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# ROAD CONSTRUCTION DEPARTMENT

## SCHEDULE OF RATES - 2022

VOLUME - I  
(Sixteenth Edition)



J.P. GANGA PATH, FATNA

Published by :  
State Level Schedule Rate Committee  
Bihar, Patna

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बिहार सरकार  
GOVERNMENT OF BIHAR

# पथ निर्माण विभाग

(राष्ट्रीय उच्च पथ उपभाग सहित)

**Road Construction Department**  
(Including National Highway Wing)

**VOLUME-I**  
(Chapter 01 to 11)

अनुसूचित दर (दर विश्लेषण सहित)  
**Schedule of Rates with Analysis**  
(Sixteenth Edition)

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# **ROAD CONSTRUCTION DEPARTMENT BIHAR**

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ROAD CONSTRUCTION DEPARTMENT  
BIHAR, PATNA**

# CONTENTS

Sr. No.	Description	Page
1.	प्रस्तावना	(I-III)
2.	दिनांक-11.03.2022 को आयोजित राज्यस्तरीय अनुसूचित दर निर्धारण समिति की बैठक में अनुसूचित दर पुस्तिका के षोडश संस्करण का राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुमोदन।	(IV-XVI)
3.	श्रम दर से संबंधित राज्य स्तरीय अनुसूचित दर निर्धारण समिति का दिनांक-22.10.2021 की बैठक में अनुमोदित (a) श्रम दर Schedule-I, श्रम दर Schedule-II एवं श्रम दर Schedule-III	(XVII-XXII)
4.	दिनांक-07.12.2021 एवं दिनांक 28.02.2022 को राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुमोदित निर्माण सामग्रियों यथा-सीमेंट, बिटुमेन, स्टील एवं ईट की सूची M1, M3A, M3B, M3C, M4, M5, M6, M8, M9, M10A, M11	(XXIII-XXXIV)
5.	दिनांक-07.12.2021, दिनांक-28.02.2022 एवं दिनांक-11.03.2022 को राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुमोदित निर्माण सामग्रियों, Plant & Machinery, श्रम दर, Carriage एवं अन्य की सूची (INPUT USED IN SOR) (a) Approved Rate of Stone-aggregate (Stone chips, Sand etc) as per M/MORTH-1 (b) Approved Rate of Construction Materials as per M/MORTH-1A (c) Approved Rate of Plant & Machinery as per P&M/MORTH-1A (d) MORT&H Standard Data Book 2019 के आधार पर दर-विश्लेषण में प्रयुक्त श्रम दर एवं Lead से संबंधित अनुमोदित सूची (e) Approved Carriage Rate of Materials by Tipper	(XXXV-XXXVI) (XXXVII-XLIX) (L-LIII) (LIV-LV) (LVI-LXXII)
6.	दिनांक-28.02.2022 को राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुमोदित Carriage rate (By Tractor) की सूची	(LXXIII-LXXXVI)
7.	रेलवे द्वारा निर्माण सामग्री की ढुलाई का दर निर्धारण हेतु रेल मंत्रालय (रेलवे बोर्ड), भारत सरकार के द्वारा माल ढुलाई हेतु Route Chart एवं Freight Rate Table की प्रति।	(LXXVII-CXXVIII)
8.	खान एवं भूतत्व विभाग द्वारा निर्गत लघु खनिजों पर देय रॉयल्टी शूल्क से संबंधित पत्रों की प्रति।	(CXXIX-CXXXIII)
9.	श्रमिक कल्याण कोष हेतु 1% (एक प्रतिशत) सेस की कटौती से संबंधित श्रम संसाधन विभाग, बिहार सरकार के पत्रांक - 4984 दिनांक - 01.10.2008 एवं संयोजक SOR का पत्रांक-746 (अनु0) दिनांक-25.02.2010 की प्रति।	(CXXXIV-CXXXIX)
10.	अन्यान्य	(CXL-CLXI)

# CONTENTS

Chapter	Item No.	Description	Page
		Basic Approach And General Conditions For The Preparation of Standard Data Book (Road Works)	1 – 4
<b>1</b>	<b>CARRIAGE OF MATERIALS</b>		
		Preamble	5
		Summary	6 – 8
	1.01	Loading and unloading of stone boulder/stone aggregates/sand /kanker /moorum	9
	1.02	Loading and unloading of Boulders by Manual Means	12
	1.03	Loading and Unloading of Cement or Steel by Manual Means and stacking	12
	1.04	Cost of Haulage Excluding Loading and Unloading	13
	1.05	Hand Broken Stone Aggregates 63mm nominal size	21
	1.06	Crushing of stone aggregates 10mm, 20mm, 40mm nominal size & Dust	21
	1.07	Crushig of stone boulders of 150 mm size (GSB Crusher run)	24
<b>2</b>	<b>SITE CLEARANCE</b>		
		Preamble	26 – 27
		Summary	28 – 31
	2.01 (A)	Cutting of trees, excluding removal of stumps and roots of trees	32
	2.01 (B)	Removal of stumps and roots including backfilling with suitable material to require compaction	34
	2.02	Clearing Grass and Removal of Rubbish	36
	2.03	Clearing and Grubbing Road Land	37
	2.04	Dismantling of Structures	41
	2.05	Dismantling of Flexible Pavements	53
	2.06	Dismantling of Cement Concrete Pavement	56
	2.07	Dismantling Guard Rails	57
	2.08	Dismantling Kerb Stone	57
	2.09	Dismantling Kerb Stone channel	58
	2.10	Dismantling kilometer Stone	58
	2.11	Dismantling of Fencing	59
	2.12	Dismantling of CI Water Pipe Line	60
	2.13	Removal of Cement Concrete Pipe of Sewer Gutter	61
	2.14	Removal of Telephone/Electric Poles and Lines	61
<b>3</b>	<b>EARTH WORK, EROSION CONTROL AND DRAINAGE</b>		
		Preamble	63 – 64
		Summary	65 – 70
	3.01	Excavation in Soil By manual means	71
	3.02	Excavation in ordinary rock by manual means	71
	3.03	Excavation in soil with dozer with lead up to 1000 metres	72
	3.04	Excavation in ordinary rock with dozer with lead up to 1000 metre	73
	3.05	Excavation in hard rock requiring blasting with disposal up to 1000 metres	74
	3.06	Excavation in soil using hydraulic excavator and tippers with disposal of 1000 metres	76

Chapter	Item No.	Description	Page
	3.07	Excavation in ordinary rock using hydraulic excavator and tippers with disposal up to 1000 metres	77
	3.08	Excavation in hard Rock (blasting prohibited)	78
	3.09	Excavation in hard Rock (Controlled blasting with disposal upto 1000 meters	80
	3.10	Excavation in Marshy Soil	82
	3.11	Removal of Unserviceable Soil with Disposal upto 1000 meters	83
	3.12	Pre-splitting of Rock Excavation Slopes	84
	3.13	Excavation for Structures	86
	3.14	Scarifying Existing Granular Surface to a Depth of 50 mm	93
	3.15	Scarifying Existing bituminous surface to a depth of 50 mm	95
	3.16	Embankment Construction with Material obtained from Borrow Pits	97
	3.17	Construction of Embankment with Material Deposited from Roadway Cutting	98
	3.18	Construction of Subgrade and Earthen Shoulders	99
	3.19	Construction of Subgrade and Earthen Shoulders with Material Deposited from Roadway Cutting	101
	3.20	Compacting Original Ground	102
	3.21	Stripping and Storing Top Soil	104
	3.22	Stripping Storing and re-laying top soil from borrow areas in agriculture fields	106
	3.23	Turfing with Sods	107
	3.24	Seeding and Mulching	108
	3.25	Surface Drains in Soil	109
	3.26	Surface Drains in Ordinary Rock	110
	3.27	Surface Drains in Hard Rock	112
	3.28	Sub Surface Drains with Perforated Pipe	112
	3.29	Aggregate Sub-Surface Drains	113
	3.30	Underground Drain at Edge of Pavement	113
	3.31	Preparation and Surface Treatment of formation	114
	3.32	Construction of Rock fill Embankment with all lifts and lead upto 5 km	115
	3.33	Work In Urban Road	116
	3.34	Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste Material	118

#### **4 SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS**

	Preamble	120
	Summary	121 – 128
4.01	Granular Sub-Base with Graded Material	129
4.02	Lime Stabilisation for Improving Subgrade	139
4.03	Cement Stabilisation for improving Subgrade	143
4.04	Lime/Cement Stabilisation for Improving Embankment	148
4.05	Lime Treated Soil for Sub-Base	156
4.06	Cement Treated Soil Sub Base/Base	157
4.07	Cement Treated Crushed Rock or combination (Sub base/Base)	159
4.08	Cement Treated Crushed Stone Sub base	160

Chapter	Item No.	Description	Page
	4.09	Making 50mm×50mm Furrows	164
	4.10	Inverted Choke	165
	4.11	Water Bound Macadam	166
	4.12	Crushed Cement Concrete Sub-base/Base	171
	4.13	Penetration Coat Over Top Layer of Crushed Cement Concrete Base	173
	4.14	Wet Mix Macadam laying	174
	4.15	Cement Treated Crushed Stone Base	177
	4.16	Construction of Median and Island with Soil Taken from Roadway Cutting	179
	4.17	Construction of Median and Island with Soil Taken from Borrow Areas	180
	4.18	Construction of Shoulders	181
	4.19	Footpaths and Separators	181
	4.20	Crusher Run Macadam Base	183
	4.21	Lime, Fly ash stabilised soil sub-base	186
	4.22	Granular crack relief layer	189

## 5 BASES AND SURFACE COURSES (BITUMINOUS)

	Preamble	190 – 191
	Summary	192 – 198
5.01	Prime coat	199
5.02	Tack coat	203
5.03	Bituminous Macadam	206
5.04	Dense Graded Bituminous Macadam	210
5.05	Bituminous Concrete	214
5.06	Surface Dressing	218
5.07	Open-Graded Premix Surfacing	221
5.08	Close Graded Premix Surfacing/Mixed Seal Surfacing	222
5.09	Seal Coat	224
5.10	Supply of Stone Aggregates for Pavement Course	227
5.11	Mastic Asphalt	227
5.12	Slurry Seal	229
5.13	Recycling of Bituminous Pavement with Central Recycling Plant	234
5.14	Fog Spray	249
5.15	Bituminous cold Mix	249
5.16	Sand Asphalt Base Course	256
5.17	Crack Prevention Courses	258
5.18	Recipe Cold Mix	262
5.19	Bituminous Concrete (using waste plastic)	266
5.20	Hot Recycling in place of Bituminous Pavement with bituminous concrete	271

## 6 CEMENT CONCRETE PAVEMENTS

	Preamble	275
	Summary	276 – 278
6.01	Dry Lean Cement Concrete sub-base	279
6.02	Cement Concrete Pavement	281
6.03	Transition section between rigid and flexible pavement	285
6.04	Cement-Fly ash Dry Lean Cement Concrete Sub-base	286

Chapter	Item No.	Description	Page
	6.05	Cement-Fly ash concrete pavement	289
	6.06	Thin White topping	293
	6.07	Cement-Fly ash Thin White topping	296
<b>7</b>	<b>GEOSYNTHETICS AND REINFORCED EARTH</b>		
		Preamble	300
		Summary	301 – 307
	7.01	Sub-Surface Drain with Geotextiles	308
	7.02	Laying Paving Fabric Beneath a Pavement Overlay	308
	7.03	Laying Boulder Apron in Crates of Synthetic Geogrids	309
	7.04	Reinforced Earth Structures	310
	7.05	Bi-axial extruded high modulus polypropylene geogrid	316
	7.06	Supplying and laying high strength flexible geogrids (HSFG)	320
	7.07	Supplying and laying of drainage composite (tensile strength of 18 kN/m)	324
	7.08	Supplying and laying of drainage composite (tensile strength of 13.5 kN/m)	325
	7.09	RCC Crash Barrier with Friction Slab	326
	7.10	In-Situ Soil reinforcement for slope restoration and protection work (Soil Nailing)	327
	7.11	Horizontal Drainage Boring methods on the types of Sandy Soil/ Cohesive Soil, Gravelly Soil, Rubble/Cobble Stone and Soft Rock (Nominal Diameter of drilling pipe-90mm)	328
	7.12	Horizontal Drainage Boring methods on the types of Sandy Soil/ Cohesive Soil, Gravelly Soil, Rubble/Cobble Stone and Soft Rock (Nominal Diameter of drilling pipe-110mm)	336
	7.13	Horizontal Drainage Boring methods on the types of Sandy Soil/ Cohesive Soil, Gravelly Soil, Rubble/Cobble Stone and Soft Rock (Nominal Diameter of drilling pipe-135mm)	344
	7.14	Selected fill behind Reinforced Earth wall	352
	7.15	Providing and laying of Filter media with granular materials	354
	7.16	Supplying & laying of drainage composite for use behind walls with Geo-synthetic Drainage Composite	354
	7.17	Geocell for slope Protection	356
	7.18	Geosynthetics mat for Slope Protection	357
	7.19	Natural Geotextile for Slope Protection	358
<b>8</b>	<b>TRAFFIC SIGNS, MARKINGS &amp; OTHER ROAD APPURTENANCES</b>		
		Preamble	360 – 361
		Summary	362 – 375
	8.01	Cast in Situ Cement Concrete M20 kerb	376
	8.02	Cast in Situ Cement Concrete M20 kerb with channel	377
	8.03	Printing new letter and figures of any shade	378
	8.04	Retro-reflectorised Traffic signs	379
	8.05	Direction and Place Identification signs upto 0.9 sqm size board	391
	8.06	Direction and Place Identification signs with size more than 0.9 sqm size board	392



Chapter	Item No.	Description	Page
	8.07	Overhead Signs	394
	8.08	Painting Two coats on New Concrete Surfaces	395
	8.09	Painting on Steel Surfaces	396
	8.10	Painting on wood Surfaces	397
	8.11	Painting Lines, Dashes, Arrows etc on Roads in Two coats on New work	397
	8.12	Painting Lines, Dashes, Arrows etc on Roads in Two coats on old work	398
	8.13	Road marking with Hot Applied Thermoplastic Compound with Reflectors Glass Beads on Bituminous Surface	398
	8.14	Kilometer Stone	399
	8.15	Road Delineators	404
	8.16	Boundary Pillar	404
	8.17	G.I Barbed wire Fencing 1.2 meter high	406
	8.18	G.I Barbed wire Fencing 1.8 meter high	407
	8.19	Fencing with welded steel wire Fabric 75mm ×50mm	407
	8.20	Tubular Steel Railing on Medium Weight steel channel (ISMC series) 100 mm×50mm	409
	8.21	Tubular Steel Railing on Precast RCC posts, 1.2 m high above ground level	410
	8.22	Reinforced Cement Concrete Crash Barrier	411
	8.23	Metal Beam Crash Barrier	414
	8.24	Road Traffic Signals electrically operated	416
	8.25	Flexible Crash Barrier, Wire Rope Safety Barrier	416
	8.26	Anti-Glare Devices in Median	418
	8.27	Street Lighting	420
	8.28	Lighting on Bridges	421
	8.29	Cable Duct Across the Road	422
	8.30	Highway Patrolling and Traffic Aid Post	424
	8.31	Items related to under pass/subway/overhead bridge/overhead foot bridge	424
	8.32	Traffic Control System and Communication system	425
	8.33	Gantry Mounted Variable Message Sign board	425
	8.34	Traffic Impact Attenuators at Abutments and Piers	426
	8.35	Solar Powered Road Markers/Road Stud	428
	8.36	Traffic Cone	430
	8.37	Roadside Amenities	430
	8.38	Rumble Strips	431
	8.39	Policeman Umbrella	431
	8.40	High Mast Pole Lighting at Interchanges and Flyovers	432
	8.41	Toll Plaza	433
	8.42	Safety Devices and signs in Construction Zones	434
	8.43	Portable Barricade in Construction Zone	435
	8.44	Permanent Type Barricade in Construction Zone	436
	8.45	Drum Delineator in Construction Zone	438
	8.46	Water Filled Barricades Work Zone sheeting	438
	8.47	Providing Tubular marker made up of Polyurethane, height upto 450mm	439
	8.48	Providing Tubular Marker Made up of Polyurethane, height upto 700 mm	439
	8.49	Flagman	440
	8.50	Advanced Traffic Management Systems (ATMS)	441
	8.51	Fiber Reinforced Cement Concrete new jersey crash barrier	443

Chapter	Item No.	Description	Page
<b>9 PIPE CULVERTS</b>			
		Preamble	445
		Summary	446 – 447
	9.01	Excavation for Structures	448
	9.02	Sand Filling in Foundation trenches	457
	9.03	Plain Cement concrete 1:3:6 nominal mix	458
	9.04	Laying Reinforced Cement Concrete Pipe NP4/pre-stressed concrete pipe on first class bedding in single row	459
	9.05	Laying Reinforced Cement Concrete Pipe NP4/pre-stressed concrete pipe on first class bedding in double row	461
	9.06	Plain/Reinforced Cement Concrete in open Foundation complete as per Drawing and Technical Specifications.	463
	9.07	Supplying, Fitting and Placing un-coated HYSD bar Reinforcement	472
<b>10 MAINTENANCE OF ROADS</b>			
		Preamble	474
		Summary	475 – 477
	10.01	Restoration of rain cuts	478
	10.02	Maintenance of earthen Shoulder (filling with fresh soil)	478
	10.03	Maintenance of Earth Shoulder (stripping excess soil)	479
	10.04	Filling Pot-holes and patch repairs with open-graded Premix surfacing, 20mm	480
	10.05	Filling pot-holes and Patch repairs with-Bituminous concrete, 40mm	481
	10.06	Crack Filling	483
	10.07	Dusting	483
	10.08	Fog Seal	484
	10.09	Repair of joint Grooves with Epoxy Mortar	484
	10.10	Repair of old Joints sealant	485
	10.11	Hill side Drain clearance	485
	10.12	Land slide clearance in soil	485
	10.13	Land slide clearance in Hard Rock Requiring Blasting	486
	10.14	Snow clearance on Roads with Dozer	487
	10.15	Snow clearance on Roads with Snow Blowers	487
	10.16	Replacement of Metal Beam Crash Barrier	488
	10.17	Network Survey Vehicle (NSV) attached with SUV	490
	10.18	Falling weight deflectometer (FWD)	491
	10.19	Road Retro reflectometer attached with SUV	491
	10.20	Automatic vehicle Counter Classified (ATCC)	492
<b>11 HORTICULTURE</b>			
		Preamble	493
		Summary	494 – 497
	11.01	Spreading of Sludge Farm Yard Manure or/and good Earth	498
	11.02	Grassing with 'Doobs' Grass	498
	11.03	Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod	499
	11.04	Maintenance of Lawns or Turfing of Slopes	500
	11.05	Turfing Lawns with Fine Grassing including Ploughing, Dressing	500
	11.06	Maintenance of Lawns with Fine Grassing for the First Year	501
	11.07	Planting Permanent Hedges including Digging of Trenches	501
	11.08	Planting Flowering Plants and Shrubs in Central Verge	502

Chapter	Item No.	Description	Page
	11.09	Planting of Trees and their Maintenance for one Year	504
	11.10	Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil	504
	11.11	Supply at Site Well Decayed Farm Yard Manure	505
	11.12	Supply at site of Work/Store-Deoiled Neem Cake	505
	11.13	Supplying Sludge	505
	11.14	half Brick Circular Tree Guard	506
	11.15	Edging with 2nd class Bricks, laid dry lengthwise	506
	11.16	Making Tree Guard 53 cm dia and 1.3 meters high as per design from empty bitumen drums	507
	11.17	Making Tree Guard 53 cm dia and 2 meters high as per design from empty bitumen drums	507
	11.18	Wrought Iron and Mild Steel Welded Work (Wrought iron and mild steel welded work)	508
	11.19	Tree Guard with MS Iron	509
	11.20	Tree Guard with MS Angle Iron and Steel Wire	510
	11.21	Compensatory Afforestation	510
	11.22	Rain Water Harvesting	511

## प्रस्तावना

बिहार लोक निर्माण संहिता की कण्डिका-103 के संशोधन के आलोक में बिहार सरकार, पथ निर्माण विभाग द्वारा निर्गत संकल्प सह पठित ज्ञापांक 1/बी-12-2003-5762 (एस) डबलू ई0 पटना दिनांक 05.06.2006 की कण्डिका 2 (iii) में यह प्रावधान किया गया है कि अनुसूचित दर का निर्धारण के लिए दर विश्लेषण तथा सामग्रियों का दर निर्धारण पथ निर्माण विभाग के संयोजन में गठित राज्य स्तरीय अनुसूचित दर निर्धारण समिति द्वारा किया जायेगा। इसी क्रम में यह प्रावधान किया गया है कि पथ निर्माण विभाग में अनुसूचित दर का निर्धारण सड़क, परिवहन एवं राजमार्ग, मंत्रालय भारत सरकार के स्टैंडर्ड डाटा बुक के आधार पर किया जायेगा, जबकि अन्य विभागों में इससे संबंधित भारत सरकार के कार्य विभागों में प्रचलित विशिष्टियों या दर विश्लेषण के आधार पर किया जायेगा। वर्तमान में राज्य स्तरीय अनुसूचित दर निर्धारण समिति के सदस्य इस प्रकार है :-

(i)	अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना	संयोजक
(ii)	अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना	सदस्य
(iii)	अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना	सदस्य
(iv)	अभियंता प्रमुख, मुख्यालय, जल संसाधन विभाग, बिहार, पटना	सदस्य
(v)	अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना	सदस्य
(vi)	अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना	सदस्य
(vii)	अभियंता प्रमुख, तकनीकी परीक्षक कोषांग, निगरानी विभाग, बिहार, पटना	सदस्य
(viii)	मुख्य अभियंता (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि०, पटना	सदस्य
(ix)	मुख्य अभियंता (विद्युत), भवन निर्माण विभाग, बिहार, पटना	सदस्य

बिहार लोक निर्माण संहिता की कण्डिका-103 में संशोधन के आलोक में MORT&H Standard Data Book एवं Software पर आधारित पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिए अनुसूचित दर पुस्त का **प्रथम संस्करण दिनांक-05.12.2006** से लागू किया गया था।

समिति द्वारा पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिए अनुसूचित दर पुस्त (दर विश्लेषण सहित) में आवश्यक संशोधन एवं पुनरीक्षण के पश्चात् निम्नलिखित संस्करण किया गया :-

द्वितीय संस्करण	:	23.05.2007
तृतीय संस्करण	:	24.03.2008
चतुर्थ संस्करण	:	01.04.2009
पंचम संस्करण	:	01.04.2010
षष्ठम् संस्करण	:	01.05.2011
सप्तम् संस्करण	:	02.07.2012
अष्टम् संस्करण	:	01.04.2013
नवम् संस्करण	:	01.04.2014
दशम् संस्करण	:	01.04.2015
एकादश संस्करण	:	01.04.2016





i



द्वादश संस्करण	:	01.04.2017
त्रयोदश संस्करण	:	01.04.2018
चतुर्दश संस्करण	:	01.04.2019
पंचदश संस्करण	:	01.04.2021

समिति द्वारा चतुर्दश संस्करण में आवश्यक संशोधन एवं पुनरीक्षण के पश्चात् इसका पंचदश संस्करण दिनांक-01.04.2021 को किया गया।

षोडश संस्करण करने के लिए राज्य अनुसूचित दर निर्धारण समिति की बैठक दिनांक-11.03.2022 को आहूत की गई।

दिनांक- 11.03.2022 की बैठक में उपस्थित सभी सदस्यों द्वारा MORT&H के Standard Data Book 2019 एवं Software के आधार पर संशोधन के साथ अनुसूचित दर पुस्तिका को दिनांक-01.04.2022 से षोडश संस्करण को लागू करने में अपनी सहमति दी।

इस पुस्तिका के संस्करण के पश्चात् भी समय-समय पर निर्माण सामग्री यथा बिटुमेन, सीमेंट, स्टील इत्यादि के दरों में होनेवाली घटोत्तरी-बढ़ोत्तरी को देखते हुए लगभग तीन माह पर राज्य स्तरीय अनुसूचित दर निर्धारण समिति की बैठक होती है जिसमें उनके द्वारा दरों को अद्यतन किया जाता है। इसके साथ ही साथ विभिन्न विभागों, संस्थाओं एवं कार्यालयों से प्राप्त सुझावों एवं प्रस्तावों के आधार पर समुचित निर्णय लिये जाते हैं जिन्हें विभागीय वेबसाइट state.bihar.gov.in/rcd पर भी उपलब्ध कराये जाते हैं।

अतः इस पुस्तिका का उपयोग करनेवाले सभी पदाधिकारियों, व्यक्तियों, संस्थाओं, निगमों से अनुरोध है कि समय-समय पर विभागीय वेबसाइट का अवलोकन करते रहें।

बिहार लोक निर्माण संहिता की कण्डिका-103 के संशोधन के पश्चात् **MORT&H Standard Data Book 2019 (2nd Revision)** एवं Software पर आधारित अनुसूचित दर पुस्त का यह षोडश संस्करण है। यद्यपि यह सभी सदस्यों की देख-रेख में तैयार किया गया है, फिर भी ऐसी संभावना है कि इस अनुसूचित दर पुस्त को तैयार करने में कुछ त्रुटियाँ रह गई हो और व्यवहार में लाने के क्रम में कुछ त्रुटियाँ दृष्टिगोचर हो सकती है, ऐसी स्थिति में मेरा अनुरोध है कि उन त्रुटियों को राज्य स्तरीय अनुसूचित दर निर्धारण समिति की जानकारी में E-mail ID-sorrcd2012@gmail.com / पत्र / दूरभाष-0612 2545514 द्वारा अथवा व्यक्तिगत रूप से अविलम्ब दी जाय ताकि सम्यक विचारोपरान्त उन त्रुटियों का समुचित निराकरण किया जा सके।

**चूँकि यह दर विश्लेषण सड़क निर्माण के उच्च एवं आधुनिक तकनीक पर आधारित है। अतः Users को परामर्श दिया जाता है कि उनके द्वारा सम्बन्धित कार्यमद का दर विश्लेषण एवं विशिष्टि का गहन अध्ययन अवश्य किया जाय।**

वर्तमान अनुसूचित दर पुस्त को तैयार करने तथा उसे प्रभावी बनाने में सहयोग करने के लिए निम्नलिखित पदाधिकारियों एवं कर्मचारियों का कार्य अत्यन्त ही सराहनीय रहा है:-

1. से० नि० ई० अरविन्द कुमार, अधीक्षण अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग पटना।
2. ई० श्रीमन नारायण शर्मा, कार्यपालक अभि०, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
3. ई० अंशुमान कुमार सिंह, कार्यपालक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
4. ई० रेजी सिंह, तकनीकी सलाहकार, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
5. ई० रामनाथ प्रसाद, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
6. ई० दिनेश कुमार, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
7. ई० आरिफ जमाल, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।

8. ई0 रवि कुमार सुमन, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
9. ई0 सुश्री तृप्ति जायसवाल, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
10. ई0 श्री शोएब उस्मानी, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
11. से० नि० ई0 राम दुलार राम, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
12. ई0 संजय गुप्ता, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
13. ई0 श्री हरिशंकर कुमार, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
14. ई0 श्रीमती प्रतिमा कुमारी, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
15. ई0 श्रीमती रीना कुमारी, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
16. ई0 श्री अजय कुमार, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
17. श्री मो० कमालउद्दीन अशरफ, सहायक, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।
18. श्री विपिन कुमार, डाटा इन्ट्री ऑपरेटर, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना ।

राज्य स्तरीय अनुसूचित दर निर्धारण समिति यांत्रिक उपभाग के प्रभारी मुख्य अभियंता, श्री अशोक कुमार एवं कार्यपालक अभियंता, श्री संजीव कुमार सिन्हा के प्रति आभार व्यक्त करता है जिनके सहयोग एवं रचनात्मक सुझाव से अनुसूचित दर पुस्त के इस संस्करण में विशेष सहयोग मिला है ।

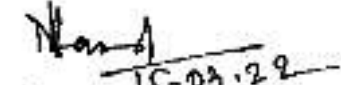
अनुसूचित दर पुस्त के उपयोग करनेवालों के विशेष सुविधा के लिए इस अनुसूचित दर पुस्तक के साथ Soft Copy (C.D.) भी संलग्न की जा रही है। साथ ही साथ यह अनुसूचित दर पुस्त विभागीय वेबसाइट [state.bihar.gov.in/rcd](http://state.bihar.gov.in/rcd) पर भी उपलब्ध है ।

यह अनुसूचित दर पुस्त दिनांक 01.04.2022 से प्रभावी होगा ।

स्थान – पटना

दिनांक – 15.03.2022




  
15-03-22  
(हनुमान प्रसाद चौधरी)

संयोजक,

राज्य स्तरीय अनुसूचित दर निर्धारण समिति

–सह– अभियंता प्रमुख (मुख्यालय),

पथ निर्माण विभाग, बिहार, पटना ।

**MORT&H Standard Data Book 2019 (2nd revision) एवं इसके Software पर आधारित पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिये अनुसूचित दर पुस्तिका (दर विश्लेषण सहित) के षोडश संस्करण-2022 का राज्य स्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुमोदन :-**

बिहार लोक निर्माण संहिता की कण्डिका-103 में संशोधन के आलोक में बिहार सरकार, पथ निर्माण विभाग द्वारा निर्गत संकल्प सह पठित ज्ञापांक 1/बी0-12/2003-5762 (एस) (डब्लू ई) पटना, दिनांक- 05.06.2006 की कण्डिका-2 (iii) में यह प्रावधान किया गया है कि अनुसूचित दर, दर विश्लेषण तथा सामग्रियों का दर निर्धारण पथ निर्माण विभाग के संयोजन में गठित राज्य स्तरीय अनुसूचित दर निर्धारण समिति द्वारा किया जायेगा। इसी क्रम में यह प्रावधान किया गया है कि पथ निर्माण विभाग में अनुसूचित दर का निर्धारण सड़क परिवहन एवं राजमार्ग मंत्रालय, भारत सरकार के स्टैन्डर्ड डाटा बुक के आधार पर किया जायेगा। राज्य स्तरीय अनुसूचित दर निर्धारण समिति द्वारा श्रमदर, निर्माण सामग्रियों एवं Plant & Machinery के दर में हुए दर पुनरीक्षण के आलोक में पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिये लागू अनुसूचित दर (दिनांक 01.04.2022 से प्रभावी) के पुनरीक्षण के लिए दिनांक-28.02.2022, दिनांक 07.12.2021 एवं दिनांक 11.03.2022 की बैठक में निर्माण सामग्री एवं Plant & Machinery के usage rate के लिए INPUT की स्वीकृति दी गयी है। सदस्यों की सहमति से पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिए दिनांक-01.04.2021 से प्रभावी अनुसूचित दर पुस्त पचदश संस्करण में परिवर्तन करते हुए MORT&H Standard Data Book 2019 (2nd revision) के अनुसार आवश्यक संशोधन एवं पुनरीक्षण के पश्चात् इसके षोडश संस्करण (दिनांक-01.04.2022 से प्रभावी) का अनुमोदन किया जाता है। अनुसूचित दर तैयार करने में निम्नलिखित प्रक्रिया अपनाई गई है:-

1. (i) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू Standard Data Book 2019 के Basic Input Parameters के आधार पर Road/Bridge/Structure/Tunnel के लिए 10% Contractor's Profit शामिल किया गया है।
- (ii) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू Standard Data Book 2019 के Basic Approach and General Conditions के आधार पर Road/Bridge/Structure/Tunnel के लिए Large/Medium/Small Projects को इस प्रकार श्रेणीबद्ध किया गया है :-
  - (a) Civil works cost up to 200 Crore :-Small Project
  - (b) Civil works cost > 200 Crore and ≤ 500 Crore :-Medium Project
  - (c) Civil works cost > 500 Crore :-Large Project
- (iii) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू Standard Data Book 2019 में दिये गये Basic Input Parameters के आधार पर Road/Bridge/Structure/Tunnel के लिए Overhead charge का प्रावधान इस प्रकार किया गया है :-

Sl. No.	Description	Overhead (Percentage)		
		Large Project	Medium Project	Small Project
1	Overheads for Road Works (CH01 to 11)	8%	10%	12%
2	Overheads for New/Widening of Bridge/Structure Works(CH12 to 16)	20%	20%	20%



3	Overheads for Rehabilitation of Bridges/Structure (CH17)	30%	30%	30%
4	Overheads for Road Tunnel Works (CH18)	25%	25%	25%

**Note :-** For Chapter-19 (Environmental & Safety Management & Bio Engineering), overhead charges will be applicable of Road works.

- (iv) भविष्य में परियोजनाओं के DPR तैयार करने के क्रम में यदि किसी परियोजना में पथ कार्य के साथ Bridge/Structure/Tunnel कार्य भी सम्मिलित है, तो पथ कार्य में नियमानुसार लागू overhead (OH) तथा Bridge/Structure/Tunnel में MORT&H के Standard Data Book 2019 के अनुरूप नियमानुसार लागू overhead (OH) मद का प्रावधान करते हुए प्राक्कलन का सृजन किया जाय।
- (v) सीमेन्ट के दर में पटना के लिये लागू OPC Grade 43 के दर को व्यवहार में लाया गया है। निरूपण एवं संरचना की आवश्यकतानुसार संबंधित सक्षम पदाधिकारी अन्य प्रकार के सिमेंट का व्यवहार कर सकते हैं।
- (vi) दर-विश्लेषण में G.S.T. (Goods & Service Tax) शामिल नहीं है।
- (vii) **Goods & Service Tax (G.S.T.) :-** समिति द्वारा सर्वसम्मति से सम्यक् विचारोपरांत G.S.T. की प्रक्रिया निम्न प्रकार से अपनाने का निर्णय लिया गया है :-

- (a) दर-विश्लेषण में प्रयुक्त प्रत्येक सामग्री की दर में GST नहीं जोड़ा जाए।
- (b) Carriage, overhead charge (excluding VAT/GST), Contractor profit, Royalty को जोड़कर प्रत्येक कार्य मद का दर निर्धारित किया जाए तथा इस निर्धारित दर के आधार पर परियोजना की प्राक्कलित राशि निर्धारित की जाए।
- (c) Work-Contracts के लिए उपरोक्त कंडिका-(b) में निर्धारित प्राक्कलित राशि/कुल लागत (Labour Cess रहित) पर Contractor Service tax/work contract G.S.T. का प्रावधान वित्त मंत्रालय, भारत सरकार की अधिसूचना संख्या-20/2017-Central Tax (Rate), नई दिल्ली दिनांक-22-08-17 में निर्मित तालिका के कॉलम-4 में निर्धारित G.S.T. (C.G.S.T.& S.G.S.T. मिलाकर जो वर्तमान में 12% है) तथा समय-समय पर भारत सरकार एवं राज्य सरकार द्वारा अधिसूचित कर की दर के अनुसार किया जाय।

परन्तु "For composite supply of work contract as defined in clause (119) of section 2 of the Central Goods & Services Tax Act 2017, involving predominantly earth work (That is, consisting more than 75% of the value of work contract) provided to the central Government, Union Territory, State Government, local Authority, a Government Authority or a Government Entity, the Goods & Services Tax (GST) for contract is 5% (CGST=2.5%, SGST=2.5%) only and as per revised GST Rates by the respective Government Authority time to time".

- (d) उपरोक्त कंडिका-(b) में निर्धारित प्राक्कलित राशि (G.S.T रहित) पर 1% Labour Cess का प्रावधान निर्धारित मापदण्डों के अनुसार किया जाय।



(e) Bill of Quantity (B.O.Q.) में work value, labour less value एवं G.S.T. value का अलग-अलग उल्लेख किया जाय।

तत्संबंधी उदाहरण तालिका (Model Calculation Sheet) निम्न प्रकार है :-

(a) Estimated Amount (प्राक्कलित राशि) including carriage, overhead charge (excluding VAT/GST), Contractor profit, Royalty but excluding GST & Labour Cess="A"

(b) Contractor Service Tax/Work Contract GST in percentage = "Y" %

(c) Contract Service tax/contract GST Amount

$$= \text{"B"} = \frac{\text{AY}}{100}$$

(d) Labour Cess Amount@1% = "C" =  $A \times 0.01$

(e) Bill of Quantity (B.O.Q.)

Work Value = A

GST Value = B

Labour Cess = C

(viii) कार्य विभागों द्वारा सरकारी योजनाओं के लिए लघु खनिजों के उपयोग हेतु मालिकाना फीस (Seigniorage Fee) :- समिति द्वारा सर्वसम्मति से खान एवं भूतत्व विभाग, बिहार, पटना के पत्रांक-कार्य विभाग/Seigniorege-11/19-3947/एम0, पटना दिनांक-15.11.2019 एवं खान एवं भूतत्व विभाग, बिहार की अधिसूचना संख्या-3174/एम0, दिनांक-17.09.2019 के आलोक में निम्नवत् निर्णय लिया गया है :-

(क) निर्माण कार्यों में व्यवहृत लघु खनिजों पर देय मालिकाना फीस उक्त खनिज के निर्धारित स्वामित्व (रॉयल्टी) दर के अतिरिक्त देय है।

(ख) कार्य विभागों द्वारा प्राक्कलन में लघु खनिज का मूल्य वैध खदान पर वर्तमान में प्रचलित खनिज मूल्य को रॉयल्टी सहित रखा जाय।

(ग) सभी सरकारी विभाग अपनी स्कीम या परियोजनाओं के लिए किसी लघु खनिज का उपयोग करने हेतु मालिकाना फीस की कटौती अपने आपूर्तिकर्ता या संवेदक से करेंगे।

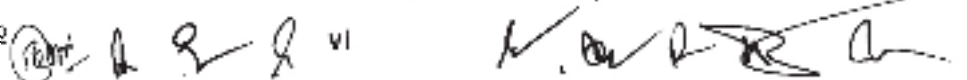
(घ) मालिकाना फीस की कटौती प्राक्कलन में लगे वैध खदान पर रॉयल्टी सहित वर्तमान में प्रचलित खनिज मूल्य पर 10 प्रतिशत की दर से की जाय। इसमें अन्य मद यथा ढुलाई आदि को शामिल नहीं किया जाय।

(ङ) प्राक्कलन में मालिकाना फीस (Seigniorage Fee) का प्रावधान वैध खदान पर रॉयल्टी सहित वर्तमान में खनिज के मूल्य पर 10 (दस) प्रतिशत की दर से किया जाय। इसमें अन्य मद यथा ढुलाई आदि को शामिल नहीं किया जाय।

समिति द्वारा सम्यक विचारोपरान्त सर्वसम्मति से प्राक्कलन में मालिकाना फीस का प्रावधान करने की प्रक्रिया निम्न प्रकार से अपनाने का निर्णय लिया गया :-

(a) दर-विश्लेषण में 10 (दस) प्रतिशत मालिकाना फीस (Seigniorage Fee) नहीं जोड़ा जाय।

(b) Carriage, overhead charge (excluding VAT/GST), Contractor Profit, Royalty को जोड़कर प्रत्येक कार्य मद का दर निर्धारित किया जाय तथा इस निर्धारित दर के आधार पर परियोजना की प्राक्कलित राशि निर्धारित की जाय।



- (c) Work-Contracts के लिए उपरोक्त कंडिका-(b) में निर्धारित प्राक्कलित राशि/कुल लागत (Labour Cess रहित) पर Contract Service tax/work contract G.S.T. का प्रावधान अधिसूचित/निर्धारित दर के अनुसार किया जाय।
- (d) उपरोक्त कंडिका (b) में निर्धारित प्राक्कलित राशि (G.S.T. रहित) पर 1 प्रतिशत Labour Cess का प्रावधान निर्धारित मापदंडों के अनुसार किया जाय।
- (e) उपरोक्त कंडिका (b) में निर्धारित प्राक्कलित राशि (G.S.T. रहित एवं Labour Cess रहित) में सम्मिलित रॉयल्टी सहित Basic खनिज मूल्य (ढुलाई रहित) पर 10 (दस) प्रतिशत की दर से मालिकाना फीस (Seigniorage Fee) का प्रावधान अलग से किया जाय।
- (f) Bill of Quantity (B.O.Q.) में Work Value, GST Value, Labour Cess Value एवं मालिकाना फीस (Seigniorage Fee) Value का अलग-अलग उल्लेख किया जाय।

तत्संबंधी उदाहरण तालिका (Model Calculation Sheet) निम्न प्रकार है :-

- (a) Estimated Amount (प्राक्कलित राशि) including Carriage, overhead charge (excluding VAT/GST), Contractor Profit, Royalty but excluding GST, Labour Cess & Seigniorage Fee

= "A"

- (b) Work Contract GST in Percentage

= "Y" %

- (c) Contract GST Amount

= "B" =  $\frac{AY}{100}$

- (d) Labour Cess@1%

= "C" =  $A \times 0.01$

- (e) प्राक्कलन में सम्मिलित रॉयल्टी सहित लघु खनिज का Basic मूल्य (ढुलाई रहित)

= "D"

- (f) मालिकाना फीस (Seigniorage Fee)

रॉयल्टी सहित Basic लघु खनिज मूल्य पर 10 प्रतिशत की दर से = "E" =  $D \times 0.10$

- (g) Bill of Quantity (B.O.Q.)

Work Value = A

GST Value = B

Labour Cess = C

Seigniorage Fee = E

- (च) वैध खदान से खनिज क्रय के समर्थन में संवेदक अपने विपत्रों के साथ खनन विभाग द्वारा निर्गत ई0 चालान की प्रति संलग्न करेंगे, जिसकी जाँच संबंधित कार्य विभागों द्वारा ही की जायेगी। विपत्रों के साथ खनिज क्रय के साक्ष्य स्वरूप ई0 चालान संलग्न नहीं किये जाने की स्थिति में संवेदकों के विपत्र से मालिकाना फीस के अतिरिक्त निर्धारित दर पर रॉयल्टी की वसूली भी कार्य विभागों द्वारा की जायेगी। साथ ही नियमाधीन अन्य कार्रवाई हेतु ऐसे संवेदकों की पूर्ण सूची कार्य विभागों द्वारा खान एवं भूतत्व विभाग को उपलब्ध कराया जायेगा।

- (छ) साधारण मिट्टी निजी जमीन अथवा सरकारी भूमि से प्राप्त करने की स्थिति में बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 के सारे प्रावधान लागू होंगे।





- (ज) निजी/सरकारी भूमि से नियमानुसार साधारण मिट्टी प्राप्त करने की स्थिति में व्यवहृत मिट्टी के संबंध में संवेदक द्वारा समर्पित विपत्र के साथ खान एवं भूतत्व विभाग द्वारा निर्गत परमिट साक्ष्य स्वरूप संलग्न रहने की स्थिति में सत्यापनोपरांत सिर्फ स्वामिस्व की 10 प्रतिशत मालिकाना फीस के रूप में वसूली की जायेगी। जिन विपत्रों के साथ खान एवं भूतत्व विभाग द्वारा निर्गत परमिट संवेदक साक्ष्य स्वरूप विपत्रों के साथ संलग्न नहीं किये होंगे या सत्यापनोपरांत गलत पाये जायेगें तो वैसी स्थिति में प्रतिघनमीटर वर्तमान स्वामिस्व दर 33/रू0 के अलावे 10 प्रतिशत मालिकाना फीस 3.30/- रू0 की कटौती संवेदक के विपत्र से की जायेगी एवं नियमाधीन अन्य कार्रवाई हेतु ऐसे संवेदकों की पूर्ण सूची कार्य विभागों द्वारा खान एवं भूतत्व विभाग को उपलब्ध कराया जायेगा।
- (झ) बिहार खनिज नियमावली, 2019 के नियम 37 (2) में सिंचाई विभाग द्वारा नहर तथा जल निकास प्रणाली के संधारण की प्रक्रिया में निष्कासित खनिजों के लिए खनिज निपटाव परमिट, लघु खनिजों के विनिर्दिष्ट दरों पर रॉयल्टी के पूर्व भुगतान पर दिये जाने का प्रावधान है। साथ ही उक्त नियमावली के नियम 37 (3) में विनिर्दिष्ट आपात स्थितियों के लिए समाहर्ता द्वारा लघु खनिजों के विनिर्दिष्ट दरों पर रॉयल्टी के पूर्व भुगतान पर परमिट दिये जाने का प्रावधान है। ऐसी स्थिति में संवेदक द्वारा समर्पित विपत्र के साथ खान एवं भूतत्व विभाग द्वारा निर्गत परमिट साक्ष्य स्वरूप संलग्न रहने की स्थिति में सत्यापनोपरांत सिर्फ स्वामिस्व की 10 प्रतिशत मालिकाना फीस के रूप में वसूली की जायेगी। जिन विपत्रों के साथ खान एवं भूतत्व विभाग द्वारा निर्गत परमिट संवेदक द्वारा साक्ष्य स्वरूप विपत्रों के साथ संलग्न नहीं किये होंगे या सत्यापनोपरांत गलत पाये जायेगे तो वैसी स्थिति में स्वामित्व एवं मालिकाना फीस की वसूली की जायेगी।
- (ix) पुल निर्माण कार्य हेतु विभिन्न व्यासों के कूपों के 40 मीटर से अधिक कूप गलाई का दर :- समिति द्वारा सर्वसम्मति से सम्यक् विचारोपरांत Well Foundation के कूप-गलाई के संदर्भ में 30 मी0 से 40 मीटर के गहराई के प्रावधान को 40 मीटर से अधिक गहराई के दर के रूप में अनुमोदित करने का निर्णय लिया गया है।
- (x) (a) स्टील के दर में TMT Bar के लिये Fe 500D HYSD के दर को दर विश्लेषण के लिए व्यवहार में लाया गया है।
- (b) बिटुमेन के लिए Packed 60/70(VG30) ग्रेड एवं Packed 80/100(VG 10) ग्रेड Ex-Barauni का दर व्यवहार में लाया गया है। Bitumen Emulsion RS1 & SS1 Packed Ex-Patna, Modified Graded Bitumen CRMB-55 Packed Ex-Barauni एवं Bitumen (Cutback) Packed Ex-Barauni के दर को दर विश्लेषण में लिया गया है।
- (c) M-327 में Ex- Fatuha VG-40 के दर को विश्लेषण में लिया गया है।
- (d) Brick 100 "A" का दर Patna Urban के लिये लागू दर को व्यवहार में लाया गया है।
- (xi) (a) Coarse Sand का Schedule-M/MORTH-1 के M-004 एवं M-005 के अनुसार अनुमोदित दर को व्यवहार में लाया गया है।

संबंधित सक्षम पदाधिकारी निर्माण कार्यक्षेत्र के जोन के अनुसार ही Bitumen/Cement/ Brick/Coarse Sand के निर्धारित दर का प्रयोग करेंगे और इसके अनुसार दर में अन्तर की राशि को प्राक्कलन में जोड़ेगे या घटायेगें।

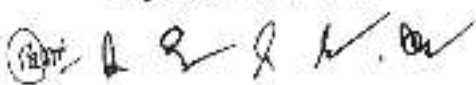
- (b) TMT Bars, Mild Steel bars एवं Structural Steel के भिन्न आकार/व्यास का व्यवहार निर्माण कार्यों में किया जाता है। इसे अनुसूचित दर विश्लेषण में अधिसूचित दर के औसत दर को व्यवहार में लिया गया है। संबंधित सक्षम पदाधिकारी द्वारा वास्तविक निरूपण के आधार पर भिन्न व्यास/आकार प्रकार के स्वीकृत दरों को आवश्यकतानुसार व्यवहार में लाया जा सकता है।
- (c) TATA, SAIL RINL एवं Shyam Steel Industries Ltd, Kolkata से प्राप्त दर पर राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा विचार-विमर्श कर स्टील का दर अनुमोदित करने का निर्णय लिया गया। इन्हीं चार कम्पनियों यथा TATA, SAIL RINL एवं Shyam Steel Industries Ltd, Kolkata के स्टील का प्रयोग निर्माण कार्यों में किया जाना है।
- (xii) Royalty का प्रावधान खान एवं भूतत्व विभाग की अधिसूचना संख्या-3174 पटना दिनांक-17.09.2019 के अनुसार किया गया है। रॉयल्टी की कटौती विपत्रों से Loose Volume of Materials पर की जानी है न कि Finished Volume of Materials (Compacted Volume) पर, जिसका अनुपालन सुनिश्चित करने की जिम्मेवारी क्षेत्रीय पदाधिकारियों की होगी।
- (xiii) इसके पूर्व में भी समय-समय पर अनुसूचित दर में "संशोधित दर" प्रकाशित किया गया है जिसका समायोजन इस अनुसूचित दर पुस्तिका में कर लिया गया है।

## 2. बिटुमेन से संबंधित दर :-

अनुसूचित दर के पुनरीक्षण के क्रम में राष्ट्रीयकृत कम्पनी Indian Oil Corporation, Bharat Petroleum एवं Hindustan Petroleum Corporation से दर प्राप्त हुआ है। Emulsion MS/RS-1/SS-1 Packed का दर Hindustan Petroleum Corporation Ltd. से प्राप्त हुआ है। समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M4" के अनुसार बिटुमेन के विभिन्न Grades/प्रकार के दर को अनुमोदित किया गया है।

## 3. सीमेन्ट का दर :-

- (i) **Ordinary Portland Cement (43 Grade)** का दर विभिन्न कम्पनियों से प्राप्त हुआ है। इस दर में शामिल GST को घटाकर प्रति बोरा दर अनुमोदित करने का निर्णय लिया गया। पटना के न्यूनतम दर के आधार पर, पूर्व से निर्धारित दर के अनुपात में अन्य जोनों के लिए दर प्राप्त किया गया। समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M1" के दर को अनुमोदित करने का निर्णय लिया गया।
- (ii) **Ordinary Portland Cement (33 Grade)** का दर किसी भी सीमेन्ट निर्माता कम्पनी से प्राप्त नहीं हुआ है। इसलिए समिति द्वारा OPC-33 grade का दर अनुमोदित नहीं किया गया है।
- (iii) **Portland Pozzolona Cement (PPC)** का दर विभिन्न कम्पनियों से प्राप्त हुआ है। इस दर में शामिल GST को घटाकर प्रति बोरा दर अनुमोदित करने का निर्णय लिया गया। पटना के न्यूनतम दर के आधार पर, पूर्व से निर्धारित दर के अनुपात में अन्य जोनों के लिए दर प्राप्त किया गया।
- समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M3A" के दर को अनुमोदित किया गया।





- (iv) **Portland Slag Cement (PSC)** का दर विभिन्न सीमेंट निर्माता कम्पनी से प्राप्त हुआ है। इस दर में शामिल GST को घटाकर प्रति बोरा दर अनुमोदित करने का निर्णय लिया गया। P.S.C. के लिए प्राप्त पटना के न्यूनतम दर के आधार पर, पूर्व से निर्धारित दर के अनुपात में अन्य जोन के दरों को भी निर्धारित करने का निर्णय लिया गया। समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M3B" के अनुसार P.S.C. के दर को अनुमोदित किया गया।
- (v) **Portland Composite Cement PCC (IS 16415:2015)** का दर विभिन्न कम्पनियों से प्राप्त हुआ है। इस दर में शामिल GST को घटाकर प्रति बोरा दर अनुमोदित करने का निर्णय लिया गया। पटना के न्यूनतम दर के आधार पर, पूर्व से निर्धारित दर के अनुपात में अन्य जोनों के लिए दर प्राप्त किया गया। समिति के द्वारा सर्वसम्मति से पूर्ण विचारोपरान्त संलग्न अनुसूची "M3C" के अनुसार PCC के दर को अनुमोदित किया गया।
4. श्रमिक कल्याण कोष हेतु 1% (एक प्रतिशत) सेस की कटौती से संबंधित श्रम विभाग, बिहार सरकार के पत्रांक 4984 दिनांक-01.10.2008 एवं संयोजक-सह-अभियंता प्रमुख के पत्रांक-746 (अनु0) दिनांक-25.02.2010 द्वारा दिये गये निर्देश का अनुपालन सुनिश्चित करने की जिम्मेवारी क्षेत्रीय पदाधिकारियों की होगी।

इस अनुसूचित दर पुस्त के दर विश्लेषण में 1%(एक प्रतिशत) सेस की राशि सम्मिलित नहीं किया गया है।

5. (a) रेलवे द्वारा निर्माण सामग्री की ढुलाई का दर निर्धारण हेतु रेल मंत्रालय (रेलवे बोर्ड) भारत सरकार, महाप्रबंधक (परिचालन)/वाणिज्य के पत्रांक-2014/टी-टी III/s/27/1, नई दिल्ली दिनांक-02.09.2014 के द्वारा माल ढुलाई हेतु Route Chart उपलब्ध कराया है जिसे क्षेत्रीय पदाधिकारी सभी Corrigendum/Amendment के साथ जाँचोपरांत व्यवहार में लायेंगे। Route Chart की छाया प्रति इस अनुसूचित दर पुस्त में संलग्न कर दी गई है। Freight Rate से संबंधित रेल मंत्रालय भारत सरकार के पत्रांक-TCR/1078/2015/07, नई दिल्ली, दिनांक-31-10-2018 (Rate Circular No.-19 of 2018) एवं इस पत्र के साथ संलग्न Annexure-1, II & III के रूप में Freight Rate Table-2018 की प्रति इस अनुसूचित दर पुस्त में Amendments के साथ संलग्न कर दी गई है।
- (b) MORT&H Standard Data Book में दिये गये "Carriage of Materials" के Calculation के अलावे रेलवे द्वारा निर्माण सामग्री की ढुलाई पर समिति के सदस्यों द्वारा विचार विमर्श किया गया। सर्वसम्मति से पूर्णविचारोपरान्त, सदस्यों द्वारा यह निर्णय लिया गया कि वैसे स्थल जहाँ पर रेलवे के द्वारा निर्माण सामग्रियों की ढुलाई संभव हो वहाँ पर Road एवं Railway दोनों के द्वारा Carriage of Materials का दर प्राप्त किया जाय तथा दोनों में से न्यूनतम दर को ही प्रयोग में लाया जाय।

The maximum lead to be considered as per T.E.C. Norms is as follows-

- (i) For local Sand 3 Km with 1 km kucheha road.

- (ii) For brick 8 km with 1 km kuchcha road.
- (iii) For Coarse Sand, Stone Metal, Stone chips, Moorum, Stone Boulder, Bitumen as per actual lead with Provision of kuchcha lead as per requirement of site condition.

**6. Steel से संबंधित निर्माण सामग्रियों का दर :-**

- a. **G.C. Sheet** का दर :- G.C. Sheet का दर TATA से प्राप्त हुआ है। तदनुसार समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, अनुसूची "M5" के अनुसार अनुमोदित करने का निर्णय लिया गया।
- b. **Wire rod in coil :-** Wire rod in coil के भिन्न भिन्न व्यास का दर RINL से प्राप्त हुआ है। इसपर समिति के सदस्यों द्वारा विचार-विमर्श किया गया तथा RINL से प्राप्त दर बिना GST के समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, अनुसूची "M6" के अनुसार अनुमोदित करने का निर्णय लिया गया।
- c. **Steel Channel का दर :-** Steel Channel का दर RINL से प्राप्त हुआ है, तदनुसार RINL से प्राप्त न्यूनतम दर बिना GST के समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, अनुसूची "M8" के अनुसार अनुमोदित करने का निर्णय लिया गया।
- d. **Steel Angles का दर :-** भिन्न-भिन्न आकार वाले Steel Angles का दर RINL से प्राप्त हुआ है। तदनुसार RINL से प्राप्त न्यूनतम दर बिना GST के समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, Schedule "M9" के अनुसार अनुमोदित करने का निर्णय लिया गया।
- e. **TMT Bar (Fe 500D) का दर :-** TMT Bar का दर TATA, RINL SAIL एवं Shyam Steel Industries ltd. से प्राप्त हुआ है। TATA, RINL, SAIL एवं Shyam Steel Industries ltd. से प्राप्त न्यूनतम दर बिना GST के समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, Schedule "M10A" के अनुसार अनुमोदित करने का निर्णय लिया गया।
- f. **Schedule M7:-** यह Steel Joist से संबंधित है। वर्तमान में इसका दर SAIL, TATA, RINL द्वारा नहीं दिया जा रहा है अतः इसका वर्तमान में इस्तेमाल नहीं होने तथा दर के अनुपलब्धता के कारण इस पुस्तिका से विलोपित किया जा रहा है।

**7. Plant & Machinery के दर पुनरीक्षण के संबंध में :-** Plant & Machinery के अन्तर्गत 141 मद है। MORT&H Standard Data Book 2019 (2nd revised) के अनुसार निर्माण कार्यों में प्रयुक्त होनेवाली मशीनों का दर Input के रूप में Oil & Lubricants के दर का प्रयोग कर MORT&H Online SoR Software (based on MORT&H Standard Data Book 2019) से downloaded दर के आधार पर अद्यतन किया गया है। इस आधार पर समिति के सभी सदस्यों द्वारा Plant & Machinery के दर को पूर्ण विचारोपरान्त सर्वसम्मति से अनुसूची P&M/MORTH-1A के अनुसार अनुमोदित करने का निर्णय लिया गया।

**8. Carriage का दर पुनरीक्षण के संबंध में :-** Plant & Machinery के अद्यतन अनुमोदित दर (P&M/MORTH-1A) एवं श्रम दर के आधार पर संलग्न अनुसूची "Carriage rate of Materials by Tipper" एवं "Carriage of Materials by Tractor" के अनुसार Carriage के

दर को समिति के सदस्यों द्वारा पूर्ण विचारोपरान्त सर्वसम्मति से अनुमोदित करने का निर्णय लिया गया।

9. **ईट (Brick) एवं ईट से संबंधित निर्माण सामग्रियों का दर पुनरीक्षण के संबंध में :-** विभिन्न ग्रेड के ईट एवं ईट से संबंधित निर्माण सामग्रियों के दर की मांग अभियंता प्रमुख, भवन निर्माण विभाग एवं सभी अधीक्षण अभियंता, पथ निर्माण विभाग से की गयी, लेकिन दर की प्राप्ति नहीं होने के कारण Office of Economic Advisor, Ministry of Commerce & Industry, भारत सरकार द्वारा निर्गत Plain Bricks के Wholesale Price Index के Moving Average के आधार पर ईट एवं ईट से निर्मित सामग्रियों के दर को समिति के सदस्यों द्वारा पूर्ण विचारोपरान्त सर्वसम्मति से Schedule M 11 के अनुसार अनुमोदित करने का निर्णय लिया गया।

10. **Coarse-Sand, स्टोन एवं स्टोन चीप्स से संबंधित निर्माण सामग्रियों का दर-पुनरीक्षण :-** खान एवं भूतत्व विभाग, बिहार, पटना के पत्रांक-02/एम० एम० (बा०)-01/21-3376, पटना दिनांक 15.11.2021 के आलोक में समिति द्वारा स्टोन-बोल्डर एवं Coarse-Sand का दर क्षेत्रीय पदाधिकारियों के माध्यम से प्राप्त न्यूनतम बाजार मूल्य के आधार पर Schedule-M/MoRTH-1 के Item संख्या M-001 से M-005 तक अद्यतन करने का निर्णय लिया गया।

Schedule-M/MoRTH-1 के Item संख्या M-006 से M-009 (Fine Sand), Moorum, Gravel एवं Hard-moorum) तक का दर क्षेत्रीय पदाधिकारियों से प्राप्त नहीं होने के कारण Office of Economic Advisor, Ministry of Commerce & Industry, भारत सरकार द्वारा निर्गत Wholesale Price Index (Last updated on 14.01.2022) में Stone, Chips मद में रखते हुए Moving Average के आधार पर अद्यतन करने का निर्णय लिया गया।

Schedule-M/MoRTH-1 के मदों यथा Stone-Aggregate 40mm nominal (M-054), 20mm nominal (M-052), 10mm nominal (M-050), Stone-dust (M-020) एवं GSB Crusher run (M-055) का दर क्षेत्रीय पदाधिकारियों के माध्यम से प्राप्त न्यूनतम बाजार मूल्य एवं SoR के मद संख्या-1.06 (Crushing of Stone-Aggregates) के दर-विश्लेषण से प्राप्त दर में से न्यूनतम दर के आधार पर अद्यतन करने का निर्णय लिया गया।

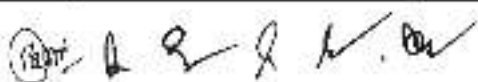
Schedule-M/MoRTh-1 के शेष मदों का दर Item संख्या-M-054, M-052, M-050 एवं M-020 मद के अनुमोदित दरों के आधार पर अथवा इन दरों के Average के आधार पर अद्यतन करने का निर्णय लिया गया।

इस प्रकार समिति द्वारा सम्यक विचारोपरान्त सर्वसम्मति से Coarse Sand, Stone-Boulder एवं Stone-Aggregates से संबंधित निर्माण सामग्रियों का दर अनुसूची M/MoRTH-1 के अनुसार M-001 से M-055 तक अनुमोदित करने का निर्णय लिया गया।

11. **MORT&H Standard Data Book के कार्य मदों में व्यवहृत विभिन्न निर्माण सामग्रियों (Schedule-M/MORTH-1A) के दर निर्धारण के संबंध में :-** Schedule-M/MORTH-1A में निहित विभिन्न निर्माण सामग्रियों (M-056 से M-327 एवं MR-01 से MR 54) का दर क्षेत्रीय पदाधिकारियों द्वारा उपलब्ध नहीं कराने के कारण उनमें से कई मदों को समुचित श्रेणियों में रखते हुए Office of Economic Advisor, Ministry of Commerce and Industry, भारत सरकार द्वारा निर्गत Wholesale Price Index (last updated on

14.01.2022) के moving average के आधार पर दरों को अद्यतन करने का निर्णय लिया गया है, जो निम्नवत है :-

Sl. No.	Item Code	Name of Commodity	% Increase/ Decrease in W.P.I
1	M-193	Alloy steel wire rods	23.785
2	M-61, 158	Aluminium Metal	13.961
3	M-59	Aluminium alloys	19.234
4	M-64, 65, 89, 94, 127, 126, 174, 180	Alloy steel castings	4.776
5	M-56	Asbestos Corrugated sheet	4.148
6	M-62, 71, 91, 92, 93, 96, 99, 111, 112, 119, 140, 143, 133, 139, 153, 156, 160, 161, 162, 163, 166, 164, 167, 169, 229, 189	All Commodities	10.65
7	M-86, 109, 128, 129, 159	Bolt Screws,, nuts & Nails of Iron & steel	11.952
8	M-324, 326	Cement blocks (Concrete)	1.981
9	M-87, 154	Copper metal/copper rings	19.677
10	M-186	Ceramic tiles (vitrified tiles)	5.505
11	M-80	Cast Iron, Castings	6.26
12	M-120	Cordage/ropes/twines of Jute and coir	11.74
13	M-95, 97, 98	Epoxy Liquid	6.95
14	M-85, 132	Fibres	21.747
15	M-155, 101, 102, 239	Galvanized iron pipes	18.161
16	M-215	Gelatine	11.001
17	M-135	Insecticide and pesticide	4.011







18	M-190	Lime & Calcium Carbonate	6.479
19	M-66, 67, 68, 69, 70	Manufacture of Bearing gears, gearing & Driving equipments	4.394
20	M-134, 152	Manufacture of articles of concrete, Cement and Plaster	3.021
21	M-217	Manufacture of electrical equipment	7.32
22	M-57, 58, 130, 131, 145, 192	Manufacture of Paints, Varnishes and Similar Coating, Printing ink and mastics	10.14
23	M-104, 106, 107, 108, 183, 286 to 291	Manufacture of made up textile articles, except apparel	2.917
24	M-90	Manufacture of other non-metallic mineral products	(-) 27.248
25	M-063, 72, 122, 123, 124, 194, 228	MS wire rods	27.287
26	M-182	Plasticizer	34.747
27	M-079	Plain Brick	(-) 0.082
28	M-113, 114, 137, 138	Plastic tube (Flexible/non -Flexible)	18.194
29	M-117, 136, 165, 292	Plastic Components	8.275
30	M-184, 141	Stone chips	2.168
31	M-171, 172, 175, 176, 177	Steel Pipes, tubes & poles	10.674
32	M-173	Steel Drums and Barrels	37.804
33	M-178, 179	Steel Cables	1.818
34	M-118, 157	Stainless Steel bars & rods, including flats.	16.354
35	M-088	Steel structure	6.863
36	M-187, 195, 196, 197, 198	Timber/wooden Plank, Sawn/resawn	6.928

Schedule-M/MORTH-1A कुछ मदों का दर Building Construction Department के SoR के आधार पर एवं भवन निर्माण विभाग से प्राप्त दर के आधार पर अद्यतन किया गया है। इस प्रकार समिति के सदस्यों द्वारा पूर्ण विचारोपरांत सर्वसम्मति से निर्माण सामग्रियों का दर अनुसूची M/MORTH-1A के अनुसार अनुमोदित करने का निर्णय लिया गया।

**12. निर्माण कार्यों (सड़के, बाँध तथा सिंचाई कार्य) में नियोजित विभिन्न श्रेणी के मजदूरों का संशोधित न्यूनतम दैनिक मजदूरी के दर पुनरीक्षण हेतु लिये गये निर्णय :-**

(a) श्रम संसाधन विभाग, बिहार, पटना की अधिसूचना संख्या-2847, दिनांक-30.09.2021 के आलोक में पथ निर्माण कार्यों में प्रयुक्त 72 प्रकार के विभिन्न कर्मियों तथा बांध निर्माण एवं सिंचाई कार्यों के लिये प्रयुक्त 71 प्रकार के कर्मियों के न्यूनतम दैनिक श्रम दर का अनुमोदन दिनांक-22.10.2021 की बैठक में सदस्यों द्वारा सर्वसम्मति से पूर्णविचारोपरांत अनुसूची-I एवं II के अनुसार करने का निर्णय लिया गया तथा समिति के सदस्यों द्वारा निर्णय लिया गया कि यह दर पथ निर्माण विभाग, भवन निर्माण विभाग, ग्रामीण कार्य विभाग, लोक स्वास्थ्य अभियंत्रण विभाग एवं अन्य कार्य विभाग के अंतर्गत कराये जानेवाले निर्माण कार्यों के उपयोग में भी लाया जा सकेगा।

(b) **MORT&H Standard Data Book 2019 (2nd Revision) के दर-विश्लेषण में व्यवहृत विभिन्न श्रेणी के मजदूरों के दर-पुनरीक्षण हेतु लिये गये निर्णय :-**

समिति के सदस्यों द्वारा सर्वसम्मति से पूर्ण विचारोपरांत उक्त वर्णित क्रमांक-12 (a) पर अनुमोदित श्रमदर अनुसूची-I के आधार पर MORT&H Standard Data Book 2019 के दर-विश्लेषण में व्यवहृत विभिन्न श्रेणी के मजदूरों के दरों को INPUT के रूप में प्रयोग करने हेतु अनुसूची-III के अनुसार अनुमोदित करने का निर्णय लिया गया है। समिति के सदस्यों द्वारा सर्वसम्मति से यह निर्णय लिया गया है कि यह दर पथ निर्माण विभाग, भवन निर्माण विभाग, ग्रामीण कार्य विभाग, लोक स्वास्थ्य अभियंत्रण विभाग एवं अन्य कार्य विभाग के अन्तर्गत कराये जानेवाले निर्माण कार्यों के उपयोग में लाया जा सकता है।

**13. MORT&H Standard Data Book 2019 के Basic Input Parameters के अन्तर्गत समिति के सदस्यों द्वारा सर्वसम्मति से पूर्ण विचारोपरांत Lead इस प्रकार लेने का निर्णय लिया गया है :-**

(1) Lead from Mixing Plant to working site=1Km

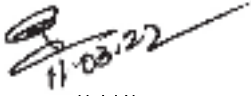
(2) Lead for Earth Work borrow area to site=1 Km

14. MORT&H Specification for Roads and Bridges work के fifth revision पर आधारित MORT&H के Standard Data Book 2019 (for analysis of Rates) का 2nd Revision प्राप्त हो गया है। इस अनुसूचित दर पुस्त का दर विश्लेषण Standard Data Book 2019 (2<sup>nd</sup> revision) के आधार पर करने का निर्णय पूर्णविचारोपरान्त सर्वसम्मति से समिति के सदस्यों द्वारा लिया गया।

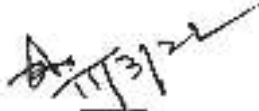
15. **Admixture :-** Batching, Plant, Transit Mixture एवं कंक्रीट पम्प के माध्यम से सीमेंट कंक्रीट की ढलाई करने पर आवश्यकतानुसार सक्षम प्राधिकार द्वारा अनुमोदित Design Mix

की विशिष्टियों के अनुरूप Admixture (plasticizer, super plasticizer etc) का उपयोग किया जा सकता है तथा इसे तत्संबंधित मद-विशेष के दर विश्लेषण में पूर्व से Admixture शामिल नहीं रहने की स्थिति में सम्मिलित किया जा सकता है।

16. नई अनुसूचित दर पुस्त का प्रकाशन के संबंध में विचार विमर्श :- पिछले वर्ष की भाँति इस वर्ष भी नये अनुसूचित दर पुस्त का प्रकाशन किया जाना है, जिस पर सदस्यों द्वारा विचार विमर्श किया गया तथा इसे दिनांक-01.04.2022 से लागू किये जाने का सर्वसम्मति से निर्णय लिया गया।

  
11-03-22  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
11/3/22  
सदस्य

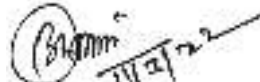
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
11/3/22  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
11-03-22  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता (असैनिक) बिहार स्टेट पावर होल्डिंग कंपनी लि0, बिहार, पटना।

  
11/3/22  
सदस्य

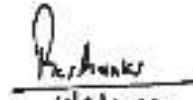
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
11/3/22  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, तकनीकी परीक्षक कोषांग, निगरानी विभाग, बिहार, पटना।

  
11/3/22  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

  
11/3/2022  
सदस्य

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख मुख्यालय जल संसाधन विभाग, बिहार, पटना।

  
11/3/22  
संयोजक

राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

राज्यस्तरीय अनुसूचित दर निर्धारण समिति की दिनांक- 22. 10. 2021. की बैठक में निर्माण कार्यों (सड़कें, बाँध तथा सिंचाई कार्य) में नियोजित विभिन्न श्रेणी के मजदूरों का संशोधित न्यूनतम दैनिक मजदूरी का अनुमोदन :-

जुलाई, 2020 से दिसम्बर, 2020 तक का औसत मूल्य सूचकांक श्रम संसाधन विभाग, बिहार सरकार के जांचक-5/एम.डब्ल्यू. 40/07-असं-1231 पटना/दिनांक-31.03.2021 के अनुसार 7782.65 है। जनवरी, 2021 से जून, 2021 तक का औसत मूल्य सूचकांक श्रम संसाधन विभाग, बिहार सरकार के अधिसूचना सं.-5/एम डब्ल्यू-40-16/2021-असं-2847 पटना/दिनांक-30.09.2021 के अनुसार 7879.68 है।

सूचकांक में वृद्धि-7879.68-7782.65=97.21

सूचकांक में प्रतिशत वृद्धि-97.21 / 7782.65x100=1.249%


औसत मूल्य सूचकांक ( जुलाई, 2020 से दिसम्बर, 2020 तक )पर आधारित न्यूनतम श्रम दर की सूची अनुसूची 'I' एवं 'II' के साथ 'B' पर अंकित है। इसी साथ के अकेला दर में 1.249% वृद्धि कर न्यूनतम श्रम दर की गणना कर तम्ब 'A' पर अंकित कर दी गयी है।

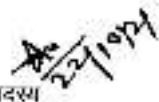
श्रम संसाधन विभाग,बिहार,पटना का अधिसूचना सं.-5/एम.डब्ल्यू.-40-16/2021-असं-2847 पटना/दिनांक-30.09.2021 के आलोक में अनुसूचित दर पुनरीक्षण हेतु उपरोक्त वृद्धि को सम्मिलित करते हुए निर्माण कार्यों, सड़कें, बाँध निर्माण तथा सिंचाई कार्यों में नियोजित दैनिक मजदूरों के न्यूनतम दैनिक मजदूरी में संशोधन के लिए संलग्न अनुसूची-I तथा II के तम्ब 'A' के अनुसार राज्यस्तरीय अनुसूचित दर निर्धारण समिति द्वारा सहमति प्रदान की जाती है। यह दर पथ निर्माण विभाग, मयन निर्माण विभाग, ग्रामीण कार्य विभाग, लोक स्वास्थ्य अभियंत्रण विभाग एवं अन्य कार्य विभाग के अंतर्गत कराये जाने वाले समस्त कार्य के उपयोग में भी लाया जा सकेगा। Schedule-I के लिए Serial No 1,2,3,4,5,6,70,71,एवं 72 पर अंकित श्रमदर, श्रम संसाधन विभाग की अधिसूचना सं.-5/एम डब्ल्यू-40-16/2021-असं-2847 पटना/दिनांक-30.09.2021 में अंकित श्रम दर के अनुसार लिया गया है एवं शेष श्रम दर, श्रम संसाधन विभाग के उक्त अधिसूचना में अंकित औसत मूल्य सूचकांक में परिवर्तन के आधार पर संगणित किया गया है। इसी प्रकार Schedule-II के लिए क्रमांक1,69,70एवं71पर अंकित श्रमदर,श्रम संसाधन विभाग की अधिसूचना सं.-5/एमडब्ल्यू-40-16/2021 असं-2847 पटना/दिनांक-30.09.2021 में अंकित श्रम दर के अनुसार लिया गया है एवं शेष श्रम दर श्रम संसाधन विभाग के उक्त अधिसूचना में अंकित औसत मूल्य सूचकांक में परिवर्तन के आधार पर संगणित किया गया है। इसके अतिरिक्त MoRT&H Standard Data Book 2019(2nd Revision ) के दर विश्लेषण में प्रयुक्त होनेवाले श्रमदर Schedule III के अनुसार जो Schedule -I पर आधारित है, समिति के सदस्यों के द्वारा सहसम्मति से अनुमोदित करने का निर्णय लिया गया।

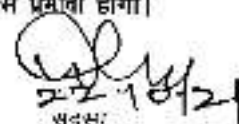
विशेष जानकारी हेतु श्रम संसाधन विभाग, बिहार सरकार का अधिसूचना सं.-5/एम डब्ल्यू-40-16/2021-असं-2847 पटना/दिनांक- 30.09.2021 द्रष्टव्य।


उक्त दर (Schedule I, II,III) श्रम संसाधन विभाग, बिहार पटना की अधिसूचना संख्या-5/एम डब्ल्यू-40-16/2021 असं-2847 पटना/दिनांक-30.09.2021 में अंकित तिथि 01.10.2021. से प्रभावी होगा।


अनु.- I, II एवं III

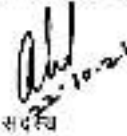
  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, श्रम निर्माण विभाग, बिहार, पटना।

  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

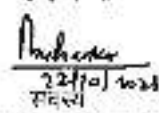
  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु श्रम संसाधन विभाग, बिहार, पटना।

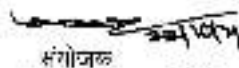
  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता (ऑनोनिव) बिहार स्टेट पावर डॉ. लिमिटेड कंपनी लिड,बिहार पटना।

  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत) पटना निर्माण विभाग, बिहार, पटना।

  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, तकनीकी परीक्षण कोषांग, निगरानी विभाग, बिहार पटना।

  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

  
सदस्य  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय) मल संसाधन विभाग, बिहार, पटना।

  
संयोजक  
राज्य स्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख(मुख्यालय) पथ निर्माण विभाग, बिहार, पटना।

**SCHEDULE - I**


Date:- 22.10.2021


**Approved Schedule of Rates for labour engaged in construction & maintenance of Roads**

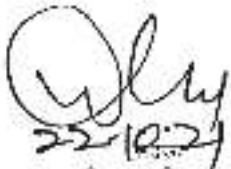
Sl. No.	Category of Employees	Minimum Rates of wages per day as per				
		Lab. Deptt. Noti. No. 4077/ 27.09.19	Lab. Deptt. Memo No. 1050/ 24.03.2020.	Lab. Deptt. Memo No.2620Dated21.09.2020	Lab. Deptt. Notification No.5/MW. 40-16/2021-1231/L&R Dated 31.03.2021.	Lab. Deptt. Notification No.5/MW. 40-16/2021-L&R 2847 Dated 30.09.2021.
1	2	3	(1.04236xcl.3) 4	(1.01595xcl.4) 5	(1.03582xcl.5) 6	(1.01249xcl.6) 7
1	Unskilled labour	277.00	287.00	292.00	304.00	306.00
2	Sweeper	277.00	287.00	292.00	304.00	306.00
3	Mistry	277.00	287.00	292.00	304.00	306.00
4	Cleaner	277.00	287.00	292.00	304.00	306.00
5	Helper	277.00	287.00	292.00	304.00	306.00
6	Khalasi/Chainman	277.00	287.00	292.00	304.00	306.00
7	Marker	349.00	364.00	370.00	383.00	388.00
8	Fitter grade-I	379.00	395.00	401.00	415.00	420.00
	Fitter grade-II	331.00	345.00	351.00	364.00	369.00
9	Turner	331.00	345.00	351.00	364.00	369.00
10	Mechanic grade-I	426.00	444.00	451.00	467.00	473.00
	Mechanic grade-II	396.00	413.00	420.00	435.00	440.00
11	Electrician grade-I	352.00	367.00	373.00	386.00	391.00
	Electrician grade-II	331.00	345.00	351.00	364.00	369.00
12	Lineman/Wireman	319.00	333.00	338.00	350.00	354.00
13	Chargeman	396.00	413.00	420.00	435.00	440.00
14	Foreman	468.00	488.00	496.00	514.00	520.00
15	Welder grade-I	416.00	434.00	441.00	457.00	463.00
	Welder grade-II	352.00	367.00	373.00	386.00	391.00
16	Glazier	310.00	323.00	328.00	340.00	344.00
17	Carpenter	331.00	345.00	351.00	364.00	369.00
18	Head Carpenter	372.00	388.00	394.00	408.00	413.00
19	Checker	335.00	349.00	355.00	368.00	373.00
20	Hammerman	290.00	302.00	307.00	318.00	322.00
21	Tin smith	379.00	395.00	401.00	415.00	420.00
22	Tin plate maker	396.00	413.00	420.00	435.00	440.00
23	Black Smith	331.00	345.00	351.00	364.00	369.00
24	Head black smith	372.00	388.00	394.00	408.00	413.00
25	Tile layer	293.00	305.00	310.00	321.00	325.00
26	Thatcher	293.00	305.00	310.00	321.00	325.00
27	Plumber	352.00	367.00	373.00	386.00	391.00
28	Grader	335.00	349.00	355.00	368.00	373.00
29	Road binder	310.00	323.00	328.00	340.00	344.00
30	Mason	331.00	345.00	351.00	364.00	369.00
31	Head Mason	372.00	388.00	394.00	408.00	413.00
32	Stone layer	331.00	345.00	351.00	364.00	369.00
33	Tarman	290.00	302.00	307.00	318.00	322.00
34	Fireman	293.00	305.00	310.00	321.00	325.00
35	Grinder	331.00	345.00	351.00	364.00	369.00
36	Gas cutter	349.00	364.00	370.00	383.00	388.00
37	Rigger	335.00	349.00	355.00	368.00	373.00
38	Sarang	396.00	413.00	420.00	435.00	440.00
39	Chipper-cum-rivetter	349.00	364.00	370.00	383.00	388.00
40	Tractor operator	396.00	413.00	420.00	435.00	440.00
41	Dozer operator grade-I	468.00	488.00	496.00	514.00	520.00
	Dozer operator grade-II	416.00	434.00	441.00	457.00	463.00
42	Dumper operator	397.00	414.00	421.00	436.00	441.00
43	Vibrator Operator	308.00	321.00	326.00	338.00	342.00
44	Pump driver grade-I	352.00	367.00	373.00	386.00	391.00
	Pump driver grade-II	331.00	345.00	351.00	364.00	369.00
45	Dragline operator grade-I	468.00	488.00	496.00	514.00	520.00
	Dragline operator grade-II	416.00	434.00	441.00	457.00	463.00
46	Concrete mixer operator grade-I	352.00	367.00	373.00	386.00	391.00
	Concrete mixer operator grade-II	331.00	345.00	351.00	364.00	369.00
47	Compressor operator grade-I	352.00	367.00	373.00	386.00	391.00
	Compressor operator grade-II	331.00	345.00	351.00	364.00	369.00

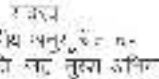
Sl. No.	Category of Employees	Minimum Rates of wages per day as per				
		Lab. Deptt. Noti. No. 4077/ 27.09.19	Lab. Deptt. Memo No. 1050/ 24.03.2020.	Lab. Deptt. Memo No.2620Dated21. 09.2020	Lab. Deptt. Notification No.5/MW. 40-16/2021- 1231/L&R Dated 31.03.2021.	Lab. Deptt. Notification No.5/MW. 40-16/2021- L&R 2847 Dated 30.09.2021.
1	2	3	(1.04236xcl.3) 4	(1.01595xcl.4) 5	(1.03582xcl.5) 6	(1.01249xcl.6) 7
48	Earth excavator					0.00
	(a) For every 110 cu. ft for soft earth	273.00	285.00	290.00	300.00	304.00
	(b) For every 100 cu. ft for hard earth	273.00	285.00	290.00	300.00	304.00
	(c) For every 90 cu. ft for highly hard earth	273.00	285.00	290.00	300.00	304.00
49	Truck driver	396.00	413.00	420.00	435.00	440.00
50	Car/Jeep driver	349.00	364.00	370.00	383.00	388.00
51	Crane operator grade-I	468.00	488.00	496.00	514.00	520.00
	Crane operator grade-II	416.00	434.00	441.00	457.00	463.00
52	Winch operator	352.00	367.00	373.00	386.00	391.00
53	Road roller driver	478.00	498.00	506.00	524.00	531.00
54	Blaster	458.00	477.00	485.00	502.00	508.00
55	Painter grade-I	352.00	367.00	373.00	386.00	391.00
56	Polisher	293.00	305.00	310.00	321.00	325.00
57	Peon / Darvan / Choukidar	290.00	302.00	307.00	318.00	322.00
58	Clerk / Typist / Typist clerk	327.00	341.00	346.00	358.00	362.00
59	Time keeper	327.00	341.00	346.00	358.00	362.00
60	Store Assistant / Storeman	354.00	369.00	375.00	388.00	393.00
61	Store head	337.00	351.00	357.00	370.00	375.00
62	Material chaser	337.00	351.00	357.00	370.00	375.00
63	Mate and Road mate	293.00	305.00	310.00	321.00	325.00
64	Munshi	308.00	321.00	326.00	338.00	342.00
65	Work Supervisor	310.00	323.00	328.00	340.00	344.00
66	Amin	327.00	341.00	346.00	358.00	362.00
67	Surveyer	335.00	349.00	355.00	368.00	373.00
68	Supervisory diploma holder	449.00	468.00	475.00	492.00	498.00
69	Supervisory non-diploma holder	331.00	345.00	351.00	364.00	369.00
70	Any other category of semi-skilled workers not mentioned above	289.00	299.00	304.00	316.00	318.00
71	Any other category of skilled workers not mentioned above	352.00	364.00	370.00	385.00	388.00
72	Highly skilled labour	429.00	444.00	451.00	470.00	474.00

Note :- The above rates has been calculated as 1.249 % increase vide Labour Deptt.Notification No.5/M.W. 40-16/2021-L&R 2847, Dtd. 30.09.2021 i.e (1.01249 X column 6).


  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

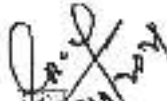
  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

  
 राज्य  
 राज्यस्वीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, बिहार, पटना।

**SCHEDULE - II**

Date:- 22.10.2021

**Approved Schedule of Rates for labour engaged in Dam construction & Irrigation works**


Sl. No.	Category of Employees	Minimum Rates of wages per day as per				
		Lab. Deptt. Noti. No. 4077/ 27.09.19	Lab. Deptt. Memo. No. 1050/ 24.03.2020	Lab. Deptt. Memo. No. 2620/ 21.09.2020	Lab. Deptt. Notification No.5/MW. 40-16/2021-1231/L&R Dated 31.03.2021	Lab. Deptt. Notification No.5/MW. 40-16/2021 L&R 2847 Dated 30.09.2021
1	2	3	(1.04236 xcl.3) 4	(1.01595 xcl.4) 5	(1.03582 xcl. 5) 6	(1.01249 xcl. 6) 7
1	Unskilled labour	277.00	287.00	292.00	304.00	306.00
2	Mate	298.00	311.00	316.00	327.00	331.00
3	Head Mason	372.00	388.00	394.00	408.00	413.00
4	Mason	331.00	345.00	351.00	364.00	369.00
5	Printer Class-I	352.00	367.00	373.00	386.00	391.00
6	Printer Class-II	331.00	345.00	351.00	364.00	369.00
7	Head Carpenter	372.00	388.00	394.00	408.00	413.00
8	Carpenter	331.00	345.00	351.00	364.00	369.00
9	Head black smith	372.00	388.00	394.00	408.00	413.00
10	Black Smith	331.00	345.00	351.00	364.00	369.00
11	Glazier	293.00	305.00	310.00	321.00	325.00
12	Stone Dresser	352.00	367.00	373.00	386.00	391.00
13	Water Carrier	273.00	285.00	290.00	300.00	304.00
14	Fitter Class-I	379.00	395.00	401.00	415.00	420.00
15	Fitter Class-II	331.00	345.00	351.00	364.00	369.00
16	Helper	290.00	302.00	307.00	318.00	322.00
17	Hammer man	290.00	302.00	307.00	318.00	322.00
18	Bellowman	273.00	285.00	290.00	300.00	304.00
19	Road Roller Driver	478.00	498.00	506.00	524.00	531.00
20	Concrete Mixer Operator, Class-I	352.00	367.00	373.00	386.00	391.00
21	Concrete Mixer Operator, Class-II	331.00	345.00	351.00	364.00	369.00
22	Stone Crusher Driver, Class-I	352.00	367.00	373.00	386.00	391.00
23	Stone Crusher Driver, Class-II	331.00	345.00	351.00	364.00	369.00
24	Truck Driver	396.00	413.00	420.00	435.00	440.00
25	Compressor Operator, Class-I	352.00	367.00	373.00	386.00	391.00
26	Compressor Operator, Class-II	331.00	345.00	351.00	364.00	369.00
27	Pump Driver, Class-I	352.00	367.00	373.00	386.00	391.00
28	Pump Driver, Class-II	331.00	345.00	351.00	364.00	369.00
29	Concrete Mixer Attendant	290.00	302.00	307.00	318.00	322.00
30	Cleaner or Oilman	282.00	294.00	299.00	310.00	314.00
31	TarBoiler Man	331.00	345.00	351.00	364.00	369.00
32	Plumber	352.00	367.00	373.00	386.00	391.00
33	Thatcher	293.00	305.00	310.00	321.00	325.00
34	Khalasi / Chainman	293.00	305.00	310.00	321.00	325.00
35	Sweeper	282.00	294.00	299.00	310.00	314.00
36	Watchman	282.00	294.00	299.00	310.00	314.00
37	Stone Breaker	282.00	294.00	299.00	310.00	314.00
38	Work Sarkar	310.00	323.00	328.00	340.00	344.00
39	Time Keeper	327.00	341.00	346.00	358.00	362.00
40	Welder, Grade-I	416.00	434.00	441.00	457.00	463.00
41	Welder, Grade-II	352.00	367.00	373.00	386.00	391.00
42	Wireman/Lineman	319.00	333.00	338.00	350.00	354.00
43	Mechanic, Grade-I	426.00	444.00	451.00	467.00	473.00
44	Mechanic, Grade-II	396.00	413.00	420.00	435.00	440.00
45	Sarang	396.00	413.00	420.00	435.00	440.00
46	Drill Operator	331.00	345.00	351.00	364.00	369.00
47	Tractor Operator	396.00	413.00	420.00	435.00	440.00
48	Gauge Reader-cum-silt Observer	290.00	302.00	307.00	318.00	322.00
49	Crane Operator, Grade-I	468.00	488.00	496.00	514.00	520.00
50	Crane Operator, Grade-II	416.00	434.00	441.00	457.00	463.00
51	Dragline / Scraper / Showel Operator Grade-I	468.00	488.00	496.00	514.00	520.00
52	Dragline/Scraper/Showel Operator Grade-II	416.00	434.00	441.00	457.00	463.00



  
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**Approved Schedule of Rates for labour engaged in Dam construction & Irrigation works**

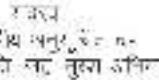
Sl. No.	Category of Employees	Minimum Rates of wages per day as per				
		Lab. Deptt. Noti. No. 4077/ 27.09.19	Lab. Deptt. Memo. No. 1050/ 24.03.2020	Lab. Deptt. Memo. No. 2620/ 21.09.2020	Lab. Deptt. Notification No.5/MW. 40-16/2021-1231/L&R Dated 31.03.2021	Lab. Deptt. Notification No.5/MW. 40-16/2021 L&R 2847 Dated 30.09.2021
1	2	3	(1.04236 xcl.3) 4	(1.01595 xcl.4) 5	(1.03582 xcl. 5) 6	(1.01249 xcl. 6) 7
53	Dumper Operator	397.00	414.00	421.00	436.00	441.00
54	Foreman	468.00	488.00	496.00	514.00	520.00
55	Junior Foreman	416.00	434.00	441.00	457.00	463.00
56	Chargeman	397.00	414.00	421.00	436.00	441.00
57	Electrician, Grade-I	352.00	367.00	373.00	386.00	391.00
58	Electrician, Grade-II	331.00	345.00	351.00	364.00	369.00
59	Electrician, Grade-III	290.00	302.00	307.00	318.00	322.00
60	Turner	331.00	345.00	351.00	364.00	369.00
61	Compounder	331.00	345.00	351.00	364.00	369.00
62	Supervisor / (Diploma holder)	449.00	468.00	475.00	492.00	498.00
63	Surveyer / Supervisor	331.00	345.00	351.00	364.00	369.00
64	Blue Printer	290.00	302.00	307.00	318.00	322.00
65	Tracer	290.00	302.00	307.00	318.00	322.00
66	Vibrator Operator	308.00	321.00	326.00	338.00	342.00
67	Clerk / Typist / Typist Clerk	327.00	341.00	346.00	358.00	362.00
68	Earth Excavator,					0.00
	(a) For every 110 cubic feet of soft earth	273.00	285.00	290.00	300.00	304.00
	(b) For every 100 cubic feet of hard earth	273.00	285.00	290.00	300.00	304.00
	(c) For every 90 cubic feet of highly hard earth	273.00	285.00	290.00	300.00	304.00
69	Any other category of semi-skilled workers not mentioned above	289.00	299.00	304.00	316.00	318.00
70	Any other category of skilled workers not mentioned above	352.00	364.00	370.00	385.00	388.00
71	Highly skilled labour	429.00	444.00	451.00	470.00	474.00

Note :- The above rates has been calculated as 1.249% increase vide Labour Dept Notification No.5/MW. 40-16/2021-L&R 2847 Dtd. 30.09.2021 i.e (1.01249 column 6):


  
राज्य  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।


  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

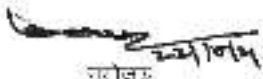
  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।

  
राज्यस्तरीय अनुसूचित कर निर्धारण समिति के अध्यक्ष अशोक कुमार शर्मा, भवन निर्माण विभाग, बिहार, पटना।




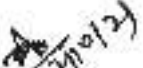
**SCHEDULE -III Date 22.10.2021**


**Approved Input of new Labour wages for the preparation of Schedule of Rate RCD Bihar in prescribed formate of revised MoRT&H Standerd Data Book-2019.**

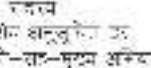
S.No.	Description of Labour	Unit	Approved Rate
1	2	3	4
L-01	Blacksmith (IInd class)	day	369.00
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	413.00
L-03	Blaster (Stone cutter)	day	508.00
L-04	Carpenter I Class	day	413.00
L-05	Chiseller (Head Mazdoor)	day	474.00
L-06	Driller (Jumper)	day	318.00
L-07	Diver	day	474.00
L-08	Fitter	day	369.00
L-09	Mali	day	318.00
L-10	Mason (IInd class)	day	369.00
L-11	Mason (Ist class)	day	413.00
L-12	Mate / Supervisor	day	325.00
L-13	Mazdoor	day	306.00
L-14	Mazdoor/Dresser (Semi Skilled)	day	318.00
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	388.00
L-16	Medical Officer	day	474.00
L-17	Operator(grouting)	day	474.00
L-18	Painter I class	day	391.00
L-19	Para medical personnel	day	474.00
L-20	Heavy Plant Operator	day	474.00
L-21	Light Plant Operator.	day	388.00
L-22	Heavy Vehicle Driver.	day	440.00
L-23	Light Vehicle Driver.	day	388.00
L-24	Helper	day	306.00
L-25	Black smith	day	369.00

Note:- 1. The above rates are based on Schedule-I

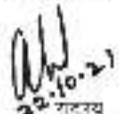
  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प भवन निर्माण विभाग, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प भवन निर्माण विभाग, बिहार, पटना।

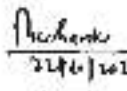
  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प भवन निर्माण विभाग, बिहार, पटना।

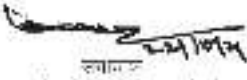
  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प (असेट), विद्यालय स्टेड नगर इलाहाबाद कंपनी लिमिटेड, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प (असेट), विद्यालय स्टेड नगर इलाहाबाद कंपनी लिमिटेड, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प (असेट), विद्यालय स्टेड नगर इलाहाबाद कंपनी लिमिटेड, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प (असेट), विद्यालय स्टेड नगर इलाहाबाद कंपनी लिमिटेड, बिहार, पटना।

  
 राज्यस्तरीय अनुसूचित कर निर्धारण समिति सह अग्रेजिता प्रकल्प (असेट), विद्यालय स्टेड नगर इलाहाबाद कंपनी लिमिटेड, बिहार, पटना।

**Schedule : M1**

**Date: 07.12.2021**

**List of Rates of Ordinary Portland Cement approved by State Level Schedule Rate Committee for the year 2021 - 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 28%, Overhead Charges & Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Ordinary Portland Cement (O.P.C. - 43 Grade)	Per bag of 50 Kg	Patna	257.80	Rupees Two Hundred Fifty Seven and Paise Eighty Only
			Muzaffarpur	253.90	Rupees Two Hundred Fifty Three and Paise Ninety Only
			Darbhanga	257.80	Rupees Two Hundred Fifty Seven and Paise Eighty Only
			Bhagalpur	253.90	Rupees Two Hundred Fifty Three and Paise Ninety Only
			Munger	253.90	Rupees Two Hundred Fifty Three and Paise Ninety Only
			Saharsa	257.80	Rupees Two Hundred Fifty Seven and Paise Eighty Only
			Purnea	257.80	Rupees Two Hundred Fifty Seven and Paise Eighty Only
			Gaya	244.10	Rupees Two Hundred Forty Four and Paise Ten Only
			Saran	253.50	Rupees Two Hundred Fifty Three and Paise Fifty Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असो), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

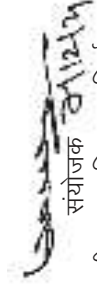
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषाग, निगरानी विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M3A**

**Date: 07.12.2021**

**List of Rates of Portland Pozzolana Cement approved by State Level Schedule Rate Committee for the year 2021- 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications. Rates are exclusive of GST @ 28%, Overhead Charges & Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Portland Pozzolana Cement (P.P.C.)	Per bag of 50 Kg	Patna	210.90	Rupees Two Hundred Ten and Paise Ninety Only
			Muzaffarpur	203.70	Rupees Two Hundred Three and Paise Seventy Only
			Darbhanga	203.70	Rupees Two Hundred Three and Paise Seventy Only
			Bhagalpur	210.90	Rupees Two Hundred Ten and Paise Ninety Only
			Munger	209.00	Rupees Two Hundred Nine and Paise Zero Only
			Saharsa	207.40	Rupees Two Hundred Seven and Paise Forty Only
			Purnea	214.40	Rupees Two Hundred Fourteen and Paise Forty Only
			Gaya	185.60	Rupees One Hundred Eighty Five and Paise Sixty Only
			Saran	206.20	Rupees Two Hundred Six and Paise Twenty Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असें०), बिहार स्टेड पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषाग, निगरानी विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M3B**

**Date: 07.12.2021**

**List of Rates of Portland Slag Cement approved by State Level Schedule Rate Committee for the year 2021- 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.  
Rates are exclusive of GST @ 28%, Overhead Charges & Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Portland Slag Cement (P.S.C.)	Per bag of 50 Kg	Patna	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Muzaffarpur	229.30	Rupees Two Hundred Twenty Nine and Paise Thirty Only
			Darbhanga	224.60	Rupees Two Hundred Twenty Four and Paise Sixty Only
			Bhagalpur	229.90	Rupees Two Hundred Twenty Nine and Paise Ninety Only
			Munger	221.10	Rupees Two Hundred Twenty One and Paise Ten Only
			Saharsa	228.30	Rupees Two Hundred Twenty Eight and Paise Thirty Only
			Purnea	224.60	Rupees Two Hundred Twenty Four and Paise Sixty Only
			Gaya	220.40	Rupees Two Hundred Twenty and Paise Forty Only
			Saran	226.80	Rupees Two Hundred Twenty Six and Paise Eighty Only

  
सदस्य


राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असो), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

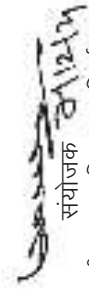
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M3C**

**Date: 07.12.2021**

**List of Rates of Portland Composite Cement approved by State Level Schedule Rate Committee for the year 2021 - 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications. Rates are exclusive of GST @ 28%, Overhead Charges & Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Portland Composite Cement (P.C.C.)	Per bag of 50 Kg	Patna	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Muzaffarpur	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Darbhanga	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Bhagalpur	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Munger	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Saharsa	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Purnea	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Gaya	230.50	Rupees Two Hundred Thirty and Paise Fifty Only
			Saran	230.50	Rupees Two Hundred Thirty and Paise Fifty Only

  
सदस्य

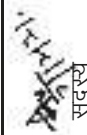
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

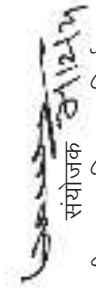
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषाग, निगरानी विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M4**


Date: 07.12.2021

List of Rates of Different Grades of Bitumen approved by State Level Schedule Rate Committee for the year 2021 - 22 (for the preparation of Schedule of Rates only). Materials should confirm to relevant BIS/IRC/MORT&H Specifications.


Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.


Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure(₹)	in words
1	2	3	4	5
<b>1</b>	<b>Bitumen Grade VG-40(30/40 )Packed</b>			
	(i) Ex. Barauni	Per MT	59554.00	Rupees Fifty Nine Thousand Five Hundred Fifty Four and Paise Zero Only
	(ii) Ex. Muzaffarpur	Per MT	59535.00	Rupees Fifty Nine Thousand Five Hundred Thirty Five and Paise Zero Only
	(iii) Ex. Fatuha	Per MT	59235.00	Rupees Fifty Nine Thousand Two Hundred Thirty Five and Paise Zero Only
	(iv) Ex. Gaya	Per MT	58998.00	Rupees Fifty Eight Thousand Nine Hundred Ninety Eight and Paise Zero Only
<b>2</b>	<b>Bitumen Grade VG-30(60/70) Packed</b>			
	(i) Ex. Barauni	Per MT	56414.00	Rupees Fifty Six Thousand Four Hundred Fourteen and Paise Zero Only
	(ii) Ex. Gaya	Per MT	56048.00	Rupees Fifty Six Thousand Forty Eight and Paise Zero Only
	(iii) Ex. Fatuha	Per MT	56285.00	Rupees Fifty Six Thousand Two Hundred Eighty Five and Paise Zero Only
	(iv) Ex. Muzaffarpur	Per MT	54985.00	Rupees Fifty Four Thousand Nine Hundred Eighty Five and Paise Zero Only
<b>3</b>	<b>Bitumen Grade VG-10( 80/100) Packed</b>			
	(i) Ex. Barauni	Per MT	55614.00	Rupees Fifty Five Thousand Six Hundred Fourteen and Paise Zero Only
	(ii) Ex. Gaya	Per MT	55248.00	Rupees Fifty Five Thousand Two Hundred Forty Eight and Paise Zero Only
	(iii) Ex. Fatuha	Per MT	55485.00	Rupees Fifty Five Thousand Four Hundred Eighty Five and Paise Zero Only
	(iv) Ex. Muzaffarpur	Per MT	54185.00	Rupees Fifty Four Thousand One Hundred Eighty Five and Paise Zero Only
<b>4</b>	<b>Bitumen Grade VG-40( 30/40) Bulk</b>			
	(i) Ex. Barauni	Per MT	52562.00	Rupees Fifty Two Thousand Five Hundred Sixty Two and Paise Zero Only
<b>5</b>	<b>Bitumen Grade VG-30( 60/70) Bulk</b>			
	(i) Ex. Barauni	Per MT	49702.00	Rupees Forty Nine Thousand Seven Hundred Two and Paise Zero Only
<b>6</b>	<b>Bitumen Grade VG-10(80/100) Bulk</b>			
	(i) Ex. Barauni	Per MT	48902.00	Rupees Forty Eight Thousand Nine Hundred Two and Paise Zero Only
<b>7</b>	<b>Modified Graded Bitumen</b>			
	(i) CRMB-55 Packed Ex. Gaya	Per MT	53728.00	Rupees Fifty Three Thousand Seven Hundred Twenty Eight and Paise Zero Only
	(ii) CRMB-55 Packed Ex. Fatuha	Per MT	53965.00	Rupees Fifty Three Thousand Nine Hundred Sixty Five and Paise Zero Only
	(iii) CRMB-55 Packed Ex. Muzaffarpur	Per MT	54265.00	Rupees Fifty Four Thousand Two Hundred Sixty Five and Paise Zero Only
<b>8</b>	<b>Bitumen Emulsion RS1(Packed) HDPE</b>			
	(i) Ex. Patna	Per MT	52919.00	Rupees Fifty Two Thousand Nine Hundred Nineteen and Paise Zero Only
	(ii) Ex. Gaya	Per MT	52769.00	Rupees Fifty Two Thousand Seven Hundred Sixty Nine and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	53219.00	Rupees Fifty Three Thousand Two Hundred Nineteen and Paise Zero Only
<b>9</b>	<b>Bitumen Emulsion MS(Packed) HDPE</b>			
	(i) Ex. Patna	Per MT	55302.00	Rupees Fifty Five Thousand Three Hundred Two and Paise Zero Only
	(ii) Ex. Gaya	Per MT	55152.00	Rupees Fifty Five Thousand One Hundred Fifty Two and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	55602.00	Rupees Fifty Five Thousand Six Hundred Two and Paise Zero Only
<b>10</b>	<b>Bitumen Emulsion SS1(Packed) HDPE</b>			
	(i) Ex. Patna	Per MT	54270.00	Rupees Fifty Four Thousand Two Hundred Seventy and Paise Zero Only
	(ii) Ex. Gaya	Per MT	54120.00	Rupees Fifty Four Thousand One Hundred Twenty and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	54570.00	Rupees Fifty Four Thousand Five Hundred Seventy and Paise Zero Only


  
सदस्य  
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-अभियंता प्रमुख,  
भवन निर्माण विभाग, बिहार, पटना।


  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख, ग्रामीण  
कार्य विभाग, बिहार, पटना।

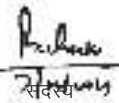
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख, लघु  
जल संसाधन विभाग, बिहार, पटना।

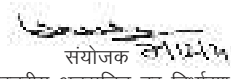
  
सदस्य  
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(असै०), बिहार स्टेट पावर होल्डिंग  
कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(विद्युत), भवन निर्माण विभाग,  
बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक,  
कोषांग, निगरानी विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-अभियंता प्रमुख,  
लोक स्वास्थ्य अभिन्न विभाग,  
बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
जल संसाधन विभाग, बिहार, पटना।

  
संयोजक  
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M5**

**Date: 07.12.2021**


**Approved new rate of G.C. Sheet by State Level Schedule Rate Committee for the year 2021- 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
<b>G. C. Sheet in mm</b>				
1	0.80	Per MT	94513.56	Rupees Ninety Four Thousand Five Hundred Thirteen and Paise Fifty Six Only
2	0.63	Per MT	93823.73	Rupees Ninety Three Thousand Eight Hundred Twenty Three and Paise Seventy Three Only
3	0.50	Per MT	95415.25	Rupees Ninety Five Thousand Four Hundred Fifteen and Paise Twenty Five Only
4	0.40	Per MT	97272.03	Rupees Ninety Seven Thousand Two Hundred Seventy Two and Paise Three Only
5	0.35	Per MT	99925.42	Rupees Ninety Nine Thousand Nine Hundred Twenty Five and Paise Forty Two Only

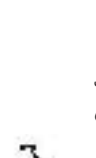
  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

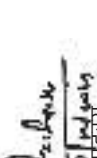
  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

  
संयोजक  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M6**

**Date: 07.12.2021**

**Approved rate of Steel - Wire Rod in Coil by State Level Schedule Rate Committee for the year 2021- 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	<b>Wire Rod in Coil</b>			
1	5.5 mm	Per MT	57900.00	Rupees Fifty Seven Thousand Nine Hundred and Paise Zero Only
2	7.0 mm	Per MT	59000.00	Rupees Fifty Nine Thousand and Paise Zero Only
3	8.0 mm	Per MT	58900.00	Rupees Fifty Eight Thousand Nine Hundred and Paise Zero Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असें०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।



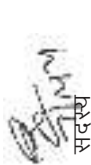
**Schedule : M8**

**Date: 07.12.2021**

**Approved rate of Steel Channel by State Level Schedule Rate Committee for the year 2021 - 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	STEEL CHANNEL			
1	Channel 100 x 50	Per MT	56400.00	Rupees Fifty Six Thousand Four Hundred and Paise Zero Only
2	Channel 150 x 75	Per MT	56400.00	Rupees Fifty Six Thousand Four Hundred and Paise Zero Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

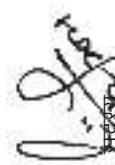
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M9**

**Date: 07.12.2021**

**Approved rate of Steel Angles by State Level Schedule Rate Committee for the year 2021 - 22 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	STEEL ANGLES			
1	50 x 50 x 6	Per MT.	56100.00	Rupees Fifty Six Thousand One Hundred and Paise Zero Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

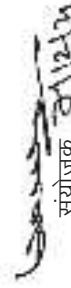
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Schedule : M10A**

**Date: 07.12.2021**

**Approved rate of Steel - TMT BARS (Fe 500D) by State Level Schedule Rate Committee for the year 2021 - 2022 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.**

**Rates are exclusive of GST @ 18%, Overhead Charges and Contractor's Profit.**

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	<b>STEEL TMT BARS</b>			
1	TMT Fe 500D - 8 mm	Per MT	56441.00	Rupees Fifty Six Thousand Four Hundred Forty One and Paise Zero Only
2	TMT Fe 500D -10 mm	Per MT	55085.00	Rupees Fifty Five Thousand Eighty Five and Paise Zero Only
3	TMT Fe 500D -12 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only
4	TMT Fe 500D -16 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only
5	TMT Fe 500D -20 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only
6	TMT Fe 500D-25 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only
7	TMT Fe 500D-28 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only
8	TMT Fe 500D -32 mm	Per MT	54492.00	Rupees Fifty Four Thousand Four Hundred Ninety Two and Paise Zero Only

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असं०), बिहार स्टेड पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।

  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषाग, निगरानी विभाग, बिहार, पटना।

  
संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

## Schedule: M11

Date: 28-02-2022

Approved Rate of Bricks & Bricks related materials by the State Level Schedule Rate Committee for the year 2022 - 23

(for preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MoRT&H Specifications.

