PART III

B.O.Q

Two Laning Of Pasighat Pangin- Pangin (Package-IV) Road from Km 57.000 to Km 71.597 in the State Of Arunachal Pradesh

Two Laning Of Pasighat Pangin- Pangin (Package-IV) Road from Km 57.000 to Km 71.597 in the State Of Arunachal Pradesh

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 1. SITE CLEARANCE AND DISMANTLING

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
1.01	201	Cutting of Trees, including cutting of Trunks, Branches and Removal Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression/pit.					
i		Girth from 300 mm to 600 mm	each	4			
ii		Girth from 600 mm to 900 mm	each	2			
iii		Girth from 900 mm to 1800 mm	each	12			
1.02	201	Clearing and Grubbing Road Land . Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.					
i		By Manual Means					
a		In area of light jungle	hectare	18.275			
1.03		Dismantling of Structures Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres					
i		Lime /Cement Concrete					
a		By Manual Means					
1		Prestressed / Reinforced cement concrete grade M-20 & above	cum	101.550			
1.04		Dismantling Brick / Tile work					
i		In cement mortar	cum	398.00			
1.05		Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.					
i		Up to 600 mm dia	metre	120.00			
ii		Above 600 mm to 900 mm dia	metre	83.00			
iii		Above 900 mm	metre	60.00			

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BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 1. SITE CLEARANCE AND DISMANTLING

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
1.06	202	Removal of Telephone / Electric Poles and Lines					
i		Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately	each	10			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 2. EARTHWORK

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
2.01	301	Excavation in ordinary rock by manual means (Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres) (For Realignment of power channel)	cum	1301.520			
2.02	301	Excavation in Soil with Dozer with lead upto 100 metres Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.	cum	63698.190			
2.03	305	Construction of Embankment with Material obtained from Borrowpits Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.	cum	60807.420			
2.04	305	Construction of Embankment with Material Deposited from Roadway Cutting Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.	cum	51741.450			
2.05	305	Construction of Subgrade and hard Shoulders Construction of hard shoulder by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401	cum	45093.280			
2.06	301	Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting i) Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres	cum	624206.120			
2.07	301	Excavation in Hilly Areas in Hard Rock Requiring Blasting (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	97277.880			

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BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 3. GRANULAR SUBBASE & BASE COURSE (Non - Bituminous)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
3.01	401	Granular Sub-Base with Well Graded Material (Table:- 400-1)					
		By Mix in Place Method Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401					
		For Grading-I Material	cum	45514.00			
3.02	406	Wet Mix Macadam Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	25129.00			

BILL NO. 4. BITUMINOUS SURFACE COURSE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
4.01	**502**	**Prime Coat** Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.	sqm	98408.70			
4.02	**503**	**Tack Coat** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous surface cleaned with mechanical broom.	sqm	98408.70			
4.03	**503**	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.30 kg per sqm on the prepared granular surface cleaned with mechanical broom.	sqm	98408.70			
4.04	**504**	**Bituminous Macadam** Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction					
		for Grading I (40 mm nominal size)	cum	5904.50			
4.05	**509**	**Bituminous Concrete** Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects					
		for Grading I (13 mm nominal size)	cum	3936.40			

BILL NO. 5. DRAINAGE & PROTECTION WORK

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		A. Longitudinal Drains (Open and Covered)					
5.01	1400	Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.					
i	1405.3 B)	Random Rubble Masonry	Cum	7436.600			
ii		Extra for Catch water drains	Cum	219.480			
		B. R R Masonry Breast Wall ,Toe Wall and Parapet Wall					
5.02	304	Earth work in excavation of foundation of structures 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, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work. (i)manual means	Cum	2279.20			
5.03	2100	PCC 1:3:6 in Foundation Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.	Cum	370.00			
5.04	1400	Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications. B) Random Rubble Masonry	Cum	688.20			
5.05	1400 & 2200	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications A) Random Rubble Masonry	Cum	1383.800			
5.06	2706 & 2200	Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications	Each	617.00			
5.07	710.1.4.of IRC:78 and 2200	Providing and laying of Filter media 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 Specification.	Cum	444.00			
		C. RCC and PCC Retaining wall and Parapet wall					

