Item No.	Description	Unit	Box	Pipe	Total
BILL NO. 5 - CROSS DRAINAGE WORKS					
5.01	Earth work in **excavation for foundation of structures** in by mechanical means as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material all complete as per Technical specifications and as directed by the Engineer-in-charge.				
a	Ordinary Soil - Depth Upto 3m	cum	692		692.11
b	Ordinary Rock - (not requiring blasting)	cum	461		461.40
5.02	Providing and laying Plain cement concrete in Levelling Course, mechanically mixed and compacted, including centering and shuttering all complete as per drawings and Technical specifications and as directed by the Engineer-in-charge.				-
a	PCC Grade M10	cum			-
b	PCC Grade M15	cum	706		706.34
c	PCC Grade M20	cum			-
5.03	Providing and laying Plain/Reinforced Cement Concrete in Foundation mechanically mixed including centering and shuttering but excluding cost of reinforcement, all complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.				-
a	PCC Grade M20	cum			-
b	RCC Grade M20	cum			-
c	RCC Grade M25	cum	0		-
d	RCC Grade M30	cum			-
e	RCC Grade M35	cum			-
5.04	Providing and laying Reinforced Cement Concrete in Substructure, mechanically mixed and compacted, including centering and shuttering but excluding cost of reinforcement, all complete as per drawings and Technical specifications and as directed by the Engineer-in-charge.				-
a	PCC Grade M20	cum			-
b	RCC Grade M20	cum			-
c	RCC Grade M25	cum			-
d	RCC Grade M30	cum	1066		1,066.47
e	RCC Grade M35	cum			-
5.05	Providing and laying Reinforced cement concrete in super-structure including centering and shuttering but excluding cost of reinforcement, all complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.				-
	Height up to 5m - For solid slab				-
a	RCC Grade M25	cum			-
b	RCC Grade M30	cum			-
c	RCC Grade M35	cum			-
5.06	Laying Reinforced cement concrete pipe NP4/prestressed concrete pipe for culverts on first Class Granual Bedding in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets all complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.				-
a	900mm dia. (internal)	m			-
b	1000mm dia. (internal)	m			-
c	1200mm dia. (internal)	m			-
5.07	Supplying, fitting and placing HYSD bar reinforcement all complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.				-
a	For Foundation	tonne			-
b	For Substructure	tonne	117		117.31
c	For Superstructure	tonne			-

Item No.	Description	Unit	Box	Pipe	Total
BILL NO. 5 - CROSS DRAINAGE WORKS					
5.08	Providing and laying Reinforced cement concrete of M30 grade for approach slab including reinforcement and formwork all complete as per drawings and Technical specifications and as directed by the Engineer-in-charge.	cum	544		543.53
5.09	Providing and fixing the Tar paper bearing complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.	sqm			-
5.10	Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	cucm			-
5.11	Providing and laying 65 mm wearing course on top of deck slab consisting of 25 mm thick mastic asphalt wearing course and 40 mm thick Bituminous concrete laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated finegrained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 507 and 516.	sqm			-
5.12	Providing and laying 75 mm wearing course on top of deck slab consisting of 25 mm thick mastic asphalt wearing course and 50 mm thick Bituminous concrete laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated finegrained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 1000C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 507 and 516.	sqm			-
5.13	Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia PVC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. complete as per Technical specifications clause 2706 and as directed by the Engineer-in-charge.	nr	1061		1,061.00
5.14	Back filling with granular material behind box culvert, wing walls and return walls complete as per drawing and Technical Specification clause 710.1.4.of IRC:78 & 305.4.4	cum	3586		3,586.36
5.15	Providing and laying of Filter media behind walls of box with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.	cum	756		756.43
5.16	Construction of precast RCC railing of M35 Grade, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, leaving adequate space between vertical post for expansion, complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.	m			-
5.17	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-40 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, complete as per drawing and Technical specifications clause 2703 and as directed by the Engineer-in-charge.	m			-
5.18	Providing and fitting Drainage Spouts complete as per drawing and Technical specifications and as directed by the Engineer-in-charge.	nr	36		36.00