Rates are inclusive of Royalty but Exclusive of GST, Seigniorage Fee, Contractor's profit and Overhead charges (Rates at source).				
Sr. No.	Materials	Unit	Approved Rate	
			in figure (₹)	in words
<b>1</b>	<b>100 A Bricks</b>			
	(i) For urban Patna	Nos/1000	6069.00	Rupees Six Thousand Sixty Nine and Paise Zero Only
	(ii) For Darbhanga, Bhagalpur, Munger & Muzaffarpur	Nos/1000	5123.00	Rupees Five Thousand One Hundred Twenty Three and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4847.00	Rupees Four Thousand Eight Hundred Forty Seven and Paise Zero Only
	(iv) For Saharsa	Nos/1000	5262.00	Rupees Five Thousand Two Hundred Sixty Two and Paise Zero Only
	(v) For Purnea	Nos/1000	5540.00	Rupees Five Thousand Five Hundred Forty and Paise Zero Only
	(vi) For rural Patna	Nos/1000	5055.00	Rupees Five Thousand Fifty Five and Paise Zero Only
<b>2</b>	<b>100 B Bricks</b>			
	(i) For urban Patna	Nos/1000	5633.00	Rupees Five Thousand Six Hundred Thirty Three and paise Zero only
	(ii) For Darbhanga, Bhagalpur, Munger & Muzaffarpur	Nos/1000	4707.00	Rupees Four Thousand Seven Hundred Seven and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4432.00	Rupees Four Thousand Four Hundred Thirty Two and Paise Zero Only
	(iv) For Saharsa	Nos/1000	4847.00	Rupees Four Thousand Eight Hundred Forty Seven and Paise Zero Only
	(v) For Purnea	Nos/1000	5123.00	Rupees Five Thousand One Hundred Twenty Three and Paise Zero Only
	(vi) For rural Patna	Nos/1000	4620.00	Rupees Four Thousand Six Hundred Twenty and Paise Zero Only
<b>3</b>	<b>Brick Tiles (300mmx150mmx50mm)</b>			
	(i) For urban Patna and rural Patna	Nos/1000	6069.00	Rupees Six Thousand Sixty Nine and Paise Zero Only
	(ii) For Saharsa, Bhagalpur, Darbhanga & Muzaffarpur	Nos/1000	6094.00	Rupees Six Thousand Ninty Four and Paise Zero Only
	(iii) For Purnea	Nos/1000	6372.00	Rupees Six Thousand Three Hundred Seventy Two and Paise Zero Only
	(iv) For other places	Nos/1000	5816.00	Rupees Five Thousand Eight Hundred Sixteen and Paise Zero Only
<b>4</b>	<b>Picket Jhama Bricks</b>			
	(i) For urban Patna	Nos/1000	5201.00	Rupees Five Thousand Two Hundred One and Paise Zero Only
	(ii) For Darbhanga, Bhagalpur, Munger & Muzaffarpur	Nos/1000	4293.00	Rupees Four Thousand Two Hundred Ninty Three and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4011.00	Rupees Four Thousand Eleven and Paise Zero Only
	(iv) For Purnea	Nos/1000	4707.00	Rupees Four Thousand Seven Hundred Seven and Paise Zero Only
	(v) For Saharsa	Nos/1000	4432.00	Rupees Four Thousand Four Hundred Thirty Two and Paise Zero Only
	(vi) For rural Patna	Nos/1000	4196.00	Rupees Four Thousand One Hundred Ninty Six and Paise Zero Only
<b>5</b>	<b>Brick Bats</b>			
	(i) For urban Patna	Per m <sup>3</sup>	1074.00	Rupees One Thousand Seventy Four and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m <sup>3</sup>	1031.00	Rupees One Thousand Thirty One and Paise Zero Only
	(iii) For other places	Per m <sup>3</sup>	986.00	Rupees Nine Hundred Eighty Six and Paise Zero Only
	(iv) For rural Patna	Per m <sup>3</sup>	1030.00	Rupees One Thousand Thirty and Paise Zero Only
<b>6</b>	<b>Jhama Metals</b>			
	<b>(a) 63 mm to 40 mm size</b>			
	(i) For urban Patna	Per m <sup>3</sup>	1275.00	Rupees One Thousand Two Hundred Seventy Five and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m <sup>3</sup>	1221.00	Rupees One Thousand Two Hundred Twenty One and Paise Zero Only
	(iii) For other places	Per m <sup>3</sup>	1195.00	Rupees One Thousand One Hundred Ninty Six and Paise Zero Only

xxxiii

RCD/SOR\_16th Edition\_2022

Sr. No.	Materials	Unit	Approved Rate	
			in figure (₹)	in words
	(iv) For rural Patna	Per m <sup>3</sup>	1246.00	Rupees One Thousand Two Hundred Forty six and Paise Zero Only
	<b>(b) 40 mm to 20 mm size</b>			
	(i) For urban Patna	Per m <sup>3</sup>	1419.00	Rupees One Thousand Four Hundred Nineteen and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m <sup>3</sup>	1360.00	Rupees One Thousand Three Hundred Sixty and Paise Zero Only
	(iii) For other places	Per m <sup>3</sup>	1321.00	Rupees One Thousand Three Hundred Twenty One and Paise Zero Only
	(iv) For rural Patna	Per m <sup>3</sup>	1376.00	Rupees One Thousand Three Hundred Seventy Six and Paise Zero Only
	<b>(c) 20 mm and down</b>			
	(i) For urban Patna	Per m <sup>3</sup>	1623.00	Rupees One Thousand Six Hundred Twenty Three and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m <sup>3</sup>	1555.00	Rupees One Thousand Five Hundred Fifty Five and Paise Zero Only
	(iii) For other places	Per m <sup>3</sup>	1501.00	Rupees One Thousand Five Hundred One and Paise Zero Only
	(iv) For rural Patna	Per m <sup>3</sup>	1566.00	Rupees One Thousand Five Hundred Sixty Six and Paise Zero Only
<b>7</b>	<b>Surkhi</b>			
	(i) For urban Patna	Per m <sup>3</sup>	1680.00	Rupees One Thousand Six Hundred Eighty and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m <sup>3</sup>	1612.00	Rupees One Thousand Six Hundred Twelve and Paise Zero Only
	(iii) For other places	Per m <sup>3</sup>	1555.00	Rupees One Thousand Five Hundred Fifty Five and Paise Zero Only
	(iv) For rural Patna	Per m <sup>3</sup>	1623.00	Rupees One Thousand Six Hundred Twenty Three and Paise Zero Only

**Note: For S.No. 1 to 4, Royalty has been included as Rs. 45.00 per 1000 Nos. & for S.No. 5 to 7 as Rs. 18.00 per m<sup>3</sup> (cum)**



राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।



राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।



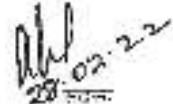
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।



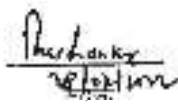
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।



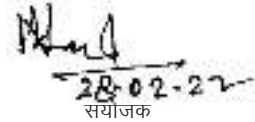
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।



राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।



राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।



राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।

**APPROVED RATES OF MATERIALS,  
PLANT-MACHINERY, LABOUR  
& CARRIAGE RATE  
(INPUT USED IN SOR)**



**Schedule -M / MORTH-1**

**Date:-28.02.2022**

**Approved Rates of Construction Materials by the State Level Schedule Rate Committee for the Preparation of Schedule of Rates for year 2022-23 only (Materials Should confirm to relevant B.I.S., MoRD and MoRT&H Specifications). The rates are inclusive of royalty but exclusive of all taxes, G.S.T, Overhead, Seigniorage fee and Contractor's profit.**

**"Rates are at source" Quarry/Crusher Plant**

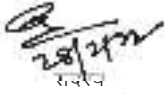
Sl. No.	Description of Materials	Unit	Approved Rates inclusive of Royalty for SOR 2022 (Rs)	Royalty included in col.4 (Rs)
1	2	3	4	5
M-001	Stone Boulder of size 150 mm and below at Source Quarry	Cum	675.00	150.00
M-002	Supply of quarried Stone 150-200 mm size for Hand Broken at source Quarry	Cum	675.00	150.00
M-003	Boulder with minimum size of 300 mm for Pitching at source Quarry	Cum	675.00	150.00
M-004	Coarse sand i) at source Quarry Koliwar/Sone sand	Cum	494.00	75.00
M-005*	Coarse sand ii) Equivalent to Koliwar / Sone Sand* at Source Quarry.	Cum	494.00	75.00
M-006	Fine sand at Source	Cum	143.32	75.00
M-007	Moorum at Source Quarry	Cum	160.00	83.00
M-008	Gravel/Quarry spall at Source Quarry	Cum	355.79	150.00
M-009	Granular Material or hard murum for GSB works at source Quarry	Cum	165.30	83.00
M-010	Fly ash conforming to IS:3812 (Part II & I) at HMP Plant/Batching Plant/Crushing Plant	Cum	Nil	Nil
M-011	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification) at Crusher.	Cum	678.14	150.00
M-012	Close graded Granular sub-base Material 53 mm to 9.5 mm/4.75mm at Crusher.	Cum	915.67	150.00
M-013	Close graded Granular sub-base Material 37.5 mm to 9.5 mm at Crusher.	Cum	915.67	150.00
M-014	Close graded Granular sub-base Material 26.5 mm to 9.5 mm at Crusher.	Cum	886.00	150.00
M-015	Close graded Granular sub-base Material 9.5 mm to 4.75 mm at Crusher.	Cum	586.00	150.00
M-016	Close graded Granular sub-base Material 9.5 mm to 2.36mm at Crusher.	Cum	424.21	150.00
M-017	Close graded Granular sub-base Material 4.75mm to 2.36mm At Crusher.	Cum	262.42	150.00
M-018	Close graded Granular sub-base Material 4.75mm to 75 micron at Crusher.	Cum	262.42	150.00
M-019	Close graded Granular sub-base Material 2.36 mm & below at Crusher.	Cum	262.42	150.00
M-020	Stone crusher dust finer than 3 mm with not more than 10% passing0.075 sieve at Crusher.	Cum	262.42	150.00
M-021	Coarse graded Granular sub-base Material 2.36 mm & below At Crusher.	Cum	262.42	150.00
M-022	Coarse graded Granular sub-base Material 4.75 mm to 75 micron at Crusher.	Cum	262.42	150.00
M-023	Coarse graded Granular sub-base Material 4.75mm to 2.36 mm at Crusher.	Cum	262.42	150.00
M-024	Coarse graded Granular sub-base Material 9.5mm to 4.75 mm at Crusher.	Cum	586.00	150.00
M-025	Coarse graded Granular sub-base Material 26.5mm to 4.75 mm at Crusher.	Cum	886.00	150.00
M-026	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm at Crusher.	Cum	886.00	150.00
M-027	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm at Crusher.	Cum	915.67	150.00
M-028	Coarse graded Granular sub-base Material 53 mm to 26.5 mm at Crusher.	Cum	1080.50	150.00
M-029	Aggregates below 5.6 mm at Crusher.	Cum	424.21	150.00
M-030	Aggregates 22.4 mm to 2.36 mm at Crusher.	Cum	678.14	150.00
M-031	Aggregates 22.4 mm to 5.6 mm at Crusher.	Cum	886.00	150.00
M-032	Aggregates 45 mm to 2.8 mm at Crusher.	Cum	752.36	150.00

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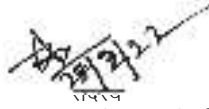
RCD/SOR\_16th Edition\_2022



1	2	3	4	5
M-033	Aggregates 45 mm to 22.4 mm at Crusher.	Cum	1080.50	150.00
M-034	Aggregates 53 mm to 2.8 mm at Crusher.	Cum	752.36	150.00
M-035	Aggregates 53 mm to 22.4 mm(Grade III) at Crusher.	Cum	1080.50	150.00
M-036	Aggregates 63 mm to 2.8 mm at Crusher.	Cum	752.36	150.00
M-037	Aggregates 63 mm to 45 mm (Grade II)at Crusher.	Cum	975.00	150.00
M-038	Aggregates 90 mm to 45mm(Gradel) at Crusher.	Cum	975.00	150.00
M-039	Aggregates 10 mm to 5 mm at Crusher.	Cum	586.00	150.00
M-040	Aggregates 11.2 mm to 0.09 mm (Key aggregate Type B) at Crusher.	Cum	424.21	150.00
M-041	Aggregates 13.2 mm to 0.09 mm (Key aggregate Type A) at Crusher.	Cum	424.21	150.00
M-042	Aggregates 13.2 mm to 5.6 mm at Crusher.	Cum	586.00	150.00
M-043	Aggregates 13.2 mm to 10 mm at Crusher.	Cum	586.00	150.00
M-044	Aggregates 20 mm to 10 mm at Crusher.	Cum	886.00	150.00
M-045	Aggregates 25 mm to 10 mm at Crusher.	Cum	886.00	150.00
M-046	Aggregates 19 mm to 6 mm at Crusher.	Cum	886.00	150.00
M-047	Aggregates 37.5 mm to 19 mm at Crusher.	Cum	1080.50	150.00
M-048	Aggregates 37.5 mm to 25 mm at Crusher.	Cum	1080.50	150.00
M-049	Aggregates 6 mm nominal size at Crusher.	Cum	424.21	150.00
M-050	Aggregates 10 mm nominal size at Crusher plant.	Cum	586.00	150.00
M-051	Aggregates 13.2/12.5 mm nominal size at Crusher plant.	Cum	586.00	150.00
M-052	Aggregates 20 mm nominal size at Crusher plant.	Cum	1186.00	150.00
M-053	Aggregates 25 mm nominal size at Crusher.	Cum	1186.00	150.00
M-054	Aggregates 40 mm nominal size at Crusher.	Cum	975.00	150.00
M-055	Crushing of Stone aggregates (GSB Crusher Run)	Cum	600.00	150.00

  
राज्य

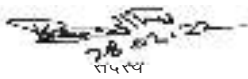
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निर्धारण समिति-सह-अभियंता प्रमुख,  
भवन निर्माण विभाग, बिहार, पटना।

  
राज्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख, ग्रामीण  
कार्य विभाग, बिहार, पटना।

  
राज्य

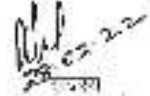
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समिति-सह-अभियंता प्रमुख, लघु  
जल संसाधन विभाग, बिहार, पटना।

  
राज्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(असै०), बिहार स्टेट पावर होल्डिंग  
कंपनी लिमिटेड, बिहार, पटना।

  
राज्य

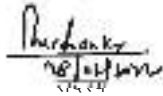
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(विद्युत), भवन निर्माण विभाग,  
बिहार, पटना।

  
राज्य

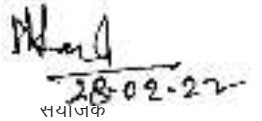
राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक,  
कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-अभियंता प्रमुख,  
लोक स्वास्थ्य अभिन्न विभाग,  
बिहार, पटना।

  
राज्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
जल संसाधन विभाग, बिहार, पटना।

  
राज्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
पथ निर्माण विभाग, बिहार, पटना।

**Schedule-M/MORTH-1A**

**Date 28.02.2022**

**Approved Rates of Construction Materials for by the State Level Schedule Rate Committee the Preparation of Schedule of Rates for year 2022-23 only. (Materials Should conform to relevant B.I.S., MoRD and MoRT&H Specifications). The rates are inclusive of Royalty but exclusive of all taxes, G.S.T., Overhead, Seigniorage fee and Contractor's profit. "Rates are at Source"**

SI No	Description	Unit	Approved Rates inclusive of Royalty for SOR (2022-23) (Rs)	Royalty included in Col. 4 (Rs)
1	2	3	4	5
M-056	AC pipe 100 mm dia	metre	44.28	
M-057	Acrylic polymer bonding coat	litre	131.88	
M-058	Alluminium Paint	litre	124.70	
M-059	Aluminium alloy plate 2mm Thick	sqm	9512.21	
M-060	Aluminium alloy/galvanised steel	tonne	57033.00	
M-061	Aluminium sheeting fixed with encapsulated lens type reflective sheeting including 2% towards lettering, cost of angle iron, cost of drilling holes, nuts, bolts etc.and signs as applicable	sqm	8945.43	
M-062	Road Aluminium Stud with Micro Prismatic lens reflectors (with shank) 100 X 100 mm	each	187.29	
M-063	Barbed wire	kg	73.77	
M-064	Bearing (Cost of parts)	nos	INPUT	
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne )	nos	85505.67	
M-066	Bearing (Elastomeric bearing assembly consisting of 7 internal layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation)	cubic cm	0.62	
	Taking elastomeric bearing of size 500 X 400 X 96mm, Overall volume=19200 cubic cm @Rs 0.59/cucm= Rs 11904	nos	11904.00	
M-067	Bearing (Forged steel roller bearing of 250 tonne)	nos	47480.35	
M-068	Bearing (Pot type bearing assembly consisting of a metal piston supported by a disc, PTFE pads providing sliding surfaces against stainless steel mating together with cast steel assemblies/ fabricated structural steel assemblies duly painted with all components output=250 tonne)	MT	142.67	
	Do	nos	35667.50	

1	2	3	4	5
	(a) Fixed POT-PTFE Bearing	MT	142.67	
	(b) Free POT-PTFE Bearing	MT	152.87	
	(c) Guide Slide (L) POT-PTFE Bearing	MT	163.06	
	(d) Guide Slide (T) POT-PTFE Bearing	MT	157.97	
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes )	nos	12637.56	
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)	nos	11414.17	
M-071	Bentonite	kg	4.02	
M-072	Binding wire	kg	75.04	
M-073	Bitumen ( Cationic Emulsion ) Ex- Patna (R.S1) Packed	tonne	52919.00	
M-074	Bitumen (60-70 grade) Packed Ex- Barauni	tonne	56414.00	
M-075	Bitumen (80-100 grade ) Packed Ex- Barauni	tonne	55614.00	
M-076	Bitumen (Cutback ) Packed Ex- Barauni .	tonne	56414.00	
M-077	Bitumen (emulsion) Packed Ex- Patna (SS1)	tonne	54270.00	
M-078	Bitumen (modified graded) Packed Ex - Fatuha (CRMB - 55)	tonne	53965.00	
M-079	Brick 100A for - Patna Urban	each	6.069	0.045
M-080	C.I. shoes for the pile	kg	47.040	
M-081	Cement - OPC 43 Grade at Patna	tonne	5156.00	
M-082	CGI Sheet 0.8 mm thick	Kg	94.51	
M-083	Cold twisted bars (HYSD Bars) - Fe 500 D Av. of M-10A	tonne	54810.00	
M-084	Collar (RCC) for joints 300 mm dia	nos	56.00	
M-085	Compressible Fibre Board (20mm thick)	sqm	1132.98	
M-086	Connectors / Staples	each	8.33	
M-087	Copper Plate (12m long x 250mm wide)	kg	896.80	
M-088	Corrosion resistant Structural steel	tonne	46827.05	
M-089	Corrugated sheet, 3 mm thick, "Thrie" beam section railing	kg	49.62	
M-090	Credit for excavated rock found suitable for use (add Royalty @ 30% of Rate)	cum	101.24	23.36
M-091	Curing compound	litre	136.22	
M-092	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	879.05	
M-093	Earth Cost or compensation for earth taken from private land	cum	35.01	33.00
M-094	Elastomeric slab seal expansion joint assembly manufactured by using chloroprene, elastomer for elastomeric slab unit conforming to clause 915.1 of IRC: 83 (part II)	metre	28508.46	

1	2	3	4	5
M-095	Epoxy compound with accessories for preparing epoxy mortar	kg	595.97	
M-096	Epoxy mortar	kg	817.29	
M-097	Epoxy primer	kg	122.02	
M-098	Epoxy resin-hardner mix for prime coat	kg	723.67	
M-099	Flag of red color cloth 600 x 600 mm	each	57.46	
M-100	Flowering Plants	each	9.00	
M-101	Galvanised MS flat clamp	nos	17.17	
M-102	Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	111.88	
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	57.03	
M-104	Geo grids	sqm	89.26	
M-105	Geomembrane	sqm	45.00	
M-106	Geonets	sqm	108.16	
M-107	Geotextile	sqm	84.55	
M-108	Geotextile filter fabric	sqm	84.55	
M-109	GI bolt 10 mm Dia	nos	17.88	
M-110	Spherical Dome Nut	nos	#VALUE!	
M-111	Grass (Doob)	kg	4.96	
M-112	Grass (Fine)	kg	4.96	
M-113	HDPE pipes 75mm dia	metre	237.01	
M-114	HDPE pipes 90mm dia	metre	237.01	
M-115	Hedge plants	each	40.00	
M-116	Helical pipes 600mm diameter	metre	INPUT	
M-117	Hot applied thermoplastic compound (Sp. Gravity - 2.10)	litre	198.46	
M-118	HTS strand	tonne	79629.50	
M-119	Joint Sealant Compound	kg	27.24	
M-120	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	41.26	
M-121	LDO for steam curing	litre	INPUT	
M-122	M.S. Clamps	nos	43.36	
M-123	M.S. Clamps	kg	78.47	
M-124	M.S.shoes @ 35 Kg per pile of 15 m	kg	30.00	
M-125	Mild Steel bars (Av-M6)	tonne	58600.00	

1	2	3	4	5
M-126	Modular strip/box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm assembly comprising of edge beams, central beam, 2 modules chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative	metre	31417.46	
M-127	Modular strip/box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm box/box seal joint assembly containing 3 modules/cells and comprising of edge beams, two central beams, chloroprene seal, anchorage elements, support and control system, all steel sections protected against corrosion and installed by the manufacturer or his authorised representative	metre	31417.46	
M-128	Nipples 12mm,300mm long	nos	44.80	
M-129	Nuts and bolts	kg	69.15	
M-130	Paint	litre	246.65	
M-131	Pavement Marking Paint	litre	246.65	
M-132	Paving Fabric	sqm	93.58	
M-133	Perforated geosynthetic pipe 150 mm dia	metre	29.35	
M-134	Perforated pipe of cement concrete, internal dia 100 mm	metre	112.83	
M-135	Pesticide	kg	80.97	
M-136	Pipes 200 mm dia, 2.5 m long for drainage	metre	173.47	
M-137	Plastic sheath, 1.25 mm thick for dowel bars	sqm	17.75	
M-138	Plastic tubes 50 mm dia, 1.2 m high	nos	INPUT	
M-139	Polymer braids	metre	INPUT	
M-140	Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	1064.18	
M-141	Pre-coated stone chips of 13.2 mm nominal size	cum	644.70	150.00
M-142	Preformed continuous chloroprene elastomer or closed cell foam sealing element with high tear strength, vulcanised in a single operation for the full length of a joint to ensure water tightness.	metre	INPUT	
M-143	Pre-moulded asphalt filler board	sqm	1064.18	
M-144	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	INPUT	
M-145	Primer (Wall)	kg	77.60	
M-146	Quick setting compound	kg	INPUT	
M-147	Random Rubble Stone	cum	675.00	150.00
M-148	RCC Pipe NP 4 heavy duty non presure pipe 1000 mm dia with spigot	metre	5570.00	
M-149	RCC Pipe NP 4 heavy duty non presure pipe 1200 mm dia with spigot	metre	6510.00	
M-150	RCC Pipe NP 4 heavy duty non presure pipe 900 mm dia with spigot	metre	4500.00	

1	2	3	4	5
M-151	RCC Pipe NP 4 heavy duty non pressure pipe 600 mm dia with spigot	metre	2350.00	
M-152	RCC Pipe NP 4 heavy duty non pressure pipe 300 mm dia	metre	532.24	
M-153	Reflectorising glass beads	kg	72.00	
M-154	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)	metre	INPUT	
M-155	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)	metre	INPUT	
M-156	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/polymeric strips)	metre	INPUT	
M-157	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)	metre	INPUT	
M-158	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Aluminium strips)	metre	INPUT	
M-159	Rivets	each	9.08	
M-160	Sand bags (Cost of sand and Empty cement bag)	nos	9.11	2.59
M-161	Sapling 2 m high 25 mm dia	each	25.55	
M-162	Scrap tyres of size 900 x 20	nos	85.14	
M-163	Seeds	kg	38.31	
M-164	Selected earth (Including royalty @ `33.0 per cum & compensation @ `1.81 per cum)	cum	35.01	33.00
M-165	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	15.24	
M-166	Sheathing duct	metre	93.66	
M-167	Shrubs	each/ (sqft)	2.77	
M-168	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	278.90	
M-169	Sodium vapour lamp (70 watt)	each	188.94	
M-170	Square Rubble Coursed Stone	cum	675.00	150.00
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level	each	INPUT	
M-172	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	INPUT	
M-173	Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	170.47	
M-174	Steel helmet and cushion block on top of pile head during driving.	kg	41.93	
M-175	Steel pipe 25 mm external dia as per IS:1239	metre	136.85	
M-176	Steel pipe 50 mm external dia as per IS:1239	metre	244.89	

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1	2	3	4	5
M-177	Steel pipe 100 mm external dia as per IS:1239	metre	INPUT	
M-178	Steel wire rope 20 mm	kg	43.42	
M-179	Steel wire rope 40 mm	kg	43.42	
M-180	Strip seal expansion joint	metre	8844.47	
M-181	Structural Steel (Av. of M6, M8 & M9)	tonne	57033.00	
M-182	Super plastisizer admixture IS marked as per 9103-1999	kg	214.86	
M-183	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	187.90	
M-184	Through and bond stone	each	10.58	
M-185	Tie rods 20mm diameter (500mm length) @2.47 kg/m	nos	67.30	
M-186	Tiles size 300 x 300 mm and 25 mm thick	each	41.07	
M-187	Timber	cum	44845.72	
M-188	Traffic cones with 150 mm reflective sleeve	nos	INPUT	
M-189	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	51.08	
M-190	Unslaked lime	tonne	3873.95	
M-191	Water	KL	56.20	Sub Analysis 21.22
M-192	Water based cement paint	litre	125.53	
M-193	Welded steel wire fabric	kg	51.18	
M-194	Wire mesh 50mm x 50mm size of 3mm wire	kg	51.66	
M-195	Wooden ballies 2" Dia for bracing (Sal)	each	22.29	
M-196	Wooden ballies 8" Dia and 9 m long	each	538.98	
M-197	Wooden packing	cum	INPUT	
M-198	Wooden staff for fastening of flag 25 mm dia, 1.0 m long	each	27.86	
M-199	Silica fume	kg	28.00	
M-200	Synthetic Geogrids Ultimate tensile Strength 100kN/Metre.	Sqm	200.00	
M-201	Synthetic Geogrids Ultimate tensile Strength 150kN/Metre.	Sqm	210.00	
M-202	Synthetic Geogrids Ultimate tensile Strength 200kN/Metre.	Sqm	340.00	
M-203	Synthetic Geogrids Ultimate tensile Strength 250kN/Metre.	Sqm	350.00	
M-204	Synthetic Geogrids Ultimate tensile Strength 300kN/Metre.	Sqm	360.00	

1	2	3	4	5
M-205	Synthetic Geogrids Ultimate tensile Strength 350kN/Metre.	Sqm	370.00	
M-206	Synthetic Geogrids Ultimate tensile Strength 400kN/Metre.	Sqm	450.00	
M-207	Synthetic Geogrids Ultimate tensile Strength 500kN/Metre.	Sqm	500.00	
M-208	Synthetic Geogrids Ultimate tensile Strength 600kN/Metre.	Sqm	550.00	
M-209	Synthetic Geogrids Ultimate tensile Strength 700kN/Metre.	Sqm	650.00	
M-210	Synthetic Geogrids Ultimate tensile Strength 800kN/Metre.	Sqm	725.00	
M-211	Synthetic Geogrids Ultimate tensile Strength 900kN/Metre.	Sqm	850.00	
M-212	Synthetic Geogrids Ultimate tensile Strength 1000kN/Metre.	Sqm	950.00	
M-213	Synthetic Geogrids Ultimate tensile Strength 1100kN/Metre.	Sqm	1000.00	
M-214	Synthetic Geogrids Ultimate tensile Strength 1200kN/Metre.	Sqm	1050.00	
M-215	Explosive for blasting(Gelatine80%)	Kg	976.21	
M-216	Delay Detonators	Nos	INPUT	
M-217	Electric Detonators @1 detonator for 1/2 gelatin stick of 125 gms each	Nos	6.19	
M-218	Detonation Fuse coil	Meter	INPUT	
M-219	3.7 mlong extension rod boom Hydraulic Drill jumbo	Nos	INPUT	
M-220	32 mm coupling sleeve boom Hydraulic Drill jumbo	Nos	INPUT	
M-221	Difter rod boom Hydraulic Drill jumbo	Nos	INPUT	
M-222	R32 sank adapter boom Hydraulic Drill jumbo	Nos	INPUT	
M-223	45 mm Dia Button Bit boom Hydraulic Drill jumbo	Nos	INPUT	
M-224	51 mm Dia Button Bit Hydraulic Drill Jumbo	Nos	INPUT	
M-225	Steel Fiber	tonne	INPUT	
M-226	Microsilica	Kg	28.00	
M-227	Accelerator	Kg	INPUT	
M-228	Wire mesh	Kg	51.66	
M-229	Bamboos (i) 75mmDia 6m to 8m long (ii) 100mm Dia 6m to 8m long (iii) 50mm Dia Hill Bamboo	Meter	19.65 20.98 13.12	
M-230	Live Stake Stump	Meter	INPUT	
M-231	Hard wood sticks	Meter	INPUT	
M-232	Live Sods(0.6m Length)	Nos	INPUT	
M-233	Live Sods(2.0 m Length)	Nos	INPUT	
M-234	Coal Tar Epoxy	Kg	INPUT	
M-235	Binding Material	Meter	INPUT	



1	2	3	4	5
M-236	Spring post 700mm	each	INPUT	
M-237	Spring post 450 mm	each	INPUT	
M-238	Water Filled Barricades Work zone sheeting (Trapezoidal Shape 800mm to 1000mm in length, 700mm in height)	each	INPUT	
M-239	GI Pipe 100 mm Dia	Meter	617.50	
M-240	Bracket for G.I Pipe fixing	Kg	INPUT	
M-241	Flange for G.I Pipe fixing	Kg	INPUT	
M-242	Neem Cake	Quintal	4000.00	
M-243	Supplying sludge	Cum	278.90	
M-244	Control Center Server	Nos	INPUT	
M-245	Hot Standby Backup Server	Nos	INPUT	
M-246	NAS Video Server with storage Minimum 70 TB	Nos	INPUT	
M-247	Backup Video (Only Incidents) Server.	Nos	INPUT	
M-248	Graphic Display(70" LED DLP IN 3X2 matrix)	Set	INPUT	
M-249	Graphic Display Controller and software including Video Switches	Set	INPUT	
M-250	CCTV Monitoring Workstation	Nos	INPUT	
M-251	Emergency Telephone (1033) Console.	Nos	INPUT	
M-252	VIDS-Workstation.	Nos	INPUT	
M-253	Administrative Workstation	Nos	INPUT	
M-254	ATMS Operator Workstation	Nos	INPUT	
M-255	CCTV joystick	Nos	INPUT	
M-256	Operations Laser Printer(Colour)	Nos	INPUT	
M-257	Operations Laser Printer(Black)	Nos	INPUT	
M-258	Rack 19"	Nos	INPUT	
M-259	ATMS Control Room Software(integrated with VIDS, ATCC, VMS, MOS)	Ls	INPUT	
M-260	Video Management Software with atleast 150 VMS Lic	Ls	INPUT	
M-261	Facility Monitoring System Controller Software	Ls	INPUT	
M-262	Server & Database license	Ls	INPUT	
M-263	Antivirus license	Ls	INPUT	
M-264	PTZ Camera (including CCTV Controller)	Set	INPUT	
M-265	Solar System with UPS, battery & 12mm Pole & Cabinet	Set	INPUT	
M-266	VIDS Camera (including image Processing unit)	Set	INPUT	

1	2	3	4	5
M-267	Warning amber lights with hooters, 72 Hrs solar backup,5m poles and foundation	Set	INPUT	
M-268	Cabinet	Nos	INPUT	
M-269	12 m Pole (including manufacturing and galvanizing)	Nos	INPUT	
M-270	Solar System with UPS & batteries	Set	INPUT	
M-271	Equipment,Sensor unit, Processing unit, Solar power supply and civil works for 4 Lanes	Set	INPUT	
M-272	Solar System with UPS , batteries.	Set	INPUT	
M-273	VMS (Variable Message Sine-Mtype)	Nos	INPUT	
M-274	Gantry(including Manufacturing and galvanizing)	Nos	INPUT	
M-275	Solar System with UPS, battery and Cabinet for M type VMS	Set	INPUT	
M-276	Uninterruptible Power supply (UPS)for Server Rack(10KVA)	Set	INPUT	
M-277	Uninterruptible Power supply (UPS) for TMC (30KVA)	Set	INPUT	
M-278	Power Distribution Board (Essential & CriticalSupply)	Set	INPUT	
M-279	MOS sensor Equipment (including MOS Controller)	Set	INPUT	
M-280	Cabinet	Nos	INPUT	
M-281	Pole	Nos	INPUT	
M-282	Steel fence for protection	Set	INPUT	
M-283	24 CoreArmoured OFC + all accessories	Meter	INPUT	
M-284	40 mm PLB HDPE duct as per latest TSEC specification +all accessories	Meter	INPUT	
M-285	Trenching of 1.8 meters,Laying & Back filling for PLB HDPE duct	Meter	INPUT	
M-286	Bi- Axial Extruded Geogrids of Minimum Tensile Strength 15kN/m	sqm	89.26	
M-287	Bi- Axial Extruded Geogrids of Minimum Tensile Strength 20kN/m	sqm	102.41	
M-288	Bi- Axial Extruded Geogrids of Minimum Tensile Strength 30kN/m	sqm	167.23	
M-289	Bi- Axial Extruded Geogrids of Minimum Tensile Strength 40kN/m	sqm	244.27	
M-290	Geosynthetic Drainage composite (tensile strength of 18 Kn/m)	sqm	473.51	
M-291	Geosynthetic Drainage composite (tensile strength of 13.5 Kn/m)	sqm	563.71	
M-292	Waste Plastic (as per IRC:SP:98-2013)	tonne	15790.14	
M293	RCC Pipe NP 4 heavy duty non presure pipe 1500 mm dia	meter	6510.00	
M294	Acrylic noise barrier shoot	Sqm	INPUT	

xLv

RCD/SOR\_16th Edition\_2022

1	2	3	4	5
M295	Silt Fence Sheet	Sqm	INPUT	
M296	Fully Threaded Hot Dip galvanised geotechnical bars with casing'	Lm	INPUT	
M297	Centralizer	No	INPUT	
M298	Bearing Plate 200mm x 200mm x 10mm	No	INPUT	
M299	Spherical dome nut	Nos.	INPUT	
M300	Fibre Reinforcement	tonne	INPUT	
M301	Geotextile	Sqm	84.55	
M302	Polyvinyl Chloride Pipe (PVC)-90 mm	meter	70.00	
M303	Polyvinyl Chloride Pipe (PVC)-110 mm	meter	130.00	
M304	Polyvinyl Chloride Pipe (PVC)-135 mm	meter	130.00	
M305	Steel/Iron Scraps	Kg.	INPUT	
M306	Aluminium sheeting fixed with encapsulated lens type reflective sheeting including 2% towards lettering (Class-C Type XI- 2mm thick)	sqm	INPUT	
M307	Geocell	sqm	89.26	
M308	Geosynthetics mat	sqm	45.00	
M309	Natural geotextile	sqm	84.55	
M310	Fabric Form mattress	sqm	84.55	
M311	Non-Woven Geotextile	sqm	84.55	
M312	Sr. Road Safety/Auditor/ Team Leader for Road Safety Audit	Month	INPUT	
M313	Traffic Planner for Road Safety Audit	Month	INPUT	
M314	Boarding & Loading and Per Diem for Site Visits (During Road Safety Audit)	Days	INPUT	
M315	Transportation at site and Head Office (During Road Safety Audit)	No. of Trip	INPUT	
M316	Duty travel to Site (During Road Safety Audit)	Days	INPUT	
M317	Collection of Road accident data and analysis of fatal and grievously injured accident with black spot identification (During Road Safety Audit)	No. of Copies	INPUT	
M318	Submission of GAP report (For Road Safety Audit)	No. of Copies	INPUT	
M319	Road Safety Audit Reports on all activities which were planned, actually executed and planned for the next quarter.	No. of Copies	INPUT	
M320	Submission of Audit Report of work zone safety (for Road Safety Audit)	No. of Copies	INPUT	
M321	Workshop Report for Road Safety Audit	No. of Copies	INPUT	
M322	Final Safety Report (for road safety Audit)	No. of Copies	INPUT	

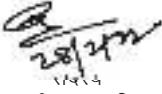
1	2	3	4	5
M-323	Cement Fly Ash Brick (Conforming to IS 12894, size= 230 X 110 X 70 mm, weight of one brick= 3Kg, composition: Fly ash= 60%, Coarse sand= 30%, Cement= 10%) including carriage of sand	each	5.008	
M-324	Paver Block (Excluding GST )			
	(i) M -35 Grade and 60 mm thickness (a) White	sqm	516.79	
	(b) Red	sqm	526.00	
	(C) Yelliw	sqm	542.52	
	(ii) M-40 Grade and 80mm thickness (a) White	sqm	593.06	
	(b) Red	sqm	608.57	
	(C) Yellow	sqm	628.20	
M-325	Kerb-Stone Block- M30 Grade (Size 375mm x 300mm x150mm ) inclusive of OH & CP	each	91.50	
M-326	Autoclaved Aerated Concrete (AAC) Block	cum	2506.34	
M-327	Bitumen grade VG 40 (30/40) packed Ex Fatuha.	MT	59235.00	
MR01	Construction of restaurant, workshop, first aid room, shop etc. in truck parking area complete as per drg. and direction of the Engineer.	Sqm	INPUT	
MR02	Providing Telephone booth complete as per specifications and direction of Engineer.	Nos.	INPUT	
MR03	Providing & fixing tube well, complete as per drawing and additional specifications.	Nr.	INPUT	
MR04	Providing a Drinking Water Kiosk complete as per drawing & specification.	Nr.	INPUT	
MR05	Providing and fixing of litter bins in Truck lay Bye locations complete as per drawing or as directed by the engineer.	Nr.	INPUT	
MR06	Construction of toilet block provided with fittings and fixtures complete in truck parking area complete as per drg. and direction of the Engineer.	Nr.	INPUT	
MR07	Construction of Open lined U - Drain in truck laybye area complete as shown in drawing and technical specification clause 309.	Meter	INPUT	
MR08	Providing shelters for bus passengers as per drawing and MORT&H Specifications section 300, 1500, 1600 and 1700.	Nr.	INPUT	
MR09	Providing & fixing guard railing with tubular steel sections at foot path / medians / islands etc including foundation concrete and painting with approved paint etc. all complete as per drawing & MORT&H Specifications Clauses 808, 300, 1500, 1700 & 1900.	Meter	INPUT	
MR10	Toll Booth at Tollplaza	Nr.	INPUT	
MR11	Barrier gates at Tollplaza For 3.2 m wide toll lane	Nr.	INPUT	

xLvii

RCM/SOR\_16th Edition\_2022

1	2	3	4	5
MR12	Barrier gates at Tollplaza For 4.5 m wide toll lane	Nr.	INPUT	
MR13	Canopy	Sqm	INPUT	
MR14	Canopy Lights Halide lamps 150 watt	Nr.	INPUT	
MR15	Canopy Lights Halogen lamps 1000 watt	Nr.	INPUT	
MR16	Loading Unloading Platform	Sqm	INPUT	
MR17	Traffic Aid Post at Toll Plaza	Nr.	INPUT	
MR18	Medical Aid Post at Toll Plaza	Nr.	INPUT	
MR19	Vehicle Rescue Post at Toll Plaza	Nr.	INPUT	
MR20	Ambulances at Toll Plaza	Nr.	INPUT	
MR21	Cranesat Toll Plaza	Nr.	INPUT	
MR22	Electronic Toll Connection (ETC lanes) at Toll Plaza	Nr.	INPUT	
MR23	Intercom facility at Toll Plaza	Nr.	INPUT	
MR24	Weigh Bridge	Nr.	INPUT	
MR25	Car Parking area	Sqm	INPUT	
MR26	Generator room	Sqm	INPUT	
MR27	Base Maintainance Camp	Sqm	INPUT	
MR28	Toll plaza equipment	Lane	INPUT	
MR29	Electrification And Air conditioning for toll Booth and toll Plaza	LS	INPUT	
MR30	Bull nose crash barrier	Nr.	INPUT	
MR31	Standby Generator at Toll Plaza	Nr.	INPUT	
MR32	CCTV camera installed at each booth	Nr.	INPUT	
MR33	T1 for Toll Road Start	Nr.	INPUT	
MR34	T2 for Toll Gate 1 Km	Nr.	INPUT	
MR35	T3 for Toll Gate 500 m and toll rates	Nr.	INPUT	
MR36	T4 for exempt vehicles at Toll Plaza	Nr.	INPUT	
MR37	T5 for pictorial description of toll rates	Nr.	INPUT	
MR38	T6 for over size vehicle lane direction sign at Toll Plaza	Nr.	INPUT	
MR39	T7 near the Toll booths displaying Toll Rates, exempt vehicles and complaint telephone number & address	Nr.	INPUT	
MR40	T8 for Toll Road End	Nr.	INPUT	
MR41	Picnic Area at Rest Area	Sqm	INPUT	
MR42	Petrol Pump & Pepairing Shop at Rest Area	Sqm	INPUT	

1	2	3	4	5
MR43	Buffer Zone at Rest Area	Sqm	INPUT	
MR44	Traffic blinker Signal (L.E.D.)	Nr	INPUT	
MR45	PVC Roof Sheet at FOB	Sqm	INPUT	
MR46	Cost of Water Quality Monitoring	Nos.	INPUT	
MR47	Cost of Soil Quality Monitoring	Nos.	INPUT	
MR48	Cost of Ambient Air Quality	Nos.	INPUT	
MR49	Cost of Ambient Noise Monitoring 24 hour continuous	Nos.	INPUT	
MR50	Consent to Establish (CTE)	Nos.	INPUT	
MR51	Consent to Operate (CTO)	Nos.	INPUT	
MR52	Compliance submission for Consent to Establish (CTE)	Nos.	INPUT	
MR53	Compliance submission for Consent to Operate (CTO)	Nos.	INPUT	
MR54	Cost of Environmental Workshop	Nos.	INPUT	

  
28/02/22  
सदस्य

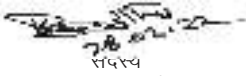
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निर्धारण समिति-सह-अभियंता प्रमुख,  
भवन निर्माण विभाग, बिहार, पटना।

  
28/02/22  
सदस्य

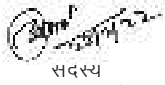
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समिति-सह-अभियंता प्रमुख, ग्रामीण  
कार्य विभाग, बिहार, पटना।

  
28/02/22  
सदस्य

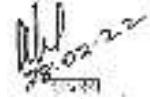
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समिति-सह-अभियंता प्रमुख, लघु  
जल संसाधन विभाग, बिहार, पटना।

  
28/02/22  
सदस्य

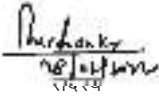
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(असै०), बिहार स्टेट पावर होल्डिंग  
कंपनी लिमिटेड, बिहार, पटना।

  
28/02/22  
सदस्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(विद्युत), भवन निर्माण विभाग,  
बिहार, पटना।

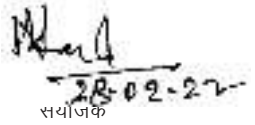
  
28/02/22  
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक,  
कोषांग, निगरानी विभाग, बिहार, पटना।

  
28/02/22  
सदस्य

सदस्य  
राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-अभियंता प्रमुख,  
लोक स्वास्थ्य अभिंत्रण विभाग,  
बिहार, पटना।

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
जल संसाधन विभाग, बिहार, पटना।

  
28-02-22  
सयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
पथ निर्माण विभाग, बिहार, पटना।

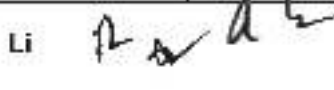
## Schedule- P &amp; M / MORTH - 1A

Date :- 07.12.2021

Approved Usages rate of Plants & Machinery for preparation of Schedule of rate 2022-23 including all charges ,cost of repair,maintainance,tyre- replacement,running and operating charges such as fuel lubricant,labour etc but excluding GST,Overhead and Contractor's profit.

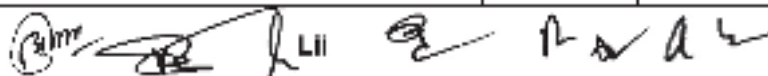
Sl. No.	Code	Description	Unit	Approved Rate	Remarks
1	PM1001	Dozer - 240 HP	Hour	5,523.00	
2	PM1002	Dozer - 175 HP	Hour	4,249.00	
3	PM1003	Dozer - 90 HP	Hour	2,930.00	
4	PM2001	Motor Grader 4.3 metre blade	Hour	5,450.00	
5	PM2002	Motor Grader 3.7 metre blade	Hour	4,985.00	
6	PM2003	Motor Grader 3.35 metre blade	Hour	4403.00	
7	PM3003	Hydraulic Excavator of 1.2 cum bucket	Hour	2,703.00	
8	PM3004	Hydraulic Excavator of 1.1 cum bucket	Hour	2,432.00	
9	PM3005	Hydraulic Excavator of 0.9 cum bucket	Hour	2,202.00	
10	PM4001	Jack Hammer (attachment of Hydraulic Excavator)	Hour	206.00	
11	PM5001	Front End loader 3.1 cum bucket capacity	Hour	3,433.00	
12	PM5002	Front End loader 2.1 cum bucket capacity	Hour	2,033.00	
13	PM5003	Backhoe-loader 1 cum bucket capacity	Hour	1366.00	
14	PM6001	Tipper-18 Cum	Hour	2239.00	
15	PM6002	Tipper-14 Cum	Hour	1998.00	
16	PM6003	Tipper-10 Cum	Hour	1785.00	
17	PM6004	Tipper-5.5 Cum	Hour	1371.00	
18	PM7001	Vibratory Soil Compactor (10 tonne)	Hour	1988.00	
19	PM8001	Smooth Wheeled Roller 8 tonne	Hour	1518.00	
20	PM9001	Tandem Roller	Hour	1,978.00	Vibratory road Roller
21	PM9002	Mini Tandem Roller	hour	1,048.00	Do
22	PM10001	Pneumatic Road Roller	Hour	1996.00	Do
23	PM11001	Water Tanker (16 KL)	Hour	1,121.00	
24	PM11002	Water Tanker (12 KL)	Hour	947.00	
25	PM11003	Water Tanker (6 KL)	Hour	707.00	
26	PM12001	Tractor-Trolley	Hour	629.00	
27	PM13001	Rotavator	Hour	17.00	
28	PM14001	Ripper	Hour	21.00	
29	PM15001	Air Compressor -250 cfm	Hour	391.00	
30	PM15002	Air Compressor -500 cfm	Hour	1,831.00	
31	PM16001	Integrated Stone Crusher Stone (3 Stage) 250 TPH	Hour	13,481.00	
32	PM17001	Wet Mix Plant - 250 TPH Capacity	Hour	649.00	
33	PM17002	Wet Mix Plant - 200 TPH Capacity	Hour	354.00	
34	<b>PM17003</b>	<b>Wet Mix Plant - 100 TPH Capacity</b>	<b>Hour</b>	<b>329.00</b>	
35	<b>PM18001</b>	<b>Hotmix Plant - 200 TPH Capacity</b>	<b>Hour</b>	<b>44,761.00</b>	
36	<b>PM18002</b>	<b>Hotmix Plant - 160 TPH Capacity</b>	<b>Hour</b>	<b>34,660.00</b>	
37	<b>PM18003</b>	<b>Hotmix Plant - 120 TPH capacity</b>	<b>Hour</b>	<b>26375.00</b>	
38	PM19001	Batching and Mixing Plant - 240 cum Capacity	Hour	5681.00	
39	PM19002	Batching and Mixing Plant - 120 cum Capacity	Hour	3635.00	
40	PM20001	Mobile Concrete Batching / Mixing Plant	Hour	617.00	
41	PM21001	Concrete Mixer - 0.4/0.28 cum	Hour	283.00	
42	PM21002	Concrete Mixer - 1 cum	Hour	313.00	
43	PM22001	Generator 725 KVA	Hour	7,759.00	
44	PM22002	Generator 500 KVA	Hour	5,360.00	
45	PM22003	Generator 400 KVA	Hour	4,323.00	
46	PM22004	Generator 250 KVA	Hour	3034.00	
47	PM22005	Generator 125 KVA	Hour	1587.00	
48	PM22006	Generator 100 KVA	Hour	1359.00	
49	PM22007	Generator 62.5 KVA	Hour	869.00	

Sl. No.	Code	Description	Unit	Approved Rate	Remarks
50	PM22008	Generator 33 KVA	Hour	495.00	
51	PM22009	Generator 15 KVA	Hour	274.00	
52	PM23001	Mechanical Broom Hydraulic	Hour	746.00	
53	PM24001	Bitumen Pressure Distributor	Hour	1,299.00	
54	PM25001	Emulsion Pressure Distributor	Hour	1,299.00	
55	PM26001	Bitumen Boiler Oil Fired	Hour	510.00	
56	PM27001	Mastic Cooker	Hour	450.00	
<b>57</b>	<b>PM28001</b>	<b>Paver Finisher Mechanical</b>	<b>Hour</b>	<b>2078.00</b>	
58	PM29001	Paver Finisher Hydrostatic with sensor control -240 HP	Hour	8054.00	
59	PM29002	Paver Finisher Hydrostatic with sensor control -170 HP	Hour	6346.00	
60	PM30001	Paver Finisher Concrete with 300 HP Motor	Hour	25929.00	
61	PM30002	Paver Finisher Concrete with 241 HP Motor	Hour	16593.00	
62	PM30003	Paver Finisher Concrete with 118 HP Motor	Hour	3,764.00	
63	PM31001	Texture Curing Machine (TCM) - upto 18 m	Hour	4,328.00	
64	PM31002	Texture Curing Machine (TCM) - upto 9 m	Hour	3,354.00	
65	PM32001	Hydraulic Chip Spreader	Hour	1,602.00	
66	PM33001	Pot-Hole Repair Machine	Hour	1,235.00	
67	PM34001	Transit Mixer - 6 Cum	Hour	1,860.00	
68	PM35001	Concrete Pump	Hour	960.00	
69	PM36001	Boom Placer	Hour	3,695.00	
70	PM37001	Kerb Casting Machine	Hour	1,468.00	
71	PM38001	Piling Rig with Bentonite Pump	Hour	17,135.00	
72	PM39001	Pneumatic Sinking Plant	Hour	5,333.00	
73	PM40001	Road marking machine	Hour	1,349.00	
74	PM41001	Mobile Slurry Seal Equipment	Hour	3,392.00	
75	PM42001	Joint Cutting Machine	Hour	293.00	
76	PM43001	Bar Bending & Cutting Machine	Hour	309.00	
77	PM44001	Needle Vibrator	Hour	325.00	
78	PM45001	Jack Hammer for air compressor	Hour	11.00	
79	PM46001	Plate Compactor	Hour	335.00	
80	PM47001	Milling Machine with 1 meter Drum Width	Hour	4,026.00	
81	PM47002	Milling Machine with 1.2 meter Drum Width	Hour	4,707.00	
82	PM47003	Milling Machine With 1.3 meter Drum Width	Hour	6,803.00	
83	PM47004	Milling Machine With 2 meter Drum Width	Hour	9,824.00	
84	PM48001	Cold in Situ recycling of bitumen's pavement with foam bitumen technology	Hour	27,209.00	
85	PM49001	In situ stabilisation of WMM/GSB/Sub grade	Hour	24,056.00	
86	PM50001	Cement spreader	Hour	6,913.00	
87	PM51001	Mobile cold recycling mixing plant	Hour	20,422.00	
88	PM52001	Hot in place recycling	Hour	1,02,535.00	
89	PM53001	Pre heater unit for hot in place recycling	Hour	634.00	
90	PM54001	Single boom Hydraulic Drill Jumbo	Hour	4,394.00	
91	PM55001	Two boom Hydraulic Drill Jumbo	Hour	6,604.00	
92	PM56001	Three boom Hydraulic Drill Jumbo	Hour	9,638.00	
93	PM57001	Hydraulic Rock bolt drill	Hour	6,572.00	
94	PM58001	Rotating Telehandlers	Hour	887.00	
95	PM59001	Shotcrete Machine	Hour	1,349.00	
96	PM60001	Grouting machine	Hour	525.00	
97	PM61001	Dewatering Pump 10 HP	Hour	195.00	
98	PM61002	Concrete cutting machine	Hour	170.00	
99	PM62001	Crawler mounted Crane 35 tonne capacity	Hour	5,502.00	
100	PM62002	Crawler mounted Crane 80 tonne capacity	Hour	5,615.00	
101	PM62003	Crawler mounted Crane 100 tonne capacity	Hour	8,705.00	
102	PM63001	Mobile Hydraulic Crane 3 tonne capacity	Hour	728.00	
103	PM63002	Mobile Hydraulic Crane 5 tonne capacity	Hour	765.00	
104	PM63003	Mobile Hydraulic Crane 10 tonne capacity	Hour	864.00	
105	PM63004	Mobile Hydraulic Crane 15 tonne capacity	Hour	899.00	

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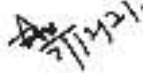
Sl. No.	Code	Description	Unit	Approved Rate	Remarks
106	PM63005	Mobile Hydraulic Crane 20 tonne capacity	Hour	1,125.00	
107	PM63006	Mobile Hydraulic Crane 35 toone capacity	Hour	1,747.00	
108	PM64001	Concrete Bucket	Hour	86.00	
109	PM65001	Prestressing Jack with Pump & Access	Hour	413.00	
110	PM66001	Boat to carry atleast 20 persons	hour	714.00	
111	PM67001	Crane with grab 0.75 cum capacity	hour	738.00	
112	PM68001	Epoxy Injection gun	hour	231.00	
113	PM69001	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	9,004.00	
114	PM70001	Jack for Lifting 40 tonne lifting capacity.	hour	239.00	
115	PM71001	Vibrating Pile driving hammer complete with power unit and accessories.	hour	16,014.00	
116	PM72001	Tipper 18 Cum ( Surface Road)	Per Tonne Km.	4.80	As per Carriage Rate
117	PM72002	Tipper-18 Cum (Unsurfaced Gravelled Road) excluding OH & CP	t.km	5.83	Do
118	PM72003	Tipper-18 Cum (Katcha Track) excluding OH & CP	t.km	11.66	Do
119	PM73001	Tipper -14 Cum (Surface Road) excluding OH & CP	t.km	5.48	Do
120	PM73002	Tipper -14 Cum (Unsurfaced Gravelled Road) excluding OH & CP	t.km	6.66	Do
121	PM73003	Tipper -14 Cum (Katcha Track) excluding OH & CP	t.km	13.32	Do
122	PM74001	Tipper -10 Cum (Surface Road) excluding OH & CP	t.km	6.80	Do
123	PM74002	Tipper -10 Cum (Unsurfaced Gravelled Road) excluding OH & CP	t.km	8.26	Do
124	PM74003	Tipper -10 Cum (Katcha Track) excluding OH & CP	t.km	16.53	Do
125	PM75001	Tipper- 5.5 Cum (Surface Road) excluding OH & CP	t.km	9.41	Do
126	PM75002	Tipper- 5.5 Cum (Unsurfaced Gravelled Road) excluding OH & CP	t.km	11.42	Do
127	PM75003	Tipper- 5.5 Cum (Katcha Track) excluding OH & CP	t.km	22.85	Do
128	PM76001	Transit Mixer - 6 Cum excluding OH & CP	t.km	10.33	Do
129	PM77001	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum (Using by 18 cum capacity Tipper & 3.1 Cum capacity Loader) excluding OH & CP	cum	73.42	Do
130	PM77002	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum (Using by 14 cum capacity Tipper & 2.1 Cum capacity Loader) excluding OH & CP	cum	71.98	Do
131	PM77003	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum (Using by 10 cum capacity Tipper & 1.0 Cum capacity Loader) excluding OH & CP	cum	100.20	Do
132	PM77004	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum (Using by 5 cum capacity Tipper & 1.0 Cum capacity Loader) excluding OH & CP	cum	112.96	Do
133	PM77005	Loading and Unloading of Cement or Steel by Manual Means and Stacking	tonne	420.80	Do
134	PM78001	Centrifugal water pump	Hour	240.00	
135	PM79001	Shredding Machine	Hour	391.00	
136	PM80001	Mobile Bridge Inspection Unit (MBIU)	hour	6,549.00	
137	PM81001	Network Survey Vehicle (NSV) With SUV	hour	6,044.00	
138	PM82001	Falling weight deflectometer (FWD) Equipment With SUV	hour	2,884.00	
139	PM83001	Retroreflector testing equipment with Vehicle With SUV	hour	1,468.00	



Sl. No.	Code	Description	Unit	Approved Rate	Remarks
140	PM84001	Sport utility vehicle (SUV)	hour	975.00	
141	PM85001	Automatic Vehicle Counter Classifier (ATCC) System	hour	74.00	

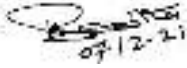


राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।



सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।


सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।



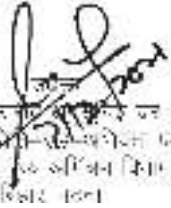
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राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।



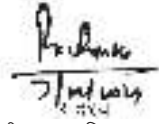
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।



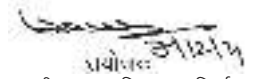
सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।



सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक संसाधन विभाग, बिहार, पटना।



सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।



सदस्य  
राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

**Approved Input of Labour wages, Overhead & Lead for the preparation of  
Schedule of Rate 2022-2023 in prescribed format of updated MORT&H Standard  
Data Book 2019 (2nd Revision)**

S.No.	Description of Labour	Unit	Approved Rate
1	2	3	4
L-01	Blacksmith (IInd class)	day	369.00
L-02	Blacksmith (Ist class)/ Welder/ Plumber/ Electrician	day	413.00
L-03	Blaster (Stone cutter)	day	508.00
L-04	Carpenter I Class	day	413.00
L-05	Chiseller (Head Mazdoor)	day	474.00
L-06	Driller (Jumper)	day	318.00
L-07	Diver	day	474.00
L-08	Fitter	day	369.00
L-09	Mali	day	318.00
L-10	Mason (IInd class)	day	369.00
L-11	Mason (Ist class)	day	413.00
L-12	Mate / Supervisor	day	325.00
L-13	Mazdoor	day	306.00
L-14	Mazdoor/Dresser (Semi Skilled)	day	318.00
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	388.00
L-16	Medical Officer	day	474.00
L-17	Operator(grouting)	day	474.00
L-18	Painter I class	day	391.00
L-19	Para medical personnel	day	474.00
L-20	Heavy Plant Operator	day	474.00
L-21	Light Plant Operator.	day	388.00
L-22	Heavy Vehicle Driver.	day	440.00
L-23	Light Vehicle Driver.	day	388.00
L-24	Helper	day	306.00
L-25	Black smith	day	369.00

**Overhead**

	Overheads for Road Works(Large)	0.08	(@ 8%)
	Overheads for Road Works(Medium)	0.10	(@ 10%)

	Overheads for Road Works (Small)	0.12	(@ 12%)
	Contractor's profit for Road Works	0.10	(@ 10%)
	Overheads for New / Widening of Bridge/Structure Works	0.20	(@ 20%)
	Overheads for Rehabilitation of Bridge /Structure	0.30	(@ 30%)
	Contractor's profit for Bridge Works	0.10	(@ 10%)
	Over heads for Road Tunnel Works	0.25	(@ 25%)
	Contractor's profit for Tunnel Works	0.10	(@ 10%)

**Lead**

L1	Lead from Mixing Plant to working site	1.0	km
L2	Lead for EW borrow area to site	1.0	km

*(Signature)*

*(Signature)*

**APPROVED CARRIAGE RATE OF MATERIALS (By TIPPER) Meeting Date 28.02.2022**

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
1.01	A	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		A. Taking output = 5.5 Cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 1 cum bucket capacity	Min	6.633	6.633	6.633					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	13.633	13.633	13.633					
		a) Machinery									
		Tipper-5.5 Cum capacity	Hour	0.227	0.227	0.227	1,371.00	311.217	311.217	311.217	PM6004
		Front end -loader 1 cum bucket capacity	Hour	0.227	0.227	0.227	1,366.00	310.082	310.082	310.082	PM5003
		<b>Total Cost Excluding OH &amp; CP</b>						621.299	621.299	621.299	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		49.704	62.130	74.556	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		67.100	68.343	69.585	
		Total Cost for 5.5 cum = (a+b+c) Including OH & CP						738.103	751.772	765.440	
		<b>Unit Cost= (a+b+c)/5.5 Including OH &amp; CP</b>						134.201	136.686	139.171	
	Note :	<b>Unloading will be by tipping.</b>					<b>Say</b>	<b>134.200</b>	<b>136.700</b>	<b>139.200</b>	
1.01	B	Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.									









Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 10.00 cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 1 cum bucket capacity	Min	12.060	12.060	12.060					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	19.060	19.060	19.060					
		a) Machinery									
		Tipper-10 Cum capacity	Hour	0.318	0.318	0.318	1,785.00	567.63	567.63	567.63	PM6003
		Front end-loader 1 cum bucket capacity	Hour	0.318	0.318	0.318	1,366.00	434.388	434.388	434.388	PM5003
		<b>Total Cost Excluding OH &amp; CP</b>						1,002.02	1,002.02	1,002.02	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		80.161	100.202	120.242	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		108.218	110.222	112.226	
		Total Cost for 10 cum = (a+b+c)Including OH & CP						1190.397	1212.442	1234.486	
		<b>Unit Cost= (a+b+c)/10 Including OH &amp; CP</b>						119.040	121.244	123.449	
		Note : Unloading will be by tipping.					<b>Say</b>	<b>119.000</b>	<b>121.200</b>	<b>123.400</b>	
1.01	C.	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.</b>									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 14.00 cum									
		<b>Time required for</b>									







Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 2.1 cum bucket capacity	Min	8.029	8.029	8.029					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	15.029	15.029	15.029					
		a) Machinery									
		Tipper-14 Cum capacity	Hour	0.250	0.250	0.250	1998.000	499.500	499.500	499.500	PM6002
		Front End loader 2.1 cum bucket capacity	Hour	0.250	0.250	0.250	2033.000	508.250	508.250	508.250	PM5002
		<b>Total Cost Excluding OH &amp; CP</b>						1,007.750	1,007.750	1,007.750	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		80.620	100.775	120.930	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		108.837	110.853	112.868	
		Total Cost for 14 cum = (a+b+c)including OH & CP						1,197.207	1,219.378	1,241.548	
		<b>Unit Cost= (a+b+c)/14 Including OH &amp; CP</b>						85.515	87.098	88.682	
		Note : Unloading will be by tipping.					<b>Say</b>	<b>85.500</b>	<b>87.100</b>	<b>88.700</b>	
1.01	D	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.</b>									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 18.00 cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 3.1 cum bucket capacity	Min	6.996	6.996	6.996					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	13.996	13.996	13.996					









Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		a) Machinery									
		Tipper-18 Cum capacity.	Hour	0.233	0.233	0.233	2,239.00	521.687	521.687	521.687	PM6001
		Front End loader 3.1 cum bucket capacity	Hour	0.233	0.233	0.233	3,433.00	799.889	799.889	799.889	PM5001
		<b>Total Cost Excluding OH &amp; CP</b>						1,321.576	1,321.576	1,321.576	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		105.726	132.158	158.589	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		142.730	145.373	148.017	
		Total Cost for 18 cum = (a+b+c)Including OH & CP						1,570.032	1,599.107	1,628.182	
		<b>Unit Cost=(a+b+c)/18 Including OH &amp; CP</b>						87.224	88.839	90.455	
		<b>Note : Unloading will be by tipping.</b>					<b>Say</b>	<b>87.200</b>	<b>88.800</b>	<b>90.500</b>	
1.02	Ref. to Morth.	<b>Loading and Unloading of Boulders by Manual Means</b>									
		Unit = cum									
		Taking output = 10 Cum									
		a) Labour									
		Mate	day	0.055	0.055	0.055	325.000	17.875	17.875	17.875	L-12
		Mazdoor	day	1.364	1.364	1.364	306.000	417.384	417.384	417.384	L-13
		b) Machinery									
		Tipper-10 Cum capacity	Hour	1.364	1.364	1.364	1,785.00	2434.74	2434.74	2434.74	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						2,870.00	2,870.00	2,870.00	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		229.600	287.000	344.400	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		309.960	315.700	321.440	
		Total Cost for 10 cum=(a+b+c+d)Including OH & CP						3409.559	3472.699	3535.839	
		<b>Unit Cost=(a+b+c+d)/10 Including OH &amp; CP</b>						340.956	347.270	353.584	
		<b>Note : Unloading will be by tipping.</b>					<b>Say</b>	<b>341</b>	<b>347.3</b>	<b>353.6</b>	
1.03	Ref. to M.	<b>Loading and Unloading of Cement or Steel by Manual Means and Stacking.</b>									
		Unit = tonne									
		Taking Output = 18.00 tonne									
		a) Labour									





Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.144	0.144	0.144	325.000	46.800	46.800	46.800	L-12
		Mazdoor	day	3.600	3.600	3.600	306.000	1101.600	1101.600	1101.600	L-13
		b) Machinery									
		Truck-18 tonne capacity.	Hour	3.600	3.600	3.600	1,785.00	6426.000	6426.000	6426.000	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						7574.400	7574.400	7574.400	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		605.952	757.440	908.928	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		818.035	833.184	848.333	
		Total Cost for 18 tonnes=(a+b+c+d)Including OH & CP						8,998.387	9,165.024	9,331.661	
		Unit Cost=(a+b+c+d)/18 Including OH & CP						499.910	509.168	518.426	
1.04	(i) A	<b>Cost of Haulage Excluding Loading and Unloading</b>					<b>Say</b>	<b>499.900</b>	<b>509.200</b>	<b>518.400</b>	
		<b>i) A.Case-I : Surfaced Road.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load and lead 10 km=100. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1,371.00	548.400	548.400	548.400	PM6004
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1,371.00	392.106	392.106	392.106	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						940.506	940.506	940.506	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		75.240	94.051	112.861	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		101.575	103.456	105.337	
		Total Cost for 100 t.km = (a+b+c)Including OH & CP						1117.321	1138.012	1158.703	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						11.173	11.380	11.587	








Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Cost of Haulage Excluding Loading and Unloading</b>					Say	11.200	11.400	11.600	
	B	<b>i) Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output =18tonnes load and lead10 km=180. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 18 tonne capacity.									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1785.000	714.000	714.000	714.000	PM6003
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1785.000	510.510	510.510	510.510	PM6003
		Total Cost Excluding OH & CP						1,224.510	1,224.510	1,224.510	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		97.961	122.451	146.941	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		132.247	134.696	137.145	
		Total Cost for180 t.km = (a+b+c)Including OH & CP						1,454.718	1,481.657	1,508.596	
		<b>Rate per t.km= (a+b+c)/180 Including OH &amp; CP</b>						8.082	8.231	8.381	
							Say	<b>8.100</b>	<b>8.200</b>	<b>8.400</b>	
	<b>C</b>	<b>Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output = 25 tonne load and lead 10km=250.t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 25 tonnes capacity									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1998.000	799.200	799.200	799.200	PM6002
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1998.000	571.428	571.428	571.428	PM6002
		Total Cost Excluding OH & CP						1370.628	1370.628	1370.628	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		109.650	137.063	164.475	











Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		c) Contractor's profit on (a+b)						148.028	150.769	153.510	
		Total Cost for 250 t.km = (a+b+c) Including OH & CP						1628.306	1658.460	1688.614	
		<b>Rate per t.km= (a+b+c)/250 Including OH &amp; CP</b>						6.513	6.634	6.754	
							<b>Say</b>	<b>6.500</b>	<b>6.600</b>	<b>6.800</b>	
D		<b>Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output = 32 tonnes load and lead 10 km = 320. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 32 tonne capacity									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	2,239.00	895.6	895.6	895.6	PM6001
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	2,239.00	640.354	640.354	640.354	PM6001
		Total Cost Excluding OH & CP						1,535.954	1,535.954	1,535.954	
		b) Overheads on (a)						122.876	153.595	184.314	
		c) Contractor's profit on (a+b)						165.883	168.955	172.027	
		Total Cost for 320 t.km = (a+b+c) Including OH & CP						1,824.713	1,858.504	1,892.295	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>						5.702	5.808	5.913	
							<b>Say</b>	<b>5.700</b>	<b>5.800</b>	<b>5.900</b>	
1.04	(ii) A	<b>.Case-II : Unsurfaced Gravelled Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load & lead 10 km = 100 t.km									
		Speed with load: 20 km/hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 10 tonnes capacity									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1371.000	685.500	685.500	685.500	PM6004
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1371.000	456.543	456.543	456.543	PM6004
		Total Cost Excluding OH & CP						1,142.043	1,142.043	1,142.043	
		b) Overheads on (a)						91.363	114.204	137.045	
		c) Contractor's profit on (a+b)						123.341	125.625	127.909	

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						1,356.747	1,381.872	1,406.997	
		<b>Rate per t.km = (a+b+c)/100 Including OH &amp; CP</b>						13.567	13.819	14.070	
							<b>Say</b>	<b>13.600</b>	<b>13.800</b>	<b>14.100</b>	
1.04	(ii) B	<b>Case-II : Unsurfaced Gravelled Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 18 tonnes load & lead 10 km = 180 t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 18 tonnes capacity									
		Time taken for onward haulage with load.	Hour	0.500	0.500	0.500	1,785.00	892.500	892.500	892.500	PM6003
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1,785.00	594.405	594.405	594.405	PM6003
		Total Cost Excluding OH & CP						1,486.905	1,486.905	1,486.905	
		b) Overheads on (a)						118.952	148.691	178.429	
		c) Contractor's profit on (a+b)						160.586	163.560	166.533	
		Total Cost for 180 t.km = (a+b+c) Including OH & CP						1,766.443	1,799.155	1,831.867	
		<b>Rate per t.km = (a+b+c)/180 Including OH &amp; CP</b>						9.814	9.995	10.177	
							<b>Say</b>	<b>9.800</b>	<b>10.000</b>	<b>10.200</b>	
1.04	(ii) C	<b>Case-II : Unsurfaced Gravelled Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 25 tonnes load & lead 10 km = 250 t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 25 tonnes capacity.									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1,998.00	999.000	999.000	999.000	PM6002
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1,998.00	665.334	665.334	665.334	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>						1,664.334	1,664.334	1,664.334	
		b) Overheads on (a)						133.147	166.433	199.720	
		c) Contractor's profit on (a+b)						179.748	183.077	186.405	
		Total Cos. for 250 t.km = (a+b+c) Including OH & CP						1977.229	2013.844	2050.459	

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per t.km= (a+b+c)/250 Including OH &amp; CP</b>						7.909	8.055	8.202	
							<b>Say</b>	<b>7.900</b>	<b>8.100</b>	<b>8.200</b>	
1.04	(ii) D	<b>Case-II : Unsurfaced Gravelled Road.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 32tonnes load & lead 10 km= 320. t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		i) Tipper 32 tonnes capacity									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	2,239.00	1119.5	1119.5	1119.5	PM6001
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	2,239.00	745.587	745.587	745.587	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>						1,865.087	1,865.087	1,865.087	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		149.207	186.509	223.810	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		201.429	205.160	208.890	
		Total Cost for 320 t.km = (a+b+c) Including OH & CP						2,215.723	2,256.755	2,297.787	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>						6.924	7.052	7.181	
							<b>Say</b>	<b>6.900</b>	<b>7.100</b>	<b>7.200</b>	
1.04	(iii) A	<b>Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load & lead 10km= 100 t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1,371.00	1371.000	1371.000	1371.000	PM6004
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1,371.00	914.457	914.457	914.457	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						2,285.457	2,285.457	2,285.457	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		182.837	228.546	274.255	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		246.829	251.400	255.971	

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Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						2,715.123	2,765.403	2,815.683	
		<b>Rate per t.km = (a+b+c)/100 Including OH &amp; CP</b>					<b>Say</b>	27.151	27.654	28.157	
1.04	(iii) B	iii) B. Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 18 tonnes load & lead 10 km = 180.00 t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		Tipper 18 tonnes capacity									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1,785.00	1785.000	1785.000	1785.000	PM6003
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1,785.00	1190.595	1190.595	1190.595	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						2,975.595	2,975.595	2,975.595	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		238.048	297.560	357.071	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		321.364	327.315	333.267	
		Total Cost for 180 t.km = (a+b+c) Including OH & CP						3,535.007	3,600.470	3,665.933	
		<b>Rate per t.km = (a+b+c)/180 Including OH &amp; CP</b>					<b>Say</b>	19.639	20.003	20.366	
1.04	(iii) C	Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 25 Tonnes load & lead 10 km = 250 t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		i) Tipper 25 tonnes capacity									


Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1,998.00	1998.000	1998.000	1998.000	PM6002
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1,998.00	1332.666	1332.666	1332.666	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>						3,330.666	3,330.666	3,330.666	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		266.453	333.067	399.680	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		359.712	366.373	373.035	
		Total Cost for 250 t.km = (a+b+c) Including OH & CP						3,956.831	4,030.106	4,103.381	
		<b>Rate per t.km= (a+b+c)/250 Including OH &amp; CP</b>					<b>Say</b>	15.827	16.120	16.414	
1.04	(iii) D	Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 32 tonnes load & lead 1 km = 320. t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		i) Tipper 32 tonnes capacity									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	2239.000	2239.000	2239.000	2239.000	PM6001
		Time taken for empty return trip	Hour	0.667	0.667	0.667	2239.000	1493.413	1493.413	1493.413	PM6001
		<b>Total Cost Excluding OH &amp; CP</b>						3,732.413	3,732.413	3,732.413	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		298.593	373.241	447.890	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		403.101	410.565	418.030	
		Total Cost for 320 t.km = (a+b+c) Including OH & CP						4434.107	4516.220	4598.333	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>						13.857	14.113	14.370	
							<b>Say</b>	13.900	14.100	14.400	
1.04	(iv)	Case-IV : Katcha Track in hilly area.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									






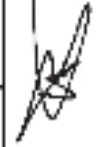








Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking Output 10 tonnes load & lead 10km= 100. t.km									
		Speed with load: 5 km / hour									
		Speed while returning empty: 7 km / hour									
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage	Hour	2.000	2.000	2.000	1,371.00	2742.000	2742.000	2742.000	PM6004
		Time taken for empty return trip.	Hour	1.429	1.429	1.429	1,371.00	1959.159	1959.159	1959.159	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						4,701.159	4,701.159	4,701.159	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		376.09272	470.1159	564.13908	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		507.725172	517.12749	526.529808	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						5,584.977	5,688.402	5,791.828	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						55.850	56.884	57.918	
							<b>Say</b>	<b>55.800</b>	<b>56.900</b>	<b>57.900</b>	
1.04	(v)	<b>Case-V : Transit Mixture</b>									
		Haulage of Concrete by transit mixture excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 15Tonnes load & lead 10km= 150 t.km									
		Speed with load : 20 km / hour									
		Speed while returning empty: 30 km / hour									
		a) Machinery									
		i) Transit Mixture 6 cum capacity.									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1,860.00	930.000	930.000	930.000	PM34001
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1,860.00	619.38	619.38	619.38	PM34001
		<b>Total Cost Excluding OH &amp; CP</b>						1,549.380	1,549.380	1,549.380	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		123.9504	154.938	185.9256	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		167.33304	170.4318	173.53056	
		Total Cost for 150 t.km = (a+b+c) Including OH & CP						1,840.663	1,874.750	1,908.836	



Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per t.km= (a+b+c)/150 Including OH &amp; CP</b>						12.271	12.498	12.726	
1.05		<b>Hand Broken Stone Aggregates 63 mm nominal size</b>				<b>Say</b>		<b>12.300</b>	<b>12.500</b>	<b>12.700</b>	
		Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed									
		Unit = cum									
		Taking Output = 1.00 cum									
		a) Labour									
		Mate	day	0.0600	0.0600	0.0600	325.000	19.500	19.500	19.500	L-12
		Mazdoor	day	1.500	1.500	1.500	306.000	459.000	459.000	459.000	L-13
		b) Material									
		Supply of quarried stone 150 - 200 mm size	cum	1.1000	1.1000	1.1000	675.000	742.500	742.500	742.500	M-001
		<b>Total Cost Excluding OH &amp; CP</b>						1221.000	1221.000	1221.000	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		97.680	122.100	146.520	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		131.868	134.310	136.752	
		Total Cost for 1 cum = (a+b+c+d) Including OH & CP						1,450.548	1,477.410	1,504.272	
		<b>Rate per cum= (a+b+c+d) Including OH &amp; CP</b>				<b>Say</b>		<b>1,450.500</b>	<b>1,477.400</b>	<b>1,504.300</b>	
1.06		<b>Crushing of stone aggregates (Nominal size)</b>									
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of different nominal size.									
	(i)	<b>1. Crushing Pattern 40 mm (tonne)- Cost Distribution 28.98 %</b>									
		Unit = cum									











Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking Output = 750.00 cum									
		a) Labour									
		Mate	day	0.320	0.320	0.320	325.000	104.000	104.000	104.000	L-12
		Mazdoor(Skilled)	day	2.000	2.000	2.000	388.000	776.000	776.000	776.000	L-15
		Mazdoor	day	6.000	6.000	6.000	306.000	1836.000	1836.000	1836.000	L-13
		b) Material									
		Stone Boulder of size 150 mm and below at Crusier Plant	cum	750.000	750.000	750.000	675.00	506250.000	506250.000	506250.000	M-001
		c) Machinery									
		Integrated stone crusher of 250 TPH including belt conveyor and vibrating screens	Hour	6.000	6.000	6.000	13,481.00	80886.000	80886.000	80886.000	PM16001
		Generator 725 KVA	Hour	6.000	6.000	6.000	7,759.00	46554.000	46554.000	46554.000	PM22001
		Front end loader 3.1 cum bucket capacity at quarry and crusher	Hour	5.515	5.515	5.515	3,433.00	18932.995	18932.995	18932.995	PM5001
		Tipper 14 cum capacity for loading at quarry site	Hour	5.515	5.515	5.515	1,998.00	11018.970	11018.970	11018.970	PM6002
		Tipper 14 cum capacity for transportation within 1 km	t.km	1,125.000	1,125.000	1,125.000	5.48	6167.826	6167.826	6167.826	1.04(i) C
		<b>d) Total Cost for 750 cum(Excluding OH &amp; CP)</b>						6,72,525.79	6,72,525.79	6,72,525.79	
		<b>e) Crushing pattern 40mm(tonne)</b>	tonne	22.71%	22.71%	22.71%	255.488				
		<b>f) % Cost distribution={d)x(f)/e)x1.5}</b>	cum	28.98%	28.98%	28.98%	0.2898	1,144.27	1,144.27	1,144.27	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		91.542	114.427	137.312	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		123.581	125.870	128.158	
		i) Total Cost for 1 cum = (f+g+h) Including OH & CP						1,359.391	1,384.565	1,409.739	
		<b>Rate per cum= (f+g+h) Including OH &amp; CP</b>					<b>Say</b>	<b>1,359.400</b>	<b>1,384.600</b>	<b>1,409.700</b>	
	(ii)	<b>Crushing of stone aggregates (Nominal size)</b>									
		<b>2.Crushing Pattern 20 mm (tonne)- Cost Distribution 31.95 %</b>									
		<b>d) Total Cost for 750 cum(Excluding OH &amp; CP)</b>						6,72,525.79	6,72,525.79	6,72,525.79	
		e) Crushing pattern 20mm(tonne)	tonne	23.00%			258.75				
		f) % Cost distribution={d)x(f)/e)x1.5}	cum	31.95%			0.3195	1,245.63	1,245.63	1,245.63	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		99.651	124.563	149.476	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		134.529	137.020	139.511	



Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) Total Cost for 1 cum = (f+g+h) Including OH & CP						1,479.814	1,507.218	1,534.622	
		<b>Rate per cum = (f+g+h) Including OH &amp; CP</b>				<b>Say</b>		<b>1,479.800</b>	<b>1,507.200</b>	<b>1,534.600</b>	
	(iii)	Crushing of stone aggregates (Nominal size)									
		3. Crushing Pattern 10 mm (tonne)- Cost Distribution 30.75 %									
		<b>d) Total Cost for 750 cum (Excluding OH &amp; CP)</b>						6,72,525.79	6,72,525.79	6,72,525.79	
		e) Crushing pattern 20mm (tonne)	tonne	25.86%			290.925				
		f) % Cost distribution = $\{(d) \times (f) / e\} \times 1.5$	cum	30.75%			0.3075	1,066.26	1,066.26	1,066.26	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		85.301	106.626	127.952	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		115.156	117.289	119.421	
		i) Total Cost for 1 cum = (f+g+h) Including OH & CP						1,266.720	1,290.178	1,313.636	
		<b>Rate per cum = (f+g+h) Including OH &amp; CP</b>						<b>1,266.700</b>	<b>1,290.200</b>	<b>1,313.600</b>	
	(iv)	Crushing of stone aggregates (Nominal size)									
		4 Crushing Pattern dust (tonne)- Cost Distribution 08.32 %									
		<b>d) Total Cost for 750 cum (Excluding OH &amp; CP)</b>						6,72,525.79	6,72,525.79	6,72,525.79	
		e) Crushing pattern dust (tonne)	tonne	28.43%			319.838				
		f) % Cost distribution = $\{(d) \times (f) / e\} \times 1.5$	cum	8.32%			0.0832	262.42	262.42	262.42	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		20.993	26.242	31.490	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		28.341	28.866	29.391	
		i) Total Cost for 1 cum = (f+g+h) Including OH & CP						311.752	317.526	323.299	
		<b>Rate per cum = (f+g+h) Including OH &amp; CP</b>						<b>311.800</b>	<b>317.500</b>	<b>323.300</b>	
	<b>Note:</b>	The average density of 1.5 tonne/cum is only a reference density in this Data Book.									
1.07		Crushing of stone aggregates (GSB Crusher Run)									











Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain crusher run (all in aggregate) for GSB. Unit = cum									
		Taking Output = 750.00 cum									
		a) Labour									
		Mate	day	0.320	0.320	0.320	325.000	104.000	104.000	104.000	L-12
		Mazdoor (Skilled)	day	2.000	2.000	2.000	388.000	776.000	776.000	776.000	L-15
		Mazdoor	day	6.000	6.000	6.000	306.000	1836.000	1836.000	1836.000	L-13
		b) Material									
		Stone Boulder of size 150 mm and below	cum	750	750	750	675.00	506250.000	506250.000	506250.000	M-001
		c) Machinery									
		Integrated stone crusher of 250 TPH including belt conveyor and vibrating screens (for producing crusher run production capacity will increase by 30%)									
		Generator 725 KVA	Hour	4.615	4.615	4.615	13,481.00	62214.815	62214.815	62214.815	PM16001
		Front end loader 3.1 cum bucket capacity at quarry and crusher	Hour	4.615	4.615	4.615	7,759.00	35807.785	35807.785	35807.785	PM22001
		Tipper 14 cum capacity for loading at quarry site	Hour	5.515	5.515	5.515	3,433.00	18932.995	18932.995	18932.995	PM5001
		Tipper 14 cum capacity for transportation within 1 km	Hour	5.515	5.515	5.515	1,998.00	11018.970	11018.970	11018.970	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>	t.km	1,125.00	1,125.00	1,125.00	5.48	6167.826	6167.826	6167.826	1.04(i) C
		d) Overheadson (a+b+c)						6,43,108.391	6,43,108.391	6,43,108.391	
		e) Contractor's profit on (a+b+c+d)						51448.671	64310.839	77173.007	
		Cost for 900 cum =(a+b+c+d+e)						69,455.71	70,741.92	72,028.14	
		<b>Rate per cum =(a+b+c+d+e)/900( Including OH &amp; CP)</b>						7,64,012.77	7,78,161.15	7,92,309.54	
		<b>Note:</b> Considering Crushed volume will be 1.2 times the volume of boulder.						<b>848.90</b>	<b>864.60</b>	<b>880.30</b>	

Note:-1. For local transportation, carriage rate will be given as per provision of different Capacity of vehicle in Large/Medium/Small Projects in rate analysis of particular item of any Chapter.

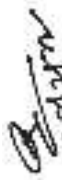
Note:-2. Except Note 1, for transportation/carryage of Stone Aggregate/Stone Boulder/Moorum/Bitumen/Steel/Cement and Other Construction Materials, Loading-Unloading charges & Haulage charges will be allowed by 18 Cum Capacity tipper (18 tonne Capacity Truck in case of loading-unloading of Cement/Steel/Bitumen by manual means) and 32 tonne Capacity tipper respectively only for all types of Projects (Large/Medium/Small) except in cases / circumstances where any limitation/restriction regarding capacity of Vehicle has been imposed by competent Authority (District/State). In case of restriction, rate of allowed capacity of vehicle will be given.

*(Handwritten signatures and initials)*

**Note:-3. In case of Loading & Unloading of Boulders by Manual means, loading-unloading charges will be allowed by 10Cum Capacity tipper.**

**Note:-4. Carriage of material will be done by shortest route.**

**Note:-5. Rates of item nos 1.06 and 1.07 will be taken as per approved rate of respective items in schedule M/MORT&H-1**



सदस्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-अभियंता प्रमुख,  
भवन निर्माण विभाग, बिहार, पटना।



सदस्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(असै०), बिहार स्टेट पावर होल्डिंग  
कंपनी लिमिटेड, बिहार, पटना।



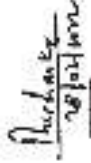
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख, ग्रामीण  
कार्य विभाग, बिहार, पटना।



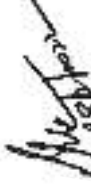
सदस्य

राज्यस्तरीय अनुसूचित दर  
निर्धारण समिति-सह-मुख्य अभियंता,  
(विद्युत), भवन निर्माण विभाग,  
बिहार, पटना।



सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
जल संसाधन विभाग, बिहार, पटना।



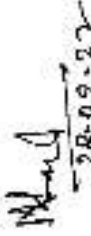
सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख, लघु  
जल संसाधन विभाग, बिहार, पटना।



सदस्य

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक,  
कोषांग, निगरानी विभाग, बिहार, पटना।



संयोजक

राज्यस्तरीय अनुसूचित दर निर्धारण  
समिति-सह-अभियंता प्रमुख (मुख्यालय),  
पथ निर्माण विभाग, बिहार, पटना।

**APPROVED CARRIAGE RATE OF MATERIALS (By TRACTOR)**

Date : 28.02.2022

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per Project Category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
1.1		<b>Loading and Unloading of Stone Boulder/ Stone aggregates/Sand /Kanker/Moorum</b>	cum								
		Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		<b>Unit = cum</b>									
		<b>Taking output = 2.25 cum</b>									
		<b>Time required for</b>									
		i) Positioning of Tractor at loading point			1 Min						
		ii) Loading by front end loader 1 cum bucket capacity.			2.71 Min						(6.633/5.5)*2.25
		iii) Maneuvering, reversing, dumping and turning for return			0 Min						
		iv) Waiting time, unforeseen contingencies etc			0 Min						
		Total			<b>3.71 Min</b>						
		<b>a) Machinery</b>									
		Tractor 3.60 tonnes capacity	hour	0.060	0.060	0.060	629.00	37.740	37.740	37.740	PM12001
		Front end-loader 1 cum bucket capacity	hour	0.060	0.060	0.060	1366.00	81.960	81.960	81.960	PM5003
		<b>Total Cost Excluding OH &amp; CP</b>						119.70	119.70	119.70	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		9.576	11.970	14.364	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		12.928	13.167	13.406	
		Total Cost for 2.25 cum = (a+b+c)Including OH & CP						142.204	144.837	147.470	
		<b>Rate per cum= (a+b+c)/2.25 Including OH &amp; CP</b>						63.202	64.372	65.542	
		<b>Unloading will be done mechanically.</b>						<b>63.200</b>	<b>64.400</b>	<b>65.500</b>	
1.2		<b>Loading and Unloading of Boulders by Manual Means</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 2.25 cum</b>									
		a) Labour									
		Mate	day	0.012	0.012	0.012	325.00	3.900	3.900	3.900	L-12

*(Handwritten signatures and initials)*

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per Project Category		Rate (Rs)	Amount (Rs)		Remarks/ Input ref.
		Mazdoor for loading and unloading	day	0.310	0.310	306.00	94.860	94.860	L-13
		<b>b) Machinery</b>							
		Tractor 3.60 tonne capacity	hour	0.310	0.310	629.00	194.990	194.990	PM12001
		<b>Total Cost Excluding OH &amp; CP</b>					293.750	293.750	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)		23.500	29.375	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)		31.725	32.313	
		Total Cost for 2.25 cum = (a+b+c+d) Including OH & CP					348.975	355.438	
		<b>Rate per cum = (a+b+c+d)/2.25 Including OH &amp; CP</b>				<b>Say</b>	155.100	157.972	
							<b>155.100</b>	<b>158.000</b>	
		<b>Note</b>							
		Unloading will be done by mechanically.							
1.3		<b>Loading and Unloading of Cement or Steel by Manual Means and Stacking.</b>							
		<b>Unit = tonne</b>							
		<b>Taking output = 3.60 tonnes</b>							
		a) Labour	day	0.030	0.030	325.00	9.750	9.750	L-12
		Mate	day	0.720	0.720	306.00	220.320	220.320	L-13
		<b>b) Machinery</b>							
		Tractor 3.60 tonne capacity	hour	0.720	0.720	629.00	452.880	452.880	PM12001
		<b>Total Cost Excluding OH &amp; CP</b>					682.950	682.950	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)		54.636	68.295	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)		73.759	75.125	
		Total Cost for 3.6 tonnes = (a+b+c+d) Including OH & CP					811.345	826.370	
		<b>Rate per tonne = (a+b+c+d)/3.6 Including OH &amp; CP</b>					225.374	229.547	
						<b>say</b>	<b>225.400</b>	<b>229.500</b>	
1.4	(i)	<b>Cost of Haulage Excluding Loading and Unloading</b>							
		Haulage of materials by Tractor excluding cost of loading, unloading and stacking.							
		<b>Unit = t.km</b>							
		<b>Taking output 3.60 tonnes load and lead 10 km = 36.0 t.km</b>							
		<b>Surfaced Road</b>							
		Speed with load : 15 km / hour.							
		Speed while Returning empty : 25 km / hour.							








Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per Project Category		Rate (Rs)	Amount (Rs)	Remarks/ Input ref.
		<b>a) Machinery.</b>						
		<b>Tractor 3.6 tonne capacity</b>						
		Time taken for onward haulage with load	hour	0.667	0.667	629.00	419.543	PM12001
		Time taken for empty return trip.	hour	0.400	0.400	629.00	251.600	PM12001
		<b>Total Cost Excluding OH &amp; CP</b>					671.143	
		b) Overheads on (a)		(@ 8%)	(@ 10%)		53.691	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)		72.483	
		Total Cost for 36 t.km = (a+b+c) Including OH & CP					797.318	
		<b>Rate per t.km= (a+b+c)/36 Including OH &amp; CP</b>					22.148	
						<b>say</b>	<b>22.100</b>	
		<b>Unsurfaced Graveled Road</b>						
	(ii)	Speed with load: 12 km / hour						
		Speed for empty return trip :20 km / hour						
		<b>a) Machinery</b>						
		<b>Tractor 3.6 tonnes capacity</b>						
		Time taken for onward haulage with load	hour	0.833	0.833	629.00	523.957	PM12001
		Time taken for empty return trip	hour	0.500	0.500	629.00	314.500	PM12001
		<b>Total Cost Excluding OH &amp; CP</b>					838.46	
		b) Overheads on (a)		(@ 8%)	(@ 10%)		67.077	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)		90.553	
		Total Cost for 36 t.km = (a+b+c) Including OH & CP					996.087	
		<b>Rate per t.km= (a+b+c)/36 Including OH &amp; CP</b>					27.669	
							<b>27.70</b>	
1.4	(iii)	<b>Katcha Track and Track in River Bed/Nallah Bed and Choe Bed.</b>						
		Speed with load :10 km / hour						
		Speed while returning empty:15 km / hour						
		<b>a) Machinery</b>						
		<b>Tractor 3.6 tonnes capacity</b>						
		Time taken for onward haulage	hour	1.000	1.000	629.00	629.000	PM12001
		Time taken for empty return trip	hour	0.667	0.667	629.00	419.543	PM12001
		<b>Total Cost Excluding OH &amp; CP</b>					1048.54	











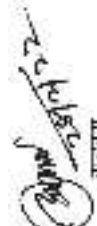


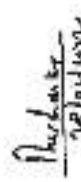
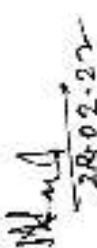






Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per Project Category		Rate (Rs)	Amount (Rs)	Remarks/ Input ref.	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)	83.883	104.854	125.825
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)	113.243	115.340	117.437
		Total Cost for 36 t.km = (a+b+c) Including OH & CP					1,245.669	1,268.737	1,291.805
		Rate per t.km = (a+b+c)/36 Including OH & CP					34.602	35.243	35.883
						say	34.600	35.200	35.900

Note:- जैसे स्थल जहाँ पर Truck एवं Tipper के द्वारा ढुलाई किया जाना संभव नहीं है तथा Tractor से ढुलाई economical हो केवल जैसे ही स्थलों के लिए Tractor से ढुलाई का प्रावधान किया जाय।

 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता प्रमुख, भवन निर्माण विभाग, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता प्रमुख, ग्रामीण कार्य विभाग, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, पटना।
 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (असै०), बिहार स्टेट पावर होल्डिंग कंपनी लिमिटेड, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-मुख्य अभियंता, (विद्युत), भवन निर्माण विभाग, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख तकनीकी परीक्षक, कोषांग, निगरानी विभाग, बिहार, पटना।
 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख, लोक स्वास्थ्य अभिन्न विभाग, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), जल संसाधन विभाग, बिहार, पटना।	 सदस्य राज्यस्तरीय अनुसूचित दर निर्धारण समिति-सह-अभियंता प्रमुख (मुख्यालय), पथ निर्माण विभाग, बिहार, पटना।

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**RAILWAY ROUTE  
CHART & FREIGHT**

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**भारत सरकार GOVERNMENT OF INDIA**  
**रेल मंत्रालय MINISTRY OF RAILWAYS**  
**(रेलवे बोर्ड RAILWAY BOARD)**

No. 2014/TT-I/MS/27/1

Rail Bhawan, New Delhi, dt: 02.09.2014

**General Managers (Operating)(Commercial),  
 All Indian Railways including Production Units**

**GENERAL ORDER NO.1/2014  
 (RATIONALISATION SCHEME)  
 (EFFECTIVE FROM 05.09.2014)**

Whereas in the opinion of the Central Government (Railway Board), it is necessary to do so in the public interest:

Now, therefore, in exercise of the powers conferred under Section 71 of The Railways Act, 1989 (24 of 1989) read with notification of the Government of India in the Ministry of Railways number G.S.R. 53(E) dated the 23<sup>rd</sup> January, 1995 the Railway Board hereby directs that all Railway Administration shall carry, unless it is necessary to divert such wagons for operational convenience after the consignments are booked, any goods or class of goods by such route or routes specified in this order:

S.No.	From	To	To be routed Via
<b>1</b>	<b>Central Railway</b>		
1.1	All fertilizer traffic from Hubli Division of SWR, KRCL and Palghat Division of Southern Railway.	Destinations on and via Central Railway for which shortest route is via Kulem-Castle Rock-Londa	Ratnagin - Roha
<b>2</b>	<b>Eastern Railway</b>		
2.1	Coal traffic from PANEM served by Pakur.	Destinations on NR and NCR	Pakur - Sainthia - Andal - Pradhankurta - Mughalsarai

1

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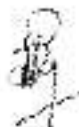
2.2	Coal traffic from Eastern Railway and East Central Railway (except loading from NCL area)	For Indira Gandhi Super Thermal Power Project served by Sudharana stn (MIGK) and Jhajjar Power Ltd. Siding (MJPJ)	MGS-MZP-TDL-JAB-IDH-AH-BTE-BKI
2.3	Coal traffic from Pirpainti (PPT) / Pirpainti coal loading siding (PCLS) of Eastern Railway	Destinations for which shortest route is via Kiul - Luckeesarai - Rampur Dumra	Gumani-Andal-Pradhankunta
<b>3 East Central Railway</b>			
3.1	Coal loading from NCL Area	All destinations on North Western Railway, (except for destinations on Lucknow and Moradabad Divisions) and North Central Railway (except Allahabad Division) for which shortest route is via Chopan-Chunar	Singrauli - Katni - Murwara - Gwalior - Mathura - Patwal.
3.2	All Coal traffic from Pathardih	All destinations on East Central Railway and via Mughalsarai for which shortest route is via Bhojudih-Gomoh	Pathardih-Pradhankunta-Gomoh
3.3	Coal loading from NCL area	All destinations on Eastern Railway for which shortest route is via Garwa Road-Manpur-Kiul	Garwa Road - Chandrapura - Dhanbad - Pradhankunta.
<b>4 East Coast Railway</b>			
4.1	All goods traffic	Stations reached via Cuttack except stations on Nergundi - Cuttack - Paradeep section	Barang - Kapilas Road - Bye Pass avoiding Cuttack.
4.2	All traffic to and from Vizag area (i.e. all loading/unloading points served by stations between SIMACHALAM North:(incl.) to Duvvada:(incl.) including all terminals served via	For destinations for which shortest route is via Titlagarh (TIG)-Raipur RV Block Hut (RVH) except to and from destinations on South East Central Railway and Jabalpur division of West Central	Duvvada - Ballarshah - Itarsi.

	Waiter Marshalling Yard- Vadlapudi, Jagayapalem. Vizag Port, Gengevaram Port and Vizag Steel Plant.	Railway	
4.3	All traffic from/to stations situated in SC Railway.	For destinations for which shortest route is via Titlagarh (TIG)-Raipur RV Block Hut (RVH) except to and from destinations on South East Central Railway and Jabalpur Division of West Central Railway	Balharshah (BPQ)
4.4	Coal Traffic from Paradeep Port.	To TISCO/TWS in SER	Jakhapura - Jaroll
4.5	Traffic Originating from Dhamra Port (DPCB)	Destinations for which shortest route is via Jakhapura-Angul- Sambalpur City except for destinations on Sambalpur Division of EcoR	Bhadrak - Nimpura
4.6	All traffic to & from NALCO/DMNJ	Stations for which shorters route is via Kottivalsa (KTV) - Koraput (KRPU) and vice versa	VZM-RGDA-SPRD and vice versa.
<b>5 Northern Railway</b>			
5.1	All goods traffic	Destinations reached via Delhi area or originating / terminating in Delhi area	Goods avoiding line / Delhi avoiding line/ Tughalakabad whichever is applicable.
Note: (1) Traffic for Sabji Mandi will also be routed by the direct route.			
5.2	All goods traffic from and via Varanasi .	Lucknow and beyond	Via Janghai - Pratapgarh - Rai Bareilly.
5.3	Food grain traffic originating on Northern Railway and Jodhpur and	Stations on Nagpur- Rourkela (excl.) section including Raipur -	Via Itarsi - Amla - Nagpur / Ajni Bye pass.

Contd.-

	Bikaner Divisions of North Western Railway.	Vizianagaram and Jharsugunda - Titalgarh sections for which the shorter route is via Anuppur - Bilaspur or via Anuppur - Uslapur - Dadhapara	
<b>6 North Central Railway</b>			
6.1	Coal traffic from Eastern Railway, East Central Railway, South Eastern Railway & East Coast Railway	Destinations for which shortest route is via Mughalsarai - Tundla - Jamuna Bridge - Mathura - Palwal	Mughalsarai - Ghaziabad.
6.2	All traffic routed via Bandikui	Destinations on North Eastern and North East Frontier Railways and terminals on Farukhabad (incl.)-Shikohabad(excl.) Section of North Central Railway	Achnera - Kasganj
6.3	All Traffic originating from Jabalpur Division	Destinations on L.J.N Divn of North Eastern Railway, SPJ Divn of East Central Railway and LKO Divn of Northern Railway for which shortest route is via ALD - Prayag - Phaphamau or via ALD - Prayag - Atrampur	Via Ohan - Banda - GMC - Kanpur Bridge (CPB).
6.4	Cement traffic from ALD Division of NCR	Destinations on LKO Divn. of Northern Railway for which shortest route is ALD-PRG-PFM	Jeonathpur (JEP) - Block Hut 'K' - Vyasnagar (VYN)
<b>7 North Eastern Railway</b>			
7.1	All goods traffic from stations of ER, ECR, SER and ECoR and vice versa.	Destinations on CR, NR, NCR, NWR, WR and WCR and vice versa for which the shortest route is via Mughalsarai - Varanasi - Madhosingh - Allahabad City	Mughalsarai - Mirzapur - Allahabad

Contd.



<b>8 South Central Railway</b>			
8.1	Traffic moving via SNF-CHZ or vice versa	Destinations for which the shortest route is via Secunderabad	SNF - CHZ Chordline.
8.2	All traffic originating on KRCL, CR, SCR, SWR and SR	Destinations on North East Frontier Railway, North Eastern Railway and Samastipur and Sonapur division of East Central Railway for which shortest route is via Bilaspur - Jharsugunda	Itarsi - Bina - Jhansi - Kanpur - Lucknow - Gorakhpur.
8.3	All Traffic	Via Nalapadu - Nadikudi - Bibinagar and vice versa	Kondapalli - Kazipet or vice-versa.
<b>9 South Eastern Railway</b>			
9.1	Iron Ore traffic from Barsuan - Bondamunda Section of SE Railway.	Destinations for which shortest route is via Jaroli-Jakhapura and to stations on Kharagpur - Bhadrak - Jakhapura - VZM (incl) section, Jakhapura - Paradeep Port section and Jakhapura - Budhapank section	Tatanagar - Kharagpur - Bhadrak subject to observing Para 4.1 above.
9.2	Iron ore traffic originating from stations and their associate sidings on Bolanikhadan / Gua - Berajamda - Rajharswan section of South Eastern Railway.	Destinations on Jakhapura - Budhapank, Balasore - Cuttack - Paradeep, Kapilas Road - Barang Bye pass and Barang -Visakhapatnam and via Duvada sections for which the shortest route is via Banspani - Jaroli - Jakhapura	Tatanagar - Kharagpur - Bhadrak subject to observing Para 4.1 above.
9.3	Iron ore traffic originating from Kiriburu / Meghataburu	To Bokaro Steel Plant	Biratgarh - Bondamunda - Nawagaon - Hatia - Muri.
9.4	All traffic from all Railways	From which shortest distance is Kharagpur - Gokulpur via Girimaidan	Via Nimpura - Gokulpur

s

Contd...



<b>10 South East Central Railway</b>			
10.1	Coal traffic from Bilaspur Division of SECR	Destinations on Bina-itarsi Section in Bhopal Divn. of WCR and destinations on Central Railway & passing through Central Railway	Via Katni Marwara (KMZ) – Bina.
10.2	Coal from Korea - Rewa Coal field of Bilaspur Division of SECR	Stations on Southern and South Central Railway and Stations of Mumbai Division of Western Railway	Via Katni Marwara (KMZ) – Bina – Khandwa – Bhusawal.
10.3	All goods traffic originating on main line of Bilaspur Division Jharsuguda (excl) – Durg (incl) and Uslapur (excl) including all branch lines connected on this section.	Stations on Vadodara, Rajkot and Ahmedabad Divisions of Western Railway	Nagpur – Bhusawal – Jalgaon – Surat.
10.4	All Goods Traffic originating from Bhilai Steel Plant and Durg.	Stations on Southern Railway	Nagpur – Balharshah instead of via R.V. Line.
10.5	Coal Traffic from and to SECR, SER, ECR	Destination on CR, SCR and SR for which shortest route is via Gondia Chanda Fort and vice versa	Nagpur – Balharshah
<b>11 South Western Railway</b>			
11.1	Iron ore traffic originating from Mysore and Hubli Division	Destination on Mumbai Division for which shortest route is via Gadtag - Holgi or Londa - Miraj	Londa – Castle Rock – Madgaon.
11.2	All traffic originating / terminating and passing through SWR	Having shortest route via BYPL – OML or vice versa	BYPL – IPT or vice-versa
11.3	Container Traffic Originating from SSC Division of SWR	Destinations on FR, SER, EcoR including on MGS Divn., DNR Divn. and DHN Divn. of ECR for which shorter route is via DMM	JTJ-RU-BZA-DVD

<b>12 Western Railway</b>			
12.1	Coal traffic from Western Railway	Destinations on Allahabad Division on North Central Railway	Ahmedabad-Nagda-Bayana-Jamuna Bridge-Tundla
12.2	All goods traffic	To and from Mumbai Port Trust for which shortest route is via Mahim-Vadala	Boisar-Diwa-Vadala.
12.3	All traffic from Ports in WR	To destinations on Moradabad Division of NR, Moradabad-Ramnagar Section & Rampur – Kathgodam section of Izzat Nagar Division of North Eastern Railway	Bandikui – IDH-Tundla

13. The above rationalisation scheme will also be applicable on the traffic originating / terminating on Sidings and Ports (including Port Trust Railways) as is applicable for the Railways serving them.
14. The provisions of the Rationalisation Scheme shall not apply to Over Dimensional Consignments, POL traffic and edible salt i.e., salt for human consumption.
15. The rate to be charged will be those chargeable by the route specified above.
16. The provisions of the Rationalisation Scheme will also apply to the branch lines connected with the different sections covered by the Rationalisation Scheme General Order unless categorically specified otherwise.
17. This order is issued in suppression of General Order No.1/2012 issued under Board's letter No.2011/TT-III/27/1 dated 14.06.2012 and Amendments thereof and will come into force from 05.09.2014 and unless cancelled earlier will remain in force upto 31.08.2015.

Please acknowledge receipt.

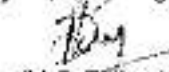


(H.S. Bajwa)  
Director Traffic Transportation (G)  
Railway Board



Copy forwarded for information an necessary action to:

1. Director (Rail Movement), Fairlie Place, Kolkatta
2. FA & CAO, All Indian Railways
3. CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
4. ADAI (Railways) with 10 copies spare, 2<sup>nd</sup> floor, Rail Bhawan, New Delhi.
5. The Principal, Railway Staff College, Vododara.
6. Managing Director, CRIS, CRIS Complex, Chanakyapuri, New Delhi - 110021.
7. CMD, Container Corporation of India, CONCOR Bhawan, C-3, Mathura Road, Saritha Vihar, Opp. Apollo Hospital, New Delhi - 110076.
8. MD, Konkan Railway Corporation Ltd., Belapur Bhawan, Plot No.6, Sector-11, CBD, Belapur, Navi Mumbai - 400 614.
9. The Cabinet Secretariat, Rashtrapathi Bhawan, New Delhi.
10. The Planning Commission, Yojana Bhawan, New Delhi
11. All Ministries, Government of India.
12. The Chief Secretaries, All State Governments.
13. The Salt Commissioner, 2-A, Lawan Bhawan, Lawan Marg, Jhalana Dhungan, Jaipur - 302 004.
14. The Dy. Director General (Rail Movement), Sena Bhawan, New Delhi.
15. The Director, Indian Bureau of Mines, Nagpur.
16. The Traffic Manager, Kolkatta Port Trust Railway, Kolkatta.
17. The Traffic Manager, Chennai Port Trust Railway, Chennai - 600 001.
18. The Manager, Bombay Port Trust Railway, Mumbai.
19. The Chief Traffic Manager, Food Corporation of India, 16-20, Barakhamba Lane, New Delhi.
20. The Coal Controller, 1, Council House Street, Kolkatta.
21. The State Trading Corporation of India, Chandralok, 30, Janpath, New Delhi.
22. The Chairman, Paradeep Port Trust, Paradeep Port, Orissa - 682 009.
23. The Chairman, Tuticorin Port Trust, Tuticorin - 628 004.
24. The Chairman, Cochin Port Trust, Wellington Island, Cochin - 682 009.
25. The Chairman, Chennai Port Trust, Chennai - 600 001.
26. The Chairman, Kandla Port Trust, Post Box No.50, Administrative Building, Gandhidham, Kutch - 370201.
27. The Chief Mechanical Engineer, Indian Railways Organisation for Alternate Fuels, 12<sup>th</sup> Floor, Core-1, Scope Minar, District Centre, Lexmi Nagar, Delhi - 92.
28. Chief Administrative Officer, Indian Railways (Workshop Projects), Chamber Bhawan, Judge's Court Road, Anta Ghat, Patna - 800 001, Bihar.
29. Adviser (Projects), Room No.548, Rail Bhawan, New Delhi.
30. Chief Administrative Officer, Rail Coach Factory, Raebareli Project, Kishanganj, Delhi.

  
(H.S. Bajwa)

Director Traffic Transportation (G)  
Railway Board

Copy forwarded for information to:

AM(T), AM(C), Adv(FM), Adv(TT(M)), EDTC(R), EDF(C), EDTT(S), EDTT(F), ED(C&IS), EDPM, EDP, EDV(T), ED(T&C), ED(LRDSS), EDA, OSD/MT, DTT/POL, DTCR, DF(C), DTC(G), DPM, Dir(T&C), DFA, DF(CCA), DFM, JDTT(F), DDTT-III(M),

TT-I, TT-II, TT-III, TT-IV, TT-V, TC-I, TC-II, TC-IV, TC(FM) & TC(CR) Branches of Rly Board.



Letter No.	Subject	Issue Date
	<b>2022</b>	
2021/TT-III/27/1	<b>Corrigendum No. 1 to Rationalisation Amendment No-22 of Rationalization Scheme General Order No.01/2014.</b>	28.02.2022
2021/TT-III/27/1	Rationalisation Scheme General Order No.01/2014 - Amendment No-22: Rationalization Circular No. 01/2022	03.02.2022
	<b>2021</b>	
2021/TT-III/27/1	Rationalization Scheme G. O. No. 01/2014- Amendment- 21 : Rationalization Circular No. 03/2021	31.08.2021
2020/TT-III/27/1	Extension of Rationalisation Scheme General Order No.01/2014 along- with its Amendment Orders: Rationalization Circular No. 02/2021	15.06.2021
2020/TT-III/27/1	Rationalization Scheme General Order No. 01/2014- Amendment No. 20.	16.02.2021
	<b>2020</b>	
2020/TT-III/27/1	Rationalisation Scheme General Order No.01/2014 - Amedment No.19	01.07.2020
2020/TT-III/27/1	Extention of Rationalisation Scheme Order No.01/201r along-with its Amendment Orders	22.06.2020
2015/TT-II/S/27/2/Part(1)	Rationalization Scheme General Order No. 01/2014 - Amendment No.18	14.01.2020
	<b>2019</b>	
2015/TT-III/S/27/2/Part (1)	Rationalization Scheme General Order No.01/2014 - Amendment No.17	11.11.2019
2015/TT-III/27/2 (part.i)	Rationalization Scheme General Order No. 01/2014-Amendment No. 16.	03.10.2019
2015/TT-III/S/27/2/Part(1)	Rationalization Scheme General Order No. 01/2014-Amendment No. 15.	16.07.2019
2015/TT-III/S/27/2/ Part.1	Extension of Rationalisation Scheme General Order No.01/2014	25.06.2019
2015/TT-III/S/27/2/Part(1)	Rationalization Scheme General Order No.01/2014-Amendment No.14.	21.02.2019
	<b>2018</b>	
2015/TT-III/S/27/2/Part(1)	Rationalization Schemes General Order No.-01/2014 - Amendment No.13	11.1.2.2018
2015/TT-III/S/27/2/Part(1)	Rationalization Scheme General Order No. 01/2014 - Amendment No. 12.	17.09.2018
2015/TT-III/S/27/2	Extension of Rationalisation Scheme General Order No.01/2014	18.06.2018
	<b>2017</b>	
2015/TT-III/S/27/2 New	Rationalization Scheme General Order No.01/2014 Amendment No.11	30.06.2017
2015/TT-III/S/27/2	Extension of Rationalisation Scheme General Order No.01/2014	21.06.2017
2015/TT-III/S/27/2	Rationalization Scheme General Order No.01/2014 Amendment No.10	05.05.2017



<b>2016</b>		
2015/TT-III/S/27/2	Extension of Rationalisation Scheme General Order No. 01/2014	27.12.2016
2015/TT-III/S/27/2	Rationalisation Scheme General Order No.01/2014 Amendment No.9	09.09.2016
2015/TT-III/S/27/2	Rationalisation Scheme General Order No. 01/2014-Amendment No. 8	19.08.2016
2015/TT-III/S/27/2	Extension of Rationalisation Scheme General Order No.01/2014 with Amendment No.7	27.06.2016
2015/TT-III/S/27/2	Rationalisation Scheme General Order No. 01/2014-Amendment No. 6	24.05.2016
2015/TT-III/S/27/2	Rationalisation Scheme General Order No. 01/2014-Amendment No. 5-Corrigendum	11.04.2016
2015/TT-III/S/27/2	Rationalisation Scheme G.O. No. 1/2014 Amendment No.5	07.04.2016
2015/TT-III/S/27/2	Extension of Rationalisation Scheme General Order No. 01/2014	29.03.2016
<b>2015</b>		
2015/TT-III/S/27/2	Extension of Rationalisation Scheme G.O. No.1/2014	30.12.2015
2014/TT-III/S/27/1	Rationalisation Scheme G.O. No. 01/2014 Amendment No.4	16.10.2015
2014/TT-III/S/27/1	Rationalisation Scheme G.O. No. 01/2014 extension.	15.10.2015
2014/TT-III/S/27/1	Rationalisation Scheme G.O. No. 01/2014 extension	25.08.2015
2014/TT-III/S/27/1	Rationalisation Scheme G.O. No. 01/2014 Amendment No.3.	01.07.2015
<b>2014</b>		
2014/TT-III/S/27/1	<b>Rationalisation Scheme General Order No. 01/2014 - Amendment No.2.</b>	<b>18.05.2015</b>
2014/TT-III/S/27/1	<b>Rationalisation Scheme General Order No. 01/2014 Amendment 1</b>	<b>19.09.2014</b>
2011/TT-III/S/27/1	<b>Rationalisation Scheme General Order No.01/2014 w.e.f. 05/09/2014</b>	<b>02.09.2014</b>
2011/TT-III/27/1	<b>Extension of Rationalisation Scheme General Order No. 01/2012</b>	<b>29.08.2014</b>
2011/TT-III/27/1	<b>Extension of Rationalisation Scheme 01/2012</b>	<b>28.06.2014</b>
2011/TT-III/27/1	<b>Extension of Rationalisation Scheme General Order No.01/2012</b>	<b>26.03.2014</b>
2011/TT-III/27/1	<b>Rationalisation Scheme General Order No.01/2012 - Amendment No.6</b>	<b>11.02.2014</b>



Corrigendum No. 1 to Rationalization Circular No. 01/2022

भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2021/TT-III/27/1

Rail Bhawan, New Delhi, dt: 28.02.2022

**General Managers (Operating)/(Commercial),  
All Indian Railways including  
Production Units**

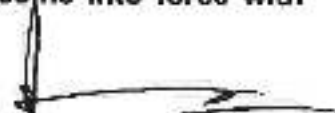
**Sub:** Rationalization Scheme General Order No.01/2014- Amendment No.22-  
Corrigendum No. 1.

Refer Board's letter No.2021/TT-III/27/1 dated 03.02.2022, the Amendment No.  
22 of Rationalization Scheme General Order No.01/2014 may be read as under.

**7A North Western Railway:**


S. No.	From	To	To be routed via
7A.2	All Goods Traffic	Destinations for which present shortest route is KTWS-RGS-FL-PNU and vice-versa	To be routed via KTWS-AELN-PNUN-PNU and vice versa on all stations between AELN and PNUN of WDFC route.

All other instructions will remain same. **This Order will come into force with immediate effect. Please acknowledge receipt.**

  
(A.K. Shamsi)  
Executive Director/Coal  
Railway Board

**Copy forwarded for information and necessary action to:**

- (1) Director (Rail Movement), Fairlie Place, Kolkatta
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
- (4) Standard List attached.

  
(A.K. Shamsi)  
Executive Director/Coal  
Railway Board

Copy for Information please:

OSD (MR), AM (T), AM(C), PEDTT(M), EDTT(F), EDTT(S), EDTC(R), EDF(C),  
ED(C&IS), EDP, ED(FM), DTT/POL, DTC/R



भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2021/TT-III/27/1

Rail Bhawan, New Delhi, dt: 03.02.2022

**General Managers (Operating)/(Commercial),  
All Indian Railways including  
Production Units**

Sub: Rationalization Scheme General Order No.01/2014- Amendment No.22

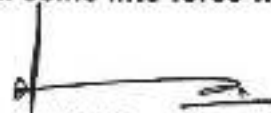
Refer Board's letter No.2014/TT-III/S/27/1 dated 02.09.2014 issuing Rationalisation Scheme General Order No.1/2014 effective from 05.09.2014 and their amendments and extensions thereof.

Now as it is necessary so to do in the public interest, the following amendments in the above mentioned Rationalization Scheme are hereby ordered:

**7A North Western Railway:**


S. No.	From	To	To be routed via
7A.2	All Goods Traffic	Destinations for which present shortest route is KTWS-RGS-FL-PNU and vice-versa	To be routed via KTWS-AELN-PNUN-PNU and vice versa

All other instructions will remain same. **This Order will come into force with effect from 06.02.2022.** Please acknowledge receipt.

  
(A.K. Shamsi)  
Executive Director/Coal  
Railway Board

**Copy forwarded for information to:**

- (1) Director (Rail Movement), Fairlie Place, Kolkata
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
- (4) Standard List attached.

  
(A.K. Shamsi)  
Executive Director/Coal  
Railway Board

Copy for information please:

OSD (MR), AM (T), AM(C), PEDTT(M), EDTT(F), EDTT(S), EDTC(R), EDF(C), ED(C&IS), EDP, ED(FM), DTT/POL, DTC/R



भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2021/TT-II/27/1

Rail Bhawan, New Delhi, dt: 31.08.2021

General Managers (Operating)/(Commercial),  
All Indian Railways including  
Production Units

Sub: Rationalisation Scheme General Order No.01/2014 - Amendment No. 21

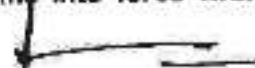
Refer Board's letter No.2014/TT-II/S/27/1 dated 02.09.2014 issuing Rationalisation Scheme General Order No.1/2014 effective from 05.09.2014 and subsequently their amendments and extensions thereof.

Now as it is necessary so to do in the public interest, the following amendments in the above mentioned Rationalisation Scheme are hereby ordered:-

6. NORTH CENTRAL RAILWAY

6. North Central Railway	
S No	
6.4	This Para has been withdrawn

All other instructions will remain same. This Order will come into force with effect from 01.09.2021. Please acknowledge receipt.

  
(A.K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy forwarded for information and necessary action to:

- (1) Director (Rail Movement), Fairlie Place, Kolkata
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
- (4) CMD/CONCOR;
- (5) MD/KRCL
- (6) All CTOs.

  
(A.K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy for information please:  
OSD/MR, AM(C), Adv./Tfc, PED/TT(M), EDTT(F), EDTT(S), ED(FM), EDTC(R), EDF(C),  
ED(C&IS), EDP, DTT/POL, DFM, DTC/R





भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2020/TT-III/27/1

Rail Bhawan, New Delhi, dt: 15.06.2021

**General Managers (Operating)/(Commercial),  
All Indian Railways Including  
Production Units**

**Sub: Extension of Rationalisation Scheme General Order No.01/2014 along-with its Amendment Orders.**

Refer Railway Board's letter No. 2014/TT-III/S/27/1 dated 02.09.2014 issuing Rationalisation Scheme General Order No.1/2014 effective from 05.09.2014 along with its Amendment Orders. The validity of Rationalisation Scheme General Order No.01/2014 along-with its Amendment Orders was extended upto 30<sup>th</sup> June, 2021 vide letter no. 2020/TT-III/27/1 dated 22.06.2020.

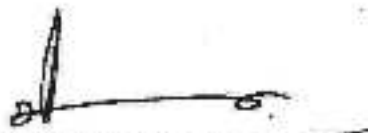
Now as it is necessary to do so in the public interest, the validity of this Rationalisation Scheme General Order along-with its Amendment Orders is hereby extended upto 30<sup>th</sup> June, 2022 unless modified / cancelled earlier.

Please acknowledge receipt.

  
(A.K. Shamsi)  
Executive Director / Coal  
Railway Board

**Copy forwarded for information and necessary action to:**

- (1) Director (Rail Movement), Fairlie Place, Kolkata
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21
- (4) CMD/CONCOR
- (5) MD/KRCL
- (6) President, ACTO & All CTOs.

  
(A.K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy for information please:

OSD/MR, AM/T, AM(C), PED/TT(M), EDTT(F), EDTT(S), ED(FM), EDTC(R), EDF(C), ED(C&IS), EDP, DTT/POL, DFM, DTC/R

भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2020/TT-III/27/1

Rail Bhawan, New Delhi, dt: 01.07.2020

**General Managers (Operating)/(Commercial),  
All Indian Railways including  
Production Units**

Sub: Rationalisation Scheme General Order No.01/2014 - Amendment No. 19


Refer Board's letter No.2014/TT-III/S/27/1 dated 02.09.2014 issuing Rationalisation Scheme General Order No.1/2014 effective from 05.09.2014 and subsequently their amendments and extensions thereof.

Now as it is necessary so to do in the public interest, the following amendment in the above mentioned Rationalisation Scheme are hereby ordered:

**4. East Coast Railway**

4. East Coast Railway	
S No	
4.2	This Para has been withdrawn

All other instructions will remain same. **This Order will be come into force with effect from 03.07.2020.** Please acknowledge receipt.

  
(A K. Shamsi)  
Executive Director / Coal  
Railway Board

**Copy forwarded for information and necessary action:**

- (1) Director (Rail Movement), Fairlie Place, Kolkatta
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
- (4) Standard List attached.

  
(A K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy for information please:

OSD/MR, AM (T), AM(C), EDTT(M), EDTT(S), EDTT(F), EDTC(R), EDF(C), ED(C&IS), EDP, ED(FM), DTT/POL, DTC/R  
TT-I, TT-II, TT-III, TT-IV, TT-V, TC-I, TC(CR) Branches of Railway Board

भारत सरकार Government of India  
रेल मंत्रालय Ministry of Railways  
(रेलवे बोर्ड Railway Board)

No. 2020/TT-III/27/1

Rail Bhawan, New Delhi, dt: 16.02.2021

General Managers (Operating)/(Commercial),  
All Indian Railways Including  
Production Units

Sub: Rationalisation Scheme General Order No.01/2014 - Amendment No. 20

Refer Board's letter No.2014/TT-III/S/27/1 dated 02.09.2014 Issuing Rationalisation Scheme General Order No.1/2014 effective from 05.09.2014 and subsequently their amendments and extensions thereof.

Now as it is necessary so to do in the public interest, the following amendments in the above mentioned Rationalisation Scheme are hereby ordered.

a. Existing Para 9.3 South Eastern Railway

From	To	Via
Iron ore traffic originating from Kiriburu / Meghataburu	Bokaro Steel Plant	Bimalgarh – Bondamunda – Nawagaon – Hatia – Muri

Amended, Para 9.3 of South Eastern Railway will be as under:

S. No.	From	To	To be routed via
9.3	Iron ore traffic originating from Kiriburu - Bondamunda and Bursuan - Bimalgarh sections	BKEC/ BSCS/ BKSC	Nawagaon – Hatia – Muri

b. The existing Para 2.2 Eastern Railway:

S. No.	From	To	To be routed via
2.2	All Coal traffic (Originating from any Railway)	For destinations on North Western Railway for which the shorter route is via MGS-TDL-JAB-AGA-MTJ would be routed via	MGS-MZP-TDL-JAB-IDH- BTE-BKI

After amendment Para 2.2 Eastern Railway will be as under:

S. No.	From	To	To be routed via
2.2	All Coal traffic (Originating from any Railway)	For destinations on North Western Railway for which the shorter route is via DDU-JAB-AGA-MTJ	DDU-MZP-JAB-IDH- BTE-BKI

c. The existing Para 6.1 North Central Railway:

S. No.	From	To	To be routed via
6.1	Coal traffic from Eastern Railway, East Central Railway, South Eastern Railway & East Coast Railway	Destinations for which shortest route is via Mughalsarai – Tundla – Jamuna Bridge – Mathura – Palwal	Mughalsarai – Ghaziabad.

Amended Para 6.1 North Central Railway will be as under:

S. No.	From	To	To be routed via
6.1	Coal traffic from Eastern Railway, East Central Railway, South Eastern Railway & East Coast Railway	Destinations for which shortest route is via Pt. Deen Dayal Upadhyaya Jn (DDU) – Yamuna Bridge (JAB) – Mathura Jn (MTJ) – Palwal (PWL)	Pt. Deen Dayal Upadhyaya Jn (DDU) – Ghaziabad Jn (GZB).

All other instructions will remain same. This Order will be come into force with effect from 19.02.2021. Please acknowledge receipt.

  
(A K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy forwarded for information and necessary action:

- (1) Director (Rail Movement), Fairlie Place, Kolkata
- (2) FA & CAO, All Indian Railways
- (3) CAO/FOIS, CRIS Complex, Chanakyapuri, New Delhi-21.
- (4) Standard List attached.

  
(A K. Shamsi)  
Executive Director / Coal  
Railway Board

Copy for information please:

OSD/MR, AM (T), AM(C), EDTT(F), EDTC(R), EDF(C), FD(C&IS), EDP



**GOVERNMENT OF INDIA (भारत सरकार)**  
**MINISTRY OF RAILWAYS (रेल मंत्रालय)**  
**RAILWAY BOARD (रेलवे बोर्ड)**

TCR/1078/2018/15

New Delhi, Dt. 31/10/2018

**General Manager,**  
All Indian Railways.

**Sub: Adjustment in Base Freight rates effective from 01 / 11 / 2018.**

1. Sanction of the Central Government is hereby accorded to rationalise the freight rates. A copy of revised freight tables is enclosed as Annexure-I.
2. The sanction of the Central Government is also accorded for the following:
  - 2.1 There shall be no increase in Base Freight of Main commodity heads Cements, 'Foodgrains, Flours and Pulses', Chemical Manures, Salts, Sugar, 'Hydrogenated and other Edible Oils' and Petroleum Products (POL) under Commodity Group No.18 as mentioned in IRCA Goods Tariff No. 48 part-I (Vol-II). Freight table of these commodities/groups is given at Annexure-II. Accordingly the classification of these commodities has been revised as under:-

S. No	Commodity	Commodity Group No. as mentioned in IRCA Goods Tariff No. 48 part-I (Vol-II)	Revised Class	
			Trainload	Wagonload
1.	Cement	5(a)	140A	140B
		5(b) - (Fly Ash)	120A	120B
2.	Chemical Manures	5	130A	130B
3.	Foodgrains, Flours & Pulses	9	130A	130B
4.	Hydrogenated and other Edible Oils	11(a)	140A	140B
		11(b) -(in covered wagons)	LR-3(A)	LR-3(B)
5.	POL (Petroleum Products)	18(a)	180A	180B
6.	Salts	19(a)	100A	100B
7.	Sugar	21	120A	120B



- 2.2 The revised freight rate table for main commodity head 'Coal and Coke' is given at Annexure-III. No Busy Season Surcharge and Development charge shall be leviable on transportation of Coal and Coke.
- 2.3 As a special case, Salt traffic (under the commodity group no. 19(a) in the IRCA Goods Tariff No.48 part-I Vol. II), when booked under TEFD will also be charged at class 100A(trainload) instead of class LR1 as stipulated in Rates Circular no.16 of 2018.
3. A copy of revised Goods tariff no. 48, part-II (freight rates tables) is enclosed herewith.
4. Zonal Railway shall ensure that requisite number of copies of the revised Goods Tariff No. 48 part-II (Freight Rates Tables) are collected from General Secretary, IRCA and distributed in time.
5. Steps should also be taken to ensure that all relevant personnel are made conversant with the aforesaid revisions, related instructions, etc. promptly. Commercial Inspectors (CMIs) and Traffic Inspectors of Accounts (TIAs) may be deputed to goods sheds / stations/ sidings etc. for ensuring correct implementation of the instructions particularly during the initial phase.

The issues with the concurrence of Finance Directorate of the Ministry of Railways.

DA: As above

  
(Barjesh Dharmani)  
Executive Director, Traffic Commercial (Rates)  
Railway Board

No. TCR/1078/2018/15

New Delhi, dated: 31/10/2018

**Copy for Information:-**

Principal Finance Adviser, All Zonal Railways  
Dy.C&AG (Rlys), Room No. 222, Rail Bhawan, New Delhi

  
31.10.18  
for Finance Commissioner, Railways

No. TCR/1078/2018/15

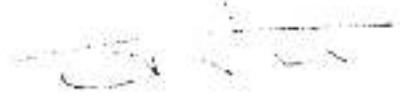
New Delhi, dated: 31/10/2018

**Copy to:-**

1. Principal Chief Commercial Manager, All Zonal Railways
2. Principal Chief Operations Manager, All Zonal Railways
3. Managing Director, CRIS, Chanakyapuri, New Delhi-21.
4. MD, KRCL, Belapur Bhavan, Sector-11, CBD Belapur, Navi Mumbai-400614.
5. Director General, National Academy of Indian Railways, Vadodara.
6. General Secy., IRCA, New Delhi.

**Rates Circular No. 19 of 2018**

7. Director, IRITM, Campus: Hardoi Bye Pass Road, Village & Post office, Kanaus,  
Manaknagar, Lucknow-226011
8. Managing Director, Pipavav Railway Corporation Ltd., Jeevan Tara Building, 1<sup>st</sup> Floor, Gate  
No.4, Sansad Marg, New Delhi-110001
9. Chief Commissioner of Railway Safety, Lucknow



**(Barjesh Dharmani)**  
**Executive Director, Traffic Commercial (Rates)**  
**Railway Board**

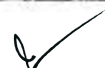
**Copy to:-**

**CRB, MT, FC, Railway Board**

AM(C), AM(T), AM(IT), PED(F), PED(TT/M), PED(Vig.), PED(Acct.), EDTC(R), EDPG, ED(C&IS),  
EDFM, EDTT(S), EDTT(F), ED(Coal), EDFC, EDVT, ED(Coord)/MOS(G), JFM, DFC, DPG, DTT(G),  
DF(CCA) Railway Board

TC(R), TC(CR), F(C), TC(FM), Safety branches, Railway Board.

\*\*\*\*



Corrigendum No 27 to Rates Circular No.08 of 2015

GOVERNMENT OF INDIA भारत सरकार  
MINISTRY OF RAILWAYS रेल मंत्रालय  
(RAILWAY BOARD रेलवे बोर्ड)

No.TCR/1078/2015/07/eFile3340125

Dated:29.09.2021

General Managers  
All Indian Railways

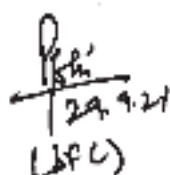
**Sub: Adjustment in Base Freight Rates-Classification of Commodities-Red Mud.**

1.0. Subject above, the array of classification of 'Red Mud' under Group No.7.(b), Main Commodity Head 'Clay and Sand' is as under:

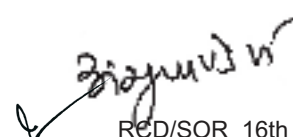
SN	Class	Reference	Valid from - to
1	120	Corrigendum no.13 to Rates Circular no.08 of 2015 dated 31.05.2016	06.06.2016 – 31.03.2017
2	120	Corrigendum no.19 to Rates Circular no.08 of 2015 dated 30.03.2017	Beyond 31.03.2017 – 31.03.2018
3	120	Corrigendum no.22 to Rates Circular no.08 of 2015 dated 27.02.2018	Beyond 31.03.2018 – 31.03.2019
4	130	Corrigendum no.23 to Rates Circular no.08 of 2015 dated 26.03.2019	From 01.04.2019 – 30.09.2019
5	130	Corrigendum no.24 to Rates Circular no.08 of 2015 dated 30.09.2019	Beyond 30.09.2019 – 31.03.2020
6	130	Board's letter E-office no.3316118 dated 23.03.2020	Beyond 31.03.2020 – 30.04.2020
7	120	Corrigendum no.25 to Rates Circular no.08 of 2015 dated 21.04.2020	Beyond 30.04.2020 – 31.03.2021
8	120	Corrigendum no.26 to Rates Circular no.08 of 2015 dated 02.03.2021	Beyond 31.03.2021 – 31.03.2022

2.0. The matter has been reviewed and now the Competent Authority have decided in partial modification to guidelines in force in terms of Corrigendum No.26 to Rates Circular No.08 of 2015 dated 02.03.2021 to revise the classification of "Red Mud" at Class-100

3.0 All others details of the Rates Circulars and its corrigenda mentioned in Para 1.0 above shall continue to apply unchanged.