BILL NO. 5. DRAINAGE & PROTECTION WORK

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
5.08	304	Earth work in excavation of foundation of structures 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, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.(i)manual means	Cum	3407.96			
5.09	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. A) PCC grade M 15	Cum	178.85			
5.10	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications e) RCC Grade M 25 (Case-I)	Cum	876.73			
5.11	1600	Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.	MT	115.050			
5.12	1500,1700 & 2200	Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications- a)upto 5m height (F) (p) RCC Grade M 25 (case-i)	Cum	474.75			
5.13	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications	MT	63.68			
5.14	2706 & 2200	Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications	Each	1606.44			
5.15	710.1.4.of IRC:78 and 2200	Providing and laying of Filter media 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 Specification.	Cum	963.86			

BILL NO. 6. TRAFFIC SIGNS MARKING AND OTHER ROAD APPURTENANCES

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
6.01	408	Cast in Situ Cement Concrete M20 Kerb Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408					
i		**Using Concrete Mixer**	metre	112.48			
6.02	801	Retro-Reflectorised Traffic Signs Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
i		**90 cm equilateral triangle**	each	18.00			
ii		**60 cm equilateral triangle**	each	8.00			
6.03	803	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
i		Up to 10 cm in width	sqm	3677.60			
6.04	804	Kilometre Stone Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc					
i	(i)	5th kilometre stone (precast)	Nos	3			
ii	(ii)	Ordinary kilometer stone (precast)	Nos	14			
iii	(iii)	Hectometer stone (precast)	Nos	70			

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
7.02	401	By Mix in Place Method Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401					
i		**For Grading-I Material**	cum	280.000			
7.04	406	Wet Mix Macadam Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	280.000			
7.05	502	Prime Coat Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.	sqm	1120.000			
7.06	503	Tack Coat Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	1120.000			
7.07	503	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.30 kg per sqm on the prepared granular surface cleaned with mechanical broom.	sqm	1120.000			
7.08	504	Bituminous Macadam Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction					
		for Grading I (40 mm nominal size)	cum	67.200			

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
7.09	508	Semi-Dense Bituminous Concrete Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects					
i		**for Grading I (13 mm nominal size)**	cum	44.800			
		Excavation for Structures					
7.10	304	Earth work in excavation of foundation of structures 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 (without de-watering)	cum	44.644			
i	(D)	Cement Mortar1:6 (1cement :6 sand)	sqm	33.600			
7.11	1300	Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.					
i	(A)	Square Rubble Coursed Rubble Masonry (first sort)	cum	15.468			
7.12	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. A) PCC grade M 15	Cum	22.956			
7.13	1500,1700 & 2101	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. C) RCC Grade M20	Cum	3.584			
7.14	1600	Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.	MT	0.268			
7.15	1500 &1600 1700	Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification					
	A	RCC Grade M20	Cum	11.91			
7.16	1600	Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications	MT	0.892			

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BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 8. JUNCTION IMPROVEMENT

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
8.01	401	Granular Sub-Base with Well Graded Material (Table:- 400-1)					
		By Mix in Place Method Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401					
i		For Grading-I Material	cum	1225.000			
8.02	406	Wet Mix Macadam Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	1225.000			
8.03	502	Prime Coat Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.	sqm	4480.400			
8.04	503	Tack Coat Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	4480.400			
8.05	503	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.30 kg per sqm on the prepared granular surface cleaned with mechanical broom.	sqm	4480.400			
8.06	504	Bituminous Macadam Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a pre					
i		for Grading I (40 mm nominal size)	cum	268.824			

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
8.07	509	Bituminous Concrete Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent					
		for Grading I (13 mm nominal size)	cum	179.216			
8.08	407	Construction of Median and Island with Soil Taken from Borrow Areas (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407)	cum	83.920			

Two Laning Of Pasighat Pangin- Pangin (Package-IV) Road from Km 57 to Km71.597 in the State Of Arunachal Pradesh