Item No.	Description	Unit	Box	Pipe	Total
BILL NO. 5 - CROSS DRAINAGE WORKS					
5.19	Providing and fixing filler type expansion joint in slab bridges and culverts complete as per technical specification section 2600	m	444		443.70
5.20	Providing and laying of Asphaltic Plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of wieldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.	m			-
5.21	Providing and fixing RCC Marker posts of dimensions as shown in Drawings and as per Technical Specifications and as directed by the Engineer-in-charge	nr			-
5.22	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	cum			-
5.23	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications	cum			-
5.24	Providing and laying flooring laid over cement concrete bedding grade M-15 complete as per drawing and technical specifications Clause 1303				-
5.25	Flexible Apron :Construction of flexible apron 750 mm thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.	cum	44		43.74
5.26	Printing of culvert No. and span arrangement of any shade with synthetic enamel paint black or any other approved colour to give an even shade as complete as per Technical specifications and as directed by the Engineer-in-charge.	nr	38		38.00
5.27	Wearing Coat 65mm thk	Sqm	2204.68		2,204.68

SUMMARY OF QUANTITIES OF BOX CULVERTS

Sl. No.	Description	Unit	(1x2x2)	(1x3x2)	(1x2x2) D Left	(1x2x3) D Left	(1x3x3) D Left	(1x2x2) D Right	(2x3x3)	Quantity
			8	2	3	1	1	2	1	
1	Earthwork in excavation	cum	530.56	208.63	136.52	45.51	54.58	89.63	88.09	1,153.51
2	PCC M15 levelling course	cum	339.53	121.21	92.72	30.91	33.39	60.20	28.40	706.34
3	RCC M30 for structure	cum	377.32	121.91	165.38	55.13	64.88	91.82	190.05	1,066.47
4	RCC M30 grade in Approach Slab	cum	246.96	61.74	88.57	29.52	29.52	56.35	30.87	543.53
5	RCC M40 grade for Crash barrier									-
6	Filler board type expansion joint	Rm	201.60	50.40	72.30	24.10	24.10	46.00	25.20	443.70
7	Drainage spouts	Nr.	16.00	4.00	6.00	2.00	2.00	4.00	2.00	36.00
8	Elastomeric Bearing	Cu.Cm.								-
9	Flexible Apron	cum	25.92	6.48	4.86	1.62	1.62	3.24	-	43.74
10	Filter media	cum	278.21	69.55	143.15	47.72	47.72	63.48	106.60	756.43
11	Back filling	cum	923.58	230.90	681.86	227.29	227.29	210.74	1,084.70	3,586.36
12	RCC M25 in footpath	cum								-
13	PVC Pipe 100 mm dia	Nr.								-
14	Weep holes	Nr.	432.00	162.00	156.00	52.00	78.00	100.00	81.00	1,061.00
15	Reinforcement	Tonne	41.50	13.41	18.19	6.06	7.14	10.10	20.91	117.31
16	Wearing Coat 65mm thk	Sqm	957.60	267.12	343.43	114.48	126.53	218.50	177.03	2,204.68
17	Painting of structure no.	Nr.	16.00	4.00	6.00	2.00	2.00	4.00	4.00	38.00

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**13.50**	**m**
Clear Span	**2.00**	**m**
Clear Height of Box	**2.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.25**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**13.50**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath	**1.50**	**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**2.80**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 2	m.		No of Culvert		**8**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	13.50	2.80	0.45	17.01
	Shear Key		2	1.20	2.80	1.35	9.07
	Curtain Wall		2	4.35	1.85	2.50	40.24
	Total	cum					**66.32**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	13.50	2.80	0.15	5.67
	Shear Key		2	1.20	2.80	0.15	1.01
	Curtain Wall		2	4.35	1.85	0.15	2.41
	Curtain Wall conc		2	4.35	2.50	0.93	20.12
	Approach Slab		2	12.60	3.50	0.15	13.23
	Total	cum					**42.44**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	13.50	2.50	0.30	10.13
	Shear Key		2	1.20	2.80	0.60	4.03
	Box Portion (Side Wall)		2	13.50	2.00	0.25	13.50
	Haunch		4	13.50	0.011	Area	0.61
	Bracket		2	13.50	0.135	Area	3.65
	Top Slab		1	13.50	2.50	0.30	10.13
	Parapet Wall		2	9.50	0.45	0.60	5.13
	Total	Cum					**47.16**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	47.16	(cum)		5188.10
	Total	MT					**5.19**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.60	2.50		31.50
	Approach Slab	Sqm	2	12.60	3.50		88.20
	Total						**119.70**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.60	3.50	0.35	**30.87**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.60			**25.20**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	54.00				**54.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	2	1.80	1.80	0.50	**3.24**
12	Filter Media	Cum	2	12.60	2.30	0.60	**34.78**
13	Backfill	Cum	2	12.60	1.992	2.30	**115.45**