  
29.9.21  
(LFC)

xCvii

  
RCD/SOR\_16th Edition\_2022



**Corrigendum No 27 to Rates Circular No.08 of 2015**

4.0 These instruction shall come into force w.e.f. 01.10.2021 and shall remain valid till 30.09.2022.

5.0. This issues in consultation with Traffic Transportation Directorate and with the concurrence of Finance Directorate of Ministry of Railways.

  
(Anshoo Pandey)  
Director, Traffic Commercial (Rates)  
Railway Board  
anshoo.pandey@gov.in  
011-2304 7359

No.TCR/1078/2015/07/eFile3340125

Dated:29.09.2021

**Copy to:**

Principal Financial Advisor, All Indian Railways.  
Dy C&AG of India (Railways), Rail Bhavan, New Delhi.

  
for Member (Finance) Railway Board

No.TCR/1078/2015/07/eFile3340125

Dated:29.09.2021

**Copy for information and necessary action to:**

1. Principal Chief Commercial Managers, All Indian Railways.
2. Principal Chief Operations Managers, All Indian Railways.
3. Managing Director, CRIS Chanakya Puri, New Delhi-23.
4. The Chief Administrative Officer, FOIS/CRIS, Chanakya Puri, New Delhi-23.
5. Managing Director, Konkan Railway Corporation, New Mumbai-400614.
6. Director General, National Academy of Indian Railways, Vadodara.
7. Director, Indian Railways Institute of Transport Management, Lucknow.
8. GS/IRCA, New Delhi.
9. CMD/DFCGIL

  
(Anshoo Pandey)  
Director, Traffic Commercial (Rates)  
Railway Board  
anshoo.pandey@gov.in  
011-2304 7359

**Copy to:-**

Chairman & CEO, M(O&BD), M(F) Railway Board  
AM(C), AM(T), AM (Vig), AM(Revenue), PED(TTM),  
EDTC(R), ED(FM), EDF(C), EDTT(F), EDTT(S),  
TC(CR) & FC Branches of Railway Board.



## FREIGHT RATE PER TONNE

Distance (kilometres)	दर Class LR3	दर Class LR2	दर Class LR1	दर Class 100	दर Class 110	दर Class 120	दर Class 130	दर Class 140
1 - 100	85.30	98.60	117.20	123.30	135.70	148.10	160.30	172.70
101 - 125	107.80	123.30	146.40	154.20	169.60	185.10	200.40	215.80
126 - 150	125.20	143.30	178.60	188.00	206.80	225.60	244.40	263.20
151 - 175	140.60	160.60	200.20	210.70	231.80	252.90	273.90	295.00
176 - 200	157.00	179.50	223.90	235.60	259.20	282.70	306.30	329.90
201 - 225	172.40	197.10	245.70	258.70	284.60	310.40	336.30	362.20
226 - 250	189.00	216.00	269.30	283.50	311.90	340.10	368.50	396.90
251 - 275	205.50	234.80	292.80	308.30	339.10	369.90	400.80	431.60
276 - 300	221.90	253.50	316.10	332.70	366.00	399.30	432.60	465.90
301 - 325	237.10	271.10	338.10	355.90	391.50	427.10	462.70	498.30
326 - 350	253.20	289.30	360.90	379.90	417.90	455.90	493.90	532.00
351 - 375	269.20	307.70	383.70	404.00	444.40	484.80	525.20	565.60
376 - 400	285.70	326.50	407.00	428.40	471.30	514.10	557.00	599.80
401 - 425	302.20	345.20	430.50	453.10	498.50	543.70	585.10	634.40
426 - 450	318.40	363.80	453.70	477.60	525.30	573.10	620.90	668.70
451 - 475	334.50	382.20	476.50	501.60	551.80	602.00	652.10	702.30
476 - 500	351.20	401.40	500.40	526.80	579.40	632.10	684.80	737.50
501 - 550	384.20	439.20	547.60	576.50	634.10	691.70	749.40	807.00
551 - 600	417.10	476.70	594.40	625.70	688.30	750.90	813.40	876.10
601 - 650	449.60	513.90	640.80	674.60	742.00	809.50	877.00	944.40
651 - 700	482.10	551.00	687.00	723.20	795.40	867.80	940.10	1012.50
701 - 750	514.70	588.30	733.60	772.20	849.40	926.70	1003.90	1081.10
751 - 800	546.70	624.80	779.30	820.30	902.30	984.40	1066.40	1148.40
801 - 850	579.00	661.60	825.00	868.50	955.40	1042.10	1129.00	1215.80
851 - 900	611.00	698.20	870.60	916.40	1008.10	1099.70	1191.40	1283.00
901 - 950	642.80	734.70	916.10	964.30	1060.70	1157.10	1253.60	1350.00
951 - 1000	674.80	771.20	961.60	1012.10	1113.40	1214.50	1315.80	1417.00
1001 - 1100	739.20	844.90	1053.40	1108.80	1219.70	1330.60	1441.50	1552.30
1101 - 1200	803.90	918.70	1145.50	1205.70	1326.30	1446.80	1567.40	1688.00
1201 - 1300	868.10	992.10	1237.00	1302.20	1432.30	1562.60	1692.80	1823.10
1301 - 1400	932.10	1065.30	1328.20	1398.10	1537.80	1677.70	1817.50	1957.30
1401 - 1500	996.00	1138.30	1419.30	1494.00	1643.40	1792.80	1942.20	2091.60
1501 - 1625	1058.20	1209.20	1507.70	1587.10	1745.70	1904.50	2063.20	2221.90
1626 - 1750	1139.60	1302.30	1623.70	1709.20	1880.10	2051.00	2222.00	2392.90
1751 - 1875	1171.80	1339.20	1669.70	1757.60	1933.40	2109.10	2284.90	2460.60
1876 - 2000	1249.90	1428.40	1781.00	1874.70	2062.20	2249.70	2437.10	2624.60
2001 - 2125	1262.40	1442.80	1798.90	1893.60	2083.00	2272.40	2451.70	2651.00
2126 - 2250	1336.60	1527.60	1904.70	2005.00	2205.50	2406.00	2606.50	2807.00
2251 - 2375	1348.90	1541.50	1922.00	2023.10	2225.40	2427.80	2630.00	2832.50
2376 - 2500	1419.80	1622.50	2023.10	2129.60	2342.60	2555.70	2768.50	2981.40
2501 - 2625	1441.90	1648.10	2054.90	2163.10	2379.40	2595.70	2812.00	3028.30
2626 - 2750	1510.60	1726.50	2152.80	2266.10	2492.70	2719.30	2945.90	3172.50
2751 - 2875	1532.20	1751.10	2183.20	2298.20	2528.00	2757.80	2987.70	3217.50
2876 - 3000	1598.80	1827.10	2278.20	2398.10	2637.90	2877.70	3117.60	3357.30
3001 - 3125	1619.40	1850.60	2307.50	2429.00	2671.90	2914.80	3157.70	3400.60
3126 - 3250	1684.10	1924.60	2400.00	2526.20	2778.80	3031.40	3284.10	3536.70
3251 - 3375	1704.30	1947.70	2428.70	2556.40	2812.20	3067.70	3323.30	3579.00
3376 - 3500	1767.50	2019.90	2518.50	2651.10	2916.20	3181.30	3446.40	3711.50

## FREIGHT RATE PER TONNE

Distance (kilometres)	वर्ग Class 145	वर्ग Class 150	वर्ग Class 160	वर्ग Class 165	वर्ग Class 170	वर्ग Class 180	वर्ग Class 190	वर्ग Class 200
1 - 100	178.90	185.10	197.30	203.50	209.70	222.00	234.30	246.70
101 - 125	223.60	231.30	246.70	254.40	262.70	277.50	292.90	308.40
126 - 150	272.60	282.10	300.80	310.20	319.60	338.40	357.20	376.00
151 - 175	305.60	316.10	337.20	347.70	358.30	379.30	400.40	421.50
176 - 200	341.70	353.50	377.00	388.90	400.60	424.20	447.70	471.30
201 - 225	375.20	388.10	413.90	426.80	439.80	465.60	491.50	517.40
226 - 250	411.00	425.30	453.60	467.80	482.00	510.30	538.60	567.00
251 - 275	447.00	462.50	493.30	508.70	524.10	554.90	585.80	616.60
276 - 300	482.50	499.10	532.40	549.10	565.70	599.00	632.30	665.50
301 - 325	516.10	533.90	569.50	587.20	605.10	640.60	676.30	711.90
326 - 350	550.90	569.90	607.90	626.90	645.90	683.90	722.00	759.90
351 - 375	585.80	606.00	646.40	666.60	686.80	727.20	767.70	808.00
376 - 400	621.30	642.70	685.50	706.90	728.40	771.20	814.10	856.90
401 - 425	657.00	679.80	725.00	747.70	770.30	815.70	861.00	906.30
426 - 450	692.50	716.40	764.20	788.10	811.90	859.70	907.50	955.30
451 - 475	727.40	752.50	802.60	827.70	852.70	902.90	953.20	1003.30
476 - 500	763.80	790.20	842.80	869.20	895.50	948.20	1000.50	1053.60
501 - 550	825.80	864.80	922.40	951.20	980.10	1037.70	1095.30	1153.00
551 - 600	907.30	938.60	1001.10	1032.50	1063.80	1128.30	1189.00	1251.50
601 - 650	978.10	1011.90	1079.30	1113.10	1146.80	1214.20	1281.70	1349.10
651 - 700	1048.70	1084.80	1157.10	1193.30	1229.40	1301.70	1374.00	1446.40
701 - 750	1119.70	1158.40	1235.60	1274.20	1312.80	1390.00	1467.20	1544.40
751 - 800	1189.40	1230.50	1312.50	1353.50	1394.50	1475.50	1558.60	1640.60
801 - 850	1259.30	1302.70	1389.60	1433.00	1476.40	1563.30	1650.10	1737.00
851 - 900	1328.80	1374.70	1466.30	1512.10	1557.90	1649.60	1741.20	1832.80
901 - 950	1398.20	1446.50	1542.90	1591.10	1639.30	1735.70	1832.10	1928.50
951 - 1000	1467.60	1518.20	1619.40	1670.00	1720.60	1821.90	1923.00	2024.20
1001 - 1100	1607.80	1663.20	1774.10	1829.50	1885.00	1995.80	2106.70	2217.60
1101 - 1200	1748.30	1808.60	1929.10	1989.40	2049.70	2170.30	2290.80	2411.40
1201 - 1300	1888.20	1953.30	2083.50	2148.60	2213.70	2343.90	2474.10	2604.40
1301 - 1400	2027.70	2097.70	2237.00	2306.90	2376.80	2516.60	2656.30	2796.20
1401 - 1500	2166.30	2241.00	2390.40	2465.10	2539.80	2689.20	2838.60	2988.00
1501 - 1625	2301.30	2380.70	2539.40	2618.70	2698.10	2856.80	3015.40	3174.30
1626 - 1750	2478.30	2563.80	2734.70	2820.20	2905.60	3076.60	3247.50	3418.40
1751 - 1875	2548.50	2636.50	2812.20	2900.00	2987.90	3163.70	3339.40	3515.20
1876 - 2000	2718.30	2812.10	2999.50	3093.30	3187.00	3374.50	3561.90	3749.40
2001 - 2125	2745.80	2840.60	3029.80	3124.40	3219.10	3408.50	3597.90	3787.20
2126 - 2250	2907.30	3007.50	3208.00	3308.30	3408.50	3609.00	3809.50	4010.00
2251 - 2375	2933.80	3034.70	3237.00	3338.40	3439.30	3641.60	3844.00	4046.20
2376 - 2500	3087.90	3194.40	3407.00	3513.80	3620.30	3833.30	4046.20	4259.20
2501 - 2625	3135.50	3244.70	3461.00	3569.10	3677.30	3893.60	4109.90	4326.20
2626 - 2750	3285.80	3399.20	3625.80	3739.10	3852.40	4079.00	4305.60	4532.20
2751 - 2875	3332.40	3447.30	3677.10	3792.00	3906.90	4136.80	4366.60	4596.40
2876 - 3000	3477.20	3597.20	3837.00	3956.90	4076.80	4316.60	4556.40	4796.20
3001 - 3125	3522.10	3643.50	3886.40	4007.90	4129.30	4372.20	4615.10	4858.00
3126 - 3250	3663.00	3789.30	4041.90	4168.20	4294.50	4547.20	4799.80	5052.40
3251 - 3375	3706.80	3834.60	4090.50	4218.10	4345.90	4601.50	4857.20	5112.80
3376 - 3500	3844.10	3976.70	4241.80	4374.30	4506.90	4772.00	5037.10	5302.20

FREIGHT RATE PER TONNE (in ₹)

Distance Slab (in Kms)	Class LR-3 (A)		Class 100A		Class 120A	
	Class-(LR3) A	Class (LR3)B	Class-100A	Class-100B	Class-120 A	Class-120B
	Tramload	Wagonload	Tramload	Wagonload	Tramload	Wagonload
1 - 100	79.40	136.20	113.40	170.20	136.20	170.20
101 - 125	99.20	170.20	141.80	212.70	170.20	212.70
126 - 150	115.20	207.50	172.80	258.40	207.50	258.40
151 - 175	129.30	232.60	193.80	290.70	232.60	290.70
176 - 200	144.40	260.00	216.70	325.10	260.00	325.10
201 - 225	158.60	285.50	237.90	356.90	285.50	356.90
226 - 250	173.80	312.80	260.70	391.10	312.80	391.10
251 - 275	189.00	340.20	283.50	425.30	340.20	425.30
276 - 300	204.10	367.20	306.00	459.00	367.20	459.00
301 - 325	218.10	392.80	327.30	491.00	392.80	491.00
326 - 350	232.90	419.30	349.40	524.10	419.30	524.10
351 - 375	247.60	445.80	371.50	557.30	445.80	557.30
376 - 400	262.80	472.80	394.00	591.00	472.80	591.00
401 - 425	277.90	500.00	416.70	625.10	500.00	625.10
426 - 450	292.80	527.00	439.70	658.80	527.00	658.80
451 - 475	307.60	553.60	461.30	692.00	553.60	692.00
476 - 500	323.00	581.30	484.40	726.60	581.30	726.60
501 - 550	353.30	636.10	530.10	795.20	636.10	795.20
551 - 600	383.60	690.50	575.40	863.10	690.50	863.10
601 - 650	413.50	744.40	620.30	930.50	744.40	930.50
651 - 700	443.40	798.00	665.00	997.50	798.00	997.50
701 - 750	473.30	852.10	710.10	1065.20	852.10	1065.20
751 - 800	502.80	905.20	754.30	1131.50	905.20	1131.50
801 - 850	532.40	958.30	798.60	1197.80	958.30	1197.80
851 - 900	561.90	1011.70	842.70	1264.10	1011.70	1264.10
901 - 950	591.10	1064.00	886.70	1330.10	1064.00	1330.10
951 - 1000	620.50	1116.80	930.70	1396.10	1116.80	1396.10
1001 - 1100	679.70	1223.50	1019.60	1529.40	1223.50	1529.40
1101 - 1200	739.20	1330.40	1108.70	1663.10	1330.40	1663.10
1201 - 1300	798.30	1436.90	1197.40	1796.10	1436.90	1796.10
1301 - 1400	857.10	1542.70	1285.60	1928.40	1542.70	1928.40
1401 - 1500	915.90	1648.60	1373.80	2060.70	1648.50	2060.70
1501 - 1625	973.10	1751.30	1459.40	2189.10	1751.30	2189.10
1626 - 1750	1047.90	1896.00	1571.70	2357.60	1896.00	2357.60
1751 - 1875	1077.50	1999.40	1616.20	2424.30	1999.40	2424.30
1876 - 2000	1149.30	2068.70	1723.90	2585.90	2068.70	2585.90
2001 - 2125	1160.80	2089.60	1741.30	2612.00	2089.60	2612.00
2126 - 2250	1279.10	2212.40	1849.70	2765.60	2212.40	2765.60
2251 - 2375	1240.40	2232.50	1860.40	2790.80	2232.50	2790.80
2376 - 2500	1305.60	2350.00	1958.30	2937.50	2350.00	2937.50
2501 - 2625	1325.90	2386.90	1989.10	2983.70	2386.90	2983.70
2626 - 2750	1389.10	2500.60	2083.80	3125.70	2500.60	3125.70
2751 - 2875	1408.90	2536.00	2113.30	3170.00	2536.00	3170.00
2876 - 3000	1470.20	2646.20	2205.20	3307.80	2646.20	3307.80
3001 - 3125	1489.10	2690.30	2233.60	3350.40	2690.30	3350.40
3126 - 3250	1548.60	2787.60	2323.00	3484.50	2787.60	3484.50
3251 - 3375	1567.70	2821.00	2350.80	3526.20	2821.00	3526.20
3376 - 3500	1625.30	2925.40	2437.80	3656.70	2925.40	3656.70

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FREIGHT RATE PER TONNE (in ₹)

Distance Slab (In Kms)	Class 130A		Class 140A		Class 180A	
	Class-130A	Class-130B	Class-140A	Class-140B	Class-180A	Class-180B
	Trainload	Wagonload	Trainload	Wagonload	Trainload	Wagonload
1 - 100	147.40	170.20	158.80	170.20	204.20	215.50
101 - 125	184.30	212.70	198.50	212.70	255.20	269.40
126 - 150	224.80	259.40	242.10	259.40	311.20	328.50
151 - 175	251.90	290.70	271.30	290.70	348.80	368.20
176 - 200	281.70	325.10	303.40	325.10	390.10	411.70
201 - 225	309.30	356.90	333.10	356.90	428.20	452.00
226 - 250	338.90	391.10	365.00	391.10	469.30	495.30
251 - 275	368.60	425.30	396.90	425.30	510.30	538.70
276 - 300	397.80	459.00	428.40	459.00	550.80	581.40
301 - 325	425.50	491.00	458.20	491.00	589.10	621.90
326 - 350	454.20	524.10	489.20	524.10	628.90	663.90
351 - 375	483.00	557.30	520.10	557.30	668.70	705.90
376 - 400	512.20	591.00	551.60	591.00	709.20	748.60
401 - 425	541.70	625.10	583.40	625.10	750.10	791.70
426 - 450	571.00	658.80	614.90	658.80	790.60	834.50
451 - 475	599.70	692.00	646.80	692.00	830.30	876.50
476 - 500	629.70	726.60	678.20	726.60	871.90	920.40
501 - 550	689.10	795.20	742.10	795.20	954.20	1007.20
551 - 600	748.00	863.10	805.60	863.10	1035.70	1093.30
601 - 650	805.40	930.50	868.40	930.50	1116.50	1178.60
651 - 700	864.50	997.50	931.00	997.50	1197.00	1263.50
701 - 750	923.10	1065.20	994.10	1065.20	1278.20	1349.20
751 - 800	980.60	1131.50	1056.00	1131.50	1357.70	1433.20
801 - 850	1038.20	1197.90	1118.00	1197.90	1437.50	1517.30
851 - 900	1095.50	1264.10	1179.80	1264.10	1516.50	1601.10
901 - 950	1152.70	1330.10	1241.40	1330.10	1596.10	1684.70
951 - 1000	1209.90	1396.10	1303.00	1396.10	1675.30	1768.30
1001 - 1100	1325.50	1529.40	1427.40	1529.40	1835.30	1937.20
1101 - 1200	1441.30	1663.10	1552.20	1663.10	1995.70	2106.50
1201 - 1300	1556.60	1796.10	1676.40	1796.10	2155.30	2275.10
1301 - 1400	1671.30	1928.40	1799.80	1928.40	2314.10	2442.60
1401 - 1500	1785.90	2060.70	1923.30	2060.70	2472.80	2610.20
1501 - 1625	1897.20	2189.10	2045.20	2189.10	2626.90	2772.90
1626 - 1750	2043.20	2357.60	2200.40	2357.60	2829.10	2985.20
1751 - 1875	2101.10	2474.30	2262.70	2474.30	2909.20	3070.80
1876 - 2000	2241.10	2585.90	2413.50	2585.90	3103.00	3275.40
2001 - 2125	2268.70	2612.00	2437.80	2612.00	3134.30	3308.50
2126 - 2250	2396.80	2705.60	2581.20	2765.60	3318.70	3503.00
2251 - 2375	2418.50	2790.60	2604.60	2790.60	3348.70	3534.80
2376 - 2500	2545.80	2937.50	2741.60	2937.50	3524.90	3720.80
2501 - 2625	2585.80	2983.70	2784.70	2983.70	3580.40	3779.30
2626 - 2750	2708.90	3125.70	2917.30	3125.70	3750.80	3959.20
2751 - 2875	2747.30	3170.00	2958.60	3170.00	3803.90	4015.30
2876 - 3000	2866.80	3307.80	3087.30	3307.80	3969.40	4189.90
3001 - 3125	2903.70	3330.40	3127.00	3350.40	4020.50	4243.80
3126 - 3250	3019.90	3484.50	3252.20	3484.50	4181.40	4413.70
3251 - 3375	3056.00	3526.20	3291.10	3526.20	4231.40	4466.50
3376 - 3500	3169.10	3656.70	3412.90	3656.70	4388.00	4631.80

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Commodity - Coal & Coke  
Freight Rate Table

Distance Slab (in Kms)			Class-145A	Class-145B
			Trainload	Wagonload
1	-	100	216.00	226.80
101	-	125	389.60	409.10
126	-	150	448.90	471.30
151	-	175	488.70	513.10
176	-	200	532.20	559.00
201	-	225	572.50	706.10
276	-	350	797.70	837.10
351	-	425	926.00	972.30
426	-	500	1054.70	1107.40
501	-	600	1228.00	1289.40
601	-	700	1398.70	1468.70
701	-	730	1435.60	1507.40
731	-	760	1484.30	1558.30
761	-	790	1537.90	1614.80
791	-	820	1586.70	1665.90
821	-	850	1640.90	1722.40
851	-	880	1688.60	1773.00
881	-	910	1747.00	1823.70
911	-	940	1790.20	1879.00
941	-	970	1838.60	1930.50
971	-	1000	1891.80	1986.30
1001	-	1020	1919.90	2015.90
1021	-	1040	1955.20	2052.90
1041	-	1060	1990.50	2090.00
1061	-	1080	2025.70	2126.90
1081	-	1100	2061.00	2164.10
1101	-	1120	2090.00	2194.50
1121	-	1140	2125.10	2231.30
1141	-	1160	2150.30	2268.40
1161	-	1180	2195.60	2305.30
1181	-	1200	2230.70	2342.20
1201	-	1220	2259.40	2377.30
1221	-	1240	2294.40	2409.10
1241	-	1260	2329.40	2445.90
1261	-	1280	2364.60	2482.70
1281	-	1300	2399.60	2519.60
1301	-	1320	2427.70	2548.00
1321	-	1340	2462.60	2585.70
1341	-	1360	2497.60	2622.40
1361	-	1380	2532.60	2659.20
1381	-	1400	2567.60	2695.90
1401	-	1420	2596.10	2725.80
1421	-	1440	2630.90	2762.40
1441	-	1460	2665.80	2799.00
1461	-	1480	2680.90	2814.90
1481	-	1500	2695.00	2829.80

Distance Slab (in Kms)			Class-145A	Class-145B
			Trainload	Wagonload
1501	-	1510	2706.70	2842.10
1511	-	1520	2719.00	2854.90
1521	-	1530	2726.10	2862.50
1531	-	1540	2733.40	2870.10
1541	-	1550	2740.60	2877.70
1551	-	1560	2747.80	2885.10
1561	-	1570	2755.10	2892.90
1571	-	1580	2762.30	2900.50
1581	-	1590	2769.50	2908.10
1591	-	1600	2776.70	2915.50
1601	-	1610	2783.90	2923.10
1611	-	1620	2791.20	2930.70
1621	-	1630	2798.40	2938.40
1631	-	1640	2805.50	2945.80
1641	-	1650	2812.90	2953.40
1651	-	1660	2820.10	2961.00
1661	-	1670	2827.30	2968.70
1671	-	1680	2834.50	2976.70
1681	-	1690	2841.70	2983.80
1691	-	1700	2848.90	2991.40
1701	-	1710	2856.20	2998.00
1711	-	1720	2863.40	3006.50
1721	-	1730	2870.60	3014.10
1731	-	1740	2877.90	3021.70
1741	-	1750	2885.00	3029.30
1751	-	1760	2892.30	3036.80
1761	-	1770	2899.50	3044.50
1771	-	1780	2906.80	3052.20
1781	-	1790	2914.00	3059.70
1791	-	1800	2921.10	3067.20
1801	-	1810	2928.40	3074.80
1811	-	1820	2935.60	3082.40
1821	-	1830	2942.90	3090.00
1831	-	1840	2950.10	3097.50
1841	-	1850	2957.20	3105.10
1851	-	1860	2964.50	3112.80
1861	-	1870	2971.70	3120.40
1871	-	1880	2979.00	3127.90
1881	-	1890	2986.20	3135.50
1891	-	1900	2993.30	3143.20
1901	-	1910	3000.60	3150.70
1911	-	1920	3007.80	3158.20
1921	-	1930	3015.10	3165.80
1931	-	1940	3022.30	3173.40
1941	-	1950	3029.60	3181.00
1951	-	1960	3036.70	3188.60



Commodity - Coal & Coke

Freight Rate Table

Distance Slab (In Kms)			Class-145A	Class-145B
			Trainload	Wagonload
1961	-	1970	3043.90	3196.20
1971	-	1980	3053.20	3203.80
1981	-	1990	3058.40	3211.40
1991	-	2000	3065.70	3238.90
2001	-	2010	3072.80	3226.50
2011	-	2020	3080.00	3234.10
2021	-	2030	3087.30	3241.70
2031	-	2040	3094.50	3249.20
2041	-	2050	3101.80	3256.80
2051	-	2060	3108.90	3264.50
2061	-	2070	3116.10	3272.10
2071	-	2080	3123.40	3279.60
2081	-	2090	3130.60	3287.20
2091	-	2100	3137.90	3294.80
2101	-	2110	3145.10	3302.40
2111	-	2120	3152.30	3309.90
2121	-	2130	3159.50	3317.50
2131	-	2140	3166.70	3325.10
2141	-	2150	3174.00	3332.80
2151	-	2160	3181.20	3340.10
2161	-	2170	3188.40	3347.90
2171	-	2180	3195.60	3355.50
2181	-	2190	3202.80	3363.10
2191	-	2200	3210.10	3370.50
2201	-	2210	3217.30	3378.10
2211	-	2220	3224.50	3385.70
2221	-	2230	3231.70	3393.40
2231	-	2240	3238.90	3400.80
2241	-	2250	3246.20	3408.40
2251	-	2260	3253.40	3416.10
2261	-	2270	3260.70	3423.70
2271	-	2280	3267.80	3431.20
2281	-	2290	3275.10	3438.80
2291	-	2300	3282.30	3446.40
2301	-	2310	3289.50	3454.00
2311	-	2320	3296.80	3461.50
2321	-	2330	3303.90	3469.10
2331	-	2340	3311.20	3476.70
2341	-	2350	3318.40	3484.40
2351	-	2360	3325.60	3492.90
2361	-	2370	3332.90	3499.50
2371	-	2380	3340.00	3507.10
2381	-	2390	3347.30	3514.70
2391	-	2400	3354.50	3522.20

Distance Slab (In Kms)			Class-145A	Class-145B
			Trainload	Wagonload
2401	-	2410	3361.70	3529.80
2411	-	2420	3369.00	3537.40
2421	-	2430	3376.10	3545.00
2431	-	2440	3383.40	3552.50
2441	-	2450	3390.60	3560.10
2451	-	2460	3397.90	3567.80
2461	-	2470	3405.10	3575.40
2471	-	2480	3412.20	3582.90
2481	-	2490	3419.50	3590.50
2491	-	2500	3426.70	3598.10
2501	-	2510	3434.00	3605.70
2511	-	2520	3441.20	3613.20
2521	-	2530	3448.40	3620.80
2531	-	2540	3455.60	3628.40
2541	-	2550	3462.80	3636.10
2551	-	2560	3470.10	3643.60
2561	-	2570	3477.30	3651.20
2571	-	2580	3484.60	3658.80
2581	-	2590	3491.70	3666.40
2591	-	2600	3498.90	3673.50
2601	-	2610	3506.20	3681.50
2611	-	2620	3513.40	3689.10
2621	-	2630	3520.70	3696.70
2631	-	2640	3527.90	3704.20
2641	-	2650	3535.00	3711.90
2651	-	2660	3542.30	3719.50
2661	-	2670	3549.50	3727.10
2671	-	2680	3556.80	3734.50
2681	-	2690	3564.00	3742.20
2691	-	2700	3571.10	3749.80
2701	-	2710	3578.40	3757.40
2711	-	2720	3585.60	3764.90
2721	-	2730	3592.90	3772.50
2731	-	2740	3600.10	3780.20
2741	-	2750	3607.30	3787.80
2751	-	2760	3614.50	3795.20
2761	-	2770	3621.70	3802.80
2771	-	2780	3629.00	3810.50
2781	-	2790	3636.20	3818.10
2791	-	2800	3643.50	3825.50
2801	-	2810	3650.60	3833.10
2811	-	2820	3657.80	3840.70
2821	-	2830	3665.10	3848.30
2831	-	2840	3672.30	3855.80

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Commodity - Coal & Coke

Freight Rate Table

Distance Slab (in Kms)		Class-145A	Class-145B
		Trainload	Wagonload
2841	- 2850	3579.60	3863.50
2851	- 2860	3586.70	3871.10
2861	- 2870	3593.90	3878.70
2871	- 2880	3701.20	3886.20
2881	- 2890	3708.40	3893.80
2891	- 2900	3715.70	3901.40
2901	- 2910	3722.80	3909.00
2911	- 2920	3730.10	3916.50
2921	- 2930	3737.30	3924.10
2931	- 2940	3744.50	3931.70
2941	- 2950	3751.80	3939.40
2951	- 2960	3758.90	3946.90
2961	- 2970	3766.20	3954.50
2971	- 2980	3773.40	3962.10
2981	- 2990	3780.60	3969.70
2991	- 3000	3787.90	3977.20
3001	- 3010	3795.00	3984.80
3011	- 3020	3802.30	3992.40
3021	- 3030	3809.50	4000.00
3031	- 3040	3816.70	4007.50
3041	- 3050	3824.00	4015.20
3051	- 3050	3831.20	4022.80
3061	- 3070	3838.40	4030.40
3071	- 3080	3845.60	4037.90
3081	- 3090	3852.90	4045.50
3091	- 3100	3860.10	4053.10
3101	- 3110	3867.30	4060.70
3111	- 3120	3874.50	4068.20
3121	- 3130	3881.70	4075.80
3131	- 3140	3889.00	4083.50
3141	- 3150	3896.20	4091.10
3151	- 3160	3903.40	4098.60
3161	- 3170	3910.70	4106.20

Distance Slab (in Kms)		Class-145A	Class-145B
		Trainload	Wagonload
3171	- 3180	3917.80	4113.80
3181	- 3190	3925.10	4121.40
3191	- 3200	3932.30	4128.90
3201	- 3210	3939.50	4136.50
3211	- 3220	3946.80	4144.10
3221	- 3230	3953.90	4151.70
3231	- 3240	3961.20	4159.30
3241	- 3250	3968.40	4166.90
3251	- 3260	3975.70	4174.50
3261	- 3270	3982.90	4182.10
3271	- 3280	3990.00	4189.60
3281	- 3290	3997.30	4197.20
3291	- 3300	4004.50	4204.80
3301	- 3310	4011.80	4212.40
3311	- 3320	4019.00	4219.90
3321	- 3330	4026.10	4227.50
3331	- 3340	4033.40	4235.20
3341	- 3350	4040.60	4242.80
3351	- 3360	4047.90	4250.20
3361	- 3370	4055.10	4257.80
3371	- 3380	4062.40	4265.50
3381	- 3390	4069.50	4273.10
3391	- 3400	4076.70	4280.50
3401	- 3410	4084.00	4288.10
3411	- 3420	4091.20	4295.70
3421	- 3430	4098.50	4303.30
3431	- 3440	4105.60	4310.90
3441	- 3450	4112.80	4318.50
3451	- 3460	4120.10	4326.10
3461	- 3470	4127.30	4333.70
3471	- 3480	4134.60	4341.20
3481	- 3490	4141.70	4348.80
3491	- 3500	4148.90	4356.40

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**भारतीय रेल सम्मेलन**  
**INDIAN RAILWAY CONFERENCE ASSOCIATION**

**मालभाड़ा सं. 49 भाग-1 (जिल्द-11)**

**और**

**मालभाड़ा दर सं. 49 (भाग-11)**

**GOODS TARIFF NO. 49 Pt. I (Vol. II)**

**AND**

**GOODS TARIFF NO. 49 (PART II)**

इसमें माल भाड़ा दर संख्या 49 भाग-1 (जिल्द-11) का सामान्य वर्गीकरण किया गया है जो केन्द्र सरकार द्वारा रेल मंत्रालय (रेल बोर्ड) के पत्र संख्या टीसीआर/1078/2018/15 दिनांक 31.10.2018 (दर प्रसिपत्र-19/2018) एवं 2015/टीसी (सीआर)/505/1 दिनांक 04.01.2019) से प्राधिकृत है।

माल भाड़ा दर संख्या 49 (भाग-11) में माल भाड़ा दर तालिकाएं दी गई हैं।

दिनांक 01 नवम्बर 2018 से लागू

भाग-1 (जिल्द-1) में माल की स्वीकृति, बुलाई और सुपुर्दगी के सामान्य नियम दिए गए हैं।

भारत की सरकारी रेलों पर स्थानीय बुकिंग में तथा सम्मेलन की सभी सदस्य रेलों पर सीधी बुकिंग में उपयोग के लिए।

Goods Tariff No. 49 Part I (Vol. II) contains the General Classification of Goods which has the authority of the Central Government vice Ministry of Railways (Railway Board) letter Nos. TCR/1078/2018/15 Dated 31.10.2018 (RC-19/2018) & 2015/TC (CR)/505/1 Dated 04.01.2019.

Goods Tariff No. 49 Part II contains Freight Rate Tables.

In force from 01.11.2018

Part I (Volume I) Contains General Rules for Acceptance, Carriage and Delivery of Goods.

To be used in local booking over Indian Railways and through booking over all Railways party to the Association.



## विषय सूची / CONTENTS

भाग / PART	विवरण / DESCRIPTION	पृष्ठ सं. / PAGE NO.
(ए) (A)	<p>माल दर सूची संख्या - 49 भाग-1, (जिल्द -II) <b>Goods Tariff No. 49 Part-I (Volume-II)</b></p> <p>शुद्धि-पत्रों का रजिस्टर <b>Register of Correction Slips</b></p> <p>प्राक्कथन <b>Preface</b></p> <p>दरों के विषय में जानकारी <b>Quotation of Rates</b></p> <p>मार्गदर्शी सिद्धांत <b>Guiding Principles</b></p> <p>वस्तुओं की सूची <b>Commodity Index</b></p> <p>माल का सामान्य वर्गीकरण <b>General Classification of Goods</b></p>	<p>i</p> <p>1</p> <p>2</p> <p>3</p> <p>4-5</p> <p>6-7</p> <p>8-23</p>
भाग / PART	विवरण / DESCRIPTION	पृष्ठ सं. / PAGE NO.
(बी) (B)	<p>माल भाड़ा दर सं. 49 (भाग-II) <b>Goods Tariff No. 49 Part-II</b></p> <p>वर्ग – एलआर3 से वर्ग – 110 की माल भाड़ा दरें <b>Freight rates of class LR3 to Class-110</b></p> <p>वर्ग – 120 से वर्ग – 150 की माल भाड़ा दरें <b>Freight rates for Class-120 to Class-150</b></p> <p>वर्ग – 160 से वर्ग – 200 की माल भाड़ा दरें <b>Freight rates for Class-160 to Class-200</b></p> <p>वर्ग प्रत्यय (ए) एवम् (बी) सहित की माल भाड़ा दरें <b>Freight rates for Class with suffix (A) &amp; (B)</b></p>	<p>1-2</p> <p>4-5</p> <p>7-8</p> <p>10-18</p>



## PREFACE

1. This Tariff is in force on the under mentioned Railways, party to the Association, and on the Central Inland Water Transport Corporation Ltd., not party to the Association, subject to the exceptions notified in their current Tariffs :-

Central Inland Water Transport Corporation Ltd. ... C.I.W.T.C

Name of Railways	Code	Name of Railways	Code
Central	C.R.	South East Central	S.E.C.R
Eastern	E.R.	South Western	S.W.R.
East Central	E.C.R.	Western	W.R.
East Coast	E.CoR.	West Central	W.C.R.
Northern	N.R.		
North Central	N.C.R.	<b>Non-Government Railway</b>	<b>Code</b>
North Eastern	N.E.R.	Kolkata Port Trust	K.P.T.
Northeast Frontier	N.F.R.	Chennai Port Trust	C.P.T.
North Western	N.W.R.	Konkan Rly. Corpn. Ltd.	K.R.
Southern	S.R.	Mumbai Port Trust	Mb.P.T.
South Central	S.C.R.	Pipavav Rly. Corp. Ltd.	P.R.C.L.
South Eastern	S.E.R.	Kutch Rly. Co. Ltd.	Ku.R.C.

2. **Mumbai Port Trust Railway** - The Port Trust Railway, while accepting the rules and conditions, collects in Mumbai an additional charge in certain cases as laid down in its Goods Tariff.
3. **Kolkata Port Trust Railway** - The Eastern Railway works the stations on the Port Trust Railway between Howrah Bridge and Cossipore, while South Eastern Railway works Haldia Port.

As regards Docks and jetties, the Port Trust are the terminal agents of the Eastern and South Eastern Railways respectively.

4. **Chennai Port Trust Railway** - The rules, rates and conditions, for all goods entering or leaving the Chennai Harbour by rail are the same as from or to Royapuram for goods from or to and via the Southern (B.G. Section) Railway and as from or to Chennai (Beach) for goods from or to and via the Southern (M.G. Section) Railway plus the local charges as laid down in Part III of the Chennai Port Trust Scale Rates.



## Quotation of Rates

Authentic information in regard to the rates and conditions for goods traffic may be had on application to the following :-

<b>Railway</b>	<b>Authority competent to quote rates</b>
Mumbai Port Trust	Manager, Mumbai
Kolkata Port Trust	(1) Pr.Chief Commercial Manager, Eastern Rly, Kolkata-1 So far as their respective traffic Docks and Jetties are concerned. * SER Works Haldia Port (2) Traffic Manager, Port Trust, Kolkata For local traffic between points on the Port Trust Premises.
Central	Pr.Chief Commercial Manager, Chhatrapati Shivaji Maharaj Terminus, Mumbai.
Eastern	Pr.Chief Commercial Manager, Koilaghat, Kolkata.
East Central	Pr.Chief Commercial Manager, Hajipur.
East Coast Paradip Port Trust	Pr.Chief Commercial Manager, East Coast Railway, Bhubaneswar.
Chennai Port Trust	Pr.Chief Commercial Manager, Southern Railway (B.G. Section), Chennai.
Northern	Pr.Chief Commercial Manager, Baroda House, New Delhi.
North Western	Pr.Chief Commercial Manager, Jaipur.
North Central	Pr.Chief Commercial Manager, Allahabad.
North Eastern	Pr.Chief Commercial Manager, Gorakhpur.
Northeast Frontier	Pr.Chief Commercial Manager, Maligaon, Guwahati.
Southern	Pr.Chief Commercial Manager, Chennai.
South Central	Pr.Chief Commercial Manager, Secunderabad.
South East Central	Pr.Chief Commercial Manager, Bilaspur.
South Western Goa Port Trust	Pr.Chief Commercial Manager, S.W. Railway, Hubballi.
South Eastern Haldia Port Trust	Pr.Chief Commercial Manager, S.E. Rly., Strand Road, Kolkata.
Western Kutch Rly. Co. Ltd.	Pr.Chief Commercial Manager, W. Rly., Churchgate, Mumbai.
Kandla Port Trust	Dy. CCM (Rates), Western Railway, Churchgate, Mumbai.
West Central	Pr.Chief Commercial Manager, Jabalpur.
Konkan Rly Corpn. Ltd.	Chief Commercial Manager, Konkan Railway, Belapur, Navi Mumbai.
Pipavav Rly. Corp. Ltd.	Vice President (Technical) B-1202, B-Wing, 12th Floor, Statesman House, 148, Barakhamba Road, Connaught Place, New Delhi-1.
Central Inland Water Transport Corpn. Ltd.	Commercial Manager, C.I.W.T.C. Ltd., Juggarnath Ghat, Kolkata-7.



## **GUIDING PRINCIPLES FOR CLASSIFICATION AND GENERAL RULES FOR CHARGING OF FREIGHT**

- 1.0 Classifications of the commodities have been given in the Goods Tariff under Main Commodity Head/Subhead and three divisions of Low Rated Commodities.
- 2.0 The Classification of different commodities under the Main Commodity Head/Subhead given in the Goods Tariff, if not explicitly mentioned otherwise, will be same for their different physical forms/shapes and different conditions, (whether raw or manufactured etc).
- 3.0 A commodity, which has not been included in any of the Main Commodity Heads or three divisions of Low Rated Commodities given in the Goods Tariff, will be charged at Composite Base freight rates applicable for the wagon type in which it is loaded. The base rates are as under:-

<b>Type of wagon</b>	<b>Applicable Class</b>
Tank Wagons	Class-200
Flat Wagons	Class-180
Open (including Hoppers) Wagons	Class-160
Covered Wagons	Class-150

- 4.0 Proposal for assigning trainload classification of a commodity not indicated in the Goods Tariff but having a potential for block rake loading may be sent to Railway Board.
- 5.0 Only train load Classification of commodities has been indicated in the Goods Tariff. The Classification for wagonload movement of the commodity will be as under:-

<b>Trainload Class</b>	<b>Wagonload Class</b>
(a) Up to Class LR <sub>1</sub>	Class-120
(b) Above Class LR <sub>1</sub> And up to Class-190	One Class higher than Trainload class rate or Class-150, whichever is higher
(C) Class-200	Base Freight rate of Class-200 + 5%



- 5.1 MG and NG System: Notwithstanding anything contained in Para 5.0, the Wagonload Class of all commodities shall be one Class higher than their respective Trainload class when loaded on Metre Gauge (MG) and Narrow Gauge (NG) system. However, for the commodities in the highest Class, the Wagonload Class will be same as Trainload Class.
- 6.0 In case of any disparity in classification between English and Hindi version, the classification given in English version shall prevail.
- 7.0 Dangerous/hazardous commodities are indicated with alphabet "d" against the commodity. These commodities are to be charged at the class indicated for the Main Commodity Head/Subhead as the case may be. However, all other dangerous/hazardous commodities, not listed in the Goods Tariff but listed in the "Red Tariff", will be charged at the highest Class-200. Dangerous commodities will not be booked for transportation by Rail unless they are listed in the "Red Tariff".
- 7.1 All conditions for carriage of dangerous/hazardous commodities, as laid down in the Red Tariff, must be followed.
- 8.0 The chargeable weight for all commodities shall be Permissible Carrying Capacity (PCC) of the wagon notified from time to time.
- 9.0 Minimum distance for charge shall be 100 kms. for all commodities.
- 10.0 Freight charges for traffic booked under provisions of Goods Tariff will be rounded off to the next higher rupee. Such rounding off of freight per Railway Receipt will be done only once after adding all applicable charges/surcharges like surcharges under Dynamic Pricing policy, etc.
- 11.0 Pre-payment of freight is compulsory for all commodities. In case of E-payment, TMS will permit issue of 'Paid E-RR' when a positive confirmation from Bank is received regarding collection of freight. If Bank sends a message of insufficient funds, system will issue 'To-pay' E-RR. If no message is received from the Bank within 150 seconds for any reason whatever, then system will issue a Paid E-RR subject to conditions laid down for 'Procedure in case of exigencies' under e-payment guidelines.
- 12.0 The commodities attached with "OR" in the column "Risk Rate" will be charged/booked at Owner's Risk. However, commodities with OR rate can be booked at RR rate on payment of 20% surcharge. In all other cases, where "OR" does not appear, commodities be treated to have been charged/booked at Railway Risk Rate.
- 13.0 Packing condition given against the Main Commodity Head/Subhead shall also apply to all commodities mentioned under that Main Commodity Head/Subhead unless other packing condition is specifically mentioned against the respective commodity.
- 13.1 Consignors will have to ensure that the commodities offered for transportation by railways are not defectively or improperly packed depending upon the nature of the commodity and the method of transportation such as in loose condition, in bulk, in bagged condition etc. It should be ensured that the commodities are packed in such a manner that they are not liable to damage, deterioration, leakage or wastage during transit.
- 13.2 It should be ensured that the commodities are packed in bags, containers, drums, cases, cartons etc. of high quality and adequate strength, which can withstand the rigours of transportation and also provide ease of handling. Commodities loaded in loose condition such as bamboos, timber, Iron & steel etc. must be securely tied.

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## Commodity Index

S.No	Main Commodity Head	Page No
<b>GENERAL TARIFF LINES</b>		
1	Acids and Alcohols	8
2	Alloys and Metals	8
3	Bricks and Stones	9
4	Caustic Potash and Soda	9
5	Cement	10
6	Chemical Manures	10-11
7	Clay and Sand	11
8	Coal and Coke	12
9	Foodgrains, Flours and Pulses	13
10	Fish Meal	13
11	Hydrogenated and other Edible Oils	14
12	Iron or Steel	14-16
13	Leather, Rubber and Plastic	16
14	Minerals and Ores	16
14.1	Iron Ore	16
14.2	Minerals and Ores other than Iron Ore	17
15	Machinery and Machine tools	18
16	Metal Scrap and Pig Iron	18
17	Oil Cakes and Seeds	18
18	Petroleum Products (POL) and Gases	19
19	Salt	20
20	Soap	20
21	Sugar	20
22	Miscellaneous	20
(i)	Ashes	20
(ii)	Betel Nuts	20
(iii)	Biomass Briquettes	20
(iv)	Chalk Calcium Carbonate	20
(v)	Chalk in Lumps or Powder	20
(vi)	Glucose	20
(vii)	Gunnies	20
(viii)	Gunny Bags	20
(ix)	Household Effects	20
(x)	Molasses	20
(xi)	Molasses Suger Mill (Not Khansari Molasses)	20
(xii)	Mono-Calcium Phosphate for Animal, Aqua and Poultry feed	20
(xiii)	Purified Terephthalic Acid (PTA)	20
(xiv)	Putty	20
(xv)	Secondary Nutrient/Soil Conditioner (CMS)	20
(xvi)	Starch	20



## Commodity Index

S.No	Main Commodity Head	Page No
<b>GENERAL TARIFF LINES</b>		
<b>23.</b>	<b>DIVISION -'A'</b>	21
(i)	Electrical appliances and fittings	21
(ii)	Empty drums, Jerrycans and Barrels	21
(iii)	Jagree and Jagree Powder	21
(iv)	Jute and Jute Caddies	21
(v)	Milk and Milk products	21
(vi)	Organic Manures	21
(vii)	Paints and Polishes	21
(viii)	Timber and Timber Waste	21
(ix)	Vegetable oil pitches	21
(x)	Water	21
(xi)	Fireworks	21
(xii)	Books/Exercise Books/Note Books and Work Books	21
24	<b>DIVISION -'B'</b>	22
(i)	Boiler Components	22
(ii)	Charcoal	22
(iii)	Paper	22
25	<b>DIVISION-'C'</b>	22
(i)	Bamboos	22
(ii)	Brooms	22
(iii)	Coffee and Tea	22
(iv)	Coir and Coir Mats	22
(v)	Cotton and other Textiles	22
(vi)	Fodder and Husk	22
(vii)	Chuni	22
(viii)	Fruits and Vegetables	23
(ix)	Groceries	23
(x)	I.V. and Insecticide fluid	23
(xi)	Live stock	23
(xii)	Motor vehicles	23
(xiii)	Surgarcane & Bagasse	23





GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>GENERAL TARIFF LINES</b>					
<b>1.</b>	<b>ACID AND ALCOHOLS</b>				
	ABSOLUTE ALCOHOLS	d	P5	RR	200
	ACETIC ACID	d			
	BENZOIC ACID				
	BENZYL ALCOHOL				
	BORIC ACID				
	BUTYL ALCOHOL				
	CITRIC ACID				
	HYDROCHLORIC ACID	d			
	NITRIC ACID	d			
	PHOSPHORIC ACID	d			
	SPIRIT	d			
	SULPHURIC ACID	d			
<b>2.</b>	<b>ALLOYS AND METALS</b>				
	ALLOY PIPES		P2(a)	RR	180
	ALLOY STEEL				
	ALLOY STEEL CASTINGS				
	ALUMINA				
	ALUMINIUM INGOTS				
	ALUMINIUM BILLETS				
	ALUMINIUM POWDER	d			
	BRASS				
	COPPER ANODE & CATHODE				
	COPPER CONCENTRATES				
	COPPER INGOTS				
	COPPER SLAB				
	FERRO CHROME				
	FERRO MANGANESE				
	FERRO SILICON	d			
	KANSA				
	LEAD				
	SILICO CHROME				
	SILICON				
	SILICON MANGANESE				
	TIN PLATE				
	BEARING PLATES				
	ELECTROPLATED TIN PLATES				
	ZINC				



GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>3. BRICKS AND STONES</b>					
<b>3(a)</b>	BALLAST				
	BALLAST CHIPS				
	CERAMIC TILES				
	CHAKKEES				
	FLOORING STONE				
	FLOORING TILES				
	GLASS STONE				
	GRANITE				
	GRANITE BLOCKS UN-DRESSED				
	GRANITE BOULDERS UN-DRESSED				
	GRAVEL				
	KOTA STONE				
	KUNKER				
	MARBLE CHIPS				
	MARBLE DRESSED				
	MARBLE UN-DRESSED				
	MILL STONE				
	POLISHED GRANITE SLAB				
	QUARTZ (Chips, Stones, Gravel and Powder)				
	ROLLERS STONE				
	SANITARY WARES				
	SLATE				
	SLATE STONE				
SLATES IN TILES					
STONE DUST					
STONE NOC					
STONE PILLARS					
STONE WARE					
STONE, Cut and/or Engraved					
STONE GRIT					
<b>3(b)</b>	BRICKS BROKEN				130
	FIRE BRICKS				
<b>4. CAUSTIC POTASH AND SODA</b>					
	CAUSTIC POTASH LIQUOR	d			
	CAUSTIC POTASH SOLID				
	CAUSTIC SODA				
	SULPHATE OF SODA				
	CAUSTIC SODA LIQUOR	d			
	CAUSTIC SODA LYE				
	CAUSTIC SODA FLAKES	d			
	CHLORATE OF SODA	d			
	SODA ASH				
	SODA BICARBONATE				
	SULPHUR				
	WASHING SODA				
			P1		
			P1 or P5		



GENERAL CLASSIFICATION OF GOODS						
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class	
(1)	(2)	(3)	(4)	(5)	(6)	
<b>5.</b>	<b>CEMENT</b>					
<b>5(a)</b>	ACID RESISTING CEMENT		P5	RR	*140A	
	ASBESTOS		P1			
	ASBESTOS JOINTING AND PACKING SHEETS NON GRAPHITED					
	BEAMS (PRESTRESSED CEMENT CONCRETE)					
	CEMENT					
	CEMENT BLOCKS		P2(a)			
	CLINKER					
	CEMENT MANUFACTURED		P2(b), P4			
	CEMENT PIPES		P2(b)			
	CEMENT PLASTER		P1			
	CEMENT SHEETS					
	CEMENT TILES		P4			
	COLOURED CEMENT		P1			
	COLUMNS (PRESTRESSED CEMENT CONCRETE)					
	OIL WELL CEMENT					
	POST SLEEPERS (PRESTRESSED CEMENT CONCRETE)					
	POZZOLONA CEMENT					
	PRESTRESSED CEMENT CONCRETE					
	SUPER FINE CEMENT					
SUPER MASONRY CEMENT						
WHITE CEMENT						
<b>5. (b)</b>	FLY ASH		P2(a)		**120A	
<b>6.</b>	<b>CHEMICAL MANURES</b>					
	AMMONIUM NITRO PHOSPHATE		P1	RR	# 130A	
	AMMONIUM PHOSPHATE					
	AMMONIUM PHOSPHATE SULPHATE					
	AMMONIUM SULPHATE NITRATE					
	AMMONIUM SULPHATE PHOSPHATE					
	BENTONITE SULPHUR PASTILLES (STRAIGHT SULPHUR FERTILIZER)					
	BORONATED SUPHALA					
	CALCIUM AMMONIUM NITRATE					
	CALCIUM AMMONIUM NITRO PHOSPHATE					
	CALCIUM NITRATE					d
	CALCIUM SULPHATE					
	COMPLEX FERTILIZER					
	CYANAMIDE					
	DI-AMMONIUM PHOSPHATE					
	GROUND PHOSPHATE					
	KAINITE					
	LIME NITROGEN					
Note :-	* for wagonload, applicable class is 140B ** for wagonload, applicable class is 120B # for wagonload, applicable class is 130B					

GENERAL CLASSIFICATION OF GOODS						
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class	
(1)	(2)	(3)	(4)	(5)	(6)	
	MANURE MIXTURE		P1	RR	# 130A	
	MINERAL PHOSPHATE					
	MONO-AMMONIUM PHOSPHATE					
	MURIATE OF AMMONIA					
	MURIATE OF POTASH					
	MURIATE OF POTASH NOC					
	MYCEILUM					
	NEEM COATED UREA					
	NITRO PHOSPHATE					
	NITROPHOSKA					
	NPK FERTILIZER					
	ROCK PHOSPHATE (IN BAG)					
	ROCK PHOSPHATE (LOOSE)					P2(a)
	SINGLE SUPER PHOSPHATE					P1
	SNPK FERTILIZERS					
	SODIUM SULPHIDE					
	SULPHATE OF AMMONIA					
	SULPHATE OF ZINC					
	SUPER PHOSPHATE					
	TRIPLE SUPERPHOSPHATE					
	UREA					
UREA AMMONIUM PHOSPHATE 20.20.0						
URVARA						
WATER SOLUBLE FERTILIZER						
<b>7.</b>	<b>CLAY AND SAND</b>					
<b>7.(a)</b>	CLAY NOC		P2(a)	RR	150	
	GROUND SILICA					
	LUTING SAND					
	MOORUM					
	SAND					
	SILICA SAND					
	WHITE CLAY (LUMPS/POWDER)					
<b>7.(b)</b>	BENTONITE				120	
	BENTONITE POWDER					
	CHINA CLAY					
	FIRE CLAY					
	OCHRE IN LUMPS					
	OCHRE IN POWDER					
	OCHRE, NOC					
	RED MUD					
Note :-	# for wagonload, applicable class is 130B					

GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>8.</b>	<b>COAL AND COKE</b>				
	ANTHRACITE COAL				
	ASSAM COAL				
	BHUTAN COAL				
	BREEZE COKE				
	BRIQUETTED FUEL MIXTURE				
	CALCINED PETROLEUM COKE				
	CILCOKE / CILCOKE FINES				
	COAL BRIQUETTES				
	COAL CHAR				
	COAL DUST	<b>d</b>			
	COAL FINES				
	COAL SHALE				
	COAL (GOVT. RLY. ACCOUNT)				
	COKE				
	COKE BRIQUETTES				
	COKE HARD				
	COKE SOFT				
	COKING COAL				
	COKING COAL (IMPORTED)				
	COKING COAL WASHED				
	HARD COKE REJECTIONS				
	LIGNITE				
	METALLURGICAL COKE		<b>P2(a)</b>	<b>OR</b>	<b>*145A</b>
	MIDDLING COAL				
	NON COKING COAL WASHED				
	NUT COKE (IN OPEN WAGON)				
	PATENT FUEL (AS COAL)				
	PEARL COKE (IN COVERED WAGON)				
	PETROLEUM COKE				
	RAW PETROLEUM COKE				
	RUN OFF MINES (ROM) COAL				
	RUN OFF MINES (ROM) COAL (A)				
	RUN OFF MINES (ROM) COAL (B)				
	RUN OFF MINES (ROM) COAL (C)				
	RUN OFF MINES (ROM) COAL (D)				
	RUN OFF MINES (ROM) COAL (E)				
	RUN OFF MINES (ROM) COAL (F)				
	SLACK COAL (GOVT. RLY. ACCOUNT)				
	SLV SLACK COAL				
	SLV STEAM COAL				
	SPECIAL QUALITY LOW ASH METALLURGICAL COKE				
	STEAM COAL				
	STEAM COAL (IMPORTED)				
	WASHED COAL				
	WASHERY MIDDLING COAL				
Note :	* for wagonload, applicable class is 145B				

GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>9.</b>	<b>FOODGRAINS, FLOURS AND PULSES</b>				
	ATTA				
	BAJRA				
	BARLEY				
	BESAN				
	CHANA DAL				
	CORN GERMS				
	DHALL				
	GRAINS AND PULSES NOC				
	GRAM				
	GRAM DAL				
	JOWAR				
	MAIDA				
	MAIZE				
	MAIZE GERMS				
	MILO (MILLETS)				
	MOONG DAL				
	MUSOOR DAL				
	PADDY				
	PADDY PARCHED		<b>P1 &amp; S2</b>	<b>RR</b>	<b>*130A</b>
	PEAS				
	PULSES				
	RICE				
	RICE BOILED GR-A (BRA)				
	RICE (BROKEN)				
	RICE (IR-8)				
	RICE BASMATI				
	RICE BASMATI (BROKEN)				
	RICE COMMON (R)				
	RICE COMMON BOILED (BR)				
	RICE PARMAL (BROKEN)				
	RICE RAW GR-A (RRA)				
	SUJI				
	TOOR DAL				
	URAD DAL				
	WHEAT				
	WHEAT (PFG)				
	WHEAT (SFG)				
<b>10.</b>	<b>FISH MEAL</b>				
	FLOATING FISH FEED		<b>P1</b>	<b>RR</b>	<b>100</b>
Note :-	* for wagonload, applicable class is 130B				



GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>11.</b>	<b>HYDROGENATED AND OTHER EDIBLE OILS</b>				
<b>11.(a)</b>	ALL REFINED & NON REFINED EDIBLE OILS		<b>P-2</b>	<b>RR</b>	<b>*140A</b>
	CASTOR OIL				
	CORN OIL				
	CRUDE DEGUMMED SOYA				
	CRUDE PALMOLEIN				
	GROUNDNUT OIL				
	HYDROGENATED OILS				
	MUSTARD OIL				
	PALM OIL				
	SOYABEAN OIL				
	SUNFLOWER OIL				
	VANASPATI GHEE				
	<b>11.(b)</b>				
CORN OIL (In covered wagons)					
GROUND NUT OIL (In covered wagons)					
HYDROGENATED OILS (in covered wagons)					
MUSTARD OIL (In covered wagons)					
PALM OIL (in covered wagons)					
SOYABEAN OIL (In covered wagons)					
SUNFLOWER OIL (In covered wagons)					
<b>12.</b>	<b>IRON OR STEEL</b>				
<b>12.(a)</b>	ALLOY CONSTRUCTIONAL STEELS		<b>P2(b)</b>	<b>RR</b>	<b>165</b>
	ANGLES				
	AXLES IRON OR STEEL NOC				
	BANDS				
	BARS INCLUDING CARBON STEEL BARS				
	BARS IRON OR STEEL GALVANISED				
	BEAMS				
	BILLETS				
	BLOOMS				
	CABLES WIRE				
	CASTINGS NOC				
	CHAINS IRON NOC				
	CHANNELS				
	COLD ROLLED COILS				
	COLD ROLLED SHEETS				
	COLLIERY ARCH AND Z-PILLING				
	CORRUGATED SHEETS				
	DOG SPIKES				
	ELASTIC RAIL CLIPS (S TYPE)				
	FISH PLATES				
	FITTINGS PIPES				
	FLAT IRON OR STEEL GIRDERS				
	FLAT, IRON OR STEEL				
GALVANISED SHEETS (CORRUGATED)					
Note :-	* for wagonload, applicable class is 140B ** for wagonload, applicable class is LR-3(B)				

**GENERAL CLASSIFICATION OF GOODS**

<b>Group No.</b>	<b>Commodity Description</b>	<b>Type of Commodity</b>	<b>Packing Condition</b>	<b>Risk Rate</b>	<b>Base Class</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>
	GALVANISED SHEETS (PLAIN)				
	GALVANSED COILS				
	GUTTERS				
	HEAVY ROLLS SPOILS				
	HOT ROLLED COILS				
	HOT ROLLED SHEETS				
	INGOTS				
	IRON OR STEEL MATERIAL USED OLD DEFACED FOR REROLNG MELTING				
	IRON OR STEEL SLAB				
	IRON OR STEEL PIPE CUTTINGS				
	IRON SHEET CUTTINGS				
	JOINTS				
	LATTICE/TRANSMISSION TOWER PARTS				
	MILL SCALE IRON OR STEEL				
	NICKLED STEEL BARS				
	PERMANENT WAY MATERIALS NOC				
	PILES SCREWS				
	PLATES				
	POLES				
	RAILS P WAY MATERIAL NOC				
	RODS INCLUDING HIGH CARBON STEEL RODS		P2(b)	RR	165
	ROUNDS				
	SAFES IRON				
	SAFES STEEL				
	SHEETS				
	SHELL BLOOMS				
	SLEEPERS (CAST IRON)				
	SLEEPERS (OTHER THAN CAST IRON)				
	SPOONS (IRON)				
	SPRINGS				
	SQUARES (CAST IRON)				
	SQUARES (OTHER THAN CAST IRON)				
	STAINLESS STEEL				
	STAINLESS STEEL BARS				
	STAINLESS STEEL RODS				
	STAINLESS STEEL SHEETS				
	STAINLESS STEEL SLABS				
	STAINLESS STEEL WARE				
	STEEL SHEET CUTTINGS				
	STEEL SHEETS PILINGS				
	STRUCTURAL COBBLES				
	TACKS				
	TIES				





GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
	TIN BARS		P2(b)	RR	165
	TYRES (IRON)				
	WEIGHTS				
	WHEELS				
12.(b)	PIPES (API) OF ANY LENGTH & DIA LOADED		P2(b)	RR	130
	PIPES (STEEL) OF ANY LENGTH & DIA (ABOVE 80MM )				
	RIBBED WIRE ROD IN COILS				
	SPIRAL WELDED STEEL PIPES (WITH DIA LESS THAN 610 MM)				
	STAINLESS STEEL PIPES				
	STEEL PIPES				
	WIRE ROD IN COILS				
13.	<b>LEATHER, RUBBER AND PLASTIC</b>				
13.(a)	HIDES & SKINS		P3		
	LEATHER CLOTH		P2(b)or P4	OR	100
	LEATHER GOODS				
	LEATHER REFUSE				
	PLASTIC GOODS				
	PVC COMPOUND				
	PVC PIPES				
	RUBBER CRUDE				
	RUBBER TYRES AND TUBES				
13.(b)	PVC POWDER				
14.	<b>MINERALS AND ORES</b>				
14.1	<b>IRON ORE (*)</b>				
	IRON ORE		P2(a)	RR	165
	CALIBRATED LUMP IRON ORE				
	IRON ORE NATURAL PELLET				
	NON CALIBRATED LUMP IRON ORE				
	IRON ORE PELLETS				
	IMPORTED IRON ORE				
	SINTER				
	IRON ORE POWDER				
	IRON ORE LUMP				
	IRON ORE FINES				
	BLUE DUST				
	HOT BRIQUETTED IRON				
Note :-	* In case of Iron ore for export, Distance based Charge, as notified from time to time, will be levied additionally.				

GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>14.2</b>	<b>MINERALS AND ORES OTHER THAN IRON ORE</b>				
<b>14.2(a)</b>	ALUNITE		<b>P2(a)</b>	<b>RR</b>	<b>160</b>
	BARYTES				
	BARYTES POWDER				
	BAUXITE				
	CALCITE				
	CHROME ORE				
	FELSPAR				
	ILIMENITE ORE				
	IRON PYRITES				
	LATERITE				
	LITHIUM ORE				
	MONAZITE				
	OLIFLUX				
	PYROXINITE				
	SOAP STONE				
	SOAP STONE POWDER				
	SOAP STONE TILES				
ZINC ORES					
<b>14.2(b)</b>	CHEMICAL GYPSUM		<b>P2(a)</b>	<b>RR</b>	<b>150</b>
	GYPSUM				
	GYPSUM IN LUMPS				
	GYPSUM IN POWDER				
	MARINE GYPSUM				
	MINERAL GYPSUM				
<b>14.2(c)</b>	DOLOMITE		<b>P2(a)</b>	<b>RR</b>	<b>145</b>
	DOLOMITE CHIPS				
	DOLOMITE LUMPS				
	DOLOMITE POWDER				
	DUNITE				
	LIME NOC				
	HYDRATED LIME				
	QUICK LIME				
	BURNT LIME				
	LIME POWDER				
	LIME STONE				
	LIME STONE CHIPS				
	LIME STONE POWDER/LUMPS				
	MANGANESE ORES				



GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>15.</b>	<b>MACHINERY AND MACHINE TOOLS</b>				
	AXLES WITH WHEELS				
	BOILERS				
	CRANES				
	ENGINES				
	LOCOMOTIVES UNASSEMBLED COMPONENT PARTS		<b>P4</b>	<b>OR</b>	<b>100</b>
	MACHINERY PARTS				
	SEWING MACHINES				
	VEHICLES RAILWAY UNASSEMBLED COMPONENT PARTS				
	WAGONS RAILWAY UNASSEMBLED COMPONENT PARTS				
<b>16.</b>	<b>METAL SCRAP AND PIG IRON</b>				
<b>16.(a)</b>	BRASS SCRAP				
	COPPER SCRAP				
	IRON PIG (PIG IRON)				<b>150</b>
	IRON SCRAP				
	SPONGE IRON				
	STEEL/STAINLESS STEEL SCRAP				
<b>16.(b)</b>	COPPER SLAG		<b>P2(a)&amp;S1</b>	<b>RR</b>	
	FERRO MANGANESE SLAG				
	GROUND GRANULATED BLAST-FURNACE SLAG				
	IRON AND STEEL SLAG				<b>140</b>
	IRON AND STEEL SLAG (GRANULATED)				
	SLAG				
	SLAG NOC				
<b>17.</b>	<b>OIL CAKES AND SEEDS</b>				
	COTTON SEED				
	COTTON SEED OIL CAKES				
	COTTON SEED WASTE				
	DE-OILED CAKES				
	DE-OILED RICE BRAN				
	GINGELLY SEED				
	GROUND NUT SEEDS				
	LINSEED				
	MUSTARD SEEDS				
	OILED CAKES		<b>P1</b>	<b>RR</b>	<b>120</b>
	RAPE SEEDS				
	SAL SEEDS				
	SOYABEAN				
	SOYABEAN EXTRACTIONS/TOSTED MEALS/FLAKES				
	SOYABEANS SEEDS				
	SUNFLOWER SEEDS				



GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>18. PETROLEUM PRODUCTS AND GASES</b>					
<b>18.(a)</b>	ALKYLATE	<b>d</b>		<b>RR</b>	<b>*180A</b>
	AVIATION SPIRIT				
	AVIATION TURBINE FUEL (ATF)				
	CARBON BLACK FEED STOCK				
	CRUDE OIL				
	DIESEL OIL				
	FURNACE OIL				
	FUSEL OIL				
	HEXANE				
	HIGH SPEED DIESEL (HSD)				
	HIGH SPEED DIESEL (HSD) BLENDED WITH BIO-DIESEL				
	LIGHT DIESEL OIL				
	LOW SULPHUR HEAVY STOCK				
	LUBRICATING OILS NOC				
	METHANE GAS				
	NAPHTHA				
	NAPHTHA (BARAUNI)				
	NAPHTHA (KOYALI)				
	PARAFFIN OIL				
	PETROL (MOTOR SPIRIT)				
	PETROL (MOTOR SPIRIT) BLENDED WITH ETHANOL				
	REFORMAT				
	RESIDUAL FUEL OIL (RFO)				
TOLUENE					
WAXY CRUDE OIL					
XYLENE					
<b>18.(b)</b>	BITUMEN		<b>P5</b>	<b>RR</b>	<b>160</b>
	COAL TAR				
	COAL TAR PITCH		<b>P1</b>		
	COAL TAR PITCH (SOLID)				
<b>18.(c)</b>	LIQUEFIED PETROLEUM GAS (LPG)	<b>d</b>		<b>RR</b>	<b>165</b>
	LIQUEFIED BUTANE				
	LIQUEFIED PROPANE				
	SUPERIOR KEROSENE OIL				
<b>18.(d)</b>	AMMONIA (ANHYDROUS LIQUEFIED GAS)	<b>d</b>		<b>RR</b>	<b>200</b>
	AMMONIA LIQUIFIED GAS				
	ARGON GAS				
	COMPRESSED GASES				
	NITROGEN GAS				
Note :-	* for wagonload, applicable class is 180B				



GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
<b>19.</b>	<b>SALT</b>				
<b>19.(a)</b>	BLACK SALT		<b>P1 &amp; S3</b>	<b>OR</b>	<b>*100A</b>
	EARTH SALT				
	IODISED SALT				
	NON REFINED SALT				
	NON REFINED SALT FOR HUMAN CONSUMPTION (IODISED SALT/SALT MEANT FOR IODISATION)				
	REFINED IODISED SALT				
	REFINED SALT				
	ROCK SALT				
	SALT FOR TABLE USE				
	VACUUM SALT				
<b>19.(b)</b>	SALT FOR INDUSTRIAL USE		<b>P1</b>		<b>120</b>
<b>20.</b>	<b>SOAP</b>				
	LIQUID SOAP		<b>P1 or P2(a) or P4 or P5</b>	<b>RR</b>	<b>120</b>
	SOAP				
	SYNTHETIC DETERGENTS				
	SYNTHETIC SOAP				
<b>21.</b>	<b>SUGAR</b>				
	RAW CANE SUGAR		<b>P1</b>	<b>RR</b>	<b>**120A</b>
	SUGAR (GR.A)				
	SUGAR (GR.B)				
	SUGAR (GR.C)				
	SUGAR CANDY				
<b>22.</b>	<b>MISCELLANEOUS</b>				
	ASHES		<b>P2(a)</b>	<b>RR</b>	<b>140</b>
	BETEL NUTS		<b>P1</b>		<b>150</b>
	BIOMASS BRIQUETTES		<b>P1</b>		<b>120</b>
	CHALK CALCIUM CARBONATE		<b>P1</b>		<b>140</b>
	CHALK IN LUMPS OR POWDER		<b>P1</b>		<b>140</b>
	GLUCOSE		<b>P4 or P5</b>		<b>150</b>
	GUNNIES		<b>P3</b>		<b>120</b>
	GUNNY BAGS				<b>120</b>
	HOUSEHOLD EFFECTS		<b>P5</b>		<b>150</b>
	MOLASSES				<b>150</b>
	MOLASSES SUGAR MILL (NOT KHANDSARI MOLASSES)		<b>150</b>		
	MONO CALCIUM PHOSPHATE FOR ANIMAL, AQUA AND POULTRY FEED		<b>P1</b>		<b>130</b>
	PURIFIED TEREPHTHALIC ACID (PTA)		<b>P1</b>		<b>130</b>
	PUTTY		<b>P2(a)</b>		<b>150</b>
	SECONDARY NUTRIENT/SOIL CONDITIONER (CMS)		<b>P1</b>		<b>150</b>
	STARCH		<b>P1 or P4 or P5</b>		<b>120</b>
Note :-	* for wagonload, applicable class is 100B ** for wagonload, applicable class is 120B				

GENERAL CLASSIFICATION OF GOODS					
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class
(1)	(2)	(3)	(4)	(5)	(6)
	<b>LOW RATED TARIFF LINES</b>				
<b>23.</b>	<b>DIVISION -'A'</b>				
<b>23.(a)</b>	<b>ELECTRICAL APPLIANCES AND FITTINGS</b>		<b>P4</b>	<b>RR</b>	<b>LR1</b>
	ELECTRONIC INSTRUMENTS NOC				
	TELEVISION SETS				
	JOINTING MATERIALS				
	ELECTRIC APPLIANCES NOC				
	DRY BATTERIES				
	DYNAMOS				
	ELECTRIC MOTORS				
	ELECTRIC PUMPS				
	GENERATORS				
	GENERATORS, SMOKE				
	ELECTRIC WIRES				
	ELECTRIC BULBS				
	ELECTRIC FANS				
	FUSE WIRE				
	EMPTY DRUMS				
	JERRYCANES				
	BARRELS				
	GUR				
<b>23.(b)</b>	JAGREE POWDER		<b>P1</b>	<b>RR</b>	<b>LR1</b>
	JAGREE				
<b>23.(c)</b>	JUTE		<b>P3</b>	<b>RR</b>	<b>LR1</b>
	JUTE CADDIES				
<b>23.(d)</b>	MILK		<b>P4 or P5</b>	<b>OR</b>	<b>LR1</b>
	MILK PRODUCTS				
<b>23.(e)</b>	ORGANIC MANURES		<b>P2(a)</b>	<b>RR</b>	<b>LR1</b>
<b>23.(f)</b>	PAINTS AND POLISHES		<b>P5</b>	<b>RR</b>	<b>LR1</b>
	COLOURS AND DYES				
<b>23.(g)</b>	TIMBER		<b>P2(b)</b>	<b>RR</b>	<b>LR1</b>
	FIRE WOOD				
	PLYWOOD IN BOARDS, PANELS				
	SANDAL WOOD				
	SPLINTS FOR MATCHES				
	WOOD PIECES				
<b>23.(h)</b>	TIMBER WASTE				<b>LR2</b>
<b>23.(i)</b>	VEGETABLE OIL PITCHES		<b>P5</b>	<b>RR</b>	<b>LR1</b>
<b>23.(j)</b>	WATER			<b>RR</b>	<b>LR1</b>
<b>23.(k)</b>	FIREWORKS	<b>d</b>		<b>RR</b>	<b>LR1</b>
<b>23.(l)</b>	BOOKS/EXERCISE BOOKS/NOTE BOOKS AND WORK BOOKS		<b>P3</b>	<b>RR</b>	<b>LR1</b>



GENERAL CLASSIFICATION OF GOODS						
Group No.	Commodity Description	Type of Commodity	Packing Condition	Risk Rate	Base Class	
(1)	(2)	(3)	(4)	(5)	(6)	
<b>24.</b>	<b>DIVISION -'B'</b>					
24.(a)	BOILER COMPONENTS		P4	RR	LR2	
24.(b)	CHARCOAL		P2(a)	OR	LR2	
24.(c)	PAPER NOC IN BUNDLES		P3	RR	LR2	
	PAPER					
	CARD BOARDS					
	PAPER IN REELS/ROLLS					
	PAPER WASTE					
	PAPER CUTTINGS					
	PAPER SLUDGE					
<b>25.</b>	<b>DIVISION -'C'</b>					
25.(a)	BAMBOOS		P2(b)	RR	LR3	
	BAMBOO CUTS					
	BAMBOO CHIPS					
	BAMBOO CRUSHED					
	BAMBOO PULP					
	STICKS					
25.(b)	BROOMS		P2(b)	RR	LR3	
25.(c)	COFFEE AND TEA		P4	RR	LR3	
25.(d)	COIR		P2(b)	RR	LR3	
	COIR MATS					
25.(e)	<b>COTTON AND OTHER TEXTILES</b>		P3	RR	LR3	
	COTTON AND OTHER TEXTILES NOC					
	BED SHEETS					
	COTTON HALF/FULL PRESSED					
	COTTON RAW FULL PRESSED					
	COTTON RAW					
	HAND SPUN YARN COTTON					
	KHADDAR					
	SILK					
	SYNTHETIC YARNS					
	TOWELS					
	WOOL					
	25.(f)					FODDER AND HUSK
FODDER AND HUSK NOC						
BARLEY HUSK						
BHOOSA						
CHARI						
COTTON SEED HUSK						
COCONUT HUSK						
DRY GRASS						
GRAM HUSK						
HAY						
KIRBY						
KIRBY KUTTI (KUTTAR)						
		P1				
		P2(a)				
	P1					





# बिहार गजट

## असाधारण अंक

### बिहार सरकार द्वारा प्रकाशित

26 भाद्र 1941 (श0)

(सं0 पटना 1068) पटना, मंगलवार, 17 सितम्बर 2019

खान एवं भूतत्व विभाग

अधिसूचना

17 सितम्बर 2019

सं० 4/वी0मु0-20-93/18-3174/एम0—खान एवं भूतत्व (विकास एवं विनियमन) अधिनियम, 1957 (1957 का अधिनियम 67) की धारा 15 सहपठित धारा 23ग तथा धारा 26 के अधीन प्रदत्त शक्तियों का प्रयोग करते हुए बिहार के राज्यपाल निम्नलिखित नियमावली बनाते हैं:—

बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019

अध्याय-1

प्रारंभिक

1. संक्षिप्त नाम, विस्तार एवं आरंभ—

(1) यह नियमावली बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 कही जा सकेगी।

(2) इसका विस्तार संपूर्ण बिहार राज्य में होगा।

(3) यह इसके राजपत्र में प्रकाशन की तिथि से प्रवृत्त होगी।

2. परिभाषाएँ— इस नियमावली, जब तक संदर्भ अन्यथा अपेक्षित न हो —

(i) “अधिनियम” से अभिप्रेत है खान और खनिज (विकास एवं विनियमन) अधिनियम, 1957 (1957 का अधिनियम 67) ;

(ii) “समाहर्ता” से अभिप्रेत है किसी जिले का समाहर्ता—सह—जिला दण्डाधिकारी अथवा समाहर्ता—सह—जिला दण्डाधिकारी की शक्तियों का प्रयोग तथा कृत्यों का अनुपालन करने हेतु सरकार द्वारा नियुक्त कोई व्यक्ति ;

(iii) “सक्षम पदाधिकारी” से अभिप्रेत है—

(क) भारतीय वन अधिनियम 1927 (केन्द्रीय अधिनियम XVI 1927) के अधीन सुरक्षित और संरक्षित वन के रूप में अधिसूचित भूमि में उत्खनन अनुज्ञापत्र की दशा में जहाँ वास्तविक खनन कार्य केवल सतह से अथवा पाँच फीट से अनधिक गहराई से कुछ हटाना मात्र हो, तथा केवल 10000 घन फीट की सीमा तक हो संबंधित सुरक्षित और संरक्षित क्षेत्र का प्रमंडलीय वन पदाधिकारी;





अनुसूची-I  
[नियम 2(x) देखें]

1	खनन लीज के लिए आवेदन	प्रपत्र-क
2	खनन लीज के विलेख	प्रपत्र-ख
3	खनन क्रिया परमिट के लिए आवेदन	प्रपत्र-ग
4	खनन क्रिया परमिट	प्रपत्र-घ
5	खनिज निपटान परमिट देने हेतु आवेदन	प्रपत्र-ड०
6	खनिज निपटान परमिट के लिए फारम	प्रपत्र-च
7	ई०चालान का प्रपत्र	प्रपत्र-छ
8	लीजधारी/परमिट धारक द्वारा संधारित किया जाने वाला रजिस्टर	प्रपत्र-ज
9	मासिक रिटर्न	प्रपत्र-झ
10	वार्षिक रिटर्न	प्रपत्र-ञ
11	स्टॉकिस्ट लाइसेन्स	प्रपत्र -ट
12	अपील के लिए फारम	प्रपत्र-ठ

अनुसूची-II  
[नियम 51(1)(क) देखें]  
अनिवार्य लगान

अवधि	अनिवार्य लगान की दर (रूपये में)
1	2
पट्टा की सम्पूर्ण अवधि के लिए प्रति वर्ष की दर	50,000.00 रु० प्रति एकड़ प्रति वर्ष

अनुसूची-III क  
[नियम 51(1)(ख) देखें]

क्रमांक	रॉयलिटी खनिजों का नाम	प्रतिघनमीटर दर, रूपये में।
1	2	3
1	(क) बोल्डर, ग्रेवेल अथवा पत्थर चाहे जिस नाम से परिभाषित हो (ख) नीलामी की रीति से बंदोबस्त पत्थर	150.00 नीलामी की दशा में नीलामी की राशि।
2	(क) निर्माण प्रयोजन के लिए उपयोग में लाया गया साधारण बालू (ख) नीलाम घाटों का साधारण बालू	75.00 नीलामी की दशा में नीलामी की राशि।
3	ईट मिट्टी (400 मानक ईटों के बराबर)	18.00
4	साधारण मिट्टी/क्ले जिसका उपयोग बाँध, सड़क, रेलवे, भवन, आदि के निर्माण के प्रयोजन में भरने तथा लेवल करने आदि तथा अन्य वाणिज्यिक कार्य हेतु जिसका उपयोग किया जाता हो।	33.00
5	लाईम सेल, लाईम स्टोन तथा कंकड़ जिसका उपयोग निर्माण सामग्री के रूप में किल्ल हेतु चूना के विनिर्माण के लिए किया जाता हो तथा चूना का उपयोग बटन के विनिर्माण के लिए किया जाता हो।	165.00
6	मोरम	83.00
7	कैल्सीडोनी कंकड़ जिसका उपयोग केवल बॉल मिल के प्रयोजनार्थ होता है।	95.00
8	ग्रेज़लर मिट्टी	83.00
9	क्वार्ट्ज़ जिसका उपयोग भवन निर्माण के प्रयोजनार्थ या सड़क बनाने के लिए किया जाता है।	150.00



क्रमांक	रॉयलिटी खनिजों का नाम	प्रतिघनमीटर दर, रुपये में।	
1	2	3	
10	रेह मिट्टी	34.00	
11	साल्ट पीटर	38.00	
12	स्लेट तथा सेल जब उसका उपयोग भवन निर्माण सामग्री के रूप में किया जाता है।	110.00	
13	फूलर्स मिट्टी (अर्थ)	124.00	
14	स्टोन जिसका उपयोग ग्रिन्डिंग स्टोन सहित घरेलू बर्तन बनाने के लिए होता हो।	95.00	
15	स्टोन सेट तथा स्टोन ब्रिक प्रति सैकड़ा	95.00	
16	स्टोन डस्ट	30.00	
17	ग्रेनाईट डिकोरेटिंग स्टोन के लिए उपयोग की दशा में प्रति सैकड़ा— (I) 60से0मी0 से अधिक ब्लॉक (II) 60 से0मी0 से कम ब्लॉक	709.00 355.00	
18	क्वार्टज	73.00	
19	बालू (अन्य)	75.00	
20	सिलिका बालू	75.00	
21	स्टीटाईट अथवा टाल्क या सोप स्टोन	मूल्यानुसार आधार पर विक्रय मूल्य का तीस प्रतिशत्।	
22	अगेट		
23	बालकले		
24	बारिट्स		
25	काल्करियस बालू		
26	कैल्साइट		
27	चॉक		
28	चइना कले		
29	कले (अन्य)		
30	कोरन्डम		
31	डिअयसपोर		
32	डोलोमाईट		
33	डूनिट अथवा पाईरोक्सेनाईट		मूल्यानुसार आधार पर विक्रय मूल्य का तीस प्रतिशत्।
34	फेल्साइट		
35	फेल्सपार		
36	फायर कले		
37	फुसाईट क्वार्ट्जाईट		
38	जिप्सम		
39	जस्पर		
40	कायोलीन		
41	लैटेराइट		
42	माईका		
43	ओक्रे		
44	पाइरो काइलाईट		
45	सभी अन्य खनिज		

नोट:— (I) बिहार खनिज समानुदान (अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 या अन्यथा में प्रतिकूल किसी बात के अंतर्विष्ट होने पर भी, बंदोबस्तधारी नीलामी राशि के समकक्ष से अधिक उत्खनित तथा प्रेषित पत्थर की मात्रा के लिए अतिरिक्त रॉयलिटी का भुगतान करेगा।

नोट:— (II) बंदोबस्तधारी नीलामी राशि के समकक्ष से अधिक उत्खनित तथा प्रेषित बालू की मात्रा के लिए अतिरिक्त रॉयलिटी का भुगतान करेगा।

नोट:— (III) साधारण मिट्टी के गैर वाणिज्यिक उपयोग के लिए कोई रॉयलिटी उगाही नहीं जाएगी।



**अनुसूची-III ख**

[नियम 38(1) देखें]

बिहार खनिज (समनुदान, अवैध खनन परिवहन एवं भंडारण निवारण) नियमावली, 2019 के नियम 38(1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए राज्य के अन्तर्गत स्थित विभिन्न क्षेत्रों, जनसंख्या, असैनिक निर्माण कार्य की स्थिति, औद्योगिक निर्माण कार्य की स्थिति, शहरीकरण की अवस्था एवं औद्योगिक विकास की गति को ध्यान में रखते हुए बिहार के राज्यपाल विभिन्न क्षेत्रों को श्रेणियों में विभाजित करते हुए प्रत्येक स्थायी चिमनी एवं बंगला ईट भट्टों के लिए ईटों की संख्या और उस पर ईट भट्टा मालिकों/ईट मिट्टी हटाने वालों द्वारा प्रति भट्टा प्रति वर्ष राज्य सरकार को देय समेकित स्वामिस्व की राशि निर्धारित करते हैं जो निम्नलिखित तालिका में दर्शायी गई है :-

**तालिका**

क्रमांक	क्षेत्र की श्रेणी	जिला का नाम तथा क्षेत्र	क्षमता स्तंभ 3 में दिखाये गये क्षेत्र में स्थित प्रति स्थायी चिमनी अथवा बंगला ईट भट्टा के निर्मित ईट।	स्वामिस्व-प्रति भट्टा प्रतिवर्ष देय स्वामिस्व की राशि जो स्तंभ 4 में निर्धारित ईट की संख्या पर देय है (रूपये में)।
1	2	3	4	5
1.	I	पटना, मुजफ्फरपुर, भागलपुर, गया, दरभंगा, जिलों का शहरी क्षेत्र।	45 लाख ईट	रु0 2,02,500.00/-
2.	II	अन्य शहरी क्षेत्र	35 लाख ईट	रु0 1,57,500.00/-
3.	III	ग्रामीण क्षेत्र	25 लाख ईट	रु0 1,12,500.00/-
4.	IV	बंगला भट्टा	01 (एक लाख) ईट	रु0 4,500.00/-

टिप्पणी (I)- “शहरी क्षेत्र” से अभिप्रेत किसी नगर निगम या नगरपालिका या अधिसूचित क्षेत्र समिति की स्थानीय सीमा के भीतर के क्षेत्रों से है और, यथास्थिति, उस नगर निगम या नगरपालिका या अधिसूचित क्षेत्र समिति की सीमा रेखा से चार किलोमीटर की बाहरी दूरी की भीतर पड़ने वाले क्षेत्र भी इसमें शामिल है।

टिप्पणी (II)- अव्यवसायिक, व्यक्तिगत उपयोग हेतु बंगला भट्टा में निर्मित ईट/ईट मिट्टी पर कोई स्वामिस्व भुगतेय नहीं होगा।



बिहार सरकार  
खान एवं मूल्य विभाग

संख्या- 02/एमएम(माग)-01/21-3374 पटना,

दिनांक- 15/11/2021

प्रेमक,

गोपाल मोण, माधवपुर  
निदेशक, खान।

E-mail

सेवा में,

शंभु कुमार,  
संयोजक,  
राज्य स्तरीय अनुसूचित पर निर्धारण समिति  
-सह-अभियंता प्रमुख (मुख्यालय),  
पत्र निर्माण विभाग, बिहार, पटना।



SE (PAC)

निम्न-  
अनुसूचित दर पुनरीक्षण हेतु निर्माण कार्यों में लागू होने वाले विभिन्न प्रकार (Size) के स्टोन चिप्स, स्लैब ग्रेटला, बालू एवं स्टोन डस्ट के दरों के संबंध में।  
आपका पत्रांक-मु.नि.421)54/2021-37(अनु0) पटना, दिनांक-05.10.2021

19/11/21

15/11/21

15/11/21

22/11/2021

अनुसूचित दर पुनरीक्षण हेतु निर्माण कार्यों में लागू होने वाले विभिन्न प्रकार (Size) के स्टोन चिप्स, स्लैब ग्रेटला, बालू एवं स्टोन डस्ट के दरों के संबंध में।

आपका पत्रांक-मु.नि.421)54/2021-37(अनु0) पटना, दिनांक-05.10.2021

उपरोक्त विषयक प्राथमिक पत्र के संबंध में निदेशानुसार कहना है कि बिहार खनिज (समानुदान, अवैध खनन, परिहारा, भंडारण निवारण) नियमवली, 2019 के नियम 59(1)(b) के प्रावधान के तहत लघु खनिज बालू/पत्थर के लिए Schedule III A में Royalty Rate नीलागी/बन्दोबस्ती राशि होता है। साथ ही उक्त नियमावली के नियम 58 में प्रावधानित है कि लागूयता एवं जनता के लिए खनिजों का विक्रय मूल्य बाजार पत्र द्वारा विनिश्चित किया जाता है। इसके अतिरिक्त उक्त नियमावली के नियम 41 के प्रावधान के तहत लघु खनिजों का संचालन/परिहारा Form-G में विहित/वांछित सूचनाएँ भरकर ई-चालान के माध्यम से किया जाना है। ई-चालान Form-G की पंक्ति 15 में पेट हेड पर वसूली गई राशि अंकित करने का प्रावधान है।

क्रमशः सूचनाएँ।

15/11/2021

विश्वासपाजन

निदेशक, खान।



अभियंता प्रमुख-सह-अपर आयुक्त-सह-विशेष सचिव का कार्यालय,  
पथ निर्माण विभाग बिहार, पटना

पत्रांक:- प्र.8/नियम-10/2008 746(E)<sup>w</sup> पटना, दिनांक 25/2/2010

प्रेषक,

अभियंता प्रमुख-सह-अपर आयुक्त-सह-विशेष सचिव  
पथ निर्माण विभाग, बिहार, पटना।

सेवा में,

सभी मुख्य अभियंता, पथ निर्माण विभाग।  
सभी अधीक्षण अभियंता, पथ निर्माण विभाग।  
सभी कार्यपालक अभियंता, पथ निर्माण विभाग।  
अधीक्षण अभियंता,  
मुख्यालय निरूपण अंचल।

विषय: बिहार भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड में प्रत्येक योजनाओं की लागत का एक प्रतिशत "सेस" के रूप में जमा करने के संबंध में।

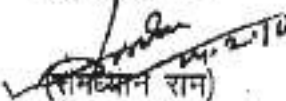
महाशय,

उपर्युक्त विषयक संयुक्त श्रमायुक्त-सह-सचिव, बिहार भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड, पटना के पत्र संख्या-बी0सी0डब्ल्यू0सी0-14/2008-श्र.स.-4984 दिनांक 01.10.08 (सानुलग्न प्रति संलग्न) से प्राप्त प्रस्ताव की समीक्षा विभागीय उच्चस्तरीय तकनीकी समिति द्वारा की गयी और समिति की अनुशंसा के आलोक में सरकार के निर्णयानुसार कहना है कि:-

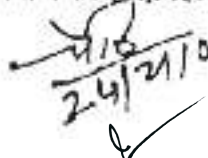
1) भवन तथा अन्य सन्निर्माण कर्मकार(नियोजन तथा सेवाशर्त विनियमन) अधिनियम, 1998 के निर्देशों के अनुपालनार्थ निर्माण कार्यों के संवेदक के विपत्रों से देय 1% (एक प्रतिशत) सेस के निमित्त निर्माण कार्य के प्राक्कलन में कार्य मूल्य का 1% (एक प्रतिशत) की दर से "रोल" की राशि जोड़कर प्राक्कलन का प्राथमिक स्वीकृति अथवा प्रशासनिक स्वीकृति प्रदान की जाय तथा 1% सेस का भुगतान कल्याण बोर्ड को करना भी सुनिश्चित किया जाय।।

2) प्रस्ताव में महाधिवक्ता, बिहार तथा वित्त विभाग का परामर्श प्राप्त है।  
अनु0-यथोक्त।

विक्रमसभाजन

  
विक्रमसभाजन राम

अभियंता प्रमुख-सह-अपर आयुक्त-सह-विशेष सचिव  
पथ निर्माण विभाग, बिहार, पटना।

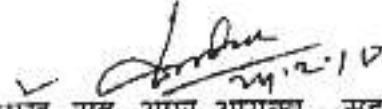
  
25/2/10

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ज्ञापांक: प्र.6 / नियम-10 / 2008

पटना, दिनांक

प्रतिलिपि महालेखाकार बिहार, बीरचंद पटेल पथ, पटना को सूचना एवं आवश्यक कार्रवाई हेतु प्रेषित।

  
अभियंता प्रमुख-सह-अपर आयुक्त -सह-विशेष सचिव  
पथ निर्माण विभाग, बिहार, पटना।

ज्ञापांक: प्र.6 / नियम-10 / 2008

पटना, दिनांक

प्रतिलिपि सभी प्रधान सचिव/सचिव, सभी विभाग/सभी प्रमंडलीय आयुक्त/सभी जिलाधिकारी/अभियंता प्रमुख, सभी कार्य विभाग/ अध्यक्ष, बिहार राज्य पुल निर्माण निगम, बिहार, पटना/ अध्यक्ष, बिहार राज्य पथ विकास निगम, बिहार, पटना को सूचना एवं आवश्यक कार्रवाई हेतु प्रेषित।

  
अभियंता प्रमुख-सह-अपर आयुक्त -सह-विशेष सचिव  
पथ निर्माण विभाग, बिहार, पटना।

ज्ञापांक: प्र.6 / नियम-10 / 2008

पटना, दिनांक

प्रतिलिपि संयुक्त श्रमायुक्त-सह-सचिव, बिहार भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड, श्रम संसाधन विभाग, बिहार, पटना को सूचनार्थ समर्पित।

  
अभियंता प्रमुख-सह-अपर आयुक्त -सह-विशेष सचिव  
पथ निर्माण विभाग, बिहार, पटना।

516  
24/2/10

✓

संचिका नं०-बी०सी०डब्लू०सी०-14/2008, अ०सं०-4984  
बिहार सरकार  
श्रम संसाधन विभाग

प्रेषक,

राजेन्द्र प्रसाद मण्डल,  
संयुक्त श्रमायुक्त-सह-सचिव,  
बिहार भवन एवं अन्य सन्निमार्ण कर्मकार कल्याण बोर्ड,पटना ।

सेवा में,

~~विशेष~~  
अभियंता प्रमुख-सह-सचिव,  
पथ निर्माण विभाग,बिहार,पटना ।

पटना, दिनांक-01-10-08

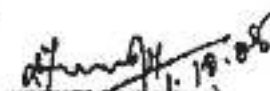
विषय:- अर्द्ध सरकारी पत्र संख्या- बी०सी०डब्लू०सी० 01/2008-922,दिनांक-21.02.08  
की प्रति उपलब्ध कराने के संबंध में।

महाशय:

उपर्युक्त विषयांतर्गत आपके पत्र के आलोक में प्रधान सचिव, श्रम संसाधन विभाग के अर्द्धसरकारी पत्र सं०-बी०सी०डब्लू०सी०-01/2008-922,दिनांक-21.02.08 की प्रति एवं भारत सरकार के राजपत्र में प्रकाशित सेस संग्रह संबंधी अधिसूचना की प्रति संलग्न कर आपके आवश्यक कार्यार्थ भेजी जा रही है।

अनुलग्नक: यथोक्त।

विश्वासभाजन,

  
( राजेन्द्र प्रसाद मण्डल )  
संयुक्त श्रमायुक्त-सह-सचिव,  
बिहार भवन एवं अन्य सन्निमार्ण  
कर्मकार कल्याण बोर्ड,पटना ।

✓

Vyas Ji, IAS  
Principal Secretary

Phone : +91-612-2223855  
Fax : +91-612-2222704  
E-mail : vyas56@hotmail.com  
secy-lab-bih@nic.in

बिहार सरकार  
श्रम संसाधन विभाग  
निकास भवन, पटना 800015, बिहार  
Government of Bihar  
Department of Labour Resources  
Vikas Bhawan, Patna - 800015, Bihar

अई सरकारी पत्र सं० ए.सी.सी. संख्या/सी. - 01/2008/क.सं. - 32 पटना दिनांक 21/2/20

श्रम महाराज,

निर्माण श्रमिकों के संबंध में वर्ष 1998 से निम्नलिखित दो केंद्रीय अधिनियम प्रचलित हैं :-

- (i) भवन तथा अन्य सन्निर्माण कर्मकार (नियोजन तथा सेवा शर्तों विनियमन) अधिनियम, 1996 तथा
- (ii) भवन तथा अन्य सन्निर्माण कर्मकार कल्याण उपकार अधिनियम, 1998.

2. उक्त द्वितीय अधिनियम के तहत नियम भी केंद्र सरकार द्वारा ही बनाया गया है, जबकि प्रथम अधिनियम के अन्तर्गत नियम बिहार सरकार द्वारा 7.9.2005 के असाधारण अंक राजपत्र में प्रकाशित किये भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड का गठन भी राज्य सरकार द्वारा दिनांक 18/2/08 की प्रकाशित अधिसूचना द्वारा कर दिया है।

3. उक्त द्वितीय अधिनियम के धारा 3 के तहत निर्माण कार्यों की लागत का एक प्रतिशत की दर से उपकर लिए जाने का प्रावधान किया गया है, जो उपरोक्त कल्याण बोर्ड को भेजा जाएगा। बोर्ड द्वारा इसका उपयोग निर्माण श्रमिकों के कल्याण की विभिन्न गतिविधियों के संचालन में किया जाएगा। (केंद्र सरकार की अधिसूचना संलग्न)

4. निर्माण कार्य कराने वाले शासकीय विभागों, सार्वजनिक उपक्रमों, स्थानीय निकायों, संविधिक प्राधिकारियों के जानकारी के लिये यह स्पष्ट करना है कि बिहार भवन एवं अन्य सन्निर्माण कर्मकार (नियोजन तथा सेवा शर्तों विनियमन) नियमावली, 2005 तथा कल्याण बोर्ड के गठन के साथ प्रदेश उक्त दोनों अधिनियमों के कार्यान्वयन किया जाना है। तदनुसार निवेदन है कि आप के विभाग तथा उसके अधीन आनेवाले सार्वजनिक उपक्रमों तथा संविधिक प्राधिकारियों (मुख्य ठेकेदार तथा ठेकेदार, यदि कोई हो) के तहत संचालित होने वाले निर्माण कार्यों में कृपया उक्त अधिनियमों / नियमों का पालन सुनिश्चित करने का कष्ट करें। इस संबंध में निम्नलिखित बिन्दु ध्यान देने योग्य है :-

- (i) विभाग / सार्वजनिक उपक्रम / संविधिक प्राधिकारियों के कार्यों में निर्माण श्रमिकों को नियोजित करने वाले सभी ठेकेदार अपनी-अपनी स्थापनाओं को उक्त प्रथम अधिनियम की धारा -7 के तहत अधिलम्ब पंजीकृत करा लें, और भविष्य में आरम्भ होने वाले सभी निर्माण कार्यों के मामले में भी इसी प्रकार का पंजीयन कराते रहें। इस प्रयोजन के लिए प्रदेश के सभी श्रम अधीक्षकों को पंजीयन पदाधिकारी नियुक्त किया गया है। बिहार भवन और अन्य सन्निर्माण कर्मकार (नियोजन तथा सेवा शर्तों विनियमन) नियमावली, 2005 के नियम 27 के अनुसार निबंधन हेतु विहित शुल्क देय होगी।



- (ii) प्रत्येक नवीन निर्माण कार्य आरंभ होने के न्यूनतम 30 दिन पूर्व नियोजक उक्त प्रथम अधिनियम की धारा 46 के तहत तदविषयक लिखित नोटिस संबंधित "निरीक्षक" को देय, और आरम्भ होने से अधिकतम 30 दिना में " उपकर निर्धारण अधिकारी " को भी विहित प्रपत्र में सूचना दें ।
- (iii) उक्त अधिनियम के अध्याय 6 एवं 7 तथा उसके तहत बने राज्य नियमावली के भाग 3 तथा 4 में निर्माण श्रमिकों की कार्य दशाओं और स्वास्थ्य तथा सुरक्षा के बारे में विस्तृत प्रावधानों का समुचित पालन हो ।
- (iv) आपके विभाग, अधीनस्थ सार्वजनिक उपक्रमों तथा सांविधिक प्राधिकारियों द्वारा निर्माण कार्यों के लिये भविष्य में जो निविदा प्रपत्र तथा अनुबंध के प्रारूप का उपयोग किया जाय । उनमें कंडिका 1 में उल्लेखित अधिनियमों के पालन की शर्तों का विशिष्ट उल्लेख कर दिया जाना उपयुक्त होगा ।

(v) महत्वपूर्ण

ऊपर कंडिका 1 में उल्लेखित द्वितीय अधिनियम ( भवन तथा अन्य सन्निर्माण कर्मकार कल्याण उपकर अधिनियम, 1996 ) के तहत निर्माण कार्यों पर देय उपकर की दर, भारत सरकार की अधिसूचना दिनांक 26.9.1996 द्वारा, निर्माण लागत का एक प्रतिशत निर्धारित किया गया है । इस अधिनियम के तहत बने केन्द्रीय नियमों के नियम 4 (3) के अनुसार शासकिय विभागों और सार्वजनिक उपक्रमों के निर्माण कार्यों पर लगने वाला उपकर ऐसे विभागों / उपक्रमों द्वारा नियत दर से कार्य के लिये भुगतान किये गये बिलों से कटा जाना और इस प्रकार काटे जाने के 30 दिनों की अवधि में कल्याण बोर्ड को क्रॉसड डीमान्ड ड्राफ्ट द्वारा भेजा जाना अपेक्षित है ।

तदनुसार कृपया अपने विभाग और अधीनस्थ उपक्रमों के सभी संबंधित अधिकारियों को अविलम्ब निर्देश दे कि उनके अधीन चल रहे निर्माण कार्यों के लिये उपकर की राशि नियमित रूप से वसूल कर उसे निम्नलिखित पते पर भेजे ।

संयुक्त श्रमायुक्त सह सचिव,  
बिहार भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड,  
विकास भवन, नया सचिवालय, बेली रोड, पटना ।

5. मैं अनारी हाऊंगा यदि पत्र के प्रसंग में की गई कार्रवाई से आप मुझे अवगत करा दें और इसे विषय पर अधीनस्थ अधिकारियों, सार्वजनिक उपक्रमों तथा सांविधिक प्राधिकारियों को जारी निर्देशों की एक-एक प्रति मुझे तथा श्रमायुक्त सह अध्यक्ष, बिहार भवन एवं अन्य सन्निर्माण कर्मकार कल्याण बोर्ड, विकास भवन पटना को भेज देने की कृपा करें। इस पत्र के साथ निम्न सूचनाएँ संलग्नकी जाती हैं ।

1. संलग्न अधिसूचना ।
2. कल्याण बोर्ड के संबंध में संक्षिप्त टिप्पणी
3. सेस संग्रह से संबंधित केन्द्र सरकार की अधिसूचना ।

भवदीय

(*Handwritten Signature*)  
(*Handwritten Name*)

*Handwritten Mark*

EXTRACT FROM THE GAZETTE OF INDIA: PART II, SEC. 3, SUB-SEC. (1)

Appendix on page No. 374  
Dated: 23-10-96

श्रम विभाग  
MINISTRY OF LABOUR

घोषणा

नई दिल्ली, 20 दिसम्बर, 1996

स. 2899.—केन्द्रीय सरकार, श्रम विभाग द्वारा अधिनियम संख्या 28 का अधिनियम, 1996 (1996 का 28) की धारा 2 की उपधारा (1) द्वारा अधिनियमों का अर्थ में की गई व्याख्या के अन्तर्गत की घोषणा के अन्तर्गत, 17 अक्टूबर, 1996 को अधिनियम संख्या 28 का अधिनियम अधिनियम अधिनियम (विशेष रूप से अधिनियम) अधिनियम, 1996 (1996 का 28) के अन्तर्गत से लिए किरी किरी का अधिनियम अधिनियम से : अधिनियम की दर अधिनियम अधिनियम

[स. 2. अधिनियम/1996 अधिनियम अधिनियम (आ) अधिनियम अधिनियम अधिनियम अधिनियम]

NOTIFICATION

New Delhi, the 26th September, 1996

S.O. 2199.—In exercise of powers conferred by subsection (1) of section 3 of the Building and Other Construction Workers' Welfare Cess Act, 1996 (22 of 1996) and in pursuance of the notification of the Government of India in the Ministry of Labour No. S.O. 1767 dated the 17th May, 1996, the Central Government specifies a cess for the purposes of the Building and Other Construction Workers' (Regulation of Employment and Labor Conditions) Service) Act, 1996 (27 of 1996), at the rate of 1 per cent of the cost of construction incurred by an employer.

[F. No. S-6101/1995-RW(P&I)]  
D. K. TREHAN, Labour & Employment Adviser



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# MISCELLANEOUS

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[Bihar Act 12, 2017]  
**THE BIHAR GOODS AND SERVICES TAX ACT, 2017**  
**AN**  
**ACT**

*to make a provision for levy and collection of tax on intra-State supply of goods or services or both by the State of Bihar and the matters connected therewith or incidental thereto*

**BE it enacted by Legislature of Bihar in the Sixty-eighth Year of the Republic of India as follows:-**

**CHAPTER I**  
**PRELIMINARY**

**1. Short title, extent and commencement.—**

- (1) This Act may be called the Bihar Goods and Services Tax Act, 2017.
- (2) It extends to the whole of the State of Bihar.
- (3) It shall come into force on such date as the State Government may, by notification in the Official Gazette, appoint:

Provided that different dates may be appointed for different provisions of this Act and any reference in any such provision to the commencement of this Act shall be construed as a reference to the coming into force of that provision.

**2. Definitions.—In this Act, unless the context otherwise requires :-**

- (1) "actionable claim" shall have the same meaning as assigned to it in section 3 of the Transfer of Property Act, 1882;
- (2) "address of delivery" means the address of the recipient of goods or services or both indicated on the tax invoice issued by a registered person for delivery of such goods or services or both;
- (3) "address on record" means the address of the recipient as available in the records of the supplier;
- (4) "adjudicating authority" means any authority, appointed or authorised to pass any order or decision under this Act, but does not include the Commissioner, Revisional Authority, the Authority for Advance Ruling, the Appellate Authority for Advance Ruling, the Appellate Authority and the Appellate Tribunal;
- (5) "agent" means a person, including a factor, broker, commission agent, *arhatia*, *del credere* agent, an auctioneer or any other mercantile agent, by whatever name called, who carries on the business of supply or receipt of goods or services or both on behalf of another;
- (6) "aggregate turnover" means the aggregate value of all taxable supplies (excluding the value of inward supplies on which tax is payable by a person on reverse charge basis), exempt supplies, exports of goods or services or both and inter-State supplies of persons having the same Permanent Account Number, to be computed on all India basis but excludes central tax, State tax, Union territory tax, integrated tax and cess;
- (7) "agriculturist" means an individual or a Hindu Undivided Family who undertakes cultivation of land—
  - (a) by own labour, or
  - (b) by the labour of family, or
  - (c) by servants on wages payable in cash or kind or by hired labour under personal supervision or the personal supervision of any member of the family;
- (8) "Appellate Authority" means an authority appointed or authorised to hear appeals as referred to in section 107;
- (9) "Appellate Tribunal" means the Goods and Services Tax Appellate Tribunal constituted under section 109;



**SCHEDULE III**

[See section 7]

**ACTIVITIES OR TRANSACTIONS WHICH SHALL BE TREATED NEITHER AS A SUPPLY OF GOODS NOR A SUPPLY OF SERVICES**

1. Services by an employee to the employer in the course of or in relation to his employment.
2. Services by any court or Tribunal established under any law for the time being in force.
3. (a) the functions performed by the Members of Parliament, Members of State Legislature, Members of Panchayats, Members of Municipalities and Members of other local authorities;
- (b) the duties performed by any person who holds any post in pursuance of the provisions of the Constitution in that capacity; or
- (c) the duties performed by any person as a Chairperson or a Member or a Director in a body established by the Central Government or a State Government or local authority and who is not deemed as an employee before the commencement of this clause.
4. Services of funeral, burial, crematorium or mortuary including transportation of the deceased.
5. Sale of land and, subject to clause (b) of paragraph 5 of Schedule II, sale of building.
6. Actionable claims, other than lottery, betting and gambling.

*Explanation.—For the purposes of paragraph 2, the term "court" includes District Court, High Court and Supreme Court.*

By Order of the Governor of Bihar,  
SURENDRA PRASAD SHARMA,  
*Secretary to the Government.*

अधीक्षक, सचिवालय मुद्रणालय,  
बिहार, पटना द्वारा प्रकाशित एवं मुद्रित।  
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# बिहार गजट

## असाधारण अंक

### बिहार सरकार द्वारा प्रकाशित

10 भाद्र 1939 (श0)

(सं0 पटना 783) पटना, शुक्रवार, 1 सितम्बर 2017

वाणिज्य-कर विभाग

अधिसूचना

1 सितम्बर 2017

एस० ओ० 141 दिनांक 1 सितम्बर 2017—बिहार माल और सेवा कर अधिनियम, 2017 (2017 का बिहार अधिनियम 12) की धारा 164 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए बिहार-राज्यपाल, बिहार माल और सेवा कर नियमावली, 2017 का संशोधन करने के लिए निम्नलिखित नियमावली बनाते हैं :-

- (1) यह नियमावली बिहार माल और सेवा कर (द्वितीय संशोधन) नियमावली, 2017 कही जा सकेगी।  
(2) अन्यथा उपबंधित के सिवाय, ये दिनांक 27 जुलाई, 2017 के प्रभाव से प्रवृत्त होंगे।
- बिहार माल और सेवा कर नियमावली, 2017 में,—
  - दिनांक 22 जुलाई, 2017 के प्रभाव से, नियम 24 के उपनियम (4) में, "नियत तारीख से तीस दिन की अवधि के भीतर" शब्दों के स्थान पर, "30 सितंबर, 2017 को या उससे पूर्व" अंक और शब्द रखे जाएंगे ;
  - नियम 34 निम्नलिखित द्वारा प्रतिस्थापित किया जाएगा, यथा :-

**"34. मूल्य के अवधारण के लिए भारतीय रुपए से भिन्न मुद्रा के विनिमय की दर—**

- कराधेय माल के मूल्य का अवधारण करने के लिए विनिमय की दर अधिनियम की धारा 12 के निबंधनों में ऐसे मालों की पूर्ति के समय की तारीख के लिए सीमा शुल्क अधिनियम, 1962 की धारा 14 के अधीन बोर्ड द्वारा यथा अधिसूचित विनिमय की लागू दर होगी।
- कराधेय सेवाओं के मूल्य का अवधारण करने के लिए विनिमय की दर अधिनियम की धारा 13 के निबंधनों में ऐसी सेवाओं की पूर्ति के समय की तारीख को साधारणतया स्वीकृत लेखांकन सिद्धांतों के अनुसार अवधारित लागू विनिमय दर होगी।";





- (iii) दिनांक 1 जुलाई, 2017 के प्रभाव से, नियम 44 के उपनियम (2) और उपनियम (3) निम्नलिखित द्वारा प्रतिस्थापित किये जाएंगे, यथा :-  
 "(2) उपनियम (1) में यथाविनिर्दिष्ट रकम का केन्द्रीय कर, राज्य कर, संघ राज्यक्षेत्र कर और एकीकृत कर के इनपुट कर प्रत्यय के लिए अवधारण पृथकतः किया जाएगा।  
 (3) जहां स्टॉक में रखे गए इनपुट से संबंधित कर बीजक उपलब्ध नहीं हैं, वहां रजिस्ट्रीकृत व्यक्ति, यथास्थिति, धारा 18 की उपधारा (4) या धारा 29 की उपधारा (5) में विनिर्दिष्ट घटनाओं में से किसी घटना के होने की प्रभावी तारीख को मालों की विद्यमान बाजार कीमत के आधार पर उपनियम (1) के अधीन रकम का आकलन करेगा।";
- (iv) नियम 46 का तीसरा परंतुक निम्नलिखित परंतुक द्वारा प्रतिस्थापित किया जाएगा, यथा :-  
 "परंतु यह भी कि माल या सेवाओं के निर्यात की दशा में बीजक पर, यथास्थिति, "निर्यात/एसईजेड इकाई या एसईजेड विकासकर्ता को एकीकृत कर के संदाय पर प्राधिकृत प्रचालनों के लिए पूर्ति" या "निर्यात/एसईजेड इकाई या एसईजेड विकासकर्ता को एकीकृत कर का संदाय किए बिना बंधपत्र या वचनबंध के अधीन प्राधिकृत प्रचालनों के लिए पूर्ति" का पृष्ठांकन होगा और खंड (ड.) में विनिर्दिष्ट ब्यौरों के स्थान पर निम्नलिखित ब्यौरे अंतर्विष्ट होंगे, यथा :-  
 (i) प्राप्तिकर्ता का नाम और पता ;  
 (ii) परिदान का पता ; और  
 (iii) गंतव्य देश का नाम :";
- (v) दिनांक 1 जुलाई, 2017 के प्रभाव से, नियम 61 का उपनियम (5) निम्नलिखित उपनियमों द्वारा प्रतिस्थापित किया जाएगा, यथा :-  
 "(5) जहां धारा 37 के अधीन प्ररूप जीएसटीआर-1 और धारा 38 के अधीन प्ररूप जीएसटीआर-2 में ब्यौरे प्रस्तुत करने के लिए समय-सीमा का विस्तार किया गया है और ऐसी परिस्थितियां हैं, तो आयुक्त अधिसूचना द्वारा विनिर्दिष्ट कर सकेगा कि रिटर्न इलैक्ट्रानिक रूप में प्ररूप जीएसटीआर-3ख में सामान्य पोर्टल के माध्यम से या तो सीधे या आयुक्त द्वारा अधिसूचित किसी सुविधा केंद्र के माध्यम से प्रस्तुत किया जाएगा।  
 (6) जहां प्ररूप जीएसटीआर-3ख में कोई रिटर्न प्ररूप जीएसटीआर-2 में ब्यौरे प्रस्तुत करने की सम्यक् तारीख के पश्चात् प्रस्तुत किया जाता है-  
 (क) प्ररूप जीएसटीआर-3 में रिटर्न का भाग-क प्ररूप जीएसटीआर-1, प्ररूप जीएसटीआर- 2 के माध्यम से प्रस्तुत सूचना के और पूर्ववर्ती कर अवधियों के अन्य दायित्वों के आधार पर इलैक्ट्रानिकी रूप से सृजित किया जाएगा तथा उक्त रिटर्न का भाग-ख कर अवधि के संबंध में प्रस्तुत प्ररूप जीएसटीआर - 3ख के आधार पर इलैक्ट्रानिकी रूप से सृजित किया जाएगा;  
 (ख) रजिस्ट्रीकृत व्यक्ति प्ररूप जीएसटीआर - 3ख में रिटर्न और प्ररूप जीएसटीआर - 3 में रिटर्न के बीच विसंगतियों, यदि कोई हों, के आधार पर प्ररूप जीएसटीआर - 3 में रिटर्न भाग-ख को उपांतरित करेगा और अपने कर दायित्वों, यदि कोई हों, का निर्वहन करेगा ;  
 (ग) जहां प्ररूप जीएसटीआर - 3 में कर प्रत्यय की रकम प्ररूप जीएसटीआर - 3(ख) के निबंधनों में इनपुट कर प्रत्यय की रकम से अधिक हो जाती है तो अतिरिक्त रकम का रजिस्ट्रीकृत व्यक्ति की इलैक्ट्रानिक प्रत्यय बही में प्रत्यय किया जाएगा।";
- (vi) दिनांक 1 जुलाई, 2017 के प्रभाव से, नियम 83 के उपनियम (3) के दूसरे परंतुक में, शब्द "उपधारा" शब्द "उपनियम" द्वारा प्रतिस्थापित किया जाएगा।
- (vii) दिनांक 1 जुलाई, 2017 के प्रभाव से, नियम 89 के उपनियम (4) के खंड (ड.) में, शब्द "उपधारा" शब्द "खंड" द्वारा प्रतिस्थापित किया जाएगा।
- (viii) दिनांक 1 जुलाई, 2017 के प्रभाव से, प्ररूप जीएसटी टीआरएएन - 1 में क्रम सं. 7 में, सारणी (क) में स्तंभ (2) का शीर्ष "यथा लागू एचएसएन" द्वारा प्रतिस्थापित किया जाएगा ;
- (ix) दिनांक 1 जुलाई, 2017 के प्रभाव से, प्ररूप जीएसटी टीआरएएन - 2 में क्रम सं. 4 और 5 में, सारणी में स्तंभ (1) का शीर्ष "यथा लागू एचएसएन" द्वारा प्रतिस्थापित किया जाएगा ;

[(सं० बिक्री-कर/जी0एस0टी0/विविध-10/2017-3237)]

बिहार-राज्यपाल के आदेश से,

सुजाता चतुर्वेदी,

वाणिज्य-कर आयुक्त-सह-प्रधान सचिव।

1 सितम्बर 2017

एस० ओ० 142, एस० ओ० 141 दिनांक 1 सितम्बर 2017 का अंग्रेजी में निम्नलिखित अनुवाद बिहार-राज्यपाल के प्राधिकार से इसके द्वारा प्रकाशित किया जाता है, जो भारतीय संविधान के अनुच्छेद 348 के खंड (3) के अधीन अंग्रेजी भाषा में उसका प्राधिकृत पाठ समझा जायेगा।

[(सं० बिक्री-कर/जी०एस०टी०/विविध-10/2017-3237)]

बिहार-राज्यपाल के आदेश से,

सुजाता चतुर्वेदी,

वाणिज्य-कर आयुक्त-सह-प्रधान सचिव।

**The 1<sup>st</sup> September 2017**

S.O.141 dated 1<sup>st</sup> September 2017— In exercise of the powers conferred by section 164 of the Bihar Goods and Services Tax Act, 2017 (12 of 2017), the Governor of Bihar is pleased to make the following Rules further to amend the Bihar Goods and Services Tax Rules, 2017.:-

1. (1) These rules may be called the Bihar Goods and Services Tax (Second Amendment) Rules, 2017.

(2) Save as otherwise provided, these shall come into force with effect from 27<sup>th</sup> July, 2017.

2. In the Bihar Goods and Services Tax Rules, 2017,

(i) With effect from 22nd July, 2017, in sub-rule (4), of rule 24, for the words “within a period of thirty days from the appointed day”, shall be substituted by the words and figures “on or before 30th September, 2017.”

(ii) Rule 34, shall be substituted, by the following namely:-

**“34. Rate of exchange of currency, other than Indian rupees, for determination of value.—**

(1) The rate of exchange for determination of value of taxable goods shall be the applicable rate of exchange as notified by the Board under section 14 of the Customs Act, 1962 for the date of time of supply of such goods in terms of section 12 of the Act.

(2) The rate of exchange for determination of value of taxable services shall be the applicable rate of exchange determined as per the generally accepted accounting principles for the date of time of supply of such services in terms of section 13 of the Act.”;

(iii) With effect from 1st July, 2017, sub-rules (2) and (3), of rule 44, shall be substituted by the following namely:—

“(2) The amount, as specified in sub-rule (1) shall be determined separately for input tax credit of central tax, State tax, Union territory tax and integrated tax.

