	0.500	962.500
							1925.000
3	**Subgrade**	cum					
	LHS		1	1150.00	5.000	0.500	2875.000
	RHS		1	1150.00	9.000	0.500	5175.000
							8050.000
4	**CTSB**	cum					
	LHS		1	1150.00	5.000	0.235	1351.250
	RHS		1	1150.00	6.850	0.235	1851.213
							3202.463
5	**CTB**	cum					
	LHS		1	1150.00	5.000	0.115	661.250
	RHS		1	1150.00	6.615	0.115	874.834
							1536.084
6	**Aggregate layer**	cum					
	LHS		1	1150.00	5.000	0.100	575.000
	RHS		1	1150.00	6.500	0.100	747.500
							1322.500
7	**BC**	cum					
	LHS		1	1150.00	5.000	0.050	287.500
	RHS		1	1150.00	6.500	0.050	373.750
							661.250
8	**Prime Coat**	sqm					
	LHS		1	1150.00	5.000		5750.000
	RHS		1	1150.00	6.500		7475.000
							13225.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	1150.00	5.000		5750.000
	RHS		1	1150.00	6.500		7475.000
							13225.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		383	1.50	0.100		57.500
	Edge marking (solid)						
	LHS		2	1150.00	0.150		345.000
	RHS		3	1150.00	0.150		517.500
							920.000
11	**Parapet wall (M-15)**	Cum					
	LHS		0	1150.00	0.450	0.600	0.000
	RHS		0	1150.00	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	1150.00			1150.000
	RHS		1	1150.00			1150.000
							2300.000
13	**EPS Sheet**	Sqm					
	LHS		1	1150.00	5.000		5750.000
	RHS		1	1150.00	8.750		10062.500
							15812.500
14	**Kerb**	Rmt					
	LHS		0	1150.00			0.000
	RHS		0	1150.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	1150.00			0.000
	RHS		1	1150.00	1.875		2156.250
							2156.250
16	**Scarification**	Cum					
	LHS		0	1150.00	0.000		0.000
	RHS		0	1150.00	0.000		0.000
							0.000

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
17	**Clearing and Grubbing**	Hect					
	LHS		1	1150.00	5.900		6785.000
	RHS		1	1150.00	9.250		10637.500
							1.742

TYPICAL CROSS-SECTION (NEW CONSTRUCTION WITH HILL SIDE CUT & VALLEY SIDE FILL)

TCS TYPE 4

INPUTS		**MAIN CARRIAGEWAY**	
		LHS	**RHS**
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.000	1.500
	Drain	0.900	0.000
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500
	Filtermedia	0.000	0.600

CALCULATION

Sl.NO.	**Item Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	100.00	3.500	0.115	40.250
	RHS		1	100.00	3.500	0.115	40.250
							80.500
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	100.00	3.500	0.500	175.000
	RHS		1	100.00	3.500	0.500	175.000
							350.000
3	**Subgrade**	cum					
	LHS		1	450.00	5.000	0.500	1125.000
	RHS		1	450.00	5.900	0.500	1327.500
							2452.500
4	**CTSB**	cum					
	LHS		1	450.00	5.000	0.235	528.750
	RHS		1	450.00	6.500	0.235	687.375
							1216.125
5	**CTB**	cum					
	LHS		1	450.00	5.000	0.115	258.750
	RHS		1	450.00	6.500	0.115	336.375
							595.125
6	**Aggregate layer**	cum					
	LHS		1	450.00	5.000	0.100	225.000
	RHS		1	450.00	6.500	0.100	292.500
							517.500
7	**BC**	cum					
	LHS		1	450.00	5.000	0.050	112.500
	RHS		1	450.00	6.500	0.050	146.250
							258.750
8	**Prime Coat**	sqm					
	LHS		1	450.00	5.000		2250.000
	RHS		1	450.00	6.500		2925.000
							5175.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	450.00	5.000		2250.000
	RHS		1	450.00	6.500		2925.000
							5175.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		150	1.50	0.100		22.500
	Edge marking (solid)						
	LHS		2	450.00	0.150		135.000
	RHS		3	450.00	0.150		202.500
							360.000
11	**Parapet wall (M-15)**	Cum					
	LHS		0	450.00	0.450	0.600	0.000
	RHS		1	450.00	0.450	0.600	121.500
							121.500
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	450.00			450.000
	RHS		0	450.00			0.000
							450.000
13	**EPS Sheet**	Sqm					

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
	LHS		1	450.00	5.000		2250.000
	RHS		1	450.00	5.900		2655.000
							4905.000
14	**Kerb**	Rmt					
	LHS		0	450.00			0.000
	RHS		0	450.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	450.00	0.000		0.000
	RHS		0	450.00			0.000
							0.000
16	**Clearing and Grubbing**	Hect					
	LHS		1	450.00	5.900		2655.000
	RHS		1	450.00	6.950		3127.500
							0.578