BILL OF QUANTITIES & COST ESTIMATE

BILL NO.9. SMALL CULVERT (51 nos)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		1.1. Foundation					
9.01	304	Earth work in excavation for foundation of structures in all kinds of soil for all lifts as per drawings and technical specifications, 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.as per drawing, technical specification- clause -304 & direction of Engineer-in-charge					
(i)		Ordinary soil by manual means - upto 3 m depth	cum	6810.21			
9.02	1600	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in cement concrete work of different components in foundation including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section- 1600 & direction of Engineer-in-charge.					
i		(a) TMT Bars conforming to IS:1786	tonne	166.13			
9.03	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. A) PCC grade M 15	Cum	799.50			
9.04	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications e) RCC Grade M 25 (Case-I)	Cum	2506.32			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO.9. SMALL CULVERT (51 nos)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		1.2. Substructure					
9.05	1500,1700 & 2200	Providing and laying for reinforced cement concrete work in Abutment Wall, Abutment Cap, Dirtwall, Pier Shaft, Pier Cap, return wall & Pedestal using batching plant, transit mixer & concrete pump with coarse aggregate of nominal size 20mm & down and grading, of approved quality coarse sand including screening and cleaning of coarse aggregate and coarse sand, curing with cost and carriage of all materials and including preparation of mix, approval of the same by the Engineer in charge and cost for quality control, sampling, testing etc. but including cost of labour and material for formwork , all complete but excluding cost of labour and material for reinforcement, as per drawing, technical specification- section - 1500, 1700 & 2200 & direction of Engineer-in-charge.					
(i)		RCC Grade M25 - Height upto 5m	cum	2359.49			
(ii)		RCC Grade M25 - Height 5m to 10m	cum	55.80			
9.06	1600 & 2200	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in reinforced cement concrete work of different components in sub- structure including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section - 1600 & direction of Engineer-in-charge	tonne				
i		(a) TMT Bars conforming to IS:1786	MT	166.34			
9.07	2706 & 2200	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications	each	2228.00			
9.08	70.14 of IRC 78 & 2200	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification					
i		Granular material	cum	11630.00			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO.9. SMALL CULVERT (51 nos)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
9.09	2200 & 2504.2.2	Providing and laying of Filter media 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 specification.	cum	3259.53			
		1.3. Super Structure					
9.10	1500 1600 & 1700	Providing and laying Reinforced/ Prestressed cement concrete in super-structure using batching plant, transit mixer & concrete pump complete as per drawing and technical specification- setion - 1500, 1600 & 1700 of MORTH specifications & direction of Engineer incharge.					
i		RCC M25 upto 5 m	cum	765.12			
ii		RCC M25 5 to 10 m	cum	40.99			
9.11	1600	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in cement concrete work of different components in super structure including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section- 1600 & direction of Engineer-in-charge.					
i		(a) TMT Bars conforming to IS:1786	tonne	53.81			
9.12	509	Providing and laying bituminus concrete with hot mix plant using crushed aggregates of grade-I premixed with bituminous binder @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostaticpaver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoSRTH Specifications as laid down in Clause 509 complete in all respects.					
i		for Grading-I (13 mm nominal size)	cum	276.74			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO.9. SMALL CULVERT (51 nos)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
9.13	503	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor @ 0.25kg/sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	5326.86			
9.14	515 & 2702	Mastic Asphalt (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 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 not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	5326.86			
9.15	800	Reinforced Cement Concrete Crash Barrier (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with TMT 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, all as specified)	m	1010.64			
9.16	2705	Drainage Spouts complete as per drawing and Technical specification.	each	204.00			
9.17	2700	PCC M15 Grade leveling course below approach slab complete as per drawing, technical specification- section - 2700 of MORTH specifications & direction of Engineer-in-charge.	cum	690.80			
9.18	1500,1600,1700 & 2704	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing & technical specification- clause - 1500, 1600, 1700 & 2704 of MORTH specifications & direction of Engineer-in-charge. (i) R.C.C. M30 grade using batching plant, transit mixer & concrete pump.	cum	1381.59			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO.9. SMALL CULVERT (51 nos)