(3) Where the tax invoices related to the inputs held in stock are not available, the registered person shall estimate the amount under sub-rule (1) based on the prevailing market price of the goods on the effective date of the occurrence of any of the events specified in sub-section (4) of section 18 or, as the case may be, sub-section (5) of section 29.”;

(iv) The third proviso, of rule 46, shall be substituted by the following proviso namely:—

“Provided also that in the case of the export of goods or services, the invoice shall carry an endorsement “SUPPLY MEANT FOR EXPORT/SUPPLY TO SEZ UNIT OR SEZ DEVELOPER FOR AUTHORISED OPERATIONS ON PAYMENT OF INTEGRATED TAX” or “SUPPLY MEANT FOR EXPORT/SUPPLY TO SEZ UNIT OR SEZ DEVELOPER FOR AUTHORISED OPERATIONS UNDER BOND OR LETTER OF UNDERTAKING WITHOUT PAYMENT OF INTEGRATED TAX”, as the case may be, and shall, in lieu of the details specified in clause (e), contain the following details, namely,-

(i) name and address of the recipient;



- (ii) address of delivery; and  
(iii) name of the country of destination.”;
- (v) With effect from 1st July, 2017, sub-rule (5) of rule 61 shall be substituted by the following namely:-  
 “(5) Where the time limit for furnishing of details in FORM GSTR-1 under section 37 and in FORM GSTR-2 under section 38 has been extended and the circumstances so warrant, the Commissioner may, by notification, specify that return shall be furnished in FORM GSTR-3B electronically through the common portal, either directly or through a Facilitation Centre notified by the Commissioner.  
 (6) Where a return in FORM GSTR-3B has been furnished, after the due date for furnishing of details in FORM GSTR-2—  
 (a) Part A of the return in FORM GSTR-3 shall be electronically generated on the basis of information furnished through FORM GSTR-1, FORM GSTR-2 and based on other liabilities of preceding tax periods and PART B of the said return shall be electronically generated on the basis of the return in FORM GSTR-3B furnished in respect of the tax period;  
 (b) the registered person shall modify Part B of the return in FORM GSTR-3 based on the discrepancies, if any, between the return in FORM GSTR-3B and the return in FORM GSTR-3 and discharge his tax and other liabilities, if any;  
 (c) where the amount of input tax credit in FORM GSTR-3 exceeds the amount of input tax credit in terms of FORM GSTR-3B, the additional amount shall be credited to the electronic credit ledger of the registered person.”;
- (vi) With effect from 1st July, 2017, in the second proviso of sub-rule (3) of Rule 83, the words “sub-section” shall be substituted by the words “sub-rule”;
- (vii) With effect from 1st July, 2017, in clause (E) of sub-rule (4) of Rule 89, the words “sub-section” shall be substituted by the word “clause”;
- (viii) In FORM GST TRAN-1, with effect from 1st July, 2017, in Sl. No. 7, in Table (a), the heading of column (2) shall be substituted by the heading “HSN as applicable”;
- (ix) In FORM GST TRAN-2, with effect from 1st July, 2017, in Sl. No. 4 and 5, in the Table, the heading of column (1) shall be substituted by the heading “HSN as applicable”.

[(No. Bikri-kar/GST/Vividh-10/2017-3237 )]

By order of Governor of Bihar,  
 SUJATA CHATURVEDI,

*Commissioner-cum-Principal Secretary  
 Commercial Taxes Department.*

अधीक्षक, सचिवालय मुद्रणालय,  
 बिहार, पटना द्वारा प्रकाशित एवं मुद्रित,  
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[TO BE PUBLISHED IN THE GAZZETE OF INDIA, EXTRAORDINARY, PART II,  
SECTION 3, SUB-SECTION (i)]

Government of India  
Ministry of Finance  
(Department of Revenue)

**Notification No. 20/2017-Central Tax (Rate)**

New Delhi, the 22<sup>nd</sup> August, 2017

G.S.R.....(E).- In exercise of the powers conferred by sub-section (1) of section 9, sub-section (1) of section 11, sub-section (5) of section 15 and sub-section (1) of section 16 of the Central Goods and Services Tax Act, 2017 (12 of 2017), the Central Government, on the recommendations of the Council, and on being satisfied that it is necessary in the public interest so to do, hereby makes the following amendments in the notification of the Government of India, in the Ministry of Finance (Department of Revenue), No. 11/2017- Central Tax (Rate), dated the 28<sup>th</sup> June, 2017, published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i), *vide* number G.S.R. 690(E), dated the 28<sup>th</sup> June, 2017, namely:-

In the said notification, in the Table,-

(i) against serial number 3, for item (iii) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-

(3)	(4)	(5)
“(iii) Composite supply of works contract as defined in clause (119) of section 2 of the Central Goods and Services Tax Act, 2017, supplied to the Government, a local authority or a Governmental authority by way of construction, erection, commissioning, installation, completion, fitting out, repair, maintenance, renovation, or alteration of, - (a) a historical monument, archaeological site or remains of national importance, archaeological excavation, or antiquity specified under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 (24 of 1958); (b) canal, dam or other irrigation works; (c) pipeline, conduit or plant for (i) water supply (ii) water treatment, or (iii) sewerage treatment or disposal.	6	-
(iv) Composite supply of works contract as defined in clause (119) of section 2 of the Central Goods and	6	-



<p>Services Tax Act, 2017, supplied by way of construction, erection, commissioning, installation, completion, fitting out, repair, maintenance, renovation, or alteration of,-</p> <ul style="list-style-type: none"> <li>(a) a road, bridge, tunnel, or terminal for road transportation for use by general public;</li> <li>(b) a civil structure or any other original works pertaining to a scheme under Jawaharlal Nehru National Urban Renewal Mission or Rajiv Awaas Yojana;</li> <li>(c) a civil structure or any other original works pertaining to the “In-situ rehabilitation of existing slum dwellers using land as a resource through private participation” under the Housing for All (Urban) Mission/Pradhan Mantri Awas Yojana, only for existing slum dwellers;</li> <li>(d) a civil structure or any other original works pertaining to the “Beneficiary led individual house construction / enhancement” under the Housing for All (Urban) Mission/Pradhan Mantri Awas Yojana;</li> <li>(e) a pollution control or effluent treatment plant, except located as a part of a factory; or</li> <li>(f) a structure meant for funeral, burial or cremation of deceased.</li> </ul>		
<p>(v) Composite supply of works contract as defined in clause (119) of section 2 of the Central Goods and Services Tax Act, 2017, supplied by way of construction, erection, commissioning, or installation of original works pertaining to,-</p> <ul style="list-style-type: none"> <li>(a) railways, excluding monorail and metro;</li> <li>(b) a single residential unit otherwise than as a part of a residential complex;</li> <li>(c) low-cost houses up to a carpet area of 60 square metres per house in a housing project approved by competent authority empowered under the 'Scheme of Affordable Housing in Partnership' framed by the Ministry of Housing and Urban Poverty Alleviation, Government of India;</li> <li>(d) low cost houses up to a carpet area of 60 square metres per house in a housing project approved</li> </ul>	6	-



<p>by the competent authority under-</p> <p>(1) the “Affordable Housing in Partnership” component of the Housing for All (Urban) Mission/Pradhan Mantri Awas Yojana;</p> <p>(2) any housing scheme of a State Government;</p> <p>(e) post-harvest storage infrastructure for agricultural produce including a cold storage for such purposes; or</p> <p>(f) mechanised food grain handling system, machinery or equipment for units processing agricultural produce as food stuff excluding alcoholic beverages.</p>		
(vi) Construction services other than (i), (ii), (iii), (iv) and (v) above.	9	-”;

(ii) against serial number 8, for item (vi) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-

(3)	(4)	(5)
“(vi) Transport of passengers by motorcab where the cost of fuel is included in the consideration charged from the service recipient.	2.5	Provided that credit of input tax charged on goods and services used in supplying the service has not been taken [Please refer to <i>Explanation</i> no. (iv)]
		or

(iii) against serial number 9, for item (iii) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-

(3)	(4)	(5)
“(iii) Services of goods transport agency (GTA) in relation to transportation of goods (including used	2.5	Provided that credit of input tax charged



household goods for personal use). <i>Explanation.</i> - “goods transport agency” means any person who provides service in relation to transport of goods by road and issues consignment note, by whatever name called.		on goods and services used in supplying the service has not been taken [Please refer to <i>Explanation</i> no. (iv)]
	or	
	6	Provided that the goods transport agency opting to pay central tax @ 6% under this entry shall, thenceforth, be liable to pay central tax @ 6% on all the services of GTA supplied by it ”.

(iv) against serial number 10, for item (i) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-

(3)	(4)	(5)
“(i) Renting of motorcab where the cost of fuel is included in the consideration charged from the service recipient.	2.5	Provided that credit of input tax charged on goods and services used in supplying the service has not been taken [Please refer to <i>Explanation</i> no. (iv)]
	or	
	6	-”;

(v) against serial number 11, for item (i) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-



(3)	(4)	(5)
“(i) Services of goods transport agency (GTA) in relation to transportation of goods (including used household goods for personal use). <i>Explanation.-</i> “goods transport agency” means any person who provides service in relation to transport of goods by road and issues consignment note, by whatever name called.	2.5	Provided that credit of input tax charged on goods and services used in supplying the service has not been taken [Please refer to <i>Explanation</i> no. (iv)]
	or	
	6	Provided that the goods transport agency opting to pay central tax @ 6% under this entry shall, thenceforth, be liable to pay central tax @ 6% on all the services of GTA supplied by it.”;

(vi) against serial number 26,-

(a) in column (3), in item (i),-

(A) for sub-item (b), the following sub-item shall be substituted, namely:-

“(b) Textiles and textile products falling under Chapter 50 to 63 in the First Schedule to the Customs Tariff Act, 1975 (51 of 1975);”;

(B) the *Explanation* shall be omitted;

(b) for item (ii) in column (3) and the entries relating thereto in columns (3), (4) and (5), the following shall be substituted, namely:-

(3)	(4)	(5)
“(ii) Services by way of any treatment or process on goods belonging to another person, in relation to- (a) printing of newspapers; (b) printing of books (including Braille books), journals and periodicals.	2.5	-





(iii) Manufacturing services on physical inputs (goods) owned by others, other than (i) and (ii) above.	9	-”;
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(vii) for serial number 27 and the entries relating thereto, the following shall be substituted, namely:-

(1)	(2)	(3)	(4)	(5)
“27	<b>Heading 9989</b>	(i) Services by way of printing of newspapers, books (including Braille books), journals and periodicals, where only content is supplied by the publisher and the physical inputs including paper used for printing belong to the printer.	6	-
		(ii) Other manufacturing services; publishing, printing and reproduction services; materials recovery services, other than (i) above.	9	-”;

(viii) against serial number 34, in column (3), in item (i), after the word “drama”, the words “or planetarium” shall be inserted.

[F. No.354/173/2017 -TRU]

(Ruchi Bisht)

Note:-The principal notification was published in the Gazette of India, Extraordinary, *vide* notification No. 11/2017 - Central Tax (Rate), dated the 28<sup>th</sup> June, 2017, *vide* number G.S.R. 690 (E), dated the 28<sup>th</sup> June, 2017.

No. RW/G-20017/26/2018-W&A  
Government of India  
Ministry of Road Transport & Highways  
(Planning zone)  
Transport Bhawan, 1, Parliament Street, New Delhi - 110001

Dated, the 19<sup>th</sup> November, 2018.

To

1. The Chief Secretaries of all State Governments/ UTs
2. The Chairman, National Highways Authority of India (NHAI), G-5&6, Sector-10, Dwarka, New Delhi- 110075
3. Director General (Border Roads), Seema Sadak Bhawan, 4- Parliament Street, New Delhi - 110001
4. The Managing Director, NHIDCL, 3rd Floor, PTI Building, 4- Parliament Street, New Delhi - 110 001
5. The Principal Secretaries/ Secretaries of all States/ UTs Public Works Departments dealing with National Highways, Other Centrally Sponsored Schemes & State Schemes
6. The Engineers-in-Chief and Chief Engineers of all States/ UTs Public works Departments dealing with National Highways, Other Centrally Sponsored Schemes
7. All CE-ROs/ SE-ROs/ ELOs of the Ministry of RT&H

**Subject: Implementation of CGST Act, 2017 - Standard Operating Procedure - Reg.**

References: -

- (i) Ministry's O.M. No. RT-23018/53/2017-T, dated 25.04.2018
- (ii) Ministry's O.M. No. RW/NH-34066/20/2018-S&R (P&B), dated 01.08.2018
- (iii) Ministry of Finance (Dept. of Revenue) Circular No. 65/39/2018 - DOR (Letter No. S.31011/11/2018-ST-I-DoR, dated 14.09.2018)

Sir,

Kind attention is drawn to the Ministry's O.M.s under ref. (i) and (ii) above regarding GST Implementation at Project sites/ offices levels. The Ministry of Finance issued detailed guidelines vide Circular under ref. (iii) above for deductions and deposits of TDS under GST by the DDO, copy of which is enclosed herewith for ready reference and for ensuring needful compliance.

2. Further, this is in continuation to the Ministry's policy and guidelines issued vide the reference on above mentioned subject.

3. The CST Act, 2017 has subsumed various indirect taxes of both Central and State Governments, such as Central Excise Duty, Service Tax, Central Sales Tax (CST)/ Works Contract Tax (WCT)/ State Value Added Tax (VAT), Additional Custom duty and Special Additional Duty (SAD) apart from Entry Tax and Octroi charges, etc.

4. Keeping in view the difficulties faced and feedback received so far, it has been decided with the approval of Competent Authority to follow the Standard Operating Procedure (SOP) given below henceforth and until further orders.

Page 1 of 5

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No. RW/G-20017/26/2018-W&A  
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**5. Incidence of application of Service Tax/ GST**

Incidence of the applicability of taxes shall be as follows:-

Sr. No.	Completion of Service	Invoice Date	Payment Date	Applicability of Taxes			Applicable TDS
				Service Tax	Works Contract Tax (WCT)	GST	
1	Before June 30, 2017	Before June 30, 2017	Before June 30, 2017	Yes	Yes	No	WCT TDS
2	Before June 30, 2017	Before June 30, 2017	After June 30, 2017	Yes	Yes	No	WCT TDS
3	Before June 30, 2017	After June 30, 2017	After June 30, 2017	No	No	Yes	GST TDS
4	After June 30, 2017	After June 30, 2017	After June 30, 2017	No	No	Yes	GST TDS

**6. Payments for EPC Contracts**

6.1. The contract price is quoted lump-sum and inclusive of all taxes in most of EPC contracts; these taxes have now been subsumed under GST. In order to arrive at the incidence of application of Service Tax/GST as mentioned at Para 5 above, the total work shall be categorized as follows: -

- (i) Works completed up to 30.06.2017 and Billing completed by 30.06.2017.
- (ii) Works completed up to 30.06.2017 and Billing not completed by 30.06.2017.
- (iii) Works yet to be completed as on 01.07.2017.

6.2. GST Act, 2017 shall be applicable for all the works mentioned above at (ii) & (iii). Following procedure may be adopted by the Ministry/ ROs/ PIUs/ various Executing Agencies while making payments as per the provisions in the contracts:-

- (i) The project components under different major heads (like Earth, Sand, Aggregates, Steel, Cement, Bitumen etc.) are to be intimated by the contractor and checked/confirmed by the respective IE/ AE in consultation with the concerned RO/ PD for each of the Project.
- (ii) In order to compile the above information, an indicative Excel format is suggested for guidance and attached (at Annexure-I). It indicates various project components which attract various types of taxes including Excise Duty, CST, VAT/WCT and other taxes, which were already included in the contract price as per the original contract. The same format can be used to compile the information for each ongoing project, taking into consideration the GST Input Tax Credit available for the project. The project components and rates shown are only indicative and should be modified as per the project actuals and shall be certified by the statutory auditors of the

Page 2 of 5

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Contractor/Developer/Company. In case, appointment of Statutory Auditor is not mandatory, then it can be certified by a Practicing Chartered Accountant.

- (iii) After completion of the said exercise, the costs against the subsumed taxes (Excise duty, CST, VAT/ WCT etc.) in the particular contract are to be finalized and to be mutually agreed by IE/ AE/ Ministry / concerned Executive Agency/ Contractor. The cost of subsumed taxes factored in the contract value is required to be reduced from the original contract price to arrive at the actual balance cost of the project.
- (iv) Based on such certification and mutual agreement, the concerned RO/ PD shall either pay or recover the net impact of the GST after accounting for subsumed tax component and input tax (GST) credit. The contractor shall be responsible for correct declaration of GST liability and shall provide the supporting documents, if required.
- (v) This will be an interim arrangement till the completion of the project and the final impact of GST (positive or negative) shall be worked out at the time of Final bill.

**7. Preparation of DPR, Estimation of Project Cost, Cost of Utility Shifting and Change of Scope:**

For all the cost estimates, which are finalized prior to 01.07.2017, there is need to revise the estimated amount taking in to consideration the implication of GST. This includes Estimated Cost for Road projects, Cost involved in Utility Shifting and estimated amount for Change in Scope. While estimating the cost, various Schedule of Rates (SoR) are followed, which are approved prior to application of GST. In all such cases, pre-GST taxes should be excluded from the cost/ estimates and the applicable GST rate shall be shown separately/ and added in the cost/ estimate.

**8. Payments for Hybrid Annuity Projects (40% of Bid Project Cost), O&M Contracts and Bonus for Early completion:**

- (i) Keeping in view the clarifications issued by the Ministry of Finance (Deptt. of Revenue) vide notification no. 33/ 2017, dated 13.10.2017 on Integrated Tax (Rate) that "Service by way of access to a road or a bridge on payment of annuity - applicable GST is NIL (SL No. 24A, Heading 9967)", no payment against GST shall be made on Annuity payments.
- (ii) Interest is payable on the reducing balance of the completion cost as per the clause no. 23.6.4 of the MCA. GST shall not be payable on interest of payment of Annuity amount.
- (iii) GST is applicable on entire payment of Operation and Maintenance (O&M) cost as per clause 23.7 of MCA with 100% input Tax credit.



No. RW/G-20017/26/2018-W&A  
Government of India  
**Ministry of Road Transport & Highways**  
(Planning zone)  
Transport Bhawan, 1, Parliament Street, New Delhi - 110001

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- (iv) GST shall be payable on Bonus for early completion as per clause 23.5 of the MCA without any Input Tax Credit. However, if any input tax credit is availed by the Concessionaire, the benefit of such ITC shall be passed on to the Ministry/ concerned Executing Agency.

**9. Mobilization advance:**

Applicability of GST on mobilization advance shall be as follows -

- (i) If the mobilization advance is refundable as per the Contract Agreement, no GST shall be payable on mobilization advance.
- (ii) If the mobilization advance is recoverable as per the Contract Agreement in future bills, then GST shall be applicable. It shall be paid by the concerned executing agency/ RO/ PD at the applicable rates and shall be suitably adjusted at the time of recovery of the Mobilization Advance.

**10. Deductibility of TDS under Income Tax Act:**

- (i) TDS shall continue to be deducted under the Income Tax Act, in addition to the Tax Deducted at Source (TDS) applicable under WCT/GST. Accordingly, wherever in terms of agreement or contract, the component of "GST on Services" comprised in the amount payable is indicated separately, TDS under the Income Tax Act shall be deducted on the amount paid or payable without including such "GST on Services" component. GST for this purpose shall include IGST, CGST, SGST and / UTGST.
- (ii) For Example, if the bill is proposed for Rs. 118/- which includes Rs. 100/- as a value of service/ work done and includes Rs. 18/- towards the GST, TDS under the Income Tax Act shall be deducted on Rs. 100/- and not on Rs. 118/-, as per the applicable rate prescribed under the Income Tax Act.

11. The ROs of the Ministry are permitted to hire the services of Financial Consultants/ Chartered Accountants for activities related to tax deduction under GST, maintaining of register, filing of returns, generating TDS certificate through the GSTN portal, etc., within maximum allowable limit of Rs. 1,00,000/- per annum. The expenditure shall be booked out of funds earmarked from budget head 3451 Secretariat Economic Services (Major Head), 00.090 Secretariat (Minor Head), 11 Ministry of Road Transport and Highways, 11.01 Roads and Transport Wings, 11.01.13 Office Expenses, or its amendments as Issued from time to time. ROs shall accordingly refer proposals from time to time to General Section of the Ministry for earmarking of needful allocation of funds. Hiring of such services should be as per Rule 177 of GFR, 2017.

12. If the amount required for such services is more than Rs. 1 lakh/ annum, in such cases prior approval of Ministry needs to be taken.

Page 4 of 5

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No. RW/G-20017/26/2018-W&A  
Government of India  
Ministry of Road Transport & Highways  
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13. Further, the ROs of the Ministry are also authorised to hire an Accountant on Contract Basis as per the terms and conditions stipulated vide the Ministry's "norms for setting up of new PMU/ PIU for the EPC projects of MoRT&H" circulated vide Office Order No. N-20011/28/2013-E.II, dated 12.08.2013 for providing assistance to the ROs subject to obtaining prior approval of the Ministry.

14. The RPAOs of the Ministry shall furnish the actual details of the expenditures incurred and deductions made to the ROs on weekly basis on every Monday.

15. It is requested that the contents of this letter may be brought into the notice of all concerned for needful compliance.

16. This issues with the concurrence of Finance Wing vide U.O.No. 1402/TF-II, dated 12.11.2018 and approval of Secretary (RT&H).

  
(Mohit Kumar)  
AEE (Planning)  
[planningmorth@gmail.com](mailto:planningmorth@gmail.com)

Enclosure: As above

**Copy to:**

1. All Js / CEs in the Ministry of Road Transport & Highways
2. All Technical Officers in the Ministry of Road Transport & Highways
3. All RPAOs of the Ministry
4. The Secretary General, Indian Road Congress
5. The Director, IAHE
6. Dy. FA / Controller of Accounts
7. Technical Circular file of S&R Section
8. NIC - for uploading on Ministry's website under "What's new"

**Copy for information and necessary action to:**

1. PPS to Secretary (RT&H)
2. Sr. PPS to DG (RD)&SS
3. PPS to Additional Secretary
4. PPS to AS&FA
5. PS to Pr.CCA
6. PS to ADG(Z-I) / ADG(Z-II) / ADG(Z-III) / ADG(IV) / ADG(V)



# TRUCK CAPACITY PER TRIP

VIDE T.E.C. LETTER No. 1115 DATED 12.07.85

Sr. No.	Materials	Truck Capacity per trip	Multi-plying factor	Net payable Volume or weight col.3 x col.4
1.	2.	3.	4.	5.
1.	Lime, Moorum and building rubbish	6.00 M <sup>3</sup>	1.00	6.00 M <sup>3</sup>
2.	Earth	6.00 M <sup>3</sup>	0.80	4.80 M <sup>3</sup>
3.	Manure or sludge	6.00 cum	0.92	5.52 cum
4.	Excavated rocks (120 Lbs)	6.00 cum	0.67	4.02 cum
5.	Stone Metal	5.40 cum	0.85	4.59 cum
6.	Soling stone	5.00 cum	0.85	4.25 cum
7.	Boulder (90 Lbs to 120 Lbs)	6.00 cum	0.80	4.80 cum
8.	Bricks	2000 Nos	1.00	2000 Nos.
9.	Tiles/Mangra/Mosaic	3200 Nos	1.00	3200 Nos.
10.	Brick tiles (300 x 150 x 50 mm)	1760 Nos	1.00	1760 Nos.
11.	Cement, Stone blocks, G.I, C.I, A.C. and C.C. Pipe below 100 mm dia and other heavy materials.	8.00 M.T.	1.00	8.00 M.T.
12.	Steel	8.00 M.T.	1.00	8.00 M.T.
13.	Timber	9.60 cum	1.00	9.60 cum
14.	Tar, Bitumen	8.00 M.T.	1.00	8.00 M.T.
15.	Steam coal	8.00 M.T.	1.00	8.00 M.T.
16.	S.W. pipe 60 cm. length			
	(i) 100 mm dia	800 No/480 M	1.00	800 No/480M
	(ii) 150 mm dia	400 No/240 M	1.00	400 No/240M
	(iii)200 mm dia	224 No/134.40 M	1.00	224 No/134.4M
	(iv)230 mm dia	176 No/105.60 M	1.00	176 No/105.6M
	(v) 250 mm dia	140 No/84 M	1.00	140 No/84 M
	(vi)300 mm dia	112 No/67.20 M	1.00	112 No/67.2M
	(vii)350 mm dia	80 No/48 M	1.00	80 No/48 M
	(viii)400 mm dia	56 No/33.60 M	1.00	56 No/33.60 M
	(ix) 450 mm dia	44 No/26.40 M	1.00	44 No/26.40 M
	(x) 500 mm dia	40 No/24.00M	1.00	40No/24.00 M
	(xi) 600 mm dia	32 No/19.20M	1.00	32 No/19.20M
17.	R.C.C. pipe and A.C. pipe			
	(i) 100 mm dia	145No x 2M= 290M	1.00	290.00M
	(ii) 125 mm dia	100No x 2M= 200M	1.00	200.00M
	(iii) 150 mm dia	90No x 2M=180M	1.00	180.00M
	(iv) 200 mm dia	40No x 2.5M=100M	1.00	100.00M



1.	2.	3.	4.	5.
	(v) 250 mm dia	30No x 2.50M=75M	1.00	75.00M
	(vi) 300 mm dia	24No x 2.5M=60M	1.00	60.00M
	(vii) 350 mm dia	19No x 2.5M=47.5M	1.00	47.50M
	(viii) 400 mm dia & 450 mm dia	13No x 2.5M=32.5M	1.00	32.50M
	(ix) 500 mm dia & 600 mm dia	10No x 2.5M=25.0M	1.00	25.00M
	(x) 700 mm dia & 800 mm dia	6No x 2.5M=15M	1.00	15.00M
	(xi) 900 mm dia & 1100 mm dia	4No x 2.5M=10M	1.00	10.00M
	(xii) 1100 mm dia & 1200 mm dia	3No x 2.5M=7.5M	1.00	7.50M
18.	G.I. crates 1 x 1.5 x 0.75 M	80 No.	1.00	80 No.
19.	Bamboos			
	(i) 75 mm dia & 100 mm dia	280 No.	1.00	280 No.
	(ii) 50 mm dia & 75 mm dia	300 No.	1.00	300 No.
20.	Empty bags of cement	3000 nos.	1.00	3000 nos.
21.	Sal bullah Av. 6 M length			
	(i) 100 mm dia	125 Nos.	1.00	125 Nos.
	(ii) 125 mm dia	80 Nos.	1.00	80 Nos.
	(iii) 150 mm dia	60 Nos.	1.00	60 Nos.
	(iv) 175 mm dia	45 Nos.	1.00	45 Nos.
	(v) 200 mm dia	25 Nos.	1.00	25 Nos.
	(vi) 225 mm dia	20 Nos.	1.00	20 Nos.
22.	Stone chips sand and Fly Ash	5.4 cum	0.924	5.00 cum
23.	Steel and C.I. Pipe 3.66 M			
	(i) 100 mm dia	80No x 3.66M=292.80M	1.00	292.8M
	(ii) 125 mm dia	60No x 3.66M=219.60M	1.00	219.60M
	(iii) 150 mm dia	50No x 3.66M=183.00M	1.00	183.00M
	(iv) 200 mm dia	30No x 3.66M=109.80M	1.00	109.80M
	(v) 250 mm dia	22No x 3.66M= 80.52M	1.00	80.52M
	(vi) 300 mm dia	17No x 3.66M= 62.22M	1.00	62.22M
	(vii) 350 mm dia	12No x 3.66M= 43.92M	1.00	43.92M
	(viii) 400 mm dia	9No x 3.66M= 32.94M	1.00	32.94M
	(ix) 500 mm dia	7No x 3.66M= 25.62M	1.00	25.62M
	(x) 600 mm dia	5No x 3.66M= 18.30M	1.00	18.30M





## BASIC INPUT PARAMETER

### Overhead and Contractor Profit

Sl. No.	Description	Percentage		
		Large Project	Medium Project	Small Project
1	Overheads for Road Works	8%	10%	12%
2	Contractors profit for Road Works	10%	10%	10%
3	Overheads for New/Widening of Bridge/Structure Works	20%	20%	20%
4	Overheads for Rehabilitation of Bridges/Structure	30%	30%	30%
5	Contractors profit for Bridge Works	10%	10%	10%
6	Overheads for Road Tunnel Works	25%	25%	25%
7	Contractors profit for Tunnel Works	10%	10%	10%

### Lead Details

Sl. No.	Description	Represent lead
1	Lead from Mixing Plant to working site	L1
2	Lead for Earthwork borrow area to site	L2
3	Lead for Moorum/Natural Granular Material borrow area to site	L3
4	Lead for fly ash from source to site	L4
5	Lead for Sand from source to site	L5
6	Lead for Sand from source to Plant	L6
7	Lead for Aggregate from Quarry to working site	L7
8	Lead for Aggregate from Quarry to Plant	L8
9	Lead for Bitumen from source to Plant	L9
10	Lead for HT Strands from source to Plant	L10

**Note**" All lead in km (one way).

## ABBREVIATIONS

Abbreviations of unit wherever occurring in the 'Standard Data Book' are as under

ATMS	ADVANCED TRAFFIC MANAGEMENT SYSTEMS
BC	BITUMINOUS CONCRETE
BM	BITUMINOUS MACADAM
CP	CONTRACTOR'S PROFIT
CM	CENTIMETER
DBM	DENSE BITUMINOUS MACADAM
DIA	DIAMETER
EG	FOR EXAMPLE
ETC.	ET CETERA
FE LOADER	FRONT END LOADER
GI	GALVANISED IRON
GL	GROUND LEVEL
GM	GRAM
HA	HECTARE
HTMS	HIGHWAY TRAFFIC MANAGEMENT SYSTEMS
HMP	HOT MIX PLANT
HR	HOUR
HYS	HIGH YIELDING STRENGTH DEFORMED
I.E/IE	THAT IS
IRC	INDIAN ROADS CONGRESS
IS	INDIAN STANDARD
KG	KILOGRAM
KL	KILOLITER
KM	KILOMETER
KMPH	KILOMETER PER HOUR
L	LITER
L1 TO L10	LEAD IN KILOMETER
M	METER
MG	MILIGRAM
MIN	MINIMUM
MAX	MAXIMUM
MM	MILLIMETER



## ABBREVIATIONS

MORT&H	MINISTRY OF ROAD TRANSPORT & HIGHWAYS
MS	MILD STEEL
MT	METRIC TONNE
NO./NR.	NUMBER
OH	OVERHEAD
OMC	OPTIMUM MOISTURE CONTENT
PCC/PC.C.	PLAIN CEMENT CONCRETE
Q	QUINTAL
RCC/R.C.C.	REINFORCED CEMENT CONCRETE
REF. TO M	REFERENCE TO MORT&H SPECIFICATION
RM	RUNNING METER
RR	ROAD ROLLER
RS	RUPEES
SMA	STONE MATRIX ASPHALT
SL./SR. NO.	SERIAL NUMBER
SQM. KM	SQUARE KILOMETER
SQM/M2	SQUARE METER
T	TONNE
T&P	TOOLS & PLANT
T.KM	TONNE KILOMETER
TM	TRANSIT MIXTURE
TPH	TONNE PER HOUR
WBM	WATER BOUND MACADAM
WMM	WET MIX MACADAM

Note:i). The all abbreviations signify both singular as well as plural number.

ii) The all abbreviations signify both small letter as well as capital letter.



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**PART - A**  
**ROAD WORKS**

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## A. ROAD WORKS

### BASIC APPROACH AND GENERAL CONDITIONS FOR THE PREPARATION OF STANDARD DATA BOOK 2019

The basic approach for the preparation of Standard Data Book for Road Works is indicated as under :

#### **Description of items**

- 1 The description of items are given briefly and linked with the relevant clauses of the MoRT&H Specification for Road and Bridge Works, which may be referred for detailed description, provisions and interpretations.

- 2 **Mechanical Means**

Due to intensive mechanization with higher size/capacity of machines in construction work, rate analysis for various items has been prepared using mechanical means. However, manual inputs have been enhanced for certain cases, where areas may be inaccessible for large size machines or quantum of work may not be large enough to justify use of large machines.

- 3 **Overhead Charges**

The overhead charges include the following elements :

- i Site office & accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii Office furniture, equipment and communications
- iii Expenditure on
  - Corporate office of contractor
  - Site supervision
  - Documentation and "as built" drawings
- iv Mobilisation/de-mobilisation of resources
- v Labour camps with basic amenities and transportation to work sites
- vi Light vehicles for site supervision including administrative and managerial requirements
- vii Laboratory equipment and quality control including field and laboratory testing
- viii Minor T&P and survey instruments and setting out works, including verification of line, dimensions, trial pits and bore holes, where required
- ix Temporary Diversion with Safety measures
- x Watch and ward
- xi Traffic management & Safety during construction

- xii Expenditure on 'safeguarding environment
- xiii Sundries
- xiv Financing Expenditure
- xv Insurance/compensation

3.1 Overhead Charges are considered depending upon the size of the projects as under :

- |  |            |
|--|------------|
| (i) Civil Works Cost upto Rs. 200 crores           | 12 percent |
| (ii) Civil Works Cost > 200 Crore and ≤ 500 Crores | 10 percent |
| (iii) Civil Works Cost > 500 crores                | 08 percent |

Civil works cost is excluding GST.

**4 Contractor Profit :** 10 percent of cost of works  
Contractor profit is added on total cost i.e. after adding overhead charges.

**5 Basic Inputs**

Basic inputs are only given in the standard data book. The rates for material and labour have to be updated by concerned State/UT govt. officials like E-in-C, CE (NH), State PWDs.

**6 Plants and Equipment**

- 6.1 A dozer is proposed for excavation where cutting and filling for the roadway is within 100m. For longer leads, a combination of hydraulic excavator and tipper is proposed.
- 6.2 Keeping in view, the managerial factor and the age factor of machines as per their utilization in various project sizes, the output of plant & equipment has been considered, however the output of plants is considered approximately 75 percent of the rated capacity given by manufacturer under ideal conditions.
- 6.3 The water tanker speed @ 20 km/hr, return speed @ 30 km/hr. spreading speed @ 2.5 km/hr. in soil & 3.00 km/hr. in granular material is considered for analysis. Water charges have not been included for items where the requirement is very nominal. It is assumed that the same would be covered under sundries.
- 6.4 Output of plant/equipment is considered for the compacted quantities.
- 6.5 The usage charge for machines include ownership charge which includes depreciation, interest charge, Insurance, road tax, cost of repair and maintenance including replacement of Tyres and running and operation charges which includes crew, fuel and lubricants.



**7 Materials**

- 7.1 Quantities of material considered in the rate analysis are approximate for the purpose of estimation and includes normal wastage. Actual consumption would have to be based on mix design.
- 7.2 The rates of material should include basis cost (including royalty) at locations of quarry/stone crushers, loading, unloading, cost of carriage and stacking at plant/sites as the case may be.
- 7.3 The alternative proposal for crushing own aggregate by installing crusher should be compared with procurement of crushed aggregates from the market and proposal found economical may be adopted.
- 7.4 The specifications of materials shall be governed by section 1000 of MORT&H Specifications for Road and Bridge Works.
- 7.5 Material rates are excluding GST.

## **8 Labour**

- 8.1 The labour wages should be as per rates fixed by state government.
- 8.2 One mate has been provided for 25 labours.
- 8.3 Highly Skilled labour include mason (1st class), carpenter, Blacksmith (1<sup>st</sup> class)/Welder/Plumber/Electrician, (1<sup>st</sup> class), mechanics and other trades.

## **9 Carriage of Materials**

- 9.1 The unit for carriage has been taken as under :
  - a) In hours where lead is defined including time required for loading and unloading
  - b) In tonne Km where lead is variable. The loading and Unloading for such cases have been provided separately.
- 9.2 Where the quantity of material to be transported is small such as dismantled material, which requires being loaded manually, provision of tractor-trolley has been made instead of tipper.

## **10 General :**

- 10.1 The clause numbers refer to MoRT&H Specifications for Road and Bridge works.
- 10.2 Assumptions made have been indicated in respective chapters in the form of notes, where required.
- 10.3 Sundries to cater for unforeseen contingency and miscellaneous items have been added in the overhead charges.
- 10.4 Arrangement for traffic during construction shall be as per Clause 112 of MoRT&H Specifications for Road and Bridge Works.
- 10.5 The supply of materials will be taken either at the location of mixing plant or at the work site as the case may be.





- 10.6 Contractor will make his own arrangements for borrowing earth. However, compensation for earth taken from private land has been included in the rate analysis for construction of embankment with borrowed earth
- 10.7 The requirement of machinery has been worked out assuming effective working period of 6 hour per shift of 8 hours.
- 10.8 **Credit for Dismantled Material**  
The dismantled materials should be examined and a realistic assessment made for the credit to such materials, which can be utilized for works or auctioned.
- 10.09 In rate analysis of some items, the quantities of sub-items involved in that analyses like excavation for foundation, foundation concrete, painting, lettering etc. have been given. The rates for such items may be taken from relevant chapters where the same have already been analyzed.
- 10.10 The source of material and samples are required to be approved by the Engineer before start of any work.
- 10.11 The rates of items include cost of testing of soil, materials and works.
- 10.12 The use of surface by construction vehicles shall be governed by Clause 119 of MoRT&H Specifications.
- 10.13 The Contractor shall arrange to provide and maintain an adequate equipped field laboratory as per Clause 120.
- 10.14 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.



**CHAPTER - 01**  
**CARRIAGE OF MATERIALS**



## CHAPTER-1

### CARRIAGE OF MATERIALS

#### PREAMBLES :

- 1 Analysis for loading has been done both for manual and mechanical means for adoption as per actual situations.
- 2 The provision of tipper has been made in hours where lead is known (like disposal of the materials upto 1 km). In case where lead is variable like carriage of hot mix or concrete mix from plants or earth from borrows areas, provision has been made in terms of tone-kilometer (tonne-km), which can be adopted as per actual conditions.
- 3 The cost of carriage will vary depending upon riding surface of the road. Provision has accordingly been made considering surface road, unsurfaced gravelled road and kutchra track.
  - i) The speed of loaded vehicle on black top surface road is considered as 25 kmph and empty vehicle is considered as 35 kmph.
  - ii) The speed of loaded vehicle on gravelled surface road is considered as 20 kmph and empty vehicle speed is considered as 30 kmph.
  - iii) The speed of loaded vehicle on kutchra road is considered as 10 kmph and empty vehicle speed is considered as 15 kmph and in hilly area speed of loaded vehicle on kutchra road is considered as 5 kmph and empty vehicle speed is considered as 7 kmph.
  - iv) The speed of loaded Transit Mixture is considered as 20 kmph and empty Transit Mixture speed is considered as 30 kmph.
- 4 Provision has been made for a tractor trolley instead of tipper where dismantled material or material having more volume as compared with weight are required to be transported. This arrangement is more economical.
- 5 Where loading is done by mechanical plant like HMP or batching plant and there is automatic loading in tippers, provision of loading and un-loading time has been taken by the tipper for getting loaded at the plant and un-loading in the paver or otherwise at site.
- 6 Aggregate shall be crushed at contractor's own crushing plant.





**Summary of Rate Analysis**

**CHAPTER 1  
CARRIAGE OF MATERIALS**

Sl.No	Ref. to M	Description	Unit	Rate as per Project Category.		
				Large	Medium	Small
1.01	A	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Tipper-5.5cum capacity)</b> Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip	cum	134.20	136.70	139.20
1.01	B	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Tipper-10.00 cum capacity)</b> Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip	cum	119.00	121.20	123.40
1.01	C.	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Tipper-14.00 cum capacity)</b> Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip	cum	85.50	87.10	88.70
1.01	D	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum. (Tipper-18.00 cum capacity)</b> Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip	cum	87.20	88.80	90.50
1.02	Ref.to M.	<b>Loading and Unloading of Boulders by Manual Means . (Tipper-10 cum capacity.)</b>	cum	341.00	347.30	353.60
1.03	Ref.to M.	<b>Loading and Unloading of Cement or Steel by Manual Means and Stacking. (Truck- 10 Tonne capacity.)</b>	tonne	499.90	509.20	518.40
1.04	(i) A	<b>Cost of Haulage Excluding Loading and Unloading</b>				
		<b>i) A.Case-I : Surfaced Road.</b>				
		Haulage of materials by tipper (10 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	11.20	11.40	11.60
	B	<b>i) Case-I : Surfaced Road .</b>				
		Haulage of materials by tipper (18 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	8.10	8.20	8.40
	C	<b>Case-I : Surfaced Road .</b>				
		Haulage of materials by tipper (25 tonne capacity) excluding cost of loading, unloading and stacking.	t.km	6.50	6.60	6.80
	D	<b>Case-I : Surfaced Road .</b>				
		Haulage of materials by tipper (32 tonne capacity ) excluding cost of loading, unloading and stacking.	t.km	5.70	5.80	5.90
1.04	(ii) A	<b>Case-II : Unsurfaced Gravelled Road .</b>				
		Haulage of materials by tipper(10 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	13.60	13.80	14.10



**Summary of Rate Analysis  
CARRIAGE OF MATERIALS**

Sl. No	Ref. to M	Description	Unit	Rate as per Project Category.		
				Large	Medium	Small
1.04	(ii) B	<b>Case-II : Unsurfaced Gravelled Road .</b>				
		Haulage of materials by tipper (18 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	9.80	10.00	10.20
1.04	(ii) C	<b>Case-II : Unsurfaced Gravelled Road .</b>				
		Haulage of materials by tipper (25 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	7.90	8.10	8.20
1.04	(ii) D	<b>Case-II : Unsurfaced Gravelled Road.</b>				
		Haulage of materials by tipper(32 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	6.90	7.10	7.20
1.04	(iii) A	<b>Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>				
		Haulage of materials by tipper(10 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	27.20	27.70	28.20
1.04	(iii) B	<b>.Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>				
		Haulage of materials by tipper (18 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	19.60	20.00	20.40
1.04	(iii) C	<b>Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>				
		Haulage of materials by tipper(25 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	15.80	16.10	16.40
1.04	(iii) D	<b>Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>				
		Haulage of materials by tipper(32 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	13.90	14.10	14.40
1.04	(iv)	<b>Case-IV : Katcha Track in hilly area.</b>				
		Haulage of materials by tipper (10 tonne capacity) excluding cost of loading, unloading and stacking.	t.km.	55.80	56.90	57.90
1.04	(v)	<b>Case-V : Transit Mixture</b>				
		Haulage of Concrete by Transit mixture (6.cum capacity) excluding cost of loading, unloading and stacking.	t.km.	12.30	12.50	12.70
1.05		<b>Hand Broken Stone Aggregates 63 mm nominal size</b>				
		Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed	cum	1450.50	1477.40	1504.30
1.06		<b>Crushing of stone aggregates (Nominal size)</b>				
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of different nominal size.				
	(i)	<b>1. Crushing Pattern 40 mm (tonne)- Cost Distribution 28.98 %</b>	cum	1359.40	1384.60	1409.70



Summary of Rate Analysis  
**CARRIAGE OF MATERIALS**

Sl. No	Ref. to M	Description	Unit	Rate as per Project Category.		
				Large	Medium	Small
	(ii)	Crushing of stone aggregates (Nominal size)				
		<b>2. Crushing Pattern 20 mm (tonne)- Cost Distribution 31.95</b>	cum	1479.80	1507.20	1534.60
	(iii)	Crushing of stone aggregates (Nominal size)				
		<b>3. Crushing Pattern 10 mm (tonne)- Cost Distribution 30.75</b>	cum	1266.70	1290.20	1313.60
	(iv)	Crushing of stone aggregates (Nominal size)				
		<b>4. Crushing Pattern dust (tonne)- Cost Distribution 08.32 %</b>	cum	311.80	317.50	323.30
<b>1.07</b>		<b>Crushing of stone aggregates (GSB Crusher Run)</b>				
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain crusher run (all in aggregate) for GSB.	cum	848.90	864.60	880.30







Analysis of Rates

CHAPTER 1  
CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
1.01 A		Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		A. Taking output = 5.5 Cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 1 cum bucket capacity	Min	6.633	6.633	6.633					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	13.633	13.633	13.633					
		a) Machinery									
		Tipper-5.5 Cum capacity	Hour	0.227	0.227	0.227	1,371.00	311.22	311.22	311.22	PM6004
		Front end -loader 1 cum bucket capacity	Hour	0.227	0.227	0.227	1,366.00	310.08	310.08	310.08	PM5003
		<b>Total Cost Excluding OH &amp; CP</b>						621.30	621.30	621.30	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		49.70	62.13	74.56	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		67.10	68.34	69.59	
		Total Cost for 5.5 cum = (a+b+c) Including OH & CP						738.10	751.77	765.44	
		<b>Unit Cost= (a+b+c)/5.5 Including OH &amp; CP</b>						134.20	136.69	139.17	
		Note : <b>Unloading will be by tipping.</b>					<b>Say</b>	<b>134.20</b>	<b>136.70</b>	<b>139.20</b>	
1.01 B		<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.</b>									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 10.00 cum									
		<b>Time required for</b>									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 1 cum bucket capacity	Min	12.060	12.060	12.060					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	19.060	19.060	19.060					
		a) Machinery									
		Tipper-10 Cum capacity	Hour	0.318	0.318	0.318	1,785.00	567.63	567.63	567.63	PM6003
		Front end-loader 1 cum bucket capacity	Hour	0.318	0.318	0.318	1,366.00	434.39	434.39	434.39	PM5003
		<b>Total Cost Excluding OH &amp; CP</b>						1002.02	1002.02	1002.02	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		80.16	100.20	120.24	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		108.22	110.22	112.23	
		Total Cost for 10 cum = (a+b+c)Including OH & CP						1190.40	1212.44	1234.49	
		<b>Unit Cost= (a+b+c)/10 Including OH &amp; CP</b>						119.04	121.24	123.45	
		Note : Unloading will be by tipping.					Say	119.00	121.20	123.40	
1.01	C.	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.</b>									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 14.00 cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 2.1 cum bucket capacity	Min	8.029	8.029	8.029					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	15.029	15.029	15.029					
		a) Machinery									
		Tipper-14 Cum capacity	Hour	0.250	0.250	0.250	1998.00	499.50	499.50	499.50	PM6002

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Front End loader 2.1 cum bucket capacity	Hour	0.250	0.250	0.250	2033.00	508.25	508.25	508.25	PM5002
		<b>Total Cost Excluding OH &amp; CP</b>						1007.75	1007.75	1007.75	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		80.62	100.78	120.93	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		108.84	110.85	112.87	
		Total Cost for 14 cum = (a+b+c)Including OH & CP						1197.21	1219.38	1241.55	
		<b>Unit Cost= (a+b+c)/14 Including OH &amp; CP</b>						85.51	87.10	88.68	
		Note : Unloading will be by tipping.					Say	85.50	87.10	88.70	
1.01	D	<b>Loading and unloading of stone boulder / stone aggregates / sand / kanker / moorum.</b>									
		Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip									
		Unit = cum									
		Taking Output = 18.00 cum									
		<b>Time required for</b>									
		i) Positioning of tipper at loading point	Min	1.000	1.000	1.000					
		ii) Loading by front end loader 3.1 cum bucket capacity	Min	6.996	6.996	6.996					
		iii) Maneuvering, reversing, dumping and turning for return	Min	2.000	2.000	2.000					
		iv) Waiting time, unforeseen contingencies etc	Min	4.000	4.000	4.000					
		Total	Min	13.996	13.996	13.996					
		a) Machinery									
		Tipper-18 Cum capacity.	Hour	0.233	0.233	0.233	2,239.0	521.7	521.7	521.7	PM6001
		Front End loader 3.1 cum bucket capacity	Hour	0.233	0.233	0.233	3,433.0	799.9	799.9	799.9	PM5001
		<b>Total Cost Excluding OH &amp; CP</b>						1,321.6	1,321.6	1,321.6	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		105.7	132.2	158.6	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		142.7	145.4	148.0	
		Total Cost for 18 cum = (a+b+c)Including OH & CP						1,570.0	1,599.1	1,628.2	
		<b>Unit Cost= (a+b+c)/18 Including OH &amp; CP</b>						87.2	88.8	90.5	
		Note : Unloading will be by tipping.					Say	87.2	88.8	90.5	

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
1.02	Ref.to M.	<b>Loading and Unloading of Boulders by Manual Means</b>									
		Unit = cum									
		Taking output = 10 Cum									
		a) Labour									
		Mate / Supervisor	day	0.055	0.055	0.055	325.00	17.88	17.88	17.88	L-12
		Mazdoor for loading and unloading.	day	1.364	1.364	1.364	306.00	417.38	417.38	417.38	L-13
		b) Machinery									
		Tipper-10 Cum capacity	Hour	1.364	1.364	1.364	1,785.00	2434.74	2434.74	2434.74	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						2870.00	2870.00	2870.00	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		229.60	287.00	344.40	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		309.96	315.70	321.44	
		Total Cost for 10 cum=(a+b+c+d)Including OH & CP						3409.56	3472.70	3535.84	
		<b>Unit Cost=(a+b+c+d)/10 Including OH &amp; CP</b>						340.96	347.27	353.58	
		<b>Note : Unloading will be by tipping.</b>					<b>Say</b>	<b>341.00</b>	<b>347.30</b>	<b>353.60</b>	
1.03	Ref.to M.	<b>Loading and Unloading of Cement or Steel by Manual Means and Stacking.</b>									
		Unit = tonne									
		Taking Output = 18.00 tonne									
		a) Labour									
		Mate	day	0.144	0.144	0.144	325.00	46.80	46.80	46.80	L-12
		Mazdoor	day	3.600	3.600	3.600	306.00	1101.60	1101.60	1101.60	L-13
		b) Machinery									
		Truck-18 tonne capacity.	Hour	3.600	3.600	3.600	1785.00	6426.00	6426.00	6426.00	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						7574.40	7574.40	7574.40	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		605.95	757.44	908.93	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		818.04	833.18	848.33	
		Total Cost for 18 tonnes=(a+b+c+d)Including OH & CP						8998.39	9165.02	9331.66	
		<b>Unit Cost=(a+b+c+d)/18 Including OH &amp; CP</b>						499.91	509.17	518.43	
							<b>Say</b>	<b>499.90</b>	<b>509.20</b>	<b>518.40</b>	

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
1.04	(i) A	<b>Cost of Haulage Excluding Loading and Unloading</b>									
		<b>i) A. Case-I : Surfaced Road.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load and lead 10 km=100. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1,371.0	548.4	548.4	548.4	PM6004
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1,371.0	392.1	392.1	392.1	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						940.51	940.51	940.51	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		75.24	94.05	112.86	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		101.57	103.46	105.34	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						1117.32	1138.01	1158.70	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						11.17	11.38	11.59	
							<b>Say</b>	<b>11.20</b>	<b>11.40</b>	<b>11.60</b>	
		<b>Cost of Haulage Excluding Loading and Unloading</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		<b>i) Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output =18tonnes load and lead10 km=180. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) Tipper 18 tonne capacity.									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1785.00	714.00	714.00	714.00	PM6003
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1785.00	510.51	510.51	510.51	PM6003
		Total Cost Excluding OH & CP						1224.51	1224.51	1224.51	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		97.96	122.45	146.94	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		132.25	134.70	137.15	
		Total Cost for 180 t.km = (a+b+c) Including OH & CP						1454.72	1481.66	1508.60	
		<b>Rate per t.km= (a+b+c)/180 Including OH &amp; CP</b>						8.08	8.23	8.38	
							<b>Say</b>	<b>8.10</b>	<b>8.20</b>	<b>8.40</b>	
	<b>C</b>	<b>Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output = 25 tonne load and lead 10km=250.t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 25 tonnes capacity									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	1998.00	799.20	799.20	799.20	PM6002
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	1998.00	571.43	571.43	571.43	PM6002
		Total Cost Excluding OH & CP						1370.63	1370.63	1370.63	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		109.65	137.06	164.48	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		148.03	150.77	153.51	
		Total Cost for 250 t.km = (a+b+c) Including OH & CP						1628.31	1658.46	1688.61	
		<b>Rate per t.km= (a+b+c)/250 Including OH &amp; CP</b>						6.51	6.63	6.75	
							<b>Say</b>	<b>6.50</b>	<b>6.60</b>	<b>6.80</b>	
	<b>D</b>	<b>Case-I : Surfaced Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									



Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Unit = t.km									
		Taking Output =32tonnes load and lead10km= 320. t.km									
		Speed with load : 25 km / hour.									
		Speed while Returning empty : 35 km / hour.									
		a) Machinery									
		i) Tipper 32 tonne capacity									
		Time taken for onward haulage with load.	Hour	0.400	0.400	0.400	2239.00	895.60	895.60	895.60	PM6001
		Time taken for empty return trip.	Hour	0.286	0.286	0.286	2239.00	640.35	640.35	640.35	PM6001
		Total Cost Excluding OH & CP						1535.95	1535.95	1535.95	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		122.88	153.60	184.31	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		165.88	168.95	172.03	
		Total Cost for 320 t.km = (a+b+c)Including OH & CP						1824.71	1858.50	1892.30	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>						5.70	5.81	5.91	
							<b>Say</b>	<b>5.70</b>	<b>5.80</b>	<b>5.90</b>	
1.04	(ii) A	<b>.Case-II : Unsurfaced Gravelled Road .</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load & lead 10 km= 100 t.km									
		Speed with load: 20 km/hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 10 tonnes capacity									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1371.00	685.50	685.50	685.50	PM6004
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1371.00	456.54	456.54	456.54	PM6004
		Total Cost Excluding OH & CP						1142.04	1142.04	1142.04	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		91.36	114.20	137.05	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		123.34	125.62	127.91	
		Total Cost for 100 t.km = (a+b+c)Including OH & CP						1356.75	1381.87	1407.00	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						13.57	13.82	14.07	



Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
1.04	(ii) B	<b>Case-II : Unsurfaced Gravelled Road .</b> Haulage of materials by tipper excluding cost of loading, unloading and stacking. Unit = t.km					Say	13.60	13.80	14.10	
		Taking Output 18 tonnes load & lead 10 km = 180.t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 18 tonnes capacity									
		Time taken for onward haulage with load.	Hour	0.500	0.500	0.500	1785.00	892.50	892.50	892.50	PM6003
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1785.00	594.41	594.41	594.41	PM6003
		Total Cost Excluding OH & CP						1486.91	1486.91	1486.91	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		118.95	148.69	178.43	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		160.59	163.56	166.53	
		Total Cost for 180 t.km = (a+b+c) Including OH & CP						1766.44	1799.16	1831.87	
		<b>Rate per t.km= (a+b+c)/180 including OH &amp; CP</b>						9.81	10.00	10.18	
							Say	<b>9.80</b>	<b>10.00</b>	<b>10.20</b>	
1.04	(ii) C	<b>Case-II : Unsurfaced Gravelled Road .</b> Haulage of materials by tipper excluding cost of loading, unloading and stacking. Unit = t.km									
		Taking Output 25 tonnes load & lead 10 km = 250. t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		Tipper 25 tonnes capacity.									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1998.00	999.00	999.00	999.00	PM6002
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1998.00	665.33	665.33	665.33	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>						1664.33	1664.33	1664.33	

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		133.15	166.43	199.72	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		179.75	183.08	186.41	
		Total Cost for 250 t.km = (a+b+c) Including OH & CP						1977.23	2013.84	2050.46	
		<b>Rate per t.km= (a+b+c)/250 Including OH &amp; CP</b>					<b>Say</b>	7.91	8.06	8.20	
								<b>7.90</b>	<b>8.10</b>	<b>8.20</b>	
1.04	(ii) D	<b>Case-II : Unsurfaced Gravelled Road.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 32tonnes load & lead 10 km= 320. t.km									
		Speed with load : 20 km / hour									
		Speed for empty return trip : 30 km / hour									
		a) Machinery									
		i) Tipper 32 tonnes capacity									
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	2239.00	1119.50	1119.50	1119.50	PM6001
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	2239.00	745.59	745.59	745.59	PM6001
		<b>Total Cost Excluding OH &amp; CP</b>						1865.09	1865.09	1865.09	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		149.21	186.51	223.81	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		201.43	205.16	208.89	
		Total Cost for 320 t.km = (a+b+c) Including OH & CP						2215.72	2256.76	2297.79	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>					<b>Say</b>	6.92	7.05	7.18	
								<b>6.90</b>	<b>7.10</b>	<b>7.20</b>	
1.04	(iii) A	<b>Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.</b>									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking									
		Unit = t.km									
		Taking Output 10 tonnes load & lead 10km= 100 t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1371.00	1371.00	1371.00	1371.00	PM6004
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1371.00	914.46	914.46	914.46	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						2285.46	2285.46	2285.46	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		182.84	228.55	274.25	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		246.83	251.40	255.97	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						2715.12	2765.40	2815.68	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						27.15	27.65	28.16	
							<b>Say</b>	<b>27.20</b>	<b>27.70</b>	<b>28.20</b>	
1.04	(iii) B	Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 18 tonnes load & lead 10km=180.00 t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		Tipper 18 tonnes capacity									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1785.00	1785.00	1785.00	1785.00	PM6003
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1785.00	1190.60	1190.60	1190.60	PM6003
		<b>Total Cost Excluding OH &amp; CP</b>						2975.60	2975.60	2975.60	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		238.05	297.56	357.07	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		321.36	327.32	333.27	
		Total Cost for 180 t.km = (a+b+c) Including OH & CP						3535.01	3600.47	3665.93	
		<b>Rate per t.km= (a+b+c)/180 Including OH &amp; CP</b>						19.64	20.00	20.37	
							<b>Say</b>	<b>19.60</b>	<b>20.00</b>	<b>20.40</b>	
1.04	(iii) C	Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Haulage of materials by tipper excluding cost of loading, unloading and stacking. Unit = t.km									
		Taking Output 25 Tonnes load & lead 10 km = 250.t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		i) Tipper 25 tonnes capacity									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	1998.00	1998.00	1998.00	1998.00	PM6002
		Time taken for empty return trip.	Hour	0.667	0.667	0.667	1998.00	1332.67	1332.67	1332.67	PM6002
		<b>Total Cost Excluding OH &amp; CP</b>						3330.67	3330.67	3330.67	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		266.45	333.07	399.68	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		359.71	366.37	373.03	
		Total Cost for 250 t.km = (a+b+c) including OH & CP						3956.83	4030.11	4103.38	
		<b>Rate per t.km = (a+b+c)/250 Including OH &amp; CP</b>						15.83	16.12	16.41	
							<b>Say</b>	<b>15.80</b>	<b>16.10</b>	<b>16.40</b>	
1.04	(iii) D	Case-III : Katcha Track and Track in river bed / nallah bed and choe bed.									
		Haulage of materials by tipper excluding cost of loading, unloading and stacking. Unit = t.km									
		Taking Output 32 tonnes load & lead 10 km = 320. t.km									
		Speed with load: 10 km / hour									
		Speed while returning empty: 15 km / hour									
		a) Machinery									
		i) Tipper 32 tonnes capacity									
		Time taken for onward haulage	Hour	1.000	1.000	1.000	2239.00	2239.00	2239.00	2239.00	PM6001
		Time taken for empty return trip	Hour	0.667	0.667	0.667	2239.00	1493.41	1493.41	1493.41	PM6001
		<b>Total Cost Excluding OH &amp; CP</b>						3732.41	3732.41	3732.41	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		298.59	373.24	447.89	

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		c) Contractor's profit on (a+b)						403.10	410.57	418.03	
		Total Cost for 320 t.km = (a+b+c) Including OH & CP						4434.11	4516.22	4598.33	
		<b>Rate per t.km= (a+b+c)/320 Including OH &amp; CP</b>						13.86	14.11	14.37	
1.04	(iv)	<b>Case-IV : Katcha Track in hilly area.</b>					<b>Say</b>	<b>13.90</b>	<b>14.10</b>	<b>14.40</b>	
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 10 tonnes load & lead 10km= 100. t.km									
		Speed with load: 5 km / hour									
		Speed while returning empty: 7 km / hour									
		a) Machinery									
		i) Tipper 10 tonnes capacity.									
		Time taken for onward haulage	Hour	2.000	2.000	2.000	1371.00	2742.00	2742.00	2742.00	PM6004
		Time taken for empty return trip.	Hour	1.429	1.429	1.429	1371.00	1959.16	1959.16	1959.16	PM6004
		<b>Total Cost Excluding OH &amp; CP</b>						4701.16	4701.16	4701.16	
		b) Overheads on (a)						376.09	470.12	564.14	
		c) Contractor's profit on (a+b)						507.73	517.13	526.53	
		Total Cost for 100 t.km = (a+b+c) Including OH & CP						5584.98	5688.40	5791.83	
		<b>Rate per t.km= (a+b+c)/100 Including OH &amp; CP</b>						55.85	56.88	57.92	
1.04	(v)	<b>Case-V : Transit Mixture</b>					<b>Say</b>	<b>55.80</b>	<b>56.90</b>	<b>57.90</b>	
		Haulage of Concrete by Transit mixture excluding cost of loading, unloading and stacking.									
		Unit = t.km									
		Taking Output 15Tonnes load & lead 10km= 150 t.km									
		Speed with load : 20 km / hour									
		Speed while returning empty: 30 km / hour									
		a) Machinery									
		i) Transit Mixture 6 cum capacity.									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Time taken for onward haulage with load	Hour	0.500	0.500	0.500	1860.00	930.00	930.00	930.00	PM34001
		Time taken for empty return trip.	Hour	0.333	0.333	0.333	1860.00	619.38	619.38	619.38	PM34001
		<b>Total Cost Excluding OH &amp; CP</b>						1549.38	1549.38	1549.38	
		b) Overheads on (a)		(@ 8%)	(@ 10%)	(@ 12%)		123.95	154.94	185.93	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		167.33	170.43	173.53	
		Total Cost for 150 t.km = (a+b+c) including OH & CP						1840.66	1874.75	1908.84	
		<b>Rate per t.km= (a+b+c)/150 including OH &amp; CP</b>					12.27	12.50	12.73		
							<b>Say</b>	<b>12.30</b>	<b>12.50</b>	<b>12.70</b>	
1.05		<b>Hand Broken Stone Aggregates 63 mm nominal size</b>									
		Supply of quarried stone, hand breaking into coarse aggregate 63 mm nominal size (passing 80 mm and retained on 50 mm sieve) and stacking as directed									
		Unit = cum									
		Taking Output = 1.00 cum									
		a) Labour									
		Mate	day	0.0600	0.0600	0.0600	325.00	19.50	19.50	19.50	L-12
		Mazdoor	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		b) Material									
		Supply of quarried stone 150 - 200 mm size	cum	1.1000	1.1000	1.1000	675.00	742.50	742.50	742.50	M-002
		<b>Total Cost Excluding OH &amp; CP</b>						1221.00	1221.00	1221.00	
		c) Overheads on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		97.68	122.10	146.52	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		131.87	134.31	136.75	
		Total Cost for 1 cum = (a+b+c+d) including OH & CP						1450.55	1477.41	1504.27	
		<b>Rate per cum= (a+b+c+d) including OH &amp; CP</b>						1450.55	1477.41	1504.27	
							<b>Say</b>	<b>1450.50</b>	<b>1477.40</b>	<b>1504.30</b>	
1.06		<b>Crushing of stone aggregates (Nominal size)</b>									

Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of different nominal size.									
	(i)	<b>1.Crushing Pattern 40 mm (tonne)- Cost Distribution</b>									
		28.98 %									
		Unit = cum									
		Taking Output = 750.00 cum									
		a) Labour									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor(Skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		b) Material									
		Stone Boulder of size 150 mm and below .	cum	750.000	750.000	750.000	675.00	506250.00	506250.00	506250.00	M-001
		c) Machinery									
		Integrated stone crusher of 250 TPH including belt conveyor and vibrating screens	Hour	6.000	6.000	6.000	13481.00	80886.00	80886.00	80886.00	PM16001
		Generator 725 KVA	Hour	6.000	6.000	6.000	7759.00	46554.00	46554.00	46554.00	PM22001
		Front end loader 3.1 cum bucket capacity at quarry and crusher	Hour	5.515	5.515	5.515	3433.00	18933.00	18933.00	18933.00	PM5001
		Tipper 14 cum capacity for loading at quarry site	Hour	5.515	5.515	5.515	1998.00	11018.97	11018.97	11018.97	PM6002
		Tipper 14 cum capacity for transportation within 1 km	t.km	1,125.000	1,125.000	1,125.000	5.48	6165.00	6165.00	6165.00	PM73001
		<b>d) Total Cost for 750 cum(a+b+c) (Excluding OH &amp; CP)</b>						672522.97	672522.97	672522.97	
		<b>e) Crushing pattern 40mm(tonne)</b>	tonne	22.71%	22.71%	22.71%	255.49				
		<b>f) % Cost distribution=(d)x(f)/e)x1.5}</b>	cum	28.98%	28.98%	28.98%	0.29	1144.26	1144.26	1144.26	
		Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		91.54	114.43	137.31	
		Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		123.58	125.87	128.16	
		Total Cost for 1cum = (f+g+h) Including OH & CP						1359.39	1384.56	1409.73	
		<b>Rate per cum= (f+g+h) Including OH &amp; CP</b>						1359.39	1384.56	1409.73	
							<b>Say</b>	<b>1359.40</b>	<b>1384.60</b>	<b>1409.70</b>	



Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	(ii)	Crushing of stone aggregates (Nominal size)									
		2.Crushing Pattern 20 mm (tonne)- Cost Distribution 31.95 %									
		<b>d) Total Cost for 750 cum(Excluding OH &amp; CP)</b>									
		e) Crushing pattern 20mm(tonne)	tonne	23.00%	23.00%	23.00%	258.75				672522.97
		f) % Cost distribution= $\{(d) \times (f) / e\} \times 1.5$	cum	31.95%	31.95%	31.95%	0.32	1245.63	1245.63	1245.63	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		99.65	124.56	149.48	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		134.53	137.02	139.51	
		i) Total Cost for 1 cum = (f+g+h)Including OH & CP						1479.81	1507.21	1534.62	
		<b>Rate per cum= (f+g+h) Including OH &amp; CP</b>					<b>Say</b>	<b>1479.80</b>	<b>1507.20</b>	<b>1534.60</b>	
	(iii)	Crushing of stone aggregates (Nominal size)									
		3.Crushing Pattern 10 mm (tonne)- Cost Distribution 30.75 %									
		<b>d) Total Cost for 750 cum(Excluding OH &amp; CP)</b>									
		e) Crushing pattern 10 mm(tonne)	tonne	25.86%	25.86%	25.86%	290.9250				672522.97
		f) % Cost distribution= $\{(d) \times (f) / e\} \times 1.5$	cum	30.75%	30.75%	30.75%	0.3075	1066.26	1066.26	1066.26	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		85.30	106.63	127.95	
		h) Contractor's profit on (f+g)		(@ 10%)	(@ 10%)	(@ 10%)		115.16	117.29	119.42	
		i) Total Cost for 1 cum = (f+g+h)Including OH & CP						1266.71	1290.17	1313.63	
		<b>Rate per cum= (f+g+h) Including OH &amp; CP</b>						<b>1266.70</b>	<b>1290.20</b>	<b>1313.60</b>	
	(iv)	Crushing of stone aggregates (Nominal size)									
		4 Crushing Pattern dust (tonne)- Cost Distribution 08.32 %									
		<b>d) Total Cost for 750 cum(Excluding OH &amp; CP)</b>									
		e) Crushing pattern dust (tonne)	tonne	28.43%	28.43%	28.43%	319.84				672522.97
		f) % Cost distribution= $\{(d) \times (f) / e\} \times 1.5$	cum	8.32%	8.32%	8.32%	0.08	262.42	262.42	262.42	
		g) Overheads on (f)		(@ 8%)	(@ 10%)	(@ 12%)		20.99	26.24	31.49	



Analysis of Rates

CARRIAGE OF MATERIALS

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		h) Contractor's profit on (f+g)						28.34	28.87	29.39	
		i) Total Cost for 1 cum = (f+g+h) Including OH & CP						311.75	317.52	323.30	
		<b>Rate per cum= (f+g+h) Including OH &amp; CP</b>						<b>311.80</b>	<b>317.50</b>	<b>323.30</b>	
<b>1.07</b>		<b>Crushing of stone aggregates (GSB Crusher Run)</b>									
		Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 250 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain crusher run (all in aggregate) for GSB.									
		Unit = cum									
		Taking Output = 750.00 cum									
		a) Labour									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor (Skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		b) Material									
		Stone Boulder of size 150 mm and below	cum	750	750	750	675.00	506250.00	506250.00	506250.00	M-001
		c) Machinery									
		Integrated stone crusher of 250 TPH including belt conveyor and vibrating screens (for producing crusher run production capacity will increase by 30%)	Hour	4.615	4.615	4.615	13481.00	62214.82	62214.82	62214.82	PM16001
		Generator 725 KVA	Hour	4.615	4.615	4.615	7759.00	35807.79	35807.79	35807.79	PM22001
		Front end loader 3.1 cum bucket capacity at quarry and crusher	Hour	5.515	5.515	5.515	3433.00	18933.00	18933.00	18933.00	PM5001
		Tipper 14 cum capacity for loading at quarry site	Hour	5.515	5.515	5.515	1998.00	11018.97	11018.97	11018.97	PM6002
		Tipper 14 cum capacity for transportation within 1 km	t.km	1,125.00	1,125.00	1,125.00	5.48	6165.00	6165.00	6165.00	PM73001
		<b>Total Cost Excluding OH &amp; CP</b>						643105.57	643105.57	643105.57	
		d) Overheadson (a+b+c)									
		e) Contractor's profit on (a+b+c+d)						51448.45	64310.56	77172.67	
		Cost for 900 cum =(a+b+c+d+e)						69455.40	70741.61	72027.82	
								764009.41	778157.73	792306.06	



**CARRIAGE OF MATERIALS**

Sl. No	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate per cum $= (a+b+c+d+e)/900$ (Including OH & CP)					Say	848.90	864.60	880.30	

Note: Considering Crushed volume will be 1.2 times the volume of boulder.

Note:-1. For local transportation , carriage rate will be given as per provision of different Capacity of vehicle in Large/Medium/Small Projects in rate analysis of particular item of any Chapter.

Note:-2. Except Note 1, for transportation/carrriage of Stone Aggregate/Stone Boulder/Moorum/Bitumen/Steel/Cement and Other Construction Materials,Loading-Unloading charges&Haulage charges will be allowed by 18 Cum Capacity tipper(18 tonne Capacity Truck in case of loading-unloading of Cement /Steel / Bitumen by manual means) and 32 tonne Capacity tipper respectively only for all types of Projects(Large/Medium/Small) except in cases / circumstances where any limitation/restriction regarding capacity of Vehicle has been imposed by competent Authority(District/State). In case of restriction, rate of allowed capacity of vehicle will be given.

Note:-3. In case of Loading &Unloading of Boulders by Manual means, loading-unloading charges will be allowed by 10Cum Capacity tipper.

Note:-4. Carriage of material will be done by shortest rout.

Note:-5. Rates of item nos 1.06 and 1.07 will be taken as per approved rate of respective items in schedule M/MORT&H-1





**CHAPTER - 02**  
**SITE CLEARANCE**



## CHAPTER-2

### SITE CLEARANCE

#### PREAMBLES :

- 1 Carriage of dismantled materials, bushes, branches of tree etc. has been catered with a tipper mechanical loading and unloading within a lead of 1000 meter.
- 2 Unless otherwise stated the rates include sorting and disposal of unserviceable material and stacking of serviceable material with all lifts and upto a lead of 1000 meter.
- 3 The Clearing and Grubbing road land has been considered both by manual and mechanical means (by use of Dozer & by use of Motor Grader). The rates include sorting and disposal of unserviceable material and stacking of serviceable material with all lifts and upto a lead of 1000 meter. The estimator can use his discretion depending upon quantum of work and particular site conditions for mechanical means (by using Dozer or by using Motor Grader).
- 4 The dismantling of structures has been considered both by manual and mechanical means. The rates include sorting and disposal of unserviceable material and stacking of serviceable material with all lifts and upto a lead of 1000 meter. The estimator can use his discretion depending upon quantum of work and particular site conditions for mechanical means.
- 5 The rates include T&P and scaffolding required for items of dismantling.
- 6 Where only grass/wild growth is met, item No. 2.02 i.e. clearing grass and removal of rubbish can be applied. As regards wild growth disposal of grass, the same can be disposed.
- 7 The dismantling of structures has been catered both by manual and mechanical means. The estimator can use his discretion depending upon quantum of work and particular site conditions.
- 8 Cutting of rivets has been provided separately.
- 9 Dismantling of Hume pipes has been catered mechanical means as pipes can be easily rolled by men to a suitable stacking place within the right of way.
- 10 For dismantling of structures, which remain submerged in water, the cost may be enhanced by 50 percent.
- 11 Dismantling of utilities is required to be done under the supervision of concerned departments with prior information to the users.
- 12 In certain items of dismantling, like, pipe culverts, utilities, etc., excavation in earth and dismantling of masonry works is not included in this analysis for which suitable notes have been inserted. These items are required to be priced separately based on actual quantities at site and nature of work.



- 13 The dismantled materials should be examined and a realistic assessment and provision made after due process for the credit for such materials, which can be utilized for works or auction.
- 14 In case where lead for disposal is more than 1000m, extra cost of carriage is required to be added based on tonne-kilometrage.
- 15 All minor T&P items required for dismantling are already included in overhead charges.
- 16 Provision has been made for a tractor trolley/10 tonne capacity tipper for transport of utility removal like telephone/electrical poles & lines, water pipe lines, and dismantling materials of sorts or materials having more volume as compared with weight are required to be transported. This arrangement is more economical.
- 17 For dismantling of utility services like water pipe lines, electric and telephone lines, prior intimation should be given to users.



## Summary of Rate Analysis.

**CHAPTER -2**  
**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Rate as per Project Category			
				Large	Medium	Small	
2.01	201	A	<b>Cutting of trees, excluding removal of stumps and roots of trees</b>				
			Cutting of trees stacking of serviceable material with all lifts and up to a lead of 1000 metres.				
		(i)	<b>Girth from 300mm to 600mm</b>	Each	336.10	354.80	384.80
		(ii)	<b>Girth from 600mm to 900mm</b>	Each	477.50	512.00	632.10
		(iii)	<b>Girth from 900mm to 1800mm</b>	Each	898.50	940.90	1068.80
		(iv)	<b>Girth above 1800mm</b>	Each	1752.80	1861.60	2137.50
2.01	201	B	<b>Removal of stumps and roots including backfilling with suitable material to required compaction</b>				
			Removal of stumps, roots, staking of serviceable material with all lifts up to a lead of 1000 metres and earth filling in the depression/ pit.				
		(i)	<b>Girth from 300mm to 600mm</b>	Each	459.20	474.70	524.00
		(ii)	<b>Girth from 600mm to 900mm</b>	Each	614.30	633.00	710.80
		(iii)	Girth from 900mm to 1800mm	Each	738.00	759.50	850.50
		(iv)	<b>Girth above 1800mm</b>	Each	916.70	949.40	1058.50
2.02	201		<b>Clearing Grass and Removal of Rubish</b>				
			Clearing grass and removal of rubbish up to a distance of 50 metres outside the periphery of the area				
			<b>By Manual Means</b>	Hectare	18948.60	19299.50	19650.40
2.03	201		<b>Clearing and Grubbing road land</b>				
			Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, sapling and tress girth upto 300 mm, removal of stumps of tree cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used of auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150mm in thickness.				
		(i)	<b>By Manual means:-</b>				
		A	<b>In area of light jungle</b>	Hectare	148176.40	150920.40	153664.50
		B	<b>In area of thorny jungle</b>	Hectare	167125.00	170219.90	173314.90
		(ii)	<b>By Mechanical means using dozer</b>				
		A	<b>In area of light jungle</b>	Hectare	135587.50	137360.80	186934.80
2.03		B	<b>In area of thorny jungle</b>	Hectare	145350.80	147247.50	199467.90
2.03		(iii)	<b>By Mechanical Means using Motor grader</b>				
		A	<b>In area of light jungle</b>	Hectare	122261.10	126766.90	165822.80
2.03		B	<b>In area of thorny Jungle</b>	Hectare	128787.50	134101.60	173178.50
2.04	202		<b>Dismantling of Structures</b>				



## Summary of Rate Analysis.

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		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) <b>Lime/ Cement concrete</b>				
		I <b>By Manual means</b>				
		A <b>Lime concrete, cement concrete grade M-10 and below</b>	cum	481.90	490.80	499.80
2.04		B <b>Cement concrete Grade M-15 &amp; M-20</b>	cum	557.70	568.00	578.40
2.04		C <b>Prestressed/ Reinforced cement concrete grade M-20 &amp; above</b>	cum	1305.50	1329.70	1353.90
2.04		II <b>By Mechanical means</b>				
		A <b>Cement Concrete Grade M-15 &amp; M-20</b>	cum	724.30	737.30	787.90
2.04		B <b>Prestressed/ Reinforced cement concrete grade M-20 &amp; above</b>	cum	936.20	953.00	1007.60
2.04		(ii) <b>Dismantling Brick/ tile work</b>				
		<b>By Manual means</b>				
		A <b>In lime mortar</b>	cum	305.20	310.90	316.50
2.04		B <b>In cement mortar</b>	cum	381.00	388.10	395.10
2.04		C <b>In Mud mortar</b>	cum	274.90	280.00	285.10
2.04		D <b>Dry brick pitching or brick soling</b>	cum	259.70	264.60	269.40
2.04		(iii) <b>Dismantling stone masonry</b>				
		I <b>By Manual means</b>				
		A <b>rubble stone masonry in lime mortar</b>	cum	335.50	341.80	348.00
2.04		B <b>Rubble stone masonry in cement mortar</b>	cum	381.00	388.10	395.10
2.04		C <b>Rubble stone masonry in mud mortar</b>	cum	305.20	310.90	316.50
2.04		D <b>Dry rubble masonry</b>	cum	290.10	295.40	300.80
2.04		E <b>Dismantling stone pitching/dry stone spalls.</b>	cum	274.90	280.00	285.10
2.04		F <b>Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.</b>	cum	305.20	310.90	316.50
2.04		II <b>By Mechanical means</b>				
		A <b>Dismantling Brick/ Tile work/ rubble masonry/pitching/ etc. by mechanical means</b>	cum	165.90	175.40	223.50
2.04		(iv) <b>Wood work wrought framed and fixed in frames of trusses upto a height of 5m above plinth level</b>	cum	659.20	671.50	683.70
2.04		(v) <b>Steel work in all types of sections upto a height of 5m above plinth level excluding cutting of rivet.</b>				
		A <b>Including dismembering</b>	tonne	1528.20	1556.50	1584.80
2.04		B <b>Excluding dismembering</b>	tonne	1101.40	1121.80	1142.20
2.04		C <b>Extra over item no (v) A and (v)B for cutting rivets</b>	Each	10.80	11.00	11.20
2.04		(vi) <b>Scrapping of bricks dismantled from brick work including stacking</b>				
		A <b>In Lime/Cement mortar</b>	Nos	1.30	1.40	1.40
2.04		B <b>In mud mortar</b>	Nos	0.50	0.50	0.50

## Summary of Rate Analysis.

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
2.04		(vii) <b>Scraping of stone from dismantled stone masonry</b>				
		A <b>In Cement and lime mortar</b>	cum	530.60	540.40	550.20
2.04		B <b>In Mud mortar</b>	cum	113.70	115.80	117.90
2.04		(viii) <b>Scraping plaster in lime or cement mortar from Brick/Stone Masonry</b>	sqm	17.50	17.80	18.10
2.04		(ix) <b>Removing all type of Hume pipes and stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.</b>				
		A <b>Upto 600mm dia</b>	metre	913.30	1030.80	1135.30
		B <b>Above 600mm to 900mm dia</b>	metre	1115.40	1215.90	1305.50
		C <b>Above 900mm</b>	metre	1317.40	1401.00	1646.10
2.05	202	<b>Dismantling of flexible pavements</b>				
		Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately				
		(i) <b>By Manual means</b>				
		A <b>Bituminous courses</b>	cum	693.20	706.10	718.90
2.05		B <b>Granular courses</b>	cum	503.80	513.10	522.40
2.05	202	Dismantling of flexible pavements and disposal of dismantled materials upto a lead of 1000 metres, stacking serviceable and unserviceable materials separately				
		(ii) <b>By Mechanical means</b>				
		A <b>Bituminous courses</b>	cum	402.10	420.50	487.70
		B <b>Granular Courses</b>	cum	51.10	55.50	71.30
2.06	202	<b>Dismantling of cement concrete pavement</b>				
		Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately	cum	607.50	650.50	732.20
2.07	202	<b>Dismantling of guard rails</b>				
		Dismantling of guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately	metre	61.30	62.50	63.60
2.08	202	<b>Dismantling of kerb stone</b>				
		Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres	metre	16.10	16.40	16.70
2.09	202	<b>Dismantling of kerb stone channel</b>				
		Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres	metre	21.20	21.60	22.00

## Summary of Rate Analysis.

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
2.10	202					
		<b>Dismantling of kilometre stone</b>				
		Dismantling of kilometre stone including cutting of earth , foundation and disposal of dismantled material with all lifts and lead up to 1000 metres and back filling of pit				
		A <b>5th KM stone</b>	Each	396.30	403.70	411.00
		B <b>Ordinary KM Stone</b>	Each	264.20	269.10	274.00
		C <b>Hectometre Stone</b>	Each	52.80	53.80	54.80
2.11	202					
		<b>Dismantling of fencing</b>				
		Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled materials with all lifts and up to a lead of 1000 metres stacking serviceable material and unserviceable material separately.	metre	53.00	54.00	54.90
2.12	202					
		<b>Dismantling of CI Water Pipe Line</b>				
		Dismantling of CI Water Pipe Line 600mm dia. Including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department	metre	172.00	175.20	178.40
2.13	202					
		<b>Removal of cement concrete Pipe of sewer Gutter</b>				
		Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.	metre	284.90	290.20	295.40
2.14	202					
		<b>Removal of telephone/ Electric Poles and Lines</b>				
		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	197.40	201.10	204.70

✓

**CHAPTER -2  
SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
2.01	201	<b>A</b> Cutting of trees, excluding removal of stumps and roots of trees									
		Cutting of trees stacking of serviceable material with all lifts and up to a lead of 1000 metres.									
		<b>(i)</b> Girth from 300mm to 600mm									
		Unit=Each									
		Taking output= 40nos.									
		<b>a) Labour</b>									
		Mate	day	0.960	0.960	0.960	325	312.00	312.00	312.00	L-12
		Mazdoors	day	24.000	24.000	24.000	306	7344.00	7344.00	7344.00	L-13
								7656.00	7656.00	7656.00	
		<b>b) Machinery</b>									
		Tipper									
		(i) 18 cum capacity	hour	1.600			2239.000	3582.40			PM6001
		(ii) 14 cum capacity	hour		2.000		1998.000		3996.00		PM6002
		(iii) 10 cum capacity	hour			2.667	1785.000			4760.60	PM6003
		Sundries @1% of labour cost (a)						76.56	76.56	76.56	
		<b>Total cost without (OH&amp;CP)</b>						11314.96	11728.56	12493.16	
		<b>c) Overhead charges on(a+b)</b>						905.20	1172.86	1499.18	
		<b>d) Contractor's profit on (a+b+c)</b>						1222.02	1290.14	1399.23	
		<b>Rate for each tree = (a+b+c+d)/40</b>						336.05	354.79	384.79	
							<b>Say</b>	<b>336.10</b>	<b>354.80</b>	<b>384.80</b>	
		<b>(ii)</b> Girth from 600mm to 900mm									
		Unit= Each									
		Taking output= 30nos									
		<b>a) Labour</b>									
		Mate	day	1.080	1.080	1.080	325.000	351.00	351.00	351.00	L-12
		Mazdoors	day	27.000	27.000	27.000	306.000	8262.00	8262.00	8262.00	L-13
		<b>b) Machinery</b>						8613.00	8613.00	8613.00	
		Tipper									
		(i) 18 cum capacity	hour	1.500			2239.000	3358.50			PM6001
		(ii) 14 cum capacity	hour		2.000		1998.000		3996.00		PM6002

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	hour			3.750	1785.000			6693.75	PM6003
		Sundries @1% of labour cost (a)						86.13	86.13		
		<b>Total cost without (OH&amp;CP)</b>						12057.63	12695.13	15392.88	
		<b>c) Overhead charges on(a+b)</b>				(@ 10%)		964.61	1269.51	1847.15	
		<b>d) Contractor's profit on (a+b+c)</b>				(@ 10%)		1302.22	1396.46	1724.00	
		<b>Rate for each tree = (a+b+c+d)/30</b>					<b>Say</b>	477.48	512.04	632.13	
								<b>477.50</b>	<b>512.00</b>	<b>632.10</b>	
		<b>(iii) Girth from 900mm to 1800mm</b>									
		<b>Unit= Each</b>									
		<b>Taking output= 25nos</b>									
		<b>a) Labour</b>									
		Mate	day	2.000	2.000	2.000	325.000	650.00	650.00	650.00	L-12
		Mazdoors	day	50.000	50.000	50.000	306.000	15300.00	15300.00	15300.00	L-13
								15950.00	15950.00	15950.00	
		<b>b) Machinery</b>									
		<b>Tipper</b>									
		(i) 18 cum capacity	hour	1.250			2239.000	2798.75			PM6001
		(ii) 14 cum capacity	hour		1.667		1998.000		3330.67		PM6002
		(iii) 10 cum capacity	hour			3.125	1785.000			5578.13	PM6003
		Sundries @1% of labour cost (a)						159.50	159.50	159.50	
		<b>Total cost without (OH&amp;CP)</b>						18908.25	19440.17	21687.63	
		<b>c) Overhead charges on(a+b)</b>				(@ 10%)		1512.66	1944.02	2602.52	
		<b>d) Contractor's profit on (a+b+c)</b>				(@ 10%)		2042.09	2138.42	2429.01	
		<b>Rate for each tree = (a+b+c+d)/25</b>						898.52	940.90	1068.77	
							<b>Say</b>	<b>898.50</b>	<b>940.90</b>	<b>1068.80</b>	
		<b>(iv) Girth above 1800mm</b>									
		<b>Unit= Each</b>									
		<b>Taking output= 20nos</b>									
		<b>a) Labour</b>									
		Mate	day	3.200	3.200	3.200	325.000	1040.00	1040.00	1040.00	L-12
		Mazdoors	day	80.000	80.000	80.000	306.000	24480.00	24480.00	24480.00	L-13
								25520.00	25520.00	25520.00	
		<b>b) Machinery</b>									
		<b>Tipper</b>									
		(i) 18 cum capacity	hour	1.667			2239.000	3732.41			PM6001
		(ii) 14 cum capacity	hour		2.500		1998.000		4995.00		PM6002

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref	
				Large	Medium	Small		Large	Medium	Small		
		(iii) 10 cum capacity	hour			5.000	1785.000			8925.00	PM6003	
		Sundries @1% of labour cost (a)						255.20	255.20	255.20		
		<b>Total cost without (OH&amp;CP)</b>						29507.61	30770.20	34700.20		
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2360.61	3077.02	4164.02		
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3186.82	3384.72	3886.42		
		<b>Rate for each tree = (a+b+c+d)/20</b>					<b>Say</b>	1752.75	1861.60	2137.53		
		<b>Note:</b> All the serviceable material resulting from tree cutting would be handed over to the employer. for the all above items.								<b>1752.80</b>	<b>1861.60</b>	<b>2137.50</b>
2.01	201	<b>B Removal of stumps and roots including backfilling with suitable material to required compaction</b>										
		Removal of stumps, roots, staking of serviceable material with all lifts up to a lead of 1000 metres and earth filling in the depression/ pit.										
		<b>(i) Girth from 300mm to 600mm</b>										
		<b>Unit= Each</b>										
		<b>Taking output=40nos.</b>										
		<b>a) Labour</b>										
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12	
		Mazdoors	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13	
		<b>b) Machinery</b>						319.00	319.00	319.00		
		<b>Hydraulic Excavator</b>										
		(i) 1.2 cum bucket capacity	hour	5.000			2703.000	13515.00			PM3003	
		(ii) 1.1 cum bucket capacity	hour		5.500		2432.000		13376.00		PM3004	
		(iii) 0.9 cum bucket capacity	hour			6.500	2202.000			14313.00	PM3005	
		<b>Tipper</b>										
		(i) 18 cum capacity	hour	0.727			2239.000	1627.75			PM6001	
		(ii) 14 cum capacity	hour		1.000		1998.000		1998.00		PM6002	
		(iii) 10 cum capacity	hour			1.333	1785.000			2379.41	PM6003	
		Total cost without (OH&CP)						15461.75	15693.00	17011.41		
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1236.94	1569.30	2041.37		
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1669.87	1726.23	1905.28		

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate for each tree = (a+b+c+d)/40						459.21	474.71	523.95	
						Say		459.20	474.70	524.00	
	(ii)	Girth from 600mm to 900mm									
		Unit= Each									
		Taking output=30nos.									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		b) Machinery						319.00	319.00	319.00	
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	5.000			2703.000	13515.00			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.500		2432.000		13376.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			6.500	2202.000			14313.00	PM3005
		Tipper									
		(i) 18 cum capacity	hour	0.750			2239.000	1679.25			PM6001
		(ii) 14 cum capacity	hour		1.000		1998.000		1998.00		PM6002
		(iii) 10 cum capacity	hour			1.500	1785.000			2677.50	PM6003
		Total cost without (OH&CP)						15513.25	15693.00	17309.50	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1241.06	1569.30	2077.14	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1675.43	1726.23	1938.66	
		Rate for each tree = (a+b+c+d)/30						614.32	632.95	710.84	
							Say	614.30	633.00	710.80	
	(iii)	Girth from 900mm to 1800mm									
		Unit= Each									
		Taking output=25nos.									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		b) Machinery						319.00	319.00	319.00	
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	5.000			2703.000	13515.00			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.500		2432.000		13376.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			6.500	2202.000			14313.00	PM3005
		Tipper									
		(i) 18 cum capacity	hour	0.758			2239.000	1697.16			PM6001
		(ii) 14 cum capacity	hour		1.000		1998.000		1998.00		PM6002
		(iii) 10 cum capacity	hour			1.471	1785.000			2625.74	PM6003
		Total cost without (OH&CP)						15531.16	15693.00	17257.74	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1242.49	1569.30	2070.93	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1677.37	1726.23	1932.87	
		Rate for each tree = (a+b+c+d)/25					Say	738.04	759.54	850.46	
		(iv) Girth above 1800mm						<b>738.00</b>	<b>759.50</b>	<b>850.50</b>	
		Unit= Each									
		Taking output=20nos.									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		b) Machinery									
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	5.000			2703.000	13515.00			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.500		2432.000		13376.00		PM3004
		(iii) 0.9 cum bucket capacity	hour				2202.000			14313.00	PM3005
		Tipper									
		(i) 18 cum capacity	hour	0.714			2239.000	1598.65			PM6001
		(ii) 14 cum capacity	hour		1.000		1998.000		1998.00		PM6002
		(iii) 10 cum capacity	hour				1785.000			2550.77	PM6003
		Total cost without (OH&CP)						15432.65	15693.00	17182.77	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1234.61	1569.30	2061.93	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1666.73	1726.23	1924.47	
		Rate for each tree = (a+b+c+d)/20						916.70	949.43	1058.46	
								<b>916.70</b>	<b>949.40</b>	<b>1058.50</b>	
		<b>Note:</b> All the serviceable material resulting from girth removal would be handed over to the employer for the all above items.									
2.02	201	<b>Clearing Grass and Removal of Rubbish</b>									
		Clearing grass and removal of rubbish up to a distance of 50 metres outside the periphery of the area									
		<b>By Manual Means</b>									
		Unit = Hectare									
		Taking output= 1 Hectare									
		a) Labour									
		Mate	day	2.000	2.000	2.000	325.000	650.00	650.00	650.00	L-12
		Mazdoor	day	50.000	50.000	50.000	306.000	15300.00	15300.00	15300.00	L-13
		Total cost without (OH&CP)						15950.00	15950.00	15950.00	



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Overhead charges on(a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1276.00	1595.00	1914.00	
		<b>c) Contractor's profit on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1722.60	1754.50	1786.40	
		<b>Rate per Hectare = (a+b+c)</b>						18948.60	19299.50	19650.40	
2.03	201	<b>Clearing and Grubbing road land</b>						<b>18948.60</b>	<b>19299.50</b>	<b>19650.40</b>	
		Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, sapling and tree girth upto 300 mm, removal of stumps of tree cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used of auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150mm in thickness.									
		<b>Unit= Hectare</b>									
		<b>Taking output= 1 Hectare</b>									
	(i)	<b>By Manual means:-</b>									
	A	<b>In area of light jungle</b>									
		<b>a) Labour</b>									
		Mate	day	6.000	6.000	6.000	325.000	1950.00	1950.00	1950.00	L-12
		Mazdoor	day	150.000	150.000	150.000	306.000	45900.00	45900.00	45900.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	122.222	122.222	122.222	629.000	76877.64	76877.64	76877.64	PM12001
		Total cost without (OH&CP)						124727.64	124727.64	124727.64	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		9978.21	12472.76	14967.32	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		13470.58	13720.04	13969.50	
		<b>Rate per Hectare= a+b+c+d</b>					<b>Say</b>	148176.43	150920.44	153664.45	
		<b>In area of thorny jungle</b>						<b>148176.40</b>	<b>150920.40</b>	<b>153664.50</b>	
	B	<b>Labour</b>									
		Mate	day	8.000	8.000	8.000	325.000	2600.00	2600.00	2600.00	L-12
		Mazdoor	day	200.000	200.000	200.000	306.000	61200.00	61200.00	61200.00	L-13
		<b>Machinery</b>									
		Tractor-trolley	hour	122.222	122.222	122.222	629.000	76877.64	76877.64	76877.64	PM12001
		Total cost without (OH&CP)						140677.64	140677.64	140677.64	
		<b>Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		11254.21	14067.76	16881.32	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		d) Contractor's profit on (a+b+c)									
		Rate per Hectare = (a+b+c+d)									
		(ii) By Mechanical means using dozer									
		A In area of light jungle									
		a) Labour									
		Mate	day	0.080	0.080	0.080	325.000	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.000	612.00	612.00	612.00	L-13
		b) Machinery									
		Dozer									
		(i) Dozer (240HP)	hour	5.952			5523	32872.90			PM1001
		(ii) Dozer (175 HP)	hour		7.692		4249		32683.31		PM1002
		(iii) Dozer (90 Hp)	hour			13.889	2930			40694.77	PM1003
		Tipper									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1500.000			4.800	7200.00			PM72001
		(ii) 14 cum capacity	t.km		1500.000		5.480		8220.00		PM73001
		(iii) 10 cum capacity	t.km			1500.000	6.800			10200.00	PM74001
		Loading & unloading charges for disposed of grabbed material									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1000.000			73.420	73420.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader.	cum		1000.000		71.98	0.00	71980.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader.	cum			1000.000	100.200	0.00	0.00	100200.00	PM77003
		Total cost without (OH&CP)						114130.90	113521.31	151732.77	
		c) Overhead charges on(a+b)						9130.47	11352.13	18207.93	
		d) Contractor's profit on (a+b+c)						12326.14	12487.34	16994.07	
		Rate per Hectare = (a+b+c+d)						135587.50	137360.78	186934.77	
		B In area of thorny jungle									
2.03		a) Labour									
		Mate	day	0.080	0.080	0.080	325.000	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.000	612.00	612.00	612.00	L-13
		b) Machinery									
		Dozer									
		(i) Dozer (240HP)	hour	7.440			5523	41091.12	0.00	0.00	PM1001

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) Dozer (175 HP)	hour		9.615		4249	40854.14	0.00	PM1002	
		(iii) Dozer (90 Hp)	hour			17.361	2930	0.00	50867.73	PM1003	
		<b>Tipper</b>									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1500.000			4.800	7200.00	0.00	PM72001	
		(ii) 14 cum capacity	t.km		1500.000		5.480	8220.00	0.00	PM73001	
		(iii) 10 cum capacity	t.km			1500.000	6.800	0.00	10200.00	PM74001	
		Loading & unloading charges for disposed of grabbed material									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1000.000			73.420	73420.00	0.00	PM77001	
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		1000.000		71.98	0.00	71980.00	PM77002	
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			1000.000	100.200	0.00	100200.00	PM77003	
		Total cost without (OH&CP)						122349.12	121692.14	161905.73	
		<b>c) Overhead charges on(a+b)</b>						9787.93	12169.21	19428.69	
		<b>d) Contractor's profit on (a+b+c)</b>						13213.70	13386.13	18133.44	
		<b>Rate per Hectare = (a+b+c+d)</b>						145350.75	147247.48	199467.86	
							<b>Say</b>	<b>145350.80</b>	<b>147247.50</b>	<b>199467.90</b>	
2.03	(iii)	<b>By Mechanical Means using Motor grader</b>									
	A	<b>In area of light jungle</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	L-12	
		Mazdoor	day	1.000	1.000	1.000	306.000	306.00	306.00	L-13	
		<b>b) Machinery</b>									
		<b>Motor Grader</b>									
		(i) Motor grader 4.3 metre blade	hour	4.032			5450.000	21974.40	0.00	PM2001	
		(ii) Motor grader 3.70 metre blade	hour		4.864		4985.000	0.00	24247.04	PM2002	
		(iii) motor grader 3.35 metre blade	hour			5.423	4403.000	0.00	0.00	PM2003	
		<b>Tipper</b>									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1500.000			4.800	7200.00	0.00	PM72001	
		(ii) 14 cum capacity	t.km		1500.000		5.480	0.00	8220.00	PM73001	
		(iii) 10 cum capacity	t.km			1500.000	6.800	0.00	10200.00	PM74001	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Loading & unloading charges for disposed of grabbed material									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1000.000			73.420	0.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		1000.000		71.98	0.00	71980.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			1000.000	100.200	0.00	0.00	100200.00	PM77003
		Total cost without (OH&CP)						102913.40	104766.04	134596.47	
		<b>c) Overhead charges on(a+b)</b>						8233.07	10476.60	16151.58	
		<b>d) Contractor's profit on (a+b+c)</b>						11114.65	11524.26	15074.80	
		<b>Rate per Hectare = (a+b+c+d)</b>					<b>Say</b>	122261.12	126766.91	165822.85	
2.03	B	<b>In area of thorny Jungle</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Motor Grader</b>									
		(i) Motor grader 4.3 metre blade	hour	5.040			5450.000	27468.00	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		6.080		4985.000	0.00	30308.80	0.00	PM2002
		(iii) motor grader 3.35 metre blade	hour			6.779	4403.000	0.00	0.00	29847.94	PM2003
		<b>Tipper</b>									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1500.000			4.800	7200.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		1500.000		5.480	0.00	8220.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			1500.000	6.800	0.00	0.00	10200.00	PM74001
		Loading & unloading charges for disposed of grabbed material									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1000.000			73.420	73420.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		1000.000		71.98	0.00	71980.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			1000.000	100.200	0.00	0.00	100200.00	PM77003
		Total cost without (OH&CP)						108407.00	110827.80	140566.94	
		<b>c) Overhead charges on(a+b)</b>						8672.56	11082.78	16868.03	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		<b>d) Contractor's profit on (a+b+c)</b>									
		<b>Rate per Hectare = (a+b+c+d)</b>									
2.04	202	<b>Dismantling of Structures</b>					<b>Say</b>				
		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 alk lifts and lead of 1000 metres									
		<b>Unit- cum</b>									
		<b>Taking output=1.25 cum</b>									
	(i)	<b>Lime/ Cement concrete</b>									
	I	<b>By Manual means</b>									
	A	<b>Lime concrete, cement concrete grade M-10 and below</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoor for dismantling and loading	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley (considering 15 min loading time)	hour	0.299	0.299	0.299	629.000	188.07	188.07	188.07	PM12001
		Total cost without (OH&CP)						507.07	507.07	507.07	
		<b>c) Overhead charges on(a+b)</b>						40.57	50.71	60.85	
		<b>d) Contractor's profit on (a+b+c)</b>						54.76	55.78	56.79	
		Rate for 1.25 cum = (a+b+c+d)						602.40	613.56	624.71	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	481.92	490.84	499.77	
2.04	B	<b>Cement concrete Grade M-15 &amp; M-20</b>									
		<b>a) Labour</b>									
		Mate	day	0.050	0.050	0.050	325.000	16.25	16.25	16.25	L-12
		Mazdoor for dismantling and loading	day	1.250	1.250	1.250	306.000	382.50	382.50	382.50	L-13
		<b>b) Machinery</b>									
		Tractor- trolley (considering 15 min loading time)	hour	0.299	0.299	0.299	629.000	188.07	188.07	188.07	PM12001



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Total cost without (OH&CP)						586.82	586.82	586.82	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46.95	58.68	70.42	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		63.38	64.55	65.72	
		Cost for 1.25 cum = (a+b+c+d)						697.14	710.05	722.96	
		Rate per cum= (a+b+c+d)/1.25					<b>Say</b>	<b>557.71</b>	<b>568.04</b>	<b>578.37</b>	
								557.70	568.00	578.40	
2.04	<b>C</b>	<b>Prestressed/ Reinforced cement concrete grade M-20 &amp; above</b>									
		a) Labour									
		Mate	day	0.150	0.150	0.150	325.000	48.75	48.75	48.75	L-12
		Blacksmith	day	0.250	0.250	0.250	369.000	92.25	92.25	92.25	L-25
		Mazdoor for dismantling and loading	day	3.500	3.500	3.500	306.000	1071.00	1071.00	1071.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley (considering 15 min loading time)	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						1373.65	1373.65	1373.65	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		109.89	137.37	164.84	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		148.35	151.10	153.85	
		Cost for 1.25 cum = (a+b+c+d)						1631.90	1662.12	1692.34	
		Rate per cum= (a+b+c+d)/1.25					<b>Say</b>	<b>1305.52</b>	<b>1329.70</b>	<b>1353.87</b>	
								1305.50	1329.70	1353.90	
2.04	<b>III</b>	<b>By Mechanical means</b>									
	<b>A</b>	<b>Cement Concrete Grade M-15 &amp; M-20</b>									
		Unit= cum									
		Taking output= 1.25 cum									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.000	6.50	6.50	6.50	L-12
		Mazdoor for loading and unloading & pneumatic breaker	day	0.500	0.500	0.500	306.000	153.00	153.00	153.00	L-13
		<b>b) Machinery</b>									
		<b>Air compressor 250cfm</b>	hour	0.625	0.625	0.625	391.000	244.38	244.38	244.38	PM15001
		<b>Pneumatic breaker @ 1 cum per hour</b>	hour	1.250	1.250	1.250	206.000	257.50	257.50	257.50	PM4001
		<b>Tipper</b>									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1.875			4.800	9.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		1.875		5.480	0.00	10.28	0.00	PM73001

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroeject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity Loading & unloading charges for disposed of material	t.km			1.875	6.800	0.00	12.75	PM74001	
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1.250			73.420	0.00	0.00	PM77001	
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		1.250		71.98	89.98	0.00	PM77002	
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			1.250	100.200	0.00	125.25	PM77003	
		Total cost without (OH&CP)						761.63	799.38		
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		60.97	76.16	95.93	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		82.31	83.78	89.53	
		Cost for 1.25 cum = (a+b+c+d)						905.43	921.57	984.83	
		<b>Rate per cum = (a+b+c+d)/1.25</b>					<b>Say</b>	<b>724.35</b>	<b>737.25</b>	<b>787.86</b>	
								<b>724.30</b>	<b>737.30</b>	<b>787.90</b>	
2.04	II B	<b>Prestressed/ Reinforced cement concrete grade M-20 &amp; above</b>									
		Unit= cum									
		Taking output= 1.25 cum									
		a) Labour									
		Mate	day	0.036	0.036	0.036	325.000	11.70	11.70	L-12	
		Mazdoor with Pneumatic breaker and for loading and unloading .	day	0.910	0.910	0.910	306.000	278.46	278.46	L-13	
		Blacksmith	day	0.250	0.250	0.250	369.000	92.25	92.25	L-25	
		b) Machinery									
		Air compressor 250cfm	hour	0.625	0.625	0.625	391.000	244.38	244.38	PM15001	
		Pneumatic breaker @ 1 cum per hour	hour	1.250	1.250	1.250	206.000	257.50	257.50	PM4001	
		Tipper									
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	1.875			4.800	9.00	0.00	PM72001	
		(ii) 14 cum capacity	t.km		1.875		5.480	0.00	10.28	PM73001	
		(iii) 10 cum capacity	t.km			1.875	6.800	0.00	0.00	PM74001	
		Loading & unloading charges for disposed of material									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	1.250			73.420	91.78	0.00	PM77001	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		1.250		71.98	0.00	89.98	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			1.250	100.200	0.00	0.00	125.25	PM77003
		<b>Total cost without (OH&amp;CP)</b>						985.06	984.54	1022.29	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		78.80	98.45	122.67	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		106.39	108.30	114.50	
		Cost for 1.25 cum = (a+b+c+d)						1170.25	1191.29	1259.46	
		<b>Rate per cum = (a+b+c+d)/1.25</b>					<b>Say</b>	<b>936.20</b>	<b>953.03</b>	<b>1007.56</b>	
								<b>936.20</b>	<b>953.00</b>	<b>1007.60</b>	
2.04	(ii)	Dismantling Brick/ file work									
		By Manual means									
	A	In lime mortar									
		a) Labour									
		Mate	day	0.020	0.020	0.020	325.000	6.50	6.50	6.50	L-12
		Mazdoor for dismantling and loading	day	0.500	0.500	0.500	306.000	153.00	153.00	153.00	L-13
		b) Machinery									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						321.15	321.15	321.15	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		25.69	32.12	38.54	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		34.68	35.33	35.97	
		Cost for 1.25 cum = (a+b+c+d)						381.53	388.60	395.66	
		Rate per cum= (a+b+c+d)/1.25						<b>305.22</b>	<b>310.88</b>	<b>316.53</b>	
							<b>Say</b>	<b>305.20</b>	<b>310.90</b>	<b>316.50</b>	
2.04	B	In cement mortar									
		a) Labour									
		Mate	day	0.030	0.030	0.030	325.000	9.75	9.75	9.75	L-12
		Mazdoor for dismantling and loading-unloading	day	0.750	0.750	0.750	306.000	229.50	229.50	229.50	L-13
		b) Machinery									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						400.90	400.90	400.90	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		32.07	40.09	48.11	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		43.30	44.10	44.90	
		Cost for 1.25 cum = (a+b+c+d)						476.27	485.09	493.91	
		Rate per cum= (a+b+c+d)/1.25						<b>381.02</b>	<b>388.07</b>	<b>395.13</b>	
							<b>Say</b>	<b>381.00</b>	<b>388.10</b>	<b>395.10</b>	
2.04	C	In Mud mortar									



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.016	0.016	0.016	325.000	5.20	5.20	5.20	L-12
		Mazdoor for dismantling , loading and unloading.	day	0.400	0.400	0.400	306.000	122.40	122.40	122.40	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						289.25	289.25	289.25	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		23.14	28.93	34.71	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		31.24	31.82	32.40	
		Cost for 1.25 cum = (a+b+c+d)						343.63	350.00	356.36	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					Say	274.91	280.00	285.09	
2.04	D	<b>Dry brick pitching or brick soling</b>						<b>274.90</b>	<b>280.00</b>	<b>285.10</b>	
		<b>a) Labour</b>									
		Mate	day	0.014	0.014	0.014	325.000	4.55	4.55	4.55	L-12
		Mazdoor for dismantling, loading and -unloading.	day	0.350	0.350	0.350	306.000	107.10	107.10	107.10	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		<b>Total cost without (OH&amp;CP)</b>						273.30	273.30	273.30	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		21.86	27.33	32.80	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		29.52	30.06	30.61	
		Cost for 1.25 cum = (a+b+c+d)						324.68	330.70	336.71	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					Say	259.75	264.56	269.37	
2.04	(iii)	<b>Dismantling stone masonry</b>						<b>259.70</b>	<b>264.60</b>	<b>269.40</b>	
	I	<b>By Manual means</b>									
	A	<b>rubble stone masonry in lime mortar</b>									
		<b>a) Labour</b>									
		Mate	day	0.024	0.024	0.024	325.000	7.80	7.80	7.80	L-12
		Mazdoor for dismantling , loading and -unloading.	day	0.600	0.600	0.600	306.000	183.60	183.60	183.60	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		<b>Total cost without (OH&amp;CP)</b>						353.05	353.05	353.05	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		28.24	35.31	42.37	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		38.13	38.84	39.54	
		Cost for 1.25 cum = (a+b+c+d)						419.43	427.19	434.96	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					Say	335.54	341.76	347.97	
2.04	B	<b>Rubble stone masonry in cement mortar</b>						<b>335.50</b>	<b>341.80</b>	<b>348.00</b>	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.000	9.75	9.75	9.75	L-12
		Mazdoor for dismantling , loading and -unloading.	day	0.750	0.750	0.750	306.000	229.50	229.50	229.50	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						400.90	400.90	400.90	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		32.07	40.09	48.11	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		43.30	44.10	44.90	
		Cost for 1.25 cum = (a+b+c+d)						476.27	485.09	493.91	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	381.02	388.07	395.13	
								<b>381.00</b>	<b>388.10</b>	<b>395.10</b>	
2.04		<b>C Rubble stone masonry in mud mortar</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.000	6.50	6.50	6.50	L-12
		Mazdoor for dismantling ,loading and -unloading.	day	0.500	0.500	0.500	306.000	153.00	153.00	153.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						321.15	321.15	321.15	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		25.69	32.12	38.54	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		34.68	35.33	35.97	
		Cost for 1.25 cum = (a+b+c+d)						381.53	388.60	395.66	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	305.22	310.88	316.53	
								<b>305.20</b>	<b>310.90</b>	<b>316.50</b>	
2.04		<b>D Dry rubble masonry</b>									
		<b>a) Labour</b>									
		Mate	day	0.018	0.018	0.018	325.000	5.85	5.85	5.85	L-12
		Mazdoor for dismantling ,loading and -unloading.	day	0.450	0.450	0.450	306.000	137.70	137.70	137.70	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						305.20	305.20	305.20	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		24.42	30.52	36.62	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		32.96	33.57	34.18	
		Cost for 1.25 cum = (a+b+c+d)						362.58	369.30	376.01	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	290.06	295.44	300.81	
								<b>290.10</b>	<b>295.40</b>	<b>300.80</b>	
2.04		<b>E Dismantling stone pitching/dry stone spalls.</b>									
		<b>a) Labour</b>									
		Mate	day	0.016	0.016	0.016	325.000	5.20	5.20	5.20	L-12

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor for dismantling ,loading and -unloading.	day	0.400	0.400	0.400	306.000	122.40	122.40	122.40	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						289.25	289.25	289.25	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		23.14	28.93	34.71	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		31.24	31.82	32.40	
		Cost for 1.25 cum = (a+b+c+d)						343.63	350.00	356.36	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	<b>274.90</b>	<b>280.00</b>	<b>285.10</b>	
2.04	F	Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.000	6.50	6.50	6.50	L-12
		Mazdoor for dismantling ,loading and -unloading.	day	0.500	0.500	0.500	306.000	153.00	153.00	153.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						321.15	321.15	321.15	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		25.69	32.12	38.54	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		34.68	35.33	35.97	
		Cost for 1.25 cum = (a+b+c+d)						381.53	388.60	395.66	
		<b>Rate per cum= (a+b+c+d)/1.25</b>						305.22	310.88	316.53	
		<b>By Mechanical means</b>					<b>Say</b>	<b>305.20</b>	<b>310.90</b>	<b>316.50</b>	
2.04	II	Dismantling Brick/ Tile work/ rubble masonry/pitching/ etc. by mechanical means									
	A	<b>Unit=cum</b>									
		<b>Taking output=20cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.008	0.008	0.008	325.000	2.60	2.60	2.60	L-12
		Mazdoor	day	0.200	0.200	0.200	306.000	61.20	61.20	61.20	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	0.523			2703.000	1413.67	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		0.603		2432.000	0.00	1466.50	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			0.843	2202.000	0.00	0.00	1856.29	PM3005
		<b>Tipper</b>									



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		For transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	30.000			4.800	144.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		30.000		5.480	0.00	164.40	0.00	PM73001
		(iii) 10 cum capacity	t.km			30.000	6.800	0.00	0.00	204.00	PM74001
		Loading and unloading time									
		(i) 18 cum capacity	hour	0.523			2239.000	1171.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		0.603		1998.000	0.00	1204.79	0.00	PM6002
		(iii) 10 cum capacity	hour			0.843	1785.000	0.00	0.00	1504.76	PM6003
		Total cost without (OH&CP)						2792.47	2899.49	3628.84	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		223.40	289.95	435.46	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		301.59	318.94	406.43	
		Rate for 20 Cum = (a+b+c+d)						3317.45	3508.38	4470.73	
		<b>Rate per cum= (a+b+c+d)/20</b>					<b>Say</b>	<b>165.87</b>	<b>175.42</b>	<b>223.54</b>	
								<b>165.90</b>	<b>175.40</b>	<b>223.50</b>	
2.04	(iv)	Wood work wrought framed and fixed in frames of trussess upto a height of 5m above plinth level									
		Unit=cum									
		Taking output=1.25 cum									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.000	19.50	19.50	19.50	L-12
		Carpenter	day	0.500	0.500	0.500	413.000	206.50	206.50	206.50	L-04
		Mazdoor for dismantling, loading and unloading	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.257	0.257	0.257	629.000	161.65	161.65	161.65	PM12001
		Total cost without (OH&CP)						693.65	693.65	693.65	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		55.49	69.37	83.24	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		74.91	76.30	77.69	
		Rate for 1.25 Cum = (a+b+c+d)						824.06	839.32	854.58	
		<b>Rate per cum= (a+b+c+d)/1.25</b>					<b>Say</b>	<b>659.25</b>	<b>671.46</b>	<b>683.66</b>	
								<b>659.20</b>	<b>671.50</b>	<b>683.70</b>	
2.04	(v)	Steel work in all types of sections upto a height of 5m above plinth level excluding cutting of rivet.									
		Unit=tonne									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking output=1 tonne									
	<b>A</b>	Including dismembring									
		<b>a) Labour</b>									
		Mate	day	0.140	0.140	0.140	325.000	45.50	45.50	45.50	L-12
		Blacksmith	day	1.000	1.000	1.000	369.000	369.00	369.00	369.00	L-25
		Mazdoor for dismantling, loading and unloading	day	2.500	2.500	2.500	306.000	765.00	765.00	765.00	L-13
		Add 2.5 percent of cost of labour for gas cutting, ropes, pulleys etc.						29.49	29.49	29.49	
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.123	0.123	0.123	629.000	77.37	77.37	77.37	PM12001
		Total cost without (OH&CP)						1286.35	1286.35	1286.35	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		102.91	128.64	154.36	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		138.93	141.50	144.07	
		<b>Rate per tonne = (a+b+c+d)</b>					<b>Say</b>	1528.19	1556.49	1584.79	
2.04	<b>B</b>	<b>Excluding dismembring</b>									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100	325.000	32.50	32.50	32.50	L-12
		Blacksmith	day	0.500	0.500	0.500	369.000	184.50	184.50	184.50	L-25
		Mazdoor for dismantling, loading and unloading	day	2.000	2.000	2.000	306.000	612.00	612.00	612.00	L-13
		Add 2.5 percent of cost of labour for gas cutting, ropes, pulleys etc.						20.73	20.73	20.73	
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.123	0.123	0.123	629.000	77.37	77.37	77.37	PM12001
		Total cost without (OH&CP)						927.09	927.09	927.09	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		74.17	92.71	111.25	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		100.13	101.98	103.83	
		<b>Rate per tonne = (a+b+c+d)</b>					<b>Say</b>	1101.39	1121.78	1142.18	
2.04	<b>C</b>	<b>Extra over item no (v) A and (v)B for cutting rivets</b>									
		<b>Unit=each</b>									
		<b>Taking output=10 rivets</b>									
		<b>a) Labour</b>									
		Mate	day	0.010	0.010	0.010	325.000	3.25	3.25	3.25	L-12
		Blacksmith	day	0.130	0.130	0.130	369.000	47.97	47.97	47.97	L-25
		Mazdoor	day	0.130	0.130	0.130	306.000	39.78	39.78	39.78	L-13
		Total cost without (OH&CP)						91.00	91.00	91.00	



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		b) Overhead charges on(a)		(@ 8%)	(@ 10%)	(@ 12%)		7.28	9.10	10.92	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		9.83	10.01	10.19	
		Rate for 10 rivets = (a+b+c)						108.11	110.11	112.11	
		<b>Rate for each rivet =(a+b+c)/10</b>						<b>10.81</b>	<b>11.01</b>	<b>11.21</b>	
							<b>Say</b>	10.80	11.00	11.20	
2.04	(vi)	Scrapping of bricks dismantled from brick work including stacking									
		Unit= numbers									
		Taking output= 1000 numbers									
	<b>A</b>	In Lime/Cement mortar									
		a) Labour									
		Mate	day	0.140	0.140	0.140	325.000	45.50	45.50	45.50	L-12
		Mazdoor	day	3.500	3.500	3.500	306.000	1071.00	1071.00	1071.00	L-13
		Total cost without (OH&CP)						1116.50	1116.50	1116.50	
		b) Overhead charges on(a)		(@ 8%)	(@ 10%)	(@ 12%)		89.32	111.65	133.98	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		120.58	122.82	125.05	
		Rate for 1000 Nos = (a+b+c)						1326.40	1350.97	1375.53	
		<b>Rate for each rivet =(a+b+c)/1000</b>						<b>1.33</b>	<b>1.35</b>	<b>1.38</b>	
2.04	<b>B</b>	In mud mortar					<b>Say</b>	1.30	1.40	1.40	
		a) Labour									
		Mate	day	0.050	0.050	0.050	325.000	16.25	16.25	16.25	L-12
		Mazdoor	day	1.250	1.250	1.250	306.000	382.50	382.50	382.50	L-13
		Total cost without (OH&CP)						398.75	398.75	398.75	
		b) Overhead charges on(a)		(@ 8%)	(@ 10%)	(@ 12%)		31.90	39.88	47.85	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		43.07	43.86	44.66	
		Rate for 1000 Nos = (a+b+c)						473.72	482.49	491.26	
		<b>Rate for each rivet =(a+b+c)/1000</b>						<b>0.47</b>	<b>0.48</b>	<b>0.49</b>	
2.04	(vii)	Scrapping of stone from dismantled stone masonry					<b>Say</b>	0.50	0.50	0.50	
		Unit=cum									
		Taking output=1 cum									
	<b>A</b>	In Cement and lime mortar									
		a) Labour									
		Mate	day	0.056	0.056	0.056	325.000	18.20	18.20	18.20	L-12
		Mazdoor	day	1.400	1.400	1.400	306.000	428.40	428.40	428.40	L-13
		Total cost without (OH&CP)						446.60	446.60	446.60	
		b) Overhead charges on(a)		(@ 8%)	(@ 10%)	(@ 12%)		35.73	44.66	53.59	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		48.23	49.13	50.02	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate per Cum = (a+b+c)						530.56	540.39	550.21	
2.04		<b>B In Mud mortar</b>				<b>Say</b>		<b>530.60</b>	<b>540.40</b>	<b>550.20</b>	
		<b>a) Labour</b>									
		Mate	day	0.012	0.012	0.012	325.000	3.90	3.90	3.90	L-12
		Mazdoor	day	0.300	0.300	0.300	306.000	91.80	91.80	91.80	L-13
		Total cost without (OH&CP)						95.70	95.70	95.70	
		b) Overhead charges on(a)		(@ 8%)	(@ 10%)	(@ 12%)		7.66	9.57	11.48	
		c) Contractor's profit on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		10.34	10.53	10.72	
		Rate per Cum = (a+b+c)						113.69	115.80	117.90	
						<b>Say</b>		<b>113.70</b>	<b>115.80</b>	<b>117.90</b>	
2.04	(viii)	<b>Scraping plaster in lime or cement mortar from Brick/Stone Masonry</b>									
		Unit=sqm									
		Taking output= 100sqm									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.000	52.00	52.00	52.00	L-12
		Mazdoor for scraping and loading	day	4.000	4.000	4.000	306.000	1224.00	1224.00	1224.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.308	0.308	0.308	629.000	193.73	193.73	193.73	PM12001
		Total cost without (OH&CP)						1469.73	1469.73	1469.73	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		117.58	146.97	176.37	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		158.73	161.67	164.61	
		Rate per sqm= (a+b+c+d)/100						17.46	17.78	18.11	
								<b>17.50</b>	<b>17.80</b>	<b>18.10</b>	
						<b>Say</b>					
2.04	(ix)	<b>Removing all type of Hume pipes and stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works.</b>									
	A	Upto 600mm dia									
		Unit= metre									
		Taking output= 15 metre									
		<b>a) Labour</b>									
		Mate	day	0.084	0.094	0.105	325.000	27.30	30.55	34.13	L-12
		Mazdoor	day	2.088	2.346	2.617	306.000	638.93	717.88	800.80	L-13
		<b>b) Machinery</b>									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	2.176			2703.000	5881.73	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		2.693		2432.000	0.00	6549.38	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			3.235	2202.000	0.00	0.00	7123.47	PM3005
		<b>Tipper</b>									
		For loading & unloading time & for transportation of excess material to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	hour	2.226			2239.000	4984.01	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		2.743		1998.000	0.00	5480.51	0.00	PM6002
		(iii) 10 cum capacity	hour			3.285	1785.000	0.00	0.00	5863.73	PM6003
		Total cost without (OH&CP)						11531.97	12778.32	13822.12	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		922.56	1277.83	1658.65	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1245.45	1405.61	1548.08	
		Rate for 15 meter = (a+b+c+d)						13699.98	15461.76	17028.85	
		<b>Rate per metre= (a+b+c+d)/15</b>					<b>Say</b>	<b>913.30</b>	<b>1030.78</b>	<b>1135.26</b>	
	B	<b>Above 600mm to 900mm dia</b>									
		<b>Unit= metre</b>									
		<b>Taking output= 15 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.094	0.104	0.115	325.000	30.55	33.80	37.38	L-12
		Mazdoor	day	2.338	2.596	2.867	306.000	715.43	794.38	877.30	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	2.676			2703.000	7233.23	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		3.193		2432.000	0.00	7765.38	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			3.735	2202.000	0.00	0.00	8224.47	PM3005
		<b>Tipper for loading &amp; unloading.</b>									
		For loading & unloading time & for transportation of excess material to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	hour	2.726			2239.000	6103.51	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		3.243		1998.000	0.00	6479.51	0.00	PM6002
		(iii) 10 cum capacity	hour			3.785	1785.000	0.00	0.00	6756.23	PM6003
		Total cost without (OH&CP)						14082.72	15073.07	15895.37	