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**13.50**	**m**
Clear Span	**3.00**	**m**
Clear Height of Box	**2.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.30**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**13.50**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath		**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath		
Width of PCC for Box	**3.90**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 3	m.		No of Culvert		**2**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	13.50	3.90	0.45	23.69
	Shear Key		2	1.20	3.90	1.35	12.64
	Curtain Wall		2	7.35	1.85	2.50	67.99
	Total	cum					**104.32**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	13.50	3.90	0.15	7.90
	Shear Key		2	1.20	3.90	0.15	1.40
	Curtain Wall		2	7.35	1.85	0.15	4.08
	Curtain Wall conc		2	7.35	2.50	0.93	33.99
	Approach Slab		2	12.60	3.50	0.15	13.23
	Total	cum					**60.60**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	13.50	3.60	0.30	14.58
	Shear Key		2	1.20	3.90	0.60	5.62
	Box Portion (Side Wall)		2	13.50	2.00	0.30	16.20
	Haunch		4	13.50	0.011	Area	0.61
	Bracket		2	13.50	0.135	Area	3.65
	Top Slab		1	13.50	3.60	0.30	14.58
	Parapet Wall		2	10.60	0.45	0.60	5.72
	Total	Cum					**60.95**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	60.95	(cum)		6704.78
	Total	MT					**6.70**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.60	3.60		45.36
	Approach Slab	Sqm	2	12.60	3.50		88.20
	Total						**133.56**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.60	3.50	0.35	**30.87**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.60			**25.20**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	81.00				**81.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	2	1.80	1.80	0.50	**3.24**
12	Filter Media	Cum	2	12.60	2.30	0.60	**34.78**
13	Backfill	Cum	2	12.60	1.99	2.30	**115.45**

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**12.95**	**m**
Clear Span	**2.00**	**m**
Clear Height of Box	**2.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.25**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**12.95**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath	**1.50**	**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**2.80**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 2	m.		No of Culvert		**3**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	12.95	2.80	0.45	16.32
	Shear Key		2	1.20	2.80	1.35	9.07
	Curtain Wall		1	4.35	1.85	2.50	20.12
	Total	cum					**45.51**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	12.95	2.80	0.15	5.44
	Shear Key		2	1.20	2.80	0.15	1.01
	Curtain Wall		1	4.35	1.85	0.15	1.21
	Curtain Wall conc		1	4.35	2.50	0.93	10.06
	Catch Pit		1	3.00	1.20	0.15	0.54
	Approach Slab		2	12.05	3.50	0.15	12.65
	Total	cum					**30.91**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	12.95	2.50	0.30	9.71
	Shear Key		2	1.20	2.80	0.60	4.03
	Box Portion (Side Wall)		2	12.95	2.00	0.25	12.95
	Haunch		4	12.95	0.011	Area	0.58
	Bracket		2	12.95	0.135	Area	3.50
	Top Slab		1	12.95	2.50	0.30	9.71
	Catch Pit		1	3.60	2.30	0.20	1.66
	Parapet Wall		2	9.50	0.45	0.60	5.13
	Total	Cum					**47.27**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	47.27	(cum)		5199.95
	Total	MT					**5.20**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.05	2.50		30.13
	Approach Slab	Sqm	2	12.05	3.50		84.35
	Total						**114.48**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.05	3.50	0.35	**29.52**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.05			**24.10**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	52.00				**52.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	1	1.80	1.80	0.50	**1.62**
12	Filter Media	Cum	2	12.05	2.30	0.60	**33.26**
13	Backfill	Cum	2	12.05	1.992	2.30	**110.41**

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**12.95**	**m**
Clear Span	**2.00**	**m**
Clear Height of Box	**3.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.25**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**12.95**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath	**1.50**	**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**2.80**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 2	m.		No of Culvert		**1**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	12.95	2.80	0.45	16.32
	Shear Key		2	1.20	2.80	1.35	9.07
	Curtain Wall		1	4.35	1.85	2.50	20.12
	Total	cum					**45.51**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	12.95	2.80	0.15	5.44
	Shear Key		2	1.20	2.80	0.15	1.01
	Curtain Wall		1	4.35	1.85	0.15	1.21
	Curtain Wall conc		1	4.35	2.50	0.93	10.06
	Catch Pit		1	3.00	1.20	0.15	0.54
	Approach Slab		2	12.05	3.50	0.15	12.65
	Total	cum					**30.91**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	12.95	2.50	0.30	9.71
	Shear Key		2	1.20	2.80	0.60	4.03
	Box Portion (Side Wall)		2	12.95	3.00	0.25	19.43
	Haunch		4	12.95	0.011	Area	0.58
	Bracket		2	12.95	0.135	Area	3.50
	Top Slab		1	12.95	2.50	0.30	9.71
	Catch Pit		1	4.60	3.30	0.20	3.04
	Parapet Wall		2	9.50	0.45	0.60	5.13
	Total	Cum					**55.13**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	55.13	(cum)		6064.00
	Total	MT					**6.06**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.05	2.50		30.13
	Approach Slab	Sqm	2	12.05	3.50		84.35
	Total						**114.48**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.05	3.50	0.35	**29.52**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.05			**24.10**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	52.00				**52.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	1	1.80	1.80	0.50	**1.62**
12	Filter Media	Cum	2	12.05	3.30	0.60	**47.72**
13	Backfill	Cum	2	12.05	2.858	3.30	**227.29**