TYPICAL CROSS-SECTION NEW CONSTRUCTION WITH HILL SIDE CUT AND VALLEY SIDE MBCB

TCS TYPE 5

INPUTS		**MAIN CARRIAGEWAY**	
		LHS	**RHS**
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.000	1.500
	Drain	0.900	0.000
	Earthen Shoulder	0.000	1.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	**Item Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	120.00	3.500	0.115	48.300
	RHS		1	120.00	3.500	0.115	48.300
							96.600
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	120.00	3.500	0.500	210.000
	RHS		1	120.00	3.500	0.500	210.000
							420.000
3	**Subgrade**	cum					
	LHS		1	920.00	5.000	0.500	2300.000
	RHS		1	920.00	9.000	0.500	4140.000
							6440.000
4	**CTSB**	cum					
	LHS		1	920.00	5.000	0.235	1081.000
	RHS		1	920.00	6.850	0.235	1480.970
							2561.970
5	**CTB**	cum					
	LHS		1	920.00	5.000	0.115	529.000
	RHS		1	920.00	6.615	0.115	699.867
							1228.867
6	**Aggregate layer**	cum					
	LHS		1	920.00	5.000	0.100	460.000
	RHS		1	920.00	6.500	0.100	598.000
							1058.000
7	**BC**	cum					
	LHS		1	920.00	5.000	0.050	230.000
	RHS		1	920.00	6.500	0.050	299.000
							529.000
8	**Prime Coat**	sqm					
	LHS		1	920.00	5.000		4600.000
	RHS		1	920.00	6.500		5980.000
							10580.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	920.00	5.000		4600.000
	RHS		1	920.00	6.500		5980.000
							10580.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		307	1.50	0.100		46.000
	Edge marking (solid)						
	LHS		2	920.00	0.150		276.000
	RHS		3	920.00	0.150		414.000
							736.000
11	**Parapet wall (M-15)**	Cum					
	LHS		0	920.00	0.450	0.600	0.000
	RHS		0	920.00	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	920.00			920.000
	RHS		0	920.00			0.000
							920.000
13	**EPS Sheet**	Sqm					
	LHS		1	920.00	5.000		4600.000
	RHS		1	920.00	9.000		8280.000
							12880.000
14	**Kerb**	Rmt					
	LHS		0	920.00			0.000
	RHS		0	920.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	920.00			0.000
	RHS		1	920.00	1.875		1725.000
							1725.000

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
16	**Metal Beam crash Barrier**	Rmt					
	LHS		0	920.00			0.000
	RHS		1	920.00			920.000
							920.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	920.00	5.900		5428.000
	RHS		1	920.00	0.253		232.760
							0.566

TYPICAL CROSS-SECTION NEW CONSTRUCTION ON HIGH EMBANKMENT

TCS TYPE 6

INPUTS		**MAIN CARRIAGEWAY**	
		LHS	**RHS**
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.750	0.750
	Drain	0.000	0.000
	Earthen Shoulder	1.000	1.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	522.50	0.000	0.115	0.000
	RHS		1	522.50	0.000	0.115	0.000
							0.000
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	522.50	0.000	0.500	0.000
	RHS		1	522.50	0.000	0.500	0.000
							0.000
3	**Subgrade**	cum					
	LHS		1	522.50	8.250	0.500	2155.313
	RHS		1	522.50	8.250	0.500	2155.313
							4310.625
4	**CTSB**	cum					
	LHS		1	522.50	5.900	0.235	724.446
	RHS		1	522.50	5.900	0.235	724.446
							1448.893
5	**CTB**	cum					
	LHS		1	522.50	5.900	0.115	354.516
	RHS		1	522.50	5.900	0.115	354.516
							709.033
6	**Aggregate layer**	cum					
	LHS		1	522.50	5.750	0.100	300.438
	RHS		1	522.50	5.750	0.100	300.438
							600.875
7	**BC**	cum					
	LHS		1	522.50	5.750	0.050	150.219
	RHS		1	522.50	5.750	0.050	150.219
							300.438
8	**Prime Coat**	sqm					
	LHS		1	522.50	5.750		3004.375
	RHS		1	522.50	5.750		3004.375
							6008.750
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	522.50	5.750		3004.375
	RHS		1	522.50	5.750		3004.375
							6008.750
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		174	1.50	0.100		26.125
	Edge marking (solid)						
	LHS		3	522.50	0.150		235.125
	RHS		3	522.50	0.150		235.125
							496.375
11	**Parapet wall (M-15)**	Cum					
	LHS		0	522.50	0.450	0.600	0.000
	RHS		0	522.50	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	522.50			522.500
	RHS		0	522.50			0.000
							522.500
13	**EPS Sheet**	Sqm					
	LHS		1	522.50	8.250		4310.625
	RHS		1	522.50	8.250		4310.625
							8621.250
14	**Kerb**	Rmt					
	LHS		1	522.50			522.500
	RHS		1	522.50			522.500
							1045.000
15	**Selected Earth Fill**	Cum					
	LHS		1	522.50	1.875		979.688
	RHS		1	522.50	1.875		979.688
							1959.375