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1126.62	1507.31	1907.44	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1520.93	1658.04	1780.28	
		Rate for 15 metre = (a+b+c+d)						16730.27	18238.41	19583.10	
		<b>Rate per metre= (a+b+c+d)/15</b>					<b>Say</b>	1115.35	1215.89	1305.54	
	C	<b>Above 900mm</b>						<b>1115.40</b>	<b>1215.90</b>	<b>1305.50</b>	
		Unit= metre									
		Taking output= 15 metre									
		a) Labour									
		Mate	day	0.104	0.114	0.135	325.000	33.80	37.05	43.88	L-12
		Mazdoor	day	2.588	2.846	3.367	306.000	791.93	870.88	1030.30	L-13
		b) Machinery									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	3.176			2703.000	8584.73	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		3.693		2432.000	0.00	8981.38	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			4.735	2202.000	0.00	0.00	10426.47	PM3005
		<b>Tipper for loading &amp; unloading.</b>									
		For loading & unloading time & for transportation of excess material to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	hour	3.226			2239.000	7223.01	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		3.743		1998.000	0.00	7478.51	0.00	PM6002
		(iii) 10 cum capacity	hour			4.785	1785.000	0.00	0.00	8541.23	PM6003
		Total cost without (OH&CP)						16633.47	17367.82	20041.87	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1330.68	1736.78	2405.02	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1796.41	1910.46	2244.69	
		Rate for 15metre = (a+b+c+d)						19760.56	21015.06	24691.59	
		<b>Rate per metre= (a+b+c+d)/15</b>					<b>Say</b>	1317.37	1401.00	1646.11	
		<b>Note</b>						<b>1317.40</b>	<b>1401.00</b>	<b>1646.10</b>	
		1. The excavation of earth, dismantling of stone masonry work in head walls and protection work is not included which is to be measured and paid separately.									
		2. Credit for retrieved stone from masonry work may be taken as per actual availability.									
2.05	202	<b>Dismantling of flexible pavements</b>									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately									
		<b>Unit=cum</b>									
		<b>Taking output= 1 cum</b>									
	(i)	<b>By Manual means</b>									
	A	<b>Bituminous courses</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.000	19.50	19.50	19.50	L-12
		Mazdoor for dismantling, loading and unloading	day	1.500	1.500	1.500	306.000	459.00	459.00	459.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.167	0.167	0.167	629.000	105.04	105.04	105.04	PM12001
		Total cost without (OH&CP)						583.54	583.54	583.54	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46.68	58.35	70.03	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		63.02	64.19	65.36	
		Rate per cum = (a+b+c+d)						693.25	706.09	718.92	
2.05	B	<b>Granular courses</b>					<b>Say</b>	<b>693.20</b>	<b>706.10</b>	<b>718.90</b>	
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoor for dismantling, loading and unloading	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.167	0.167	0.167	629.000	105.04	105.04	105.04	PM12001
		Total cost without (OH&CP)						424.04	424.04	424.04	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		33.92	42.40	50.89	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		45.80	46.64	47.49	
		<b>Rate per cum = (a+b+c+d)</b>						503.76	513.09	522.42	
							<b>Say</b>	<b>503.80</b>	<b>513.10</b>	<b>522.40</b>	
2.05	202	Dismantling of flexible pavements and disposal of dismantled materials upto a leadof 1000 metres, stacking serviceable and unserviceable materials separately									
	(ii)	<b>By Mechanical means</b>									
	A	<b>Bituminous courses</b>									
		<b>Unit=cum</b>									
		<b>Taking output= 20cum</b>									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroeject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.024	0.027	0.033	325.000	7.80	8.78	10.73	L-12
		Mazdoor for dismantling, loading and unloading	day	0.588	0.667	0.833	306.000	179.93	204.10	254.90	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity considering output 85 sqm/8.5 cum per hour	hour	2.353			2703.000	6360.16	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity considering output 75 sqm/7.5 cum per hour	hour		2.667		2432.000	0.00	6486.14	0.00	PM3004
		(iii) 0.9 cum bucket capacity considering output 60 sqm/6 cum per hour	hour			3.333	2202.000	0.00	0.00	7339.27	PM3005
		<b>Tipper for transportation</b>									
		(i) 18 cum capacity	t.km	46.000			4.800	220.80	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		46.000		5.480	0.00	252.08	0.00	PM73001
		(iii) 10 cum capacity	t.km			46.000	6.800	0.00	0.00	312.80	PM74001
		<b>Total cost without (OH&amp;CP)</b>						6768.69	6951.10	7917.69	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		541.49	695.11	950.12	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		731.02	764.62	886.78	
		Ratefor 20 cum = (a+b+c+d)						8041.20	8410.83	9754.59	
		<b>Rate per cum= (a+b+c+d)/20</b>						402.06	420.54	487.73	
							<b>Say</b>	<b>402.10</b>	<b>420.50</b>	<b>487.70</b>	
		<b>Granular Courses</b>									
	B	<b>Unit=cum</b>									
		<b>Taking output= 250cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.029	0.033	0.046	325.000	9.43	10.73	14.95	L-12
		Mazdoor for dismantling, loading and unloading	day	0.718	0.827	1.156	306.000	219.71	253.06	353.74	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	2.873			2703.000	7765.72	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		3.308		2432.000	0.00	8045.06	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			4.625	2202.000	0.00	0.00	10184.25	PM3005
		<b>Tipper for transportation</b>									
		(i) 18 cum capacity	t.km	575.000			4.800	2760.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		575.000		5.480	0.00	3151.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			575.000	6.800	0.00	0.00	3910.00	PM74001



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Total cost without (OH&CP)						10754.85	11459.84	14462.94	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		860.39	1145.98	1735.55	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		1161.52	1260.58	1619.85	
		Rate for 250 cum = (a+b+c+d)						12776.76	13866.41	17818.34	
		<b>Rate per cum = (a+b+c+d)/250</b>					<b>Say</b>	51.11	55.47	71.27	
2.06	202	<b>Dismantling of cement concrete pavement</b>						<b>51.10</b>	<b>55.50</b>	<b>71.30</b>	
		Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately									
		<b>Unit=cum</b>									
		<b>Taking output=60cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.000	39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.000	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	6.841			2703.000	18491.22	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		8.048		2432.000	0.00	19572.74	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			9.121	2202.000	0.00	0.00	20084.44	PM3005
		Jack hammer	hour	6.841	9.146	12.162	206.000	1409.25	1884.08	2505.37	PM4001
		Air compressor 250 cfm with 2 leads of pneumatic breaker @1 cum per hour	hour	2.880	2.880	2.880	391.000	1126.08	1126.08	1126.08	PM15001
		Pneumatic breaker	hour	5.760	5.760	5.760	206.000	1186.56	1186.56	1186.56	PM4001
		Concrete joint cutting machine	hour	8.000	8.000	8.000	170.000	1360.00	1360.00	1360.00	PM61002
		<b>Tipper</b>									
		for transportation to dumping yard considering lead @ 1km									
		(i) 18 cum capacity	t.km	180.000			4.800	864.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		180.000		5.480	0.00	986.40	0.00	PM73001
		(iii) 10 cum capacity	t.km			180.000	6.800	0.00	0.00	1224.00	PM74001
		For loading and unloading charges for disposed of grabbed material									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(i) Using by 18 cum capacity tipper & 3.1 cum capacity loader	cum	72.000			73,420	5286.24	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		72.000		71.98	0.00	5182.56	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			72.000	100.200	0.00	0.00	7214.40	PM77003
		<b>Total cost without (OH&amp;CP)</b>						30680.35	32255.41	35657.85	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		2454.43	3225.54	4278.94	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		3313.48	3548.10	3993.68	
		Cost for 60 cum = (a+b+c+d)						36448.25	39029.05	43930.48	
		<b>Rate per cum= (a+b+c+d)/60</b>					<b>Say</b>	607.47	650.48	732.17	
		<b>Dismantling of guard rails</b>						<b>607.50</b>	<b>650.50</b>	<b>732.20</b>	
2.07	202	Dismantling of guard rails by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable materials and unserviceable materials separately									
		<b>Unit= running metre</b>									
		<b>Taking output= 1 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.006	0.006	0.006	325.000	1.95	1.95	1.95	L-12
		Mazdoor including loading and unloading	day	0.150	0.150	0.150	306.000	45.90	45.90	45.90	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.006	0.006	0.006	629.000	3.77	3.77	3.77	PM12001
		Total cost without (OH&CP)						51.62	51.62	51.62	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		4.13	5.16	6.19	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		5.58	5.68	5.78	
		Rate per metre = (a+b+c+d)						61.33	62.47	63.60	
		<b>Dismantling of kerb stone</b>					<b>Say</b>	<b>61.30</b>	<b>62.50</b>	<b>63.60</b>	
2.08	202	Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres									
		<b>Unit= running metre</b>									
		<b>Taking output= 10 metre</b>									
		<b>a) Labour</b>									



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.006	0.006	0.006	325.000	1.95	1.95	1.95	L-12
		Mazdoor including loading and unloading	day	0.150	0.150	0.150	306.000	45.90	45.90	45.90	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.139	0.139	0.139	629.000	87.43	87.43	87.43	PM12001
		<b>Total cost without (OH&amp;CP)</b>						135.28	135.28	135.28	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		10.82	13.53	16.23	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		14.61	14.88	15.15	
		Cost for 10 meter = (a+b+c+d)						160.71	163.69	166.67	
		<b>Rate per metre =(a+b+c+d)/10</b>						16.07	16.37	16.67	
							<b>Say</b>	<b>16.10</b>	<b>16.40</b>	<b>16.70</b>	
2.09	202	<b>Dismantling of kerb stone channel</b>									
		Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metres									
		<b>Unit= running metre</b>									
		<b>Takng output= 10 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.009	0.009	0.009	325.000	2.93	2.93	2.93	L-12
		Mazdoor including loading and unloading	day	0.225	0.225	0.225	306.000	68.85	68.85	68.85	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.170	0.170	0.170	629.000	106.93	106.93	106.93	PM12001
		Total cost without (OH&CP)						178.71	178.71	178.71	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		14.30	17.87	21.44	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		19.30	19.66	20.01	
		Cost for 10 meter = (a+b+c+d)						212.30	216.23	220.16	
		<b>Rate per metre =(a+b+c+d)/10</b>						21.23	21.62	22.02	
							<b>Say</b>	<b>21.20</b>	<b>21.60</b>	<b>22.00</b>	
2.10	202	<b>Dismantling of kilometre stone</b>									
		Dismantling of kilometre stone including cutting of earth , foundation and disposal of dismantled material with all lifts and lead up to 1000 metres and back filling of pit									
		<b>Unit= each</b>									
		<b>Takng output= one KM stone</b>									
		<b>5th KM stone</b>									
	A	Quantity of cement concrete= 0.392									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.000	9.75	9.75	9.75	L-12
		Mazdoor	day	0.750	0.750	0.750	306.000	229.50	229.50	229.50	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.150	0.150	0.150	629.000	94.35	94.35	94.35	PM12001
		Total cost without (OH&CP)						333.60	333.60	333.60	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		26.69	33.36	40.03	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		36.03	36.70	37.36	
		Rate for one 5th KM Stone = (a+b+c+d)					<b>Say</b>	396.32	403.66	411.00	
		<b>Ordinary KM Stone</b>						<b>396.30</b>	<b>403.70</b>	<b>411.00</b>	
	B	Quantity of cement concrete=0.269 cum									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.000	6.50	6.50	6.50	L-12
		Mazdoor	day	0.500	0.500	0.500	306.000	153.00	153.00	153.00	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.100	0.100	0.100	629.000	62.90	62.90	62.90	PM12001
		<b>Total cost without (OH&amp;CP)</b>						222.40	222.40	222.40	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		17.79	22.24	26.69	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		24.02	24.46	24.91	
		<b>Rate for 1 ordinary km stone = (a+b+c+d)</b>						264.21	269.10	274.00	
		<b>Hectometre Stone</b>					<b>Say</b>	<b>264.20</b>	<b>269.10</b>	<b>274.00</b>	
	C	Quantity of cement concrete=0.048 cum									
		<b>a) Labour</b>									
		Mate	day	0.004	0.004	0.004	325.000	1.30	1.30	1.30	L-12
		Mazdoor	day	0.100	0.100	0.100	306.000	30.60	30.60	30.60	L-13
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.020	0.020	0.020	629.000	12.58	12.58	12.58	PM12001
		<b>Total cost without (OH&amp;CP)</b>						44.48	44.48	44.48	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		3.56	4.45	5.34	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		4.80	4.89	4.98	
		<b>Rate for 1 Hectometre stone = (a+b+c+d)</b>					<b>Say</b>	52.84	53.82	54.80	
2.11	202	<b>Dismantling of fencing</b>						<b>52.80</b>	<b>53.80</b>	<b>54.80</b>	

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled materials with all lifts and up to a lead of 1000 metres stacking serviceable material and unserviceable material separately.									
		<b>Unit=running metre</b>									
		<b>Taking output= 30 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.150	0.150	0.150	325.000	48.75	48.75	48.75	L-12
		Mazdoor including loading and unloading	day	3.000	3.000	3.000	306.000	918.00	918.00	918.00	L-13
		Blacksmith	day	0.750	0.750	0.750	369.000	276.75	276.75	276.75	L-25
		<b>b) Machinery</b>									
		Tractor- trolley	hour	0.150	0.150	0.150	629.000	94.35	94.35	94.35	PM12001
		Total cost without (OH&CP)						1337.85	1337.85	1337.85	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		107.03	133.79	160.54	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		144.49	147.16	149.84	
		Cost for 30 metres = (a+b+c+d)						1589.37	1618.80	1648.23	
		<b>Rate per metre= (a+b+c+d)/30</b>					<b>say</b>	<b>53.00</b>	<b>54.00</b>	<b>54.90</b>	
2.12	202	<b>Dismantling of CI Water Pipe Line</b>									
		Dismantling of CI Water Pipe Line 600mm dia. Including disposal with all lifts and lead upto 1000 metres and stacking of serviceable material and unserviceable material separately under supervision of concerned department									
		<b>Unit= running metre</b>									
		<b>Taking output=10 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.000	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.000	612.00	612.00	612.00	L-13
		Plumber	day	0.250	0.250	0.250	413.000	103.25	103.25	103.25	L-02
		<b>b) Machinery</b>									
		Truck 10 tonne capacity	hour	0.250	0.250	0.250	1371.000	342.75	342.75	342.75	PM6004
		Light crane 3 tonne capacity	hour	0.500	0.500	0.500	728.000	364.00	364.00	364.00	PM63001
		Total cost without (OH&CP)						1448.00	1448.00	1448.00	



**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per peroeject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		115.84	144.80	173.76	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		156.38	159.28	162.18	
		Cost for 10 metres = (a+b+c+d)						1720.22	1752.08	1783.94	
		<b>Rate per metre= (a+b+c+d)/10</b>						<b>172.00</b>	<b>175.20</b>	<b>178.40</b>	
		<b>Note</b>		The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.							
2.13	202	<b>Removal of cement concrete Pipe of sewer Gutter</b>									
		Removal of cement concrete pipe of sewer gutter 1500 mm dia under the supervision of concerned department including disposal with all lifts and up to a lead of 1000 metres and stacking of serviceable and unserviceable material separately but excluding earth excavation and dismantling of masonry works.									
		<b>Unit= running metre</b>									
		<b>Taking output= 10 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100		32.50	32.50	32.50	L-12
		Mazdoor	day	2.500	2.500	2.500		765.00	765.00	765.00	L-13
		<b>b) Machinery</b>									
		Crane 5 tonne capacity	hour	0.300	0.300	0.300		229.50	229.50	229.50	PM63002
		Truck flat body 10 tonne	hour	1.000	1.000	1.000		1371.00	1371.00	1371.00	PM6004
		Total cost without (OH&CP)						2398.00	2398.00	2398.00	
		<b>c) Overhead charges on(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		191.84	239.80	287.76	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		258.98	263.78	268.58	
		Cost for 10 metres = (a+b+c+d)						2848.82	2901.58	2954.34	
		<b>Rate per metre= (a+b+c+d)/10</b>						<b>284.90</b>	<b>290.20</b>	<b>295.40</b>	
		<b>Note</b>		The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.							
2.14	202	<b>Removal of telephone/ Electric Poles and Lines</b>									

**SITE CLEARANCE**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		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									
		<b>Unit= Each</b>									
		<b>Taking Output= 30 nos.</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.000	156.00	156.00	156.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.000	3060.00	3060.00	3060.00	L-13
		Electrician/ Lineman	day	2.000	2.000	2.000	413.000	826.00	826.00	826.00	L-02
		<b>b) Machinery</b>									
		Tractor-trolley	hour	1.500	1.500	1.500	629.000	943.50	943.50	943.50	PM12001
		<b>Total cost without (OH&amp;CP)</b>						<b>4985.50</b>	<b>4985.50</b>	<b>4985.50</b>	
		c) Overhead charges on(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		398.84	498.55	598.26	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		538.43	548.41	558.38	
		Cost for 30 Pole = (a+b+c+d)						5922.77	6032.46	6142.14	
		<b>Rate per pole= (a+b+c+d)/30</b>						197.43	201.08	204.74	
		<b>Note</b>					<b>Say</b>	<b>197.40</b>	<b>201.10</b>	<b>204.70</b>	
		<b>All the serviceables material resulting from removal of telephone / Electric poles and lines would be handed over to the employer.</b>									



**CHAPTER - 03**

**EARTHWORK,  
EROSION CONTROL AND  
DRAINAGE**



## CHAPTER-3

### EARTHWORK, EROSION CONTROL AND DRAINAGE

#### PREAMBLES :

- 1 The rates have been analyzed using mechanical means. Manual means for certain items have also been provided which can be used for area inaccessible to machines and for small jobs.
- 2 In rate analyses of earthwork, only compacted volume of earth has been considered.
- 3 Rates have been analyzed for average working conditions.
- 4 Average achievable outputs of machines have been considered taking into account job and management factors.
- 5 A water tanker of 6, 12, & 16 KL capacity which is commonly used at construction site has been considered
- 6 The rate caters for disposal of unsuitable soil only upto a distance of 1 km. The cost of transportation beyond the initial lead of 1 km will be paid separately based on tonne-kilometer.
- 7 The replacement of unsuitable soil by suitable soil shall be included separately in the estimate. The rate analyses for removal of unsuitable soil does not provide for replacement by suitable soil.
- 8 In cases where embankment is constructed with earth taken from roadway, the cost of depositing the earth at the site of embankment is already included in the disposal of excavated earth.
- 9 For narrow and restricted areas, plate compactor has been proposed for compaction to achieve the desired density.
- 10 For small jobs where loading and unloading is required to be done manually, tractor-trolley has been proposed for carriage instead of a tipper.
- 11 In case excavated rock is found suitable for incorporation in works, suitable credit for the available rock shall be given.
- 12 The possibility of using the blasted rock fragments for backfilling behind structures or backfilling of foundation pits or filling in medians/separators or use in service road shall be examined before proposing disposal of excavated rock.
- 13 In case of hill roads, the cut earth can be pushed down the valley in case there is no objection. In that case, cost of disposal is not required to be provided.
- 14 'L2' (Lead for Earthwork borrow area to site) in the analysis represents lead in km one way. This will vary from project to project and is required to be ascertained at site at the time of estimation.
- 15 For inhabited areas, controlled blasting with limited charges of explosives has been provided. This involves smaller drill holes and additional requirement of electric detonators. Provision has accordingly been made.

- 16 Any work involved for water courses at culverts (Clause 312) will be priced under respective items like excavation, grubbing, clearing etc. for which rate analyses have separately been made.
- 17 Earth excavated from drains can be used in roadway berms. Hence, carriage for disposal of same is not provided.
- 18 In rate analysis of some items, the quantities of sub-items involved in that analysis, (like excavation for foundation, foundation concrete, painting, lettering etc.) has been given. The rates for such item shall be taken from relevant chapters where the same have already been analyzed.



Summary of Rate Analysis  
**CHAPTER -3**  
**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
<b>3.01</b>	<b>301</b>	<b>Excavation in Soil by Manual Means.</b>				
		Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto 1000 metres.	cum	267.50	272.40	277.40
<b>3.02</b>	<b>301</b>	<b>Excavation in Ordinary Rock by Manual Means.</b>				
		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.	cum	346.40	352.80	359.30
<b>3.03</b>	<b>301</b>	<b>Excavation in soil with Dozer with lead upto 1000 metres</b>				
		Excavation for road way in soil by mechanical means including cutting and transporting the earth to site of embankment /dumping area with lead upto 1000 metres, including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.	cum	146.10	153.40	199.90
<b>3.04</b>	<b>301</b>	<b>Excavation in ordinary rock with Dozer with lead upto 1000 metres</b>				
		Excavation for roadway in ordinary rock by deploying a dozer, including cutting and transporting the earth to site of embankment /dumping area with lead upto 1000 metres, trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.	cum	222.10	236.00	298.50
<b>3.05</b>	<b>301 &amp; 302</b>	<b>Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres</b>				
		Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres	cum	#VALUE!	#VALUE!	#VALUE!
<b>3.06</b>	<b>301</b>	<b>Excavation in Soil using Hydraulic Excavator and Tippers with Disposal upto 1000 metres.</b>				
		Excavation for road work in soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and tranporting to the embankment location within all lifts and lead upto 1000 m	cum	75.50	88.00	102.40
<b>3.07</b>	<b>301</b>	<b>Excavation in Ordinary Rock using Hydraulic Excavator and Tippers with Disposal upto 1000 metres</b>				





**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Excavation for roadwork in Ordinary Rock with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m	cum	524.50	561.20	602.90
<b>3.08</b>	<b>301</b>	<b>Excavation in Hard Rock (blasting prohibited)</b>				
		Excavation for roadwork in Hard Rock (blasting prohibited) with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m				
		<b>A Mechanical Method</b>	cum	653.30	705.10	785.50
<b>3.08</b>		<b>B Manual Method</b>	cum	1510.20	1538.20	1566.20
<b>3.09</b>	<b>301 &amp; 302</b>	<b>Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres</b>	cum	#VALUE!	#VALUE!	#VALUE!
		Excavation for road way in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road within all lifts and leads upto 1000 metres.				
<b>3.10</b>	<b>301</b>	<b>Excavation in Marshy Soil using Hydraulic Excavator and Tippers with Disposal upto 1000 metres</b>				
		Excavation for roadwork in Marshy Soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m	cum	163.40	172.70	220.80
<b>3.11</b>	<b>301</b>	<b>Removal of Unserviceable Soil with Disposal upto 1000 metres</b>				
		Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.	cum	76.90	81.80	104.40
<b>3.12</b>	<b>303</b>	<b>Presplitting of Rock Excavation Slopes</b>				
		Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303	sqm	#VALUE!	#VALUE!	#VALUE!
<b>3.13</b>	<b>304</b>	<b>Excavation for Structures</b>				



**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		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) <b>Ordinary Soil</b>				
		<b>A Manual Means ( Depth upto 3 m)</b>	cum	303.20	308.80	314.40
3.13		<b>B Mechanical Means (Depth upto 3 m)</b>	cum	72.60	76.50	95.70
3.13		(ii) <b>Ordinary Rock (not requiring blasting)</b>				
		<b>A Manual Means ( Depth upto 3m)</b>	cum	379.00	386.00	393.00
3.13		<b>B Mechanical Means</b>	cum	541.30	583.30	613.20
3.13	302 & 303	(iii) <b>Mechanical Means</b>				
		<b>A</b> Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in property aligned and spaced drill holes , collection of the excavated rock by a dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303.	cum	#VALUE!	#VALUE!	#VALUE!
3.13		(iv) <b>Hard Rock ( Blasting Prohibited)</b>	cum	985.50	1067.20	1215.00
3.13		(v) <b>Marshy soil</b>				
		<b>A Manual means ( upto 3m depth)</b>	cum	599.30	610.40	621.50
3.13		<b>B Mechanical Means</b>	cum	272.00	286.70	360.00
3.14	305.4.3	<b>Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.</b>				
		(i) Scarifying Existing Grannular Surface to a depth of 50 mm by Manual Means	sqm	31.40	32.00	32.60
3.14	305.4.3	(ii) <b>By Mechnaical Means using Hydraulic excavator</b>	sqm	4.80	5.20	6.60
3.14	305.4.3	(iii) <b>By Mechnaical Means using Motor Grader</b>	sqm	6.50	6.80	8.70
3.15	305.4.3	<b>Scarifying the existing bituminous surface to a depth of 50 mm and disposal of scarified material within all the lifts and leads upto 1000 metres.</b>				
		(i) <b>By Mechnaical Means using Hydraulic excavator</b>	sqm	5.80	6.20	7.90
3.15	305.4.3	(ii) <b>By Mechnaical Means using Motor Grader</b>	sqm	6.60	6.90	8.80
3.16	305	<b>Construction of Embankment with Material obtained from Borrow pits.</b>				
		Construction of Embankment with approved material obtained from Borrow pits 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	169.70	180.10	205.50
3.17	305	<b>Construction of Embankment with Material Deposited from Roadway Cutting.</b>				
		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	52.30	57.00	59.40
		<b>Rate per cum after adding royalty@Rs 33.00/cum</b>	cum	85.30	90.00	92.40

**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
3.18	305	<b>Construction of Subgrade and Earthen Shoulders</b>				
		Construction of sub-grade and earthen shoulders with approved material obtained from Borrow pits 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	171.40	181.90	207.80
3.19	305	<b>Construction of Subgrade and Earthen Shoulders with Material Deposited from Roadway Cutting</b>				
		Construction of Embankment with Material Deposited from Roadway 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	53.10	57.90	60.50
		<b>Rate per cum after adding royalty@Rs 33.00/cum</b>	cum	86.10	90.90	93.50
3.20	305.3.4	<b>Compacting Original ground</b>				
	<b>Case-I</b>	<b>Compacting Original ground supporting sub-grade</b>				
		Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of Table 300-2 for sub-grade construction.	cum	84.30	92.60	91.20
	<b>Case-II</b>	<b>Compacting Original ground supporting embankment</b>				
		Loosening, leveling and compacting original ground supporting embankment to facilitate placement of first layer of embankment , scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.	cum	97.00	106.90	106.30
3.21	305	<b>Stripping and Storing Top Soil</b>				
		Stripping, Storing of Top Soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth.	cum	100.20	107.90	126.80
3.22	305	<b>Stripping, Storing and Re-laying Top Soil from Borrow Areas in Agriculture Fields.</b>				
		Stripping of top Soil from Borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.	cum	177.40	186.20	236.50
3.23	307	<b>A Turfing with Sods</b>				
		Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of sods and watering.	cum	35.40	37.10	42.30
3.24	308	<b>Seeding and Mulching</b>				



**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Preparation of seed bed on previously laid top soil, finishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including cost of watering for 3 months all as per clause 308.	sqm	145.00	151.40	170.50
<b>3.25</b>	<b>309</b>	<b>Surface Drains in Soil</b>				
		Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 1000 metres				
		<b>A Mechanical means</b>	metre	51.40	52.40	53.30
<b>3.25</b>		<b>B Manual means</b>	metre	137.20	139.80	142.30
<b>3.26</b>	<b>309</b>	<b>Surface Drains in Ordinary Rock</b>				
		Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 and 309. Excavated material to be used in embankment at site within a lead of 1000 metres				
		<b>A Mechanical means</b>	metre	68.20	69.50	70.70
		<b>B Manual means</b>	metre	191.70	195.30	198.80
<b>3.27</b>	<b>309</b>	<b>Surface Drains in Hard Rock</b>				
		Rate per metre may be worked out based on quantity of hard rock as per design. For rate of hard rock cutting, refer relevant item in this chapter				
<b>3.28</b>	<b>309</b>	<b>Sub-Surface Drains with Perforated Pipe</b>				
		Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ Cement concrete/ PVC, closely jointed, perforations ranging from 3mm to 6mm depending upto size of material surrounding the pipe, with 150 mm bedding below the pipe and 300mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site	metre	401.60	409.10	416.50
<b>3.29</b>	<b>309</b>	<b>Aggregate Sub-Surface Drains</b>				
		Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to Table 300-4, excavated material to be utilised in roadway.	metre	165.60	168.70	171.70
<b>3.30</b>	<b>309</b>	<b>Underground Drain at Edge of pavement</b>				
		Construction of an underground drain 1m x 1m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab 10 cm in thickness on urban roads.	metre	3760.00	3836.84	3945.91
		Rates for these items may be taken from chapters on earth work and culvert respectively.				
<b>3.31</b>	<b>310</b>	<b>Preparation and Surface Treatment of Formation</b>				
		Preparation and Surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content, trimming to the required line, grade, profile and rolling with smooth wheeled roller, complete as per clause 310.	sqm	3.20	3.30	3.60



**EARTH WORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
3.32	313	<b>Construction of Rock fill Embankment with all lifts and lead upto 5 km</b>				
		Construction of Rock fill Embankment from roadway excavation with broken hard rock fragments of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313.	cum	110.40	118.80	146.70
3.33		<b>Work in Urban Roads</b>				
		The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:				
		a) There is mixed traffic on urban roads like slow moving hand and animal driven carts, riskshaws, cycles, two/ three wheeler apart from the usual vehicular traffic resulting into traffic jams. This causes loss of working time which may be in the range of 10-15 percent				
		b) There is considerable disruption of traffic adversely affecting the efficiency of the working parties including machines due to congestion caused by pedestrian traffic, local road side vendors, parking of vehicles by the-road side encroachment by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorised conversion of road berms into mini local market. The output of Manpower and machines is substantially reduced due to factors mentioned above.				
		c) Cost of living in urban areas is comparatively more resulting into higher wages.				
		d) At times, work is executed during night time due to heavy traffic during day time. This involves extra expenditure by way of making arrangement for lighting and special transport for working parties due to odd hour.				
		In the light of above, the authorities engaged in preparing the cost estimates may exercise their judgement and cater for the additional cost to the extent of 2 to3 percent,keeping in view the severity of factors mentioned above. Supporting details for the extra cost based on the actual conditions in specific cases will have to give in justification.				
3.34	<b>Suggestive</b>	<b>Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material.</b>				
		Construction of embankment with fly ash conforming to Table 1 of IRC: SP:58 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layers at OMC, all as specified in IRC: SP: 58 and as per approved plans. Considering soil blanketing of 2m either side for 4 lane section		75.10	81.00	87.70



**Analysis of Rate**  
**CHAPTER 3**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
3.01	301	<b>Excavation in Soil by Manual Means.</b>									
		Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto 1000 metres.									
		<b>Unit=cum</b>									
		<b>Taking output=120 cum</b>									
		<b>a) Labour</b>									
		Mate	day	1.800	1.800	1.800	325.00	585.00	585.00	585.00	L-12
		Mazdoors	day	45.000	45.000	45.000	306.00	13770.00	13770.00	13770.00	L-13
		<b>b) Machinery</b>									
		Truck 5.5 cum capacity	hour	9.236	9.236	9.236	1371.00	12662.56	12662.56	12662.56	PM6004
		Total cost( Without O.H.&C.P.)						27017.56	27017.56	27017.56	
		<b>c) Overhead charges on (a+b)</b>						2161.40	2701.76	3242.11	
		<b>d) Contractor's profit on(a+b+c)</b>						2917.90	2971.93	3025.97	
		<b>Cost of 120 cum= a+b+c+d</b>						32096.86	32691.24	33285.63	
		<b>Rate per cum= (a+b+c+d)/120(With OH.&amp;C.P.)</b>						267.47	272.43	277.38	
		<b>Note</b>						<b>Say</b>	<b>272.40</b>	<b>277.40</b>	
		In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted									
3.02	301	<b>Excavation in Ordinary Rock by Manual Means.</b>									
		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.									
		<b>Unit=cum</b>									
		<b>Taking output=120 cum</b>									



**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	2.800	2.800	2.800	325.00	910.00	910.00	910.00	L-12
		Mazdoors	day	70.000	70.000	70.000	306.00	21420.00	21420.00	21420.00	L-13
		<b>b) Machinery</b>									
		Truck 5.5 cum capacity	hour	9.236	9.236	9.236	1371.00	12662.56	12662.56	12662.56	PM6004
		Total cost( Without O.H.&C.P.)						34992.56	34992.56	34992.56	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2799.40	3499.26	4199.11	
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3779.20	3849.18	3919.17	
		<b>Cost of 120 cum= a+b+c+d</b>						41571.16	42340.99	43110.83	
		<b>Rate per cum= (a+b+c+d)/120(With OH.&amp;C.P.)</b>						346.43	352.84	359.26	
							<b>Say</b>	<b>346.40</b>	<b>352.80</b>	<b>359.30</b>	
		<b>Note</b>									
		In case there is a situation where the cross-section is of cut and fill and cut earth is required to be used in embankment in the immediate vicinity, the item of carriage in the truck shall be omitted									
3.03	301	<b>Excavation in soil with Dozer with lead upto 1000 metres</b>									
		Excavation for road way in soil by mechanical means including cutting and transporting the earth to site of embankment/dumping area with lead upto 1000 metres, including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.									
		<b>Unit=cum</b>									
		<b>Taking output= 500 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Dozer</b>									
		Dozer (240HP)	hour	3.731			5523.00	20606.31	0.00	0.00	PM1001

**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Dozer (175HP)	hour		5.342		4249.00	0.00	22698.16	0.00	PM1002
		Dozer (90HP)	hour			8.621	2930.00	0.00	0.00	25259.53	PM1003
		Tipper									
		(i) 18 cum capacity	t.km	800.000			4.80	3840.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		800.000		5.48	0.00	4384.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			800.000	6.80	0.00	0.00	5440.00	PM74001
		<b>Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	500.000			73.42	36710.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		500.000		71.98	0.00	35990.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity Total cost( Without O.H&C.P.)	cum			500.000	100.20	0.00	0.00	50100.00	PM77003
		<b>c) Overhead charges on (a+b)</b>						61475.31	63391.16	81118.53	
		<b>d) Contractor's profit on(a+b+c)</b>						4918.03	6339.12	9734.22	
		<b>Cost for 500 cum= a+b+c+d</b>						6639.33	6973.03	9085.28	
		<b>Rate per cum= (a+b+c+d)/500(With OH.&amp;C.P.)</b>						73032.67	76703.30	99938.03	
								146.07	153.41	199.88	
							<b>Say</b>	<b>146.10</b>	<b>153.40</b>	<b>199.90</b>	
3.04	301	<b>Excavation in ordinary rock with Dozer with lead upto 1000 metres</b>									
		Excavation for roadway in ordinary rock by deploying a dozer, including cutting and transporting the earth to site of embankment/dumping area with lead upto 1000 metres, trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.									
		<b>Unit=cum</b>									
		<b>Taking output= 300 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Dozer</b>									
		Dozer (240HP)	hour	4.688			5523.00	25891.82	0.00	0.00	PM1001



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Dozer (175HP)	hour		6.667		4249.00	0.00	28328.08	0.00	PM1002
		Dozer (90HP)	hour			10.714	2930.00	0.00	0.00	31392.02	PM1003
		Tipper									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	720.000			4.80	3456.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		720.000		5.48	0.00	3945.60	0.00	PM73001
		(iii) 10 cum capacity	t.km			720.000	6.80	0.00	0.00	4896.00	PM74001
		<b>For Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	360.000			73.42	26431.20	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		360.000		71.98	0.00	25912.80	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			360.000	100.20	0.00	0.00	36072.00	PM77003
		Total cost( Without O.H&C.P.)						56098.02	58505.48	72679.02	
		<b>c) Overhead charges on (a+b)</b>						4487.84	5850.55	8721.48	
		<b>d) Contractor's profit on(a+b+c)</b>						6058.59	6435.60	8140.05	
		<b>Cost for 300 cum= a+b+c+d</b>						66644.45	70791.63	89540.55	
		<b>Rate per cum= (a+b+c+d)/300 (With OH.&amp;C.P.)</b>						222.15	235.97	298.47	
							<b>Say</b>	<b>222.10</b>	<b>236.00</b>	<b>298.50</b>	
3.05	301 & 302	<b>Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres</b>									
		Excavation for roadway in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres									
		<b>Unit = cum</b>									
		<b>Taking output= 180 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.210	0.210	0.210	325.00	68.25	68.25	68.25	L-12
		Mazdoors	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Driller	day	2.000	2.000	2.000	318.00	636.00	636.00	636.00	L-06
		Blaster	day	0.250	0.250	0.250	508.00	127.00	127.00	127.00	L-03
		<b>b) Machinery</b>									
		Air Compressor 250 cfm	hour	27.500	27.500	27.500	391.00	10752.50	10752.50	10752.50	PM15001
		Pneumatic breaker for drilling holes (@ 4.5 m per hour)	hour	55.000	55.000	55.000	206.00	11330.00	11330.00	11330.00	PM4001
		<b>Dozer</b>									
		Dozer (240HP)	hour	3.375			5523.00	18640.13	0.00	0.00	PM1001
		Dozer (175HP)	hour		4.800		4249.00	0.00	20395.20	0.00	PM1002
		Dozer (90HP)	hour			7.714	2930.00	0.00	0.00	22602.02	PM1003
		Tipper									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	360.000			4.80	1728.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		360.000		5.48	0.00	1972.80	0.00	PM73001
		(iii) 10 cum capacity	t.km			360.000	6.80	0.00	0.00	2448.00	PM74001
		<b>For Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	216.000			73.42	15858.72	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		216.000		71.98	0.00	15547.68	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			216.000	100.20	0.00	0.00	21643.20	PM77003
		<b>c) Materials</b>									
		Small dia Explosive at 0.40kg/cum for 180 cum (180 x 0.40) Explosive at 0.20 kg/cum for secondary blast @5% of the total volume (180 x 0.2x5%)	kg	73.800	73.800	73.800	976.21	72044.30	72044.30	72044.30	M-215
		Electric detonators at 1 per hole for main blast holes (2'x3'+20x2)= 103 nos	no	103.000	103.000	103.000	6.19	637.57	637.57	637.57	M-217
		Ordinary detonators @ 1 per hole for 10 secondary holes (required for 5% of the total quantity @ 0.6 m per hole for 1 cum)	no	10.000	10.000	10.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Detonating Fuse coil	m	320.000	320.000	320.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Credit for excavated rock found suitable for use @ 50 percent quantity blasted	cum	90.000	90.000	90.000	101.24	-9111.60	-9111.60	-9111.60	M-090
		Total cost( Without O.H&C.P.)						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 180 cum = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per cum=(a+b+c+d+e)/180(with OH.&amp;C.P)</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>Note</b>									
		1. The quantity and availability of rock shall be checked before affording credit.									
		2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced/ restricted to that extent.									
3.06	301	<b>Excavation in Soil using Hydraulic Excavator and Tippers with Disposal upto 1000 metres.</b>									
		Excavation for road work in soil with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000 m									
		<b>Unit = cum</b>									
		<b>Taking output= 350 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	3.926			2703.00	10611.98	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.024		2432.00	0.00	12218.37	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			6.321	2202.00	0.00	0.00	13918.84	PM3005
		<b>Tipper</b>									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	525.000			4.80	2520.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		525.000		5.48	0.00	2877.00	0.00	PM73001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t.km			525.000	0.00	0.00	3570.00	PM74001	
		<b>For Loading and unloading time</b>									
		(i) 18 cum capacity	hour	3.926			2239.00	8790.31	0.00	PM6001	
		(ii) 14 cum capacity	hour		5.024		1998.00	0.00	10037.95	PM6002	
		(iii) 10 cum capacity	hour			6.321	1785.00	0.00	11282.99	PM6003	
		Total cost( Without O.H&C.P.)					22241.29	25452.32	29090.83		
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)	1779.30	2545.23	3490.90		
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)	2402.06	2799.76	3258.17		
		<b>Cost for 350 cum= a+b+c+d</b>					26422.65	30797.31	35839.90		
		<b>Rate per cum= (a+b+c+d)/350 (With OH.&amp;C.P.)</b>					75.49	87.99	102.40		
							<b>Say</b>	<b>75.50</b>	<b>88.00</b>	<b>102.40</b>	
3.07	301	<b>Excavation in Ordinary Rock using Hydraulic Excavator and Tippers with Disposal upto 1000 metres</b>									
		Excavation for roadwork in Ordinary Rock with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m									
		<b>Unit = cum</b>									
		<b>Taking output= 60 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	L-12	
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	L-13	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator for Jack Hammer</b>									
		(i) 1.2 cum bucket capacity	hour	6.982			2703.00	18872.35	0.00	PM3003	
		(ii) 1.1 cum bucket capacity	hour		8.214		2432.00	0.00	19976.45	PM3004	
		(iii) 0.9 cum bucket capacity	hour			8.727	2202.00	0.00	0.00	PM3005	
		<b>Jack Hammer</b>	hour	6.982	8.214	8.727	206.00	1438.29	1692.08	PM4001	
		Tipper									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	120.000			4.80	576.00	0.00	0.00	PMT2001
		(ii) 14 cum capacity	t.km		120.000		5.48	0.00	657.60	0.00	PMT3001
		(iii) 10 cum capacity	t.km			120.000	6.80	0.00	0.00	816.00	PMT4001
		<b>For Loading &amp; unloading charges for disposed of grabbed material</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	72.000			73.42	5286.24	0.00	0.00	PMT7001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		72.000		71.98	0.00	5182.56	0.00	PMT7002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			72.000	100.20	0.00	0.00	7214.40	PMT7003
		Total cost( Without O.H&C.P.)						26491.88	27827.69	29364.02	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2119.35	2782.77	3523.68	
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2861.12	3061.05	3288.77	
		<b>Cost for 60 cum= a+b+c+d</b>						31472.35	33671.51	36176.47	
		<b>Rate per cum= (a+b+c+d)/ 60 (With OH.&amp;C.P.)</b>						524.54	561.19	602.94	
							<b>Say</b>	<b>524.50</b>	<b>561.20</b>	<b>602.90</b>	
<b>3.08</b>	<b>301</b>	<b>Excavation in Hard Rock (blasting prohibited)</b>									
		Excavation for roadwork in Hard Rock (blasting prohibited) with hydraulic excavator including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m									
		<b>A Mechanical Method</b>									
		<b>Unit = cum</b>									
		<b>Taking output= 50 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Hydraulic Excavator for Jack Hammer</b>									
		(i) 1.2 cum bucket capacity	hour	8.533			2703.00	23064.70	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		10.039		2432.00	0.00	24414.85	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			11.378	2202.00	0.00	0.00	25054.36	PM3005
		<b>Jack Hammer</b>	hour	8.533	10.039	11.378	206.00	1757.80	2068.03	2343.87	PM4001
		<b>Tipper</b>									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	100.000			4.80	480.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		100.000		5.48	0.00	548.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			100.000	6.80	0.00	0.00	680.00	PM74001
		<b>For Loading &amp; unloading charges for disposed of grabbed material</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	60.000			73.42	4405.20	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		60.000		71.98	0.00	4318.80	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			60.000	100.20	0.00	0.00	6012.00	PM77003
		Credit for excavated rock found suitable for use @ 50 percent of excavated .	cum	25.000	25.000	25.000	101.24	-2531.00	-2531.00	-2531.00	M-090
		Total cost( Without O.H&C.P.)						27495.70	29137.68	31878.22	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2199.66	2913.77	3825.39	
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2969.54	3205.15	3570.36	
		<b>Cost for 50 cum= a+b+c+d</b>						32664.89	35256.60	39273.97	
		<b>Rate per cum= (a+b+c+d)/ 50 (With OH.&amp;C.P.)</b>						653.30	705.13	785.48	
							<b>Say</b>	<b>653.30</b>	<b>705.10</b>	<b>785.50</b>	
<b>3.08</b>		<b>B Manual Method</b>									
		<b>Unit = cum</b>									
		<b>Taking output= 16 cum</b>									
		<b>a) Labour</b>									
		Mate	day	1.640	1.640	1.640	325.00	533.00	533.00	533.00	L-12
		Mazdoor including loading in truck	day	16.000	16.000	16.000	306.00	4896.00	4896.00	4896.00	L-13
		Chiseller	day	24.000	24.000	24.000	474.00	11376.00	11376.00	11376.00	L-05
		Blacksmith (lind class)	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-01

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		Tipper 5.5 cum capacity, 1 trip per hour	hour	2.900	2.900	2.900	1371.00	3975.90	3975.90	3975.90	PM6004
		Credit for excavated rock found suitable for use @ 50 percent quantity blasted	cum	8.000	8.000	8.000	101.24	-809.92	-809.92	-809.92	M-090
		Total cost( Without O.H.&C.P.)						20339.98	20339.98	20339.98	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1627.20	2034.00	2440.80	
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2196.72	2237.40	2278.08	
		<b>Cost for 16 cum= a+b+c+d</b>						24163.90	24611.38	25058.86	
		<b>Rate per cum= (a+b+c+d)/ 16 (With OH.&amp;C.P.)</b>					<b>Say</b>	1510.24	1538.21	1566.18	
								<b>1510.20</b>	<b>1538.20</b>	<b>1566.20</b>	
		<b>Note</b>									
		1. Credit is considered for 50 percent of quantity of work.									
		2. Loading for disposal will be done manually, being small quantity.									
		3. In case some rock is issued to contractor at site, the item of carriage shall be omitted to the extent of quantity issued to the contractor									
<b>3.09</b>	<b>301 &amp; 302</b>	<b>Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres</b>									
		Excavation for road way in hard rock (requiring blasting) by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road within all lifts and leads upto 1000 metres.									
		<b>Unit = cum</b>									
		<b>Taking output= 180 cum</b>									
		a) Labour									
		Mate	day	0.210	0.210	0.210	325.00	68.25	68.25	68.25	L-12
		Mazdoors	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Driller	day	2.000	2.000	2.000	318.00	636.00	636.00	636.00	L-06
		Blaster	day	0.250	0.250	0.250	508.00	127.00	127.00	127.00	L-03
		<b>b) Machinery</b>									
		Air Compressor 250 cfm	hour	27.500	27.500	27.500	391.00	10752.50	10752.50	10752.50	PM15001
		Pneumatic breaker for drilling holes	hour	55.000	55.000	55.000	206.00	11330.00	11330.00	11330.00	PM4001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(@ 4.5 m per hour)									
		<b>Dozer</b>									
		Dozer (240HP)	hour	3.375			5523.00	18640.13	0.00	0.00	PM1001
		Dozer (175HP)	hour		4.320		4249.00	0.00	18355.68	0.00	PM1002
		Dozer (90HP)	hour			7.714	2930.00	0.00	0.00	22602.02	PM1003
		<b>Tipper</b>									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	360.000			4.80	1728.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		360.000		5.48	0.00	1972.80	0.00	PM73001
		(iii) 10 cum capacity	t.km			360.000	6.80	0.00	0.00	2448.00	PM74001
		<b>For Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	216.000			73.42	15858.72	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		216.000		71.98	0.00	15547.68	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			216.000	100.20	0.00	0.00	21643.20	PM77003
		<b>c) Materials</b>									
		Small dia Explosive at 0.40kg/cum for 180 cum (180 x 0.40) Explosive at 0.20 kg/cum for secondary blast @5% of the total volume (180 x 0.2x5%)	kg	73.800	73.800	73.800	976.21	72044.30	72044.30	72044.30	M-215
		Electric detonators at 1 per hole for main blast holes (21x3+20x2)= 103 nos	no	103.000	103.000	103.000	6.19	637.57	637.57	637.57	M-217
		Ordinary detonators @ 1 per hole for 10 secondary holes (required for 5% of the total quantity @ 0.6 m per hole for 1 cum)	no	10.000	10.000	10.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Detonating Fuse coil	m	320.000	320.000	320.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Credit for excavated rock found suitable for use @ 50 percent quantity blasted	cum	90.000	90.000	90.000	101.24	-9111.60	-9111.60	-9111.60	M-090
		Add 5 percent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting						#VALUE!	#VALUE!	#VALUE!	
								#VALUE!	#VALUE!	#VALUE!	



**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Total cost( Without O.H&C.P.)									
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 180 cum = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		Rate per cum=(a+b+c+d+e)/180(with O.H.&C.P)					Say	#VALUE!	#VALUE!	#VALUE!	
		<b>Note</b>									
		1. The quantity and availability of rock shall be checked before affording credit.									
		2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced/ restricted to that extent.									
3.10	301	<b>Excavation in Marshy Soil using Hydraulic Excavator and Tipper with Disposal upto 1000 metres</b>									
		Excavation for roadwork in Marshy Soil with hydraulic excavator including cutting and loading in tipper, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m									
		Unit = cum									
		Taking output= 325 cum									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		b) Machinery									
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	8.506			2703.00	22991.72	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		9.796		2432.00	0.00	23823.87	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			13.695	2202.00	0.00	0.00	30156.39	PM3005
		Tipper									
		For transportation to dumping yard considering lead @1 km									
		(i) 18 cum capacity	t.km	487.500			4.80	2340.00	0.00	0.00	PMT2001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per peroject category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 14 cum capacity	t.km		487.500		5.48	0.00	2671.50	0.00	PM73001
		(iii) 10 cum capacity	t.km			487.500	6.80	0.00	0.00	3315.00	PM74001
		<b>For Loading and unloading time</b>									
		(i) 18 cum capacity	hour	8.506			2239.00	19044.93	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.796		1998.00	0.00	19572.41	0.00	PM6002
		(iii) 10 cum capacity	hour			13.695	1785.00	0.00	0.00	24445.58	PM6003
		Total cost( Without O.H&C.P.)						44695.65	46386.78	58235.97	
		<b>c) Overhead charges on (a+b)</b>						3575.65	4638.68	6988.32	
		<b>d) Contractor's profit on(a+b+c)</b>						4827.13	5102.55	6522.43	
		<b>Cost of 325 cum= a+b+c+d</b>						53098.43	56128.00	71746.71	
		<b>Rate per cum= (a+b+c+d)/325 (With OH.&amp;C.P.)</b>						163.38	172.70	220.76	
							<b>Say</b>	<b>163.40</b>	<b>172.70</b>	<b>220.80</b>	
<b>3.11</b>	<b>301</b>	<b>Removal of Unserviceable Soil with Disposal upto 1000 metres</b>									
		Removal of unserviceable soil including excavation, loading and disposal upto 1000 metres lead but excluding replacement by suitable soil which shall be paid separately as per clause 305.									
		<b>Unit = cum</b>									
		<b>Taking output= 415 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	4.769			2703.00	12890.61	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.492		2432.00	0.00	13356.54	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			7.678	2202.00	0.00	0.00	16906.96	PM3005
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	622.500			4.80	2988.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		622.500		5.48	0.00	3411.30	0.00	PM73001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t.km			622.500	0.00	0.00	4233.00	PM74001	
		<b>Loading and unloading time</b>									
		(i) 18 cum capacity	hour	4.769			10677.79	0.00	0.00	PM6001	
		(ii) 14 cum capacity	hour		5.492		0.00	10973.02	0.00	PM6002	
		(iii) 10 cum capacity	hour			7.678	0.00	0.00	13705.23	PM6003	
		Total cost( Without O.H.&C.P.)					28875.40	28059.86	35164.19		
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)	2150.03	2805.99	4219.70		
		<b>d) Contractor's profit on(a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)	2902.54	3086.58	3938.39		
		<b>Cost of 415 cum= a+b+c+d</b>					31927.97	33952.43	43322.28		
		<b>Rate per cum= (a+b+c+d)/415 (With OH.&amp;C.P.)</b>					76.93	81.81	104.39		
							<b>76.90</b>	<b>81.80</b>	<b>104.40</b>		
<b>3.12</b>	<b>303</b>	<b>Presplitting of Rock Excavation Slopes</b>									
		Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes, collection of the excavated rock by a dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303									
		<b>Unit = Sqm</b>									
		<b>Taking output= 400 Sqm</b>									
		<b>(120 cum considering 300mm average depth of excavation over the existing rock face)</b>									
		<b>a) Labour</b>									
		Mate	day	0.210	0.210	0.210	68.25	68.25	68.25	L-12	
		Mazdoors	day	3.000	3.000	3.000	918.00	918.00	918.00	L-13	
		Driller	day	2.000	2.000	2.000	636.00	636.00	636.00	L-06	
		Blaster	day	0.250	0.250	0.250	127.00	127.00	127.00	L-03	
		<b>b) Machinery</b>									
		Air Compressor 250 cfm	hour	17.000	17.000	17.000	6647.00	6647.00	6647.00	PM15001	
		Pneumatic breaker for drilling holes	hour	34.000	34.000	34.000	7004.00	7004.00	7004.00	PM4001	
		(@ 4.5 m per hour)									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Dozer</b>									
		(i) Dozer (240HP)	hour	1.875			5523.00	10355.63	0.00	0.00	PM1001
		(ii) Dozer (175HP)	hour		2.400		4249.00	0.00	10197.60	0.00	PM1002
		(iii) Dozer (90HP)	hour			4.286	2930.00	0.00	0.00	12557.98	PM1003
		<b>Tipper</b>									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	240.000			4.80	1152.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		240.000		5.48	0.00	1315.20	0.00	PM73001
		(iii) 10 cum capacity	t.km			240.000	6.80	0.00	0.00	1632.00	PM74001
		<b>Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	144.000			73.42	10572.48	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		144.000		71.98	0.00	10365.12	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			144.000	100.20	0.00	0.00	14428.80	PM77003
		<b>c) Materials</b>									
		Small dia Explosive at 0.40kg/cum for 400 cum (400 x 0.40) Explosive at 0.20 kg/cum for secondary blast @5% of the total volume (400 x 0.2x5%)	kg	49.200	49.200	49.200	976.21	48029.53	48029.53	48029.53	M-215
		Electric detonators at 1 per hole for main blast holes (21x3+20x2)= 103 nos	no	69.000	69.000	69.000	6.19	427.11	427.11	427.11	M-217
		Ordinary detonators @ 1 per hole for 10 secondary holes (required for 5% of the total quantity @ 0.6 m per hole for 1 cum)	no	7.000	7.000	7.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Detonating Fuse coil	m	213.000	213.000	213.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Credit for excavated rock found suitable for use @ 50 percent quantity blasted	cum	60.000	60.000	60.000	101.24	-6074.40	-6074.40	-6074.40	M-090
		Total cost( Without O.H&C.P.)						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		#VALUE!	#VALUE!	#VALUE!	
		Cost for 400 sqm = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per sqm=(a+b+c+d+e)/400(with OH.&amp;C.P)</b>						#VALUE!	#VALUE!	#VALUE!	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
							#VALUE!	#VALUE!	#VALUE!	#VALUE!	
		<b>Note</b>									
		1. The quantity and availability of rock shall be checked before affording credit.									
		2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced/ restricted to that extent.									
3.13	304	<b>Excavation for Structures</b> 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)	<b>(i) Ordinary Soil</b>									
		<b>Unit=cum</b>									
		<b>Taking output=10 cum</b>									
	<b>A</b>	<b>Manual Means ( Depth upto 3 m)</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoors	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		Total cost( Without O.H.&C.P.)						2552.00	2552.00	2552.00	
		<b>b) Overhead charges on (a)</b>						204.16	255.20	306.24	
		<b>c) Contractor's profit on (a+b)</b>						275.62	280.72	285.82	
		Cost for 10 cum = a+b+c						3031.78	3087.92	3144.06	
		<b>Rate per cum=(a+b+c)/10(with OH.&amp;C.P)</b>						303.18	308.79	314.41	
							<b>Say</b>	<b>303.20</b>	<b>308.80</b>	<b>314.40</b>	
		<b>Note</b>									
		Cost of dewatering may be added where required upto 10 percent of labour cost Assessment for dewatering shall be made as per site conditions.									
3.13		<b>B Mechanical Means (Depth upto 3 m)</b>									
		<b>Unit= Cum</b>									
		<b>Taking output= 330 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		<b>For excavation &amp; backfill</b>									
		(i) 1.2 cum bucket capacity	hour	4.627			2703.00	12506.78	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.329		2432.00	0.00	12960.13	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			7.450	2202.00	0.00	0.00	16404.90	PM3005
		<b>Tipper</b>									
		<b>For transportation of excess material to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	198.000			4.80	950.40	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		198.000		5.48	0.00	1085.04	0.00	PM73001
		(iii) 10 cum capacity	t.km			198.000	6.80	0.00	0.00	1346.40	PM74001
		<b>For Loading and unloading time</b>									
		(i) 18 cum capacity	hour	1.851			2239.00	4144.39	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		2.131		1998.00	0.00	4257.74	0.00	PM6002
		(iii) 10 cum capacity	hour			2.980	1785.00	0.00	0.00	5319.30	PM6003
		Total cost( Without O.H&C.P.)						20153.57	20854.91	25622.60	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1612.29	2085.49	3074.71	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2176.59	2294.04	2869.73	
		Cost for 330 cum= a+b+c+d						23942.44	25234.44	31567.04	
		<b>Rate per cum= (a+b+c+d)/330</b>						72.55	76.47	95.66	
							<b>Say</b>	<b>72.60</b>	<b>76.50</b>	<b>95.70</b>	
3.13	(ii)	<b>(ii) Ordinary Rock (not requiring blasting)</b>									
	<b>A</b>	<b>Manual Means ( Depth upto 3m)</b>									
		<b>Unit=cum</b>									
		<b>Taking output=10 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		Total cost( Without O.H&C.P.)						3190.00	3190.00	3190.00	
		<b>b) Overhead charges on (a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		255.20	319.00	382.80	
		<b>c) Contractor's profit on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		344.52	350.90	357.28	
		Cost for 10 cum = a+b+c						3789.72	3859.90	3930.08	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per cum=(a+b+c)/10(with OH.&amp;C.P)</b>				<b>Say</b>	378.97	385.99	393.01		
							<b>379.00</b>	<b>386.00</b>	<b>393.00</b>		
		<b>Note</b>									
		Cost of dewatering upto 10 percent of labour cost may be added where required. Assessment for dewatering shall be made as per site conditions.									
3.13		<b>B Mechanical Means</b>									
		<b>Unit= Cum</b>									
		<b>Taking output= 50 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		<b>For excavation, backfill &amp; loading</b>									
		(i) 1.2 cum bucket capacity	hour	7.127			2703.00	19264.28	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		8.352		2432.00	0.00	20312.06	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			9.380	2202.00	0.00	0.00	20654.76	PM3005
		<b>Jack Hammer</b>	hour	5.818	6.845	7.273	206.00	1198.51	1410.07	1498.24	PM4001
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	40.000			4.80	192.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		40.000		5.48	0.00	219.20	0.00	PM73001
		(iii) 10 cum capacity	t.km			40.000	6.80	0.00	0.00	272.00	PM74001
		<b>Loading and unloading time</b>									
		(i) 18 cum capacity	hour	0.523			2239.00	1171.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		0.603		1998.00	0.00	1204.79	0.00	PM6002
		(iii) 10 cum capacity	hour			0.843	1785.00	0.00	0.00	1504.76	PM6003
		Total cost( Without O.H&C.P.)						22782.79	24103.13	24886.75	
		<b>c) Overhead charges(a+b)</b>						1822.62	2410.31	2986.41	
		(@ 8%)									
		(@ 10%)									
		(@ 12%)									
		<b>d) Contractor's profit (a+b+c)</b>						2460.54	2651.34	2787.32	
		Cost for 50 cum= a+b+c+d						27065.95	29164.78	30660.48	
		<b>Rate per cum= (a+b+c+d)/50</b>						541.32	583.30	613.21	
							<b>Say</b>	<b>541.30</b>	<b>583.30</b>	<b>613.20</b>	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
3.13	302 & 303	<b>Mechanical Means</b> (iii) A Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in property aligned and spaced drill holes, collection of the excavated rock by a dozer, loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No. 303.									
		<b>Unit = cum</b>									
		<b>Taking output= 120 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.210	0.210	0.210	325.00	68.25	68.25	68.25	L-12
		Mazdoors	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Driller	day	2.000	2.000	2.000	318.00	636.00	636.00	636.00	L-06
		Blaster	day	0.250	0.250	0.250	508.00	127.00	127.00	127.00	L-03
		<b>b) Machinery</b>									
		Air Compressor 250 cfm	hour	17.000	17.000	17.000	391.00	6647.00	6647.00	6647.00	PM15001
		Pneumatic breaker for drilling holes (@ 4.5 m per hour)	hour	34.000	34.000	34.000	206.00	7004.00	7004.00	7004.00	PM4001
		Hydraulic Excavator for Jack Hammer & backfilling, loading									
		(i) 1.2 cum bucket capacity	hour	3.537			2703.00	9560.51	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		4.174		2432.00	0.00	10151.17	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			5.411	2202.00	0.00	0.00	11915.02	PM3005
		<b>Jack Hammer (considering 5% of the volume for dressing)</b>	hour	1.024	1.280	1.365	206.00	210.94	263.68	281.19	PM4001
		<b>Tipper</b>									
		<b>For transportation considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	96.000			4.80	460.80	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		96.000		5.48	0.00	526.08	0.00	PM73001
		(iii) 10 cum capacity	t.km			96.000	6.80	0.00	0.00	652.80	PM74001
		<b>For Loading and unloading time</b>									



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(i) 18 cum capacity	hour	1.005			2239.00	2250.20	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		1.157		1998.00	0.00	2311.69	0.00	PM6002
		(iii) 10 cum capacity	hour			1.618	1785.00	0.00	0.00	2888.13	PM6003
		<b>c) Materials</b>									
		Small dia Explosive at 0.40kg/cum for 120 cum (120 x 0.40) Explosive at 0.20 kg/cum for secondary blast @5% of the total volume (120 x 0.2x5%)	kg	49.200	49.200	49.200	976.21	48029.53	48029.53	48029.53	M-215
		Electric detonators at 1 per hole for main blast holes (21x3+20x2)= 103 nos	no	69.000	69.000	69.000	6.19	427.11	427.11	427.11	M-217
		Ordinary detonators @ 1 per hole for 10 secondary holes (required for 5% of the total quantity @ 0.6 m per hole for 1 cum)	no	7.000	7.000	7.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Detonating Fuse coil	m	213.000	213.000	213.000	INPUT	#VALUE!	#VALUE!	#VALUE!	#REF!
		Total cost( Without O.H&C.P.)						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		#VALUE!	#VALUE!	#VALUE!	
		Cost for 120 cum = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per cum=(a+b+c+d+e)/120(with OH.&amp;C.P)</b>						#VALUE!	#VALUE!	#VALUE!	
							<b>Say</b>	#VALUE!	#VALUE!	#VALUE!	
3.13		<b>Hard Rock (Blasting Prohibited)</b>									
		<b>Unit= Cum</b>									
		<b>Taking output= 35 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator used for Jack Hammer &amp; loading</b>									
		(i) 1.2 cum bucket capacity	hour	9.571			2703.00	25870.41	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		11.244		2432.00	0.00	27345.41	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			13.763	2202.00	0.00	0.00	30350.17	PM3005
		<b>Jack Hammer</b>	hour	8.960	10.541	12.800	206.00	1845.76	2171.45	2636.80	PM4001
		<b>Tipper</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	28.000			4.80	134.40	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		28.000		5.48	0.00	153.44	0.00	PM73001
		(iii) 10 cum capacity	t.km			28.000	6.80	0.00	0.00	190.40	PM74001
		<b>Loading and unloading time</b>									
		(i) 18 cum capacity	hour	0.244			2239.00	546.32	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		0.281		1998.00	0.00	561.44	0.00	PM6002
		(iii) 10 cum capacity	hour			0.393	1785.00	0.00	0.00	701.51	PM6003
		Total cost( Without O.H&C.P.)						29034.89	30869.73	34516.87	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2322.79	3086.97	4142.02	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3135.77	3395.67	3865.89	
		Cost for 35cum= a+b+c+d						34493.45	37352.38	42524.79	
		<b>Rate per cum= (a+b+c+d)/35</b>					<b>Say</b>	985.53	1067.21	1214.99	
3.13		<b>Marshy soil</b>									
		<b>Unit=cum</b>									
		<b>Taking output=10 cum</b>									
	<b>A</b>	<b>Manual means ( upto 3m depth)</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		<b>b) Machinery</b>									
		Tractor- Trolley	hour	2.670	2.670	2.670	629.00	1679.43	1679.43	1679.43	PM12001
		<b>c) Material</b>									
		Selected earth for refilling	cum	5.000	5.000	5.000	35.01	175.05	175.05	175.05	M-164
		Total cost( Without O.H&C.P.)						5044.48	5044.48	5044.48	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		403.56	504.45	605.34	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		544.80	554.89	564.98	
		Cost for 10 cum= a+b+c+d						5992.84	6103.82	6214.80	
		<b>Rate per cum= (a+b+c+d)/10</b>					<b>say</b>	599.28	610.38	621.48	
		<b>Note</b>									
		1. Cost of dewatering @ 30 percent of (a), may be added where required Assessment for dewatering shall be made as per site conditions.									
		2. Shoring & Strutting 20 percent of (a), where required may be added.									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		3. It is assumed that Marshy Soil will be available upto 3 m depth only. For deeper excavation below 3 m depth, refer analysis in item (i) to (iv) for ordinary soil.									
3.13	B	<b>Mechanical Means</b>									
		<b>Unit= Cum</b>									
		<b>Taking output= 260 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	10.256			2703.00	27721.97	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		11.811		2432.00	0.00	28724.35	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			16.513	2202.00	0.00	0.00	36361.63	PM3005
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	639.600			4.80	3070.08	0.00	0.00	PMT2001
		(ii) 14 cum capacity	t.km		639.600		5.48	0.00	3505.01	0.00	PMT3001
		(iii) 10 cum capacity	t.km			639.600	6.80	0.00	0.00	4349.28	PMT4001
		<b>For Loading and unloading</b>									
		(i) 18 cum capacity	hour	10.256			2239.00	22963.18	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		11.811		1998.00	0.00	23598.38	0.00	PM6002
		(iii) 10 cum capacity	hour			16.513	1785.00	0.00	0.00	29475.71	PM6003
		<b>c) Material</b>									
		Selected earth for refilling	cum	156.000	156.000	156.000	35.01	5461.56	5461.56	5461.56	M-164
		Total cost( Without O.H.&C.P.)						59535.79	61608.30	75967.17	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		4762.86	6160.83	9116.06	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		6429.87	6776.91	8508.32	
		Cost for 260 cum = a+b+c+d+e						70728.52	74546.04	93591.55	
		<b>Rate per cum=(a+b+c+d+e)/260 (with OH.&amp;C.P)</b>					<b>Say</b>	<b>272.00</b>	<b>286.70</b>	<b>360.00</b>	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
3.14	305.4.3	Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres.									
	(i)	Scarifying Existing Granular Surface to a depth of 50 mm by Manual Means									
		Unit= sqm									
		Taking output= 100 sqm									
		a) Labour	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mate	day	5.000	5.000	5.000	306.00	1530.00	1530.00	1530.00	L-13
		Mazdoor including loading and unloading									
		b) Machinery	hour	1.670	1.670	1.670	629.00	1050.43	1050.43	1050.43	PM12001
		Tractor- Trolley									
		Total cost( Without O.H&C.P.)						2645.43	2645.43	2645.43	
		c) Overhead charges(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		211.63	264.54	317.45	
		d) Contractor's profit (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		285.71	291.00	296.29	
		Cost for 100 sqm = a+b+c+d						3142.77	3200.97	3259.17	
		Rate per sqm = (a+b+c+d)/100						31.43	32.01	32.59	
							<b>Say</b>	<b>31.40</b>	<b>32.00</b>	<b>32.60</b>	
		<b>Note</b>	In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.								
3.14	305.4.3	(ii) By Mechanical Means using Hydraulic excavator									
		Unit= sqm									
		Taking output= 6000 sqm									
		a) Labour	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mate	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Mazdoor									
		b) Machinery									
		Hydraulic Excavator	hour	4.309			2703.00	11647.23	0.00	0.00	PM3003
		(i) 1.2 cum bucket capacity	hour		4.962		2432.00	0.00	12067.58	0.00	PM3004
		(ii) 1.1 cum bucket capacity	hour			6.938	2202.00	0.00	0.00	15277.48	PM3005
		(iii) 0.9 cum bucket capacity	hour								
		Tipper									
		For transportation to dumping yard considering lead @1 km									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(i) 18 cum capacity	t.km	600.000			4.80	2880.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		600.000		5.48	0.00	3288.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			600.000	6.80	0.00	0.00	4080.00	PM74001
		<b>For Loading and unloading</b>									
		(i) 18 cum capacity	hour	4.309			2239.00	9647.85	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.962		1998.00	0.00	9914.08	0.00	PM6002
		(iii) 10 cum capacity	hour			6.938	1785.00	0.00	0.00	12384.33	PM6003
		Total cost( Without O.H&C.P.)					24494.08	25588.66	32060.81		
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1959.53	2558.87	3847.30	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2645.36	2814.75	3590.81	
		Cost for 6000 sqm = a+b+c+d					29098.96	30962.28	39498.91		
		<b>Rate per sqm= (a+b+c+d)/6000</b>					4.85	5.16	6.58		
							<b>4.80</b>	<b>5.20</b>	<b>6.60</b>		
<b>3.14</b>	<b>305.4.3</b>	<b>(iii) By Mechanical Means using Motor Grader</b>									
		Unit= sqm									
		Taking output= 12500 sqm									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	3.064			5450.00	16698.80	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		3.676		4985.00	0.00	18324.86	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.720	4403.00	0.00	0.00	16379.16	PM2003
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	1250.000			4.80	6000.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		1250.000		5.48	0.00	6850.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			1250.000	6.80	0.00	0.00	8500.00	PM74001
		<b>For Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	625.000			73.42	45887.50	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		625.000		71.98	0.00	44987.50	0.00	PM77002

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			625.000	100.20	0.00	62625.00	PM77003	
		Total cost( Without O.H&C.P.)						68905.30	70481.36	87823.16	
		<b>c) Overhead charges(a+b)</b>		@ 8%	@ 10%	@ 12%		5512.42	7048.14	10538.78	
		<b>d) Contractor's profit (a+b+c)</b>		@ 10%	@ 10%	@ 10%		7441.77	7752.95	9836.19	
		Cost for 12500 sqm = a+b+c+d						81859.50	85282.45	108198.13	
		<b>Rate per sqm= (a+b+c+d)/12500</b>					<b>Say</b>	6.55	6.82	8.66	
								<b>6.50</b>	<b>6.80</b>	<b>8.70</b>	
		<b>Note</b>									
		In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.									
3.15	305.4.3	<b>Scarifying the existing bituminous surface to a depth of 50 mm and disposal of scarified material within all the lifts and leads upto 1000 metres.</b>									
	(i)	<b>By Mechanical Means using Hydraulic excavator</b>									
		Unit= sqm									
		Taking output= 6000 sqm									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	5.196			2703.00	14044.79	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.984		2432.00	0.00	14553.09	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			8.366	2202.00	0.00	0.00	18421.93	PM3005
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	690.000			4.80	3312.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		690.000		5.48	0.00	3781.20	0.00	PM73001
		(iii) 10 cum capacity	t.km			690.000	6.80	0.00	0.00	4692.00	PM74001
		<b>For Loading and unloading</b>									
		(i) 18 cum capacity	hour	5.196			2239.00	11633.84	0.00	0.00	PM6001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 14 cum capacity	hour		5.984		1998.00	0.00	11956.03	0.00	PM6002
		(iii) 10 cum capacity	hour			8.366	1785.00	0.00	0.00	14933.31	PM6003
		Total cost( Without O.H&C.P.)						29309.63	30609.32	38366.24	
		<b>c) Overhead charges(a+b)</b>			(@ 10%)	(@ 12%)		2344.77	3060.93	4603.95	
		<b>d) Contractor's profit (a+b+c)</b>			(@ 10%)	(@ 10%)		3165.44	3367.03	4297.02	
		Cost for 6000 sqm = a+b+c+d						34819.84	37037.28	47267.21	
		<b>Rate per sqm= (a+b+c+d)/6000</b>					<b>Say</b>	5.80	6.17	7.88	
<b>3.15</b>	<b>305.4.3</b>	<b>(ii) By Mechanical Means using Motor Grader</b>						<b>5.80</b>	<b>6.20</b>	<b>7.90</b>	
		Unit= sqm									
		Taking output= 12500 sqm									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	3.064			5450.00	16698.80	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		3.676		4985.00	0.00	18324.86	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.720	4403.00	0.00	0.00	16379.16	PM2003
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @1 km</b>									
		(i) 18 cum capacity	t.km	1437.500			4.80	6900.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		1437.500		5.48	0.00	7877.50	0.00	PM73001
		(iii) 10 cum capacity	t.km			1437.500	6.80	0.00	0.00	9775.00	PM74001
		<b>For Loading &amp; unloading charges</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	625.000			73.42	45887.50	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		625.000		71.98	0.00	44987.50	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			625.000	100.20	0.00	0.00	62625.00	PM77003
		Total cost( Without O.H&C.P.)						69805.30	71508.86	89098.16	
		<b>c) Overhead charges(a+b)</b>			(@ 10%)	(@ 12%)		5584.42	7150.89	10691.78	
		<b>d) Contractor's profit (a+b+c)</b>			(@ 10%)	(@ 10%)		7538.97	7865.97	9978.99	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Cost for 12500 sqm = a+b+c+d						82928.70	86525.72	109768.93	
		<b>Rate per sqm= (a+b+c+d)/12500</b>						6.63	6.92	8.78	
						<b>Say</b>		<b>6.60</b>	<b>6.90</b>	<b>8.80</b>	
3.16	305	<b>Construction of Embankment with Material obtained from Borrow pits.</b>									
		Construction of Embankment with approved material obtained from Borrow pits 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.									
		<b>Unit= cum</b>									
		<b>Taking output= 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	5.048			2703.00	13644.74	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.813		2432.00	0.00	14137.22	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			8.127	2202.00	0.00	0.00	17895.65	PM3005
		<b>Tipper</b>									
		<b>For transportation</b>									
		(i) 18 cum capacity	t.km	450x1.6x L2			4.80	3456.00			PM72001
		(ii) 14 cum capacity	t.km		450x1.6x L2		5.48		3945.60		PM73001
		(iii) 10 cum capacity	t.km		450x1.6x L2		6.80			4896.00	PM74001
		<b>For Loading and unloading time</b>									
		(i) 18 cum capacity	hour	5.048			2239.00	11302.47	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		5.813		1998.00	0.00	11614.37	0.00	PM6002
		(iii) 10 cum capacity	hour			8.127	1785.00	0.00	0.00	14506.70	PM6003



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Motor grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00	0.00	13090.61	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00	0.00	0.00	12896.39	PM2003
		Water tanker (Speed @ km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr									
		(i) 16 KL Capacity	hour	0.25XL1+0.864			1121.00	1248.79			PM11001
		(ii) 12 KL capacity	hour		0.333XL1+1.152		947.00		1406.30		PM11002
		(iii) 6 KL Capacity	hour			0.667XL1+2.304	707.00			2100.50	PM11003
		<b>Vibratory roller</b>									
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
		Compensation for Earth taken from private land	cum	450.000	450.000	450.000	35.01	15754.50	15754.50	15754.50	M-093
		Total cost( Without O.H.&C.P.)						64291.62	66969.06	75070.20	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		5143.33	6696.91	9008.42	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		6943.50	7366.60	8407.86	
		Cost for 450 cum = a+b+c+d+e						76378.45	81032.56	92486.48	
		<b>Rate per cum=(a+b+c+d+e)/450 (with OH.&amp;C.P)</b>						169.73	180.07	205.53	
								<b>169.70</b>	<b>180.10</b>	<b>205.50</b>	
		<b>Note</b>	Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.								
3.17	305	<b>Construction of Embankment with Material Deposited from Roadway Cutting</b>									
		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.									
		<b>Unit= cum</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking output= 450 cum									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		b) Machinery									
		Motor Grader for grading									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00	0.00	13090.61	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00	0.00	0.00	12896.39	PM2003
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr									
		(i) 16 KL Capacity	hour	0.25XL1+0 .864			1121.00	1248.79			PM11001
		(ii) 12 KL capacity	hour		0.333XL1+ 1.152		947.00		1406.30		PM11002
		(iii) 6 KL Capacity	hour			0.667XL1+ 2.304	707.00			2100.50	PM11003
		Vibratory roller	hour	2.184	2.184	2.184	1996.00	4359.26	4359.26	4359.26	PM10001
		c) Material									
		Cost of water (considering 5% additional moisture	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
		Total cost( Without O.H&C.P.)						19814.91	21198.37	21698.35	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		1585.19	2119.84	2603.80	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		2140.01	2331.82	2430.21	
		Cost for 450 cum = a+b+c+d+e						23540.11	25650.03	26732.36	
		Rate per cum=(a+b+c+d+e)/450 (with OH.&C.P)						52.30	57.00	59.40	
		Rate per cum after adding royalty@Rs 33.00/cum						85.30	90.00	92.40	
3.18	305	Construction of Subgrade and Earthen Shoulders									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Construction of sub-grade and earthen shoulders with approved material obtained from Borrow pits with and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of Table 300-2.									
		<b>Unit= cum</b>									
		<b>Taking output= 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	5.048			2703.00	13644.74	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		5.813		2432.00	0.00	14137.22	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			8.127	2202.00	0.00	0.00	17895.65	PM3005
		<b>Tipper</b>									
		<b>For transportation</b>									
		(i) 18 cum capacity	t.km	450x1.75x L2			4.80	3780.00			PM72001
		(ii) 14 cum capacity	t.km	450x1.75x L2			5.48		4315.50		PM73001
		(iii) 10 cum capacity	t.km		450x1.75x L2		6.80			5355.00	PM74001
		<b>For Loading and unloading time</b>									
		(i) 18 cum capacity	hour	5.048			2239.00	11302.47	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		5.813		1998.00	0.00	11614.37	0.00	PM6002
		(iii) 10 cum capacity	hour			8.127	1785.00	0.00	0.00	14506.70	PM6003
		<b>Motor grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00	0.00	13090.61	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00	0.00	0.00	12896.39	PM2003
		Water tanker (Speed @ km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									

**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(i) 16 KL Capacity	hour	0.273XL1+ 0.945			1121.00	1365.38			PM11001
		(ii) 12 KL capacity	hour		0.365XL1+ 1.26		947.00		1538.88		PM11002
		(iii) 6 KL Capacity	hour			0.729XL1+ 2.52	707.00			2297.04	PM11003
		<b>Vibratory roller 12 tonne</b>	hour	2.184	2.184	2.184	1996.00	4359.26	4359.26	4359.26	PM10001
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	39.375	39.375	39.375	56.20	2212.88	2212.88	2212.88	M-191
		Compensation for Earth taken from private land	cum	450.000	450.000	450.000	35.01	15754.50	15754.50	15754.50	M-093
		Total cost( Without O.H.&C.P.)						64921.88	67661.21	75915.42	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		5193.75	6766.12	9109.85	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		7011.56	7442.73	8502.53	
		Cost for 450 cum = a+b+c+d+e						77127.20	81870.07	93527.79	
		<b>Rate per cum=(a+b+c+d+e)/450 (with OH.&amp;C.P)</b>						171.39	181.93	207.84	
							<b>Say</b>	<b>171.40</b>	<b>181.90</b>	<b>207.80</b>	
3.19	305	<b>Construction of Subgrade and Earthen Shoulders with Material Deposited from Roadway Cutting</b>									
		Construction of Embankment with Material Deposited from Roadway									
		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.									
		<b>Unit= cum</b>									
		<b>Taking output= 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Motor grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00	0.00	13090.61	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00	0.00	0.00	12896.39	PM2003
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									
		(i) 16 KL Capacity	hour	0.273XL1+ 0.945			1121.00	1365.38			PM11001
		(ii) 12 KL capacity	hour		0.365XL1+ 1.26		947.00		1538.88		PM11002
		(iii) 6 KL Capacity	hour			0.729XL1+ 2.52	707.00			2297.04	PM11003
		<b>Vibratory roller</b>	hour	2.184	2.184	2.184	1996.00	4359.26	4359.26	4359.26	PM10001
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	39.375	39.375	39.375	56.20	2212.88	2212.88	2212.88	M-191
		Total cost( Without O.H.&C.P.)						20121.17	21520.62	22084.57	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1609.69	2152.06	2650.15	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2173.09	2367.27	2473.47	
		Cost for 450 cum = a+b+c+d+e						23903.95	26039.96	27208.19	
		<b>Rate per cum=(a+b+c+d+e)/450 (with OH.&amp;C.P)</b>						<b>53.10</b>	<b>57.90</b>	<b>60.50</b>	
		<b>Rate per cum after adding royalty@Rs 33.00/cum</b>						<b>86.10</b>	<b>90.90</b>	<b>93.50</b>	
<b>3.20</b>	<b>305.3.4</b>	<b>Compacting Original ground</b>									
		<b>Compacting Original ground supporting sub-grade</b>									
		Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of Table 300-2 for sub-grade construction.									
		<b>Unit= cum</b>									
		<b>Taking output= 225 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12

**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Motor grader for ripping (in two layers) &amp; grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.192			5450.00	11946.40	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.637		4985.00	0.00	13145.45	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.804	4403.00	0.00	0.00	12346.01	PM2003
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr									
		(i) 16 KL Capacity	hour	0.137XL1+ 0.236			1121.00	418.13			PM11001
		(ii) 12 KL capacity	hour		0.182XL1+ 0.315		947.00		470.66		PM11002
		(iii) 6 KL Capacity	hour			0.365XL1+ 0.63	707.00			703.47	PM11003
		<b>Vibratory roller</b>									
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture	KL	19.688	19.688	19.688	56.20	1106.47	1106.47	1106.47	M-191
		Total cost( Without O.H&C.P.)						15969.63	17221.20	16654.57	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1277.57	1722.12	1998.55	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1724.72	1894.33	1865.31	
		Cost for 225 cum = a+b+c+d+e						18971.92	20837.65	20518.44	
		<b>Rate per cum=(a+b+c+d+e)/225(with OH.&amp;C.P)</b>						84.32	92.61	91.19	
		<b>Compacting Original ground supporting embankment</b>					<b>Say</b>	<b>84.30</b>	<b>92.60</b>	<b>91.20</b>	
		Loosening, leveling and compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Unit= cum									
		Taking output= 300 cum									
		a) Labour									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		b) Machinery									
		<b>Motor Grader for ripping &amp; grading</b>									
		(i) Motor grader 4.30 metre blade	hour	3.487			5450.00	19004.15	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		4.197		4985.00	0.00	20922.05	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			4.497	4403.00	0.00	0.00	19800.29	PM2003
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									
		(i) 16 KL Capacity	hour	0.167xL1+ 0.64			1121.00	904.65			PM11001
		(ii) 12 KL capacity	hour		0.222xL1+ 0.853		947.00		1018.03		PM11002
		(iii) 6 KL Capacity	hour			0.444xL1+ 1.707	707.00			1520.76	PM11003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	24.000	24.000	24.000	56.20	1348.80	1348.80	1348.80	M-191
		Total cost( Without O.H.&C.P.)						24482.77	26514.05	25895.02	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1958.62	2651.40	3107.40	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2644.14	2916.55	2900.24	
		Cost for 300 cum = a+b+c+d+e						29085.53	32082.00	31902.67	
		<b>Rate per cum=(a+b+c+d+e)/300(with OH.&amp;C.P)</b>						96.95	106.94	106.34	
		<b>Stripping and Storing Top Soil</b>					<b>Say</b>	<b>97.00</b>	<b>106.90</b>	<b>106.30</b>	
3.21	305										

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Stripping, Storing of Top Soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth.									
		<b>Unit= cum</b>									
		<b>Taking output= 250 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	1.680			5450.00	9156.00	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.027		4985.00	0.00	10104.60	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.260	4403.00	0.00	0.00	9950.78	PM2003
		<b>Hydraulic Excavator for reapplication</b>									
		(i) 1.2 cum bucket capacity	hour	2.804			2703.00	7579.21	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		3.230		2432.00	0.00	7855.36	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			4.515	2202.00	0.00	0.00	9942.03	PM3005
		<b>Tipper</b>									
		<b>For transportation considering lead @ 1 km (20% of the material needs to be transported)</b>									
		(i) 18 cum capacity	t.km	75.000			4.80	360.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		75.000		5.48	0.00	411.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			75.000	6.80	0.00	0.00	510.00	PM74001
		<b>For Loading (20% of the material needs to be transporting)</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	50.000			73.42	3671.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		50.000		71.98	0.00	3599.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum				100.20	0.00	0.00	5010.00	PM77003
		<b>Total cost( Without O.H&amp;C.P.)</b>						21085.21	22288.96	25731.81	



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		c) Overhead charges(a+b)		(@ 8%)	(@ 10%)	(@ 12%)		1686.82	2228.90	3087.82	
		d) Contractor's profit (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		2277.20	2451.79	2881.96	
		Cost for 250 cum = a+b+c+d						25049.23	26969.64	31701.59	
		Rate per cum= (a+b+c+d)/250					Say	100.20	107.88	126.81	
3.22	305	Stripping, Storing and Re-laying Top Soil from Borrow Areas in Agriculture Fields.									
		Stripping of top Soil from Borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.									
		Unit= cum									
		Taking output= 250 cum									
		a) Labour									
		Mate	day	0.040	0.040	0.040		13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000		306.00	306.00	306.00	L-13
		b) Machinery									
		Motor Grader									
		(i) Motor grader 4.30 metre blade	hour	1.680				9156.00	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.027			0.00	10104.60	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.260		0.00	0.00	9950.78	PM2003
		Hydraulic Excavator for reapplication									
		(i) 1.2 cum bucket capacity	hour	2.804				7579.21	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		3.230			0.00	7855.36	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			4.515		0.00	0.00	9942.03	PM3005
		Tipper									
		For transportation									
		(i) 18 cum capacity	t.km	250x1.60x L2				1920.00			PM72001
		(ii) 14 cum capacity	t.km	250x1.60x L2					2192.00		PM73001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t.km			250x1.60x L2	6.80			2720.00	PM74001
		<b>For Loading &amp; unloading</b>									
		(i) Using by 18 cum capacity Tipper & 3.1 cum capacity loader	cum	250.000			73.42	18355.00	0.00	0.00	PM77001
		(ii) Using by 14 cum capacity tipper & 2.1 cum capacity loader	cum		250.000		71.98	0.00	17995.00	0.00	PM77002
		(iii) Using by 10 cum capacity tipper & 1 cum capacity loader	cum			250.000	100.20	0.00	0.00	25050.00	PM77003
		Total cost( Without O.H&C.P.)						37329.21	38465.96	47981.81	
		<b>c) Overhead charges(a+b)</b>				(@ 12%)		2986.34	3846.60	5757.82	
		<b>d) Contractor's profit (a+b+c)</b>				(@ 10%)		4031.55	4231.26	5373.96	
		Cost for 250 cum = a+b+c+d				(@ 10%)		44347.10	46543.81	59113.59	
		<b>Rate per cum= (a+b+c+d)/250</b>						177.39	186.18	236.45	
							<b>Say</b>	<b>177.40</b>	<b>186.20</b>	<b>236.50</b>	
<b>3.23</b>	<b>307</b>	<b>A Turfing with Sods</b>									
		Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of sods and watering.									
		<b>Unit= sqm</b>									
		<b>Taking output= 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor for preparation of ground and fetching of sods	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		Water tanker including watering for 3 months									
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr									
		(i) 16 KL Capacity	hour	0.5XL1+0.096			1121.00	668.12			PM11001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 KL capacity	hour		0.667XL1+ 0.128		947.00		752.87		PM11002
		(iii) 6 KL Capacity	hour			1.333XL1+ 0.256	707.00			1123.42	PM11003
		Tactor- trolley	hour	1.000	1.000	1.000	629.00	629.00	629.00	629.00	PM12001
		<b>c) Material</b>									
		Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	0.180	0.180	278.90	50.20	50.20	50.20	M-168
		Cost of water	KL	12.000	12.000	12.000	56.20	674.40	674.40	674.40	M-191
		Total cost( Without O.H&C.P.)						2978.72	3063.47	3434.03	
		<b>d) Overhead charges on (a+b+c)</b>				(@ 8%)		238.30	306.35	412.08	
		<b>e) Contractor's profit on (a+b+c+d)</b>				(@ 10%)		321.70	336.98	384.61	
		Cost for 100 sqm = a+b+c+d+e						3538.72	3706.80	4230.72	
		<b>Rate per Sqm=(a+b+c+d+e)/100 (with OH.&amp;C.P)</b>					<b>Say</b>	35.39	37.07	42.31	
<b>3.24</b>	<b>308</b>	<b>Seeding and Mulching</b>									
		Preparation of seed bed on previously laid top soil, finishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including cost of watering for 3 months all as per clause 308.									
		<b>Unit= sqm</b>									
		<b>Taking output= 240 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		<b>b) Machinery</b>									
		Water tanker including watering for 3 months									
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr									
		(i) 16 KL Capacity	hour	3.5XL1+1. 613			1121.00	5731.67			PM11001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 KL capacity	hour		4.667XL1+ 2.15		947.00		6455.70		PM11002
		(iii) 6 KL Capacity	hour			9.333XL1+ 4.301	707.00			9639.24	PM 11003
		Tactor- trolley	hour	2.400	2.400	2.400	629.00	1509.60	1509.60	1509.60	PM12001
		<b>c) Material</b>						0.00	0.00	0.00	
		Seeds	kg	3.600	3.600	3.600	38.31	137.92	137.92	137.92	M-163
		Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	0.430	0.430	278.90	119.93	119.93	119.93	M-168
		Bitumen emulsion	litre	55.200	55.200	55.200	54.27	2995.70	2995.70	2995.70	M-077
		Jute netting, open weave, 2.5 cm square opening	sqm	264.000	264.000	264.000	41.26	10892.64	10892.64	10892.64	M-120
		Cost of water for 3 months	KL	84.000	84.000	84.000	56.20	4720.80	4720.80	4720.80	M-191
		Total cost( Without O.H&C.P.)						29298.26	30022.29	33205.83	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2343.86	3002.23	3984.70	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3164.21	3302.45	3719.05	
		Cost for 240 sqm = a+b+c+d+e						34806.33	36326.97	40909.58	
		<b>Rate per sqm=(a+b+c+d+e)/240 (with OH.&amp;C.P)</b>						145.03	151.36	170.46	
<b>3.25</b>	<b>309</b>	<b>Surface Drains in Soil</b>					<b>Say</b>	<b>145.00</b>	<b>151.40</b>	<b>170.50</b>	
		Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 1000 metres									
		<b>Unit= metre</b>									
		<b>Taking output = 10 metre</b>									
		<b>A Mechanical means</b>									
		<b>a) Labour</b>									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Mazdoor for dressing of bed and side of drain	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Machinery</b>									
		Hydraulic Excavator 0.9 cum bucket capacity	hour	0.090	0.090	0.090	2202.00	198.18	198.18	198.18	PM3005
		<b>Tactor- trolley</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Tactor- Trolley for transportation & for loading & un loading Time	hour	0.246	0.246	0.246	629.00	154.73	154.73	154.73	PM12001
		Total cost( Without O.H&C.P.)						432.66	432.66	432.66	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		34.61	43.27	51.92	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		46.73	47.59	48.46	
		Cost for 10 meter = a+b+c+d						514.00	523.52	533.04	
		<b>Rate per meter= (a+b+c+d)/10</b>					<b>Say</b>	51.40	52.35	53.30	
<b>3.25</b>		<b>B Manual means</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		<b>Tactor- trolley</b>									
		Tactor- trolley for transportation & for loading & un loading Time	hour	0.822	0.822	0.822	629.00	517.04	517.04	517.04	PM12001
		Total cost( Without O.H&C.P.)						1155.04	1155.04	1155.04	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		92.40	115.50	138.60	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		124.74	127.05	129.36	
		Cost for 10 meter = a+b+c+d						1372.19	1397.60	1423.01	
		<b>Rate per meter= (a+b+c+d)/10</b>					<b>Say</b>	137.22	139.76	142.30	
		<b>Note</b> Where lining of drain is provided, quantity shall be worked out based on approved design and drawing and priced on rate of cement concrete of approved grade or stone/ brick masonry as the case may be.									
<b>3.26</b>	<b>309</b>	<b>Surface Drains in Ordinary Rock</b>									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Construction of unlined surface drain of average cross sectional area 0.4 sqm in ordinary rock to specified lines, grades, levels and dimensions as per approved design and to the requirement of clause 301 and 309. Excavated material to be used in embankment at site within a lead of 1000 metres									
		<b>Unit- metre</b>									
		<b>Taking output = 10 metre</b>									
		<b>A Mechanical means</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mazdoor for dressing of bed and side of drain	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		<b>b) Machinery</b>									
		Hydraulic Excavator 0.9 cum bucket capacity	hour	0.112	0.112	0.112	2202.00	246.62	246.62	246.62	PM3005
		<b>Tactor- trolley</b>									
		Tactor- trolley for transportation & for loading & un loading Time	hour	0.267	0.267	0.267	629.00	167.94	167.94	167.94	PM12001
		Total cost( Without O.H&C.P.)						574.07	574.07	574.07	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		45.93	57.41	68.89	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		62.00	63.15	64.30	
		Cost for 10 meter = a+b+c+d						681.99	694.62	707.25	
		<b>Rate per meter= (a+b+c+d)/10</b>						68.20	69.46	70.73	
							<b>Say</b>	<b>68.20</b>	<b>69.50</b>	<b>70.70</b>	
		<b>B Manual means</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		<b>Tactor- trolley</b>									
		Tactor- trolley for transportation & for loading & un loading Time	hour	1.044	1.044	1.044	629.00	656.68	656.68	656.68	PM12001
		Total cost( Without O.H&C.P.)						1613.68	1613.68	1613.68	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		129.09	161.37	193.64	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		174.28	177.50	180.73	

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per meter = (a+b+c+d)/10</b>					1917.05	1952.55	1988.05		
							191.70	195.25	198.80		
						<b>Say</b>	<b>191.70</b>	<b>195.30</b>	<b>198.80</b>		
3.27	309	<b>Surface Drains in Hard Rock</b> Rate per metre may be worked out based on quantity of hard rock as per design. For rate of hard rock cutting, refer relevant item in this chapter									
3.28	309	<b>Sub-Surface Drains with Perforated Pipe</b> Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ Cement concrete/ PVC, closely jointed, perforations ranging from 3mm to 6mm depending upto size of material surrounding the pipe, with 150 mm bedding below the pipe and 300mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site									
		<b>Unit= metre</b>									
		<b>Taking output = 10 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	13.00	13.00	13.00	L-12	
		Mazdoor for excavation and back filling	day	2.000	2.000	2.000	612.00	612.00	612.00	L-13	
		<b>b) Material</b>									
		Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	10.000	10.000	1128.30	1128.30	1128.30	M-134	
		Crushed stone as per table 300-3	cum	2.400	2.400	2.400	678.14	1627.54	1627.54	M-011	
		Total cost( Without O.H&C.P.)						3380.84	3380.84		
		<b>c) Overhead charges(a+b)</b>						270.47	338.08		
		<b>d) Contractor's profit (a+b+c)</b>						365.13	371.89		
		Cost for 10 meter = a+b+c+d						4016.43	4090.81		
		<b>Rate per meter = (a+b+c+d)/10</b>						401.64	409.08		
						<b>Say</b>	<b>401.60</b>	<b>409.10</b>	<b>416.50</b>		

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Note</b>	Type of pipe may be modified depending upon provision in design.								
3.29	309	<b>Aggregate Sub-Surface Drains</b> Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to Table 300-4, excavated material to be utilised in roadway.									
		<b>Unit= metre</b>									
		<b>Taking output = 10 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mazdoor for excavation and back filling with aggregates	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		<b>b) Material</b>									
		Crushed stone as per table 300-3	cum	1.350	1.350	1.350	678.14	915.49	915.49	915.49	M-011
		Total cost( Without O.H&C.P.)						1393.99	1393.99	1393.99	
		<b>c) Overhead charges(a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		111.52	139.40	167.28	
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		150.55	153.34	156.13	
		Cost for 10 meter = a+b+c+d						1656.06	1686.73	1717.39	
		<b>Rate per meter= (a+b+c+d)/10</b>						165.61	168.67	171.74	
							<b>Say</b>	<b>165.60</b>	<b>168.70</b>	<b>171.70</b>	
3.30	309	<b>Underground Drain at Edge of pavement</b> Construction of an underground drain 1m x 1m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab 10 cm in thickness on urban roads.									
		<b>Unit= Running metre</b>									
		<b>Taking output= One metre</b>									
		a) Earthwork in soil ( Rate taken from Item No. - 3.13(B) including OH & CP)	cum	1.500	1.500	1.500	72.60-L 76.50-M 95.70-S	108.90	114.75	143.55	
		b) RCC work M-20 ( Rate taken from Item No. - 9.06 C Case-II including OH & CP)	cum	0.495	0.495	0.495	4534.10-L 4622.90-M 4728.50-S	2244.38	2288.34	2340.61	



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		c) Reinforcement ( Rate taken from Item No. - 9.07 including OH & CP)	tonne	0.020	0.020	0.020	70336.10-L 71687.60-M 73087.50-S	1406.72	1433.75	1461.75	
		<b>Rate per metre= (a+b+c)</b>						<b>3760.00</b>	<b>3836.84</b>	<b>3945.91</b>	
		Rates for these items may be taken from chapters on earth work and culvert respectively.									
<b>3.31</b>	<b>310</b>	<b>Preparation and Surface Treatment of Formation</b>									
		Preparation and Surface treatment of formation by removing mud and slurry, watering to the extent needed to maintain the desired moisture content; trimming to the required line, grade, profile and rolling with smooth wheeled roller; complete as per clause 310.									
		<b>Unit= sqm</b>									
		<b>Taking output= 3500 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>b) Machinery</b>									
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									
		(i) 16 KL Capacity	hour	0.125xL <sup>1+</sup> 0.84			1121.00	1081.77			PM11001

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 KL capacity	hour		0.167XL1+ 1.12		947.00		1218.79		PM11002
		(iii) 6 KL Capacity	hour			0.333XL1+ 2.24	707.00			1819.11	PM11003
		<b>Vibratory roller</b>	hour	2.549	2.549	2.549	1996.00	5087.80	5087.80	5087.80	PM10001
		<b>c) Material</b>									
		Cost of water	KL	18.000	18.000	18.000	56.20	1011.60	1011.60	1011.60	M-191
		Total cost( Without O.H.&C.P.)						9496.17	9633.19	10233.52	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		759.69	963.32	1228.02	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1025.59	1059.65	1146.15	
		Cost for 3500 sqm = a+b+c+d+e						11281.45	11656.16	12607.69	
		<b>Rate per sqm=(a+b+c+d+e)/3500(with OH.&amp;C.P)</b>						3.22	3.33	3.60	
							<b>Say</b>	<b>3.20</b>	<b>3.30</b>	<b>3.60</b>	
<b>3.32</b>	<b>313</b>	<b>Construction of Rock fill Embankment with all lifts and lead upto 5 km</b>									
		Construction of Rock fill Embankment from roadway excavation with broken hard rock fragments of size not exceeding 300 mm laid in layers not exceeding 500 mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313.									
		<b>Unit = cum</b>									
		<b>Taking output= 500 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoors	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Dozer</b>									
		Dozer (240HP)	hour	3.731			5523.00	20606.31	0.00	0.00	PM1001
		Dozer (175HP)	hour		4.808		4249.00	0.00	20429.19	0.00	PM1002
		Dozer (90HP)	hour			8.621	2930.00	0.00	0.00	25259.53	PM1003

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Tipper for transportation of rock considering lead @5 km</b>									
		(i) 18 cum capacity	t.km	4000.000			4.80	19200.00	0.00	0.00	PM72001
		(ii) 14 cum capacity	t.km		4000.000		5.48	0.00	21920.00	0.00	PM73001
		(iii) 10 cum capacity	t.km			4000.000	6.80	0.00	0.00	27200.00	PM74001
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									
		(i) 16 KL Capacity	hour	0.111XL1+ 0.427			1121.00	603.10			PM11001
		(ii) 12 KL capacity	hour		0.148XL1+ 0.569		947.00		679.00		PM11002
		(iii) 6 KL Capacity	hour			0.296XL1+ 1.138	707.00			1013.84	PM11003
		<b>Vibratory roller</b>	hour	2.427	2.427	2.427	1996.00	4844.29	4844.29	4844.29	PM10001
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	16.000	16.000	16.000	56.20	899.20	899.20	899.20	M-191
		Total cost( Without O.H&C.P.)						46471.90	49090.68	59535.86	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		3717.75	4909.07	7144.30	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		5018.97	5399.98	6668.02	
		Cost for 500 cum = a+b+c+d+e						55208.62	59399.73	73348.18	
		<b>Rate per cum=(a+b+c+d+e)/500 (with OH.&amp;C.P)</b>						110.42	118.80	146.70	
							<b>Say</b>	<b>110.40</b>	<b>118.80</b>	<b>146.70</b>	
		<b>Note</b>									
		It is assumed that rock is available locally at site from roadway cutting. In case, portion of the rock requires breaking to acceptable size of 300mm, breaking charges will have to be added.									
<b>3.33</b>		<b>Work in Urban Roads</b>									
		The cost of earth work in urban roads inhabited area will be comparatively higher due to following reasons:									

**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		a) There is mixed traffic on urban roads like slow moving hand and animal driven carts, rickshaws, cycles, two/three wheeler apart from the usual vehicular traffic resulting into traffic jams. This causes loss of working time which may be in the range of 10-15 percent									
		b) There is considerable disruption of traffic adversely affecting the efficiency of the working parties including machines due to congestion caused by pedestrian traffic, local road side vendors, parking of vehicles by the-road side encroachment by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorised conversion of road berms into mini local market. The output of Manpower and machines is substantially reduced due to factors mentioned above.									
		c) Cost of living in urban areas is comparatively more resulting into higher wages.									
		d) At times, work is executed during night time due to heavy traffic during day time. This involves extra expenditure by way of making arrangement for lighting and special transport for working parties due to odd hour.									
		In the light of above, the authorities engaged in preparing the cost estimates may exercise their judgement and cater for the additional cost to the extent of 2 to3 percent, keeping in view the severity of factors mentioned above. Supporting details for the extra cost based on the actual conditions in specific cases will have to give in justification.									



**Analysis of Rate  
EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
3.34	Suggestive	Embankment Construction with Fly ash/Pond ash available from coal or lignite burning Thermal Plants as waste material.									
		Construction of embankment with fly ash conforming to Table 1 of IRC: SP:58 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layers at OMC, all as specified in IRC: SP: 58 and as per approved plans. Considering soil blanketing of 2m either side for 4 lane section									
		<b>Unit= cum</b>									
		<b>Taking output= 450 cum</b>									
		<b>a) Labour</b>									
		Mate									
		Mazdoor	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		<b>b) Machinery</b>	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	0.757			2703.00	2046.17	0.00	0.00	PM3003
		(ii) 1.1 cum bucket capacity	hour		0.872		2432.00	0.00	2120.70	0.00	PM3004
		(iii) 0.9 cum bucket capacity	hour			1.219	2202.00	0.00	0.00	2684.24	PM3005
		<b>Tipper</b>									
		<b>Transportation of borrow area soil</b>									
		(i) 18 cum capacity	t.km	67.5X1.6X L2			4.80	518.40			PM72001
		(ii) 14 cum capacity	t.km		67.5X1.6X L2		5.48		591.84		PM73001
		(iii) 10 cum capacity	t.km			67.5X1.6X L2	6.80			734.40	PM74001
		<b>Transportation of Fly ash</b>									
		To be supplied by the thermal power plant including loading and unloading									
		<b>Loading and unloading</b>									
		(i) 18 cum capacity	hour	0.757			2239.00	1694.92	0.00	0.00	PM6001

**Analysis of Rate**  
**EARTHWORK, EROSION CONTROL AND DRAINAGE.**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 14 cum capacity	hour		0.872		1998.00	0.00	1742.26	0.00	PM6002
		(iii) 10 cum capacity	hour			1.219	1785.00	0.00	0.00	2175.92	PM6003
		<b>Motor Grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65	0.00	0.00	PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00	0.00	13090.61	0.00	PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00	0.00	0.00	12896.39	PM2003
		Water tanker (Speed @ water tanker speed km/hr and return speed @ 20km/hr and spreading speed @ 2.5 km/hr)									
		(i) 16 KL Capacity	hour	0.356XL1+1.231			1121.00	1779.03			PM11001
		(ii) 12 KL capacity	hour		0.475XL1+1.642		947.00		2004.80		PM11002
		(iii) 6 KL Capacity	hour			0.95XL1+3.283	707.00			2992.73	PM11003
		<b>Vibratory roller</b>	hour	2.184	2.184	2.184	1996.00	4359.26	4359.26	4359.26	PM10001
		<b>c) Material</b>									
		Cost of water (considering 5% additional moisture required)	KL	51.300	51.300	51.300	56.20	2883.06	2883.06	2883.06	M-191
		Compensation for Earth taken from private land	cum	67.5	67.5	67.5	35.01	2363.18	2363.18	2363.18	M-093
		Total cost( Without O.H.&C.P.)						28465.67	30112.71	32046.17	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2277.25	3011.27	3845.54	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3074.29	3312.40	3589.17	
		Cost for 450 cum = a+b+c+d+e						33817.22	36436.38	39480.88	
		<b>Rate per cum=(a+b+c+d+e)/450 (with OH.&amp;C.P)</b>					<b>Say</b>	75.15	80.97	87.74	
		<b>Note</b>						<b>75.10</b>	<b>81.00</b>	<b>87.70</b>	
		1. As Fly Ash is available free of cost as waste material from Thermal Plants, cost of materials has not been added.									
		2. The Earth cover on sides and intermediate layers of earth sandwitching the Fly Ash has been included in this analysis.									



**CHAPTER - 04**  
**SUB-BASES,**  
**BASES (NON-BITUMENOUS)**  
**AND**  
**SHOULDERS**





## CHAPTER-4

### SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

#### PREAMBLES :

- 1 Quantities of materials provided are approximate and are meant for the purpose of estimating only. Actual quantities shall be as per mix design.
- 2 For construction of sub-base, three alternatives as under have been provided :
  - a. Plant mix method
  - b. Mix in Placed method
  - c. Crusher Run method
- 3 For Plant Mix method of Granular sub base, a wet mix plant of 250, 200 & 100 TPH capacity is taken as the appropriate mixing plant.
- 4 The plant mix method is actually being practiced from quite some time to get better quality of mix. It is also found economical as it can achieve much more progress.
- 5 In the case of cement treated sub-base or base course, Plant mixing as well as site mixing with the help of cement spreader, stabilizer equipment is considered for rate analysis.
- 6 In the case of sub-base or base course using RAP, milling machine is considered for rate analysis.
- 7 In the case of medians, separators and footpaths, plate compactor has been catered for compaction due to restricted space.
- 8 It has been assumed in the case of crushed cement concrete sub-base/base that during the process of dismantling, 25% of aggregate will get segregated and only the remaining will have to be broken/crushed from dismantled concrete slab portions. Transportation of material has been catered from place of dismantling to work site. In case, site is the same, transportation can be deleted.
- 9 Separate rate for penetration coat over top layer of crushed cement concrete base has been provided, as this item is optional.
- 10 The rate analysis for crushing of aggregate has been included in Chapter-1.
- 11 The quantity considered in the output is the compacted quantity. The quantities of aggregates provided in the rate analysis under the head material are the un-compacted quantities.



**Summary of Rate Analysis**  
**CHAPTER - 4**  
**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
4.01	401	<b>A Granular Sub-Base with Graded Material (Table:- 400-1)</b>				
		<b>Plant Mix Method</b>				
4.01A		Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.				
4.01A		(i) <b>Rate per cum for grading-I Material</b>	cum	1304.90	1326.20	1427.40
4.01A		(ii) <b>Rate per cum for grading-II Material</b>	cum	1082.70	1099.90	1196.90
4.01A		(iii) <b>Rate per cum for grading-III Material</b>	cum	1409.20	1432.50	1535.50
4.01A		(iv) <b>Rate per cum for grading-IV Material</b>	cum	1364.20	1386.60	1488.80
4.01A		(V) <b>Rate per cum for grading-V Material</b>	cum	1317.80	1339.40	1440.80
4.01A		(VI) <b>Rate per cum for grading-VI Material</b>	cum	1173.30	1192.20	1290.90
4.01	401	<b>B By Mix in Place Method</b>				
		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 front end loader at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.				
4.01B		(i) <b>Rate per cum for grading-I Material</b>	cum	1219.30	1238.70	1291.20
4.01B		(ii) <b>Rate per cum for grading-II Material</b>	cum	997.10	1012.40	1060.80
4.01B		(iii) <b>Rate per cum for grading-III Material</b>	cum	1323.60	1345.00	1399.40
4.01B		(iv) <b>Rate per cum for grading-IV Material</b>	cum	1278.60	1299.10	1352.60
4.01B		(v) <b>Rate per cum for grading-V Material</b>	cum	1232.30	1251.90	1304.60
4.01B		(vi) <b>Rate per cum for grading-VI Material</b>	cum	1087.80	1104.70	1154.80
4.01	401&407	<b>C Using Crusher Run</b>				
		Construction of granular sub-base using crusher run ,spreading in uniform layers with mator grader on prepared surface ,mixing by mix in place method with rotovator at OMC, and compating with vibratory roller to achieve the desired density, complete as per clause 401				
4.01C		(i) <b>Rate per cum for grading-I Material</b>	cum	1344.80	1379.70	1439.90
4.01C		(ii) <b>Rate per cum for grading-II Material</b>	cum	1558.50	1597.40	1661.50
4.01C		(iii) <b>Rate per cum for grading-III Material</b>	cum	1558.50	1597.40	1661.50
4.01C		(iv) <b>Rate per cum for grading-IV Material</b>	cum	1558.50	1597.40	1661.50
4.01C		(v) <b>Rate per cum for grading-V Material</b>	cum	1344.80	1379.70	1439.90
4.01C		(vi) <b>Rate per cum for grading-VI Material</b>	cum	1344.80	1379.70	1439.90
4.02A	402	<b>Lime Stabilisation for Improving Sub-grade</b>				



**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Manual Means</b>	cum	392.20	410.20	445.30
<b>4.02B</b>	<b>402</b>	<b>(i) Lime Stabilisation for Improving Sub-grade</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent slaked lime <b>using Binder spreader Machine</b> having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Mechanical Means</b>	cum	707.30	731.10	772.00
<b>4.02B</b>	<b>402</b>	<b>(ii) Lime Stabilisation for Improving Sub-grade</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent slaked lime <b>manually spread</b> having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Mechanical Means</b>	cum	643.10	665.80	705.50
<b>4.03</b>	<b>402</b>	<b>A Cement Stabilisation for Improving Sub-grade</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent cement , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Manual Means</b>	cum	445.50	464.50	500.60
<b>4.03</b>	<b>402</b>	<b>B Cement Stabilisation for Improving Sub-grade</b>				
		<b>(i)</b> Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil stabilizer</b> with 2 per cent cement <b>using Binder spreader Machine</b> grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>By Mechanical Means</b>	cum	760.60	785.40	827.30
<b>4.03B</b>	<b>402</b>	<b>(ii) Cement Stabilisation for Improving Sub-grade</b>				



**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent cement <b>manually spread</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.	cum	696.40	720.10	760.70
<b>4.04</b>	<b>402</b>	<b>Lime Stabilisation in Embankment</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the <b>spread soil in place with rotavator</b> with 2 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Manual Means</b>	cum	362.70	379.80	412.80
<b>4.04B</b>	<b>402</b>	<b>(i) Lime Stabilisation in Embankment</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil Stabilizer</b> with 2 per cent slaked lime using <b>Binder Spreader Machine</b> having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>A By Manual Means</b>	cum	677.80	700.70	739.50
<b>4.04B</b>	<b>402</b>	<b>(ii) Lime Stabilisation in Embankment</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 per cent slaked lime <b>manually spread having minimum</b> content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>By Mechanical Means</b>	cum	613.60	635.30	673.00
<b>4.04B</b>	<b>403</b>	<b>(iii) Cement Stabilisation in Embankment</b>				
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil Stabilizer</b> with 2 per cent cement using <b>Binder Spreader machine</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>By Mechanical Means</b>	cum	723.50	747.20	786.90
<b>4.04B</b>	<b>403</b>	<b>(iv) Cement Stabilisation in Embankment</b>				

**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil Stabilizer</b> with 2 per cent cement <b>manually spread</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.				
		<b>By Mechanical Means</b>	cum	659.30	681.90	720.40
<b>4.05</b>	<b>402</b>	<b>Lime Treated Soil for Sub- Base</b>				
		Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 per cent of the max dry density to form a layer of sub base.	cum	548.00	571.10	629.80
<b>4.06</b>	<b>403</b>	<b>CementTreated Soil for Sub- Base /Base</b>				
		Providing, laying and spreading soil on a prepared sub grade, pulverising,adding the designed quantity of cement to the spread soil mixing in place with rotavator , grading with motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub base /base	cum	735.20	761.70	823.90
<b>4.07</b>	<b>403</b>	<b>Cement Treated Crushed Rock or combination as per clause 403 and Table 400-4 in sub base /Base</b>				
		Providing, laying and spreading Material on a prepared sub grade, pulverising,adding the designed quantity of cement to the spread Material mixing in place with rotavator , grading with motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub base /base				
<b>4.07</b>		<b>(I) For Sub -Base course</b>	cum	1637.60	1674.50	1708.50
<b>4.07</b>		<b>(II) For Base course</b>		1340.30	1371.70	1400.20
<b>4.08</b>	<b>403</b>	<b>A Cement Treated Crushed stone Sub base</b>				
		<b>Plant Mix Method</b>				
		Construction of granular sub-base by providing graded Material, mixing with cement in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with mechanical paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.				
		<b>(i) Rate per cum for Grading -III Material</b>	cum	1768.10	1802.50	1913.90
		<b>(ii) Rate per cum for Grading -IV Material</b>	cum	1723.00	1756.60	1867.20
<b>4.08</b>	<b>403</b>	<b>Cement Treated Crushed stone Sub base</b>				
		<b>B By Mix Place Method</b>				



**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Construction of granular sub-base by providing graded Material, mixing , carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface mixing with cement at OMC and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.				
		(i) Rate per cum for Grading -III Material	cum	2005.00	2039.90	2111.50
		(ii) Rate per cum for Grading -IV Material	cum	1959.90	1994.00	2064.70
4.09	404.3.1	<b>Making 50 mm x 50 mm Furrows</b>				
		Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 450 to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead,				
		(i) 25mm deep furrow cutting	sqm	4.30	4.40	4.50
		(ii) 50mm deep furrow cutting	sqm	8.60	8.80	9.00
4.10	404.3.2	<b>Inverted Choke</b>				
		Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc.	cum	819.40	841.60	863.10
4.11	404	<b>Water Bound Macadam</b>				
		Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with 3 wheeled steel/ vibratory roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.				
		<b>A By Manual Means</b>				
4.11A (i)		(a) Using Screening Crushable type such as Moorum or Gravel.	cum	1798.30	1833.90	1872.40
4.11A (i)		(b) Using Screening Type-A (13.2mm agg.)	cum	1822.60	1858.70	1897.60
4.11A (i)		(c) Using Screening Type-B (11.2mm agg.)	cum	1863.50	1900.30	1940.00
4.11A (ii)		(a) Using Screening Crushable type such as Moorum or Gravel.	cum	1949.90	1988.30	2029.70
4.11A (ii)		(b) Using Screening Type-B (11.2mm agg.)	cum	2015.10	2054.80	2097.30
4.11		<b>B By Mechanical Means</b>				
4.11B (i)		(a) Using Screening Crushable type such as Moorum or Gravel.	cum	1675.90	1705.30	1773.30
4.11B (i)		(b) Using Screening Type-A (13.2mm agg.)	cum	1700.80	1730.70	1799.10
4.11B (i)		(c) Using Screening Type-B (11.2mm agg.)	cum	1741.10	1771.70	1840.90
4.11B		(ii) Grading-II				
4.11B (ii)		(a) Using Screening Crushable type such as Moorum or Gravel.	cum	1827.60	1859.80	1930.60





**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
4.11B (ii)		(b) Using Screening Type-B (11.2mm agg.)	cum	1892.80	1926.20	1998.20
4.12	405	<b>Crushed Cement Concrete Sub-base / Base</b>				
		Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in <b>Table 400-9</b> transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L1 km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.	cum	272.70	287.90	328.90
4.13	405.2	<b>Penetration Coat Over Top Layer of Crushed Cement Concrete Base</b>				
		Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8.	cum	16.20	16.50	16.80
4.14	406	<b>A Wet Mix Macadam (Plant Mix Method)</b>				
		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	1359.40	1392.80	1471.20
4.14	406	<b>B Wet Mix Macadam (Plant Mix Method)</b>				
		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 grader in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	1344.60	1366.40	1447.30
4.15	406	<b>Cement Treated Crushed Stone Base(Plant Mix Method)</b>				
		Providing, laying, spreading and compacting graded stone aggregate mixed with cement to crushed stone treated base specification including pre mixing 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	1941.90	1967.70	2065.80
4.16	408	<b>Construction of Median and Island with Soil Taken from Roadway Cutting</b>				



**Summary of Rate Analysis**

**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 408	cum	231.40	235.80	240.90
<b>4.17</b>	<b>408</b>	<b>Construction of Median and Island with Soil Taken from Borrow Areas</b>				
		Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 408	cum	188.00	194.80	219.80
<b>4.18</b>	<b>408</b>	<b>Construction of Shoulders</b>				
		<b>A. Earthen Shoulders</b>				
		The rate as applicable for sub-grade construction may be adopted.				
		<b>B. Hard Shoulders</b>				
		Rate as applicable for sub-base and or base may be adopted as per approved design.				
		<b>C. Paved shoulders</b>				
		The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.				
<b>4.19</b>	<b>410</b>	<b>Footpaths and Separators</b>				
		Construction of footpath/separator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, over laid with pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..	cum	912.60	929.60	946.80
<b>4.20</b>	<b>407</b>	<b>Crusher Run Macadam Base</b>				
		Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 407 to form a layer of sub-base/Base.				
		<b>A By Mix in Place Method</b>				
<b>4.20A</b>		(i) <b>For 53 mm maximum size</b>	cum	1371.90	1394.00	1448.60
<b>4.20A</b>		(ii) <b>For 37.5 mm maximum size</b>	cum	1269.80	1290.00	1342.70
<b>4.20</b>		<b>B By Mixing Plant :</b>				
<b>4.20B</b>		(i) <b>For 53 mm maximum size</b>	cum	1390.80	1414.60	1492.60
<b>4.20B</b>		(ii) <b>For 37.5 mm maximum size</b>	cum	1288.70	1310.60	1386.80
<b>4.21</b>	<b>Suggestive</b>	<b>Lime, Flyash Stabilised Soil Sub-Base</b>				



**SUB-BASES, BASES ( NON - BITUMINOUS) AND SHOULDERS**

Sr. No.	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Construction of Sub-base using lime - Flyash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50 per cent, Flyash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + Flyash content ranging between 10 to 30 per cent, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/sq, cm and 25 per cent respectively, all as specified in IRC: 88.	cum	468.00	484.80	512.00
4.22	Suggestive	<b>Granular crack relief layer</b> Granular crack relief layer laying Using Mechanical Paver (Providing, laying ,spreading and compacting graded stone aggregate to Granular crack relief layer as per IRC SP -37 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 over base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)				
		<b>Unit:= Cum</b>				
	Note	Rate shall be taken from item no- 4.14 A.				