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**12.95**	**m**
Clear Span	**3.00**	**m**
Clear Height of Box	**3.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.25**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**12.95**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath	**1.50**	**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**3.80**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 3	m.		No of Culvert		**1**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	12.95	3.80	0.45	22.14
	Shear Key		2	1.20	3.80	1.35	12.31
	Curtain Wall		1	4.35	1.85	2.50	20.12
	Total	cum					**54.58**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	12.95	3.80	0.15	7.38
	Shear Key		2	1.20	3.80	0.15	1.37
	Curtain Wall		1	4.35	1.85	0.15	1.21
	Curtain Wall conc		1	4.35	2.50	0.93	10.06
	Catch Pit		1	4.00	1.20	0.15	0.72
	Approach Slab		2	12.05	3.50	0.15	12.65
	Total	cum					**33.39**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	12.95	3.50	0.30	13.60
	Shear Key		2	1.20	3.80	0.60	5.47
	Box Portion (Side Wall)		2	12.95	3.00	0.25	19.43
	Haunch		4	12.95	0.011	Area	0.58
	Bracket		2	12.95	0.135	Area	3.50
	Top Slab		1	12.95	3.50	0.30	13.60
	Catch Pit		1	4.60	3.30	0.20	3.04
	Parapet Wall		2	10.50	0.45	0.60	5.67
	Total	Cum					**64.88**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	64.88	(cum)		7136.50
	Total	MT					**7.14**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.05	3.50		42.18
	Approach Slab	Sqm	2	12.05	3.50		84.35
	Total						**126.53**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.05	3.50	0.35	**29.52**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.05			**24.10**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	78.00				**78.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	1	1.80	1.80	0.50	**1.62**
12	Filter Media	Cum	2	12.05	3.30	0.60	**47.72**
13	Backfill	Cum	2	12.05	2.858	3.30	**227.29**

Box Culvert		
No of Cell	**1**	
Total Proposed Width	**12.40**	**m**
Clear Span	**2.00**	**m**
Clear Height of Box	**2.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.30**	**m**
Thickness of Side Wall of Box	**0.25**	**m**
Thickness of middle Wall of Box		**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**12.40**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath		**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**2.80**	**m**
Thickness of PCC	**0.15**	**m**
Wearing Coat Thickness	**0.065**	**m**

	Box Culvert	1 x 2	m.		No of Culvert		**2**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		1	12.40	2.80	0.45	15.62
	Shear Key		2	1.20	2.80	1.35	9.07
	Curtain Wall		1	4.35	1.85	2.50	20.12
	Total	cum					**44.81**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		1	12.40	2.80	0.15	5.21
	Shear Key		2	1.20	2.80	0.15	1.01
	Curtain Wall		1	4.35	1.85	0.15	1.21
	Curtain Wall conc		1	4.35	2.50	0.93	10.06
	Catch Pit		1	3.00	1.20	0.15	0.54
	Approach Slab		2	11.50	3.50	0.15	12.08
	Total	cum					**30.10**

3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		1	12.40	2.50	0.30	9.30
	Shear Key		2	1.20	2.80	0.60	4.03
	Box Portion (Side Wall)		2	12.40	2.00	0.25	12.40
	Haunch		4	12.40	0.011	Area	0.56
	Bracket		2	12.40	0.135	Area	3.35
	Top Slab		1	12.40	2.50	0.30	9.30
	Catch Pit		1	4.00	2.30	0.20	1.84
	Parapet Wall		2	9.50	0.45	0.60	5.13
	Total	Cum					**45.91**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	45.91	(cum)		5049.88
	Total	MT					**5.05**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	11.50	2.50		28.75
	Approach Slab	Sqm	2	11.50	3.50		80.50
	Total						**109.25**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	11.50	3.50	0.35	**28.18**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	11.50			**23.00**
8	Drainage spouts	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	50.00				**50.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	2				**2.00**
11	Protection to Suit (Rubble Pitching)	Cum	1	1.80	1.80	0.50	**1.62**
12	Filter Media	Cum	2	11.50	2.30	0.60	**31.74**
13	Backfill	Cum	2	11.50	1.992	2.30	**105.37**