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
16	**Metal Beam crash Barrier**	Rmt					
	LHS		1	522.50			522.500
	RHS		1	522.50			522.500
							1045.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	522.50	12.000		6270.000
	RHS		1	522.50	12.000		6270.000
							1.254
18	**construction of Reinforced Earth steepened slope**	Sqm					
	LHS		1	522.50	10.000		5225.000
	RHS		1	522.50	10.000		5225.000
							10450.00
19	**Supply and laying of PCC leveling pad of M-15 grade**	Cum					
	LHS		1	522.50	0.150	0.200	15.675
	RHS		1	522.50	0.150	0.200	15.675
							31.350
20	**Providing and laying of boulders in front of the Reinforced Earth facia**	Cum					
	LHS		1	522.50	10.000	0.300	1567.500
	RHS		1	522.50	10.000	0.300	1567.500
							3,135.00
21	**Needle punched or continuous filament non-woven geotextile**	Sqm					
	LHS		1	522.50	10.000	2.500	13062.500
	RHS		1	522.50	10.000	2.500	13062.500
							26,125.00
22	**Drainage board wrapped with non-woven geotextiles (500 mm x 250 mm)**	Rm					
	LHS		1	522.50	10.000	0.800	4180.000
	RHS		1	522.50	10.000	0.800	4180.000
							8360.00

TYPICAL CROSS-SECTION NEW CONSTRUCTION ON HIGH EMBANKMENT

TCS TYPE 7

INPUTS		**MAIN CARRIAGEWAY**	
		LHS	**RHS**
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.750	0.750
	Drain	0.000	0.000
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	0.00	0.000	0.115	0.000
	RHS		1	0.00	0.000	0.115	0.000
							0.000
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	0.00	0.000	0.500	0.000
	RHS		1	0.00	0.000	0.500	0.000
							0.000
3	**Subgrade**	cum					
	LHS		1	0.00	5.750	0.500	0.000
	RHS		1	0.00	5.750	0.500	0.000
							0.000
4	**CTSB**	cum					
	LHS		1	0.00	5.750	0.235	0.000
	RHS		1	0.00	5.750	0.235	0.000
							0.000
5	**CTB**	cum					
	LHS		1	0.00	5.750	0.115	0.000
	RHS		1	0.00	5.750	0.115	0.000
							0.000
6	**Aggregate layer**	cum					
	LHS		1	0.00	5.750	0.100	0.000
	RHS		1	0.00	5.750	0.100	0.000
							0.000
7	**BC**	cum					
	LHS		1	0.00	5.750	0.050	0.000
	RHS		1	0.00	5.750	0.050	0.000
							0.000
8	**Prime Coat**	sqm					
	LHS		1	0.00	5.750		0.000
	RHS		1	0.00	5.750		0.000
							0.000
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	0.00	5.750		0.000
	RHS		1	0.00	5.750		0.000
							0.000
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		0	1.50	0.100		0.000
	Edge marking (solid)						
	LHS		3	0.00	0.150		0.000
	RHS		3	0.00	0.150		0.000
							0.000
11	**Parapet wall (M-15)**	Cum					
	LHS		0	0.00	0.450	0.600	0.000
	RHS		0	0.00	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	0.00			0.000
	RHS		0	0.00			0.000
							0.000
13	**EPS Sheet**	Sqm					
	LHS		1	0.00	5.750		0.000
	RHS		1	0.00	5.750		0.000
							0.000
14	**Kerb**	Rmt					
	LHS		0	0.00			0.000
	RHS		0	0.00			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	0.00			0.000
	RHS		0	0.00	0.125		0.000
							0.000

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
16	**Metal Beam crash Barrier**	Rmt					
	LHS		0	0.00			0.000
	RHS		0	0.00			0.000
							0.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	0.00	6.250		0.000
	RHS		1	0.00	6.250		0.000
							0.000
18	**Precast concrete fascia panels of M35 grade**						
	LHS	Sqm	1	0.00	9.000		-
	RHS		1	0.00	8.500		-
							-
19	**RCC crash barrier with friction slab**						
	LHS	Lm	1	0.00			-
	RHS		1	0.00			-
							-
20	**Granular Earth Fill**						
		Cum	1	0.00	8.100	8.750	-
							-