**Analysis of Rate**  
**CHAPTER - 4**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
4.01	401	<b>Granular Sub-Base with Graded Material (Table:- 400-1)</b>									
	A	<b>Plant Mix Method</b>									
		Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.									
		<b>Unit = cum</b>									
		<b>Taking output = 400 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
								720.00	720.00	720.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									
		(i) 250 tonne per hour	hour	4.480			649.00	2907.52			PM17001
		(ii) 200 tonne per hour	hour		5.600		354.00		1982.40		PM17002
		(iii) 100 tonne per hour	hour			11.200	329.00			3684.80	PM17003
		<b>Electric generator</b>									
		(i) 125 KVA	hour	4.480			1587.00	7109.76			PM22005
		(ii) 100 KVA	hour		5.600		1359.00		7610.40		PM22006
		(iii) 62.5 KVA	hour			11.200	869.00			9732.80	PM22007
		<b>Front end loader</b>									
		(i) 3.1 cum capacity	hour	9.502			3433.00	32620.37			PM5001
		(ii) 2.1 cum capacity	hour		14.047		2033.00		28557.55		PM5002
		(iii) 1 cum capacity	hour			29.371	1366.00			40120.79	PM5003
		<b>Tipper for transportation</b>									
		(i) 18 cum capacity	t.km	840xL1			4.80	4032.00			L1=1km & PM72001
		(ii) 14 cum capacity	t.km		840xL1		5.48		4603.20		L1=1km & PM73001
		(iii) 10 cum capacity	t.km			840xL1	6.80			5712.00	L1=1 km & PM74001

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		For loading and unloading Time									
		(i)18 cum capacity	hour	4.480			2239.00	10030.72			PM6001
		(ii) 14 cum capacity	hour		5.600		1998.00		11188.80		PM6002
		(iii) 10 cum capacity	hour			11.200	1785.00			19992.00	PM6003
		<b>Motor grader</b>									
		(i)Motor grader 4.30 metre blade	hour	3.226			5450.00	17581.70			PM2001
		(ii)Motor grader 3.70 metre blade	hour		3.891		4985.00		19396.64		PM2002
		(iii)Motor grader 3.35 metre blade	hour			4.339	4403.00			19104.62	PM2003
		<b>Vibratory roller</b>									
			hour	2.589	2.589		1996.00	5167.64	5167.64	103514.65	PM10001
								79449.71	78506.63		
		<b>c) Material</b>									
		Granular sub-base Material as per table 400-1									
		<b>For Grading-I Material</b>									
		53 mm to 26.5 mm @ 27.5 per cent	cum	148.077	148.077		1080.50	159997.20	159997.20		M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	121.154	121.154		886.00	107342.44	107342.44		M-014
		9.5 mm to 4.75 below @ 10%	cum	53.846	53.846		586.00	31553.76	31553.76		M-015
		4.75mm below @40 percent	cum	215.385	215.385		262.42	56521.33	56521.33		M-018
		Cost of water	KL	67.200	67.200		56.20	3776.64	3776.64		M-191
								359191.37	359191.37		
		<b>OR</b>									
		<b>For Grading-II Material</b>									
		26.5 mm to 9.5 mm @ 35 per cent	cum	188.462	188.462		886.00	166977.33	166977.33		M-014
		9.5 mm to 4.75 mm @12.5 %	cum	67.308	67.308		586.00	39442.49	39442.49		M-015
		4.75 mm below @ 52.5 percent	cum	282.692	282.692		262.42	74184.03	74184.03		M-018
		Cost of water	KL	67.200	67.200		56.20	3776.64	3776.64		M-191
								284380.49	284380.49		
		<b>OR</b>									
		<b>For Grading-III Material</b>									
		26.5 mm to 9.5 mm @ 68 per cent	cum	366.154	366.154		886.00	324412.44	324412.44		M-014
		9.5 mm to 4.75 mm @12% per cent	cum	64.615	64.615		586.00	37864.39	37864.39		M-015
		4.75 mm below @ 20 percent	cum	107.692	107.692		262.42	28260.53	28260.53		M-018
		Cost of water	KL	67.200	67.200		56.20	3776.64	3776.64		M-191
								394314.01	394314.01		
		<b>OR</b>									
		<b>For Grading-IV Material</b>									
		26.5 mm to 9.5 mm @ 64 per cent	cum	344.615	344.615		886.00	305328.89	305328.89		M-014
		9.5 mm to 4.75 mm @11%	cum	59.231	59.231		586.00	34709.37	34709.37		M-015
		4.75 mm below @ 25 percent	cum	134.615	134.615		262.42	35325.67	35325.67		M-018

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost of water	KL	67.200	67.200	67.200	56.20	3776.64	3776.64	3776.64	M-191
		<b>OR</b>									
		<b>For Grading-V Material</b>									
		53 mm to 26.5 mm @ 27.5 per cent	cum	148.077	148.077	148.077	1080.50	159997.20	159997.20	159997.20	M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	121.154	121.154	121.154	886.00	107342.44	107342.44	107342.44	M-014
		9.5 mm to 4.75 below @ 12.50 percent	cum	67.308	67.308	67.308	586.00	39442.49	39442.49	39442.49	M-015
		4.75mm below @ 37.5 percent	cum	201.923	201.923	201.923	262.42	52988.63	52988.63	52988.63	M-018
		Cost of water	KL	67.200	67.200	67.200	56.20	3776.64	3776.64	3776.64	M-191
		<b>OR</b>									
		<b>For Grading-VI Material</b>									
		53 mm to 26.5 mm @ 12.5 per cent	cum	67.308	67.308	67.308	1080.50	72726.29	72726.29	72726.29	M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	121.154	121.154	121.154	886.00	107342.44	107342.44	107342.44	M-014
		9.5 mm to 4.75 below @ 22.50 percent	cum	121.154	121.154	121.154	586.00	70996.24	70996.24	70996.24	M-015
		4.75mm below @ 42.5 percent	cum	228.846	228.846	228.846	262.42	60053.77	60053.77	60053.77	M-018
		Cost of water	KL	67.200	67.200	67.200	56.20	3776.64	3776.64	3776.64	M-191
								314895.39	314895.39	314895.39	
<b>4.01A</b>		<b>(i) Rate per cum for grading-I Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						439361.08	438418.00	463426.02	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		35148.89	43841.80	55611.12	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		47451.00	48225.98	51903.71	
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)						521960.96	530485.78	570940.85	
		<b>Rate per cum = (a+b+c+d+e)/400 (With O.H. &amp; C.P.)</b>						1304.90	1326.21	1427.35	
							<b>say</b>	1304.90	1326.20	1427.40	
<b>4.01A</b>		<b>(ii) Rate per cum for grading-II Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						364550.20	363607.12	388615.14	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		29164.02	36360.71	46633.82	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		39371.42	39996.78	43524.90	
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)						433085.64	439964.62	478773.85	
		<b>Rate per cum = (a+b+c+d+e)/400 (With O.H. &amp; C.P.)</b>						1082.71	1099.91	1196.93	
							<b>say</b>	1082.70	1099.90	1196.90	
<b>4.01A</b>		<b>(iii) Rate per cum for grading-III Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						<b>474483.72</b>	<b>473540.64</b>	<b>498548.66</b>	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		37958.70	47354.06	59825.84	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		51244.24	52089.47	55837.45	
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)						563686.66	572984.17	614211.94	
		<b>Rate per cum = (a+b+c+d+e)/400 (With O.H. &amp; C.P.)</b>						1409.22	1432.46	1535.53	

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
4.01A						say	1409.20	1432.50	1535.50		
	(IV)	Rate per cum for grading-IV Material									
		Total cost (Without O.H. & C.P.)					459310.27	458367.19	483375.21		
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	36744.82	45836.72	58005.03		
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)	49605.51	50420.39	54138.02		
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)					545660.61	554624.31	595518.26		
		Rate per cum = (a+b+c+d+e)/400 (With O.H. & C.P.)				say	1364.15	1386.56	1488.80		
							1364.20	1386.60	1488.80		
4.01A											
	(V)	Rate per cum for grading-V Material									
		Total cost (Without O.H. & C.P.)					443717.11	442774.03	467782.05		
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	35497.37	44277.40	56133.85		
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)	47921.45	48705.14	52391.59		
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)					527135.93	535756.58	576307.49		
		Rate per cum = (a+b+c+d+e)/400 (With O.H. & C.P.)				say	1317.84	1339.39	1440.77		
							1317.80	1339.40	1440.80		
4.01A											
	(VI)	Rate per cum for grading-VI Material									
		Total cost (Without O.H. & C.P.)					395065.10	394122.02	419130.04		
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	31605.21	39412.20	50295.60		
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)	42667.03	43353.42	46942.56		
		Cost for 400 cum = a+b+c+d+e (With O.H. & C.P.)					469337.34	476887.64	516368.20		
		Rate per cum = (a+b+c+d+e)/400 (With O.H. & C.P.)				say	1173.34	1192.22	1290.92		
							1173.30	1192.20	1290.90		
		<b>Note</b>									
		Any one of the grading for material may be adopted as per design.									
4.01	401	<b>B</b>									
		<b>By Mix in Place Method</b>									
		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 front end loader at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.									
		<b>Unit = cum</b>									
		<b>Taking output = 250 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
							1358.00	1358.00	1358.00	1358.00	

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		Front end loader for Mixing at stock pile location.									
		(i) 3.1 cum capacity	hour	4.464			3433.00	15324.91			PM5001
		(ii) 2.1 cum capacity	hour		6.579		2033.00		13375.11		PM5002
		(iii) 1 cum capacity	hour			13.889	1366.00			18972.37	PM5003
		Water tanker (speed@20km / hr and return speed @30km / hr and spreading speed@3.0 km /hr )									
		(i) 16 KL capacity	hour	0.292xL 1+0 .778			1121.00	1199.47			L1=1km & PM11001
		(ii) 12 KL capacity	hour	0.389xL 1+1 .037			947.00		1350.42		L1=1km & PM11002
		(iii) 6 KL capacity	hour			0.778xL 1+2 .074	707.00			2016.36	L1=1km & PM11003
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.016			5450.00	10987.20			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.432		4985.00		12123.52		PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.742	4403.00			11940.94	PM2003
		<b>Vibratory roller</b>									
		(i) 16 KL capacity	hour	1.618	1.618		1996.00	3229.53	3229.53	30078.58	PM10001
		(ii) 12 KL capacity	hour								
		(iii) 6 KL capacity	hour								
		<b>c) Material</b>									
		Granular sub-base Material as per table 400-1									
		<b>For Grading-I Material</b>									
		53 mm to 26.5 mm @ 27.5 per cent	cum	92.548	92.548	92.548	1080.50	99998.11	99998.11	99998.11	M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	75.721	75.721	75.721	886.00	67088.81	67088.81	67088.81	M-014
		9.5 mm to 4.75mm @ 10 percent	cum	33.654	33.654	33.654	586.00	19721.24	19721.24	19721.24	M-015
		4.75mm below @ 40 percent	cum	134.615	134.615	134.615	262.42	35325.67	35325.67	35325.67	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								224494.23	224494.23	224494.23	
		<b>OR</b>									
		<b>For Grading-II Material</b>									
		26.5 mm to 9.5 mm @ 35 per cent	cum	117.788	117.788	117.788	886.00	104360.17	104360.17	104360.17	M-014
		9.5 mm to 4.75 mm @ 12.5 %	cum	42.067	42.067	42.067	586.00	24651.26	24651.26	24651.26	M-015
		4.75 mm below @ 52.5 percent	cum	176.683	176.683	176.683	262.42	46365.15	46365.15	46365.15	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								177736.98	177736.98	177736.98	
		<b>OR</b>									
		<b>For Grading-III Material</b>									
		26.5 mm to 9.5 mm @ 68 per cent	cum	228.846	228.846	228.846	886.00	202757.56	202757.56	202757.56	M-014



**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		9.5 mm to 4.75 mm @12 %	cum	40.385	40.385	40.385	586.00	23665.61	23665.61	23665.61	M-015
		4.75 mm below @ 20 percent	cum	67.308	67.308	67.308	262.42	17662.97	17662.97	17662.97	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								246446.53	246446.53	246446.53	
		<b>OR</b>									
		<b>For Grading-IV Material</b>									
		26.5 mm to 9.5 mm @ 64 per cent	cum	215.385	215.385	215.385	886.00	190831.11	190831.11	190831.11	M-014
		9.5 mm to 4.75 mm @11 per cent	cum	37.019	37.019	37.019	586.00	21693.13	21693.13	21693.13	M-015
		4.75 mm below @ 25 percent	cum	84.135	84.135	84.135	262.42	22078.71	22078.71	22078.71	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								236963.35	236963.35	236963.35	
		<b>OR</b>									
		<b>For Grading-V Material</b>									
		53 mm to 26.5 mm @ 27.5 per cent	cum	92.548	92.548	92.548	1080.50	99998.11	99998.11	99998.11	M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	75.721	75.721	75.721	886.00	67088.81	67088.81	67088.81	M-014
		9.5 mm to 4.75mm @ 12.50 percent	cum	42.067	42.067	42.067	586.00	24651.26	24651.26	24651.26	M-015
		4.75mm below @ 37.5 percent	cum	126.202	126.202	126.202	262.42	33117.93	33117.93	33117.93	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								227216.51	227216.51	227216.51	
		<b>OR</b>									
		<b>For Grading-VI Material</b>									
		53 mm to 26.5 mm @ 12.5 per cent	cum	42.067	42.067	42.067	1080.50	45453.39	45453.39	45453.39	M-028
		26.5 mm to 9.5 mm @ 22.5 per cent	cum	75.721	75.721	75.721	886.00	67088.81	67088.81	67088.81	M-014
		9.5 mm to 4.75mm @ 22.50 percent	cum	75.721	75.721	75.721	586.00	44372.51	44372.51	44372.51	M-015
		4.75mm below @ 42.5 percent	cum	143.029	143.029	143.029	262.42	37533.67	37533.67	37533.67	M-018
		Cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
								196808.78	196808.78	196808.78	
<b>4.01B</b>		(i) Rate per cum for grading-I Material									
		Total cost (Without O.H. & C.P.)						256593.34	255930.81	262011.43	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		20527.47	25593.08	31441.37	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		27712.08	28152.39	29345.28	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)						304832.89	309676.28	322798.09	
		Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)						1219.33	1238.71	1291.19	
							<b>say</b>	1219.30	1238.70	1291.20	
<b>4.01B</b>		(ii) Rate per cum for grading-II Material									
		Total cost (Without O.H. & C.P.)									
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		16786.89	20917.36	25830.50	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		22662.30	23009.09	24108.47	

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
4.01B		(iii) <b>Rate per cum for grading-III Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>									
		d) <b>Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		e) <b>Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
4.01B		(iv) <b>Rate per cum for grading-IV Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>									
		d) <b>Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		e) <b>Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
4.01B		(v) <b>Rate per cum for grading-V Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>									
		d) <b>Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		e) <b>Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
4.01B		(vi) <b>Rate per cum for grading-VI Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>									
		d) <b>Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		e) <b>Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
4.01B		(vii) <b>Rate per cum for grading-VII Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>									
		d) <b>Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		e) <b>Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)									
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>									
						say					
		<b>Note</b>									
		Any one of the grading for material may be adopted as per design.									
4.01	401&407	<b>C Using Crusher Run</b>									

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of granular sub-base using crusher run ,spreading in uniform layers with motor grader on prepared surface ,mixing by mix in place method with rotovator at OMC, and compating with vibratory roller to achieve the desired density, complete as per clause 401									
		<b>Unit=cum</b>									
		<b>Taking output=250 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
							<b>720.00</b>	<b>720.00</b>	<b>720.00</b>	<b>720.00</b>	
		<b>b) Machinery</b>									
		<b>Front end loader for loading to Tipper</b>									
		(i)3.1 cum capacity	hour	1.548			3433.00	5314.28			PM5001
		(ii) 2.1 cum capacity	hour		2.283		2033.00		4641.34		PM5002
		(iii) 1 cum capacity	hour			4.808	1366.00		6567.73		PM5003
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	525xL1			4.80	2520.00			L1=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL1		5.48		2877.00		L1=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL1	6.80		3570.00		L1=1 km & PM74001
		For loading and unloading Time									
		(i)18 cum capacity	hour	1.548			2239.00	3465.97			PM6001
		(ii) 14 cum capacity	hour		2.283		1998.00		4561.43		PM6002
		(iii) 10 cum capacity	hour			4.808	1785.00		8582.28		PM6003
		Water tanker (speed@20km /hr and return speed @30 km / hr and spreading speed@3.0 km /hr)									
		(i)16 KL capacity	hour	0.292xL1+0.778			1121.00	1199.47			L1=1km & PM11001
		(ii)12 KL capacity	hour		0.389xL1+1.037		947.00		1350.42		L1=1km & PM11002
		(iii)6 KL capacity	hour			0.778xL1+2.074	707.00		2016.36		L1=1km & PM11003
		<b>Motor Grader</b>									
		(i)Motor grader 4.30 metre blade	hour	2.016			5450.00	10987.20			PM2001

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		(ii) Motor grader 3.70 metre blade	hour		2.432		4985.00	12123.52			PM2002	
		(iii) Motor grader 3.35 metre blade	hour			2.712	4403.00		11940.94		PM2003	
		Vibratory roller	hour	1.618	1.618	1.618	1996.00	3229.53	3229.53	3229.53	3229.53	PM10001
								<b>26716.45</b>	<b>28783.24</b>	<b>35906.84</b>		
		<b>c) Material</b>										
		Granular sub-base Material as per table 400-1										
		<b>For Grading-I Material</b>										
		53 mm to 4.75 mm below	cum	336.538	336.538	336.538	752.36	<b>253197.73</b>	<b>253197.73</b>	<b>253197.73</b>	<b>M-034</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>255558.13</b>	<b>255558.13</b>	<b>255558.13</b>		
		<b>OR</b>										
		<b>For Grading-II Material</b>										
		26.5 mm to 4.75 mm below	cum	336.538	336.538	336.538	886.00	<b>298172.67</b>	<b>298172.67</b>	<b>298172.67</b>	<b>M-025</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>300533.07</b>	<b>300533.07</b>	<b>300533.07</b>		
		<b>OR</b>										
		<b>For Grading-III Material</b>										
		26.5 mm to 4.75 mm below	cum	336.538	336.538	336.538	886.00	<b>298172.67</b>	<b>298172.67</b>	<b>298172.67</b>	<b>M-025</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>300533.07</b>	<b>300533.07</b>	<b>300533.07</b>		
		<b>OR</b>										
		<b>For Grading-IV Material</b>										
		26.5 mm to 4.75 mm below	cum	336.538	336.538	336.538	886.00	<b>298172.67</b>	<b>298172.67</b>	<b>298172.67</b>	<b>M-025</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>300533.07</b>	<b>300533.07</b>	<b>300533.07</b>		
		<b>OR</b>										
		<b>For Grading-V Material</b>										
		53 mm to 4.75 mm below	cum	336.538	336.538	336.538	752.36	<b>253197.73</b>	<b>253197.73</b>	<b>253197.73</b>	<b>M-034</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>255558.13</b>	<b>255558.13</b>	<b>255558.13</b>		
		<b>OR</b>										
		<b>For Grading-VI Material</b>										
		53 mm to 4.75 mm below	cum	336.538	336.538	336.538	752.36	<b>253197.73</b>	<b>253197.73</b>	<b>253197.73</b>	<b>M-034</b>	
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191	
								<b>255558.13</b>	<b>255558.13</b>	<b>255558.13</b>		
4.01C	(i)	Rate per cum for grading-I Material										
		Total cost (Without O.H. & C.P.)						<b>282994.58</b>	<b>285061.37</b>	<b>292184.97</b>		
		<b>d) Overhead charges on (a+b+c)</b>						<b>22639.57</b>	<b>28506.14</b>	<b>35062.20</b>		

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		30563.42	31356.75	32724.72	
								336197.57	344924.26	359971.88	
						say		1344.79	1379.70	1439.89	
								1344.80	1379.70	1439.90	
4.01C		(ii) Rate per cum for grading-II. Material Total cost (Without O.H. & C.P.)						<b>327969.52</b>	<b>330036.31</b>	<b>337159.90</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		26237.56	33003.63	40459.19	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		35420.71	36303.99	37761.91	
								389627.79	399343.94	415381.00	
						say		1558.51	1597.38	1661.52	
								1558.50	1597.40	1661.50	
4.01C		(iii) Rate per cum for grading-III. Material Total cost (Without O.H. & C.P.)						<b>327969.52</b>	<b>330036.31</b>	<b>337159.90</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		26237.56	33003.63	40459.19	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		35420.71	36303.99	37761.91	
								389627.79	399343.94	415381.00	
						say		1558.51	1597.38	1661.52	
								1558.50	1597.40	1661.50	
4.01C		(iv) Rate per cum for grading-IV. Material Total cost (Without O.H. & C.P.)						<b>327969.52</b>	<b>330036.31</b>	<b>337159.90</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		26237.56	33003.63	40459.19	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		35420.71	36303.99	37761.91	
								389627.79	399343.94	415381.00	
						say		1558.51	1597.38	1661.52	
								1558.50	1597.40	1661.50	
4.01C		(v) Rate per cum for grading-V. Material Total cost (Without O.H. & C.P.)						<b>282994.58</b>	<b>285061.37</b>	<b>292184.97</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		22639.57	28506.14	35062.20	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		30563.42	31356.75	32724.72	
								336197.57	344924.26	359971.88	
						say		1344.79	1379.70	1439.89	
								1344.80	1379.70	1439.90	
4.01C		(vi) Rate per cum for grading-VI. Material Total cost (Without O.H. & C.P.)						<b>282994.58</b>	<b>285061.37</b>	<b>292184.97</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		22639.57	28506.14	35062.20	
		e) Contractor's profit on (a+b+c+d) Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.) Rate per cum = (a+b+c+d+e)/250 (With O.H. & C.P.)		(@ 10%)	(@ 10%)	(@ 10%)		30563.42	31356.75	32724.72	
								336197.57	344924.26	359971.88	
						say		1344.79	1379.70	1439.89	
								1344.80	1379.70	1439.90	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Note</b> Any one of the grading for material may be adopted as per design.				say	1344.80	1379.70	1439.90		
4.02A	402	<b>Lime Stabilisation for Improving Sub-grade</b> Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>A By Manual Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	117.00	117.00	117.00	L-12	
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	L-15	
		Mazdoor for spraying lime	day	8.000	8.000	8.000	2448.00	2448.00	2448.00	L-13	
							2953.00	2953.00	2953.00		
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	3.365			9095.60			PM3003	
		(ii) 1.1 cum bucket capacity	hour		3.875		9424.00			PM3004	
		(iii) 0.9 cum bucket capacity	hour			5.418	2202.00		11930.44	PM3005	
		<b>Tipper</b>									
		for transportation									
		(i) 18 cum capacity	t.km	525xL2			4.80	2520.00		L2=1km & PM72001	
		(ii) 14 cum capacity	t.km		525xL2		5.48	2877.00		L2=1km & PM73001	
		(iii) 10 cum capacity	t.km			525xL2	6.80		3570.00	L2=1 km & PM74001	
		For loading and unloading Time									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24		PM6001	
		(ii) 14 cum capacity	hour		3.875		1998.00	7742.25		PM6002	
		(iii) 10 cum capacity	hour			5.418	1785.00		9671.13	PM6003	
		<b>Tractor with ripper and rotavator</b>									

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		attachments @250 cum per hour for mixing	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13 001+14001 )
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		Water tanker (speed@20km /hr and return speed @30 km/hr and spreading speed@3.0 km /hr )									
		(i) 16 KL capacity	hour	0.693xL1+2. 217			1121.00	3262.11			L1=1km & PM11001
		(ii) 12 KL capacity	hour		0.924xL1+2. 966		947.00		3674.36		L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.847xL1+5. 911	707.00			5484.91	L1=1km & PM11003
		<b>c) Material</b>						39302.07	41970.42	48690.41	
		Lime at site	tonne	10.500	10.500	10.500	3873.95	40676.48	40676.48	40676.48	M-190
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						56785.43	56785.43	56785.43	
		<b>d) Overhead charges on (a+b+c)</b>						99040.49	101708.84	108428.84	
		<b>e) Contractor's profit on (a+b+c+d)</b>						7923.24	10170.88	13011.46	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						10696.37	11187.97	12144.03	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						117660.10	123067.70	133584.32	
								392.20	410.23	445.28	
							say	392.20	410.20	445.30	
<b>4.02B</b>	<b>402</b>	<b>(i) Lime Stabilisation for Improving Sub-grade</b>									
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent slaked lime using Binder spreader Machine having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub-grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
	<b>A</b>	<b>By Mechanical Means</b>									

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
							720.00	720.00	720.00		
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i)1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii)1.1 cum bucket capacity	hour		3.875		2432.00	9424.00			PM3004
		(iii)0.9cum bucket capacity	hour			5.418	2202.00		11930.44		PM3005
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2		5.48		2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2	6.80			3570.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i)18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil Stabilizer for mixing and pulverising with capacity 1000.m2.per.hour</b>	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Binder Spreader</b>									
		<b>Motor Grader</b>									
		(i)Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii)Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii)Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>									
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		(i)16 KL capacity	hour	0.693xL1+2.217			1121.00	3262.11			L1=1km & PM11001
		(ii)12 KL capacity	hour		0.924xL1+2.956		947.00		3674.36		L1=1km & PM11002
		(iii)6 KL capacity	hour			1.847xL1+5.911	707.00			5484.91	L1=1km & PM11003
								121095.99	123764.34	130484.33	



**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Material</b>									
		Lime at site	tonne	10.500	10.500	10.500	3873.95	40676.48	40676.48	40676.48	M-190
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.00	300.00	300.00	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						56785.43	56785.43	56785.43	
		<b>d) Overhead charges on (a+b+c)</b>						178601.41	181269.76	187989.76	
		<b>e) Contractor's profit on (a+b+c+d)</b>						14288.11	18126.98	22558.77	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						19288.95	19939.67	21054.85	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						212178.48	219336.41	231603.38	
								707.26	731.12	772.01	
								707.30	731.10	772.00	
<b>4.02B</b>	<b>402</b>	<b>(ii) Lime Stabilisation for Improving Sub-grade</b>									
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent slaked lime <b>manually spread</b> having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>By Mechanical Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying lime	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
								2953.00	2953.00	2953.00	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavtor</b>									
		(i) 1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.875		2432.00		9424.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		<b>Tipper</b>									
		<b>for transportation</b>									
		(i) 18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2		5.48		2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2	6.80			3570.00	L2=1 km & PM74001

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For loading and unloading Time</b>									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil Stabiliser for mixing and pulverising with capacity 1000 m<sup>2</sup> per hour</b>	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>									
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		(i) 16 KL capacity	hour	0.693xL1+2. 217			1121.00	3262.11			L1=1km & PM1001
		(ii) 12 KL capacity	hour		0.924xL1+2. 956		947.00		3674.36		L1=1km & PM1002
		(iii) 6 KL capacity	hour			1.847xL1+5. 911	707.00			5484.91	L1=1km & PM1003
		<b>c) Material</b>									
		Lime at site	tonne	10.500	10.500	10.500	3873.95	40676.48	40676.48	40676.48	M-190
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
								56785.43	56785.43	56785.43	
		<b>Total cost (Without O.H. &amp; C.P.)</b>						162397.44	165065.79	171785.79	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		12991.80	16506.58	20614.29	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		17538.92	18157.24	19240.01	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						192928.16	199729.61	211640.09	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						643.09	665.77	705.47	
							say	643.10	665.80	705.50	
<b>4.03</b>	<b>402</b>	<b>A Cement Stabilisation for Improving Sub-grade</b>									
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 2 per cent cement, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Taking output = 300 cum									
	<b>A</b>	<b>By Manual Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying cement	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
							2953.00	2953.00	2953.00		
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i)1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii)1.1 cum bucket capacity	hour		3.875		2432.00	9424.00			PM3004
		(iii)0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2		5.48	2877.00			L2=1km & PM73001
		(iii) 10 cum capacity	t.km		525xL2		6.80		3570.00		L2=1 km & PM74001
		<b>For loading and unloading Time</b>									
		(i)18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00	7742.25			PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00		9671.13		PM6003
		<b>Tractor with ripper and rotavator</b>									
		attachments @250 cum per hour for mixing	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13 001+14001 )
		<b>Motor Grader</b>									
		(i)Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii)Motor grader3.70 metre blade	hour		2.918		4985.00	14546.23			PM2002
		(iii)Motor grader 3.35 metre blade	hour			3.254	4403.00		14327.36		PM2003
		<b>Vibratory roller</b>									
		Water tanker (speed@20km /hr and return speed @30 hr/km and spreading speed@3.0 km /hr )	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		(i)16 KL capacity	hour	0.693xL+2. 217			1121.00	3262.11			L1=1km & PM11001

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 KL capacity	hour		0.924xL1+2. 956		947.00	3674.36			L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.847xL1+5. 911	707.00		5484.91		L1=1km & PM11003
		<b>c) Material</b>						39302.07	41970.42	48690.41	
		cement at site	tonne	10.500	10.500	10.500	5156.00	54138.00	54138.00	54138.00	M-081
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
								70246.95	70246.95	70246.95	
		<b>Total cost (Without O.H. &amp; C.P.)</b>						112502.02	115170.37	121890.36	
		<b>d) Overhead charges on (a+b+c)</b>						9000.16	11517.04	14626.84	
		<b>e) Contractor's profit on (a+b+c+d)</b>						12150.22	12668.74	13651.72	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						133652.40	139356.14	150168.92	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>					say	445.51	464.52	500.56	
4.03	402	<b>B Cement Stabilisation for Improving Sub-grade</b>						445.50	464.50	500.60	
		(i) Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil stabilizer</b> with 2 per cent cement using <b>Binder spreader Machine</b> grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>By Mechanical Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying cement	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
								720.00	720.00	720.00	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.875		2432.00		9424.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		<b>Tipper</b>									
		for transportation									

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2		5.48		2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2	6.80			3570.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil stabilizer</b> for mixing and pulverising with capacity 1000 m <sup>2</sup> per hour	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Binder Spreader</b>	hour	2.667	2.667	2.667	6913.00	18436.97	18436.97	18436.97	PM50001
		<b>Motor Grader</b>	hour								
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.7 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		Water tanker (speed@20km /hr and return speed @30 km/hr and spreading speed@3.0 km/hr.)	hour	0.693xL1+2.217			1121.00	3262.11			L1=1km & PM1001
		(i) 16 KL capacity	hour								L1=1km & PM1002
		(ii) 12 KL capacity	hour		0.924xL1+2.956		947.00		3674.36		L1=1km & PM1002
		(iii) 6 KL capacity	hour			1.847xL1+5.911	707.00			5484.91	L1=1km & PM1003
		<b>c) Material</b>						121095.99	123764.34	130484.33	
		cement at site	tonne	10.500	10.500	10.500	5156.00	54138.00	54138.00	54138.00	M-081
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						70246.95	70246.95	70246.95	
		<b>d) Overhead charges on (a+b+c)</b>						192062.94	194731.29	201451.28	
		<b>e) Contractor's profit on (a+b+c+d)</b>						15365.04	19473.13	24174.15	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						20742.80	21420.44	22562.54	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						228170.77	235624.86	248187.98	
								760.57	785.42	827.29	
							say	760.60	785.40	827.30	
4.03B	402	(ii) <b>Cement Stabilisation for Improving Sub-grade</b>									

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 percent cement <b>manually spread</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying cement	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
								2953.00	2953.00		
		<b>b) Machinery</b>									
		<b>Hydraulic Excavtor</b>									
		(i)1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii)1.1 cum bucket capacity	hour		3.875		2432.00	9424.00			PM3004
		(iii)0.9cum bucket capacity	hour			5.418	2202.00		11930.44		PM3005
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2		5.48		2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2	6.80			3570.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i)18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil Stabiliser for mixing and pulverising with capacity1000 m2 per hour</b>	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Motor Grader</b>									
		(i)Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii)Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii)Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)	hour								
		(i)16 KL capacity	hour	0.693xL1 +2.217			1121.00	3262.11			L1=1km & PM11001
		(ii)12 KL capacity	hour	0.924xL1 +2.956			947.00		3674.36		L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.847xL1 +5.911	707.00			5484.91	L1=1km & PM11003
		<b>c) Material</b>						102659.02	105327.37	112047.36	
		Cement at site	tonne	10.500	10.500	10.500	5156.00	54138.00	54138.00	54138.00	M-081
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						70246.95	70246.95	70246.95	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		175858.97	178527.32	185247.31	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		14068.72	17852.73	22229.68	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						18992.77	19638.00	20747.70	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						208920.45	216018.05	228224.69	
								696.40	720.06	760.75	
							say	696.40	720.10	760.70	
4.04	402	<b>Lime Stabilisation in Embankment</b>									
		Providing,laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the <b>spread soil in place with rotavator</b> with 2 per cent slaked lime having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>A</b>									
		<b>By Manual Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraving lime	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery</b>						2953.00	2953.00	2953.00	
		<b>Hydraulic Excavator</b>									
		(i)1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii)1.1 cum bucket capacity	hour		3.875		2432.00	9424.00			PM3004

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 0.9 cum bucket capacity <b>Tipper</b>	hour			5.418	2202.00			11930.44	PM3005
		for transportation									
		(i) 18 cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km	450xL2			5.48	2466.00			L2=1km & PM73001
		(iii) 10 cum capacity	t.km	450xL2			6.80	3060.00			L2=1 km & PM74001
		For loading and unloading Time									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00	7742.25			PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00	9671.13			PM6003
		<b>Tractor with ripper and rotavator</b> attachments @250 cum per hour for mixing	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13 001+14001
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00	14546.23			PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00	14327.36			PM3003
		<b>Vibratory roller</b>									
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		(i) 16 KL capacity	hour	0.594xL1+1.9			1121.00	2795.77			L1=1km & PM11001
		(ii) 12 KL capacity	hour		0.792xL1+2.533		947.00	3148.78			L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.583xL1+5.067	707.00			4701.55	L1=1km & PM11003
		<b>c) Material</b>									
		Lime at site	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Cost of water including water for curing	KL	85.500	85.500	85.500	56.20	4805.10	4805.10	4805.10	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						50173.65	50173.65	50173.65	
		<b>d) Overhead charges on (a+b+c)</b>						91602.38	94160.48	100523.70	
		<b>e) Contractor's profit on (a+b+c+d)</b>						7328.19	9416.05	12062.84	
								9893.06	10357.65	11258.65	



Analysis of Rate

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						108823.63	113934.18	123845.20	
		Rate per cum = (a+b+c+d+e)/300 (With O.H. & C.P.)						362.75	379.78	412.82	
							say	362.70	379.80	412.80	
4.04B	402	(i) Lime Stabilisation in Embankment Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 per cent slaked limeusing Binder Spreader Machine having minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub-grade.									
		Unit = cum									
		Taking output = 300 cum									
		A By Manual Means									
		a) Labour									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying lime	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		b) Machinery									
		Hydraulic Excavator									
		(i) 1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.875		2432.00		9424.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		Tipper									
		for transportation									
		(i) 18 cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		450xL2		5.48		2466.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			450xL2	6.80			3060.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i) 18 cum capacity	hour	3.365			2239.00				PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		Soil Stabilizer for mixing and pulverising with capacity 1000m2 per hour	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		Binder Spreader									
		Motor Grader	hour	2.667	2.667	2.667	6913.00	18436.97	18436.97	18436.97	PM50001

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001	
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23			PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36		PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18		PM10001
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)										
		(i) 16 KL capacity	hour	0.594xL1+1.9			1121.00	2795.77				L1=1km & PM1001
		(ii) 12 KL capacity	hour		0.792xL1+2.533		947.00		3148.78			L1=1km & PM1002
		(iii) 6 KL capacity	hour			1.583xL1+5.067	707.00			4701.55		L1=1km & PM1003
		<b>c) Material</b>						120269.65	122827.75	129190.98		
		Lime at site	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55		M-190
		Cost of water including water for curing	KL	85.500	85.500	85.500	56.20	4805.10	4805.10	4805.10		M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00		M-093
								50173.65	50173.65	50173.65		
		<b>Total cost (Without O.H. &amp; C.P.)</b>						171163.30	173721.40	180084.63		
		<b>d) Overhead charges on (a+b+c+d)</b>						13693.06	17372.14	21610.16		
		<b>e) Contractor's profit on (a+b+c+d)</b>						18485.64	19109.35	20169.48		
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						203342.00	210202.90	221864.26		
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						677.81	700.68	739.55		
							say	677.80	700.70	739.50		
<b>4.04B</b>	<b>402</b>	<b>(ii) Lime Stabilisation in Embankment</b>										
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with Soil Stabilizer with 2 per cent slaked lime manually <b>spread having minimum</b> content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.										
		<b>Unit = cum</b>										
		<b>Taking output = 300 cum</b>										
		<b>By Mechanical Means</b>										
		<b>a) Labour</b>										
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00		L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00		L-15
		Mazdoor for spraying lime	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00		L-13
								2953.00	2953.00	2953.00		

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i)1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii)1.1 cum bucket capacity	hour		3.875		2432.00		9424.00		PM3004
		(iii)0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		450xL2		5.48		2466.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			450xL2	6.80			3060.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i)18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil Stabilizer</b> for mixing and pulverising with capacity 1000m2 per hour	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Motor Grader</b>									
		(i)Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii)Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii)Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>									
		Water tanker (speed@20km /hr and return speed @30 hr/ and spreading speed@3.0 km /hr )	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		(i)16 KL capacity	hour	0.594xL1+1.9			1121.00	2795.77			L1=1km & PM11001
		(ii)12 KL capacity	hour		0.792xL1+2.533		947.00		3148.78		L1=1km & PM11002
		(iii)6 KL capacity	hour			1.583xL1+5.067	707.00			4701.55	L1=1km & PM11003
		<b>c) Material</b>									
		Lime at site	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Cost of water including water for curing	KL	85.500	85.500	85.500	56.20	4805.10	4805.10	4805.10	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H.&amp; C.P.)</b>						154959.33	157517.43	163880.66	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDER**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large (@ 8%)	Medium (@ 10%)	Small (@ 12%)		Large	Medium	Small	
		d) Overhead charges on (a+b+c)						12396.75	15751.74	19665.68	
		e) Contractor's profit on (a+b+c+d)						16735.61	17326.92	18354.63	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						184091.69	190596.09	201900.97	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>					say	613.64	635.32	673.00	
								613.60	635.30	673.00	
4.04B	403	<b>Cement Stabilisation in Embankment</b>									
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil Stabilizer</b> with 2 per cent cement using <b>Binder Spreader machine</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>By Mechanical Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor for spraying cement	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.875		2432.00	9424.00			PM3004
		(iii) 0.9 cum bucket capacity	hour		5.418		2202.00	11930.44			PM3005
		<b>Tipper</b>									
		for transportation									
		(i) 18 cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		450xL2		5.48		2466.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			450xL2	6.80			3060.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00	7742.25			PM6002
		(iii) 10 cum capacity	hour		5.418		1785.00			9671.13	PM6003
		<b>Soil Stabilizer</b> for mixing and pulverising with capacity 1000m2 per hour	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Binder Spreader</b>	hour	2.667	2.667	2.667	6913.00	18436.97	18436.97	18436.97	PM50001

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		Water tanker (speed@20km /hr and return speed @30 km/hr and spreading speed@3.0 km /hr )									
		(i) 16 KL capacity	hour	0.594xL1+1.9			1121.00	2795.77			L1=1km & PM11001
		(ii) 12 KL capacity	hour		0.792xL1+2.533		947.00		3148.78		L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.583xL1+5.067	707.00			4701.55	L1=1km & PM11003
		<b>c) Material</b>						120269.65	122827.75	129190.98	
		cement at site	tonne	9.000	9.000	9.000	5156.00	46404.00	46404.00	46404.00	M-081
		Cost of water including water for curing	KL	85.500	85.500	85.500	56.20	4805.10	4805.10	4805.10	M-191
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						61712.10	61712.10	61712.10	
		<b>d) Overhead charges on (a+b+c)</b>						182701.75	185259.85	191623.08	
		<b>e) Contractor's profit on (a+b+c+d)</b>						14616.14	18525.99	22994.77	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						19731.79	20378.58	21461.78	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						217049.68	224164.42	236079.63	
								723.50	747.21	786.93	
								723.50	747.20	786.90	
<b>4.04B</b>	<b>403</b>	<b>(iv) Cement Stabilisation in Embankment</b>									
		Providing, laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with <b>Soil Stabilizer</b> with 2 per cent cement <b>manually spread</b> , grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>By Mechanical Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Skilled mazdoor for alignment and geometrics	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor for spraying cement	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery</b>						2953.00	2953.00		
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	3.365			2703.00	9095.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.875		2432.00		9424.00		PM3004
		(iii) 0.9 cum bucket capacity	hour			5.418	2202.00			11930.44	PM3005
		<b>Tipper for transportation</b>									
		(i) 18 cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		450xL2		5.48		2466.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			450xL2	6.80			3060.00	L2=1 km & PM74001
		<b>For loading and unloading Time</b>									
		(i) 18 cum capacity	hour	3.365			2239.00	7534.24			PM6001
		(ii) 14 cum capacity	hour		3.875		1998.00		7742.25		PM6002
		(iii) 10 cum capacity	hour			5.418	1785.00			9671.13	PM6003
		<b>Soil Stabilizer for mixing and pulverising with capacity 1000m<sup>2</sup> per hour</b>	hour	2.667	2.667	2.667	24056.00	64157.35	64157.35	64157.35	PM49001
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		Water tanker (speed@20km /hr and return speed @30 km /hr and spreading speed@3.0 km /hr)									
		(i) 16 KL capacity	hour	0.594xL1+1.900			1121.00	2795.77			L1=1km & PM11001
		(ii) 12 KL capacity	hour		0.792xL1+2.533		947.00		3148.78		L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.583xL1+5.067	707.00			4701.55	L1=1km & PM11003
		<b>c) Material</b>						101832.68	104390.78	110754.01	
		cement at site	tonne	9,000	9,000	9,000	5156.00	46404.00	46404.00	46404.00	M-081
		Cost of water including water for curing	KL	85,500	85,500	85,500	56.20	4805.10	4805.10	4805.10	M-191
		Compensation for earth taken from private land	cum	300,000	300,000	300,000	35.01	10503.00	10503.00	10503.00	M-093
		<b>Total cost (Without O.H. &amp; C.P.)</b>						166497.78	169055.88	175419.11	

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		13319.82	16905.59	21050.29	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		17981.76	18596.15	19646.94	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						197799.37	204557.62	216116.34	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						659.33	681.86	720.39	
							say	659.30	681.90	720.40	
4.05	402	<b>Lime Treated Soil for Sub-Base</b>									
		Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 per cent slaked lime with minimum content of 70 per cent of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 per cent of the max dry density to form a layer of sub base.									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480		156.00	156.00	156.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		Mazdoor	day	10.000	10.000	10.000		3060.00	3060.00	3060.00	L-13
								3992.00	3992.00	3992.00	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i)1.2 cum bucket capacity	hour	7.852				21223.96			PM3003
		(ii)1.1 cum bucket capacity	hour		9.043			2432.00	21992.58		PM3004
		(iii)0.9 cum bucket capacity	hour			12.642		2202.00		27837.68	PM3005
		<b>Tipper</b>									
		for transportation									
		(i)18 cum capacity	t.km	525xL2				2520.00			L2=1km & PM72001
		(ii) 14 cum capacity	t.km		525xL2				2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2				3570.00	L2=1 km & PM74001
		For loading and unloading Time									
		(i)18 cum capacity	hour	7.852				17580.63			PM6001
		(ii) 14 cum capacity	hour		9.043			1998.00	18067.91		PM6002
		(iii) 10 cum capacity	hour			12.642		1785.00		22565.97	PM6003
		Motor Grader for grading									
		(i)Motor grader 4.30 metre blade	hour	2.419				5450.00		13183.55	PM2001

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) Motor grader 3.70 metre blade	hour		2.918		4985.00				PM2002
		(ii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		<b>Tractor with ripper and rotovator</b> attachments @ 250 cum per hour for mixing	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13 001+14001
		Water tanker (speed@20km /hr and return speed @30 km / hr and spreading speed@3.0 km /hr )	hour	0.365xL <sup>1+1</sup> . 167			1121.00	1717.37			L1=1km & PM11001
		(i) 16 KL capacity	hour				947.00		1933.77		L1=1km & PM11002
		(ii) 12 KL capacity	hour		0.486xL <sup>1+1</sup> . 556		707.00			2886.68	L1=1km & PM11003
		(iii) 6 KL capacity	hour			0.972xL <sup>1+3</sup> . 111				74894.27	
		<b>c) Material</b>									
		Lime at site	tonne	15.750	15.750	15.750	3873.95	61014.71	61014.71	61014.71	M-190
		Compensation for earth taken from private land	cum	300.000	300.000	300.000	35.01	10503.00	10503.00	10503.00	M-093
		Cost of water	KL	52.500	52.500	52.500	56.20	2950.50	2950.50	2950.50	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						74468.21	74468.21	74468.21	
		<b>d) Overhead charges on (a+b+c)</b>						138392.29	141584.28	153354.49	
		<b>e) Contractor's profit on (a+b+c+d)</b>						11071.38	14158.43	18402.54	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						14946.37	15574.27	17175.70	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						164410.05	171316.98	188932.73	
								548.03	571.06	629.78	
								548.00	571.10	629.80	
4.06	403	<b>Cement Treated Soil for Sub-Base /Base</b>									
		Providing, laying and spreading soil on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread soil mixing in place with rotavator , grading with motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub base /base									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum for 4 percent quantity of cement by weight of soil</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12



**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor skilled	day	2,000	2,000	2,000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	10,000	10,000	10,000	306.00	3060.00	3060.00	3060.00	L-13
								3992.00	3992.00	3992.00	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	7.852			2703.00	21223.96			PM3003
		(ii) 1.1 cum bucket capacity	hour		9.043		2432.00		21992.58		PM3004
		(iii) 0.9 cum bucket capacity	hour			12.642	2202.00			27837.68	PM3005
		<b>Tipper for transportation</b>									
		(i) 18 cum capacity	t.km	525xL2			4.80	2520.00			L2=1km & PM72004
		(ii) 14 cum capacity	t.km		525xL2		5.48		2877.00		L2=1km & PM73001
		(iii) 10 cum capacity	t.km			525xL2	6.80			3570.00	L2=1 km & PM74001
		<b>For loading and unloading Time</b>									
		(i) 18 cum capacity	hour	7.852			2239.00	17580.63			PM6001
		(ii) 14 cum capacity	hour		9.043		1998.00		18067.91		PM6002
		(iii) 10 cum capacity	hour			12.642	1785.00			22565.97	PM6003
		<b>Motor Grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		<b>Tractor with ripper and rotovator attachments @ 250 cum per hour for mixing</b>	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13001+14001)
		Water tanker (speed@20km /hr and return speed @30 km/hr and spreading speed@3.0 km /hr )									
		(i) 16 KL capacity	hour	0.365xL1+1.167			1121.00	1717.37			L1=1km & PM41001
		(ii) 12 KL capacity	hour		0.486xL1+1.556		947.00		1933.77		L1=1km & PM41002
		(iii) 6 KL capacity	hour			0.972xL1+3.111	707.00			2886.68	L1=1km & PM41003
		<b>c) Material</b>									
		cement at site( @4 percent of 525 tonne)	tonne	21,000	21,000	21,000	5156.00	108276.00	108276.00	108276.00	M-081
		Compensation for earth taken from private land	cum	300,000	300,000	300,000	35.01	10503.00	10503.00	10503.00	M-093

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost of water	KL	52.500	52.500	52.500	56.20	2950.50	2950.50	2950.50	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						121729.50	121729.50	121729.50	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		185653.58	188845.57	200615.77	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		14852.29	18884.56	24073.89	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						20050.59	20773.01	22468.97	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						220556.46	228503.14	247158.63	
							say	735.19	761.68	823.86	
								735.20	761.70	823.90	
4.07	403	<b>Cement Treated Crushed Rock or combination as per clause 403 and Table 400-4 in sub base /Base</b>									
		Providing, laying and spreading Material on a prepared sub grade, pulverising, adding the designed quantity of cement to the spread Material mixing in place with rotavator , grading with motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub base /base									
		<b>Unit = cum</b>									
		<b>Taking output = 300 cum</b>									
		<b>Quantity of cement assumed as 4 percent of quantity of crushed rock by weight</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
								3992.00	3992.00	3992.00	
		<b>b) Machinery</b>									
		<b>Motor Grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.419			5450.00	13183.55			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.918		4985.00		14546.23		PM2002
		(iii) Motor grader 3.35 metre blade	hour			3.254	4403.00			14327.36	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
		<b>Tractor with ripper and rotovator</b>									
		attachments @ 250 cum per hour for mixing	hour	1.200	1.200	1.200	667.00	800.40	800.40	800.40	PM (12001+13 001+14001
		Water tanker (speed@20km/hr and return speed @30 km/hr and spreading speed@3.0 km/hr)									
		(i) 16 KL capacity	hour	0.417xL1+1.333			1121.00	1961.75			L1=1km & PM11001

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 KL capacity	hour		0.556xL1+1.778		947.00				L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.111xL1+3.556	707.00			3299.57	L1=1km & PM11003
		<b>c) Material</b>									
		cement at site @4 percent by weight of crushed aggregate (600 tonne)	tonne	24.000	24.000	24.000	5156.00	123744.00	123744.00	123744.00	M-081
		<b>Grading of material for sub-base course</b>									
		37.5mm to 9.5mm @ 55 percent	cum	211.200	211.200	211.200	915.67	193389.50	193389.50	193389.50	M-013
		9.5mm to 4.75mm @ 20 percent	cum	76.800	76.800	76.800	586.00	45004.80	45004.80	45004.80	M-015
		4.75mm to 75 micron @ 25 percent	cum	96.000	96.000	96.000	262.42	25192.32	25192.32	25192.32	M-018
		Cost of water	kL	60.000	60.000	60.000	56.20	3372.00	3372.00	3372.00	M-191
								266958.62	266958.62	266958.62	
		<b>or</b>									
		<b>Grading of material for Base course</b>									
		37.5 mm to 9.5mm @ 32.5 percent	cum	124.800	124.800	124.800	915.67	114275.62	114275.62	114275.62	M-013
		9.5mm to 4.75mm @ 5 percent	cum	19.200	19.200	19.200	586.00	11251.20	11251.20	11251.20	M-015
		4.75mm to 75 micron @ 62.5 percent	cum	240.000	240.000	240.000	262.42	62980.80	62980.80	62980.80	M-018
		Cost of water	kL	60.000	60.000	60.000	56.20	3372.00	3372.00	3372.00	M-191
								191879.62	191879.62	191879.62	
<b>4.07</b>		<b>(I) For Sub -Base course</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						413546.50	415157.73	416028.13	
		<b>d) Overhead charges on (a+b+c)</b>						33083.72	41515.77	49923.38	
		<b>e) Contractor's profit on (a+b+c+d)</b>						44663.02	45667.35	46595.15	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						491293.24	502340.85	512546.66	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						1637.64	1674.47	1708.49	
							say	1637.60	1674.50	1708.50	
<b>4.07</b>		<b>(II) For Base course</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						338467.49	340078.72	340949.12	
		<b>d) Overhead charges on (a+b+c)</b>						27077.40	34007.87	40913.89	
		<b>e) Contractor's profit on (a+b+c+d)</b>						36554.49	37408.66	38186.30	
		Cost for 300 cum = a+b+c+d+e (With O.H. & C.P.)						402099.38	411495.25	420049.32	
		<b>Rate per cum = (a+b+c+d+e)/300 (With O.H. &amp; C.P.)</b>						1340.33	1371.65	1400.16	
							say	1340.30	1371.70	1400.20	
		<b>Note</b>									
		Quantities of aggregate provide under 'c' above are uncompacted quantities									
<b>4.08</b>	<b>403</b>	<b>A Cement Treated Crushed stone Sub base</b>									

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Plant Mix Method</b>									
		Construction of granular sub-base by providing graded Material, mixing with cement in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with mechanical paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.									
		<b>Laying Using Mechanical Paver</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 250 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
								1358.00	1358.00	1358.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									
		(i)250 tonne per hour	hour	2.800			649.00	1817.20			PM17001
		(ii)200 tonne per hour	hour		3.500		354.00		1239.00		PM17002
		(iii)100 tonne per hour	hour			7.000	329.00			2303.00	PM17003
		<b>Electric generator</b>									
		(i) 125 KVA	hour	2.800			1587.00	4443.60			PM22005
		(ii)100KVA	hour		3.500		1359.00		4756.50		PM22006
		(iii)62.5 KVA	hour			7.000	869.00			6083.00	PM22007
		<b>Front end loader for loading to Tipper</b>									
		(i) 3.1Cum capacity	hour	5.939			3433.00	20388.59			PM5001
		(ii)2.1 Cum capacity	hour		8.779		2033.00		17847.71		PM5002
		(iii)1 Cum Capacity	hour			18.357	1366.00			25075.66	PM5003
		<b>Tipper For Transportation</b>									
		(i) 18Cum capacity	t.km	525xL1			4.80	2520.00			L1=1km & PM72001
		(ii)14 Cum capacity	t.km		525xL1		5.48		2877.00		L1=1km & PM73001
		(iii)10 Cum Capacity	t.km			525xL1	6.80			3570.00	L1=1 km & PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18Cum capacity	hour	5.600			2239.00	12538.40			PM6001
		(ii)14 Cum capacity	hour		6.300		1998.00		12587.40		PM6002
		(iii)10 Cum Capacity	hour			9.800	1785.00			17493.00	PM6003
		<b>Mechanical paver finisher</b>	hour	2.800	3.500	3.500	2078.00	5818.40	7273.00	7273.00	PM28001

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Vibratory roller</b>	hour	2.240	2.800	2.800	1996.00	4471.04	5588.80	5588.80	PM10001
		Water tanker (speed@20km /hr and return speed @30 hr/ and spreading speed@3.0 km /hr )									
		(i)16 KL capacity	hour	0.328xL1+0.875			1121.00	1348.56			L1=1km & PM1001
		(ii)12 KL capacity	hour		0.4375xL1+1.167		947.00		1519.46		L1=1km & PM1002
		(iii)6 KL capacity	hour			0.875xL1+2.333	707.00			2268.06	L1=1km & PM1003
		<b>c) Material</b>						53345.79	53688.87	69654.52	
		cement at site	tonne	13.125	13.125	13.125	5156.00	67672.50	67672.50	67672.50	M-081
		cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
								73278.45	73278.45	73278.45	
		<b>(i) For Grading -III Material</b>									
		26.5mm to 9.5mm @ 68 percent	cum	228.846	228.846	228.846	886.00	202757.56	202757.56	202757.56	M-014
		9.5mm to 4.75mm @ 12 percent	cum	40.385	40.385	40.385	586.00	23665.61	23665.61	23665.61	M-015
		4.75mm below @ 20 percent	cum	67.308	67.308	67.308	262.42	17662.97	17662.97	17662.97	M-018
								244086.13	244086.13	244086.13	
		<b>OR</b>									
		<b>(ii)For Grading -IV Material</b>									
		26.5 mm to 9.5mm @ 64 percent	cum	215.385	215.385	215.385	886.00	190831.11	190831.11	190831.11	M-014
		9.5mm to 4.75mm @ 11 percent	cum	37.019	37.019	37.019	586.00	21693.13	21693.13	21693.13	M-015
		4.75mm below@25 percent	cum	84.135	84.135	84.135	262.42	22078.71	22078.71	22078.71	M-018
								234602.95	234602.95	234602.95	
		<b>(j) Rate per cum for Grading -III Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						372068.37	372411.45	388377.10	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		29765.47	37241.14	46605.25	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		40183.38	40965.26	43498.24	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)						442017.23	450617.85	478480.59	
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>						1768.07	1802.47	1913.92	
							say	1768.10	1802.50	1913.90	
		<b>(ii) Rate per cum for Grading -IV Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						362585.19	362928.27	378893.92	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		29006.82	36292.83	45467.27	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		39159.20	39922.11	42436.12	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)						430751.21	439143.21	466797.31	
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>						1723.00	1756.57	1867.19	
							say	1723.00	1756.60	1867.20	



**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
4.08	403	<b>Cement Treated Crushed stone Sub base</b>									
	<b>B</b>	<b>By Mix Place Method</b>									
		Construction of granular sub-base by providing graded Material, mixing , carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface mixing with cement at OMC and compacting with vibratory power roller to achieve the desired density, complete as per clause 401.									
		<b>Unit = cum</b>									
		<b>Taking output = 250cum</b>									
		<b>By mechanical means</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Skilled mazdoor for alignment and geometrics	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor for spraying cement	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
								3354.00	3354.00	3354.00	
		<b>b) Machinery</b>									
		<b>Front end loader for Mixing at stock pile location.</b>									
		(i) 3.1 cum capacity	hour	4.464			3433.00	15324.91			PM5001
		(ii) 2.1 cum capacity	hour		6.579		2033.00		13375.11		PM5002
		(iii) 1 cum capacity	hour			13.889	1366.00			18972.37	PM5003
		Water tanker (speed@20km /hr and return speed @30 hr/ and spreading speed@3.0 km /hr )									
		(i) 16 KL capacity	hour	0.693xL1+1.847			1121.00	2847.34			L1=1km & PM11001
		(ii) 12 KL capacity	hour		0.924xL1+2.463		947.00		3207.49		L1=1km & PM11002
		(iii) 6 KL capacity	hour			1.847xL1+4.926	707.00			4788.51	L1=1km & PM11003
		<b>Soil Stabilizer</b> for mixing and pulverising with capacity 1000m2 per hour	hour	2.222	2.222	2.222	24056.00	53452.43	53452.43	53452.43	PM49001
		<b>Binder Spreader</b>	hour	2.222	2.222	2.222	6913.00	15360.69	15360.69	15360.69	PM50001
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	2.016			5450.00	10987.20			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.432		4985.00		12123.52		PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.712	4403.00			11940.94	PM2003
		<b>Vibratory roller</b>	hour	1.618	1.618	1.618	1996.00	3229.53	3229.53	3229.53	PM10001
		<b>c) Material</b>						101202.10	100748.76	107744.47	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		cement at site	tonne	13.125	13.125	13.125	5156.00	67672.50	67672.50	67672.50	M-081
		Cost of water including water for curing	KL	99.750	99.750	99.750	56.20	5605.95	5605.95	5605.95	M-191
								73278.45	73278.45	73278.45	
		<b>For Grading -III Material</b>									
		26.5mm to 9.5mm @ 68 percent	cum	228.846	228.846	228.846	886.00	202757.56	202757.56	202757.56	M-014
		9.5mm to 4.75mm @ 12 percent	cum	40.385	40.385	40.385	586.00	23665.61	23665.61	23665.61	M-015
		4.75mm below@ 20 percent	cum	67.308	67.308	67.308	262.42	17662.97	17662.97	17662.97	M-018
		<b>OR</b>						244086.13	244086.13	244086.13	
		<b>For Grading -IV Material</b>									
		26.5 mm to 9.5mm @ 64 percent	cum	215.385	215.385	215.385	886.00	190831.11	190831.11	190831.11	M-014
		9.5mm to 4.75mm @ 11 percent	cum	37.019	37.019	37.019	586.00	21693.13	21693.13	21693.13	M-015
		4.75mm below@ 25 percent	cum	84.135	84.135	84.135	262.42	22078.71	22078.71	22078.71	M-018
								234602.95	234602.95	234602.95	
		<b>(i) Rate per cum for Grading -III Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						421920.68	421467.34	428463.05	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		33753.65	42146.73	51415.57	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		45567.43	46361.41	47987.86	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)						501241.77	509975.49	527866.48	
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>						2004.97	2039.90	2111.47	
							say	2005.00	2039.90	2111.50	
		<b>(ii) Rate per cum for Grading -IV Material</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						412437.50	411984.16	418979.87	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		32995.00	41198.42	50277.58	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		44543.25	45318.26	46925.75	
		Cost for 250 cum = a+b+c+d+e (With O.H. & C.P.)						489975.75	498500.84	516183.20	
		<b>Rate per cum = (a+b+c+d+e)/250 (With O.H. &amp; C.P.)</b>						1959.90	1994.00	2064.73	
							say	1959.90	1994.00	2064.70	
<b>4.09</b>	<b>404.3.1</b>	<b>Making 50 mm x 50 mm Furrows</b>									
		Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 450 to the center line of the road and at one metre interval in the existing thin bituminous wearing coarse including sweeping and disposal of excavated material within 1000 metres lead,									
		<b>Unit = sqm</b>									
		<b>Taking output = 30 m x 7 m = 210 sqm</b>									
		<b>(i) 25mm deep furrow cutting</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>						638.00	638.00	638.00	
		Tractor-trolley	hour	0.200	0.200	0.200	612.00	122.40	122.40	122.40	PM12001
		<b>Total cost (Without O.H. &amp; C.P.)</b>						760.40	760.40	760.40	
		<b>d) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		60.83	76.04	91.25	
		<b>e) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		82.12	83.64	85.16	
		Cost for 210 sqm = a+b+c+d (With O.H. & C.P.)						903.36	920.08	936.81	
		<b>Rate per sqm = (a+b+c+d)/210 (With O.H. &amp; C.P.)</b>					<b>say</b>	4.30	4.38	4.46	
								4.30	4.40	4.50	
		<b>(ii) 50mm deep furrow cutting</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
								1276.00	1276.00	1276.00	
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.400	0.400	0.400	629.00	251.60	251.60	251.60	PM12001
		<b>Total cost (Without O.H. &amp; C.P.)</b>						1527.60	1527.60	1527.60	
		<b>d) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		122.21	152.76	183.31	
		<b>e) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		164.98	168.04	171.09	
		Cost for 210 sqm = a+b+c+d (With O.H. & C.P.)						1814.79	1848.40	1882.00	
		<b>Rate per sqm = (a+b+c+d)/210 (With O.H. &amp; C.P.)</b>					<b>say</b>	8.64	8.80	8.96	
								8.60	8.80	9.00	
<b>4.10</b>	<b>404.3.2</b>	<b>Inverted Choke</b>									
		Construction of inverted choke by providing, laying, spreading and compacting screening B type/ coarse sand of specified grade in uniform layer on a prepared surface with motor grader and compacting with power roller etc.									
		<b>Unit = cum</b>									
		<b>Taking output = 600 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.920	0.920	0.920	325.00	299.00	299.00	299.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	21.000	21.000	21.000	306.00	6426.00	6426.00	6426.00	L-13
								7501.00	7501.00	7501.00	
		<b>b) Machinery</b>									
		(i) Motor Grader 4.30 meter blade.	hour	4.839			5450.00	26372.55			PM2001
		(ii) Motor Grader 3.70 meter blade.	hour		5.837		4985.00	29097.45			PM2002





**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) Motor Grader 3.35 meter blade.	hour			6.508	4403.00			28654.72	PM2003
		Vibratory roller 8-10 tonnes @ 60 cum per hour	hour	6.000	6.000	6.000	1996.00	11976.00	11976.00	11976.00	PM10001
		Water tanker (speed @20km/hour and return speed @30 km/hour and spreading speed @ 3.0km/hour									
		(i) 16 KL capacity	hour	0.75xL1+4.8			1121.00	6221.55			L1=1km & PM11001
		(ii) 12 KL capacity	hour	1xL1+6.4			947.00	7007.80	7007.80		L1=1km & PM11002
		(iii) 6 KL capacity	hour			2xL1+12.8	707.00			10463.60	L1=1km & PM11003
								44570.10	48081.25	51094.32	
		<b>c) Material</b>									
		Screening type 'B' or coarse sand	cum	720.000	720.000	720.000	494.00	355680.00	355680.00	355680.00	M-005*
		Cost of water	KL	108.000	108.000	108.000	56.20	6069.60	6069.60	6069.60	M-191
								361749.60	361749.60	361749.60	
		<b>Total cost (Without O.H. &amp; C.P.)</b>						413820.70	417331.85	420344.92	
		<b>d) Overhead charges on (a+b+c)</b>				(@ 8%)		33105.66	41733.18	50441.39	
		<b>e) Contractor's profit on (a+b+c+d)</b>				(@ 10%)		44692.64	45906.50	47078.63	
		Cost for 600 cum = a+b+c+d+e (With O.H. & C.P.)						491618.99	504971.53	517864.95	
		<b>Rate per cum = (a+b+c+d+e)/600 (With O.H. &amp; C.P.)</b>					<b>say</b>	819.36	841.62	863.11	
								819.40	841.60	863.10	
4.11	404	<b>Water Bound Macadam</b>									
		Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with 3 wheeled steel/ vibratory roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.									
		<b>A By Manual Means</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 360 cum</b>									
		<b>a) Labour</b>									
		Mate	day	10.080	10.080	10.080	325.00	3276.00	3276.00	3276.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	250.000	250.000	250.000	306.00	76500.00	76500.00	76500.00	L-13
								80552.00	80552.00	80552.00	
		<b>b) Machinery</b>									
		Vibratory roller	hour	2.330	2.330	2.330	1996.00	4650.68	4650.68	4650.68	PM10001



**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Smooth 3 wheeled steel roller @.30cum/hour or Water tanker (speed @20km/hour and return speed@30 km/hour and spreading speed@ 3.0km/hour	hour	4.660	4.660	4.660					PM8001
		(i) 16 KL capacity	hour	1xL1+3.84			1121.00	5425.64			L1=1km & PM1001
		(ii) 12 KL capacity	hour		1.333xL1+5.12		947.00		6110.99		L1=1km & PM1002
		(iii) 6 KL capacity	hour			0.533xL1+10.24	707.00			7616.51	L1=1km & PM1003
		<b>C)Material (Refer table 400-8.9.10 &amp; 11.)</b>						<b>10076.32</b>	10761.67	12267.19	
4.11A	(i)	<b>Grading-I</b>									
		<b>Aggregate</b>									
		Grading-I 63 mm to 45 mm/ Grading II-53mm to 22.4mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	435.600	435.600	975.00	424710.00	424710.00	424710.00	M-037
		<b>Stone Screening</b>									
		Type A.13.2 mm for grading-I @.0.12 cum per 10 sqm	cum	57.200	57.200	57.200	424.21	24264.81	24264.81	24264.81	M-041
		<b>OR</b>									
		Crushable type such as Moorum or Gravel for grading-I &II @ 0.22 cum per 10 sqm	cum	105.590	105.590	105.590	160.00	16894.40	16894.40	16894.40	M-007
		<b>OR</b>									
		Type B.11.2 mm for grading-II @.0.18 cum per 10 sqm	Cum	86.400	86.400	86.400	424.21	36651.74	36651.74	36651.74	M-040
		<b>Binding material</b>									
		Binding Material @ 0.06 cum per 10 sqm for grading I material	cum	28.800	28.800	28.800	160.00	4608.00	4608.00	4608.00	M-007
		Cost of water	KL	144.000	144.000	144.000	56.20	8092.80	8092.80	8092.80	M-191
4.11A(i)	(a)	<b>Using Screening</b> Crushable type such as Moorum or Gravel.									
		Total cost (Without O.H. & C.P.)						544933.52	545618.87	547124.39	
		d) Overhead charges on (a+b+c)						43594.68	54561.89	65654.93	
		e) Contractor's profit on (a+b+c+d)						58852.82	60018.08	61277.93	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						647381.02	660198.83	674057.25	
		Rate per cum = (a+b+c+d+e)/ 360 (With O.H. & C.P.)					say	1798.28	1833.89	1872.38	
		<b>OR</b>									
4.11A(i)	(b)	<b>Using Screening</b> Type-A (13.2mm agg.)									
		Total cost (Without O.H. & C.P.)						552303.93	552989.28	554494.80	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		44184.31	55298.93	66539.38	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		59648.82	60828.82	62103.42	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						656137.07	669117.03	683137.60	
		Rate per cum = (a+b+c+d+e)/ 360 (With O.H. & C.P.)						1822.60	1858.66	1897.60	
		OR					say	1822.60	1858.70	1897.60	
4.11A(i)	(c)	Using Screening Type-B (11.2mm agg.)									
		Total cost (Without O.H. & C.P.)						564690.86	565376.22	566881.74	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		45175.27	56537.62	68025.81	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		60986.61	62191.38	63490.75	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						670852.75	684105.22	698398.30	
		Rate per cum = (a+b+c+d+e)/ 360 (With O.H. & C.P.)						1863.48	1900.29	1940.00	
4.11A	(ii)	Grading-II					say	1863.50	1900.30	1940.00	
		Aggregate									
		Grading-II 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	435.600	435.600	1080.50	470665.80	470665.80	470665.80	M-035
		Stone Screening									
		Type B 11.2 mm for grading-II @ 0.18 cum per 10 sqm	cum	86.400	86.400	86.400	424.21	36651.74	36651.74	36651.74	M-040
		OR									
		Crushable type such as Mooroom or Gravel for grading I & II @ 0.22 cum per 10 sqm	cum	105.590	105.590	105.590	160.00	16894.40	16894.40	16894.40	M-007
		Binding material									
		Binding Material @ 0.06 cum per 10 sqm for grading I material	cum	28.800	28.800	28.800	160.00	4608.00	4608.00	4608.00	M-007
		Cost of water	KL	144.000	144.000	144.000	56.20	8092.80	8092.80	8092.80	M-191
4.11A(ii)	(a)	Using Screening Crushable type such as Mooroom or Gravel.									
		Total cost (Without O.H. & C.P.)						590889.32	591574.67	593080.19	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		47271.15	59157.47	71169.62	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		63816.05	65073.21	66424.98	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						701976.51	715805.35	730674.80	
		Rate per cum = (a+b+c+d+e)/ 360 (With O.H. & C.P.)						1949.93	1988.35	2029.65	
		OR					say	1949.90	1988.30	2029.70	
4.11A(ii)	(b)	Using Screening Type-B (11.2mm agg.)									
		Total cost (Without O.H. & C.P.)						610646.66	617332.02	612837.54	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		48851.73	61133.20	73540.50	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>e) Contractor's profit on (a+b+c+d)</b> Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.) <b>Rate per cum = (a+b+c+d+e)/ 360 (With O.H. &amp; C.P.)</b>		(@ 10%)	(@ 10%)	(@ 10%)		65949.84	67246.52	68637.80	
		(Anyone of the aggregate grading, screening and binding material may be used as per design.)						725448.24	739711.74	755015.84	
		<b>By Mechanical Means</b>						2015.13	2054.75	2097.27	
		<b>Unit = cum</b>					<b>say</b>	<b>2015.10</b>	<b>2054.80</b>	<b>2097.30</b>	
		<b>Taking output = 360 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.680	0.680	0.680	325.00	221.00	221.00	221.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	15.000	15.000	15.000	306.00	4590.00	4590.00	4590.00	L-13
								5687.00	5587.00	5587.00	
		<b>b) Machinery</b>									
		<b>Front end loader for Mixing at stock pile location.</b>									
		(i) 3.1 Cum Capacity.	hour	6.429			3433.00	22070.76			PM5001
		(ii) 2.1 Cum Capacity.	hour		9.474		2033.00	19260.64			PM5002
		(iii) 1 Cum Capacity.	hour			20.000	1366.00	27320.00			PM5003
		<b>Motor grader</b>									
		(i) Motor grader 4.3 meter blade	hour	2.903			5450.00	15821.35			PM2001
		(ii) Motor grader 3.70 meter blade	hour		3.502		4985.00	17457.47			PM2002
		(iii) Motor grader 3.35 meter blade	hour		3.905		4403.00	17193.72			PM2003
		<b>Vibratory roller</b>	hour	2.330	2.330	2.330	1996.00	4650.68	4650.68	4650.68	PM10001
		or									
		Smooth 3 wheeled steel roller.	hour	4.660	4.660	4.660					PM8001
		Water tanker (speed @20km/hour and return speed@30 km/hour and spreading speed@ 3.0km/hour									
		(i) 16 KL capacity	hour	1xL1+3.84			1121.00	5425.64			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		1.333xL1+5.12		947.00	6110.99			L1=1km & PM11002
		(iii) 6 KL Capacity.	hour			2.667xL1+10.24	707.00	9125.25			L1=1km & PM11003
		<b>c) Material ( Refer table 400- 8,9,10&amp;11 )</b>									
		(i) Grading-I									
		<b>Aggregate</b>						47968.43	47479.78	58289.64	
4.11B											

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Grading- I 63 mm to 45 mm/ Grading-II-53MM to 22.4mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	435.600	435.600	975.00	424710.00	424710.00	424710.00	M-037
		<b>Stone Screening</b>									
		Type A 13.2 mm for grading-I @ 0.12 cum per 10 sqm	cum	57.600	57.600	57.600	424.21	24434.50	24434.50	24434.50	M-041
		OR									
		Crushable type such as Moorum or Gravel for grading-I & II @ 0.22 cum per 10 sqm	cum	105.590	105.590	105.590	160.00	16894.40	16894.40	16894.40	M-007
		OR									
		Type B 11.2 mm for grading II @ 0.18 cum per 10sqm	cum	86.400	86.400	86.400	424.21	36651.74	36651.74	36651.74	M-040
		<b>Binding material</b>									
		Binding Material @ 0.06 cum per 10 sqm for grading I material	cum	28.800	28.800	28.800	160.00	4608.00	4608.00	4608.00	M-007
		Cost of water	KL	144.000	144.000	144.000	56.20	8092.80	8092.80	8092.80	M-191
<b>4.11B(i)</b>		<b>Using Screening Crushable type such as Moorum or Gravel</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						507860.63	507371.98	518181.84	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		40628.85	50737.20	62181.82	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		54848.95	55810.92	58036.37	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						603338.42	613920.10	638400.03	
		<b>Rate per cum = (a+b+c+d+e)/ 360 (With O.H. &amp; C.P.)</b>					say	1675.94	1705.33	1773.33	
		OR						1675.90	1705.30	1773.30	
<b>4.11B(i)</b>		<b>Using Screening Type-A (13.2mm agg.)</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						515400.72	514912.08	525721.94	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		41232.06	51491.21	63086.63	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		55663.28	56640.33	58880.86	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						612296.06	623043.62	647689.43	
		<b>Rate per cum = (a+b+c+d+e)/ 360 (With O.H. &amp; C.P.)</b>					say	1700.82	1730.68	1799.14	
		OR						1700.80	1730.70	1799.10	
<b>4.11B(i)</b>		<b>Using Screening Type-B (11.2mm agg.)</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						527617.97	527129.33	537939.19	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		42209.44	52712.93	64552.70	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		56982.74	57984.23	60249.19	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						62810.15	637826.49	662741.08	
		<b>Rate per cum = (a+b+c+d+e)/ 360 (With O.H. &amp; C.P.)</b>					say	1741.14	1771.74	1840.95	
								1741.10	1771.70	1840.90	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
4.11B	(ii)	<b>Grading-II Aggregate</b> Grading-II 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	435.600	435.600	1080.50	470665.80	470665.80	470665.80	M-035
		<b>Stone Screening</b> Type B 11.2 mm for grading-II @ 0.18 cum per 10 sqm	cum	86.400	86.400	86.400	424.21	36651.74	36651.74	36651.74	M-040
		<b>OR</b> Crushable type such as Moorum or Gravel for grading I & II @ 0.22 cum per 10 sqm	cum	105.590	105.590	105.590	160.00	16894.40	16894.40	16894.40	M-007
		<b>Binding material</b> Binding Material @ 0.06 cum per 10 sqm for grading I material	cum	28.800	28.800	28.800	160.00	4608.00	4608.00	4608.00	M-007
		Cost of water	KL	144.000	144.000	144.000	56.20	8092.80	8092.80	8092.80	M-191
4.11B(ii)	(a)	<b>Using Screening</b> Crushable type such as Moorum or Gravel									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						553816.43	553327.78	564137.64	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		44305.31	55332.78	67696.52	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		59812.17	60866.06	63183.42	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						657933.92	669526.62	695017.58	
		<b>Rate per cum = (a+b+c+d+e) / 360 (With O.H. &amp; C.P.)</b>					say	1827.59	1859.80	1930.60	
		<b>OR</b>						1827.60	1859.80	1930.60	
4.11B(ii)	(b)	<b>Using Screening</b> Type-B (11.2mm agg.)									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						573573.77	573085.13	583894.99	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		45885.90	57308.51	70067.40	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		61945.97	63039.36	65396.24	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						681405.64	693433.00	719358.63	
		<b>Rate per cum = (a+b+c+d+e) / 360 (With O.H. &amp; C.P.)</b>					say	1892.79	1926.20	1998.22	
4.12	405	<b>Crushed Cement Concrete Sub-base / Base</b> Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in Table 400-9 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L1 km., laying and compacting the same as sub base/ base course, constructed as WBM to clause 404 except the use of screening or binding Material.									

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Unit = cum									
		Taking output =360 cum									
		a) Labour									
		Mate	day	4.160	4.160	4.160	325.00	1352.00	1352.00	1352.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	102.000	102.000	306.00	31212.00	31212.00	31212.00	L-13
								33340.00	33340.00	33340.00	
		b) Machinery									
		Motor Grader for grading									
		(i) Motor grader 4.3 meter blade	hour	2.903			5450.00	15821.35			PM2001
		(ii) Motor grader 3.70 meter blade	hour		3.502		4985.00		17457.47		PM2002
		(iii) Motor grader 3.35 meter blade	hour			3.905	4403.00			17193.72	PM2003
		Vibrator roller 8-10 tonne @ 60 Cum per hour	hour	6.000	6.000	6.000	1996.00	11976.00	11976.00	11976.00	PM10001
		or									
		Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.00	12.00	12.00					PM8001
		Front end loader for loading to Tipper									
		(i) 3.1Cum Capacity	hour	2.229			3433.00	7652.16			PM5001
		(ii) 2.1Cum Capacity	hour		3.288		2033.00		6684.50		PM5002
		(iii) 1Cum Capacity	hour			6.923	1366.00			9456.82	PM5003
		Tipper									
		For Transportation									
		(i) 18 Cum Capacity	tonne.km	720xL1			4.80	3456.00			L1=1km & PM72001
		(ii) 14 Cum Capacity	tonne.km		720xL1		5.48		3945.60		L1=1km & PM73001
		(iii) 10 Cum Capacity	tonne.km			720xL1	6.80			4896.00	L1=1 km & PM74001
		For loading and unloading time									
		(i) 18 Cum Capacity	hour	2.229			2239.00	4990.73			PM6001
		(ii) 14 Cum Capacity	hour		3.288		1998.00		6569.42		PM6002
		(iii) 10 Cum Capacity	hour			6.923	1785.00			12357.56	PM6003
		Water tanker (speed @20km/hour and return speed@30 km/hour and spreading speed@ 3.0km/hour									
		(i) 16 KL capacity	hour	0.4xL1+1.53 6			1121.00	2170.26			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		0.533xL1+2.048		947.00		2444.21		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour		1.067xL1+4.096		707.00			3650.24	L1=1km & PM11003
								46066.49	49077.21	59530.33	

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Material</b>									
		Material available from dismantled concrete slab after crushing / breaking and only carriage is required to be provided.									
		Cost of water	KL	57.600	57.600	57.600	56.20	3237.12	3237.12	3237.12	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						82643.61	85654.33	96107.45	
		<b>d) Overhead charges on (a+b+c)</b>						6611.49	8565.43	11532.89	
		<b>e) Contractor's profit on (a+b+c+d)</b>						8925.51	9421.98	10764.03	
		Cost for 360 cum = a+b+c+d+e (With O.H. & C.P.)						98180.61	103641.73	118404.38	
		<b>Rate per cum = (a+b+c+d+e)/ 360 (With O.H. &amp; C.P.)</b>					<b>say</b>	<b>272.72</b>	<b>287.89</b>	<b>328.90</b>	
		<b>Note</b>									
		1. It is assumed that dismantling of concrete slab/pavement has been considered separately. Hence same is not added in this analysis. Only labour for crushing the dismantled slab into aggregate has been added. Carriage from stock pile to work site has been provided with a lead of L1 km.									
		2. In case of breaking of slabs is done locally without involvement of transportation, the provision of tipper, front end loader and loading/unloading charges may be deleted.									
		3. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative.									
4.13	405.2	<b>Penetration Coat Over Top Layer of Crushed Cement Concrete Base</b>									
		Spraying of bitumen over cleaned dry surface of crushed cement concrete base at the rate of 25 kg per 10 sqm by a bitumen pressure distributor, spreading of key aggregates at the rate of 0.13 cum per 10 sqm by a mechanical gritter and rolling the surface as per clause 506.3.8.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7500 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.560	0.560	0.560	325.00	182.00	182.00	182.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	12.000	12.000	12.000	306.00	3672.00	3672.00	3672.00	L-13
		<b>b) Machinery</b>									
								4630.00	4630.00	4630.00	





**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mechanical broom (2.1meter sweeping width)	hour	2.232	2.232	2.232	746.00	1665.07	1665.07	1665.07	PM23001
		Hydraulic self propelled chips spreader	hour	5.140	5.140	5.140	1602.00	8234.28	8234.28	8234.28	PM32001
		Front end loader 1 cum bucket capacity	hour	6.000	6.000	6.000	1366.00	8196.00	8196.00	8196.00	PM5003
		Tipper 10 tonne capacity	hour	6.000	6.000	6.000	1371.00	8226.00	8226.00	8226.00	PM6004
		Vibratory roller 8 -10 tonnes	hour	5.140	5.140	5.140	1996.00	10259.44	10259.44	10259.44	PM10001
		Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	4.280	4.280	1299.00	5559.72	5559.72	5559.72	PM24001
								42140.51	42140.51	42140.51	
		<b>c) Material</b>									
		Crushed stone aggregate 11.2 mm size	cum	97.500	97.500	97.500	424.21	41360.48	41360.48	41360.48	M-040
		Bitumen (60-70 grade)	tonne	0.250	0.250	0.250	56414.00	14103.50	14103.50	14103.50	M-074
								55463.98	55463.98	55463.98	
		<b>Total cost (Without O.H. &amp; C.P.)</b>						102234.49	102234.49	102234.49	
		<b>d) Overhead charges on (a+b+c)</b>						8178.76	10223.45	12268.14	
		<b>e) Contractor's profit on (a+b+c+d)</b>						11041.32	11245.79	11450.26	
		Cost for 7500 sqm = a+b+c+d+e (With O.H. & C.P.)						121454.57	123703.73	125952.89	
		<b>Rate per sqm = (a+b+c+d+e)/ 7500 (With O.H. &amp; C.P.)</b>					<b>say</b>	16.19	16.49	16.79	
<b>4.14</b>	<b>406A</b>	<b>Wet Mix Macadam (Plant Mix Method)</b>									
		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.									
		<b>Laying Using Mechanical Paver</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 225 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
								1358.00	1358.00	1358.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									
		(i) 250 tonne per hour	hour	2.640			649.00	1713.36			PM17001
		(ii) 200 tonne per hour	hour		3.300		354.00		1168.20		PM17002
		(iii) 100 tonne per hour	hour			6.600	329.00			2171.40	PM17003
		Electric generator									

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 125 KVA	hour	2.640			1587.00	4189.68			PM22005
		(ii) 100 KVA	hour		3.300		1359.00		4484.70		PM22006
		(iii) 62.5 KVA	hour			6.600	869.00			5735.40	PM22007
		<b>Front end loader for loading to Tipper</b>									
		(i) 3.1Cum Capacity	hour	2.640			3433.00	9063.12			PM5001
		(ii) 2.1Cum Capacity	hour		3.300		2033.00		6708.90		PM5002
		(iii) 1Cum Capacity	hour			<b>6.600</b>	1366.00			9015.60	PM5003
		<b>Tipper for Transportation</b>									
		(i) 18 Cum Capacity	tonne.km	495xL2			4.80	2376.00			L2=1km & PM72001
		(ii) 14 Cum Capacity	tonne.km		495xL2		5.48		2712.60		L2=1km & PM73001
		(iii) 10 Cum Capacity	tonne.km			495xL2	6.80			3366.00	L2=1 km & PM74001
		<b>For loading and unloading time</b>									
		(i) 18 Cum Capacity	hour	5.280			2239.00	11821.92			PM6001
		(ii) 14 Cum Capacity	hour		6.600		1998.00		13186.80		PM6002
		(iii) 10 Cum Capacity	hour			9.900	1785.00			17671.50	PM6003
		<b>Mechanical Paver finisher</b>									
		Vibratory roller	hour	2.640	3.300	3.300	2078.00	5485.92	6857.40	<b>6857.40</b>	PM28001
			hour	2.112	2.640	2.640	1996.00	4215.55	5269.44	5269.44	PM10001
								38865.55	40388.04	<b>50086.74</b>	
		<b>c) Material as per table 400-13</b>									
		45 mm to 22.4 mm@ 30 percent	Cum	95.192	95.192	95.192	1080.50	102854.96	102854.96	<b>102854.96</b>	M-033
		22.4 mm to 2.36 mm@ 40 percent	Cum	126.923	126.923	126.923	678.14	86071.56	86071.56	<b>86071.56</b>	M-030
		2.36 mm to 75 microm@ 30 percent	Cum	95.192	95.192	95.192	262.42	24980.28	24980.28	<b>24980.28</b>	M-019
		Cost of water	KL	59.400	59.400	59.400	56.20	3338.28	3338.28	3338.28	M-191
								217245.08	217245.08	<b>217245.08</b>	
		<b>Rate per cum</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						257468.64	258991.12	268689.82	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		20597.49	25899.11	32242.78	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		27806.61	28489.02	30093.26	
		Cost for 225 cum = a+b+c+d+e (With O.H. & C.P.)						<b>305872.74</b>	<b>313379.26</b>	331025.86	
		<b>Rate per cum= (a+b+c+d+e)/ 225 (With O.H. &amp; C.P.)</b>						<b>1359.43</b>	<b>1392.80</b>	<b>1471.23</b>	
4.14	406	<b>B Wet Mix Macadam (Plant Mix Method)</b>					say	<b>1359.40</b>	<b>1392.80</b>	<b>1471.20</b>	

**Analysis of Rate**  
**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		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 grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.									
		<b>Laying Using Grader</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 225 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
								1358.00	1358.00	1358.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									
		(i) 250 tonne per hour	hour	2.640			649.00	1713.36			PM17001
		(ii) 200 tonne per hour	hour		3.300		354.00		1168.20		PM17002
		(iii) 100 tonne per hour	hour			6.600	329.00			2171.40	PM17003
		<b>Electric generator</b>									
		(i) 125 KVA	hour	2.640			1587.00	4189.68			PM22005
		(ii) 100 KVA	hour		3.300		1359.00		4484.70		PM22006
		(iii) 62.5 KVA	hour			6.600	869.00			5735.40	PM22007
		<b>Front end loader for loading to Tipper</b>									
		(i) 3.1Cum Capacity	hour	2.640			3433.00	9063.12			PM5001
		(ii) 2.1Cum Capacity	hour		3.300		2033.00		6708.90		PM5002
		(iii) 1Cum Capacity	hour			6.600	1366.00			9015.60	PM5003
		<b>Tipper</b>									
		<b>For Transportation</b>									
		(i) 18 Cum Capacity	tonne.km	495xL2			4.80	2376.00			L2=1km & PM22001
		(ii) 14 Cum Capacity	tonne.km		495xL2		5.48		2712.60		L2=1km & PM23001
		(iii) 10 Cum Capacity	tonne.km			495xL2	6.80			3366.00	L2=1 km & PM24001
		<b>For loading and unloading time</b>									
		(i) 18 Cum Capacity	hour	2.640			2239.00	5910.96			PM6001
		(ii) 14 Cum Capacity	hour		3.300		1998.00		6593.40		PM6002
		(iii) 10 Cum Capacity	hour			6.600	1785.00			11781.00	PM6003

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Motor grader</b>									
		(i) Motor grader 4.3 meter blade	hour	1.815			5450.00	9891.75			PM2001
		(ii) Motor grader 3.70 meter blade	hour		2.189		4985.00		10912.17		PM2002
		(iii) Motor grader 3.35 meter blade	hour			2.441	4403.00			10747.72	PM2003
		<b>Vibratory roller</b>	hour	1.456	1.456	1.456	1996.00	2906.18	2906.18	2906.18	PM10001
								36051.05	35486.14	45723.30	
		<b>c) Material</b>									
		Material as per table 400-13									
		45 mm to 22.4 mm@ 30 percent	Cum	95.192	95.192	95.192	1080.50	102854.96	102854.96	102854.96	M-033
		22.4 mm to 2.36 mm@ 40 percent	Cum	126.923	126.923	126.923	678.14	86071.56	86071.56	86071.56	M-030
		2.36 mm to 75 micron@ 30 percent	Cum	95.192	95.192	95.192	262.42	24980.28	24980.28	24980.28	M-019
		Cost of water	KL	59.400	59.400	59.400	56.20	3338.28	3338.28	3338.28	M-191
								217245.08	217245.08	217245.08	
		<b>Rate per cum</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						254654.13	254089.22	264326.38	
		<b>d) Overhead charges on (a+b+c)</b>						20372.33	25408.92	31719.17	
		<b>e) Contractor's profit on (a+b+c+d)</b>						27502.85	27949.81	29604.55	
		Cost for 225 cum = a+b+c+d+e (With O.H. & C.P.)						<b>302529.11</b>	<b>307447.96</b>	<b>325660.10</b>	
		<b>Rate per cum = (a+b+c+d+e)/ 225 (With O.H. &amp; C.P.)</b>						<b>1344.57</b>	<b>1366.44</b>	<b>1447.33</b>	
							say	<b>1344.60</b>	<b>1366.40</b>	<b>1447.30</b>	
4.15	406	<b>Cement Treated Crushed Stone Base(Plant Mix Method)</b>									
		Providing, laying, spreading and compacting graded stone aggregate mixed with cement to crushed stone treated base specification including pre mixing 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.									
		<b>Laying Using Mechanical Paver.</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 225 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
								1358.00	1358.00	1358.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 250 tonne per hour	hour	2.640			649.00	1713.36			PM17001
		(ii) 200 tonne per hour	hour		3.300		354.00		1168.20		PM17002
		(iii) 100 tonne per hour	hour			6.600	329.00			2171.40	PM17003
		<b>Electric generator</b>									
		(i)125 KVA	hour	2.640			1587.00	4189.68			PM22005
		(ii) 100 KVA	hour		3.300		1359.00		4484.70		PM22006
		(iii) 62.5 KVA	hour			6.600	869.00			5735.40	PM22007
		<b>Front end loader for loading to Tipper</b>									
		(i) 3.1Cum Capacity	hour	2.640			3433.00	9063.12			PM5001
		(ii) 2.1Cum Capacity	hour		3.300		2033.00		6708.90		PM5002
		(iii) 1Cum Capacity	hour			6.600	1366.00			9015.60	PM5003
		<b>Tipper For Transportation</b>									
		(i) 18 Cum Capacity	tonne.km	495xL2			4.80	2376.00			L2=1km & PM2001
		(ii) 14 Cum Capacity	tonne.km		495xL2		5.48		2712.60		L2=1km & PM73001
		(iii) 10 Cum Capacity	tonne.km			495xL2	6.80			3366.00	L2=1 km & PM74001
		For loading and unloading time									
		(i) 18 Cum Capacity	hour	5.280			2239.00	11821.92			PM6001
		(ii) 14 Cum Capacity	hour		5.940		1998.00		11868.12		PM6002
		(iii) 10 Cum Capacity	hour			9.240	1785.00			16493.40	PM6003
		<b>Vibratory roller</b>	hour	2.112	2.112	2.112	1996.00	4215.55	4215.55	4215.55	PM10001
		<b>Mechanical Paver finisher</b>	hour	2.460	2.460	2.460	2078.00	5111.88	5111.88	5111.88	PM28001
		Water tanker (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr									
		(i) 16 KL capacity	hour	0.722xL1+1.733			1121.00	2752.06			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		0.963xL1+2.31		947.00		3099.53		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour			1.925xL1+4.62	707.00			4627.32	L1=1km & PM11003
		<b>c) Material</b>						41243.57	39369.48	50736.55	
		Material as per table 400-13									
		45 mm to 22.4 mm@ 30 percent	Cum	95.192	95.192	95.192	1080.50	102854.96	102854.96	102854.96	M-033
		22.4 mm to 2.36 mm@ 40 percent	Cum	126.923	126.923	126.923	678.14	86071.56	86071.56	86071.56	M-030
		2.36 mm to 75 microm@ 30 percent	Cum	95.192	95.192	95.192	262.42	24980.28	24980.28	24980.28	M-021
		Cost of cement @4%	Tonne.	19.800	19.800	19.800	5156.00	102088.80	102088.80	102088.80	M-081

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost of water	KL	163.350	163.350	163.350	56.20	9180.27	9180.27	9180.27	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						<b>325175.87</b>	<b>325175.87</b>	<b>325175.87</b>	
		<b>d) Overhead charges on (a+b+c)</b>									
		<b>e) Contractor's profit on (a+b+c+d)</b>									
		Cost for 225 cum = a+b+c+d+e (With O.H. & C.P.)						39719.96	40249.37	42254.29	
		<b>Rate per cum= (a+b+c+d+e)/ 225 (With O.H. &amp; C.P.)</b>						<b>436919.60</b>	<b>442743.06</b>	<b>464797.16</b>	
							say	<b>1941.86</b>	<b>1967.75</b>	<b>2065.77</b>	
								1941.90	1967.70	2065.80	
4.16	408	<b>Construction of Median and Island with Soil Taken from Roadway Cutting</b>									
		Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted as per clause 408									
		<b>Unit = cum</b>									
		<b>Taking output =21 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
								1914.00	1914.00	1914.00	
		<b>b) Machinery</b>									
		Water tanker (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr	hour	0.018xL1+0.004			1121.00	24.66			L1=1km & PM11001
		(i) 16 KL capacity									
		(ii) 12 KL Capacity.	hour		0.023xL1+0.005		947.00		26.52		L1=1km & PM11002
		(iii)6 KL Capacity.	hour			0.047xL1+0.01	707.00			40.30	L1=1km & PM11003
		Plate Compactor @ 3.5 cum per hour	hour	6.000	6.000	6.000	335.00	2010.00	2010.00	2010.00	PM46001
								2034.66	2036.52	2050.30	
		<b>c) Material</b>									
		Cost of water	KL	2.520	2.520	2.520	56.20	141.62	141.62	141.62	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						4090.29	4092.14	4105.92	
		<b>d) Overhead charges on (a+b+c)</b>						327.22	409.21	492.71	
		<b>e) Contractor's profit on (a+b+c+d)</b>						441.75	450.14	459.86	

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 21 cum = a+b+c+d+e (With O.H. & C.P.)						4859.26	4951.49	5058.50	
		<b>Rate per cum = (a+b+c+d+e)/21 (With O.H. &amp; C.P.)</b>					say	231.39	235.79	240.88	
		<b>Note</b> This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case granular fill is required to be paved, quantities of paving are required to be calculated as per approved design and paid separately.						231.40	235.80	240.90	
4.17	408	<b>Construction of Median and Island with Soil Taken from Borrow Areas</b>									
		Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 408									
		<b>Unit = cum</b>									
		<b>Taking output = 21 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
								638.00	638.00	638.00	
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 Cum bucket Capacity	hour	0.236			2703.00	637.91			PM3003
		(ii) 1.1 Cum bucket Capacity	hour		0.271		2432.00		659.07		PM3004
		(iii) 0.9 Cum bucket Capacity	hour			0.379	2202.00			834.56	PM3005
		<b>Tipper</b>									
		for Transportation									
		(i) 18 Cum Capacity	t.km	31.5xL2			4.80	151.20			L2=1km & PM72001
		(ii) 14 Cum Capacity	t.km		31.5xL2		5.48		172.62		L2=1km & PM73001
		(iii) 10 Cum Capacity	t.km			31.5xL2	6.80			214.20	L2=1 km & PM74001
		For loading and unloading time									
		(i) 18 Cum Capacity	hour	0.236			2239.00	528.40			PM6001
		(ii) 14 Cum Capacity	hour		0.271		1998.00		541.46		PM6002
		(iii) 10 Cum Capacity	hour			0.379	1785.00			676.52	PM6003
		Water tanker (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr									



**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		(i) 16 KL capacity	hour	0.018xL1+0.002			1121.00	22.42			L1=1km & PM11001	
		(ii) 12 KL.Capacity.	hour	0.023xL1+0.003			947.00		24.62		L1=1km & PM11002	
		(iii) 6 KL.Capacity.	hour			0.047xL1+0.006	707.00			37.47	L1=1km & PM11003	
		<b>Plate Compactor</b>	hour	1.400	1.400	1.400	335.00	469.00	469.00	469.00		PM46001
								1808.93	1866.77	2231.74		
		<b>c) Material</b>										
		Compensation for earth taken from private Land	cum	21.000	21.000	21.000	35.01	735.21	735.21	735.21		M-093
		Cost of water	KL	2.520	2.520	2.520	56.20	141.62	141.62	141.62		M-191
								876.83	876.83	876.83		
		<b>Total cost (Without O.H. &amp; C.P.)</b>						3323.77	3381.61	3746.58		
		<b>d) Overhead charges on (a+b+c)</b>										
		<b>e) Contractor's profit on (a+b+c+d)</b>										
		Cost for 21 cum = a+b+c+d+e (With O.H. & C.P.)										
		<b>Rate per cum= (a+b+c+d+e)/ 21 (With O.H. &amp; C.P.)</b>										
		<b>Note</b>										
		This analysis provides for median and island with earthen top. In case the surface is required to be turfed or planted with shrubs, the same is required to be provided separately as per analysis given in the chapter on horticulture. In case surface finish is of hard type, the same may be provided separately as per approved design.										
4.18	408	<b>Construction of Shoulders</b>										
		<b>A. Earthen Shoulders</b>										
		The rate as applicable for sub-grade construction may be adopted.										
		<b>B. Hard Shoulders</b>										
		Rate as applicable for sub-base and or base may be adopted as per approved design.										
		<b>C. Paved shoulders</b>										
		The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.										
4.19	410	<b>Footpaths and Separators</b>										



**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of footpath/seperator by providing a 150 mm compacted granular sub base as per clause 401 and 25 mm thick cement concrete grade M15, over laid with pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel..									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	1.360	1.360	1.360	325.00	442.00	442.00	442.00	L-12
		Mason	day	4.000	4.000	4.000	369.00	1476.00	1476.00	1476.00	L-10
		Mazdoor	day	30.000	30.000	30.000	306.00	9180.00	9180.00	9180.00	L-13
								11098.00	11098.00	11098.00	
		<b>b) Machinery</b>									
		Vibratory road roller	hour	0.750	0.750	0.750	1996.00	1497.00	1497.00	1497.00	PM10001
		Water tanker (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr									
		(i) 16 KL capacity	hour	0.083xL1+0.04			1121.00	137.88			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		0.111xL1+0.053		947.00		155.31		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour				707.00			232.60	L1=1km & PM11003
		Concrete mixer 0.4/0.28 cum.per hour	hour	6.000	6.000	6.000	283.00	1698.00	1698.00	1698.00	PM21001
								3332.88	3350.31	3427.60	
		<b>c) Material</b>									
		<b>i) For Granular sub base material</b>									
		53 mm to 26.5 mm @ 35 per cent	cum	20.790	20.790	20.790	1080.50	22463.60	22463.60	22463.60	M-028
		26.5 mm to 4.75 mm @ 45 per cent	cum	26.730	26.730	26.730	886.00	23682.78	23682.78	23682.78	M-025
		2.36 mm below @ 20 per cent	cum	11.880	11.880	11.880	262.42	3117.55	3117.55	3117.55	M-019
		<b>ii) For cement concrete grade M15 7.5 cum</b>									
		Aggregate 12 mm crushed @ 0.9 cum of concrete	cum	6.750	6.750	6.750	586.00	3955.50	3955.50	3955.50	M-051
		Sand @ 0.45 cum/cum of concrete	cum	3.380	3.380	3.380	494.00	1669.72	1669.72	1669.72	M-005*
		Cement	tonne	1.880	1.880	1.880	5156.00	9693.28	9693.28	9693.28	M-081
		<b>iii) For cement plaster 1:3</b>									
		Sand	cum	3.840	3.840	3.840	494.00	1896.96	1896.96	1896.96	M-005*
		Cement	tonne	1.830	1.830	1.830	5156.00	9435.48	9435.48	9435.48	M-081
		<b>iv) Pre-cast cement concrete tiles</b>									
		Tiles size 300 x 300 mm and 25 mm thick	each	3300.000	3300.000	3300.000	41.07	135531.00	135531.00	135531.00	M-186

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		v) RCC pipes									
		Pipes 200 mm dia, 2.5 m long for drainage	metre	22.500	22.500	22.500	173.47	3903.08	3903.08	3903.08	M-136
		vi) Cost of water	KL	12.000	12.000	12.000	56.20	674.40	674.40	674.40	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						216023.34	216023.34	216023.34	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		230454.22	230471.65	230548.94	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		18436.34	23047.16	27665.87	
		Cost for 300 sqm = a+b+c+d+e (With O.H. & C.P.)						24889.06	25351.88	25821.48	
		<b>Rate per sqm = (a+b+c+d+e)/ 300 (With O.H. &amp; C.P.)</b>					<b>say</b>	912.60	929.57	946.79	
4.20	407	<b>Crusher Run Macadam Base</b>						912.60	929.60	946.80	
		Providing crushed stone aggregate, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 407 to form a layer of sub-base/Base.									
		<b>Unit = cum</b>									
		<b>Taking output = 360 cum</b>									
		<b>A By Mix in Place Method</b>									
		a) Labour									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
								3992.00	3992.00	3992.00	
		b) Machinery									
		Tractor attached with rotavator @ 25 cum per hour	hour	12.000	12.000	12.000	646.00	7752.00	7752.00	7752.00	PM(12001+13004)
		<b>Front end Loader for mixing at stock pile location.</b>									
		(i) 3.1 Cum Capacity	hour	6.429			3433.00	22070.76			PM5001
		(ii) 2.1 Cum Capacity	hour		9.474		2033.00		19260.64		PM5002
		(iii) 1 Cum Capacity	hour			20.000	1366.00			27320.00	PM5003
		<b>Motor grader</b>									
		(i) Motor grader 4.30 meter blade.	hour	2.903			5450.00	15821.35			PM2001
		(ii) Motor grader 3.70 meter blade.	hour		3.502		4985.00		17457.47		PM2002
		(iii) Motor grader 3.35 meter blade.	hour			3.905	4403.00			17193.72	PM2003
		<b>Vibratory roller</b>									
		or	hour	2.330	2.330	2.330	1996.00	4650.68	4650.68	4650.68	PM10001
		Smooth 3 Wheeled steel roller	hour	4.660	4.660	4.660					PM8001
		Water tanker (speed @20km / hr and return speed@30 km / hr and spreading speed@ 3.0km / hr									

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 16 KL capacity	hour	0.25xL1+0.9 6			1121.00	1356.41			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour	0.333xL1+1. 28			947.00		1527.51		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour		0.667xL1+2. 56		707.00			2281.49	L1=1km & PM11003
		<b>C) Material</b>									
		<b>i) For 53 mm maximum size (Table- 400-14)</b>									
		63 mm to 45 mm @ 33 per cent	cum	157.460	157.460	157.460	975.00	153523.50	153523.50	153523.50	M-037
		22.5 mm to 5.6 mm @ 32 per cent	cum	151.060	151.060	151.060	886.00	133839.16	133839.16	133839.16	M-031
		Below 5.6 mm @ 35 per cent	cum	166.680	166.680	166.680	424.21	70707.32	70707.32	70707.32	M-029
		Cost of water	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
								360093.18	360093.18	360093.18	
		<b>Or</b>									
		<b>ii) For 37.5 mm maximum size (Table- 400-14)</b>									
		37.5 mm to 22.5 mm @ 5 per cent	cum	24.120	24.120	24.120	1080.50	26061.66	26061.66	26061.66	M-047
		22.4 mm to 5.6 mm @ 50 per cent	cum	237.600	237.600	237.600	886.00	210513.60	210513.60	210513.60	M-031
		Below 5.6 mm @ 45 per cent	cum	213.480	213.480	213.480	424.21	90560.35	90560.35	90560.35	M-029
		Cost of water	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
								329158.81	329158.81	329158.81	
<b>4.20A</b>		<b>(i) For 53 mm maximum size</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						415736.38	414733.49	423283.07	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		33258.91	41473.35	50793.97	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		44899.53	45620.68	47407.70	
		Cost for 360.0 cum = a+b+c+d+e (With O.H. & C.P.)						493894.82	501827.52	521484.74	
		<b>Rate per cum = (a+b+c+d+e)/ 360.0 (With O.H. &amp; C.P.)</b>						1371.93	1393.97	1448.57	
							say	1371.90	1394.00	1448.60	
		<b>or</b>									
<b>4.20A</b>		<b>(ii) For 37.5 mm maximum size</b>									
		<b>Total cost (Without O.H. &amp; C.P.)</b>						<b>384802.01</b>	<b>383799.11</b>	<b>392348.69</b>	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		30784.16	38379.91	47081.84	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		41558.62	42217.90	43943.05	
		Cost for 360.0 cum = a+b+c+d+e (With O.H. & C.P.)						457144.79	464396.93	<b>483373.59</b>	
		<b>Rate per cum = (a+b+c+d+e)/ 360.0 (With O.H. &amp; C.P.)</b>						1269.85	1289.99	1342.70	
							say	1269.80	1290.00	1342.70	
		<b>Note</b>	Any one of the aggregate grading may be adopted.								
<b>4.20</b>		<b>B</b>	<b>By Mixing Plant :</b>								
			<b>Unit = cum</b>								

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Taking output = 225 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
							2315.00	2315.00	2315.00	2315.00	
		<b>b) Machinery</b>									
		<b>Wet mix plant</b>									
		(i) 250 tonne per hour	hour	2.400			649.00	1557.60			PM17001
		(ii) 200 tonne per hour	hour		3.000		354.00		1062.00		PM17002
		(iii) 100 tonne per hour	hour			6.000	329.00			1974.00	PM17003
		<b>Electric generator</b>									
		(i) 125 KVA	hour	2.400			1587.00	3808.80			PM22005
		(ii) 100 KVA	hour		3.000		1359.00		4077.00		PM22006
		(iii) 62.5 KVA	hour			6.000	869.00			5214.00	PM22007
		<b>Front end loader for loading to tipper</b>									
		(i) 3.1 Cum Capacity	hour	2.400			3433.00	8239.20			PM5001
		(ii) 2.10 Cum Capacity	hour		3.000		2033.00		6099.00		PM5002
		(iii) 1 Cum Capacity	hour			6.000	1366.00			8196.00	PM5003
		<b>Motor grader</b>									
		(i) Motor grader 4.3 meter blade.	hour	1.815			5450.00	9891.75			PM2001
		(ii) Motor grader 3.70 meter blade.	hour		2.189		4985.00		10912.17		PM2002
		(iii) Motor grader 3.35 meter blade.	hour			2.441	4403.00			10747.72	PM2003
		<b>Vibratory roller</b>									
		Water tanker (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr	hour	2.400	2.400	2.400	1996.00	4790.40	4790.40	4790.40	PM10001
		(i) 16 KL capacity	hour	0.125xL1+0.3			1121.00	476.43			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		0.167xL1+0.4		947.00		536.95		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour			0.333xL1+0.8	707.00			801.03	L1=1km & PM11003
		<b>Tipper</b>									
		For Transportation									
		(i) 18 Cum capacity	t.km	450xL2			4.80	2160.00			L2=1km & PM2004
		(ii) 14 Cum capacity	t.km		450xL2		5.48		2466.00		L2=1km & PM23001
		(iii) 10 Cum capacity	t.km			450xL2	6.80			3060.00	L2=1 km & PM24001



**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of Sub-base using lime - Flyash admixture with granular soil, free from organic matter/ deleterious material or clayey silts and low plasticity clays having PI between 5 and 20 and liquid limit less than 25 and commercial dry lime, slaked at site or pre-slaked with CaO content not less than 50 per cent, Flyash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + Flyash content ranging between 10 to 30 per cent, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5kg/sq. cm and 25 per cent respectively, all as specified in IRC: 88.	cum								
		<b>Unit = cum</b>									
		<b>Taking output = 480 cum (720 tonnes, density 1.50)</b>									
		<b>Assumptions made</b>									
		Total mass taken for analysis = 720 Tonne									
		Lime + Flyash admixture @ 20 per cent = 0.2 x 720=144									
		Soil = 720 -144 = 576 Tonne									
		576 /1.6 = 360 cum									
		Lime + Flyash = 144 t									
		Ratio Lime 4 : Flyash 16									
		Lime = 29 t									
		Flyash = 115 t									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>b) Machinery</b>									
		Hydraulic Excavator	hour	4.038			2703.00	10914.71			PM3003
		(i) 1.2 Cum bucket Capacity	hour		4.650		2432.00		11308.80		PM3004
		(ii) 1.1 Cum bucket Capacity	hour			6.502	2202.00			14317.40	PM3005
		(iii) 0.9 Cum bucket Capacity	hour								
		<b>Tipper For transportation</b>									
		(i) 18 Cum Capacity	t.km	720xL1			4.80	3456.00			L1=1km & PM72001
		(ii) 14 Cum Capacity	t.km		720xL1		5.48		3945.60		L1=1km & PM73001

**Analysis of Rate**

**SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 Cum Capacity	t.km			720xL1	6.80			4896.00	L1=1 km & PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18 Cum Capacity	hour	4.038			2239.00	9041.08			PM6001
		(ii) 14 Cum Capacity	hour		4.650		1998.00		9290.70		PM6002
		(iii) 10 Cum Capacity	hour			6.502	1785.00			11606.07	PM6003
		<b>Traction with disc harrow for pulverisation</b>	hour	6.000	6.000	6.000	650.00	3900.00	3900.00	3900.00	PM(12001+14001)
		<b>Motor grader for grading</b>									
		(i) Motor grader 4.3 meter blade.	hour	3.302			5450.00	17995.90			PM2001
		(ii) Motor grader 3.70 meter blade.	hour		3.982		4985.00		19850.27		PM2002
		(iii) Motor grader 3.35 meter blade.	hour			4.441	4403.00			19553.72	PM2003
		<b>Vibratory Roller</b>	hour	6.000	6.000	6.000	1996.00	11976.00	11976.00	11976.00	PM10001
		<b>Water tanker</b> (speed @20km/hr and return speed@30 km/hr and spreading speed@ 3.0km/hr									
		(i) 16 KL capacity	hour	0.3xL1+1.57 2			1121.00	2098.51			L1=1km & PM11001
		(ii) 12 KL Capacity.	hour		0.4xL1+2.09 6		947.00		2363.71		L1=1km & PM11002
		(iii) 6 KL Capacity.	hour			0.8xL1+4.19 2	707.00			3529.34	L1=1km & PM11003
		<b>c) Material</b>									
		Slaked Lime	tonne	29.000	29.000	29.000	3873.95	112344.55	112344.55	112344.55	M-190
		Compensation for earth taken from private source	cum	360.000	360.000	360.000	35.01	12603.60	12603.60	12603.60	M-093
		Cost of water (considering 5% additional moisture	KL	43.200	43.200	43.200	56.20	2427.84	2427.84	2427.84	M-191
		<b>Total cost (Without O.H. &amp; C.P.)</b>						127375.99	127375.99	127375.99	
		<b>d) Overhead charges on (a+b+c)</b>						189073.20	192326.07	199469.53	
		<b>e) Contractor's profit on (a+b+c+d)</b>						15125.86	19232.61	23936.34	
		Cost for 480 cum = a+b+c+d+e (With O.H. & C.P.)						20419.91	21155.87	22340.59	
		<b>Rate per cum = (a+b+c+d+e)/ 480 (With O.H. &amp; C.P.)</b>						224618.96	232714.55	245746.46	
								467.96	484.82	511.97	
							say	468.00	484.80	512.00	
		<b>Note</b>									
		1.Compensation for earth will vary from place to place and will have to be assessed realistically as per particular ground situation. In case earth is available from Govt. land, compensation for earth will not be required. The position is required to be clearly stated in the cost estimate.									

**Analysis of Rate  
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS**

Sl. No.	Ref. to M.	Description	Unit	Quantity as per Project Category			Rate	Amount			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		2. Cost of Flyash has not been considered as same will be available free of cost. Only carriage of Flyash has been provided.									
		3. Lime + Flyash has been taken as 20 per cent of total mass and ratio of lime and Flyash as 1:4 for estimating purposes. Total quantities will be as per approved design.									
4.22	Suggestive	<b>Granular crack relief layer</b> Granular crack relief layer laying Using Mechanical Paver (Providing, laying, spreading and compacting graded stone aggregate to Granular crack relief layer as per IRC SP -37 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 over base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)									
		<b>Unit:= Cum</b>									
	Note	Rate shall be taken from item no- 4.14 A.									





**CHAPTER - 05**  
**BASES AND SURFACE COURSES**  
**(BITUMENOUS)**



## CHAPTER-5

### BASES AND SURFACE COURSE (BITUMINOUS)

#### PREAMBLES :

- 1 Various alternatives for machines and materials have been provided. The one that suits a particular situation and design may be adopted.
- 2 The clauses of MoRT&H Specifications have been mentioned for each item, may be referred for detailed specifications and construction procedure. The rate analyses mentions only brief description.
- 3 The machinery and equipment included in analysis are as per specifications of MoRT&H and are mandatory. As per the present trend, contractors are procuring machinery and equipment of higher capacity.
- 4 The outputs taken for the construction equipment are for the compacted quantities of the relevant items and not for loose quantities.
- 5 In case of prime coat and tack coat, minimum quantities of binder indicated in specifications have been taken. Adjustment plus or minus can be made for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials.
- 6 The items of bituminous works under maintenance have been added in the Chapter on maintenance.
- 7 Tack coat and prime coat, wherever provided are required to be measured and paid separately.
- 8 Brooming & cleaning of surface is a part of the prime coat and tack coat. As such cleaning of surface has not been provided for bituminous courses as the same is already catered in prime/tack coat. However, for those cases where such coats are not required to be done, cleaning of surface shall be included.
- 9 It is presumed that tack coat, where required, will be provided immediately preceding the bituminous layer.
- 10 Rolling of bituminous courses is required to be done as per Clause 501.6 Provision in the analyses has accordingly been made. It has been observed during actual practice at work sites, that the availability of road roller is generally inadequate. As compaction is the key to good construction, this point is being specifically highlighted to ensure that road rollers are deployed at sites as per provision in the rate analyses.
- 11 Spreading of bituminous materials shall be done as per Clause 501.5.3.
- 12 The source of all materials to be used on the project must be tested and expressly approved by the Engineer.
- 13 Quantities of materials taken in the analyses are for the proposed of cost estimate only. The actual quantity shall be as per job mix formula.
- 14 Choice of grade of bitumen shall be made as per IRC-37



- 15 The specification and requirements for modified binders with various types of modifiers have been laid down in Clause 501.2.1 of MoRT&H Specifications and IRC:SP:53 which shall be followed.
- 16 The guidelines given vide Annexure-A to Clause 501 of MoRT&H Specifications in regard to protection of environment shall be followed for a particular situation.
- 17 The quantities taken as output of the item rate analysis are the compacted quantities and the quantities of aggregates taken under the head 'material' are the un-compacted quantities for the procurement purposes.
- 18 The approximate proportions by weight of different aggregates and bitumen necessary to produce the intended mix satisfying the job requirements and meeting the designated specifications are for estimating purpose only. The actual quantities should be worked out on the basis of job mix formula adopted for the job after working out the same in the laboratory for particular aggregates and bitumen approved by the Engineer.