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		1.4 River Training and Protection works					
9.19	304	Earth work in excavation for foundation of structures in all kinds of soil for all lifts as per drawings and technical specifications, 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.as per drawing, technical specification- clause -304 & direction of Engineer-in-charge					
(i)		Ordinary soil by manual means - upto 3 m depth	cum	57.43			
9.20	2507.2	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.					
i		Boulder laid dry without wire crates.	cum	3.06			
9.21	2507.2	Curtain wall complete as per drawing and Technical specification (I) Cement concrete Grade M15	Cum	154.90			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
10.01	304	Earth work in excavation for foundation of structures in all kinds of soil for all lifts as per drawings and technical specifications, 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.as per drawing, technical specification- clause -304 & direction of Engineer-in-charge					
a		Ordinary Rock (not requiring blasting)					
i		upto 3 m depth	cum	2570.27			
ii		> 3.0 M.	cum	901.01			
10.02	1600	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in cement concrete work of different components in foundation including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section- 1600 & direction of Engineer-in-charge					
i		(a) TMT Bars conforming to IS:1786	tonne	23.39			
10.03	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. A) PCC grade M 15	Cum	97.41			
10.04	1500,1700 & 2100	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications e) RCC Grade M 25 (Case-I)	Cum	118.68			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
		1.2. Substructure					
10.05	1500,1700 & 2200	Providing and laying for reinforced cement concrete work in Abutment Wall, Abutment Cap, Dirtwall, Pier Shaft, Pier Cap, return wall & Pedestal using batching plant, transit mixer & concrete pump with coarse aggregate of nominal size 20mm & down and grading, of approved quality coarse sand including screening and cleaning of coarse aggregate and coarse sand, curing with cost and carriage of all materials and including preparation of mix, approval of the same by the Engineer in charge and cost for quality control, sampling, testing etc. but including cost of labour and material for formwork , all complete but excluding cost of labour and material for reinforcement, as per drawing, technical specification- section - 1500, 1700 & 2200 & direction of Engineer-in-charge.					
(i)		RCC Grade M25 - Height upto 5m	cum	1315.55			
(ii)		RCC Grade M25 - Height 5m to 10m	cum	193.12			
(iv)		RCC Grade M35 (for Pedestal)	cum	0.20			
10.06	1600 & 2200	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in reinforced cement concrete work of different components in sub- structure including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section - 1600 & direction of Engineer in charge	tonne				
i		(a) TMT Bars conforming to IS:1786		135.11			
10.07	2706 & 2200	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications	each	344.00			
10.08	2200	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification					
i		Sandy material	cum	44.85			
ii		Granular material	cum	1174.65			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
10.09	2200 & 2504.2.2	Providing and laying of Filter media 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 specification	cum	452.14			
10.10	2000,2200 & 2005	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.	cu.cm	155320.00			
10.11	2000,2200 & 2006	Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications Clause 2004.	per tonne capacity	2000.00			
		1.3. Super Structure					
10.12	1500, 1600 & 1700	Providing and laying Reinforced/ Prestressed cement concrete in super-structure using batching plant, transit mixer & concrete pump complete as per drawing and technical specification- setion - 1500, 1600 & 1700 of MORTH specifications & direction of Engineer incharge.					
i		RCC M25 5 to 10 m	cum	355.26			
ii		PSC Grade M-40 for Slab+Girder (Height upto 5m).	cum	505.54			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
10.13	1600	Supplying, bending and binding and laying in position steel reinforcement of approved brand of different dimensions in cement concrete work of different components in super structure including initial straightening, straightening of coil bars, removal of loose rust (if any), cutting to requisite-length bending, binding with annealed wire not less than 1mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing, technical specification- section- 1600 & direction of Engineer-in-charge					
i		(a) TMT Bars conforming to IS:1786	tonne	81.26			
10.14	1800	High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications	tonne	13.08			
10.15	509	Providing and laying bituminus concrete with hot mix plant using crushed aggregates of grade-I premixed with bituminous binder @ 5.5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostaticpaver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoSRTH Specifications as laid down in Clause 509 complete in all respects.					
i		for Grading-I (13 mm nominal size)	cum	52.67			
10.16	503	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor @ 0.25kg/sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	1053.15			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
10.17	800	Mastic Asphalt (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 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 not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	1053.15			
10.18	800	Reinforced Cement Concrete Crash Barrier (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with TMT 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, all as specified)	m	200.60			
10.19	2705	Drainage Spouts complete as per drawing and Technical specification.	each	20.00			
10.20	2700	PCC M15 Grade leveling course below approach slab complete as per drawing, technical specification- section - 2700 of MORTH specifications & direction of Engineer-in-charge.	cum	48.39			
10.21	1500, 1600 & 1700	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing & technical specification- clause - 1500, 1600, 1700 & 2704 of MORTH specifications & direction of Engineer-in-charge. (i) R.C.C. M30 grade using batching plant, transit mixer & concrete pump.	cum	104.49			

BILL OF QUANTITIES & COST ESTIMATE

BILL NO. 10. MINOR BRIDGE

Sl No.	Ref. to MORTH Spec.	Item Description	Unit	Quantity	Rate in Rs.		Amount in Rs.
					In figures	In words	In figures
		MINOR BRIDGES					
		1.1. Foundation					
10.22	2704	Strip Seal Expansion Joint (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	m	25.80			