TYPICAL CROSS-SECTION NEW CONSTRUCTION ON HIGH EMBANKMENT

TCS TYPE 8

INPUTS		**MAIN CARRIAGEWAY**	
		LHS	**RHS**
	Data Related to Existing Carriageway		
All Data in m	Carriageway width	0.000	0.000
	Earthen Shoulder	0.000	0.000
	Data Related to Proposed Carriageway		
	Carriageway width	3.500	3.500
	Paved Shoulder	1.500	1.500
	Snow Storage	0.000	1.500
	Drain	0.900	0.600
	Earthen Shoulder	0.000	0.000
	BC	0.050	0.050
	Aggregate layer	0.100	0.100
	CTB	0.115	0.115
	CTSB	0.235	0.235
	Subgrade	0.500	0.500

CALCULATION

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
1	**Dismantling of Ex. Bituminous Layer**	cum					
	LHS		1	292.50	0.000	0.115	0.000
	RHS		1	292.50	0.000	0.115	0.000
							0.000
2	**Dismantling of Ex. Granular Layer**	cum					
	LHS		1	292.50	0.000	0.500	0.000
	RHS		1	292.50	0.000	0.500	0.000
							0.000
3	**Subgrade**	cum					
	LHS		1	292.50	5.000	0.500	731.250
	RHS		1	292.50	6.500	0.500	950.625
							1681.875
4	**CTSB**	cum					
	LHS		1	292.50	5.000	0.235	343.688
	RHS		1	292.50	6.500	0.235	446.794
							790.481
5	**CTB**	cum					
	LHS		1	292.50	5.000	0.115	168.188
	RHS		1	292.50	5.900	0.115	198.461
							366.649
6	**Aggregate layer**	cum					
	LHS		1	292.50	5.000	0.100	146.250
	RHS		1	292.50	5.475	0.100	160.144
							306.394
7	**BC**	cum					
	LHS		1	292.50	5.000	0.050	73.125
	RHS		1	292.50	5.475	0.050	80.072
							153.197
8	**Prime Coat**	sqm					
	LHS		1	292.50	5.000		1462.500
	RHS		1	292.50	5.475		1601.438
							3063.938
9	**Tack Coat over Granular Surface**	sqm					
	LHS		1	292.50	5.000		1462.500
	RHS		1	292.50	5.475		1601.438
							3063.938
10	**Road Marking**	sqm					
	Lane marking (broken)						
	Center		98	1.50	0.100		14.625
	Edge marking (solid)						
	LHS		2	292.50	0.150		87.750
	RHS		2	292.50	0.150		87.750
							190.125
11	**Parapet wall (M-15)**	Cum					
	LHS		0	292.50	0.450	0.600	0.000
	RHS		0	292.50	0.450	0.600	0.000
							0.000
12	**Utility Duct Pipe (300mm Dia)**	Rmt					
	LHS		1	292.50			292.500
	RHS		0	292.50			0.000
							292.500
13	**EPS Sheet**	Sqm					
	LHS		1	292.50	5.000		1462.500
	RHS		1	292.50	6.500		1901.250
							3363.750
14	**Kerb**	Rmt					
	LHS		0	292.50			0.000
	RHS		0	292.50			0.000
							0.000
15	**Selected Earth Fill**	Cum					
	LHS		0	292.50			0.000
	RHS		0	292.50	0.125		0.000
							0.000

Sl.NO.	Item Description	Unit	No.	Length (m)	Width (m)	Depth (m)	Quantity
16	**Metal Beam crash Barrier**	Rmt					
	LHS		0	292.50			0.000
	RHS		0	292.50			0.000
							0.000
17	**Clearing and Grubbing**	Hect					
	LHS		1	292.50	5.900		1725.750
	RHS		1	292.50	6.500		1901.250
							0.363

Quantity calculation for Road Maintainance

Length consider for maintenance 13.30 Period in month 36

Item No.	Description	Unit	No.	Length	Width	Depth	Qty.
BILL NO. 10 - MAINTENANCE OF ROADS							
10.01	Carrying out repairs to pot holes and patching to existing Bituminous carriageway surfacing using semi dense bituminous concrete with all lifts and leads complete as per MoRT&H technical specification clause 3004 and as per the direction of engineer.	sqm					
	Consider atleat 25 pothole in 1 Km		50	2.50	1.00		125.00
					Total Area for 13.30 Km =		**59,850.00**
10.02	Providing and applying tack coat with bituminous emulsion at the rate of 0.2 kg per sqm with all lifts and leads complete as per MoRT&H technical specification clause 503.	sqm			**Quantity Same as Item 1.**		**59,850.00**
10.03	Sealing of cracks in bituminous surface with fog seal as per technical specification clause 3004	sqm.	50	3.00	0.05		7.50
					Total Area for 13.30 Km =		**3,591.00**
10.04	Routine maintenance of embankment and unpaved shoulder as per technical specification section 3000 and clause 408	per km per month	1	13.30			478.80