**Summary of Rate Analysis**  
**CHAPTER -5**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category			
				Large	Medium	Small	
5.01	502	<b>A</b>	<b>Prime Coat over WMM/WBM</b>				
		(i)	Providing and applying primer coat with SS1 grade bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.70 kg/sqm using mechanical means.	sqm	46.30	47.20	48.10
		(ii)	Providing and applying primer coat with cutback MC 30 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	41.40	42.20	43.00
5.01	502	<b>B</b>	<b>Prime Coat over Stabilized soil bases/ Crusher Run Macadam</b>				
		(i)	Providing and applying primer coat with SS1 grade bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.90 kg/sqm using mechanical means.	sqm	59.20	60.30	61.50
		(ii)	Providing and applying primer coat with cutback MC 70 bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.90 kg/sqm using mechanical means.	sqm	61.50	62.60	63.90
5.02	503	(i)	<b>Tack Coat on Bituminous surfaces</b>				
			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	13.80	14.10	14.30
5.02	503	(ii)	<b>Tack Coat on Granular surfaces treated with primer</b>				
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared bituminous surface cleaned with mechanical broom.	sqm	17.10	17.40	17.70
5.02	503	(iii)	<b>Tack Coat on Cement concrete pavement</b>				
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.30 kg per sqm on the prepared bituminous surface cleaned with mechanical broom.	sqm	20.30	20.70	21.00
5.03	504	(i)	<b>Bituminous Macadam Grading- I</b>				
			Providing and laying bituminous macadam with higher capacity hot mix plant 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.	cum	7399.70	7546.90	7753.20
5.03	504	(ii)	<b>Bituminous Macadam Grading-II</b>				



**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing and laying bituminous macadam with higher capacity hot mix plant 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.	cum	7498.80	7646.60	7858.30
<b>5.04</b>	<b>505</b>	<b>A</b>	<b>Dense Graded Bituminous Macadam Grading-I</b>			
		Providing and laying dense graded bituminous macadam with higher capacity batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 per cent by weight of total 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. 505 complete in all respects.	cum	8951.70	9127.10	9369.40
<b>5.04</b>	<b>505</b>	<b>B</b>	<b>Dense graded Bituminous Macadam Grading-II</b>			
		Providing and laying dense graded bituminous macadam with higher capacity batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @4.5 percent by weight of total 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 MORT&H specification clause no. 505 complete in all respects.	cum	9628.50	9816.40	10071.10
<b>5.05</b>	<b>507</b>	<b>A</b>	<b>Bituminous concrete Grading- I</b>			
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @5.2 percent 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 MORT&H specification clause no. 507 complete in all respects.	cum	11027.80	11249.40	11544.50
<b>5.05</b>	<b>507</b>	<b>B</b>	<b>Bituminous concrete Grading- II</b>			
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @5.4 percent 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 MORT&H specification clause no. 507 complete in all respects.	cum	11155.30	11379.20	11677.00
<b>5.06</b>	<b>509</b>		<b>Surface Dressing</b>			



**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing and laying surface dressing as wearing course in a single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller				
5.06	Case-I	19mm Nominal chipping size	sqm	104.90	106.70	108.90
5.06	509 Case-II	13 mm Nominal size chipping	sqm	81.40	82.70	84.30
5.07	510	<b>Open-Graded Premix Surfacing</b>				
		Providing, laying and rolling of open-graded premix surfacing of 20mm thickness composed of 13.2mm to 5.6mm aggregates using viscosity grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable hot mix plant of appropriate capacity not less than 200 tonnes/hour, laying and rolling with a smooth wheeled roller finished to required level and grades.	sqm	147.10	150.00	154.20
5.08	508	<b>Close Graded Premix Surfacing/Mixed Seal Surfacing</b>				
		Providing, laying and rolling of open graded premix surfacing of 20mm thickness composed of 11.2mm to 0.09 mm (Type-a) or 13.2 mm to 0.09mm (Type-b) aggregates using viscosity grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable hot mix plant of appropriate capacity not less than 200 tonnes/hour, laying and rolling with a smooth wheeled roller, finished to required level and grades.	sqm			
		Type-A	sqm	190.80	195.20	200.30
		Type-B	sqm	170.70	174.80	179.40
5.09	511	<b>Seal Coat</b>				
		Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B Seal coats				
	(i)	<b>Case-I: Type A</b>	sqm	76.40	77.60	79.10
5.09	(ii)	<b>Case-II : Type B</b>				
		Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 200 tonnes/hours using crushed stone chipping 6.7mm size and penetration bitumen of suitable grade.	sqm	53.70	54.70	56.00
5.10	520	<b>Supply of Stone aggregates for pavement course</b>				
		Supply of stone aggregates from approved sources conforming to physical requirement, specified in the respective specified clauses, including royalties, fees, rents, collection, transportation, stacking and testing and measured in cum as per clause 520				
		Competitive market rates to be ascertained. Alternatively rates for stone crushing given in chapter 1 may be adopted, if found economical. In case for supply of aggregates at site may be ascertained. Loading and unloading charges and cost of carriage may be added to the rates to arrive at the cost at site.				
5.11	516	<b>Mastic Asphalt</b>				





**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-39, 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 13.2 mm nominal size at the rate of 0.005 cum per 10sqm and at an approximate spacing of 10cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 1000c, protruding 1mm to 4mm over mastic surface, all complete as per clause 516.	sqm	717.00	730.20	743.50
<b>5.12</b>	<b>512</b>	<b>Slurry seal</b>				
		Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface				
		(i) <b>2-3mm thickness (Type-i)</b>	sqm	50.60	51.50	52.60
		(ii) <b>4-6mm thickness (Type-II)</b>	sqm	81.90	83.40	85.10
		(iii) <b>6-8mm thickness (Type-III)</b>	sqm	96.90	98.70	100.70
<b>5.13</b>	<b>519</b>	<b>Recycling of Bituminous Pavement with Central Recycling Plant</b>				
		Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 percent of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and the thickness, all as specified in clause 519.				
		<b>A (i) Using by bituminous Macadam Grading I</b>	cum	7429.60	7672.30	7710.40
		<b>A (ii) Using by bituminous Macadam Grading II</b>	cum	7483.50	7725.80	7768.80
		<b>B (i) Using by Dense Graded bituminous macadam Grading I</b>	cum	8360.10	8611.50	8646.40
		<b>B (ii) Using by Dense Graded bituminous macadam Grading II</b>	cum	9087.30	9359.60	9431.50
		<b>C (i) Using bituminous concrete Grading I</b>	cum	10054.60	10344.80	10434.50
		<b>C (ii) Using by bituminous concrete Grading II</b>	cum	10178.60	10471.10	10563.00
<b>5.14</b>	<b>513</b>	(i) Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3mm wide or incipient fretting or disintegration in an existing bituminous surfacing	sqm	49.30	50.20	51.20
		(ii) 1. In case it is decided by the engineer to blind the fog spray, the following may be added	sqm	5.30	5.30	5.30
<b>5.15</b>	<b>518</b>	<b>Bituminous Cold mix (including gravel emulsion)</b>				

**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and capacity, transporting, laying compacting and finishing to specified grades and levels.				
		(i) Using bitumen emulsion and 9.5mm or 13.2mm size aggregate	cum	13942.10	14212.10	14556.90
		(ii) Using bitumen emulsion and 19mm or 26.5mm nominal size aggregate	cum	14185.90	14460.40	14809.70
5.15		(iii) Using cutback bitumen and 9.5mm or 13.2mm nominal size aggregate	cum	10014.80	10206.60	10467.70
5.15		(iv) Using cutback bitumen and 19mm or 26.5mm nominal size aggregate	cum	10245.00	10441.00	10706.40
5.16	506	<b>Sand asphalt /base course</b>				
		Providing, laying and rolling sand-asphalt base course compose of sand, mineral filler and bituminous binder on a prepared subgrade or sub-base to the lines, levels, grades and cross sections as per the drawing including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.	cum	9818.80	10009.60	10264.40
5.17	517	(i) <b>Crack prevention courses</b>				
		<b>Stress absorbing membrane (SAM) crack width less than 6mm</b>				
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.	sqm	65.60	66.80	68.00
5.17		(ii) <b>Stress absorbing membrane (SAM) crack width 6mm to 9mm</b>				
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 mm to 9mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.	sqm	78.40	79.90	81.30
		(iii) <b>Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 percent</b>				



**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width above 9mm and cracked area above 50 percent after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.	sqm	105.20	107.10	109.10
5.17		(iv) <b>Case IV: bitumen impregnated geotextile</b>				
		Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 518.3	sqm	183.00	186.30	189.70
5.18	518	<b>Recipe Cold mix</b>				
		(i) Providing and laying of premix crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 518.3	cum	9449.80	9638.40	9899.00
		(ii) <b>40mm thickness</b>	cum	12277.50	12521.00	12835.80
		(iii) <b>25mm thickness</b>	cum	14079.90	14358.50	14703.10
5.19	Suggestive	A <b>Bituminous Concrete Grading 1 using waste plastic</b>				
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.2 percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the the required grade, level and alignment , rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORT&H specification clause no. 507 complete in all respects.	cum	10588.20	10801.70	11088.60
5.19	Suggestive	B <b>Bituminous Concrete Grading 2 ( using waste plastic)</b>				
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the the required grade, level and alignment , rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORT&H specification clause no. 507 complete in all respects.	cum	10668.00	10882.90	11171.70
5.20	519	A <b>Hot recycling in place of Bituminous Pavement with bituminous concrete</b>				
		<b>Grading I</b>				



**Summary of Rate Analysis**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Providing and laying bituminous concrete with hot recycling in place using crushed aggregates of specified grading, with bituminous binder @ 5.2 percent of mix filler, transporting the aggregate to work site, laying with a hot recycling in place to the required grade, level and alignment rolling with smoothed wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 519 complete in all respects.	cum	4085.70	4151.10	4222.20
5.20	519	<b>B Hot recycling in place of Bituminous Pavement with bituminous concrete</b>				
		<b>Grading II</b>				
		Providing and laying bituminous concrete with hot recycling in place using crushed aggregates of specified grading, with bituminous binder @ 5.4 percent of mix filler, transporting the aggregate to work site, laying with a hot recycling in place to the required grade, level and alignment rolling with smoothed wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 519 complete in all respects.	cum	4098.30	4163.90	4235.20





Analysis of Rate

CHAPTER-5

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
5.01	502	<b>A Prime Coat over WMM/WBM</b>									
		(i) Providing and applying primer coat with SS1 grade bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.70 kg/sqm using mechanical means.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7000 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM24001
		Water tanker (Speed @ 20km/hr and return speed @ 30km/hr and spreading speed. @ 4.0 km/hr.									L1=1
		(i) 16 KL Capacity	hour	0.073xL1+ 0.613			1121.00	769.01			PM11001
		(ii) 12 KL capacity	hour	0.097XL1+ 0.817			947.00		865.56		PM11002
		(iii) 6 KL Capacity	hour			0.194XL1+ 1.633	707.00			1291.69	PM11003
		<b>c) Material</b>									
		SS1 grade Bitumen emulsion @ 0.70 Kg per sqm	tonne	4.900	4.900	4.900	54270.00	265923.00	265923.00	265923.00	M-077
		Cost of water	KL	10.500	10.500	10.500	56.20	590.10	590.10	590.10	M-191
		Total cost( Without O.H&C.P.)						272813.73	272910.29	273336.42	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		21825.10	27291.03	32800.37	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		29463.88	30020.13	30613.68	

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Cost for 7000 sqm = a+b+c+d+e					324102.71	330221.44	336750.46		
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>					46.30	47.17	48.11		
						<b>Say</b>	<b>46.30</b>	<b>47.20</b>	<b>48.10</b>		
	<b>Note</b>	Bitumen primer has been provided @ 0.70 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.									
	(ii)	Providing and applying primer coat with cutback MC 30 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.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7000 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	26.00	26.00	26.00	L-12	
		Mazdoor	day	2.000	2.000	2.000	612.00	612.00	612.00	L-13	
		<b>b) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	PM23001	
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	PM15001	
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	PM24001	
		Water tanker (Speed @ 20km/hr and return speed @ 30km/hr and spreading speed @ 4.0 km/hr)								L1=1	
		(i) 16 KL Capacity	hour	0.073xL1+			769.01			PM11001	
		(ii) 12 KL capacity	hour	0.613	0.097XL1+			865.56		PM11002	
		(iii) 6 KL Capacity	hour		0.817					PM11003	
		<b>c) Material</b>									



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Cutback Bitumen MC 30 @ 0.60 Kg per sqm	tonne	4.200	4.200	4.200	56414.00	236938.80	236938.80	236938.80	M-076
		Cost of water	KL	10.500	10.500	10.500	56.20	590.10	590.10	590.10	M-191
		Total cost( Without O.H&C.P.)						243829.53	243926.09	244352.22	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		19506.36	24392.61	29322.27	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		26333.59	26831.87	27367.45	
		Cost for 7000 sqm = a+b+c+d+e						289669.49	295150.56	301041.93	
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>						41.38	42.16	43.01	
							<b>Say</b>	<b>41.40</b>	<b>42.20</b>	<b>43.00</b>	
		<b>Note</b>									
		Bitumen primer has been provided @ 0.60 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.									
5.01	502	<b>Prime Coat over Stabilized soil bases/ Crusher Run Macadam</b>									
		(i) Providing and applying primer coat with SS1 grade bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.90 kg/sqm using mechanical means.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7000 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001



**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM/24001
		Water tanker (Speed @ 20km/hr and return speed @ 30km/hr and spreading speed @ 4.0 km/hr									L1=1
		(i) 16 KL Capacity	hour	0.073xL1+ 0.613			1121.00	769.01			PM11001
		(ii) 12 KL capacity	hour		0.097XL1+ 0.817		947.00		865.56		PM11002
		(ii) 6 KL capacity	hour			0.194XL1+ 1.633	707.00			1291.69	PM11003
		<b>c) Material</b>									
		SS1 grade bitumen emulsion @ 0.9 kg/sqm	tonne	6.300	6.300	6.300	54270.00	341901.00	341901.00	341901.00	M-077
		Cost of water	KL	10.500	10.500	10.500	56.20	590.10	590.10	590.10	M-191
		Total cost( Without O.H.&C.P.)						348791.73	348888.29	349314.42	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		27903.34	34888.83	41917.73	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		37669.51	38377.71	39123.21	
		Cost for 7000 sqm = a+b+c+d+e						414364.58	422154.82	430355.36	
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>						59.19	60.31	61.48	
							<b>Say</b>	<b>59.20</b>	<b>60.30</b>	<b>61.50</b>	
		<b>Note</b> Bitumen primer has been provided @ 0.90 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.									
		(ii) Providing and applying primer coat with cutback MC 70 bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.90 kg/sqm using mechanical means.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7000 sqm</b>									



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM24001
		Water tanker (Speed @ 20km/hr and return speed @ 30km/hr and spreading speed @ 4.0 km/hr)									L1=1
		(i) 16 KL Capacity	hour	0.073xL1+ 0.613			1121.00	769.01			PM11001
		(ii) 12 KL capacity	hour	0.097XL1+ 0.817			947.00		865.56		PM11002
		(iii) 6 KL Capacity	hour			0.194XL1+ 1.633	707.00			1291.69	PM11003
		<b>c) Material</b>									
		Cutback Bitumen MC 70@ 0.90 Kg per sqm	tonne	6.300	6.300	6.300	56414.00	355408.20	355408.20	355408.20	M-076
		Cost of water	KL	10.500	10.500	10.500	56.20	590.10	590.10	590.10	M-191
		Total cost( Without O.H&C.P.)						362298.93	362395.49	362821.62	
		<b>d) Overhead charges on (a+b+c)</b>									
		<b>e) Contractor's profit on (a+b+c+d)</b>									
		Cost for 7000 sqm = a+b+c+d+e									
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>						61.49	62.64	63.86	
		<b>Note</b>					<b>Say</b>	<b>61.50</b>	<b>62.60</b>	<b>63.90</b>	
		Bitumen primer has been provided @ 0.90 kg per sqm as per clause 502.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 502.4.3.									
<b>5.02</b>	<b>503</b>	<b>(i) Tack Coat on Bituminous surfaces</b>									
		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.									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Unit = sqm									
		Taking output = 7000 sqm									
		a) Labour									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		b) Machinery									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM24001
		c) Material									
		Bitumen emulsion @0.2 kg per sqm	tonne	1.400	1.400	1.400	54270.00	75978.00	75978.00	75978.00	M-077
		Total cost( Without O.H&C.P.)						81509.63	81509.63	81509.63	
		d) Overhead charges on (a+b+c)		@ 8%	@ 10%	@ 12%		6520.77	8150.96	9781.16	
		e) Contractor's profit on (a+b+c+d)		@ 10%	@ 10%	@ 10%		8803.04	8966.06	9129.08	
		Cost for 7000 sqm = a+b+c+d+e						96833.44	98626.65	100419.86	
		Rate per sqm = (a+b+c+d+e)/7000						13.83	14.09	14.35	
		Note					Say	13.80	14.10	14.30	
		Bitumen emulsion has been provided @ 0.20 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 503.4.3.									
5.02	503	Tack Coat on Granular surfaces treated with primer									
		(ii)									
		Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared bituminous surface cleaned with mechanical broom.									
		Unit = sqm									
		Taking output = 7000 sqm									
		a) Labour									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		b) Machinery									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM24001
		<b>c) Material</b>									
		Bitumen emulsion @0.25 kg per sqm	tonne	1.750	1.750	1.750	54270.00	94972.50	94972.50	94972.50	M-077
		Total cost( Without O.H&C.P.)						100504.13	100504.13	100504.13	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		8040.33	10050.41	12060.50	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		10854.45	11055.45	11256.46	
		Cost for 7000 sqm = a+b+c+d+e						119398.90	121609.99	123821.08	
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>					<b>Say</b>	17.06	17.37	17.69	
		<b>Note</b>						17.10	17.40	17.70	
		1) Bitumen emulsion has been provided @ 0.25 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 503.4.3.									
		2) An output of 7000 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day									
<b>5.02</b>	<b>503</b>	<b>(iii) Tack Coat on Cement concrete pavement</b>									
		Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.30 kg per sqm on the prepared bituminous surface cleaned with mechanical broom.									
		<b>Unit = sqm</b>									
		<b>Taking output = 7000 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	2.083	2.083	2.083	746.00	1553.92	1553.92	1553.92	PM23001
		Air compressor 250 cfm	hour	2.083	2.083	2.083	391.00	814.45	814.45	814.45	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	1.944	1.944	1.944	1299.00	2525.26	2525.26	2525.26	PM24001
		<b>c) Material</b>									

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Bitumen emulsion @0.30 kg per sqm	tonne	2.100	2.100	2.100	54270.00	113967.00	113967.00	113967.00	M-077
		Total cost( Without O.H&C.P.)						119498.63	119498.63	119498.63	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		9559.89	11949.86	14339.84	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		12905.85	13144.85	13383.85	
		Cost for 7000 sqm = a+b+c+d+e						141964.37	144593.34	147222.31	
		<b>Rate per sqm = (a+b+c+d+e)/7000</b>						20.28	20.66	21.03	
		<b>NOTE</b>					<b>Say</b>	<b>20.30</b>	<b>20.70</b>	<b>21.00</b>	
		1) Bitumen emulsion has been provided @ 0.30 kg per sqm as per clause 503.8. Payment shall be made with adjustment, plus or minus, for the variation between this quantity and the actual quantity approved by the Engineer after the preliminary trials referred to in clause No. 503.4.3.									
		2) An output of 7000 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day									
<b>5.03</b>	<b>504</b>	<b>(i) Bituminous Macadam Grading- I</b>									
		Providing and laying bituminous macadam with higher capacity hot mix plant 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.									
		<b>Unit=cum</b>									
		<b>Taking output=205cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Batch type hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.007			44761.00	134596.33	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.758		34660.00	0.00	130252.28	0.00	PM18002

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref	
				Large	Medium	Small		Large	Medium	Small		
		(ii) HMP 120 TPH	hour			5.011	26375.00	0.00	132165.13		PM18003	
		Mechanical broom (2.1m sweeping width)	hour	0.697	0.697	0.697	746.00	519.96	519.96	519.96		PM23001
		<b>Air compressor 250 cfm</b>	hour	0.697	0.697	0.697	391.00	272.53	272.53	272.53		PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with hot mix plant</b>										
		(i) Paver (240 HP)	hour	3.007			8054.00	24218.38	0.00	0.00		PM29001
		(ii) Paver (240 HP)	hour		3.758		8054.00	0.00	30266.93	0.00		PM29001
		(iii) Paver (174 HP)	hour			5.011	6346.00	0.00	0.00	31799.81		PM29002
		<b>Electric generator</b>										
		(i) 500 KVA	hour	3.007			5360.00	16117.52	0.00	0.00		PM22002
		(ii) 400 KVA	hour		3.758		4323.00	0.00	16245.83	0.00		PM22003
		(iii) 250 KVA	hour			5.011	3034.00	0.00	0.00	15203.37		PM22004
		<b>Front end loader for feeding the plant</b>										
		(i) 3.1 cum Capacity	hour	4.618			3433.00	15853.59	0.00	0.00		PM5001
		(ii) 2.1 cum Capacity	hour		6.826		2033.00	0.00	13877.26	0.00		PM5002
		(iii) 1 Cum Capacity	hour			14.273	1366.00	0.00	0.00	19496.92		PM5003
		<b>Tipper for transportation</b>										
		(i) 18 cum Capacity	t.km	451xL1			4.80	2164.80				L1=1
		(ii) 14 cum Capacity	t.km		451XL1		5.48		2471.48			PM72001
		(iii) 10 Cum Capacity	t.km			451XL1	6.80			3066.80		PM73001
		<b>For loading &amp; Unloading time</b>										
		(i) 18 cum Capacity	hour	6.013			2239.00	13463.11	0.00	0.00		PM6001
		(ii) 14 cum Capacity	hour		7.517		1998.00	0.00	15018.97	0.00		PM6002
		(iii) 10 Cum Capacity	hour			10.022	1785.00	0.00	0.00	17889.27		PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	7.256	7.256	7.256	1978.00	14352.37	14352.37	14352.37		PM9001
		<b>c) Material</b>										
		i) Bitumen @ 3.3 percent of mix	tonne	14.883	14.883	14.883	56414.00	839609.56	839609.56	839609.56		M-074
		Weight of mix = 205 X 2.2 = 451 tonne										
		ii) Aggregate										
		Total weight of mix = 451 tonnes										
		Weight of bitumen = 14.88 tonnes										
		Weight of aggregate = 436.12 tonnes										
		Taking density of aggregate= 1.5 tonne/ cum										
		*Grading I ( 40 mm nominal size)										
		37.5-25 mm 15 percent	cum	43.612	43.612	43.612	1080.50	47122.77	47122.77	47122.77		M-048
		25- 10 mm 45 percent	cum	130.835	130.835	130.835	886.00	115919.81	115919.81	115919.81		M-045
		10-5mm 25 percent	cum	72.686	72.686	72.686	586.00	42594.00	42594.00	42594.00		M-039

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		5mm and below 15 percent	cum	14.537	14.537	14.537	424.21	6166.74	6166.74	6166.74	M-029
		* Any one of the alternative may be adopted as per approved design									
		(i) for Grading I ( 40mm nominal size)									
		Total cost( Without O.H&C.P.)						1276890.46	1278609.48	1290098.02	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		102151.24	127860.95	154811.76	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		137904.17	140647.04	144490.98	
		Cost for 205 cum = a+b+c+d+e						1516945.86	1547117.47	1589400.77	
		<b>Rate per cum = (a+b+c+d+e)/205</b>						7399.74	7546.91	7753.17	
							<b>Say</b>	<b>7399.70</b>	<b>7546.90</b>	<b>7753.20</b>	
		<b>Note:</b> 1.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									
		2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.									
		3. In case BM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors for the same shall be deleted as the same has been included in the cost of tack coat.									
<b>5.03</b>	<b>504</b>	<b>(ii) Bituminous Macadam Grading-II</b>									
		Providing and laying bituminous macadam with higher capacity hot mix plant 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.									
		<b>Unit=cum</b>									
		<b>Taking output=205cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Batch type hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.007			44761.00	134596.33	0.00	0.00	PM18001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) HMP 160 TPH	hour		3.758		34660.00	0.00	130252.28	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.011	26375.00	0.00	0.00	132165.13	PM18003
		Mechanical broom (2.1m sweeping width)	hour	0.976	0.976	0.976	746.00	728.10	728.10	728.10	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.976	0.976	0.976	391.00	381.62	381.62	381.62	PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with the hot mix plant</b>									
		(i) Paver (240 HP)	hour	3.007			8054.00	24218.38	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.758		8054.00	0.00	30266.93	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.011	6346.00	0.00	0.00	31799.81	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.007			5360.00	16117.52	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.758		4323.00	0.00	16245.83	0.00	PM22003
		(iii) 250 KVA	hour			5.011	3034.00	0.00	0.00	15203.37	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	5.125			3433.00	17594.13	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.577		2033.00	0.00	15404.04	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.842	1366.00	0.00	0.00	21640.17	PM5003
		<b>Tipper for transportation</b>									
		(i) 18 cum Capacity	t.km	451XL1			4.80	2164.80			PM72001
		(ii) 14 cum Capacity	t.km		451XL1		5.48		2471.48		PM73001
		(iii) 10 Cum Capacity	t.km			451XL1	6.80			3066.80	PM74001
		<b>Tipper for loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	6.013			2239.00	13463.11	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		7.517		1998.00	0.00	15018.97	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.022	1785.00	0.00	0.00	17889.27	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	10.159	10.159	10.159	1978.00	20094.50	20094.50	20094.50	PM9001
		<b>c) Material</b>									
		i) Bitumen @ 3.4 percent of mix	tonne	15.334	15.334	15.334	56414.00	865052.28	865052.28	865052.28	M-074
		Weight of mix = 205 * 2.2 = 451 tonne									
		ii) Aggregate									
		Total weight of mix = 451 tonnes									
		Weight of bitumen= 15.33 tonnes									
		Weight of aggregate = 435.67 tonnes									
		Taking density of aggregate= 1.5 tonne/ cum									
		Grading II ( 19 mm nominal size)									
		25-10 mm 40 percent	cum	116.178	116.178	116.178	886.00	102933.71	102933.71	102933.71	M-045
		10-5mm 40 percent	cum	116.178	116.178	116.178	586.00	68080.31	68080.31	68080.31	M-039



**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		5mm and below 20 percent	cum	58.089	58.089	58.089	424.21	24641.93	24641.93	24641.93	M-029
		* Any one of the alternative may be adopted as per approved design (i) for grading II ( 19mm nominal size)									
		Total cost( Without O.H&C.P.)						1293985.70	1295490.97	1307595.99	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		103518.86	129549.10	156911.52	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		139750.46	142504.01	146450.75	
		<b>Rate per cum = (a+b+c+d+e)/205</b>						1537255.01	1567544.08	1610958.26	
								7498.80	7646.56	7858.33	
		<b>NOTE</b>					<b>Say</b>	<b>7498.80</b>	<b>7646.60</b>	<b>7858.30</b>	
		*1.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									
		2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.									
		3. In case BM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors for the same shall be deleted as the same has been included in the cost of tack coat.									
5.04	505	<b>Dense Graded Bituminous Macadam Grading-I</b>									
		Providing and laying dense graded bituminous macadam with higher capacity batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 per cent by weight of total 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. 505 complete in all respects.									
		<b>Unit = cum</b>									
		<b>Taking output = 195 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		<b>H ot mix plant</b>									
		(i) HMP 200 TPH	hour	3.003			44761.00	134417.28	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.754		34660.00	0.00	130113.64	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.005	26375.00	0.00	0.00	132006.88	PM18003
		Mechanical broom (2.1m sweeping width)	hour	0.663	0.663		746.00	494.60	494.60	494.60	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.663	0.663		391.00	259.23	259.23	259.23	PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with the hot mix plant</b>									
		(i) Paver (240 HP)	hour	3.003			8054.00	24186.16	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.754		8054.00	0.00	30234.72	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.005	6346.00	0.00	0.00	31761.73	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.003			5360.00	16096.08	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.754		4323.00	0.00	16228.54	0.00	PM22003
		(iii) 250 KVA	hour			5.005	3034.00	0.00	0.00	15185.17	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	5.138			3433.00	17638.75	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.596		2033.00	0.00	15442.67	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.882	1366.00	0.00	0.00	21694.81	PM5003
		<b>Tipper for transportation</b>									
		(i) 18 cum Capacity	t.km	450.45XL1			4.80	2162.16			L1=1
		(ii) 14 cum Capacity	t.km		450.45XL1		5.48		2468.47		PM72001
		(iii) 10 Cum Capacity	t.km			450.45XL1	6.80			3063.06	PM73001
		<b>Tipper For loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	6.006			2239.00	13447.43	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		7.508		1998.00	0.00	15000.98	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.010	1785.00	0.00	0.00	17867.85	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	9.663	9.663		1978.00	19113.41	19113.41	19113.41	PM9001
		<b>c) Material</b>									
		i) Bitumen @ 4 percent of mix	tonne	18.018	18.018		56414.00	1016467.45	1016467.45	1016467.45	M-074
		Weight of mix = 205 x 2.231 = 450.45 tonne									
		ii) Aggregate									
		Total weight of mix = 450.45 tonnes									
		Weight of bitumen= 18.02 tonnes									
		Weight of aggregate = 432.43 tonnes									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking density of aggregate= 1.5 tonne/ cum									
		Grading- I 37.5mm (Nominal size)									
		37.5-25mm 22 percent	cum	63.423	63.423	63.423	1080.50	68528.55	68528.55	68528.55	M-048
		25-10 mm 13 percent	cum	37.477	37.477	37.477	886.00	33204.62	33204.62	33204.62	M-045
		10-4.75mm 19 percent	cum	54.775	54.775	54.775	586.00	32098.15	32098.15	32098.15	M-039
		4.75 mm and below 44 percent	cum	126.847	126.847	126.847	424.21	53809.77	53809.77	53809.77	M-029
		Filler @ 2percent of weight of aggregates	tonne	8.649	8.649	8.649	3873.95	33505.79	33505.79	33505.79	M-190
		* Any one of the alternative may be adopted as per approved design						1469348.45	1470889.60	1482980.08	
		Grading I 37.5mm (Nominal size)									
		Total cost( Without O.H&C.P.)						1469348.45	1470889.60	1482980.08	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		117547.88	147088.96	177957.61	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		158689.63	161797.86	166093.77	
		Cost for 195 cum = a+b+c+d+e						1745585.96	1779776.41	1827031.45	
		<b>Rate per cum = (a+b+c+d+e)/195</b>						8951.72	9127.06	9369.39	
							<b>Say</b>	<b>8951.70</b>	<b>9127.10</b>	<b>9369.40</b>	
<b>5.04</b>	<b>505</b>	<b>Dense graded Bituminous Macadam Grading-II</b>									
		Providing and laying dense graded bituminous macadam with higher capacity batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @4.5 percent by weight of total 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 MORT&H specification clause no. 505 complete in all respects.									S
		Unit= cum									
		Taking output= 195 cum									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.003			44761.00	134417.28	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.754		34660.00	0.00	130113.64	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.005	26375.00	0.00	0.00	132006.88	PM18003
		Mechanical broom (2.1m sweeping width)	hour	0.663	0.663	0.663	746.00	494.60	494.60	494.60	PM23001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Air compressor 250 cfm	hour	0.663	0.663	0.663	391.00	259.23	259.23	259.23	PM15001
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.003			8054.00	24186.16	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.754		8054.00	0.00	30234.72	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.005	6346.00	0.00	0.00	31761.73	PM29002
		Electric generator									
		(i) 500 KVA	hour	3.003			5360.00	16096.08	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.754		4323.00	0.00	16228.54	0.00	PM22003
		(iii) 250 KVA	hour			5.005	3034.00	0.00	0.00	15185.17	PM22004
		Front end loader for feeding the plant									
		(i) 3.1 cum Capacity	hour	5.112			3433.00	17549.50	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.556		2033.00	0.00	15361.35	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.799	1366.00	0.00	0.00	21581.43	PM5003
		Tipper for transportation									
		(i) 18 cum Capacity	t.km	450.45XL1			4.80	2162.16			L1=1
		(ii) 14 cum Capacity	t.km		450.45XL1		5.48		2468.47		PM72001
		(iii) 10 Cum Capacity	t.km				6.80			3063.06	PM73001
		Tipper for loading & Unloading time									
		(i) 18 cum Capacity	hour	6.006			2239.00	13447.43	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		7.508		1998.00	0.00	15000.98	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.010	1785.00	0.00	0.00	17867.85	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	9.663	9.663	9.663	1978.00	19113.41	19113.41	19113.41	PM9001
		c) Material									
		i) Bitumen @ 4.5 percent of mix	tonne	20.270	20.270	20.270	56414.00	1143511.78	1143511.78	1143511.78	M-074
		ii) Aggregate									
		Total weight of mix = 450.45 tonnes									
		Weight of bitumen= 20.27 tonnes									
		Weight of aggregate = 430.18 tonnes									
		Taking density of aggregate= 1.5 tonne/ cum									
		Grading-2, 26.5 mm (Nominal size)									
		25-10mm 30 percent	cum	86.036	86.036	86.036	886.00	76227.90	76227.90	76227.90	M-045
		10-5mm 28 percent	cum	80.300	80.300	80.300	586.00	47055.80	47055.80	47055.80	M-039
		5mm and below 40 percent	cum	114.715	114.715	114.715	424.21	48663.25	48663.25	48663.25	M-029
		Filler @2 percent of weight of aggregates	tonne	8.604	8.604	8.604	3873.95	33331.47	33331.47	33331.47	M-190
		* Any one of the alternative may be adopted as per approved design									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Grading-2, 26.5mm (Nominal size)									
		Total cost( Without O.H&C.P.)						1580435.05	1581984.13	1594042.56	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		126434.80	158198.41	191285.11	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		170686.99	174018.25	178532.77	
		Cost for 195 cum = a+b+c+d+e						1877556.84	1914200.80	1963860.43	
		<b>Rate per cum = (a+b+c+d+e)/195</b>						9628.50	9816.41	10071.08	
		<b>Note</b>					Say	<b>9628.50</b>	<b>9816.40</b>	<b>10071.10</b>	
		1. Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									
		2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.									
		3. In case DBM is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.									
		4. The average density of 1.5 tonne/cum is only a reference density in this data book.									
		5. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e. excluding the weight of bitu.men. The weight of filler will also be 2 percent by weight of dry aggregates.									
<b>5.05</b>	<b>507</b>	<b>Bituminous concrete Grading-1</b>									
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @5.2 percent 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 MORT&H specification clause no. 507 complete in all respects.									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.005			44761.00	134506.81	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.756		34660.00	0.00	130182.96	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.008	26375.00	0.00	0.00	132086.00	PM18003
		Mechanical broom (2.1m sweeping width)	hour	1.137	1.137	1.137	746.00	848.20	848.20	848.20	PM23001
		<b>Air compressor 250 cfm</b>	hour	1.137	1.137	1.137	391.00	444.57	444.57	444.57	PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with hot mix plant</b>									
		(i) Paver (240 HP)	hour	3.005			8054.00	24202.27	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.756		8054.00	0.00	30250.82	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.008	6346.00	0.00	0.00	31780.77	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.005			5360.00	16106.80	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.756		4323.00	0.00	16237.19	0.00	PM22003
		(iii) 250 KVA	hour			5.008	3034.00	0.00	0.00	15194.27	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	5.078			3433.00	17432.77	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.506		2033.00	0.00	15259.70	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.694	1366.00	0.00	0.00	21438.00	PM5003
		<b>Tipper for transportation</b>									
		(i) 18 cum Capacity	t.km	450.76xL1			4.80	2163.65			L1=1
		(ii) 14 cum Capacity	t.km		450.76xL1		5.48		2470.16		PM72001
		(iii) 10 Cum Capacity	t.km			450.76xL1	6.80			3065.17	PM73001
		<b>Tipper for loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	6.010			2239.00	13456.39	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		7.513		1998.00	0.00	15010.97	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.017	1785.00	0.00	0.00	17880.35	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic tyre roller	hour	2.404	3.005	4.007	1996.00	4798.38	5997.98	7997.97	PM10001
		<b>c) Material</b>									
		i) Bitumen @ 5.2 percent of mix	tonne	23.440	23.440	23.440	56414.00	1322344.16	1322344.16	1322344.16	M-074

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		ii) Aggregate									
		Total weight of mix = 450.76tonnes									
		Weight of bitumen= 23.44 tonnes									
		Weight of aggregate = 427.32 tonnes									
		Taking density of aggregate= 1.5 tonne/ cum									
		*Grading I 19mm (Nominal size)									
		20-10mm 38 percent	cum	108.255	108.255	108.255	886.00	95913.93	95913.93	95913.93	M-044
		10-5mm 17percent	cum	48.430	48.430	48.430	586.00	28379.98	28379.98	28379.98	M-039
		5mm and below 43 percent	cum	122.499	122.499	122.499	424.21	51965.30	51965.30	51965.30	M-029
		Filler @ 2percent of weight of aggregates	tonne	8.546	8.546	8.546	3873.95	33106.78	33106.78	33106.78	M-190
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						1772990.71	1775733.42	1789766.16	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		141839.26	177573.34	214771.94	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		191483.00	195330.68	200453.81	
		Cost for 191 cum = a+b+c+d+e						2106312.96	2148637.44	2204991.91	
		<b>Rate per cum = (a+b+c+d+e)/191</b>						11027.82	11249.41	11544.46	
<b>5.05</b>	<b>507</b>	<b>B Bituminous concrete Grading- II</b>					<b>Say</b>	<b>11027.80</b>	<b>11249.40</b>	<b>11544.50</b>	
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @5.4 percent 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 MORT&H specification clause no. 507 complete in all respects.									
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.005			44761.00	134506.81	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.756		34660.00	0.00	130182.96	0.00	PM18002



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref	
				Large	Medium	Small		Large	Medium	Small		
		(iii) HMP 120 TPH	hour			5.008	26375.00	0.00	132086.00		PM18003	
		Mechanical broom (2.1m sweeping width)	hour	1.624	1.624	1.624	746.00	1211.50	1211.50	1211.50		PM23001
		<b>Air compressor 250 cfm</b>	hour	1.624	1.624	1.624	391.00	634.98	634.98	634.98		PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with hot mix plant</b>										
		(i) Paver (240 HP)	hour	3.005			8054.00	24202.27	0.00	0.00		PM29001
		(ii) Paver (240 HP)	hour		3.756		8054.00	0.00	30250.82	0.00		PM29001
		(iii) Paver (174 HP)	hour			5.008	6346.00	0.00	0.00	31780.77		PM29002
		<b>Electric generator</b>										
		(i) 500 KVA	hour	3.005			5360.00	16106.80	0.00	0.00		PM22002
		(ii) 400 KVA	hour		3.756		4323.00	0.00	16237.19	0.00		PM22003
		(iii) 250 KVA	hour			5.008	3034.00	0.00	0.00	15194.27		PM22004
		<b>Front end loader for feeding the plant</b>										
		(i) 3.1 cum Capacity	hour	5.004			3433.00	17178.73	0.00	0.00		PM5001
		(ii) 2.1 cum Capacity	hour		7.378		2033.00	0.00	14999.47	0.00		PM5002
		(iii) 1 Cum Capacity	hour			15.553	1366.00	0.00	0.00	21245.40		PM5003
		<b>Tipper for transportation</b>										
		(i) 18 cum Capacity	t.km	450.76xL1			4.80	2163.65				PM72001
		(ii) 14 cum Capacity	t.km		450.76xL1		5.48		2470.16			PM73001
		(iii) 10 Cum Capacity	t.km			450.76xL1	6.80			3065.17		PM74001
		<b>For loading &amp; Unloading time</b>										
		(i) 18 cum Capacity	hour	6.010			2239.00	13456.39	0.00	0.00		PM6001
		(ii) 14 cum Capacity	hour		7.513		1998.00	0.00	15010.97	0.00		PM6002
		(iii) 10 Cum Capacity	hour			10.017	1785.00	0.00	0.00	17880.35		PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	16.902	16.902	16.902	1978.00	33432.16	33432.16	33432.16		PM9001
		Pneumatic tyre roller	hour	2.404	3.005	4.007	1996.00	4798.38	5997.98	7997.97		PM10001
		<b>c) Material</b>										
		i) Bitumen @ 5.4 percent of mix	tonne	24.341	24.341	24.341	56414.00	1373173.17	1373173.17	1373173.17		M-074
		ii) Aggregate										
		Total weight of mix = 450.76 tonnes										
		Weight of bitumen= 24.34 tonnes										
		Weight of aggregate = 426.42 tonnes										
		Taking density of aggregate= 1.5 tonne/ cum										
		*Grading II 13mm (Nominal size)										
		13.2mm-10 mm 21percent	cum	59.699	59.699	59.699	586.00	34983.61	34983.61	34983.61		M-043
		10-5mm 17percent	cum	48.327	48.327	48.327	586.00	28319.62	28319.62	28319.62		M-039
		5mm and below 60 percent	cum	170.568	170.568	170.568	424.21	72356.65	72356.65	72356.65		M-029
		Filler @ 2percent of weight of aggregates	tonne	8.528	8.528	8.528	3873.95	33037.05	33037.05	33037.05		M-190



**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)					1793480.78	1796217.32	1810317.67		
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%	143478.46	179621.73	217238.12		
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%	193695.92	197583.90	202755.58		
		Cost for 191 cum = a+b+c+d+e					2130655.17	2173422.95	2230311.37		
		<b>Rate per cum = (a+b+c+d+e)/191</b>					11155.26	11379.18	11677.02		
		<b>Note</b>					<b>Say</b>	<b>11379.20</b>	<b>11677.00</b>		
		1. Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									
		2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.									
		3. In case BC is laid over freshly laid tack coat, provision of Mechanical broom and 2 mazdoors shall be deleted as the same has been included in the cost of tack coat.									
		4. The average density of 1.5 tonne/cum is only a reference density in this data book.									
		5. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e. excluding the weight of bitumen. The weight of filler will also be 2 percent by weight of dry aggregates.									
<b>5.06</b>	<b>509</b>	<b>Surface Dressing</b> Providing and laying surface dressing as wearing course in a single coat using crushed stone aggregates of specified size on a layer of bituminous binder laid on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller									
		Unit=sqm									
		Taking output= 9000sqm									



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
5.06	Case-I	19mm Nominal chipping size									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	9.000	9.000	9.000	306.00	2754.00	2754.00	2754.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Machinery</b>									
		Mechanical broom (2.1m sweeping width)	hour	2.679	2.679	2.679	746.00	1998.53	1998.53	1998.53	PM23001
		Air compressor 250 cfm	hour	2.679	2.679	2.679	391.00	1047.49	1047.49	1047.49	PM15001
		Bitumen pressure distributor (Spraying width 4.5m)	hour	1.250	1.250	1.250	1299.00	1623.75	1623.75	1623.75	PM24001
		Hydraulic self propelled chip spreader	hour	7.401	7.401	7.401	1602.00	11856.40	11856.40	11856.40	PM32001
		Front end loader for feeding the plant									
		(i) 3.1 cum capacity	hour	0.823			3433.00	2825.36	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		1.216		2033.00	0.00	2472.13	0.00	PM5002
		(ii) 1 cum Capacity	hour			2.547	1366.00	0.00	0.00	3479.20	PM5003
		Tipper for transportation									L1=1
		(i) 18 cum Capacity	t.km	202.5XL1			4.80	972.00			PM72001
		(ii) 14 cum capacity	t.km		202.5XL1		5.48		1109.70		PM73001
		(iii) 10 cum capacity	t.km				6.80			1377.00	PM74001
		For loading and unloading time									
		(i) 18 cum Capacity	hour	8.224			2239.00	18413.54	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		8.618		1998.00	0.00	17218.76	0.00	PM6002
		(iii) 10 cum capacity	hour			9.948	1785.00	0.00	0.00	17757.18	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	5.973	5.973	5.973	1978.00	11814.59	11814.59	11814.59	PM9001
		Pneumatic Tyre roller	hour	5.973	5.973	5.973	1996.00	11922.11	11922.11	11922.11	PM10001
		<b>c) Material</b>									
		Bitumen @1.2 kg per sqm	tonne	10.800	10.800	10.800	56414.00	609271.20	609271.20	609271.20	M-074
		Crushed stone chipping, 19mm nominal size @ 0.015 cum per sqm	cum	135.000	135.000	135.000	886.00	119610.00	119610.00	119610.00	M-046
		Total cost( Without O.H&C.P.)						795027.97	793617.67	795430.46	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		63602.24	79361.77	95451.66	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		85863.02	87297.94	89088.21	
		Cost for 9000 sqm= a+b+c+d+e						944493.23	960277.38	979970.33	
		Rate per sqm =(a+b+c+d+e)/9000						104.94	106.70	108.89	
							<b>Say</b>	<b>104.90</b>	<b>106.70</b>	<b>108.90</b>	
5.06	509	Case-II 13 mm Nominal size chipping									
		Unit= sqm									
		Taking output= 9000sqm									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	9.000	9.000	9.000	306.00	2754.00	2754.00	2754.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Machinery</b>									
		Mechanical broom (2.1m sweeping width)	hour	2.679	2.679	2.679	746.00	1998.53	1998.53	1998.53	PM23001
		Air compressor 250 cfm	hour	2.679	2.679	2.679	391.00	1047.49	1047.49	1047.49	PM15001
		Bitumen pressure distributor (Spraying width 4.5m)	hour	1.250	1.250	1.250	1299.00	1623.75	1623.75	1623.75	PM24001
		Hydraulic self propelled chip spreader	hour	7.401	7.401	7.401	1602.00	11856.40	11856.40	11856.40	PM32001
		Front end loader for loading									
		(i) 3.1 cum capacity	hour	0.544			3433.00	1867.55	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		0.804		2033.00	0.00	1634.53	0.00	PM5002
		(ii) 1 cum Capacity	hour			1.688	1366.00	0.00	0.00	2305.81	PM5003
		Tipper for transportation									L=1
		(i) 18 cum Capacity	t.km	135XL1			4.80	648.00			PM72001
		(ii) 14 cum capacity	t.km		135XL1		5.48		739.80		PM73001
		(iii) 10 cum capacity	t.km			135XL1	6.80			918.00	PM74001
		For loading and unloading time									
		(i) 18 cum Capacity	hour	7.946			2239.00	17791.09	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		8.205		1998.00	0.00	16393.59	0.00	PM6002
		(iii) 10 cum capacity	hour			9.089	1785.00	0.00	0.00	16223.87	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	3.982	3.982	3.982	1978.00	7876.40	7876.40	7876.40	PM9001
		Pneumatic Tyre roller	hour	3.982	3.982	3.982	1996.00	7948.07	7948.07	7948.07	PM10001
		<b>c) Material</b>									
		Bitumen @1.2 kg per sqm	tonne	9.000	9.000	9.000	56414.00	507726.00	507726.00	507726.00	M-074
		Crushed stone chipping, 13mm nominal size @ 0.015 cum per sqm	cum	90.000	90.000	90.000	586.00	52740.00	52740.00	52740.00	M-051
		Total cost( Without O.H&C.P.)						616796.29	615257.57	615937.32	
		<b>d) Overhead charges on (a+b+c)</b>						49343.70	61525.76	73912.48	
		<b>e) Contractor's profit on (a+b+c+d)</b>						66614.00	67678.33	68984.98	
		Cost for 9000 sqm= a+b+c+d+e						732753.99	744461.65	758834.77	
		Rate per sqm =(a+b+c+d+e)/9000						81.42	82.72	84.31	
							<b>Say</b>	<b>81.40</b>	<b>82.70</b>	<b>84.30</b>	

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Note</b> 1. Where the proposed aggregate fails to pass the stripping test, an approved adhesion agent may be added to the binder as per clause 510.2.4. Alternatively, chips may be precoated as per clause 510.2 2. Input for the second coat, where required, will be the same as per the 1st coat mentioned above									
5.07	510	<b>Open-Graded Premix Surfacing</b> Providing, laying and rolling of open-graded premix surfacing of 20mm thickness composed of 13.2mm to 5.6mm aggregates using viscosity grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable hot mix plant of appropriate capacity not less than 200 tonnes/hour, laying and rolling with a smooth wheeled roller finished to required level and grades.									
		<b>Unit=sqm</b>									
		<b>Taking output= 10250 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.225			44761.00	144354.23	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		4.032		34660.00	0.00	139749.12	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.376	26375.00	0.00	0.00	141792.00	PM18003
		Mechanical broom (2.1m sweeping width)	hour	1.220	1.220	1.220	746.00	910.12	910.12	910.12	PM23001
		<b>Air compressor 250 cfm</b>	hour	1.220	1.220	1.220	391.00	477.02	477.02	477.02	PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with the hot mix plant</b>									
		(i) Paver (240 HP)	hour	3.225			8054.00	25974.15	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		4.032		8054.00	0.00	32473.73	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.376	6346.00	0.00	0.00	34116.10	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.225			5360.00	17286.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		4.032		4323.00	0.00	17430.34	0.00	PM22003

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 250 KVA	hour			5.376	3034.00	0.00	16310.78		PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	4.942			3433.00	0.00	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.283		2033.00	0.00	14806.34	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.375	1366.00	0.00	21002.25	0.00	PM5003
		<b>Tipper for transportation</b>									L1=1
		(i) 18 cum Capacity	t.km	483.8XL1			4.80	2322.24			PM72001
		(ii) 14 cum Capacity	t.km	483.8XL1			5.48		2651.22		PM73001
		(iii) 10 Cum Capacity	t.km			483.8XL1	6.80			3289.84	PM74001
		<b>For Loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	6.451			2239.00	14443.79	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		8.063		1998.00	0.00	16109.87	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.751	1785.00	0.00	0.00	19190.54	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90	PM9001
		<b>c) Material</b>									
		j) Bitumen @ 14.60 kg per 10 sqm	tonne	14.965	14.965	14.965	56414.00	844235.51	844235.51	844235.51	M-074
		Crushed stone chipping, 13.2mm to 5.6mm @ 0.27 cum per 10 sqm	cum	276.750	276.750	276.750	586.00	162175.50	162175.50	162175.50	M-042
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						1268946.34	1270820.67	1283301.55	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		101515.71	127082.07	153996.19	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		137046.20	139790.27	143729.77	
		Cost for 10250 sqm = a+b+c+d+e						1507508.25	1537693.01	1581027.51	
		<b>Rate per sqm = (a+b+c+d+e)/10250</b>						147.07	150.02	154.25	
							Say	<b>147.10</b>	<b>150.00</b>	<b>154.20</b>	
<b>5.08</b>	<b>508</b>	<b>Close Graded Premix Surfacing/Mixed Seal Surfacing</b>									
		Providing, laying and rolling of open graded premix surfacing of 20mm thickness composed of 11.2mm to 0.09 mm (Type-a) or 13.2 mm to 0.09mm (Type-b) aggregates using viscosity grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable hot mix plant of appropriate capacity not less than 200 tonnes/hour, laying and rolling with a smooth wheeled roller, finished to required level and grades.									
		Unit=sqm									
		Taking output=10250 sqm									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	3.225			44761.00	144354.23	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		4.032		34660.00	0.00	139749.12	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.376	26375.00	0.00	0.00	141792.00	PM18003
		Mechanical broom (2.1m sweeping width)	hour	1.220	1.220	1.220	746.00	910.12	910.12	910.12	PM23001
		<b>Air compressor 250 cfm</b>	hour	1.220	1.220	1.220	391.00	477.02	477.02	477.02	PM15001
		<b>Paver finisher hydrostatic with sensor control compatible with hot mix plant</b>									
		(i) Paver (240 HP)	hour	3.225			8054.00	25974.15	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		4.032		8054.00	0.00	32473.73	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.376	6346.00	0.00	0.00	34116.10	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.225			5360.00	17286.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		4.032		4323.00	0.00	17430.34	0.00	PM22003
		(iii) 250 KVA	hour			5.376	3034.00	0.00	0.00	16310.78	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	3.225			3433.00	11071.43	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.283		2033.00	0.00	14806.34	0.00	PM5002
		(iii) 1 Cum Capacity	hour			15.375	1366.00	0.00	0.00	21002.25	PM5003
		<b>Tipper for transportation</b>									L1=1
		(i) 18 cum Capacity	t.km	483.8XL1			4.80	2322.24			PM72001
		(ii) 14 cum Capacity	t.km		483.8XL1		5.48		2651.22		PM73001
		(iii) 10 Cum Capacity	t.km			483.8XL1	6.80			3289.84	PM74001
		<b>For loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	6.451			2239.00	14443.79	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		8.063		1998.00	0.00	16109.87	0.00	PM6002
		(iii) 10 Cum Capacity	hour			10.751	1785.00	0.00	0.00	19190.54	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90	PM9001
		<b>c) Material</b>									
		<b>Type-A</b>									
		* Bitumen @ 22kg per 10sqm	tonne	22.550	22.550	22.550	56414.00	1272135.70	1272135.70	1272135.70	M-074
		Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10sqm	cum	276.750	276.750	276.750	424.21	117400.12	117400.12	117400.12	M-040
		or									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Type-B</b>									
		Bitumen @19 kg per 10 sqm	tonne	19.475	19.475	19.475	56414.00	1098662.65	1098662.65	1098662.65	M-074
		Stone crushed aggregates 13.2mm to 0.09mm @ 0.27 cum per 10sqm	cum	276.750	276.750	276.750	424.21	117400.12	117400.12	117400.12	M-041
		* Any one of the alternative may be adopted as per approved design									
		<b>Type-A</b>									
		Total cost( Without O.H&C.P.)						1646176.68	1653945.48	1666426.36	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		131694.13	165394.55	199971.16	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		177787.08	181934.00	186639.75	
		Cost for 10250 sqm = a+b+c+d+e						1955657.90	2001274.03	2053037.28	
		<b>Rate per sqm = (a+b+c+d+e)/10250</b>					<b>Say</b>	190.80	195.25	200.30	
		<b>Type-B</b>									
		Total cost( Without O.H&C.P.)						1472703.63	1480472.43	1492953.31	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		117816.29	148047.24	179154.40	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		159051.99	162851.97	167210.77	
		Cost for 10250 sqm = a+b+c+d+e						1749571.92	1791371.64	1839318.48	
		<b>Rate per sqm = (a+b+c+d+e)/10250</b>					<b>Say</b>	170.69	174.77	179.45	
<b>5.09</b>	<b>511</b>	<b>Seal Coat</b>						<b>170.70</b>	<b>174.80</b>	<b>179.40</b>	
		Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B Seal coats									
		<b>(i) Case-I: Type A</b>									
		<b>Unit= sqm</b>									
		<b>Taking output= 10250sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1m sweeping width)	hour	3.051	3.051	3.051	746.00	2276.05	2276.05	2276.05	PM23001
		Air compressor 250 cfm	hour	3.051	3.051	3.051	391.00	1192.94	1192.94	1192.94	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	2.847	2.847	2.847	1299.00	3698.25	3698.25	3698.25	PM24001
		Hydraulic self propelled chip spreader	hour	8.429	8.429	8.429	1602.00	13503.26	13503.26	13503.26	PM32001
		<b>Front end loader</b>									
		(i) 3.1 cum Capacity	hour	0.563			3433.00	1932.78	0.00	0.00	PM5001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 2.1 cum Capacity	hour		0.831		2033.00	0.00	1689.42	0.00	PM5002
		(iii) 1 Cum Capacity	hour			1.741	1366.00	0.00	0.00	2378.21	PM5003
		<b>Tipper</b>									
		For loading time									
		(i) 18 cum Capacity	hour	0.563			2239.00	1260.56	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		0.831		1998.00	0.00	1660.34	0.00	PM6002
		(iii) 10 Cum Capacity	hour			1.741	1785.00	0.00	0.00	3107.69	PM6003
		For transportation									L1=1
		(i) 18 cum Capacity	t.km	202.95XL1			4.80	974.16			PM72001
		(ii) 14 cum Capacity	t.km		202.95XL1		5.48		1112.17		PM73001
		(iii) 10 Cum Capacity	t.km			202.95XL1	6.80			1380.06	PM74001
		For Unloading time									
		(i) 18 cum Capacity	hour	8.429			2239.00	18872.53	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		8.429		1998.00	0.00	16841.14	0.00	PM6002
		(iii) 10 Cum Capacity	hour			8.429	1785.00	0.00	0.00	15045.77	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	4.082	4.082		1978.00	8074.20	8074.20	8074.20	PM9001
		<b>c) Material</b>									
		i) Bitumen @ 9.80 kg per 10 sqm	tonne	10.045	10.045	10.045	56414.00	566678.63	566678.63	566678.63	M-074
		Crushed stone chipping of 6.7 mm size defined as 100 percent passing 11.2mm sieve and retained on 2.36mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	92.250	92.250	424.21	39133.37	39133.37	39133.37	M-049
		Total cost( Without O.H&C.P.)						659510.72	657773.77	658382.41	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		52760.86	65777.38	79005.89	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		71227.16	72355.11	73738.83	
		Cost for 10250 sqm= a+b+c+d+e						783498.74	795906.26	811127.13	
		<b>Rate per sqm = (a+b+c+d+e)/10250</b>						76.44	77.65	79.13	
							Say	<b>76.40</b>	<b>77.60</b>	<b>79.10</b>	
		<b>Note</b> Since seal coat is provided immediately over the bituminous layers, mechanical broom for cleaning has not been catered.									
<b>5.09</b>		<b>Case-II : Type B</b>									
		Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 200 tonnes/hours using crushed stone chipping 6.7mm size and penetration bitumen of suitable grade.									
		<b>Unit=sqm</b>									
		<b>Taking output= 7860 sqm</b>									
		<b>a) Labour</b>									



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot mix plant</b>									
		(i) HMP 200 TPH	hour	0.314			44761.00	14054.95	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		0.393		34660.00	0.00	13621.38	0.00	PM18002
		(iii) HMP 120 TPH	hour			0.524	26375.00	0.00	0.00	13820.50	PM18003
		Mechanical broom (2.1m sweeping width)	hour	2.339	2.339	2.339	746.00	1744.89	1744.89	1744.89	PM23001
		Air compressor 250 cfm	hour	2.339	2.339	2.339	391.00	914.55	914.55	914.55	PM15001
		Paver finisher hydrostatic with sensor control compatible with Hot mix plant									
		(i) Paver (240 HP)	hour	0.314			8054.00	2528.96	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		0.393		8054.00	0.00	3165.22	0.00	PM29001
		(iii) Paver (174 HP)	hour			0.524	6346.00	0.00	0.00	3325.30	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	0.314			5360.00	1683.04	0.00	0.00	PM22002
		(ii) 400 KVA	hour		0.393		4323.00	0.00	1698.94	0.00	PM22003
		(iii) 250 KVA	hour			0.524	3034.00	0.00	0.00	1589.82	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 cum Capacity	hour	0.832			3433.00	2856.26	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		1.230		2033.00	0.00	2500.59	0.00	PM5002
		(iii) 1 Cum Capacity	hour			2.572	1366.00	0.00	0.00	3513.35	PM5003
		<b>Tipper for transportation</b>									
		(i) 18 cum Capacity	t.km	103.752XL			4.80	498.01			L=1
		(ii) 14 cum Capacity	t.km	1	103.752XL		5.48		568.56		PM73001
		(iii) 10 Cum Capacity	t.km			103.752XL	6.80			705.51	PM74001
		<b>For loading &amp; Unloading time</b>									
		(i) 18 cum Capacity	hour	0.629			2239.00	1408.33	0.00	0.00	PM6001
		(ii) 14 cum Capacity	hour		0.786		1998.00	0.00	1570.43	0.00	PM6002
		(iii) 10 Cum Capacity	hour			1.048	1785.00	0.00	0.00	1870.68	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	2.087	2.087	2.087	1978.00	4128.09	4128.09	4128.09	PM9001
		<b>c) Material</b>									
		i) Bitumen @ 6.80 kg per 10 sqm	tonne	5.345	5.345	5.345	56414.00	301532.83	301532.83	301532.83	M-074

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Crushed stone chipping of 6.7mm size defined as passing 11.2mm sieve and retained on 2.6mm sieve applied @0.06 cum per 10 sqm	cum	47.160	47.160	47.160	424.21	20005.74	20005.74	20005.74	M-049
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						355274.65	355370.22	357070.27	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		28421.97	35537.02	42848.43	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		38369.66	39090.72	39991.87	
		Cost for 7860 sqm = a+b+c+d+e						422066.28	429997.97	439910.57	
		<b>Rate per sqm = (a+b+c+d+e)/7860</b>						53.70	54.71	55.97	
							<b>Say</b>	<b>53.70</b>	<b>54.70</b>	<b>56.00</b>	
<b>5.10</b>	<b>520</b>	<b>Supply of Stone aggregates for pavement course</b>									
		Supply of stone aggregates from approved sources conforming to physical requirement, specified in the respective specified clauses, including royalties , fees, rents, collection, transportation, stacking and testing and measured in cum as per clause 520									
		Competitive market rates to be ascertained. Alternatively rates for stone crushing given in chapter 1 may be adopted, if found economical. In case for supply of aggregates at site may be ascertained. Loading and unloading charges and cost of carriage may be added to the rates to arrive at the cost at site.									
<b>5.11</b>	<b>516</b>	<b>Mastic Asphalt</b>									
		Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-39, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen pre-coated fine grained hard stone chipping of 13.2 mm nominal size at the rate of 0.005 cum per 10sqm and at an approximate spacing of 10cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 1000c, protruding 1mm to 4mm over mastic surface, all complete as per clause 516.									
		<b>Unit=sqm</b>									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Taking output=35 sqm									
		a) Labour									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		b) Machinery									
		Mechanical broom (2.1m sweeping width)	hour	0.010	0.010	0.010	746.00	7.46	7.46	7.46	PM23001
		Air compressor 250 cfm	hour	0.010	0.010	0.010	391.00	3.91	3.91	3.91	PM15001
		Mastic cooker 1 tonne capacity	hour	3.000	3.000	3.000	450.00	1350.00	1350.00	1350.00	PM27001
		Bitumen boiler 1500 litres capacity	hour	3.000	3.000	3.000	510.00	1530.00	1530.00	1530.00	PM26001
		Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	1.000	1.000	629.00	629.00	629.00	629.00	PM12001
		c) Material									
		Base mastic (without coarse aggregates)= 60 percent									
		Coarse aggregate (6.3mm to 13.2mm)= 40 percent									
		Proportion of material required for mastic asphalt with coarse aggregates ( based on mix design by CRR1 for a specific case)									
		i) Bitumen 85/25 or 30/40 @10.2 percent by weight of mix. 2 X 10.2/100=0.204	tonne	0.205	0.205	0.205	59235.00	12143.18	12143.18	12143.18	M-327
		ii) Fine aggregate passing 2.36mm and retained on 0.075mm sieve @31.9 percent by weight of mix = 2 X 31.9/100=0.638 tonnes= 0.638/1.625 = 0.39	cum	0.395	0.395	0.395	262.42	103.66	103.66	103.66	M-019
		iii) Lime stone dust filler with calcium content not less than 80 percent by weight of mix = 2 X 17.92/100=0.36	tonne	0.361	0.361	0.361	3873.95	1398.50	1398.50	1398.50	M-190
		iv) Coarse aggregates 6.3mm to 13.2mm @ 40 percent by weight of mix = 2 X 40/100= 0.8 MT= 0.8/1.456= 0.55	cum	0.553	0.553	0.553	586.00	324.06	324.06	324.06	M-042
		v) Pre-Coated stone chips of 13.2 mm nominal size for skid resistance =35 X 0.005/10=0.018	cum	0.018	0.018	0.018	644.70	11.60	11.60	11.60	M-141

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		vi) Bitumen for coating of chips @2 percent by weight= 0.018 X 1.456 X 2/100 = 0.0005 MT= 0.5kg	kg	0.510	0.510	0.510	59.24	30.21	30.21	30.21	M327/1000
		Total cost( Without O.H&C.P.)						21122.57	21122.57	21122.57	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		1689.81	2112.26	2534.71	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		2281.24	2323.48	2365.73	
		Cost for 35 sqm = a+b+c+d+e						25093.61	25558.31	26023.01	
		<b>Rate per sqm= (a+b+c+d+e)/35</b>						716.96	730.24	743.51	
		<b>Note</b>					Say	<b>717.00</b>	<b>730.20</b>	<b>743.50</b>	
		1. The rates for 50mm and 40mm thick layers may be worked out on pro-rata basis									
		2. Where tack coat is required to be provided before laying mastic asphalt, the same is required to be measured and paid separately.									
		3. The quantities of binder, filler and aggregates are for estimating purpose. Exact quantities shall be as per mix design.									
		4. This rate analysis is based on design made by CRR1 for a specific case and is meant estimating purposes only. Actual design is required to be done for each case.									
5.12	512	<b>Slurry seal</b>									
		Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface									
		<b>(i) 2-3mm thickness (Type-i)</b>									
		<b>Unit=sqm</b>									
		<b>Taking output= 24000 sqm (60cum)</b>									
		Taking density of 2.2 tonnes per cum									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	5.000	5.000	5.000	306.00	1530.00	1530.00	1530.00	L-13

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		Machanical broom (2.1m sweeping width)	hour	7.143	7.143	7.143	746.00	5328.68	5328.68	5328.68	PM23001
		Air compressor 250 cfm	hour	7.143	7.143	7.143	391.00	2792.91	2792.91	2792.91	PM15001
		Mobile slurry seal equipment	hour	6.579	6.579	6.579	3392.00	22315.97	22315.97	22315.97	PM41001
		Front end loader									
		(i) 3.1 Cum Capacity	hour	0.366			3433.00	1256.48	0.00	0.00	PM5001
		(ii) 2.1 cum capacity	hour		0.541		2033.00	0.00	1099.85	0.00	PM5002
		(iii) 1 cum capacity	hour			1.132	1366.00	0.00	0.00	1546.31	PM5003
		Tipper									
		Tipper for loading time									
		(i) 18 cum capacity	hour	0.366			2239.00	819.47	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		0.541		1998.00	0.00	1080.92	0.00	PM6002
		(iii) 10 cum capacity	hour			1.132	1785.00	0.00	0.00	2020.62	PM6003
		For transportation									L1=1
		(i) 18 cum capacity	t.km	132XL1			4.80	633.60			PM72001
		(ii) 14 cum capacity	t.km		132XL1		5.48		723.36		PM73001
		(iii) 10 cum capacity	t.km			132XL1	6.80			897.60	PM74001
		Tipper for unloading time									
		(i) 18 cum capacity	hour	6.579			2239.00	14730.38	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		6.579		1998.00	0.00	13144.84	0.00	PM6002
		(iii) 10 cum capacity	hour			6.579	1785.00	0.00	0.00	11743.52	PM6003
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3 km/hr)									L1=1
		(i) 16kL capacity	hour	0.083XL1+3 .2			1121.000	3680.243			PM11001
		(ii) 12 kL capacity	hour		0.111XL1+4 .267		947.000		4145.966		PM11002
		(iii) 6 kL capacity	hour			0.222XL1+8 .533	707.000			6189.785	PM11003
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	5.263	5.263	5.263	1996.00	10504.95	10504.95	10504.95	PM10001
		<b>c) Material</b>									
		Residual binder @13 percent of mix = 60 X 2.2 X 0.13	tonne	17.160	17.160	17.160	54270.00	931273.20	931273.20	931273.20	M-077
		Fine aggregate 3mm and below 85.5 percent of total mix, 60X2.2X0.855=112.860 tonnes. Taking density 1.5.= 112.860/1.5= 75.240 cum	cum	75.240	75.240	75.240	262.42	19744.48	19744.48	19744.48	M-019
		Filler @1.5 percent of total mix= 60X2.2X0.015	tonne	1.980	1.980	1.980	3873.95	7670.42	7670.42	7670.42	M-190

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Cost of water	kL	12.000	12.000	12.000	56.20	674.40	674.40	674.40	M-191
		Total cost( Without O.H&C.P.)						1023020.18	1022094.95	1024297.84	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		81841.61	102209.49	122915.74	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		110486.18	112430.44	114721.36	
		Cost for 24000 sqm= a+b+c+d+e						1215347.98	1236734.89	1261934.94	
		<b>Rate per sqm= (a+b+c+d+e)/24000</b>					Say	50.64	51.53	52.58	
5.12		<b>(ii) 4-6mm thickness (Type-II)</b>						<b>50.60</b>	<b>51.50</b>	<b>52.60</b>	
		Unit=sqm									
		Taking output= 16000 sqm (80cum)									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Machanical broom (2.1m sweeping width)	hour	4.762	4.762	4.762	746.00	3552.45	3552.45	3552.45	PM23001
		Air compressor 250 cfm	hour	4.762	4.762	4.762	391.00	1861.94	1861.94	1861.94	PM15001
		Mobile slurry seal equipment	hour	4.386	4.386	4.386	3392.00	14877.31	14877.31	14877.31	PM41001
		Front end loader									
		(i) 3.1 Cum Capacity	hour	0.488			3433.00	1675.30	0.00	0.00	PM5001
		(ii) 2.1 cum capacity	hour		0.721		2033.00	0.00	1465.79	0.00	PM5002
		(iii) 1 cum capacity	hour			1.509	1366.00	0.00	0.00	2061.29	PM5003
		Tipper									
		Tipper for loading time									
		(i) 18 cum capacity	hour	0.488			2239.00	1092.63	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		0.721		1998.00	0.00	1440.56	0.00	PM6002
		(iii) 10 cum capacity	hour			1.509	1785.00	0.00	0.00	2693.57	PM6003
		For transportation									L1=1
		(i) 18 cum capacity	t.km	176XL 1			4.80	844.80			PM72001
		(ii) 14 cum capacity	t.km		176XL 1		5.48		964.48		PM73001
		(iii) 10 cum capacity	t.km			176XL 1	6.80			1196.80	PM74001
		Tipper for unloading time									
		(i) 18 cum capacity	hour	4.386			2239.00	9820.25	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.386		1998.00	0.00	8763.23	0.00	PM6002
		(iii) 10 cum capacity	hour			4.386	1785.00	0.00	0.00	7829.01	PM6003
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3 km/hr)									L1=1
		(i) 16kL capacity	hour	0.083XL 1+			1121.000	2484.136			PM11001
				2.133							

**Analysis of Rate**  
**BASES AND SURFACE COURSE (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 12 kL capacity	hour		0.111XL1+ 2.844		947.000	2798.385			PM11002
		(iii) 6 kL capacity	hour			0.222XL1+ 5.689	707.000		4179.077		PM11003
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	3.509	3.509	3.509	1996.00	7003.96	7003.96		PM10001
		<b>c) Material</b>									
		Residual binder @10.5 percent of mix = 60 X 2.2 X 0.105	tonne	18.480	18.480	18.480	54270.00	1002909.60	1002909.60		M-077
		Fine aggregate 4.75mm and below 88 percent of total mix, 80 X 2.2 X 0.88 =154.88 tonnes. Taking density 1.5,= 154.88/1.5= 103.253cum	cum	103.253	103.253	103.253	424.21	43800.96	43800.96		M-029
		Filler @1.5 percent of total mix= 80X2.2X0.015	tonne	2.640	2.640	2.640	3873.95	10227.23	10227.23		M-190
		Cost of water	kL	12.000	12.000	12.000	56.20	674.40	674.40		M-191
		Total cost( Without O.H&C.P.)						1102738.98	1102254.30		
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		88219.12	110225.43		
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		119095.81	121247.97		
		Cost for 16000 sqm= a+b+c+d+e						1310053.91	1333727.70		
		<b>Rate per sqm= (a+b+c+d+e)/16000</b>						81.88	83.36		
5.12	(iii)	<b>6-8mm thickness (Type-III)</b>				Say		<b>81.90</b>	<b>83.40</b>		
		<b>Unit=sqm</b>									
		<b>Taking output= 12000 sqm (84cum)</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00		L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00		L-13
		<b>b) Machinery</b>									
		Machanical broom (2.1m sweeping width)	hour	3.571	3.571	3.571	746.00	2663.97	2663.97		PM23001
		Air compressor 250 cfm	hour	3.571	3.571	3.571	391.00	1396.26	1396.26		PM15001
		Mobile slurry seal equipment	hour	3.289	3.289	3.289	3392.00	11156.29	11156.29		PM41001
		Front end loader									
		(i) 3.1 Cum Capacity	hour	0.512			3433.00	1757.70	0.00		PM5001
		(ii) 2.1 cum capacity	hour		0.757		2033.00	0.00	1538.98		PM5002
		(iii) 1 cum capacity	hour			1.585	1366.00	0.00	0.00		PM5003
		Tipper									
		Tipper for loading time									
		(i) 18 cum capacity	hour	0.512			2239.00	1146.37	0.00		PM6001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 14 cum capacity	hour		0.757		1998.00	0.00	1512.49	0.00	PM6002
		(iii) 10 cum capacity	hour			1.585	1785.00	0.00	0.00	2829.23	PM6003
		For transportation									L1=1
		(i) 18 cum capacity	t.km	184.8XL1			4.80	887.04			PM72001
		(ii) 14 cum capacity	t.km	184.8XL1			5.48		1012.70		PM73001
		(iii) 10 cum capacity	t.km			184.8XL1	6.80			1256.64	PM74001
		Tipper for unloading time									
		(i) 18 cum capacity	hour	3.289			2239.00	7364.07	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		3.289		1998.00	0.00	6571.42	0.00	PM6002
		(iii) 10 cum capacity	hour			3.289	1785.00	0.00	0.00	5870.87	PM6003
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3 km/hr)									L1=1
		(i) 16kL capacity	hour	0.083XL1+ 1.600			1121.000	1886.64			PM11001
		(ii) 12 kL capacity	hour		0.111XL1+ 2.133		947.000		2125.068		PM11002
		(iii) 6 kL capacity	hour			0.222XL1+ 4.267	707.000			3173.723	PM11003
		Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	2.632	2.632	2.632	1996.00	5253.47	5253.47	5253.47	PM10001
		<b>c) Material</b>									
		Residual binder @9 percent of mix = 84 X 2.2 X 0.09	tonne	16.632	16.632	16.632	54270.00	902618.64	902618.64	902618.64	M-077
		Fine aggregate 2.36mm and below 89.5 percent of total mix, 84 X 2.2 X 0.895 =165.396 tonnes. Taking density 1.5, = 165.396/1.5= 110.264 cum	cum	110.264	110.264	110.264	262.42	28935.48	28935.48	28935.48	M-019
		Filler @1.5 percent of total mix= 84X2.2X0.015	tonne	2.772	2.772	2.772	3873.95	10738.59	10738.59	10738.59	M-190
		Cost of water	kL	12.000	12.000	12.000	56.20	674.40	674.40	674.40	M-191
		Total cost( Without O.H&C.P.)						978711.91	978430.76	980965.66	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		78296.95	97843.08	117715.88	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		105700.89	107627.38	109868.15	
		Cost for 12000 sqm= a+b+c+d+e						1162709.75	1183901.22	1208549.69	
		<b>Rate per sqm= (a+b+c+d+e)/12000</b>					Say	96.89	98.66	100.71	
								<b>96.90</b>	<b>98.70</b>	<b>100.70</b>	



**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Note</b> Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately									
5.13	519	<b>Recycling of Bituminous Pavement with Central Recycling Plant</b>									
		Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 percent of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required the grade, level and the thickness, all as specified in clause 519.									
		<b>Unit= cum</b>									
		<b>Taking output = 120 cum</b>									
	<b>A</b>	<b>(i) Using by bituminous Macadam</b>									
		<b>Grading I</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		<b>b) Machinery</b>									
		<b>Milling machine</b>									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM47004
		Milling machine with 1.3 meter Drum width	hour		9.117		6803.00	0.00	62022.95	0.00	PM47003
		Milling machine with 1.2 metre drum width	hour			9.877	4707.00	0.00	0.00	46491.04	PM47002
		<b>Bitumen pressure distributor</b> ( Spraying width 4.5m)	hour	0.667	0.667	0.667	1299.00	866.43	866.43	866.43	PM24001
		<b>Batch Type Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		<b>Mechanical broom</b> (2.1 m sweeping width)	hour	0.571	0.571	0.571	746.00	425.97	425.97	425.97	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.571	0.571	0.571	391.00	223.26	223.26	223.26	PM15001



**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Paver finisher hydrostatic with sensor control compatible with Hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		<b>Front end loader for feeding the pant</b>									
		(i) 3.1 Cum Capacity	hour	1.868			3433.00	6412.84	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		2.762		2033.00	0.00	5615.15	0.00	PM5002
		(iii) 1 Cum capacity	hour			5.775	1366.00	0.00	0.00	7888.65	PM5003
		<b>Tipper</b>									
		For transportation plant to site									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	0.00	10947.41	PM6003
		For transportation of dismantle material site to plant									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading time									
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	0.00	17630.45	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>i) Bitumen</b>									

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		A bitumen content is 3.3 percent bitumen weight of mix. For reclaimed material, fresh material will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.033=1.639	tonne	1.639	1.639	1.639	56414.00	92462.55	92462.55	92462.55	M-074
		Bitumen required for fresh mix of 193.2 tonnes= 193.2 tonnes= 193.2 X 0.033= 6.376	tonne	6.376	6.376	6.376	56414.00	359695.66	359695.66	359695.66	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.967= 186.824 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 124.550 cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading I ( 40 mm nominal size)</b>									
		37.5-25 mm 15 percent	cum	18.683	18.683	18.683	1080.50	20186.98	20186.98	20186.98	M-048
		25-10 mm 45 percent	cum	56.048	56.048	56.048	886.00	49658.53	49658.53	49658.53	M-045
		10-5mm 25 percent	cum	31.138	31.138	31.138	586.00	18246.87	18246.87	18246.87	M-039
		5mm and below 15 percent	cum	18.683	18.683	18.683	424.21	7925.52	7925.52	7925.52	M-029
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above average material rate of aggregate	cum	124.550	124.550	124.550	744.18	-18537.46	-18537.46	-18537.46	J=0.2*F*
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						750466.99	760892.41	751009.41	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		60037.36	76089.24	90121.13	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		81050.43	83698.16	84113.05	
		Cost for 120 cum= a+b+c+d+e						891554.78	920679.81	925243.59	
		<b>Rate per cum= (a+b+c+d+e)/120</b>					Say	7429.62	7672.33	7710.36	
								<b>7429.60</b>	<b>7672.30</b>	<b>7710.40</b>	

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	A	(ii) Using by bituminous Macadam									
		Grading II									
		a) Labour									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		b) Machinery									
		Milling machine									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM47004
		Milling machine with 1.3 meter Drum width			9.117		6803.00	0.00	62022.95	0.00	PM47003
		Milling machine with 1.2 metre drum width				9.877	4707.00	0.00	0.00	46491.04	PM47002
		Bitumen pressure distributor( Spraying width 4.5m)	hour	0.667	0.667	0.667	1299.00	866.43	866.43	866.43	PM24001
		Batch Type Hot Mix Plant									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		Mechanical broom (2.1 m sweeping width)	hour	0.571	0.571	0.571	746.00	425.97	425.97	425.97	PM23001
		Air compressor 250 cfm	hour	0.571	0.571	0.571	391.00	223.26	223.26	223.26	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		Electric generator									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		Front end loader for feeding the pant									
		(i) 3.1 Cum Capacity	hour	2.196			3433.00	7538.87	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		3.246		2033.00	0.00	6599.12	0.00	PM5002
		(iii) 1 Cum capacity	hour			6.787	1366.00	0.00	0.00	9271.04	PM5003
		Tipper									
		For transportation plant to site									
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			L1=1
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	10947.41		PM6003
		For transportation of dismantle material site to plant									
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km	276XL1			5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km	276XL1			6.80		1876.80		PM74001
		Tipper for loading time									
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	17630.45	0.00	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>i) Bitumen</b>									
		A bitumen content is 3.4 percent bitumen weight of mix. For reclaimed material, fresh material will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.33=1.639	tonne	1.689	1.689	1.689	56414.00	95283.25	95283.25	95283.25	M-074
		Bitumen required fro fresh mix of 193.2 tonnes= 193.2 tonnes= 193.2 X 0.033= 6.376	tonne	6.569	6.569	6.569	56414.00	370583.57	370583.57	370583.57	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.966= 186.631 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 124.421 cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading II ( 19 mm nominal size)</b>									
		25-10 mm 40 percent	cum	49.768	49.768	49.768	886.00	44094.45	44094.45	44094.45	M-045
		10-5mm 40 percent	cum	49.768	49.768	49.768	586.00	29164.05	29164.05	29164.05	M-039
		5mm and below 20 percent	cum	24.884	24.884	24.884	424.21	10556.04	10556.04	10556.04	M-029

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above average material rate of aggregate	cum	124.421	124.421	124.421	632.07	-15728.56	-15728.56	-15728.56	J=0.2*F*1
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H.&C.P.)						755907.16	766190.53	756705.95	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		60472.57	76619.05	90804.71	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		81637.97	84280.96	84751.07	
		Cost for 120 cum= a+b+c+d+e						898017.71	927090.54	932261.73	
		<b>Rate per cum= (a+b+c+d+e)/120</b>						7483.48	7725.75	7768.85	
							Say	<b>7483.50</b>	<b>7725.80</b>	<b>7768.80</b>	
		<b>B (i) Using by Dense Graded bituminous macadam</b>									
		<b>Grading I</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		<b>b) Machinery</b>									
		<b>Milling machine</b>									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM47004
		Milling machine with 1.3 meter Drum width			9.117		6803.00	0.00	62022.95	0.00	PM47003
		Milling machine with 1.2 metre drum width				9.877	4707.00	0.00	0.00	46491.04	PM47002
		<b>Bitumen pressure distributor( Spraying width 4.5m)</b>	hour	0.667	0.667	0.667	1299.00	866.43	866.43	866.43	PM24001
		<b>Batch Type Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	0.571	0.571	0.571	746.00	425.97	425.97	425.97	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.571	0.571	0.571	391.00	223.26	223.26	223.26	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii)Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		<b>Front end loader for feeding the pant</b>									
		(i) 3.1 Cum Capacity	hour	1.840			3433.00	6316.72	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		2.300		2033.00	0.00	4675.90	0.00	PM5002
		(iii) 1 Cum capacity	hour			3.642	1366.00	0.00	0.00	4974.97	PM5003
		<b>Tipper</b>									
		For transportation plant to site									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	0.00	10947.41	PM6003
		For transportation of dismantle material site to plant									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading time									
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	0.00	17630.45	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>i) Bitumen</b>									
		A bitumen content is 4 percent bitumen weight of mix. For reclaimed material, fresh bitumen will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.04=1.987	tonne	1.987	1.987	1.987	56414.00	112094.62	112094.62	112094.62	M-074

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Bitumen required for fresh mix of 193.2 tonnes= 193.2 tonnes= 193.2 X 0.04= 7.728	tonne	7.728	7.728	7.728	56414.00	435967.39	435967.39	435967.39	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.96= 185.472 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 123.648 cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading I ( 40mm nominal size)</b>									
		37.5-25mm 22 percent	cum	27.203	27.203	27.203	1080.50	29392.84	29392.84	29392.84	M-048
		25-10mm 13 percent	cum	16.074	16.074	16.074	886.00	14241.56	14241.56	14241.56	M-045
		10-4.75mm 19 percent	cum	23.493	23.493	23.493	586.00	13766.90	13766.90	13766.90	M-039
		4.75mm and below 44 percent	cum	54.405	54.405	54.405	262.42	14276.96	14276.96	14276.96	M-022
		Filler @2 % of weight of aggregates	tonnes	5.520	5.520	5.520	3873.95	21384.20	21384.20	21384.20	M-190
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above averagematerial rate of aggregate	cum	123.648	123.648	123.648	703.73	-17402.96	-17402.96	-17402.96	<b>J=0.2*F*1</b>
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						844453.74	854036.04	842178.60	
		<b>d) Overhead charges on (a+b+c)</b>						67556.30	85403.60	101061.43	
		<b>e) Contractor's profit on (a+b+c+d)</b>						91201.00	93943.96	94324.00	
		Cost for 120 cum= a+b+c+d+e						1003211.04	1033383.60	1037564.04	
		<b>Rate per cum= (a+b+c+d+e)/120</b>						8360.09	8611.53	8646.37	
							Say	<b>8360.10</b>	<b>8611.50</b>	<b>8646.40</b>	
	<b>B</b>	<b>(ii) Using by Dense Graded bituminous macadam</b>									
		<b>Grading II</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		<b>Milling machine</b>									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM47004
		Milling machine with 1.3 meter Drum width			9.117		6803.00	0.00	62022.95	0.00	PM47003
		Milling machine with 1.2 metre drum width				9.877	4707.00	0.00	0.00	46491.04	PM47002
		<b>Bitumen pressure distributor</b> ( Spraying width 4.5m)	hour	0.667	0.667		1299.00	866.43	866.43	866.43	PM24001
		<b>Batch Type Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		<b>Mechanical broom</b> (2.1 m sweeping width)	hour	0.571	0.571		746.00	425.97	425.97	425.97	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.571	0.571		391.00	223.26	223.26	223.26	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		<b>Front end loader for feeding the pant</b>									
		(i) 3.1 Cum Capacity	hour	2.127			3433.00	7301.99	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		3.145		2033.00	0.00	6393.79	0.00	PM5002
		(iii) 1 Cum capacity	hour			6.575	1366.00	0.00	0.00	8981.45	PM5003
		<b>Tipper</b>									
		For transportation plant to site									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	0.00	10947.41	PM6003
		For transportation of dismantle material site to plant									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity Tipper for loading time	t.km			276XL1	6.80			1876.80	PM74001
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	0.00	17630.45	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>i) Bitumen</b>									
		A bitumen content is 4.5 percent bitumen weight of mix. For reclaimed material, fresh material will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.045=1.689	tonne	2.236	2.236	2.236	56414.00	126141.70	126141.70	126141.70	M-074
		Bitumen required for fresh mix of 193.2 tonnes= 193.2 tonnes= 193.2 X 0.045= 6.569	tonne	8.694	8.694	8.694	56414.00	490463.32	490463.32	490463.32	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.955= 184.506 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 123.004 cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading II ( 19mm nominal size)</b>									
		25-10mm 30percent	cum	36.901	36.901	36.901	886.00	32694.29	32694.29	32694.29	M-045
		10-5mm 28 percent	cum	34.441	34.441	34.441	586.00	20182.43	20182.43	20182.43	M-039
		5mm and below 40 percent	cum	49.202	49.202	49.202	424.21	20871.98	20871.98	20871.98	M-029
		Filler @2 % of weight of aggregates	tonnes	5.520	5.520	5.520	3873.96	21384.20	21384.20	21384.20	M-190
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above averagematerial rate of aggregate	cum	123.004	123.004	123.004	632.07	-15549.43	-15549.43	-15549.43	<b>J=0.2*F*1</b>

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H.&C.P.)									
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)					
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)					
		Cost for 120 cum= a+b+c+d+e									
		<b>Rate per cum= (a+b+c+d+e)/120</b>									
							Say				
		<b>C</b>									
		<b>(j) Using bituminous concrete</b>									
		<b>Grading I</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		<b>b) Machinery</b>									
		<b>Milling machine</b>									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM47004
		Milling machine with 1.3 meter Drum width	hour		9.117		6803.00	0.00	62022.95	0.00	PM47003
		Milling machine with 1.2 metre drum width	hour			9.877	4707.00	0.00	0.00	46491.04	PM47002
		<b>Bitumen pressure distributor( Spraying width 4.5m)</b>	hour	0.667	0.667	0.667	1299.00	866.43	866.43	866.43	PM24001
		<b>Batch Type Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	0.571	0.571	0.571	746.00	425.97	425.97	425.97	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.571	0.571	0.571	391.00	223.26	223.26	223.26	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		<b>Front end loader for feeding the pant</b>									
		(i) 3.1 Cum Capacity	hour	2.112			3433.00	7250.50	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		3.122		2033.00	0.00	6347.03	0.00	PM5002
		(iii) 1 Cum capacity	hour			6.527	1366.00	0.00	0.00	8915.88	PM5003

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Tipper</b>									
		For transportation plant to site									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km	276XL1			5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km		276XL1		6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	0.00	10947.41	PM6003
		For transportation of dismantle material site to plant									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading time									
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	0.00	17630.45	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>j) Bitumen</b>									
		A bitumen content is 5.2 percent bitumen weight of mix. For reclaimed material, fresh material will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.052=2.583	tonne	2.583	2.583	2.583	56414.00	145717.36	145717.36	145717.36	M-074
		Bitumen required for fresh mix of 193.2 tonnes = 193.2 X 0.052= 10.046	tonne	10.046	10.046	10.046	56414.00	566735.04	566735.04	566735.04	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.948= 183.54 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 122.102cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading I ( 19mm nominal size)</b>									
		20-10mm 38percent	cum	46.399	46.399	46.399	886.00	41109.51	41109.51	41109.51	M-044
		10-5mm 17 percent	cum	20.757	20.757	20.757	586.00	12163.60	12163.60	12163.60	M-039
		5mm and below 43 percent	cum	52.504	52.504	52.504	424.21	22272.72	22272.72	22272.72	M-029
		Filler @2 % of weight of aggregates	tonnes	5.520	5.520	5.520	3873.95	21384.20	21384.20	21384.20	M-190
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above average material rate of aggregate	cum	122.102	122.102	122.102	632.07	-15435.40	-15435.40	-15435.40	<b>J=0.2*F*1</b>
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						1015613.04	1025932.69	1016345.04	
		<b>d) Overhead charges on (a+b+c)</b>						81249.04	102593.27	121961.41	
		<b>e) Contractor's profit on (a+b+c+d)</b>						109686.21	112852.60	113830.64	
		Cost for 120 cum= a+b+c+d+e						1206548.29	1241378.56	1252137.09	
		<b>Rate per cum= (a+b+c+d+e)/120</b>						10054.57	10344.82	10434.48	
							Say	<b>10054.60</b>	<b>10344.80</b>	<b>10434.50</b>	
		<b>C (ii) Using by bituminous concrete</b>									
		<b>Grading II</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		<b>b) Machinery</b>									
		<b>Milling machine</b>									
		Milling machine with 2 metre drum width	hour	5.926			9824.00	58217.02	0.00	0.00	PM/47004
		Milling machine with 1.3 meter Drum width	hour		9.117		6803.00	0.00	62022.95	0.00	PM/47003
		Milling machine with 1.2 metre drum width	hour			9.877	4707.00	0.00	0.00	46491.04	PM/47002
		<b>Bitumen pressure distributor( Spraying width 4.5m)</b>	hour	0.667	0.667	0.667	1299.00	866.43	866.43	866.43	PM/24001
		<b>Batch Type Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	1.840			44761.00	82360.24		0.00	PM/18001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) HMP 160 TPH	hour		2.300		34660.00	0.00	79718.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			3.067	26375.00	0.00	0.00	80892.13	PM18003
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	0.571	0.571	0.571	746.00	425.97	425.97	425.97	PM23001
		<b>Air compressor 250 cfm</b>	hour	0.571	0.571	0.571	391.00	223.26	223.26	223.26	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	1.840			8054.00	14819.36	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		2.300		8054.00	0.00	18524.20	0.00	PM29001
		(iii) Paver (174 HP)	hour			3.067	6346.00	0.00	0.00	19463.18	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	1.840			5360.00	9862.40	0.00	0.00	PM22002
		(ii) 400 KVA	hour		2.300		4323.00	0.00	9942.90	0.00	PM22003
		(iii) 250 KVA	hour			3.067	3034.00	0.00	0.00	9305.28	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	2.107			3433.00	7233.33	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		3.115		2033.00	0.00	6332.80	0.00	PM5002
		(iii) 1 Cum capacity	hour			6.513	1366.00	0.00	0.00	8896.76	PM5003
		<b>Tipper</b>									
		For transportation plant to site									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	3.680			2239.00	8239.52	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		4.600		1998.00	0.00	9190.80	0.00	PM6002
		(iii) 10 cum capacity	hour			6.133	1785.00	0.00	0.00	10947.41	PM6003
		For transportation of dismantle material site to plant									L1=1
		(i) 18 cum capacity	t.km	276XL1			4.80	1324.80			PM72001
		(ii) 14 cum capacity	t.km		276XL1		5.48		1512.48		PM73001
		(iii) 10 cum capacity	t.km			276XL1	6.80			1876.80	PM74001
		Tipper for loading time									
		(i) 18 cum capacity	hour	5.926			2239.00	13268.31	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		9.117		1998.00	0.00	18215.77	0.00	PM6002
		(iii) 10 cum capacity	hour			9.877	1785.00	0.00	0.00	17630.45	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	10.619	10.619	10.619	1978.00	21004.38	21004.38	21004.38	PM9001
		<b>c) Material</b>									
		<b>i) Bitumen</b>									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		A bitumen content is 5.4 percent bitumen weight of mix. For reclaimed material, fresh material will be required to extent of 60 percent of normal requirement.									
		In a mix of 276 tonnes, 82.8 tonne is reclaimed and balance 193.2 tonne is fresh mix.									
		Bitumen required for reclaimed mix of 82.8 tonne @60 percent= 82.8 X 0.60 X 0.054=2.683	tonne	2.683	2.683	2.683	56414.00	151358.76	151358.76	151358.76	M-074
		Bitumen required for fresh mix of 193.2 tonnes = 193.2 X 0.054= 10.433	tonne	10.433	10.433	10.433	56414.00	588567.26	588567.26	588567.26	M-074
		<b>ii) Aggregates</b>									
		Percentage of mix requiring fresh aggregates- 70 percent									
		Weight of fresh mix= 276 X 0.70= 193.2 tonne									
		Weight of fresh aggregate in the mix= 193.2 X 0.946= 182.767 tonne									
		<b>Taking average density of 1.5 tonnes/cum, total volume of aggregate = 121.845cum</b>									
		Size wise requirement of fresh aggregates									
		<b>* Grading II( 13mm nominal size)</b>									
		13.2-10mm 21percent	cum	25.587	25.587	25.587	586.00	14993.98	14993.98	14993.98	M-043
		10-5mm 17 percent	cum	20.714	20.714	20.714	586.00	12138.40	12138.40	12138.40	M-039
		5mm and below 60 percent	cum	73.107	73.107	73.107	424.21	31012.72	31012.72	31012.72	M-029
		Filler @2 % of weight of aggregates	tonnes	5.520	5.520	5.520	3873.95	21384.20	21384.20	21384.20	M-190
		Credit for milled material for use (70 percent), Considering 20 percent cost as salvage value of above average material rate of aggregate	cum	121.845	121.845	121.845	532.07	-12966.01	-12966.01	-12966.01	J=0.2*F*
		* Any one of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						1028138.15	1038460.73	1028868.19	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		82251.05	103846.07	123464.18	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		111038.92	114230.68	115233.24	
		Cost for 120 cum= a+b+c+d+e						1221428.12	1256537.49	1267565.62	
		<b>Rate per cum= (a+b+c+d+e)/120</b>					Say	10178.57	10471.15	10563.05	
								<b>10178.60</b>	<b>10471.10</b>	<b>10563.00</b>	

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
5.14	513	Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3mm wide or incipient fretting or disintegration in an existing bituminous surfacing									
		<b>Unit=sqm</b>									
		<b>Taking output=10500sqm</b>									
		<b>(i) a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom @ 1250 sqm per hour	hour	3.125	3.125	3.125	746.00	2331.25	2331.25	2331.25	PM23001
		Air compressor 250cfm	hour	3.125	3.125	3.125	391.00	1221.88	1221.88	1221.88	PM15001
		Bitumen pressure distributor ( spraying width 4.5m)	tonne	2.917	2.917	2.917	1299.00	3789.18	3789.18	3789.18	PM24001
		<b>c) Material</b>									
		Bitumen emulsion @ 0.75 kg/sqm	tonne	7.880	7.880	7.880	54270.00	427647.60	427647.60	427647.60	M-077
		Total cost( Without O.H&C.P.)						435946.91	435946.91	435946.91	
		<b>d) Overhead charges on (a+b+c)</b>						34875.75 (@ 10%)	43594.69 (@ 12%)	52313.63	
		<b>e) Contractor's profit on (a+b+c+d)</b>						47082.27 (@ 10%)	47954.16 (@ 10%)	48826.05	
		Cost for 10500sqm= a+b+c+d+e						517904.93	527495.76	537086.59	
		<b>Rate per sqm= (a+b+c+d+e)/10500</b>						49.32	50.24	51.15	
							Say	<b>49.30</b>	<b>50.20</b>	<b>51.20</b>	
		<b>(ii)</b>									
		1. In case it is decided by the engineer to blind the fog spray, the following may be added									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor for precoating of grit	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>b) Material</b>									
		Crushed stone grit 3mm size @3.75kg / sqm	cum	26.250	26.250	26.250	424.21	11135.51	11135.51	11135.51	M-029
		Bitumen emulsion for precoating grit @2 percent of grit, 39.38 X 0.02	tonne	0.790	0.790	0.790	54270.00	42873.30	42873.30	42873.30	M-077
		Cost for 10500 sqm= a+b						55284.81	55284.81	55284.81	
		<b>Rate per sqm= (a+b)/10500</b>						5.27	5.27	5.27	
							Say	<b>5.30</b>	<b>5.30</b>	<b>5.30</b>	
5.15	518	<b>Bituminous Cold mix (including gravel emulsion)</b>									



Analysis of Rate

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing laying and rolling of bituminous cold mix on prepared base consisting of a mixture of unheated mineral aggregate and emulsified or cutback bitumen, including mixing in a plant of suitable type and capacity, transporting, laying compacting and finishing to specified grades and levels.									
		Unit=cum									
		Taking output=205cum									
	(i)	<b>Using bitumen emulsion and 9.5mm or 13.2mm size aggregate</b>									
		Composition of mix (450 tonne) is assumed to be as under:-									
		Bitumen emulsion 8 percent by weight of total mix									
		Filler 2 percent									
		Total aggregates 90 percent									
		<b>Proportion of aggregates</b>									
		19mm to 9.5 mm 25 percent									
		9.5mm to 6mm 29 percent									
		6mm to 0.075mm 36 percent									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	1.743	1.743	1.743	746.00	1300.28	1300.28	1300.28	PM23001
		<b>Air compressor 250 cfm</b>	hour	1.743	1.743	1.743	391.00	681.51	681.51	681.51	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		<b>Electric generator</b>									
		(i) 500 kVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	4.852			3433.00	16656.92	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		6.923		2033.00	0.00	14074.46	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.081	1366.00	0.00	0.00	20600.65	PM5003
		<b>Tipper</b>									
		For transportation									L1=1
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passes	hour	18.141		18.141	1978.00	35882.90	35882.90		PM9001
		Pneumatic Tyre roller	hour	2.569		4.000	1996.00	5127.72	5988.00	7984.00	PM10001
		<b>c) Material</b>									
		Bitumen emulsion @8percent	tonne	36.000		36.000	54270.00	1953720.00	1953720.00	1953720.00	M-077
		Filler (lime) @ 2percent	tonne	9.000		9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Aggregates size 19 to 9.5mm- 450 X 0.25 X1/1.5	cum	75.000		75.000	886.00	66450.00	66450.00	66450.00	M-044
		Aggregates size 9.5 to 6mm- 450 X 0.29 X 1/1.5	cum	87.000		87.000	586.00	50982.00	50982.00	50982.00	M-039
		Aggregates size 6 to 0.075mm- 450 X 0.36 X 1/1.5	cum	108.000		108.000	424.21	45814.68	45814.68	45814.68	M-029
		Total cost( Without O.H&C.P.)						2405838.56	2407837.13	2422204.57	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		192467.08	240783.71	290664.55	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		259830.56	264862.08	271286.91	
		Cost for 205 cum= a+b+c+d+e						2858136.21	2913482.92	2984156.02	
		<b>Rate per cum= (a+b+c+d+e)/205</b>						13942.13	14212.11	14556.86	
		<b>(Applicable to cases I to IV)</b>					Say	<b>13942.10</b>	<b>14212.10</b>	<b>14556.90</b>	
		<b>Note</b>									
		1. Density of aggregates has been assumed 1.5gms/cc									
		2. Tack coat where provided will be measured and paid separately									
	(ii)	<b>Using bitumen emulsion and 19mm or 26.5mm nominal size aggregate</b>									
		Composition of mix ( 450 tonne ) is assumed to be as under-									

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Bitumen emulsion - 8 percent									
		Filler - 2 percent									
		Total aggregates - 90 percent									
		<b>Proportion of aggregates</b>									
		37.5mm to 19 mm 25 percent									
		19mm to 6mm 30percent									
		6mm to 0.075mm 35 percent									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	1.743	1.743	1.743	746.00	1300.28	1300.28	1300.28	PM23001
		<b>Air compressor 250 cfm</b>	hour	1.743	1.743	1.743	391.00	681.51	681.51	681.51	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	4.852			3433.00	16656.92	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		6.923		2033.00	0.00	14074.46	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.081	1366.00	0.00	0.00	20600.65	PM5003
		<b>Tipper</b>									
		For transportation									L1=1
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref	
				Large	Medium	Small		Large	Medium	Small		
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	17850.00		PM6003	
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90		PM9001
		Pneumatic Tyre roller	hour	2.569	3.000	4.000	1996.00	5127.72	5988.00	7984.00		PM47001
		<b>c) Material</b>										
		Bitumen emulsion @8percent	tonne	36.000	36.000	36.000	54270.00	1953720.00	1953720.00	1953720.00		M-077
		Filler (lime) @ 2percent	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55		M-190
		Aggregates size 37.5 to 19mm- 450 X 0.25 X1/1.5	cum	75.000	75.000	75.000	1080.50	81037.50	81037.50	81037.50		M-047
		Aggregates size 19 to 6mm- 450 X 0.3 X 1/1.5	cum	90.000	90.000	90.000	886.00	79740.00	79740.00	79740.00		M-046
		Aggregates size 6 to 0.075mm- 450 X 0.35 X 1/1.5	cum	105.000	105.000	105.000	424.21	44542.05	44542.05	44542.05		M-029
		Total cost( Without O.H&C.P.)						2447911.43	2449910.00	2464277.44		
		<b>d) Overhead charges on (a+b+c)</b>				@ 8%		195832.91	244991.00	295713.29		
		<b>e) Contractor's profit on (a+b+c+d)</b>				@ 10%		264374.43	269490.10	275999.07		
		Cost for 205 cum= a+b+c+d+e						2908118.78	2964391.10	3035989.80		
		<b>Rate per cum= (a+b+c+d+e)/205</b>					Say	14185.95	14460.44	14809.71		
		<b>Note</b>						<b>14185.90</b>	<b>14460.40</b>	<b>14809.70</b>		
		1. Density of aggregates has been assumed 1.5gms/cc										
		2. Tack coat where provided will be measured and paid separately										
5.15	(iii)	<b>Using cutback bitumen and 9.5mm or 13.2mm nominal size aggregate</b>										
		Composition of mix ( 450 tonne ) is assumed to be as under-										
		Bitumen emulsion - 5 percent										
		Filler - 2 percent										
		Total aggregates - 93 percent										
		<b>Proportion of aggregates</b>										
		19mm to 9.5mm 26 percent										
		9.5mm to 6mm 31percent										
		6mm to 0.075mm 36 percent										
		<b>a) Labour</b>										
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00		L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00		L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00		L-15
		<b>b) Machinery</b>										
		<b>Hot Mix Plant</b>										
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00		PM18001

**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		<b>Mechanical broom</b> (2.1 m sweeping width)	hour	1.743	1.743	1.743	746.00	1300.28	1300.28	1300.28	PM23001
		<b>Air compressor - 250 cfm</b>	hour	1.743	1.743	1.743	391.00	681.51	681.51	681.51	PM15001
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	5.009			3433.00	17195.90	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.154		2033.00	0.00	14544.08	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.568	1366.00	0.00	0.00	21265.89	PM5003
		<b>Tipper</b>									
		For transportation									L=1
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passes	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90	PM9001
		Pneumatic tyre roller	hour	2.569	2.569	2.569	1996.00	5127.72	5127.72	5127.72	PM10001
		<b>c) Material</b>									
		Cutback bitumen @ 5percent	tonne	22.500	22.500	22.500	56414.00	1269315.00	1269315.00	1269315.00	M-076
		Filler (lime) @ 2percent	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Aggregates size 19 to 9.5mm- 450 X 0.26 X1/1.5	cum	78.000	78.000	78.000	886.00	69108.00	69108.00	69108.00	M-044
		Aggregates size 9.5 to 6 mm- 450 X 0.31 X 1/1.5	cum	93.000	93.000	93.000	586.00	54498.00	54498.00	54498.00	M-039
		Aggregates size 6 to 0.075mm- 450 X 0.36 X 1/1.5	cum	108.000	108.000	108.000	424.21	45814.68	45814.68	45814.68	M-029



**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Total cost( Without O.H&C.P.)					1728146.54	1729215.48	1741782.53		
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)	138251.72	172921.55	209013.90		
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)	186639.83	190213.70	195079.64		
		Cost for 205 cum= a+b+c+d+e					2053038.09	2092350.72	2145876.08		
		<b>Rate per cum= (a+b+c+d+e)/205</b>				Say	10014.82	10206.59	10467.69		
		<b>Note</b>					<b>10014.80</b>	<b>10206.60</b>	<b>10467.70</b>		
		1. Density of aggregates has been assumed 1.5gms/cc									
		2. Tack coat where provided will be measured and paid separately									
5.15	(iv)	<b>Using cutback bitumen and 19mm or 26.5mm nominal size aggregate</b>									
		Composition of mix ( 450 tonne ) is assumed to be as under-									
		Bitumen emulsion - 5 percent									
		Filler - 2 percent									
		Total aggregates - 93 percent									
		<b>Proportion of aggregates</b>									
		37.5mm to 19mm 25 percent									
		19mm to 6mm 30 percent									
		6mm tp 0.075mm 38 percent									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	156.00	156.00	156.00	L-12	
		Mazdoor	day	7.000	7.000	7.000	2142.00	2142.00	2142.00	L-13	
		Mazdoor skilled	day	5.000	5.000	5.000	1940.00	1940.00	1940.00	L-15	
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			134283.00	0.00	0.00	PM18001	
		(ii) HMP 160 TPH	hour		3.750		34660.00	129975.00	0.00	PM18002	
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	131875.00	PM18003	
		<b>Mechanical broom (2.1 m sweeping width)</b>	hour	1.743	1.743	1.743	746.00	1300.28	1300.28	PM23001	
		<b>Air compressor 250 cfm</b>	hour	1.743	1.743	1.743	391.00	681.51	681.51	PM15001	
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	3.000			8054.00	24162.00	0.00	PM29001	
		(ii) Paver (240HP)	hour		3.750		8054.00	30202.50	0.00	PM29001	
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	31730.00	PM29002	
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	PM22002	

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	5.009			3433.00	17195.90	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.154		2033.00	0.00	14544.08	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.568	1366.00	0.00	0.00	21265.89	PM5003
		<b>Tipper</b>									
		For transportation									L=1
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90	PM9001
		Pneumatic tyre roller	hour	2.569	2.569	2.569	1996.00	5127.72	5127.72	5127.72	PM10001
		<b>c) Material</b>									
		Cutback bitumen @ 5percent	tonne	22.500	22.500	22.500	56414.00	1269315.00	1269315.00	1269315.00	M-076
		Filler (lime) @ 2percent	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Aggregates size 37.5 to 19mm- 450 X 0.25 X1/1.5	cum	75.000	75.000	75.000	1080.50	81037.50	81037.50	81037.50	M-047
		Aggregates size 19 to 6 mm- 450 X 0.3 X 1/1.5	cum	90.000	90.000	90.000	886.00	79740.00	79740.00	79740.00	M-046
		Aggregates size 6 to 0.075mm- 450 X 0.38 X 1/1.5	cum	114.000	114.000	114.000	424.21	48359.94	48359.94	48359.94	M-029
		Total cost( Without O.H&C.P.)						1767863.30	1768932.24	1781499.29	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		141429.06	176893.22	213779.91	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		190929.24	194582.55	199527.92	
		Cost for 205 cum= a+b+c+d+e						2100221.60	2140408.00	2194807.13	
		<b>Rate per cum= (a+b+c+d+e)/205</b>						10244.98	10441.01	10706.38	
							Say	<b>10245.00</b>	<b>10441.00</b>	<b>10706.40</b>	
		<b>Note</b>	1. Density of aggregates has been assumed 1.5gms/cc								
			2. Tack coat where provided will be measured and paid separately								
5.16	506	<b>Sand asphalt /base course</b>									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing , laying and rolling sand-asphalt base course compose of sand, mineral filler and bituminous binder on a prepared subgrade or sub-base to the lines, levels, grades and cross sections as per the drawing including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.									
		<b>Unit= cum</b>									
		<b>Taking output=205 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		Paver finisher hydrostatic with sensor control compatible with hot mix plant									
		(i) Paver (240HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	5.044			3433.00	17316.05	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.441		2033.00	0.00	15127.55	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.664	1366.00	0.00	0.00	21397.02	PM5003
		<b>Tipper</b>									
		For transportation									
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			L1=1
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading lime									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003



**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	18.141	18.141	18.141	1978.00	35882.90	35882.90	35882.90	PM9001
		<b>c) Material</b> Composition of mix (450 tonne) is assumed to be as under:-									
		Density 2.20 tonne per cum									
		Weight 450 tonne									
		Bitumen 5 percent									
		Filler 2 percent									
		Sand of size 4.75 to 0.075mm 93 percent									
		Bitumen @ 5 percent	tonne	22.500	22.500	22.500	56414.00	1269315.00	1269315.00	1269315.00	M-074
		Filler (lime) @ 2 percent	tonne	9.000	9.000	9.000	3873.95	34865.55	34865.55	34865.55	M-190
		Sand of size 4.75 to 0.075mm - 450 X 0.93 X 1/1.5	cum	288.620	288.620	288.620	494.00	142578.28	142578.28	142578.28	M-004
		Total cost( Without O.H&C.P.)						1694314.78	1695847.03	1707961.75	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		135545.18	169584.70	204955.41	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		182986.00	186543.17	191291.72	
		Cost for 205 cum= a+b+c+d+e						2012845.96	2051974.91	2104208.88	
		<b>Rate per cum = (a+b+c+d+e)/205</b>						9818.76	10009.63	10264.43	
		<b>Note:-</b> Tack coat will be measured and paid separately					Say	<b>9818.80</b>	<b>10009.60</b>	<b>10264.40</b>	
<b>5.17</b>	<b>517</b>	<b>(i) Crack prevention courses</b>									
		<b>Stress absorbing membrane (SAM) crack width less than 6mm</b>									
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width below 6 mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 9 kg per 10 sqm and spreading 5.6 mm crushed stone aggregates @ 0.11 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.									
		Unit= sqm									
		Taking output= 10500 sqm									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>B) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	3.125	3.125	3.125	746.00	2331.25	2331.25	2331.25	PM23001
		Air compressor 250cfm	hour	3.125	3.125	3.125	391.00	1221.88	1221.88	1221.88	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	2.917	2.917	2.917	1299.00	3789.18	3789.18	3789.18	PM24001
		Hydraulic chip spreader	hour	5.397	5.397	5.397	1602.00	8645.99	8645.99	8645.99	PM32001
		Smooth wheeled road roller 8-10 tonne	hour	5.397	5.397	5.397	1518.00	8192.65	8192.65	8192.65	PM8001
		<b>c) Material</b>									
		Modified binder	tonne	9.450	9.450	9.450	53965.00	509969.25	509969.25	509969.25	M-078
		Crushed stone aggregates 5.6mm size	cum	105.000	105.000	105.000	424.21	44542.05	44542.05	44542.05	M-029
		Total cost( Without O.H&C.P.)						579968.25	579968.25	579968.25	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46397.46	57996.82	69596.19	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		62636.57	63796.51	64956.44	
		Cost for 10500 sqm= a+b+c+d+e						689002.28	701761.58	714520.88	
		<b>Rate per sqm= (a+b+c+d+e)/10500</b>						65.62	66.83	68.05	
							Say	<b>65.60</b>	<b>66.80</b>	<b>68.00</b>	
5.17		<b>(ii) Stress absorbing membrane (SAM) crack width 6mm to 9mm</b>									
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 mm to 9mm after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.									
		<b>Unit= sqm</b>									
		<b>Taking output= 10500 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>B) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	3.125	3.125	3.125	746.00	2331.25	2331.25	2331.25	PM23001
		Air compressor 250cfm	hour	3.125	3.125	3.125	391.00	1221.88	1221.88	1221.88	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	2.917	2.917	2.917	1299.00	3789.18	3789.18	3789.18	PM24001
		Hydraulic chip spreader	hour	5.397	5.397	5.397	1602.00	8645.99	8645.99	8645.99	PM32001
		Smooth wheeled road roller 8-10 tonne	hour	5.397	5.397	5.397	1518.00	8192.65	8192.65	8192.65	PM8001

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Material</b>									
		Modified binder	tonne	11.550	11.550	11.550	53965.00	623295.75	623295.75	623295.75	M-078
		Crushed stone aggregates 11.2mm size	cum	105.000	105.000	105.000	424.21	44542.05	44542.05	44542.05	M-040
		Total cost( Without O.H&C.P.)						693294.75	693294.75	693294.75	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		55463.58	69329.47	83195.37	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		74875.83	76262.42	77649.01	
		Cost for 10500 sqm= a+b+c+d+e					Say	823634.16	838886.65	854139.13	
		<b>Rate per sqm= (a+b+c+d+e)/10500</b>						78.44	79.89	81.35	
		<b>(iii) Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 percent</b>						<b>78.40</b>	<b>79.90</b>	<b>81.30</b>	
		Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width above 9mm and cracked area above 50 percent after cleaning with a mechanical broom, using modified binder complying with IRC:SP: 53, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm with hydraulic chip spreader, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.									
		<b>Unit= sqm</b>									
		<b>Taking output= 10500 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>B) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	3.125	3.125	3.125	746.00	2331.25	2331.25	2331.25	PM23001
		Air compressor 250cfm	hour	3.125	3.125	3.125	391.00	1221.88	1221.88	1221.88	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	2.917	2.917	2.917	1299.00	3789.18	3789.18	3789.18	PM24001
		Hydraulic chip spreader	hour	5.397	5.397	5.397	1602.00	8645.99	8645.99	8645.99	PM32001
		Smooth wheeled road roller 8-10 tonne	hour	5.397	5.397	5.397	1518.00	8192.65	8192.65	8192.65	PM18001
		<b>c) Material</b>									
		Modified binder	tonne	15.750	15.750	15.750	53965.00	849948.75	849948.75	849948.75	M-078
		Crushed stone aggregates 11.2mm size	cum	126.000	126.000	126.000	424.21	53450.46	53450.46	53450.46	M-040
		Total cost( Without O.H&C.P.)						929632.16	929632.16	929632.16	

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		74370.57	92963.22	111555.86	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		100400.27	102259.54	104118.80	
		Cost for 10500 sqm= a+b+c+d+e						1104403.00	1124854.91	1145306.82	
		<b>Rate per sqm= (a+b+c+d+e)/10500</b>					Say	105.18	107.10	109.08	
		<b>Note</b> In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per Table 500-43									
<b>5.17</b>		<b>(iv) Case IV: bitumen impregnated geotextile</b>									
		Providing and laying of premix of crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 518.3									
		<b>Unit= sqm</b>									
		<b>Taking output= 10500 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.280	0.280	0.280	325.00	91.00	91.00	91.00	L-12
		Mazdoor	day	5.000	5.000	5.000	306.00	1530.00	1530.00	1530.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>B) Machinery</b>									
		Mechanical broom (2.1 m sweeping width)	hour	1.042	1.042	1.042	746.00	777.33	777.33	777.33	PM23001
		Air compressor 250cfm	hour	1.042	1.042	1.042	391.00	407.42	407.42	407.42	PM15001
		Bitumen pressure distributor (spraying width 4.5m)	hour	0.972	0.972	0.972	1299.00	1262.63	1262.63	1262.63	PM24001
		Pneumatic roller	hour	2.000	2.000	2.000	1996.00	3992.00	3992.00	3992.00	PM10001
		<b>c) Material</b>									
		Paving grade bitumen of 80-100 penetration @1.05 kg per sqm	tonne	3.680	3.680	3.680	55614.00	204659.52	204659.52	204659.52	M-075
		Geotextile including 10 percent for overlaps	sqm	3850.000	3850.000	3850.000	84.55	325517.50	325517.50	325517.50	M-108
		Total cost( Without O.H&C.P.)						539013.40	539013.40	539013.40	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		43121.07	53901.34	64681.61	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		58213.45	59291.47	60369.50	
		Cost for 3500 sqm= a+b+c+d+e						640347.92	652206.22	664064.51	
		<b>Rate per sqm= (a+b+c+d+e)/3500</b>					Say	182.96	186.34	189.73	
								<b>183.00</b>	<b>186.30</b>	<b>189.70</b>	

Analysis of Rate

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref	
				Large	Medium	Small		Large	Medium	Small		
5.18	518.3	<p><b>Note</b> As bitumen overlay construction shall follow closely the fabric placement on the same day, an output of 3500 sqm only has been considered for the analysis which will cover a length of 500m, of 7 m wide carriageway. This can be conveniently overlaid by a bituminous course in a day</p> <p><b>Recipe Cold mix</b> Providing and laying of premix crushed stone aggregates and emulsion binder, mixed in a batch type cold mixing plant, laid over prepared surface, by paver finisher, rolled with a pneumatic tyred roller initially and finished with a smooth steel wheel roller, all as per clause 518.3</p>										
		<b>Unit= cum</b>										
		<b>Taking output=205cum</b>										
		<b>(i) 75mm thickness</b>										
		<b>a) Labour</b>										
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12	
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13	
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15	
		<b>b) Machinery</b>										
		<b>Hot Mix Plant</b>										
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001	
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002	
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003	
		<b>Electric generator</b>										
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002	
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003	
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004	
		<b>Front end loader for feeding the plant</b>										
		(i) 3.1 Cum Capacity	hour	5.400			3433.00	18538.20	0.00	0.00	PM5001	
		(ii) 2.1 cum Capacity	hour		8.027		2033.00	0.00	16318.89	0.00	PM5002	
		(iii) 1 Cum capacity	hour			16.500	1366.00	0.00	0.00	22539.00	PM5003	
		<b>Tipper</b>										
		For transportation										
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001	
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001	

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		Smooth steel wheeled tandem roller for static and vibratory passaes	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic tyre roller	hour	2.400	3.000	4.000	1996.00	4790.40	5988.00	7984.00	PM10001
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3.0 km.hr)									L1=1
		(i) 16 KL capacity	hour	0.42XL1+0.182			1121.000	674.842			PM11001
		(ii) 12 KL capacity	hour		0.056XL1+0.243		947.000		283.153		PM11002
		(iii) 6 KL capacity	hour			0.111XL1+0.486	707.000			422.079	PM11003
		<b>c) Material</b>									
		Bitumen emulsion @ 45 litres per tonne	tonne	20.250	20.250	20.250	54270.00	1098967.50	1098967.50	1098967.50	M-077
		Crushed stone aggregates 40mm nominal size	cum	297.000	297.000	297.000	975.00	289575.00	289575.00	289575.00	M-054
		Cost of water	KL	6.000	6.000	6.000	56.20	337.20	337.20	337.20	M-191
		Total cost( Without O.H&C.P.)						1630641.86	1632949.21	1647149.50	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		130451.35	163294.92	197657.94	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		176109.32	179624.41	184480.74	
		Cost for 205 cum= a+b+c+d+e						1937202.53	1975868.55	2029288.18	
		<b>Rate per cum= (a+b+c+d+e)/205</b>						9449.77	9638.38	9898.97	
		<b>Note (Case (i) to (iii))</b>					Say	<b>9449.80</b>	<b>9638.40</b>	<b>9899.00</b>	
		1. These mixes are considered suitable for minor repair work and temporary road surface improvements.									
		2. In case concrete mixtures are required to be used for mixing, a number of these will be needed to match the capacity of road rollers.									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		3. Tack coat, where provided, will be measured and paid separately.									
5.18	(ii)	40mm thickness									
		a) Labour									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		b) Machinery									
		Hot Mix Plant									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		Electric generator									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		Front end loader for feeding the plant									
		(i) 3.1 Cum Capacity	hour	5.125			3433.00	17594.13	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.553		2033.00	0.00	15355.25	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.944	1366.00	0.00	0.00	21779.50	PM5003
		Tipper									
		For transportation									L1=1
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM74001
		Tipper for loading & unloading time									
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic tyre roller	hour	2.400	3.000	4.000	1996.00	4790.40	5988.00	7984.00	PM10001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3.0 km.hr)									L1=1
		(i) 16 KL capacity	hour	0.042XL1+ 0.342			1121.000	430.464			PM11001
		(ii) 12 KL capacity	hour		0.056XL1+ 0.456		947.000		484.864		PM11002
		(iii) 6 KL capacity	hour			0.111XL1+ 0.911	707.000			722.554	PM11003
		<b>c) Material</b>									
		Bitumen emulsion @ 70 litres per tonne	tonne	31.500	31.500	31.500	54270.00	1709505.00	1709505.00	1709505.00	M-077
		Crushed stone aggregates 14mm nominal size	cum	287.000	287.000	287.000	586.00	168182.00	168182.00	168182.00	M-051
		Cost of water	KL	6.000	6.000	6.000	56.20	337.20	337.20	337.20	M-191
		Total cost( Without O.H&C.P.)						2118597.91	2121331.78	2135834.98	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		169487.83	212133.18	256300.20	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		228808.57	233346.50	239213.52	
		Cost for 205 cum= a+b+c+d+e						2516894.31	2566811.46	2631348.69	
		<b>Rate per cum= (a+b+c+d+e)/205</b>						12277.53	12521.03	12835.85	
							Say	<b>12277.50</b>	<b>12521.00</b>	<b>12835.80</b>	
<b>5.18</b>		<b>(iii) 25mm thickness</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00	0.00	129975.00	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00	0.00	0.00	131875.00	PM18003
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.000			5360.00	16080.00	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.750		4323.00	0.00	16211.25	0.00	PM22003
		(iii) 250 KVA	hour			5.000	3034.00	0.00	0.00	15170.00	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	4.576			3433.00	15709.41	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		6.750		2033.00	0.00	13722.75	0.00	PM5002
		(iii) 1 Cum capacity	hour			14.211	1366.00	0.00	0.00	19412.23	PM5003
		<b>Tipper</b>									



**Analysis of Rate**

**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		For transportation									
		(i) 18 cum capacity	t.km	450XL1			4.80	2160.00			L1=1
		(ii) 14 cum capacity	t.km		450XL1		5.48		2466.00		PM72001
		(iii) 10 cum capacity	t.km			450XL1	6.80			3060.00	PM73001
		Tipper for loading & unloading time									PM74001
		(i) 18 cum capacity	hour	6.000			2239.00	13434.00	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.500		1998.00	0.00	14985.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.000	1785.00	0.00	0.00	17850.00	PM6003
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.000			8054.00	24162.00	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.750		8054.00	0.00	30202.50	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.000	6346.00	0.00	0.00	31730.00	PM29002
		Smooth steel wheeled tandem roller for static and vibratory passes	hour	11.831	11.831		1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic tyre roller	hour	2.400	3.000	4.000	1996.00	4790.40	5988.00	7984.00	PM10001
		Water tanker (speed @20km/hr and return speed @30km/hr and spreading speed @3.0 km.hr)									L1=1
		(i) 16 KL capacity	hour	0.042XL1+ 0.547			1121.000	660.269			PM11001
		(ii) 12 KL capacity	hour		0.056XL1+ 0.729		947.000		743.395		PM11002
		(iii) 6 KL capacity	hour			0.111XL1+ 1.458	707.000			1109.263	PM11003
		<b>c) Material</b>									
		Bitumen emulsion @ 85 litres per tonne	tonne	38.250	38.250	38.250	54270.00	2075827.50	2075827.50	2075827.50	M-077
		Crushed stone aggregates 6mm nominal size	cum	270.000	270.000	270.000	424.21	114536.70	114536.70	114536.70	M-049
		Cost of water	KL	6.000	6.000	6.000	56.20	337.20	337.20	337.20	M-191
		Total cost( Without O.H&C.P.)						2429620.20	2432635.01	2446531.63	
		<b>d) Overhead charges on (a+b+c)</b>						194369.62	243263.50	293583.80	
		<b>e) Contractor's profit on (a+b+c+d)</b>						262398.98	267589.85	274011.54	
		Cost for 205 cum= a+b+c+d+e						2886388.79	2943488.37	3014126.96	
		<b>Rate per cum= (a+b+c+d+e)/205</b>						14079.95	14358.48	14703.06	
							Say	<b>14079.90</b>	<b>14358.50</b>	<b>14703.10</b>	
5.19	Suggestive	Bituminous Concrete Grading 1 using waste plastic									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.2 percent 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 MORT&H specification clause no. 507 complete in all respects.									
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.005			44761.00	134506.81	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.756		34660.00	0.00	130182.96	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.008	26375.00	0.00	0.00	132086.00	PM18003
		Mechanical broom (2.1m sweeping width)	hour	1.137	1.137	1.137	746.00	848.20	848.20	848.20	PM23001
		Air compressor 250cfm	hour	1.137	1.137	1.137	391.00	444.57	444.57	444.57	PM15001
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.005			8054.00	24202.27	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.756		8054.00	0.00	30250.82	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.008	6346.00	0.00	0.00	31780.77	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.005			5360.00	16106.80	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.756		4323.00	0.00	16237.19	0.00	PM22003
		(iii) 250 KVA	hour			5.008	3034.00	0.00	0.00	15194.27	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	5.078			3433.00	17432.77	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.506		2033.00	0.00	15259.70	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.694	1366.00	0.00	0.00	21438.00	PM5003
		<b>Tipper</b>									
		For transportation mix									
		(i) 18 cum capacity	t.km	450.76XL1			4.80	2163.65			L1=1 PM72001

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		(ii) 14 cum capacity	t.km		450.76XL1		5.48	2470.16			PM73001
		(iii) 10 cum capacity	t.km			450.76XL1	6.80		3065.17		PM74001
		Tipper for loading & unloading time for mix									
		(i) 18 cum capacity	hour	6.010			2239.00	13456.39	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.513		1998.00	0.00	15010.97	0.00	PM6002
		(iii) 10 cum capacity	hour			10.017	1785.00	0.00	0.00	17880.35	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic tyre roller	hour	2.404	3.005	4.007	1996.00	4798.38	5997.98	7997.97	PM10001
		Shredding Machine	hour	1.250	1.250	1.250	391.00	488.75	488.75	488.75	PM79001
		<b>c) Material</b>									
		i) Bitumen @4.78 percent of mix	tonne	21.654	21.654	21.654	56414.00	1221588.76	1221588.76	1221588.76	M-074
		ii) Plastic @ 8 percent of mix	tonne	1.875	1.875	1.875	15790.14	29606.51	29606.51	29606.51	M-292
		iii) Aggregate									
		Total weight of mix = 450.76 tonnes									
		Weight of bitumen=21.564 tonnes									
		Weight of Plastic= 1.875 tonnes									
		Weight of aggregate= 427.320 tonnes									
		Taking density of aggregate=1.5 ton/cum									
		* Grading-I 19mm(Nominal size)									
		20-10mm 38 percent	cum	108.255	108.255	108.255	886.00	95913.93	95913.93	95913.93	M-044
		10-5mm 17 percent	cum	48.430	48.430	48.430	586.00	28379.98	28379.98	28379.98	M-039
		5mm and below 43 percent	cum	122.499	122.499	122.499	424.21	51965.30	51965.30	51965.30	M-029
		Filler @2 percent of weight of aggregates	cum	8.546	8.546	8.546	3873.95	33106.78	33106.78	33106.78	M-190
		*Any one of the alternative may be adopted as per approved design									
		* Grading I-19mm (Nominal size)									
		Total cost( Without O.H&C.P.)						1702317.56	1705060.28	1719093.02	
		<b>d) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		136185.41	170506.03	206291.16	
		<b>e) Contractor's profit on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		183850.30	187556.63	192538.42	
		Cost for 191 cum= a+b+c+d+e						2022353.27	2063122.94	2117922.60	
		<b>Rate per cum=(a+b+c+d+e)/191</b>						10588.24	10801.69	11088.60	
							Say	<b>10588.20</b>	<b>10801.70</b>	<b>11088.60</b>	
5.19	Suggestive	Bituminous Concrete Grading 2 ( using waste plastic)									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and laying bituminous concrete with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 percent 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 MORT&H specification clause no. 507 complete in all respects.									
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		<b>Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.005			44761.00	134506.81	0.00	0.00	PM18001
		(ii) HMP 160 TPH	hour		3.756		34660.00	0.00	130182.96	0.00	PM18002
		(iii) HMP 120 TPH	hour			5.008	26375.00	0.00	0.00	132086.00	PM18003
		Mechanical broom ( 2.1m sweeping width)	hour	1.624	1.624	1.624	746.00	1211.50	1211.50	1211.50	PM23001
		Air compressor 250cfm	hour	1.624	1.624	1.624	391.00	634.98	634.98	634.98	PM15001
		Paver finisher hydrostatic with sensor control compatible with the hot mix plant									
		(i) Paver (240 HP)	hour	3.005			8054.00	24202.27	0.00	0.00	PM29001
		(ii) Paver (240 HP)	hour		3.756		8054.00	0.00	30250.82	0.00	PM29001
		(iii) Paver (174 HP)	hour			5.008	6346.00	0.00	0.00	31780.77	PM29002
		<b>Electric generator</b>									
		(i) 500 KVA	hour	3.005			5360.00	16106.80	0.00	0.00	PM22002
		(ii) 400 KVA	hour		3.756		4323.00	0.00	16237.19	0.00	PM22003
		(iii) 250 KVA	hour			5.008	3034.00	0.00	0.00	15194.27	PM22004
		<b>Front end loader for feeding the plant</b>									
		(i) 3.1 Cum Capacity	hour	4.993			3433.00	17140.97	0.00	0.00	PM5001
		(ii) 2.1 cum Capacity	hour		7.362		2033.00	0.00	14966.95	0.00	PM5002
		(iii) 1 Cum capacity	hour			15.520	1366.00	0.00	0.00	21200.32	PM5003
		<b>Tipper</b>									
		For transportation mix									L1=1

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		(i) 18 cum capacity	t.km	450.76XL1			4.80	2163.65			PM72001
		(ii) 14 cum capacity	t.km		450.76XL1		5.48		2470.16		PM73001
		(iii) 10 cum capacity	t.km			450.76XL1	6.80			3065.17	PM74001
		Tipper for loading & unloading time for mix									
		(i) 18 cum capacity	hour	6.010			2239.00	13456.39	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		7.513		1998.00	0.00	15010.97	0.00	PM6002
		(iii) 10 cum capacity	hour			10.017	1795.00	0.00	0.00	17880.35	PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	16.902	16.902	16.902	1978.00	33432.16	33432.16	33432.16	PM9001
		Pneumatic tyre roller	hour	2.404	3.005	4.007	1996.00	4798.38	5997.98	7997.97	PM10001
		Shredding Machine	hour	1.298	1.298	1.298	391.00	507.52	507.52	507.52	PM79001
		<b>c) Material</b>									
		i) Bitumen @4.97 percent of mix	tonne	22.394	22.394	22.394	56414.00	1263335.12	1263335.12	1263335.12	M-074
		ii) Plastic @ 8 percent of bitumen	tonne	1.947	1.947	1.947	15790.14	30743.40	30743.40	30743.40	M-292
		iii) Aggregate									
		Total weight of mix = 450.76 tonnes									
		Weight of bitumen=22.39 tonnes									
		Weight of Plastic= 1.95 tonnes									
		Weight of aggregate= 426.42 tonnes									
		Taking density of aggregate=1.5 ton/cum									
		* Grading-II 13mm(Nominal size)									
		13.2-10mm 21 percent	cum	59.825	59.825	59.825	586.00	35057.45	35057.45	35057.45	M-043
		10-5mm 17 percent	cum	48.430	48.430	48.430	586.00	28379.98	28379.98	28379.98	M-039
		5mm and below 60 percent	cum	170.928	170.928	170.928	424.21	72509.37	72509.37	72509.37	M-029
		Filler @2 percent of weight of aggregates	tonne	8.528	8.528	8.528	3873.95	33037.05	33037.05	33037.05	M-190
		* Any one of the alternative may be adopted as per approved design									
		* Grading II-13mm (Nominal size)									
		Total cost( Without O.H&C.P.)						1715142.79	1717884.56	1731972.37	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		137211.42	171788.46	207836.68	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		185235.42	188967.30	193980.91	
		Cost for 191 cum= a+b+c+d+e						2037589.63	2078640.32	2133789.96	
		<b>Rate per cum=(a+b+c+d+e)/191</b>						10668.01	10882.93	11171.68	
		<b>Note</b>					Say	<b>10668.00</b>	<b>10882.90</b>	<b>11171.70</b>	
		* 1. Quantity of bitumen & plastic has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									

**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		2 Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.									
		3. The average density of 1.5 tonne/cum is only a reference density in this data book									
		4. The individual percentage of aggregates should be calculated from the total weight of dry aggregates i.e Excluding the weight of bitumen. The weight of filler will also be 2 percent by weight of dry aggregates.									
5.20	519	<b>A</b> <b>Hot recycling in place of Bituminous Pavement with bituminous concrete</b>									
		<b>Grading I</b>									
		Providing and laying bituminous concrete with hot recycling in place using crushed aggregates of specified grading, with bituminous binder @ 5.2 percent of mix filler, transporting the aggregate to work site, laying with a hot recycling in place to the required grade, level and alignment rolling with smoothed wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 519 complete in all respects.									
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.520	0.520	0.520	325.00	169.00	169.00	169.00	L-12
		Mazdoor working with HMP, mechanical boom, paver, roller, asphalt cutter and assistancw for setting out lines, levels and layout of construction	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		Skilled mazdoor for checking lines and levels	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		Hot in place recycling with pre heater unit for hot in place recycling	hour	6.000	6.000	6.000	634.00	3804.00	3804.00	3804.00	PM53001
		Front end loader for feeding the plant									
		i) 3.1 cum capacity	hour	1.200			3433.00	4119.60	0.00	0.00	PM5001
		ii) 2.1 cum capacity	hour		1.200		2033.00	0.00	2439.60	0.00	PM5002
		iii) 1 cum capacity	hour			1.200	1366.00	0.00	0.00	1639.20	PM5003
		Tipper									
		For Transportation (Mix 20 % fresh material has been considered)									L1=1

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) 18 cum capacity	t.km	90.152 X L1			4.80	432.73			PM72001
		ii) 14 cum capacity	t.km	90.152 X L1			5.48		494.03		PM73001
		iii) 10 cum capacity	t.km		90.152 X L1		6.80			613.03	PM74001
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic Tyre roller	hour	4.800	4.800	4.800	1996.00	9580.80	9580.80	9580.80	PM10001
		<b>c) Material</b>									
		i) Bitumen @ 5.2 percent of weight of mix (for 80% recycled material @ 1.5%)	tonne	10.088	10.088	10.088	56414.00	569104.43	569104.43	569104.43	M-074
		ii) Aggregate									
		Total weight of mix = 450.76 tonnes									
		Weight of bitumen = 23.440 tonnes									
		Weight of aggregate = 427.320 tonnes									
		Taking density of aggregate = 1.5 ton/cum									
		* Grading I - 19mm (Nominal size) (only 20% fresh material has been considered)									
		20-10 mm 38 percent	cum	21.651	21.651	21.651	886.00	19182.79	19182.79	19182.79	M-044
		10-5 mm 17 percent	cum	9.686	9.686	9.686	586.00	5676.00	5676.00	5676.00	M-039
		5 mm and below 43 percent	cum	24.500	24.500	24.500	424.21	10393.15	10393.15	10393.15	M-029
		Filler @ 2 percent of weight of aggregates	tonne	1.709	1.709	1.709	3873.95	6620.58	6620.58	6620.58	M-190
		* Any of the alternative may be adopted as per approved design									
		* Grading I - 19mm (Nominal size)									
		Total cost (Without O.H.&C.P.)						656872.79	655254.09	654572.69	
		<b>d) Overhead charges on (a+b+c)</b>						52549.82	65525.41	78548.72	
		<b>e) Contractor's profit on (a+b+c+d)</b>						70942.26	72077.95	73312.14	
		Cost for 191 cum = a+b+c+d+e						780364.87	792857.45	806433.56	
		<b>Rate per cum = (a+b+c+d+e)/191</b>						4085.68	4151.09	4222.17	
							Say	<b>4085.70</b>	<b>4151.10</b>	<b>4222.20</b>	
5.20	519	<b>B</b> Hot recycling in place of Bituminous Pavement with bituminous concrete									
		Grading II									

**Analysis of Rate  
BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and laying bituminous concrete with hot recycling in place using crushed caggregates of specified grading, with bituminous bindes @ 5.4 percent of mix filler, transporting the aggregate to work site, laying with a hot recycling in place to the required grade, level and alignment rolling with smoothed wheeled, vibratoey and tandem rollers to achieve the desired compaction as per MORTH specificationf clause No. 519 complete in all respects.									
		Unit= cum									
		Taking output= 191 cum									
		<b>a) Labour</b>									
		Mate	day	0.520	0.520	0.520	325.00	169.00	169.00	169.00	L-12
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		Skilled mazdoor	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		<b>b) Machinery</b>									
		Hot in place recycling with pre heater unit for hot in place recycling	hour	6.000	6.000	6.000	634.00	3804.00	3804.00	3804.00	PM53001
		Front end loader for feeding the plant									
		i) 3.1 cum capacity	hour	1.200			3433.00	4119.60	0.00	0.00	PM5001
		ii) 2.1 cum capacity	hour		1.200		2033.00	0.00	2439.60	0.00	PM5002
		iii) 1 cum capacity	hour			1.200	1366.00	0.00	0.00	1639.20	PM5003
		Tipper									
		For Transportation									L1=1
		i)18 cum capacity	t.km	90.152 X L1			4.80	432.73			PM72001
		ii) 14 cum capacity	t.km	90.152 X L1			5.48		494.03		PM73001
		iii) 10 cum capacity	t.km				6.80			613.03	PM74001
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	11.831	11.831	11.831	1978.00	23401.72	23401.72	23401.72	PM9001
		Pneumatic Tyre roller	hour	4.800	4.800	4.800	1996.00	9580.80	9580.80	9580.80	PM10001
		<b>c) Material</b>									
		i) Bitumen@5.4 percent of weight of mix for 80% recycled material @1.5%)	tonne	10.268	10.268	10.268	56414.00	579258.95	579258.95	579258.95	M-074
		ii) Aggregate									
		Total weight of mix= 450.76 tonnes									
		Weight of bitumen= 23.341 tonnes									



**Analysis of Rate**  
**BASES AND SURFACE COURSES (BITUMINOUS)**

Sl. No	Ref. to M.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Weight of aggregate=426.419 tonnes									
		Taking density of aggregate = 1.5 ton/cum									
		* Grading II -13mm (Nominal size)(only 20% fresh material has been considered)									
		13.2-10 mm 21 percent	cum	11.940	11.940	11.940	586.00	6996.84	6996.84	6996.84	M-043
		10-5mm 17 percent	cum	9.665	9.665	9.665	586.00	5663.69	5663.69	5663.69	M-039
		5 mm and below 60 percent	cum	34.114	34.114	34.114	424.21	14471.50	14471.50	14471.50	M-029
		Filler @2 percent of weight of aggregates	tonne	1.706	1.706	1.706	3873.95	6608.96	6608.96	6608.96	M-190
		* Any of the alternative may be adopted as per approved design									
		Total cost( Without O.H&C.P.)						658895.79	657277.09	656595.69	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		52711.66	65727.71	78791.48	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		71160.75	72300.48	73538.72	
		Cost for 191 cum = a+b+c+d+e						782768.20	795305.28	808925.89	
		<b>Rate per cum= (a+b+c+d+e)/191</b>						4098.26	4163.90	4235.21	
							Say	<b>4098.30</b>	<b>4163.90</b>	<b>4235.20</b>	
		<b>Note</b>									
		*1 Quantity of bitumen & plastic has been taken for analysis purpose. The actual quantity will depend upon job mix formula.									
		2. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractors.									
		3. The average density of 1.5 tonne/cum is only reference density in this data book.									
		4. The individual percentage of aggregate should be calculated from the total weight of dry aggregates i.e. excluding the weight of bitumen. The weight of filler will also be 2 percent by weight of dry aggregates.									