Box Culvert		
No of Cell	**2**	
Total Proposed Width	**13.50**	**m**
Clear Span	**3.00**	**m**
Clear Height of Box	**3.00**	**m**
Depth of Top Slab	**0.30**	**m**
Depth of Bottom Slab	**0.35**	**m**
Thickness of Side Wall of Box	**0.35**	**m**
Thickness of middle Wall of Box	**0.35**	**m**
Projection of Bottom Slab		**m**
Width of wearing coat	**13.50**	**m**
No of approach slab	**2**	
Width of approach slab	**3.50**	**m**
Thickness of approach slab	**0.35**	**m**
Width of Footpath	**1.50**	**m**
Proposed Formation Level		**m**
Existing Ground Level (Avg)		**m**
STEEL for Box	**110**	**kg/m^3**
Invert Level		**m**
No of Foothpath	**2.00**	
Width of PCC for Box	**7.25**	**m**
Thickness of PCC	**0.10**	**m**
Wearing Coat Thickness	**0.065**	**m**
No of Drain	**2**	
Width	**1.50**	**m**
Side Wall (Drain)		**m**

	Box Culvert	2 x 3	m.		No of Culvert		**1**
Sr. No	Description	Unit	Nos	Length	Width	Depth	Quantity
1	Earthwork in Excavation of foundation for structure complete as per drawing and Technical Specification Clause 304.						
	Box Portion		2	13.50	7.25	0.45	88.09
	Total	cum					**88.09**
2	Plain cement concrete M 15 grade complete as per Technical Specification Sections 1700, 2100 and 2700.						
	Box Portion		2	13.50	7.25	0.10	19.58
	Approach Slab		2	12.60	3.50	0.10	8.82
	Total	cum					**28.40**
3	Structural Cement Concrete M 30 grade for plain / reinforced concrete for box portion including formwork, machinery and workmanship complete as per drawing and Technical Specification Sections 1500 and 1700.						
	Box Portion (Bottom Slab with Projection)		2	13.50	7.05	0.35	66.62
	Sump Projection		2	0.25	7.05	0.20	0.71

	Box Portion (Side Wall)		4	13.50	3.00	0.35	56.70
	Haunch		8	3.70	0.01	Area	0.33
	Bracket		2	3.70	0.14	Area	1.00
	Parapet		2	14.05	0.45	0.6	7.59
	Top Slab		2	13.50	7.05	0.30	57.11
	Total	Cum					**190.05**
4	Providing and fixing in position TMT deformed bars reinforcement complete as per drawing and Technical Specification Section 1600.						
	Box	Kg	110.00	190.05	(cum)		20905.67
	Total	MT					**20.91**
5	Providing and laying 65 mm thick bituminous concrete wearing coat in single layer over the top of deck slab complete as per drawings and Technical Specification Section 500 and 2700.						
	Road	Sqm	1	12.60	7.05		88.83
	Approach Slab	Sqm	2	12.60	3.50		88.20
	Total						**177.03**
6	Reinforced cement concrete M 30 grade in approach slab including reinforcement complete as per drawing and Technical Specification Section 1500, 1700 and 2700.	cum	2	12.60	3.50	0.35	**30.87**
7	Providing 20mm thick compressible filler type expansion joint for box type structure, capped with 10mm deep coarse sand mixed with Bitumen (6% by Weight) total depth of board shall be equal to the thickness of approach slab.	Rmt	2	12.60			**25.20**
8	Drainage Spout	No	2				**2.00**
9	Providing AC weepholes in retaining walls, abutments and return walls complete as per drawings and Technical Specification Clause 2706.	No	81.00				**81.00**
10	Painting of culvert number and span arrangement as per Technical Specification Secion 800.	No	4				**4.00**
11	Protection to Suit (Rubble Pitching)	Cum		1.80	1.80	0.50	
12	Filter Media	Cum	2	12.60	7.05	0.60	**106.60**
13	Backfill	Cum	2	12.60	6.105	7.05	**1084.70**