## **CHAPTER - 06**

# **CEMENT CONCRETE PAVEMENT**



## CHAPTER-6

### CEMENT CONCRETE PAVEMENT

#### PREAMBLES :

- 1 High capacity of batch mix plants of 240 cum/hour & 120 cum/hour have been considered in the rate analysis of cement concrete pavement works.
- 2 While tippers have been provided for transportation of dry lean cement concrete and rolled cement concrete, transit truck mixers have been considered for the cement concrete pavement.
- 3 Chemical admixture and Silica Fumes has been considered to improve workability with reduced water cement ratio.
- 4 OPC 43 & 53 grade, Portland Slag Cement and Portland Pozzolana Cement has been catered for the cement concrete pavement i.e., for pavement quality concrete to get higher strength. However, for dry lean concrete, cement OPC 43 grade, Portland Slag Cement and Portland Pozzolana Cement.
- 5 While a slip form paver has been considered for pavement quality concrete, mechanical paver has been provided for dry lean and rolled cement concrete. However for smaller length construction by fixed form paver in an alternative.
- 6 The letter 'L1' (Lead from Mixing Plant to working site) represents lead in km one way. This will vary from project to project and is required to be ascertained at site to provide for the cost of carriage of the mix to work site.
- 7 Materials provided in the rate analysis are for estimating purpose. Exact quantity of materials will be determined for the job mix formula.
- 8 Fiber reinforcement concrete is also considered as specified in Clause 602.2.5 of MoRT&H Specification.
- 9 Rate of Ultra Thin White Topping analyzed.





**Summary of Rate Analysis**  
**CHAPTER -6**  
**CEMENT CONCRETE PAVEMENT**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
6.01	601	<b>Dry Lean Cement Concrete Sub- base</b>				
		Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.	cum	2550.00	2601.00	2656.20
6.02	602	<b>Cement Concrete Pavement</b>				
		Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with approve grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing	cum	5686.30	5802.30	5920.00
6.03	Suggestive	<b>Transition Section between Rigid and Flexible Pavement</b>				
		Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers. The quantities of items should be worked out based on the approved design and drawings and priced as per rates given under respective clauses for cement concrete and asphaltic work.				
6.04	suggestive	<b>Cement-Fly ash Dry Lean Cement Concrete Sub-base</b>				

**Summary of Rate Analysis**  
**CEMENT CONCRETE PAVEMENT**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Construction of dry lean cement concrete sub-base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 20 percent, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 129 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.	cum	#VALUE!	#VALUE!	#VALUE!
<b>6.05</b>	<b>Suggestive</b>	<b>Cement - Fly ash concrete pavement.</b>				
		Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with approve grade cement @ 340 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15 percent and sand by 10 percent, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing	cum	#VALUE!	#VALUE!	#VALUE!
<b>6.06</b>	<b>Suggestive</b>	<b>Thin White topping</b>				
		Construction of thin white topping with plain cement concrete pavement over existing surface with approve grade cement @ 400 kg per cum and as per IRC SP-76, coarse and fine aggregate conforming to IS 383, maximum size of fine aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction joint, joint filler, sealant primer, joint sealant, admixtures as approved, curing compound, finishing to lines etc.. and grades as per drawing.	cum	#VALUE!	#VALUE!	#VALUE!
<b>6.07</b>	<b>Suggestive</b>	<b>Cement- Fly ash Thin White topping</b>				

**Summary of Rate Analysis**  
**CEMENT CONCRETE PAVEMENT**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		Construction of thin white topping with plain cement concrete pavement over existing surface with approved grade cement @ 340 kg per cum and Fly ash as per IRC SP-76, coarse and fine aggregate conforming to IS 383, maximum size of fine aggregate not exceeding 25mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction joint, joint filler, sealant primer, joint sealant, admixtures as approved, curing compound, finishing to lines etc.. and grades as per drawing.	cum	#VALUE!	#VALUE!	#VALUE!







Analysis of Rate

CHAPTER -6

CEMENT CONCRETE PAVEMENTS

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
6.01	601	<b>Dry Lean Cement Concrete Sub- base</b>									
		Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.									
		<b>Unit = cum</b>									
		<b>Taking output = 450 cum.</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		<b>b) Machinery</b>									
		<b>Paver with electronic sensor</b>									
		(i) Paver Finisher Concrete with 300HP Motor	hour	2.045			25929.00	53024.81	0.00	0.00	PM30001

Analysis of Rate

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) Paver Finisher Concrete with 241HP Motor	hour		3.000		16593.00	0.00	49779.00	0.00	PM30002
		(iii) Paver Finisher Concrete with 118HP Motor	hour			5.625	3764.00	0.00	0.00	21172.50	PM30003
		<b>Vibratory roller 8-10 t capacity</b>	hour	2.045	3.000	5.625	1996.00	4081.82	5988.00	11227.50	PM10001
		<b>Tipper for Transportation</b>									
		(i) 18 cum capacity	t.km	990 x L1			4.80	4752.00			PM72001
		(ii) 14 cum capacity	t.km		990 x L1		5.48		5425.20		PM73001
		(iii) 10 cum capacity	t.km			990 x L1	6.80			6732.00	PM74001
		<b>For loading &amp; unloading</b>									
		<b>Time</b>									
		(i) 18 cum capacity	hour	4.545			2239.00	10176.26	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		5.500		1998.00	0.00	10989.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.625	1785.00	0.00	0.00	18965.63	PM6003
		<b>Water tanker(speed@20km/hr and return speed@30km/hr and spreading speed@3.0km/hr)</b>									
		(i) 16KL Capacity	hour	1.509xL1+7.245			1121.000	9813.23			PM11001
		(ii) 12KL Capacity	hour		2.013xL1+9.66		947.000		11054.33		PM11002
		(iii) 6KL Capacity	hour			4.025xL1+19.32	707.000			16504.92	PM11003
		(C) Material									
		Concrete from sub-analysis of concrete Rate									



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) Using Batching Plant 240 Cum Capacity (Rate taken from sub-analysis of concrete-21.18 A)	cum	450.000			1930.70	868815.00	0.00	0.00	21.18 A
		(ii) Using Batching Plant 240 Cum Capacity (Rate taken from sub-analysis of concrete-21.18 A)	cum		450.000		1930.70	0.00	868815.00	0.00	21.18 A
		(iii) Using Batching Plant 120 Cum Capacity (Rate taken from sub-analysis of concrete-21.18 C)	cum			450.000	1956.30	0.00	0.00	880335.00	21.18 C
		cost of water (Curing)	KL	217.350	217.350	217.350	56.20	12215.07	12215.07	12215.07	M-191
		Total cost( Without O.H&C.P.)						<b>965913.18</b>	<b>967300.60</b>	<b>970187.61</b>	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		77273.05	96730.06	116422.51	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		104318.62	106403.07	108661.01	
		Cost for 450 cum = a+b+c+d+e						1147504.86	1170433.73	1195271.14	
		<b>Rate per cum=(a+b+c+d+e)/450 (with OH.&amp;C.P)</b>						2550.01	2600.96	2656.16	
							<b>Say</b>	<b>2550.00</b>	<b>2601.00</b>	<b>2656.20</b>	
		<b>Note:-</b>	Quantity provided for aggregate is for estimating purpose.Exact quantity shall be as per mix design.								
<b>6.02</b>	<b>602</b>	<b>Cement Concrete Pavement</b>									

Analysis of Rate

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with approve grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing									
		<b>Unit = cum</b>									
		<b>Taking output = 900cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom@1250 sqm per hour	hour	0.893	0.893	0.893	746.00	666.18	666.18	666.18	PM23001
		Air compressor 250 cfm	hour	0.893	0.893	0.893	391.00	349.16	349.16	349.16	PM15001
		<b>Paver with electronic sensor</b>									



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i)Paver Finisher Concrete with 300HP Motor	hour	4.091			25929.00	106075.54	0.00	0.00	PM30001
		(ii)Paver Finisher Concrete with 241HP Motor	hour		6.000		16593.00	0.00	99558.00	0.00	PM30002
		(iii)Paver Finisher Concrete with 118HP Motor	hour			11.250	3764.00	0.00	0.00	42345.00	PM30003
		<b>Transit truck agitator</b>									
		For Transportation Transit truck agitator 6cum capacity	t.km	2070xL1	2070xL1	2070xL1	10.33	21383.10	21383.10	21383.10	PM76001
		For unloading time	hour	4.091	6.000	11.250	1860.00	7609.26	11160.00	20925.00	PM34001
		Concrete joint cutting machine	hour	101.587	101.587	101.587	170.00	17269.79	17269.79	17269.79	PM61002
		<b>Texturing machine</b>									
		Texturing machine(TCM) up to 18 m	hour	4.091			4328.00	17705.85	0.00	0.00	PM31001
		Texturing machine(TCM) up to 18 m	hour		6.000		4328.00	0.00	25968.00	0.00	PM31001
		Texturing machine(TCM) up to 9 m	hour			11.250	3354.00	0.00	0.00	37732.50	PM31002
		Water tanker (speed @20 km /hr and return speed@30 km / hr and spreading speed@3.0 km /hr)									L1=1
		(i)16 KL capacity	hour	3.281xL1+1 5.75			1121.000	21333.75			PM11001
		(ii) 12 KL capacity	hour		4.375xL1+ 21		947.000		24030.13		PM11002
		(iii)6 KL capacity	hour			8.75xL1+ 42	707.000			35880.25	PM11003
		<b>c) Material</b>									

Analysis of Rate

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Concrete from sub analysis of concrete Rate</b>									
		(i) Using Batching Plant 240 cum Capacity (Rate taken from sub analysis of concrete 21.19 A)	cum	900.000			3663.80	3297420.00	0.00	0.00	21.19 A
		(ii) Using Batching Plant 240 cum Capacity/(Rate taken from sub analysis of concrete 21.19 A)	cum		900.000		3663.80	0.00	3297420.00	0.00	21.19 A
		(iii) Using Batching Plant 120 cum Capacity (Rate taken from sub analysis of concrete 21.19 C)	cum			900.000	3699.80	0.00	0.00	3329820.00	21.19 C
		36 mm mild steel dowel bars of grade S 240	tonne	9.170	9.170	9.170	58600.00	537362.00	537362.00	537362.00	M-125
		12 mm deformed steel tie bars of grade S 415	tonne	1.051	1.051	1.051	54810.00	57605.31	57605.31	57605.31	M-083
		Separation Membrane of impermeable plastic sheeting 125 micron thick (including 5% overlap)	sqm	3150.000	3150.000	3150.000	15.24	48006.00	48006.00	48006.00	M-165
		Joint sealant	kg	609.524	609.524	609.524	27.24	16603.43	16603.43	16603.43	M-119
		Sealant primer	kg	100.003	100.003	100.003	27.24	2724.08	2724.08	2724.08	M-119
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	155.735	155.735	155.735	17.75	2764.30	2764.30	2764.30	M-137
		Curing compound	Liter	600.000	600.000	600.000	136.22	81732.00	81732.00	81732.00	M-091
		Cost of water(Curing)	KL	472.500	472.500	472.500	56.20	26554.50	26554.50	26554.50	M-191



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 1 percent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, metal cap, cotton / compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items.					40707.72	40707.72	41031.72		
		Total cost( Without O.H&C.P.)					4307790.97	4315782.69	4324673.32		
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)	344623.28	431578.27	518960.80		
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)	465241.42	474736.10	484363.41		
		Cost for 900 cum = a+b+c+d+e					5117655.67	5222097.06	5327997.53		
		<b>Rate per cum=(a+b+c+d+e)/900(with OH.&amp;C.P)</b>					5686.28	5802.33	5920.00		
						<b>Say</b>	<b>5686.30</b>	<b>5802.30</b>	<b>5920.00</b>		
	<b>Note</b>	The quantities for cement, coarse aggregate and fine aggregates are for estimating only . The exact quantities will be as per mix design.									
<b>6.03</b>	<b>Suggestive</b>	<b>Transition Section between Rigid and Flexible Pavement</b>									



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Due to change in the properties of materials and type of construction, a gradual changeover from rigid pavement to flexible pavement is desirable to avoid any damage at the butting joint. After provision of an expansion joint in the cement concrete slab, the thickness of slab should be tapered to 10 cm over a length of 3 m towards the flexible pavement. The deficiency of thickness caused due to tapering of the slab should be made up by the asphaltic layers. The quantities of items should be worked out based on the approved design and drawings and priced as per rates given under respective clauses for cement concrete and asphaltic work.									
6.04	suggestive	Cement-Fly ash Dry Lean Cement Concrete Sub-base									

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of dry lean cement concrete sub-base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 20 percent, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 129 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.									
		<b>Unit = cum</b>									
		<b>Taking output= 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		<b>b) Machinery</b>									
		<b>Paver finisher with electronic sensor</b>									
		(i) Paver finisher concrete with 300 HP Motor	hour	2.045			25929.00	53024.81	0.00	0.00	PM30001

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) Paver Finisher concrete with 241 HP Motor	hour		3.000		16593.00	0.00	49779.00	0.00	PM30002
		(iii) Paver Finisher concrete with 118 HP Motor	hour			5.625	3764.00	0.00	0.00	21172.50	PM30003
		Vibratory roller 8-10 t capacity	hour	2.045	3.000	5.625	1996.00	4081.82	5988.00	11227.50	PM10001
		<b>Tipper</b>									
		<b>For Transportation</b>									L1=1
		(i) 18 cum capacity	t.km	990xL1			4.80	4752.00			PM72001
		(ii) 14 cum capacity	t.km		990xL1		5.48		5425.20		PM73001
		(iii) 10 cum capacity	t.km			990xL1	6.80			6732.00	PM74001
		<b>For loading &amp; unloading Time</b>									
		(i) 18 cum capacity	hour	4.545			2239.00	10176.26	0.00	0.00	PM6001
		(ii) 14 cum capacity	hour		5.500		1998.00	0.00	10989.00	0.00	PM6002
		(iii) 10 cum capacity	hour			10.625	1785.00	0.00	0.00	18965.63	PM6003
		Water tanker (speed @ 20 km/hr and return speed @ 30 km/hr and spreading speed @ 3.0 km/hr)									L1=1
		(i) 16 KL capacity	hour	1.509xL1+7.245			1121.000	9813.23			PM11001
		(ii) 12 KL capacity	hour		2.013xL1+9.66		947.000		11054.33		PM11002
		(iii) 6 KL capacity	hour			4.025xL1+19.32	707.000			16504.92	PM11003
		<b>c) Material</b>									
		<b>Concrete from sub-analysis of concrete Rate</b>									
		(i) Using Batching Plant 240 cum capacity(Rate taken from sub-analysis of concrete-21.18 B)	cum	450.000			#VALUE!	#VALUE!	#VALUE!	#VALUE!	21.18 B

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) Using Batching Plant 240 cum capacity (Rate taken from sub-analysis of concrete-21.18 B)	cum		450.000		#VALUE!	#VALUE!	#VALUE!	21.18 B	
		(iii) Using Batching Plant 120 Cum capacity (Rate taken from sub-analysis of concrete-21.18 D)	cum			450.000	#VALUE!	#VALUE!	#VALUE!	21.18 D=	
		Cost of water (Curing)	KL	217.350	217.350	217.350	56.20	12215.07	12215.07	M-191	
		Total cost( Without O.H&C.P.)						#VALUE!	#VALUE!		
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!		
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!		
		Cost for 450 cum = a+b+c+d+e						#VALUE!	#VALUE!		
		<b>Rate per cum=(a+b+c+d+e)/450(with OH.&amp;C.P)</b>						#VALUE!	#VALUE!		
							<b>Say</b>	#VALUE!	#VALUE!		
	<b>Note:-</b>	Quantity provided for aggregate is for estimating purpose.Exact quantity shall be as per mix design.									
<b>6.05</b>	<b>Suggestive</b>	<b>Cement - Fly ash concrete pavement.</b>									

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction reinforced-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with approve grade cement @ 340 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, replacing cement by fly ash to the extent of 15 percent and sand by 10 percent, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing									
		<b>Unit = cum</b>									
		<b>Taking output = 900 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom @ 1250 sqm per hour	hour	0.893	0.893	0.893	746.00	666.18	666.18	666.18	PM23001

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Air compressor 250 cfm	hour	0.893	0.893	0.893	391.00	349.16	349.16	349.16	PM15001
		<b>Paver with electronic sensor</b>									
		(i) Paver finisher Concrete with 300 HP Motor	hour	4.091			25929.00	106075.54	0.00	0.00	PM30001
		(ii) Paver Finisher Concrete with 241 HP Motor	hour		6.000		16593.00	0.00	99558.00	0.00	PM30002
		(iii) Paver Finisher Concrete with 118 HP Motor	hour			11.250	3764.00	0.00	0.00	42345.00	PM30003
		<b>Transit truck agitator</b>									L1=1
		For Transportation Transit truck agitator 6 cum capacity	t.km	2070xL1	2071xL1	2072xL1	10.33	21383.10	21383.10	21383.10	PM76001
		For Unloading time	hour	4.091	6.000	11.250	1860.00	7609.26	11160.00	20925.00	PM34001
		Concrete joint cutting machine	hour	101.587	101.587	101.587	170.00	17269.79	17269.79	17269.79	PM61002
		Texturing machine.	hour	4.091	6.000	11.250	4328.00	17705.85	25968.00	48690.00	PM31001
		Water tanker (speed @ 20km/hr and return speed @30 km/hr and spreading speed@ 3.0 km/hr									L1=1
		(i) 16 KL capacity	hour	3.281xL1+1 5.75			1121.000	21333.75			PM11001
		(ii) 12 KL capacity	hour		4.375xL1+ 21		947.000		24030.13		PM11002
		(iii) 6 KL capacity	hour			8.75xL1+42	707.000			35880.25	PM11003
		<b>c) Material</b>									
		<b>Concrete from sub-analysis of concrete Rate</b>									
		(i) Using Batching plant 240 Cum Capacity (Rate taken from sub-analysis of concrete- 21.19 B)	cum	900.000			#VALUE!	#VALUE!	#VALUE!	#VALUE!	21.19. B

**Analysis of Rate**

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) Using Batching Plant 240 cum capacity (Rate taken from sub-analysis of concrete- 21.19 B)	cum		900.000		#VALUE!	#VALUE!	#VALUE!	21.19 B	
		(iii) Using Batching Plant 120 Cum Capacity (Rate taken from sub-analysis of concrete - 21.19 D)	cum			900.000	#VALUE!	#VALUE!	#VALUE!	21.19 D	
		36mm mild steel dowelbars of grade S 240	tonne	9.170	9.170	9.170	58600.00	537362.00	537362.00	M-125	
		12 mm deformed steel tie bars of grade S 415	tonne	1.051	1.051	1.051	54810.00	57605.31	57605.31	M-083	
		Separation Membrane of impermeable plastic sheeting 125 micron thick (including 5% overlap)	sqm	3150.000	3150.000	3150.000	15.24	48006.00	48006.00	M-165	
		Joint Sealant	kg	609.524	609.524	609.524	27.24	16603.43	16603.43	M-119	
		Sealant primer	kg	100.003	100.003	100.003	27.24	2724.08	2724.08	M-119	
		Plastic sheath, 1.25 mm thick for dowel bars	sqm	155.735	155.735	155.735	17.75	2764.30	2764.30	M-137	
		Curing compound	Litre	600.000	600.000	600.000	136.22	81732.00	81732.00	M-091	
		Cost of water (Curing)	KL	472.500	472.500	472.500	56.20	26554.50	26554.50	M-191	



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 1 percent of material for cost of miscellaneous materials like tarpaulin, Hessian cloth, metal cap, cotton/compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items.					#VALUE!	#VALUE!	#VALUE!		
		Total cost( Without O.H&C.P.)					#VALUE!	#VALUE!	#VALUE!		
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)	#VALUE!	#VALUE!	#VALUE!		
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)	#VALUE!	#VALUE!	#VALUE!		
		Cost for 900 cum = a+b+c+d+e					#VALUE!	#VALUE!	#VALUE!		
		<b>Rate per cum = (a+b+c+d+e)/900</b>					#VALUE!	#VALUE!	#VALUE!		
						<b>Say</b>	#VALUE!	#VALUE!	#VALUE!		
		<b>Note</b>	The quantities for cement, coarse aggregate and fine aggregates are for estimating only. The exact quantities will be as per mix design.								
<b>6.06</b>	Suggestive	<b>Thin White topping</b>									



Analysis of Rate

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of thin white topping with plain cement concrete pavement over existing surface with approve grade cement @ 400 kg per cum and as per IRC SP-76, coarse and fine aggregate conforming to IS 383, maximum size of fine aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction joint, joint filler, sealant primer, joint sealant, admixtures as approved, curing compound, finishing to lines etc.. and grades as per drawing.									
		<b>Unit = cum</b>									
		<b>Taking output = 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom @1250 sqm per hour	hour	0.893	0.893	0.893	746.00	666.18	666.18	666.18	PM23001
		Air Compressor 250 cfm	hour	0.893	0.893	0.893	391.00	349.16	349.16	349.16	PM15001
		<b>Paver with electronic sensor</b>									
		(i) Paver finisher concrete with 300 HP Motor	hour	2.045			25929.00	53024.81	0.00	0.00	PM30001
		(ii) Paver finisher concrete with 241 HP Motor	hour		3.000		16593.00	0.00	49779.00	0.00	PM30002



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		(iii) Paver finisher concrete with 118 HP Motor	hour			5.625	3764.00	0.00	21172.50		PM30003	
		<b>Transit truck agitator</b>									L1=1	
		For Transportation Transit truck agitator 6 cum capacity	t.km	2070xL1	2070xL1	2070xL1	10.33	21383.10	21383.10	21383.10		PM76001
		For Unloading time	hour	2.045	3.000	5.625	1860.00	3803.70	10462.50	5580.00		PM34001
		Concrete joint cutting machine	hour	320.000	320.000	320.000	170.00	54400.00	54400.00	54400.00		PM61002
		<b>Texturing machine</b>										
		Texturing machine (TCM) upto 18 m	hour	2.045			4328.00	8850.76				PM31001
		Texturing machine (TCM) upto 18 m	hour		3.000		4328.00		12984.00			PM31001
		Texturing machine (TCM) upto 9 m	hour			5.625	3354.00		18866.25			PM31002
		Water tanker (speed @ 20 km/hr and return speed @ 30 km/hr and spreading speed @ 3.0 km/hr)										L1=1
		(i) 16 KL capacity	hour	1.641xL1+7.875			1121.000	10667.44				PM11001
		(ii) 12 KL capacity	hour		2.188xL1+10.5		947.000		12015.54			PM11002
		(iii) 6 KL capacity	hour			4.375xL1+21	707.000			17940.13		PM11003
		<b>c) Material</b>										
		<b>Concrete from sub-analysis of concrete Rate</b>										
		(i) Using Batching Plant 240 cum Capacity (Rate taken from sub-analysis of concrete- 21.19 A)	cum	450.000			3663.80	1648710.00	0.00	0.00		21.19 A
		(ii) Using Batching Plant 240 Cum capacity (Rate taken from sub-analysis of concrete- 21.19 A)	cum		450.000		3663.80	0.00	1648710.00	0.00		21.19 A
		(iii) Using Batching Plant 120 Cum capacity (Rate taken from sub-analysis of concrete- 21.19 C)	cum			450.000	3699.80	0.00	0.00	1664910.00		21.19 C

**Analysis of Rate**

**CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Joint sealant	kg	1920.000	1920.000	1920.000	27.24	52300.80	52300.80	52300.80	M-119
		Sealant primer	kg	50.001	50.001	50.001	27.24	1362.03	1362.03	1362.03	M-119
		Fibre Reinforcement @ 9.25 kg Per Cum	tonne	4.163	4.163	4.163	INPUT	#VALUE!	#VALUE!	#VALUE!	M300
		Curing compound	Liter	600.000	600.000	600.000	136.22	81732.00	81732.00	81732.00	M-091
		Cost of water (Curing)	KL	236.250	236.250	236.250	56.20	13277.25	13277.25	13277.25	M-191
		Add 1 percent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, cotton / compressible sponge and , work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threaders, ropes, guide wires and any other unforeseen items.						#VALUE!	#VALUE!	#VALUE!	
		Total cost( Without O.H&C.P.)						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 450 cum = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per cum = (a+b+c+d+e)/450</b>						#VALUE!	#VALUE!	#VALUE!	
								#VALUE!	#VALUE!	#VALUE!	
	Note	1. The quantities for cement, coarse aggregate and fine aggregates are for estimating only . The exact quantities will be as per mix design.									
6.07	Suggestive	<b>Cement- Fly ash Thin White topping</b>									



**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Construction of thin white topping with plain cement concrete pavement over existing surface with approve grade cement @ 340 kg per cum and Fly ash as per IRC SP-76, coarse and fine aggregate conforming to IS 383, maximum size of fine aggregate not exceeding 25mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction joint, joint filler, sealant primer, joint sealant, admixtures as approved, curing compound, finishing to lines etc.. and grades as per drawing.									
		<b>Unit = cum</b>									
		<b>Taking output = 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.440	0.440	0.440	325.00	143.00	143.00	143.00	L-12
		Mazdoor skilled	day	5.000	5.000	5.000	388.00	1940.00	1940.00	1940.00	L-15
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom @1250 sqm per hour	hour	0.893	0.893	0.893	746.00	666.18	666.18	666.18	PM23001
		Air Compressor 250 cfm	hour	0.893	0.893	0.893	391.00	349.16	349.16	349.16	PM15001
		<b>Paver with electronic sensor</b>									
		(i) Paver finisher concrete with 300 HP Motor	hour	2.045			25929.00	53024.81	0.00	0.00	PM30001
		(ii) Paver finisher concrete with 241 HP Motor	hour		3.000		16593.00	0.00	49779.00	0.00	PM30002

**Analysis of Rate  
CEMENT CONCRETE PAVEMENTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs)	Amount (Rs)			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		(iii) Paver finisher concrete with 118 HP Motor	hour			5.625	0.00	0.00	21172.50		PM30003	
		<b>Transit truck agitator</b>									L1=1	
		For Transportation Transit truck agitator 6 cum capacity	t.km	2070xL1	2070xL1	2070xL1	10.33	21383.10	21383.10	21383.10		PM76001
		For Unloading time	hour	2.045	3.000	5.625	1860.00	3803.70	10462.50			PM34001
		Concrete joint cutting machine	hour	320.000	320.000	320.000	170.00	54400.00	54400.00			PM61002
		<b>Texturing machine</b>										
		Texturing machine (TCM) upto 18 m	hour	2.045			4328.00	8850.76				PM31001
		Texturing machine (TCM) upto 18 m	hour		3.000		4328.00	12984.00				PM31001
		Texturing machine (TCM) upto 9 m	hour			5.625	3354.00		18866.25			PM31002
		Water tanker (speed @ 20 km/hr and return speed @ 30 km/hr and spreading speed @ 3.0 km/hr										L1=1
		(i) 16 KL capacity	hour	1.641xL1+ 7.875			1121.000	10667.44				PM11001
		(ii) 12 KL capacity	hour		2.188xL1+ 10.5		947.000	12015.54				PM11002
		(iii) 6 KL capacity	hour			4.375xL1+21	707.000		17940.13			PM11003
		<b>c) Material</b>										
		<b>Concrete from sub-analysis of concrete Rate</b>										
		(i) Using Batching Plant 240 cum Capacity (Rate taken from sub-analysis of concrete- 21.19.B)	cum	450.000			#VALUE!	#VALUE!	#VALUE!	#VALUE!		21.19. B
		(ii) Using Batching Plant 240 Cum capacity (Rate taken from sub-analysis of concrete- 21.19 B)	cum		450.000		#VALUE!	#VALUE!	#VALUE!	#VALUE!		21.19 B
		(iii) Using Batching Plant 120 Cum capacity (Rate taken from sub-analysis of concrete- 21.19 D)	cum			450.000	#VALUE!	#VALUE!	#VALUE!	#VALUE!		21.19 D
		Joint sealant	kg	1920.000	1920.000	1920.000	27.24	52300.80	52300.80	52300.80		M-119





**CHAPTER - 7**

**GEOSYNTHETIC,  
REINFORCED EARTH AND  
PROTECTION WORK**





## CHAPTER-7

### GEOSYNTHETIC, REINFORCED EARTH AND PROTECTION WORKS

#### PREAMBLES :

- 1 The specifications for geo-synthetics which includes geotextiles, geogrids, geo-nets, geomembranes, geo-composites, geo-cells, geo-synthetic-map, natural geotextiles and Paving Fabric and Glass Grids shall be as per section 700 of MoRT&H Specifications.
- 2 The geotextile proposed for sub-surface drain shall satisfy the requirements given in Clause 702.2.3.1
- 3 Bitumen overlay shall follow on the same day where paving fabric is laid.
- 4 Rates are including quality control and tesiting.





**Summary of Rate Analysis**  
**Chapter 7**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
<b>7.01</b>	<b>702</b>	<b>Sub-Surface Drain with Geotextiles</b>				
		Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planer geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling	Running metre	699.10	712.00	725.00
<b>7.02</b>	<b>708</b>	<b>Laying Paving Fabric Beneath a Pavement Overlay</b>				
		Providing and laying paving fabric with physical requirements as per <b>Table 700-16</b> over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface	Sqm	187.40	190.90	194.30
<b>7.03</b>	<b>703</b>	<b>Laying Boulder Apron in Crates of Synthetic Geogrids</b>				
		Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 703.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 703.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 703 and laid as per clause 2503.3 and approved design.	cum	#VALUE!	#VALUE!	#VALUE!
<b>7.04</b>	<b>3100</b>	<b>Reinforced Earth Structures</b>				
		Reinforced earth Structures have four main components as under:				
		a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (fascia material).				
		b) Fascia material and its placement.				
		c) Assembling, joining with facing elements and laying of the reinforcing elements.				
		d) Earth fill with granular material which is to be retained by the wall.				
		<b>Each component is analysed separately as under:</b>				
		considering Average height of wall = 8 m.				



Summary of Rate Analysis

**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
7.04	3103	(i) <b>Assembling, joining and laying of reinforcing elements.</b>				
		<b>A With reinforcing element of steel / Aluminium strips / polymeric strips.</b>				
		Type 1 <b>1.Galvanised carbon steel strips</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		Type 2 <b>2.Copper Strips</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		Type 3 <b>3.Aluminium Strips</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		Type 4 <b>4.Stainless steel strips</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		Type 5 <b>Glass reinforced polymer/ fiber reinforced polymer /polymeric strips</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.04 (i)		<b>B With reinforcing elements of synthetic geogrids</b>	Sqm	253.10	257.80	262.40
7.04	3105	(ii) <b>Facing elements of RCC</b>	Sqm	1580.80	1611.20	1644.90
7.05	703	(i) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 15KN/m in the longitudinal and transverse direction ,with 5KN/m and 7KN/m tensile strength at 2 % and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than95% and with 38mmx38mm mesh opening.	Sqm	123.60	125.90	128.20
7.05	703	(ii) supplying & laying of bi-axial extruded high modulus polypropylene geogrid confirming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 20KN/m in the longitudinal and transverse direction ,with 7KN/m and 14KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.	Sqm	140.80	143.40	146.00
7.05	703	(iii) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 30KN/m in the longitudinal and transverse direction ,with 10.5KN/m and 21KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.	Sqm	225.50	229.70	233.90



**Summary of Rate Analysis**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
7.05	703	(iv) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 40KN/m in the longitudinal and transverse direction ,with 14KN/m and 28KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.	Sqm	326.20	332.20	338.30
7.06	703	supplying and laying high strength flexible geogrids (HSFG) as soil reinforcement /basal reinforcement as per MORT&H 3100 and IRC 113, made of high tenacity polyester core with polyethylene coating with minimum Long Term Design strength (LTDS) of more than 50% of ultimate tensile strength at 30 degree celcius corresponding to 12 % strain e.t.c.Complete and as directed by Engineer-in-charge.				
		(i) Synthetic Geogrid ultimate tensile strength- 100kN/m	Sqm	294.50	299.90	305.40
		(ii) Synthetic Geogrid ultimate tensile strength- 150kN/m	Sqm	308.80	314.60	320.30
		(iii) Synthetic Geogrid ultimate tensile strength- 200kN/m	Sqm	495.70	504.90	514.10
		(iv) Synthetic Geogrid ultimate tensile strength- 250kN/m	Sqm	510.10	519.50	529.00
		(v) Synthetic Geogrid ultimate tensile strength- 300kN/m	Sqm	524.50	534.20	543.90
		(vi) Synthetic Geogrid ultimate tensile strength- 350kN/m	Sqm	538.80	548.80	558.80
		(vii) Synthetic Geogrid ultimate tensile strength- 400kN/m	Sqm	653.80	665.90	678.00
		(viii) Synthetic Geogrid ultimate tensile strength- 500kN/m	Sqm	725.70	739.10	752.60
		(ix) Synthetic Geogrid ultimate tensile strength- 600kN/m	Sqm	797.60	812.30	827.10
		(x) Synthetic Geogrid ultimate tensile strength- 800kN/m	Sqm	1049.10	1068.60	1088.00
		(xi) Synthetic Geogrid ultimate tensile strength- 900kN/m	Sqm	1228.80	1251.60	1274.30
		(xii) Synthetic Geogrid ultimate tensile strength- 1000kN/m	Sqm	1372.60	1398.00	1423.40
		(xiii) Synthetic Geogrid ultimate tensile strength- 1100kN/m	Sqm	1444.40	1471.20	1497.90
		(xiv) Synthetic Geogrid ultimate tensile strength- 1200kN/m	Sqm	1516.30	1544.40	1572.50
7.07	704	Supplying & laying of drainage composite for use behind walls, between two different fills, alongside drains of road, below concrete lining of canal etc. Geocomposite for planar drainage,realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as seperation or protecting layers. The draining three dimensional core will have a "W" configuration as longitudinal parallel channels.Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geo textile of minimum thickness of 0.75mm having pores of 150 micron and tensile strength of 8.0kN/m that will be working as seperation or protecting layer, geocomposite having in plane flow capacity of 2.1L/(m.s) at hydraulic gradiant of 1.0 & 20 kpa pressure and tensile strength of 18 kN/m, with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge	Sqm	625.70	637.30	648.90



**Summary of Rate Analysis**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
7.08	704	Supplying & laying of drainage composite for use behind walls, between two different fills, alongside drains of road, below concrete lining of canal etc.having thermobonding a draining core- HDPE geonet comprises of two sets of parallel overlaid ribs integrally connected to have a rhomboidal shape with a polythylene film and a nonwoven geotextile having mass per unit area 130g/m2 and tensile strength of 8.0 kn/m that will be working as separation or protecting layers, geocomposite having in plane flow capacity of 0.7L/(m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 13.5 kN/m, with mass per unit area of 830 gsm, at easily accessible location including top and bottom, with all leads and lifts, manpower and machinery, materials, labour etc. complete and as directed by Engineer-in-charge	Sqm	743.60	757.40	771.20
7.09	suggestive	<b>Reinforced cement concrete crash Barrier with friction slab</b>				
		Provision of an Reinforced cement concrete crash barrier with friction slab at the approaches to bridge structures, Constructed with M-40 grade concrete with HYSD reinforcement conforming to IRC:112 and as per dimensions in the approved drawings and at locations directed by the Engineers, all as specified.(Area-0.185 sqm/meter) below friction slab and (Area-1.032 sqm/meter) crash Barrier with friction slab				
		(i) a) M 40 grade concrete	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.10		<b>In-Situ Soil reinforcement for slope restoration and protection work (Soil Nailing)</b>	Running Metre			
		<b>Supply and installation of In-Situ Soil reinforcement (Soil Nailing)</b> With fully threaded hot-dip galvanised solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of minimum 25 mm diameter, having yield strength>670N/mm2 and tensile strength>800N/mm2 as per technical specifications and drawings etc. complete including drilling, flushing,grouting, and all Supply and installation of all components listed as per technical specifications and drawings etc.and considering all lead, lift and machinery.	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.11	Suggestive	<b>Horizontal Drainage Boring</b>				
		Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm				
		<b>Nominal Diameter of drilling pipe- 90mm</b>				
		(i) <b>Drilling length below bed level upto 50.0 Meter</b>				
		A <b>Sandy Soil / Cohesive Soil</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B <b>Gravelly Soil</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C <b>Rubble / Cobble Stone</b>	Running Metre	#VALUE!	#VALUE!	#VALUE!



Summary of Rate Analysis

**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description		Unit	Rate as per Project Category		
					Large	Medium	Small
		D	Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
		(ii)	Drilling length from 50.0 Meter-80 meter				
		A	Sandy Soil / Cohesive Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B	Gravelly Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C	Rubble / Cobble Stone	Running Metre	#VALUE!	#VALUE!	#VALUE!
		D	Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.12	Suggestive		<b>Horizontal Drainage Boring(Nomonal Diameter of drilling pipe-110 mm)</b>				
			Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm				
			<b>Nominal Diameter of drilling pipe- 110mm</b>				
		(i)	Drilling length below bed level upto 50.0 Meter				
		A	Sandy Soil / Cohesive Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B	Gravelly Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C	Rubble / Cobble Stone	Running Metre	#VALUE!	#VALUE!	#VALUE!
		D	Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
		(ii)	Drilling length from 50.0 Meter-80 meter				
		A	Sandy Soil / Cohesive Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B	Gravelly Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C	Rubble / Cobble Stone	Running Metre	#VALUE!	#VALUE!	#VALUE!
		D	Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.13	Suggestive		<b>Horizontal Drainage Boring (Nominal Diameter of drilling pipe-135 mm)</b>				
			Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm				
			<b>Nominal Diameter of drilling pipe- 135mm</b>				
		(i)	Drilling length below bed level upto 50.0 Meter				
		A	Sandy Soil / Cohesive Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B	Gravelly Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C	Rubble / Cobble Stone	Running Metre	#VALUE!	#VALUE!	#VALUE!
		D	Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
		(ii)	Drilling length from 50.0 Meter-80 meter				





Summary of Rate Analysis

**GEOSYNTHETICS AND REINFORCED EARTH**

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
		A Sandy Soil / Cohesive Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		B Gravelly Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		C Rubble / Cobble Soil	Running Metre	#VALUE!	#VALUE!	#VALUE!
		D Soft Rock	Running Metre	#VALUE!	#VALUE!	#VALUE!
7.14	710.1. 4of IRC78 &2200	Selected fill behind Reinforced Earth Wall Complete as per drawing and Technical specification				
		A Granular Material	Cum	297.10	306.40	313.80
7.14		B Sandy Material	Cum	223.40	231.20	236.80
7.15	710.1. 4of IRC:78 and25 04.2	Providing and laying of filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRT&H 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.	cum	1284.70	1308.50	1332.30
7.16	704	Supplying & laying of drainage composite for use behind walls with Geosynthetic Drainage composite.				
7.16		A Supplying & laying of drainage composite for use behind walls,between two different fills, alongside drains of road, below concrete lining of canal etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as separation or protecting layers.The draining three dimensional core will have a "W" configuration as longitudinal parallel chanel. Minimum thickness to be 7.2 mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75 mm having pores of 150 micron and tensile strength of 8.0 KN/M that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 2.1 L /(m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 KN/M, with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge.	Sqm	625.70	637.30	648.90



### GEOSYNTHETICS AND REINFORCED EARTH

Sl. No	Ref. to M.	Description	Unit	Rate as per Project Category		
				Large	Medium	Small
7.16		B Supplying & laying of drainage composite for use behind walls,between two different fills, alongside drains of road, below concrete lining of canal etc. having thermobonding a draining core - HDPE geonet comprises of two sets of parallel overlaid ribs integrally connected to have a rhomboidal shape with a polythylene film and a nonwoven geotextiles having mass per unit area 130 g/m <sup>2</sup> and tensile strength of 8.0 KN/M that will be workind as separation or protecting layer, geocomposite having in plane flow capacity of 0.7 L /(m.s) at hydraulic gradiant of 1.0 & 20 kpa pressure and tensile strength of 13.5 KN/M, with mass per unit area of 830 gsm, at easily accessible location including top and bottom, with all leads and lifts, manpower and machinery, materials, labour etc. complete and as directed by Engineer in charge.	Sqm	743.60	757.40	771.20
<b>7.17</b>	<b>705</b>	<b>Geocell for Slope protection</b>				
		Furnishing and installing of the Geocell for slope protection including fixing and anchoring of cells in the ground, preparation of ground, filling of cells with specified materials, seeding, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.	Sqm	122.80	125.10	127.40
<b>7.18</b>	<b>706</b>	<b>Geosynthtics mat on the slope</b>				
		Furnishing and installing of the Geosynthetics mat for control of erosion of slopes including supplying and laying the mat, spreading soil and seeding to promote the design of vegetation, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.	Sqm	65.00	66.20	67.40
<b>7.19</b>	<b>707</b>	<b>Natural Geotextile on the slope</b>				
		Furnishing and installing of the natural Geotextile for control of erosion of slopes including supplying and laying the natural Geotextile, spreading soil and seeding to promote the design of vegetation, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.	Sqm	116.70	118.80	121.00





Analysis of Rate

Chapter 7

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
7.01	702	<b>Sub-Surface Drain with Geotextiles</b> Construction of sub surface drain 200 mm dia using geotextiles treated with carbon black with physical properties as given in clause 702.2.3 formed in to a stable network and a planer geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling <b>Unit = Running metre</b> <b>Taking output = one metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.00	9.75	9.75	9.75	L-12
		Mazdoor skilled	day	0.250	0.250	0.250	388.00	97.00	97.00	97.00	L-15
		Mazdoor	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		<b>b) Material</b>									
		Geonets, geomembrane and geotextile to make planar geocomposite stable network for sub surface drain including wrapping of joints with 160 mm over lapping with geotextile .									
		Geonets	sqm	1.000	1.000	1.000	108.16	108.16	108.16	108.16	M-106
		Geomembrane	sqm	1.000	1.000	1.000	45.00	45.00	45.00	45.00	M-105
		Geotextile	sqm	2.000	2.000	2.000	84.55	169.10	169.10	169.10	M-107
		Add 2 per cent cost of material for miscellaneous items like synthetic cord						6.45	6.45	6.45	
		<b>c) Overhead charges on (a+b)</b>									
		<b>d) Contractor's profit on (a+b+c)</b>									
		<b>Rate per metre = a+b+c+d</b>									
								47.08	58.85	70.61	
								63.55	64.73	65.91	
								699.08	712.03	724.98	
		<b>Note</b>						<b>say</b>	<b>712.00</b>	<b>725.00</b>	
		Surplus excavated material to be used at site. Hence separate cost for disposal not added.									
7.02	708	<b>Laying Paving Fabric Beneath a Pavement Overlay</b>									

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Providing and laying paving fabric with physical requirements as per <b>Table 700-16</b> over a tack coat of paving grade Bitumen 80-100 penetration, laid at the rate of 1 kg per sqm over thoroughly cleaned and repaired surface to provide a water resistant membrane and crack retarding layer. Paving fabric to be free of wrinkling and folding and to be laid before cooling of tack coat, brooming and rolling of surface with pneumatic roller to maximise paving fabric contact with pavement surface									
		<b>Unit = sqm</b>									
		<b>Taking output = 2800 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.800	0.800	0.800	325.00	260.00	260.00	260.00	L-12
		Mazdoor	day	20.000	20.000	20.000	306.00	6120.00	6120.00	6120.00	L-13
		<b>b) Machinery</b>									
		Mechanical broom (2.1m sweeping width)	hour	0.833	0.833	0.833	746.00	621.42	621.42	621.42	PM23001
		Pneumatic roller 14 tonnes 2000 sqm per hour	hour	1.400	1.400	1.400	1996.00	2794.40	2794.40	2794.40	PM10001
		Bitumen pressure distributor (Spraying width 4.5 m)	hour	0.778	0.778	0.778	1299.00	1010.62	1010.62	1010.62	PM24001
		<b>c) Material</b>									
		Paving Fabric	sqm	2940.000	2940.000	2940.000	93.58	275125.20	275125.20	275125.20	M-132
		Paving Bitumen 80-100	tonne	2.800	2.800	2.800	55614.00	155719.20	155719.20	155719.20	M-075
		<b>d) Overhead charges on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		35332.07	44165.08	52998.10	
		<b>e) Contractor's profit on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		47698.29	48581.59	49464.89	
		Cost for 2800 sqm = a+b+c+d+e						524681.20	534397.52	544113.83	
		<b>Rate per sqm = (a+b+c+d+e)/2800</b>						187.39	190.86	194.33	
							<b>say</b>	<b>187.40</b>	<b>190.90</b>	<b>194.30</b>	
7.03	703	Laying Boulder Apron in Crates of Synthetic Geogrids									

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Providing, preparing and laying of geogrid crated apron 1 m x 5 m, 600 mm thick including excavation and backfilling with baffles at 1 metre interval, made with geogrids having characteristics as per clause 703.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300 mm connecting opposite side with lateral braces and tied with polymer braids to avoid bulging, constructed as per clause 703.3. filled with stone with minimum size of 200 mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping ground and laid over a layer of geotextile to prevent migration of fines, all as per clause 703 and laid as per clause 2503.3 and approved design.									
		<b>Unit = cum</b>									
		<b>Taking output = 3 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor skilled	day	0.500	0.500	0.500	388.00	194.00	194.00	194.00	L-15
		Mazdoor	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		<b>b) Material</b>									
		Geo grids	sqm	21.000	21.000	21.000	89.26	1874.46	1874.46	1874.46	M-104
		Connectors/ Staples	each	50.000	50.000	50.000	8.33	416.50	416.50	416.50	M-086
		Polymer braids	metre	20.000	20.000	20.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-139
		Stones with minimum size of 200 mm	cum	3.450	3.450	3.450	675.00	2328.75	2328.75	2328.75	M-002
		Stones spall for filling voids	cum	0.450	0.450	0.450	355.79	160.11	160.11	160.11	M-008
		<b>c) Overhead charges on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		#VALUE!	#VALUE!	#VALUE!	
		<b>d) Contractor's profit on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		#VALUE!	#VALUE!	#VALUE!	
		Cost for 3 cum = a+b+c+d						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per cum = (a+b+c+d)/3</b>						#VALUE!	#VALUE!	#VALUE!	
							say	#VALUE!	#VALUE!	#VALUE!	
7.04	3100	<b>Reinforced Earth Structures</b>									
		Reinforced earth Structures have four main components as under:									
		a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (fascia material).									

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		b) Fascia material and its placement.									
		c) Assembling, joining with facing elements and laying of the reinforcing elements.									
		d) Earth fill with granular material which is to be retained by the wall.									
		<b>Each component is analysed separately as under:</b>									
		considering Average height of wall = 8 m.									
7.04	3103	<b>(i) Assembling, joining and laying of reinforcing elements.</b>									
	A	<b>With reinforcing element of steel / Aluminium strips / polymeric strips.</b>									
		<b>Unit = Running Metre</b>									
		<b>Taking Output = 450 m</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		@ Reinforcement strips 60 mm wide 5 mm thick as per clause 3103.including 5% wastage.									
		1.Galvanised carbon steel strips	metre	472.500	472.500	472.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-155
		Add 5 percent of the cost of reinforcing elements strip towards accessories like tie-strips, nuts and bolts and loops / lugs for joining reinforcing elements with the fascia panels, overlaps heat bonding or extension						#VALUE!	#VALUE!	#VALUE!	
		or									
		2.Copper Strips	metre	472.500	472.500	472.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-154
		Add 5 percent of the cost of reinforcing elements strip towards accessories like tie-strips, nuts and bolts and loop/lugs for joining reinforcing elements with the fascia panels, overlaps heat bonding or extension						#VALUE!	#VALUE!	#VALUE!	
		3.Aluminium Strips	metre	472.500	472.500	472.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-158



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 5 percent of the cost of reinforcing elements strip towards accessories like tie-strips, nuts and bolts and loop/lugs for joining reinforcing elements with the fascia panels, overlaps heat bonding or extension					#VALUE!	#VALUE!	#VALUE!		
		or									
		4.Stainless steel strips	metre	472.500	472.500	472.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-157
		Add 5 percent of the cost of reinforcing elements strip towards accessories like tie-strips, nuts and bolts and loop/lugs for joining reinforcing elements with the fascia panels, overlaps heat bonding or extension						#VALUE!	#VALUE!	#VALUE!	
		5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	472.500	472.500	472.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-156
		Add 5 percent of the cost of reinforcing elements strip towards accessories like tie-strips, nuts and bolts and loop/lugs for joining reinforcing elements with the fascia panels, overlaps heat bonding or extension						#VALUE!	#VALUE!	#VALUE!	
		@ Any one of the above alternative may be adopted as per approved design.									
		<b>Type 1</b>									
		<b>1.Galvanised carbon steel strips</b>									
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of 450 m = a+b+c+d						#VALUE!	#VALUE!	#VALUE!	
		Rate per metre =(a+b+c+d)/450					say	#VALUE!	#VALUE!	#VALUE!	
		<b>Type 2</b>									
		<b>2.Copper Strips</b>									
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of 450 m = a+b+c+d						#VALUE!	#VALUE!	#VALUE!	
		Rate per metre =(a+b+c+d)/450					say	#VALUE!	#VALUE!	#VALUE!	
		<b>Type 3</b>									
		<b>3.Aluminium Strips</b>									
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	



**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost of 450 m = a+b+c+d									
		<b>Rate per metre = (a+b+c+d)/450</b>									
						say					
		<b>4. Stainless steel strips</b>									
		<b>Type 4</b>									
		c) Overhead charges on (a+b)									
		d) Contractor's profit on (a+b+c)									
		Cost of 450 m = a+b+c+d									
		<b>Rate per metre = (a+b+c+d)/450</b>									
						say					
		<b>Glass reinforced polymer/ fiber reinforced polymer /polymeric strips</b>									
		<b>Type 5</b>									
		c) Overhead charges on (a+b)									
		d) Contractor's profit on (a+b+c)									
		Cost of 450 m = a+b+c+d									
		<b>Rate per metre = (a+b+c+d)/450</b>									
						say					
7.04(i)		<b>B With reinforcing elements of synthetic geogrids</b>									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	325.00	65.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	306.00	918.00	918.00	918.00	918.00	L-13
		Mazdoor skilled	day	2.000	2.000	388.00	776.00	776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Synthetic Geogrids as per clause 3100 and approved design and specifications including 5% wastage	sqm	315.000	315.000	187.90	59188.50	59188.50	59188.50	59188.50	M-183
		Add 5 per cent of the cost of reinforcing elements (synthetic geogrids) for accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia pannels, overlaps and other protective elements for synthetic geogrids.					2959.43	2959.43	2959.43	2959.43	
		<b>c) Overhead charges on (a+b)</b>									
		<b>d) Contractor's profit on (a+b+c)</b>									
		Cost of 300 sqm of Synthetic geogrids = a+b+c+d					5112.55	6390.69	7668.83	7668.83	
		<b>Rate per sqm = (a+b+c+d)/ 300</b>					6901.95	7029.76	7157.58	7157.58	
							75921.43	77327.38	78733.33	78733.33	
						say	253.07	257.76	262.44	262.44	
						say	<b>253.10</b>	<b>257.80</b>	<b>262.40</b>	<b>262.40</b>	

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
7.04	3105	(ii) Facing elements of RCC									
		Unit = sqm									
		Taking output = 200 sqm									
		a) Labour									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		Mazdoor skilled	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		b) Machinery									
		i) For Casting Yard									
		Light crane with lifting capacity upto 3 tonne ( For Lifting at casting yard)	hour	2.963	2.963	2.963	728.00	2157.06	2157.06	2157.06	PM63001
		ii) For transportation and placement at site									
		Light crane with lifting capacity upto 3 tonne for loading & unloading	hour	5.926	5.926	5.926	728.00	4314.13	4314.13	4314.13	PM63001
		Trailer 30 tonne capacity for transporting to site	t.km	36x2.5xL	36x2.5xL	36x2.5xL	4.80	432.00	432.00	432.00	L=1km&P M72001
		Light crane with lifting capacity upto 3 tonne ( For erection)	hour	8.000	8.000	8.000	728.00	5824.00	5824.00	5824.00	PM63001
		c) Material									
		Pre-cast RCC M-35 facing elements of size as per design and 18 cm thick for 75 sqm. (Refer Item 12.08 (H))Case-II Basic cost of Labour, Material & Machinery))	cu.m	36.000	36.000	36.000	4219.84 4223.48 4239.35	151914.24	152045.28	152616.60	12.08H Case II
		Formwork @ 4 % on cost of concrete i.e. cost of Material, labour and machinery						6076.57	6081.81	6104.66	
		Non- Woven geotextile behind the fascia element to avoid leaching out of backfill material.	sqm	80.000	80.000	80.000	84.55	6764.00	6764.00	6764.00	M-107
		HYSD steel @ 7 kg / sqm (Refer Item 9.07, Basic Cost of Labour,Material&Machinery )	tonnes	1.400	1.400	1.400	59205.43-L 59245.92-M 59324.27-S	82887.61	82944.28	83053.98	
		Add 2 per cent of cost of fascia pannels, for all necessary temporary form work, scaffolding and provision of loops/lugs for lifting of pannels and joining the reinforcing elements.						3038.28	3040.91	3052.33	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		21289.91	26631.95	32044.17	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		28741.38	29295.14	29907.89	
		Cost for 200 sqm = a+b+c+d+e						316155.18	322246.56	328986.84	

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per sqm = (a+b+c+d+e)/ 200</b>					1580.78	1611.23	1644.93		
		<b>Note</b> 1. The specification and construction details to be adopted shall be as per section 3100 of MoRTH Specification. 2. Drainage arrangement shall be made as per approved design and drawings. 3. The quantity of filler media shall be calculated as per approved design and specifications and shall be priced separately. The rate for same to be adopted from chapter-9. 4. Excavation for foundation including foundation concrete and groove in the foundation for seating of bottom most fascia panel and capping beam to be calculated as per design and priced separately. The rates for excavation and foundation concrete shall be taken from the chapter 3. 5. The earth fill to be retained is not included in this analysis. The same is to be worked out and provided separately complete as per clause 305. 6. For compaction of Earthwork, attention is invited to clause 3106.5 of MoRTH Specification. 7. Length of reinforcing strips will vary with the height of wall and will be as per approved design and drawings. 8. The type of reinforcing elements to be adopted shall be as per approved design and specifications. 9. The market rate for supply of reinforcing elements and their accessories are to be ascertained from reputed firms in the field of earth reinforcement.				say	1580.80	1611.20	1644.90		

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		10. The earth fill material shall be clean, free draining, granular with high friction and low cohesion, non-corrosive, coarse grained with not 10 per cent of particles passing 75 micron sieve, free of any deleterious matter, chlorides, salts, acids, alkalies, mineral oil, fungus and microbes and shall be of specified PH value.									
		11. Capping beam is to be priced separately as per approved design. The rate for cement concrete shall be taken from the chapter of sub-structure in bridge section.									
		12. The cost of reinforced earth retaining wall shall include following:									
		(i) Foundation concrete as per approved design.									
		(ii) Cost of facial pannels and their erection .									
		(iii) Cost of reinforcing elements including their fixing and joining with the facial pannels.									
		(iv) Drainage arrangement including filter media as per approved design and drawings.									
		13. The compacted earth filling to be retained shall form part of embankment.									
		14. Excavation for foundation including back filling paid separately.									
		15. The compacted earth filling to be retained shall form part of embankment /backfilling									
7.05	703	(i) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 15KN/m in the longitudinal and transverse direction ,with 5KN/m and 7KN/m tensile strength at 2 % and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Material</b>									
		Bi-Axial Extruded GeoGrids of Minimum Tensile Strength 15 KN/m in the longitudinal and transverse direction	sqm	300.000	300.000	300.000	89.26	26776.64	26776.64	26776.64	M-286
		Add 10% of the cost of reinforcing elements (synthetic geogrids) for wastage and accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia panels, overlaps and other protective elements for synthetic geogrids and all other activities required to complete the item in all respect including taxes and transportation.									
		<b>c) Overhead charges on (a+b)</b>						2497.06	3121.33	3745.60	
		<b>d) Contractor's profit on (a+b+c)</b>						3371.04	3433.46	3495.89	
		<b>Cost for 300 sqm = a+b+c+d</b>						37081.40	37768.10	38454.79	
		<b>Rate per sqm = (a+b+c+d)/300</b>						123.60	125.89	128.18	
								<b>123.60</b>	<b>125.90</b>	<b>128.20</b>	
7.05	703	(ii) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 20KN/m in the longitudinal and transverse direction ,with 7KN/m and 14KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200		65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		Mazdoor (skilled)	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Bi-Axial Extruded GeoGrids of Minimum Tensile Strength 20 KN/m in the longitudinal and transverse direction	sqm	300.000	300.000	300.000	102.41	30723.00	30723.00	30723.00	M-287

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 10% of the cost of reinforcing elements (synthetic geogrids) for wastage and accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia panels, overlaps and other protective elements for synthetic geogrids and all other activities required to complete the item in all respect including taxes and transportation.									
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2844.34	3555.43	4266.52	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3839.86	3910.97	3982.08	
		<b>Cost for 300 sqm = a+b+c+d</b>						42238.51	43020.70	43802.90	
		<b>Rate per sqm = (a+b+c+d)/300</b>					say	140.80	143.40	146.01	
								<b>140.80</b>	<b>143.40</b>	<b>146.00</b>	
7.05	703	(iii) supplying & laying of bi-axial extruded high modulus polypropylene geogrid conforming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 30KN/m in the longitudinal and transverse direction ,with 10.5KN/m and 21KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200		65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		Mazdoor (skilled)	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Bi-Axial Extruded GeoGrids of Minimum Tensile Strength 30 KN/m in the longitudinal and transverse direction	sqm	300.000	300.000	300.000		50169.00	50169.00	50169.00	M-288
		Add 10% of the cost of reinforcing elements (synthetic geogrids) for wastage and accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia panels, overlaps and other protective elements for synthetic geogrids and all other activities required to complete the item in all respect including taxes and transportation.						5016.90	5016.90	5016.90	

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Overhead charges on (a+b)</b>						4555.59	5694.49	6833.39	
		<b>d) Contractor's profit on (a+b+c)</b>						6150.05	6263.94	6377.83	
		<b>Cost for 300 sqm = a+b+c+d</b>						67650.54	68903.33	70156.12	
		<b>Rate per sqm = (a+b+c+d)/300</b>						225.50	229.68	233.85	
								<b>225.50</b>	<b>229.70</b>	<b>233.90</b>	
7.05	703	(iv) supplying & laying of bi-axial extruded high modulus polypropylene geogrid confirming to MORT&H specification for base/sub-base reinforcement having minimum tensile strength 40KN/m in the longitudinal and transverse direction ,with 14KN/m and 28KN/m tensile strength at 2% and 5% strain respectively in the longitudinal and transverse direction ,junction efficiency not less than 95% and with 38mmx38mm mesh opening.									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200		65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		Mazdoor (skilled)	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Bi-Axial Extruded GeoGrids of Minimum Tensile Strength 40 KN/m in the longitudinal and transverse direction	sqm	300.000	300.000	300.000		73281.00	73281.00	73281.00	M-289
		Add 10% of the cost of reinforcing elements (synthetic geogrids) for wastage and accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia panels, overlaps and other protective elements for synthetic geogrids and all other activities required to complete the item in all respect including taxes and transportation.						7328.10	7328.10	7328.10	
		<b>c) Overhead charges on (a+b)</b>						6589.45	8236.81	9884.17	
		<b>d) Contractor's profit on (a+b+c)</b>						8895.75	9060.49	9225.23	
		<b>Cost for 300 sqm = a+b+c+d</b>						97853.30	99665.40	101477.50	
		<b>Rate per sqm = (a+b+c+d)/300</b>						326.18	332.22	338.26	
								<b>326.20</b>	<b>332.20</b>	<b>338.30</b>	



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
7.06	703	supplying and laying high strength flexible geogrids (HSFG) as soil reinforcement /basal reinforcement as per MORT&H 3100 and IRC 113, made of high tenacity polyester core with polyethylene coating with minimum Long Term Design strength (LTDS) of more than 50% of ultimate tensile strength at 30 degree celcius corresponding to 12 % strain e.t.c.Complete and as directed by Engineer-in-charge.									
		<b>Details of Cost for 300 sqm</b>									
		<b>Unit = sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		(i) Synthetic Geogrid ultimate tensile strength-100kN/m	sqm	300*1.1	300*1.1	300*1.1	200.00	66000.00	66000.00	66000.00	M-200
		(ii) Synthetic Geogrid ultimate tensile strength-150kN/m	sqm	300*1.1	300*1.1	300*1.1	210.00	69300.00	69300.00	69300.00	M-201
		(iii) Synthetic Geogrid ultimate tensile strength-200kN/m	sqm	300*1.1	300*1.1	300*1.1	340.00	112200.00	112200.00	112200.00	M-202
		(iv) Synthetic Geogrid ultimate tensile strength-250kN/m	sqm	300*1.1	300*1.1	300*1.1	350.00	115500.00	115500.00	115500.00	M-203
		(v) Synthetic Geogrid ultimate tensile strength-300kN/m	sqm	300*1.1	300*1.1	300*1.1	360.00	118800.00	118800.00	118800.00	M-204
		(vi) Synthetic Geogrid ultimate tensile strength-350kN/m	sqm	300*1.1	300*1.1	300*1.1	370.00	122100.00	122100.00	122100.00	M-205
		(vii) Synthetic Geogrid ultimate tensile strength-400kN/m	sqm	300*1.1	300*1.1	300*1.1	450.00	148500.00	148500.00	148500.00	M-206
		(viii) Synthetic Geogrid ultimate tensile strength-500kN/m	sqm	300*1.1	300*1.1	300*1.1	500.00	165000.00	165000.00	165000.00	M-207
		(ix) Synthetic Geogrid ultimate tensile strength-600kN/m	sqm	300*1.1	300*1.1	300*1.1	550.00	181500.00	181500.00	181500.00	M-208
		(x) Synthetic Geogrid ultimate tensile strength-800kN/m	sqm	300*1.1	300*1.1	300*1.1	725.00	239250.00	239250.00	239250.00	M-210
		(xi) Synthetic Geogrid ultimate tensile strength-900kN/m	sqm	300*1.1	300*1.1	300*1.1	850.00	280500.00	280500.00	280500.00	M-211
		(xii) Synthetic Geogrid ultimate tensile strength-1000kN/m	sqm	300*1.1	300*1.1	300*1.1	950.00	313500.00	313500.00	313500.00	M-212



**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(xiii) Synthetic Geogrid ultimate tensile strength-1100kN/m	sqm	300*1.1	300*1.1	300*1.1	1000.00	330000.00	330000.00	330000.00	M-213
		(xiv) Synthetic Geogrid ultimate tensile strength-1200kN/m	sqm	300*1.1	300*1.1	300*1.1	1050.00	346500.00	346500.00	346500.00	M-214
		@ Any one of the above alternative may be adopted as per approved design									
		Add 10% of the cost of reinforcing elements (synthetic geogrids) for wastage and accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the fascia panels, overlaps and other protective elements for synthetic geogrids and all other activities required to complete the item in all respect including taxes and transportation.									
		(i) Synthetic Geogrid ultimate tensile strength-100kN/m						6600.00	6600.00	6600.00	
		(ii) Synthetic Geogrid ultimate tensile strength-150kN/m						6930.00	6930.00	6930.00	
		(iii) Synthetic Geogrid ultimate tensile strength-200kN/m						11220.00	11220.00	11220.00	
		(iv) Synthetic Geogrid ultimate tensile strength-250kN/m						11550.00	11550.00	11550.00	
		(v) Synthetic Geogrid ultimate tensile strength-300kN/m						11880.00	11880.00	11880.00	
		(vi) Synthetic Geogrid ultimate tensile strength-350kN/m						12210.00	12210.00	12210.00	
		(vii) Synthetic Geogrid ultimate tensile strength-400kN/m						14850.00	14850.00	14850.00	
		(viii) Synthetic Geogrid ultimate tensile strength-500kN/m						16500.00	16500.00	16500.00	
		(ix) Synthetic Geogrid ultimate tensile strength-600kN/m						18150.00	18150.00	18150.00	
		(x) Synthetic Geogrid ultimate tensile strength-800kN/m						23925.00	23925.00	23925.00	
		(xi) Synthetic Geogrid ultimate tensile strength-900kN/m						28050.00	28050.00	28050.00	
		(xii) Synthetic Geogrid ultimate tensile strength-1000kN/m						31350.00	31350.00	31350.00	
		(xiii) Synthetic Geogrid ultimate tensile strength-1100kN/m						33000.00	33000.00	33000.00	

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(xiv) Synthetic Geogrid ultimate tensile strength-1200kN/m									
	(i)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		34650.00	34650.00	34650.00	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		5948.72	7435.90	8923.08	
		Cost for 300 sqm = a+b+c+d						8030.77	8179.49	8328.21	
		Rate per sqm = (a+b+c+d)/300					say	294.46	299.91	305.37	
								<b>294.50</b>	<b>299.90</b>	<b>305.40</b>	
	(ii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		6239.12	7798.90	9358.68	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		8422.81	8578.79	8734.77	
		Cost for 300 sqm = a+b+c+d						92650.93	94366.69	96082.45	
		Rate per sqm = (a+b+c+d)/300					say	308.84	314.56	320.27	
								<b>308.80</b>	<b>314.60</b>	<b>320.30</b>	
	(iii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		10014.32	12517.90	15021.48	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		13519.33	13769.69	14020.05	
		Cost for 300 sqm = a+b+c+d						148712.65	151466.59	154220.53	
		Rate per sqm = (a+b+c+d)/300					say	495.71	504.89	514.07	
								<b>495.70</b>	<b>504.90</b>	<b>514.10</b>	
	(iv)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		10304.72	12880.90	15457.08	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		13911.37	14168.99	14426.61	
		Cost for 300 sqm = a+b+c+d						153025.09	155858.89	158692.69	
		Rate per sqm = (a+b+c+d)/300					say	510.08	519.53	528.98	
								<b>510.10</b>	<b>519.50</b>	<b>529.00</b>	
	(v)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		10595.12	13243.90	15892.68	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		14303.41	14568.29	14833.17	
		Cost for 300 sqm = a+b+c+d						157337.53	160251.19	163164.85	
		Rate per sqm = (a+b+c+d)/300					say	524.46	534.17	543.88	
								<b>524.50</b>	<b>534.20</b>	<b>543.90</b>	
	(vi)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		10885.52	13606.90	16328.28	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		14695.45	14967.59	15239.73	
		Cost for 300 sqm = a+b+c+d						161649.97	164643.49	167637.01	
		Rate per sqm = (a+b+c+d)/300					say	538.83	548.81	558.79	
								<b>538.80</b>	<b>548.80</b>	<b>558.80</b>	
	(vii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		13208.72	16510.90	19813.08	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		17831.77	18161.99	18492.21	

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 300 sqm = a+b+c+d					196149.49	199781.89	203414.29		
		Rate per sqm = (a+b+c+d)/300				say	653.83	665.94	678.05		
							<b>653.80</b>	<b>665.90</b>	<b>678.00</b>		
	(viii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	14660.72	18325.90	21991.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	19791.97	20158.49	20525.01		
		Cost for 300 sqm = a+b+c+d					217711.69	221743.39	225775.09		
		Rate per sqm = (a+b+c+d)/300				say	725.71	739.14	752.58		
							<b>725.70</b>	<b>739.10</b>	<b>752.60</b>		
	(ix)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	16112.72	20140.90	24169.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	21752.17	22154.99	22557.81		
		Cost for 300 sqm = a+b+c+d					239273.89	243704.89	248135.89		
		Rate per sqm = (a+b+c+d)/300				say	797.58	812.35	827.12		
							<b>797.60</b>	<b>812.30</b>	<b>827.10</b>		
	(x)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	21194.72	26493.40	31792.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	28612.87	29142.74	29672.61		
		Cost for 300 sqm = a+b+c+d					314741.59	320570.14	326398.69		
		Rate per sqm = (a+b+c+d)/300				say	1049.14	1068.57	1088.00		
							<b>1049.10</b>	<b>1068.60</b>	<b>1088.00</b>		
	(xi)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	24824.72	31030.90	37237.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	33513.37	34133.99	34754.61		
		Cost for 300 sqm = a+b+c+d					368647.09	375473.89	382300.69		
		Rate per sqm = (a+b+c+d)/300				say	1228.82	1251.58	1274.34		
							<b>1228.80</b>	<b>1251.60</b>	<b>1274.30</b>		
	(xii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	27728.72	34660.90	41593.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	37433.77	38126.99	38820.21		
		Cost for 300 sqm = a+b+c+d					411771.49	419396.89	427022.29		
		Rate per sqm = (a+b+c+d)/300				say	1372.57	1397.99	1423.41		
							<b>1372.60</b>	<b>1398.00</b>	<b>1423.40</b>		
	(xiii)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	29180.72	36475.90	43771.08		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	39393.97	40123.49	40853.01		
		Cost for 300 sqm = a+b+c+d					433333.69	441358.39	449383.09		
		Rate per sqm = (a+b+c+d)/300					1444.45	1471.19	1497.94		

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
							say	1444.40	1471.20	1497.90	
	(xiv)	c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		30632.72	38290.90	45949.08	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		41354.17	42119.99	42885.81	
		Cost for 300 sqm = a+b+c+d						454895.89	463319.89	471743.89	
		Rate per sqm = (a+b+c+d)/300					say	1516.32	1544.40	1572.48	
7.07	704	Supplying & laying of drainage composite for use behind walls, between two different fills, alongside drains of road, below concrete lining of canal etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as separation or protecting layers. The draining three dimensional core will have a "W" configuration as longitudinal parallel channels. Minimum thickness to be 7.2mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75mm having pores of 150 micron and tensile strength of 8.0kN/m that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 2.1L/(m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 kN/m, with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge									
		<b>Unit= sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200		65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		Mazdoor(skilled)	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Geosynthetic Drainage composite	sqm	300.000	300.000	300.000	473.51	142053.00	142053.00	142053.00	M-290

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 10% of the cost of synthetic composite for wastage and accessories for joining sheets with the fascia panels, overlaps and other protective elements for synthetic composite and other miscellaneous activities required to complete the item in all respect including transportation & taxes.									
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		12641.38	15801.73	18962.08	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		17065.87	17381.90	17697.94	
		<b>Cost for 300 sqm = a+b+c+d</b>						187724.55	191200.93	194677.31	
		<b>Rate per sqm = (a+b+c+d)/300</b>						625.75	637.34	648.92	
								<b>625.70</b>	<b>637.30</b>	<b>648.90</b>	
7.08	704	Supplying & laying of drainage composite for use behind walls, between two different fills, alongside drains of road, below concrete lining of canal etc.having thermobonding a draining core- HDPE geonet comprises of two sets of parallel overlaid ribs integrally connected to have a rhomboidal shape with a polyethylene film and a nonwoven geotextile having mass per unit area 130g/m <sup>2</sup> and tensile strength of 8.0 kn/m that will be working as seperation or protecting layers, geocomposite having in plane flow capacity of 0.7L/(m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 13.5 kN/m, with mass per unit area of 830 gsm, at easily accessible location including top and bottom, with all leads and lifts, manpower and machinery, materials, labour etc. complete and as directed by Engineer-in-charge									
		<b>Unit= sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200		65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		Mazdoor(skilled)	day	2.000	2.000	2.000		776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Geosynthetic Drainage composite	sqm	300.000	300.000	300.000		169113.00	169113.00	169113.00	M-291



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 10% of the cost of synthetic composite for wastage and accessories for joining sheets with the fascia panels, overlaps and other protective elements for synthetic composite and other miscellaneous activities required to complete the item in all respect including transportation & taxes.									
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		15022.66	18778.33	22534.00	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		20280.60	20656.16	21031.73	
		<b>Cost for 300 sqm = a+b+c+d</b>						223086.56	227217.79	231349.03	
		<b>Rate per sqm = (a+b+c+d)/300</b>						743.62	757.39	771.16	
							say	<b>743.60</b>	<b>757.40</b>	<b>771.20</b>	
7.09	suggestive	<b>Reinforced cement concrete crash Barrier with friction slab</b>									
		Provision of an Reinforced cement concrete crash barrier with friction slab at the approaches to bridge structures, Constructed with M-40 grade concrete with HYSD reinforcement conforming to IRC:112 and as per dimensions in the approved drawings and at locations directed by the Engineers, all as specified.(Area-0.185 sqm/meter) below friction slab and (Area-1.032 sqm/meter) crash Barrier with friction slab									
		<b>Unit= Linear meter</b>									
		<b>Taking output= 10 m</b>									
	(i)	<b>a) M 40 grade concrete</b>									
		PCC M 15 grade concrete (Area-0.185 sqm/meter) below friction slab	cum	0.550	0.550	0.550		2357.74	2360.49	2372.48	
		(Rate taken from items 12.08 A Case-II including OH & CP)									
		RCC M 40 grade concrete (Area-1.032 sqm/meter)	cum	10.320	10.320	10.320		74374.18	74434.03	74700.29	
		(Rate taken from items 14.01 E Case-II including OH & CP)									
		<b>b) Labour</b>									
		Mate	day	0.120	0.120	0.120		39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000		918.00	918.00	918.00	L-13
		<b>c) Material</b>									
		Fiber steel (80 kg/cum)	tonne	0.826	0.826	0.826	INPUT	#VALUE!	#VALUE!	#VALUE!	M-225

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>d) Overhead charges on (b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 10 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/10</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>Note</b>									
		i) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) Rate for PCC M 15 may be taken from chapter on 12.									
		iii) Rate for RCC M 40 may be taken from chapter on 14.									
7.10		<b>In-Situ Soil reinforcement for slope restoration and protection work (Soil Nailing)</b>									
		<b>Supply and installation of In-Situ Soil reinforcement (Soil Nailing)</b> With fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of minimum 25 mm diameter, having yield strength > 670N/mm <sup>2</sup> and tensile strength > 800N/mm <sup>2</sup> as per technical specifications and drawings etc. complete including drilling, flushing, grouting, and all Supply and installation of all components listed as per technical specifications and drawings etc. and considering all lead, lift and machinery.									
		<b>Unit = Running meter</b>									
		<b>Taking output = 6 Running Meter</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		skilled Mazdoor	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Semi Skilled Mazdoor	day	2.000	2.000	2.000	318.00	636.00	636.00	636.00	L-14
		Highly Skilled	day	4.000	4.000	4.000	474.00	1896.00	1896.00	1896.00	L-05
		Driller	day	1.000	1.000	1.000	318.00	318.00	318.00	318.00	L-06
		Operator (Grouting)	day	1.000	1.000	1.000	474.00	474.00	474.00	474.00	L-17
		<b>b) Machinery</b>									
		Air Compressor	hour	6.000	6.000	6.000	391.00	2346.00	2346.00	2346.00	PM15001
		Tractor-trolley	hour	3.000	3.000	3.000	629.00	1887.00	1887.00	1887.00	PM12001
		Grouting pump with agitator	hour	6.000	6.000	6.000	525.00	3150.00	3150.00	3150.00	PM60001
		Drilling Machine	hour	6.000	6.000	6.000	11.00	66.00	66.00	66.00	PM45001
		<b>c) Material</b>									

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Fully Threaded Hot Dip galvanized geotechnical bars with casing	LM	6.000	6.000	6.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M296
		Centralizer	No.	3.000	3.000	3.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M297
		Bearing plate 200mmx200mmx10mm	No.	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M298
		Spherical Dome Nut	No.	1.000	1.000	1.000	#VALUE!	#VALUE!	#VALUE!	#VALUE!	M-110
		Cement	tonne	0.300	0.300	0.300	5156.00	1546.80	1546.80	1546.80	M-081
		Admixture	Kg	1.000	1.000	1.000	214.86	214.86	214.86	214.86	M-182
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of repair for 10 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Cost of meter = (a+b+c+d+e)/6</b>					say	#VALUE!	#VALUE!	#VALUE!	
<b>7.11</b>	<b>suggestive</b>	<b>Horizontal Drainage Boring</b>									
		Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm									
		<b>Nominal Diameter of drilling pipe- 90mm</b>									
		<b>Unit = Running Meter</b>									
	(i)	<b>Drilling length below bed level upto 50.0 Meter</b>									
	<b>A</b>	<b>Sandy Soil / Cohesive Soil</b>									
		<b>Taking output = 32 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.030	0.030	0.030	325.00	9.75	9.75	9.75	L-12
		Mazdoor	day	0.400	0.400	0.400	306.00	122.40	122.40	122.40	L-13
		Mazdoor (Skilled)	day	0.352	0.352	0.352	388.00	136.58	136.58	136.58	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12



**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)- 90 mm	meter	32.960	32.960	32.960	70.00	2307.20	2307.20	2307.20	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	11.180	11.180	11.180	84.55	945.27	945.27	945.27	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 32 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/32</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>B</b>									
		<b>Gravelly Soil</b>									
		Taking output = 22 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.022	0.022	0.022	325.00	7.15	7.15	7.15	L-12
		Mazdoor	day	0.300	0.300	0.300	306.00	91.80	91.80	91.80	L-13
		Mazdoor (Skilled)	day	0.242	0.242	0.242	388.00	93.90	93.90	93.90	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Vinyl chloride pipes	meter	22.660	22.660	22.660	70.00	1586.20	1586.20	1586.20	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	7.686	7.686	7.686	84.55	649.85	649.85	649.85	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 22 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/22</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>C Rubble / Cobble Stone</b>									
		Taking output = 16 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.017	0.017	0.017	325.00	5.53	5.53	5.53	L-12
		Mazdoor	day	0.240	0.240	0.240	306.00	73.44	73.44	73.44	L-13
		Mazdoor (Skilled)	day	0.176	0.176	0.176	388.00	68.29	68.29	68.29	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		vinyl chloride pipes	meter	16.480	16.480	16.480	70.00	1153.60	1153.60	1153.60	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.590	5.590	5.590	84.55	472.63	472.63	472.63	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 16 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/16</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>D Soft Rock</b>									
		Taking output = 20 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mazdoor	day	0.280	0.280	0.280	306.00	85.68	85.68	85.68	L-13
		Mazdoor (Skilled)	day	0.220	0.220	0.220	388.00	85.36	85.36	85.36	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		vinyl chloride pipes	meter	20.600	20.600	20.600	70.00	1442.00	1442.00	1442.00	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	6.988	6.988	6.988	84.55	590.84	590.84	590.84	M-107
		<b>d) Overhead charges on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 20 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/20</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>(ii) Drilling length from 50.0 Meter-80 meter</b>									
		<b>A Sandy Soil / Cohesive Soil</b>									
		<b>Taking output = 26.7 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.026	0.026	0.026	325.00	8.45	8.45	8.45	L-12
		Mazdoor	day	0.347	0.347	0.347	306.00	106.18	106.18	106.18	L-13
		Mazdoor (Skilled)	day	0.294	0.294	0.294	388.00	114.07	114.07	114.07	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)	meter	27.501	27.501	27.501	70.00	1925.07	1925.07	1925.07	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	9.328	9.328	9.328	84.55	788.68	788.68	788.68	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 26.7 meter= a+b+c+d+e									
		<b>Rate per meter = (a+b+c+d+e)/26.7</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>B Gravelly Soil</b>									
		Taking output = 18.3 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.019	0.019	0.019	325.00	6.18	6.18	6.18	L-12
		Mazdoor	day	0.263	0.263	0.263	306.00	80.48	80.48	80.48	L-13
		Mazdoor (Skilled)	day	0.201	0.201	0.201	388.00	77.99	77.99	77.99	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Vinyl chloride pipes	meter	18.849	18.849	18.849	70.00	1319.43	1319.43	1319.43	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	6.394	6.394	6.394	84.55	540.61	540.61	540.61	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 18.3 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/18.3</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>C</b>									
		<b>Rubble / Cobble Stone</b>									
		Taking output = 13.3 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.014	0.014	0.014	325.00	4.55	4.55	4.55	L-12
		Mazdoor	day	0.213	0.213	0.213	306.00	65.18	65.18	65.18	L-13
		Mazdoor (Skilled)	day	0.146	0.146	0.146	388.00	56.65	56.65	56.65	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		vinyl chloride pipes	meter	13.699	13.699	13.699	70.00	958.93	958.93	958.93	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.647	4.647	4.647	84.55	392.90	392.90	392.90	M-107
		<b>d) Overhead charges on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 13.3 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		Rate per meter = (a+b+c+d+e)/13.3					say	#VALUE!	#VALUE!	#VALUE!	
		<b>D Soft Rock</b>									
		Taking output = 16.7 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.017	0.017	0.017	325.00	5.53	5.53	5.53	L-12
		Mazdoor	day	0.247	0.247	0.247	306.00	75.58	75.58	75.58	L-13
		Mazdoor (Skilled)	day	0.184	0.184	0.184	388.00	71.39	71.39	71.39	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout.pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		vinyl chloride pipes	meter	17.201	17.201	17.201	70.00	1204.07	1204.07	1204.07	M302
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.835	5.835	5.835	84.55	493.35	493.35	493.35	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 16.7 meter= a+b+c+d+e									
		<b>Rate per meter = (a+b+c+d+e)/16.7</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>Horizontal Drainage Boring(Nomonal Diameter of drilling pipe-110 mm)</b>									
7.12	suggestive	Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm)									
		<b>Nominal Diameter of drilling pipe- 110mm</b>									
		<b>Unit = Running Meter</b>									
	(i)	<b>Drilling length below bed level upto 50.0 Meter</b>									
	A	<b>Sandy Soil / Cohesive Soil</b>									
		<b>Taking output = 24 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.048	0.048	0.048	325.00	15.60	15.60	15.60	L-12
		Mazdoor	day	0.940	0.940	0.940	306.00	287.64	287.64	287.64	L-13
		Mazdoor (Skilled)	day	0.264	0.264	0.264	388.00	102.43	102.43	102.43	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13



**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)- 110 mm	meter	24.720	24.720	24.720	130.00	3213.60	3213.60	3213.60	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	8.385	8.385	8.385	84.55	708.95	708.95	708.95	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 24 meter= a+b+c+d+e									
		<b>Rate per meter = (a+b+c+d+e)/24</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>B</b>									
		<b>Gravelly Soil</b>									
		<b>Taking output = 18 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.043	0.043	0.043	325.00	13.98	13.98	13.98	L-12
		Mazdoor	day	0.880	0.880	0.880	306.00	269.28	269.28	269.28	L-13
		Mazdoor (Skilled)	day	0.198	0.198	0.198	388.00	76.82	76.82	76.82	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		PolyVinyl chloride pipes(PVC)-110 mm	meter	18.540	18.540	18.540	130.00	2410.20	2410.20	2410.20	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	6.289	6.289	6.289	84.55	531.73	531.73	531.73	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 18meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/18</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>C Rubble / Cobble Stone</b>									
		Taking output = 14 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	0.840	0.840	0.840	306.00	257.04	257.04	257.04	L-13
		Mazdoor (Skilled)	day	0.154	0.154	0.154	388.00	59.75	59.75	59.75	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC)-110 mm	meter	14.420	14.420	14.420	130.00	1874.60	1874.60	1874.60	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.891	4.891	4.891	84.55	413.53	413.53	413.53	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 14 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/14</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>D</b>									
		<b>Soft Rock</b>									
		Taking output = 17 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.042	0.042	0.042	325.00	13.65	13.65	13.65	L-12
		Mazdoor	day	0.870	0.870	0.870	306.00	266.22	266.22	266.22	L-13
		Mazdoor (Skilled)	day	0.187	0.187	0.187	388.00	72.56	72.56	72.56	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC)-110 mm	meter	17.510	17.510	17.510	130.00	2276.30	2276.30	2276.30	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.939	5.939	5.939	84.55	502.14	502.14	502.14	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 17 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/17</b>					say	#VALUE!	#VALUE!	#VALUE!	
		(ii) Drilling length from 50.0 Meter-80 meter									
		<b>A Sandy Soil / Cohesive Soil</b>									
		Taking output = 20 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.045	0.045	0.045	325.00	14.63	14.63	14.63	L-12
		Mazdoor	day	0.900	0.900	0.900	306.00	275.40	275.40	275.40	L-13
		Mazdoor (Skilled)	day	0.220	0.220	0.220	388.00	85.36	85.36	85.36	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)- 110 mm	meter	20.600	20.600	20.600	130.00	2678.00	2678.00	2678.00	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	6.988	6.988	6.988	84.55	590.84	590.84	590.84	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 20 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/20</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>B Gravelly Soil</b>									
		Taking output = 15 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.041	0.041	0.041	325.00	13.33	13.33	13.33	L-12
		Mazdoor	day	0.850	0.850	0.850	306.00	260.10	260.10	260.10	L-13
		Mazdoor (Skilled)	day	0.165	0.165	0.165	388.00	64.02	64.02	64.02	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC)- 110 mm	meter	15.450	15.450	15.450	130.00	2008.50	2008.50	2008.50	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.241	5.241	5.241	84.55	443.13	443.13	443.13	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 15 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/15</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>C Rubble / Cobble Stone</b>									
		Taking output = 11.7 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.038	0.038	0.038	325.00	12.35	12.35	12.35	L-12
		Mazdoor	day	0.817	0.817	0.817	306.00	250.00	250.00	250.00	L-13
		Mazdoor (Skilled)	day	0.129	0.129	0.129	388.00	50.05	50.05	50.05	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC)- 110 mm	meter	12.051	12.051	12.051	130.00	1566.63	1566.63	1566.63	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.088	4.088	4.088	84.55	345.64	345.64	345.64	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 11.7 meter= a+b+c+d+e									
		<b>Rate per meter = (a+b+c+d+e)/11.7</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>D Soft Rock</b>									
		Taking output = 14.2 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	0.842	0.842	0.842	306.00	257.65	257.65	257.65	L-13
		Mazdoor (Skilled)	day	0.156	0.156	0.156	388.00	60.53	60.53	60.53	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe(PVC)- 110 mm	meter	14.626	14.626	14.626	130.00	1901.38	1901.38	1901.38	M303
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.961	4.961	4.961	84.55	419.45	419.45	419.45	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 14.2 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/14.2</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>Horizontal Drainage Boring (Nominal Diameter of drilling pipe-135 mm)</b>									
7.13 suggestive		Horizontal Drainage Boring methods on the types of sandy soil / cohesive soil and drilling length including cost of all materials, machinery, labour and all other ancillary operations etc..(Nominal Diameter of drilling pipe- 90mm)									
		<b>Nominal Diameter of drilling pipe- 135mm</b>									
		<b>Unit = Running Meter</b>									
	(i)	<b>Drilling length below bed level upto 50.0 Meter</b>									
	A	<b>Sandy Soil / Cohesive Soil</b>									
		<b>Taking output = 20 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15



**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For installation of pipe material</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mazdoor	day	0.270	0.270	0.270	306.00	82.62	82.62	82.62	L-13
		Mazdoor (Skilled)	day	0.220	0.220	0.220	388.00	85.36	85.36	85.36	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)- 135 mm	meter	20.600	20.600	20.600	130.00	2678.00	2678.00	2678.00	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	6.988	6.988	6.988	84.55	590.84	590.84	590.84	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 20 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/20</b>						#VALUE!	#VALUE!	#VALUE!	
							say	#VALUE!	#VALUE!	#VALUE!	
		<b>B Gravelly Soil</b>									
		Taking output = 15 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.015	0.015	0.015	325.00	4.88	4.88	4.88	L-12
		Mazdoor	day	0.220	0.220	0.220	306.00	67.32	67.32	67.32	L-13
		Mazdoor (Skilled)	day	0.165	0.165	0.165	388.00	64.02	64.02	64.02	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe(PVC) -135 mm	meter	15.450	15.450	15.450	130.00	2008.50	2008.50	2008.50	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.241	5.241	5.241	84.55	443.13	443.13	443.13	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 15 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/15</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>C Rubble / Cobble Stone</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>Taking output = 13 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.014	0.014	0.014	325.00	4.55	4.55	4.55	L-12

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	0.200	0.200	0.200	306.00	61.20	61.20	61.20	L-13
		Mazdoor (Skilled)	day	0.143	0.143	0.143	388.00	55.48	55.48	55.48	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		<b>c) Materials</b>									
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		Polyvinyl chloride pipe(PVC) -135 mm	meter	13.390	13.390	13.390	130.00	1740.70	1740.70	1740.70	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.542	4.542	4.542	84.55	384.03	384.03	384.03	M-107
		<b>d) Overhead charges on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 13 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/13</b>					<b>say</b>	#VALUE!	#VALUE!	#VALUE!	
		<b>D</b>									
		<b>Soft Rock</b>									
		<b>Taking output = 15 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.015	0.015	0.015	325.00	4.88	4.88	4.88	L-12
		Mazdoor	day	0.220	0.220	0.220	306.00	67.32	67.32	67.32	L-13



**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor (Skilled)	day	0.165	0.165	0.165	388.00	64.02	64.02	64.02	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.176	0.176	0.176	325.00	57.20	57.20	57.20	L-12
		Mazdoor	day	2.600	2.600	2.600	306.00	795.60	795.60	795.60	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC) -135 mm	meter	15.450	15.450	15.450	130.00	2008.50	2008.50	2008.50	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.241	5.241	5.241	84.55	443.13	443.13	443.13	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 15 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/15</b>					say	#VALUE!	#VALUE!	#VALUE!	
		(ii) <b>Drilling length from 50.0 Meter-80 meter</b>									
		<b>A Sandy Soil / Cohesive Soil</b>									
		<b>Taking output = 16.7 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.017	0.017	0.017	325.00	5.53	5.53	5.53	L-12
		Mazdoor	day	0.230	0.230	0.230	306.00	70.38	70.38	70.38	L-13

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor (Skilled)	day	0.184	0.184	0.184	388.00	71.39	71.39	71.39	L-15
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.184	0.184	0.184	325.00	59.80	59.80	59.80	L-12
		Mazdoor	day	2.800	2.800	2.800	306.00	856.80	856.80	856.80	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		polyvinyl chloride pipe (PVC)- 135 mm	meter	17.201	17.201	17.201	130.00	2236.13	2236.13	2236.13	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	5.835	5.835	5.835	84.55	493.35	493.35	493.35	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 16.7 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/16.7</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>B</b>									
		<b>Gravelly Soil</b>									
		<b>Taking output = 12.5 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.013	0.013	0.013	325.00	4.23	4.23	4.23	L-12
		Mazdoor	day	0.188	0.188	0.188	306.00	57.53	57.53	57.53	L-13
		Mazdoor (Skilled)	day	0.138	0.138	0.138	388.00	53.54	53.54	53.54	L-15

**Analysis of Rate**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.184	0.184	0.184	325.00	59.80	59.80	59.80	L-12
		Mazdoor	day	2.800	2.800	2.800	306.00	856.80	856.80	856.80	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC)- 135 mm	meter	12.875	12.875	12.875	130.00	1673.75	1673.75	1673.75	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.367	4.367	4.367	84.55	369.23	369.23	369.23	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 12.5 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/12.5</b>						#VALUE!	#VALUE!	#VALUE!	
							say	#VALUE!	#VALUE!	#VALUE!	
		<b>C Rubble / Cobble Soil</b>									
		Taking output = 10.8 meter									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.012	0.012	0.012	325.00	3.90	3.90	3.90	L-12
		Mazdoor	day	0.171	0.171	0.171	306.00	52.33	52.33	52.33	L-13
		Mazdoor (Skilled)	day	0.119	0.119	0.119	388.00	46.17	46.17	46.17	L-15

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For both installation and removal of machinery and equipment of boring work</b>									
		Mate	day	0.184	0.184	0.184	325.00	59.80	59.80	59.80	L-12
		Mazdoor	day	2.800	2.800	2.800	306.00	856.80	856.80	856.80	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		<b>For installation and removal of temporary stage in flat terrain</b>									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe(PVC)- 135 mm	meter	11.124	11.124	11.124	130.00	1446.12	1446.12	1446.12	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	3.773	3.773	3.773	84.55	319.01	319.01	319.01	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 10.8 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/10.8</b>					say	#VALUE!	#VALUE!	#VALUE!	
		<b>D Soft Rock</b>									
		<b>Taking output = 12.5 meter</b>									
		<b>a) Labour</b>									
		<b>For boring work</b>									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>For installation of pipe material</b>									
		Mate	day	0.013	0.013	0.013	325.00	4.23	4.23	4.23	L-12
		Mazdoor	day	0.188	0.188	0.188	306.00	57.53	57.53	57.53	L-13
		Mazdoor (Skilled)	day	0.138	0.138	0.138	388.00	53.54	53.54	53.54	L-15

**Analysis of Rate**  
**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		For both installation and removal of machinery and equipment of boring work									
		Mate	day	0.184	0.184	0.184	325.00	59.80	59.80	59.80	L-12
		Mazdoor	day	2.800	2.800	2.800	306.00	856.80	856.80	856.80	L-13
		Mazdoor (Skilled)	day	1.800	1.800	1.800	388.00	698.40	698.40	698.40	L-15
		For installation and removal of temporary stage in flat terrain									
		Mate	day	0.364	0.364	0.364	325.00	118.30	118.30	118.30	L-12
		Mazdoor	day	5.700	5.700	5.700	306.00	1744.20	1744.20	1744.20	L-13
		Mazdoor (Skilled)	day	3.400	3.400	3.400	388.00	1319.20	1319.20	1319.20	L-15
		<b>b) Machinery</b>									
		Boring machine	hour	8.000	8.000	8.000	195.00	1560.00	1560.00	1560.00	PM61001
		Grout pump	hour	8.000	8.000	8.000	525.00	4200.00	4200.00	4200.00	PM60001
		Crawler Crane-5 tonne (for installation and removal of machinery and equipment)	hour	5.600	5.600	5.600	765.00	4284.00	4284.00	4284.00	PM63002
		Crawler Crane-5 tonne (for temporary stage)	hour	3.600	3.600	3.600	765.00	2754.00	2754.00	2754.00	PM63002
		<b>c) Materials</b>									
		Polyvinyl chloride pipe (PVC) - 135 mm	meter	12.875	12.875	12.875	130.00	1673.75	1673.75	1673.75	M304
		Core tube(drilling bit)	Nos.	0.416	0.416	0.416	INPUT	#VALUE!	#VALUE!	#VALUE!	M-223
		Core tube(drilling pipe)	Nos.	0.224	0.224	0.224	INPUT	#VALUE!	#VALUE!	#VALUE!	M-221
		Core tube (Inner rod)	Nos.	0.288	0.288	0.288	INPUT	#VALUE!	#VALUE!	#VALUE!	M-219
		Geotextile for Wrapping the pipe including 5% wastage	sqm	4.367	4.367	4.367	84.55	369.23	369.23	369.23	M-107
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost of for 12.5 meter= a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per meter = (a+b+c+d+e)/12.5</b>					say	#VALUE!	#VALUE!	#VALUE!	
7.14	710.1.4 of IRC78& 2200	Selected fill behind Reinforced Earth Wall Complete as per drawing and Technical specification									
		<b>A Granular Material</b>									
		Unit = cum									
		Taking output = 250 cum									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor skilled	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Mazdoor	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>b) Machinery</b>									



**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Motor Grader</b>									
		(i) Motor grader 4.30 metre blade	hour	1.210			5450.00	6594.50			PM2001
		(ii) Motor grader 3.70 metre blade	hour		1.459		4985.00		7273.12		PM2002
		(iii) Motor grader 3.35 metre blade	hour			1.627	4403.00			7163.68	PM2003
		<b>Vibratory roller</b>	hour	1.214	1.214	1.214	1988.00	2413.43	2413.43	2413.43	PM7001
		water tanker ( speed @ water tanker speed km/hr and return speed @ 20 km/hr and spreading speed @ 3.0 km/hr )									
		(i) 16 KL capacity	hour	0.292xL1+0.467			1121.00	850.84			L=1km&P M11001
		(ii) 12 KL capacity	hour		0.389xL1+0.622		947.00		957.42		L=1km&P M11002
		(iii) 6 KL capacity	hour			0.778xL1+1.244	707.00			1429.55	L=1km&P M11003
		<b>c) Material</b>									
		cost of water	KL	42.000	42.000	42.000	56.20	2360.40	2360.40	2360.40	M-191
		Granular material	cum	300.000	300.000	300.000	165.30	49590.00	49590.00	49590.00	M-009
		<b>d) Overhead charges on (a+b+c)</b>						5002.33	6331.44	7641.25	
		<b>e) Contractor's profit on (a+b+c+d)</b>									
		Cost for 250 cum of granular backfill= a+b+c+d+e						74284.66	76610.38	78450.15	
		<b>Rate per cum = (a+b+c+d+e)/250</b>						297.14	306.44	313.80	
7.14		<b>B Sandy Material</b>					<b>say</b>	<b>297.10</b>	<b>306.40</b>	<b>313.80</b>	
		<b>Unit = cum</b>									
		<b>Taking output = 450 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		<b>Motor Grader for grading</b>									
		(i) Motor grader 4.30 metre blade	hour	2.177			5450.00	11864.65			PM2001
		(ii) Motor grader 3.70 metre blade	hour		2.626		4985.00		13090.61		PM2002
		(iii) Motor grader 3.35 metre blade	hour			2.929	4403.00			12896.39	PM2003
		water tanker ( speed @ water tanker speed km/hr and return speed @ 20 km/hr and spreading speed @ 2.5 km/hr )									
		(i) 16 KL capacity	hour	0.25xL1+0.864			1121.00	1248.79			L=1km& PM11001
		(ii) 12 KL capacity	hour		0.333xL1+1.152		947.00		1406.30		L=1km& PM11002

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 6 KL capacity	hour			0.667xL1+2 .304	707.00			2100.50	L-1=1km& PM11003
		Vibratory roller	hour	2.184		2.184	1988.00	4341.79		4341.79	PM7001
		<b>c) Material</b>									
		cost of water	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
		Sand at site	cum	450.000	450.000	450.000	143.32	64494.00	64494.00	64494.00	M-006
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		6768.83	8599.39	10379.27	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		9137.93	9459.33	9687.31	
		Cost for 450cum= a+b+c+d+e						100517.20	104052.62	106560.46	
		<b>Rate per cum = (a+b+c+d+e)/450</b>					say	223.37	231.23	236.80	
7.15	710.1.4 of IRC:78 and 250 4.2	Providing and laying of filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRT&H 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.									
		<b>Unit = cum</b>									
		<b>Taking output = 10 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor for filling, watering, ramming etc.	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		Mazdoor (skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>b) Material</b>									
		Filter media of stone aggregate conforming to clause 2504.2.2. of MoRT&H specifications.	cum	12.000	12.000	12.000	678.14	8137.68	8137.68	8137.68	M-011
		<b>c) Machinery</b>									
		Water Tanker of 6 KL capacity	hour	0.060	0.060	0.060	707.00	42.42	42.42	42.42	PM11003
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		865.13	1081.41	1297.69	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1167.92	1189.55	1211.18	
		Cost for 10 cum of filter Media = a+b+c+d+e						12847.15	13085.06	13322.97	
		<b>Rate per cum = (a+b+c+d+e)/10</b>					say	1284.70	1308.50	1332.30	
7.16	704	Supplying & laying of drainage composite for use behind walls with Geosynthetic Drainage composite.									

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
7.16	A	Supplying & laying of drainage composite for use behind walls,between two different fills, alongside drains of road, below concrete lining of canal etc. Geocomposite for planar drainage, realized by thermobonding a draining core in extruded monofilaments with two filtering nonwoven geotextiles that may also be working as separation or protecting layers.The draining three dimensional core will have a "W" configuration as longitudinal parallel chanel. Minimum thickness to be 7.2 mm, with two filtering UV stabilized polypropylene nonwoven geotextile of minimum thickness of 0.75 mm having pores of 150 micron and tensile strength of 8.0 KN/M that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 2.1 L /m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 18 KN/M, with mass per unit area of 740 gsm, supplied in the form of roll for easy transportation to site of work as per detailed specification all complete as per directions of Engineer in charge.									
		<b>Unit= sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Geosynthetic Drainage Composite	sqm	300.000	300.000	300.000	473.51	142053.00	142053.00	142053.00	M-290
		Add 10 percent of thesynthetic composite for wastage and accessories for joining sheets with the fascia panels overlaps and other protective elements for synthetic composites and other miscellaneous activities required to complete the items in all respect including transportation & takes.									
		<b>c) Overhead Charges on (a+b)</b>									
		<b>d) Contractor's profit on (a+b+c)</b>									
		<b>Cost for 300 sqm = a+b+c+d</b>									
		<b>Rate per sqm = (a+b+c+d)/300</b>									
								12641.38	15801.73	18962.08	
								17065.87	17381.90	17697.94	
								187724.55	191200.93	194677.31	
								625.75	637.34	648.92	

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
7.16	B	Supplying & laying of drainage composite for use behind walls, between two different fills, alongside drains of road, below concrete lining of canal etc. having thermobonding a draining core - HDPE geonet comprises of two sets of parallel overlaid ribs integrally connected to have a rhomboidal shape with a polyethylene film and a nonwoven geotextiles having mass per unit area 130 g/m <sup>2</sup> and tensile strength of 8.0 KN/M that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 0.7 L / (m.s) at hydraulic gradient of 1.0 & 20 kpa pressure and tensile strength of 13.5 KN/M, with mass per unit area of 830 gsm, at easily accessible location including top and bottom, with all leads and lifts, manpower and machinery, materials, labour etc. complete and as directed by Engineer in				say	625.70	637.30	648.90		
		<b>Unit= sqm</b>									
		<b>Taking output = 300 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor (Skilled)	day	2.000	2.000	2.000	388.00	776.00	776.00	776.00	L-15
		<b>b) Material</b>									
		Geosynthetic Drainage Composite	sqm	300.000	300.000	300.000	563.71	169113.00	169113.00	169113.00	M-291
		Add 10 percent of the cost of synthetic composites for wastage and accessories for joining sheets with the fascia panels, overlaps and other protective elements for synthetic composites and other miscellaneous activities required to complete the item in all respect including transportation and takes.						16911.30	16911.30	16911.30	
		<b>c) Overhead Charges on (a+b)</b>						(@ 8%)	(@ 10%)	(@ 12%)	
		<b>d) Contractor's profit on (a+b+c)</b>						(@ 10%)	(@ 10%)	(@ 10%)	
		<b>Cost for 300 sqm = a+b+c+d</b>						15022.66	18778.33	22534.00	
		<b>Rate per sqm = (a+b+c+d)/300</b>						20280.60	20656.16	21031.73	
								223086.56	227217.79	231349.03	
								743.62	757.39	771.16	
							say	<b>743.60</b>	<b>757.40</b>	<b>771.20</b>	
7.17	705	<b>Geocell for Slope protection</b>									

**Analysis of Rate**

**GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.	
				Large	Medium	Small		Large	Medium	Small		
		Furnishing and installing of the Geocell for slope protection including fixing and anchoring of cells in the ground, preparation of ground, filling of cells with specified materials, seeding, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.										
		<b>Unit = sqm</b>										
		<b>Taking output = 100 sqm</b>										
		<b>a) Labour</b>										
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12	
		Mazdoor for preparation of ground and laying of the Geocell	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13	
		Skilled Mazdoor	day	0.500	0.500	0.500	388.00	194.00	194.00	194.00	L-15	
		<b>b) Material</b>										
		Geocell	sqm	100.000	100.000	100.000	89.26	8926.00	8926.00	8926.00	M307	
		Add 10 percent of the cost of Geocell for wastage, overlaps and accessories for anchoring with the ground, other protective elements for Geocell and other miscellaneous activities required to complete the item in all respect including transportation & takes.						892.60	892.60	892.60		
		<b>c) Overhead Charges on (a+b)</b>							827.05	1033.81	1240.57	
		<b>d) Contractor's profit on (a+b+c)</b>							1116.51	1137.19	1157.87	
		<b>Cost for 100 sqm = a+b+c+d</b>							12281.66	12509.10	12736.54	
		<b>Rate per sqm = (a+b+c+d)/100</b>							122.82	125.09	127.37	
		<b>Note</b>							<b>say</b>	<b>122.80</b>	<b>125.10</b>	<b>127.40</b>
		Soil filling/spreading, turfing/seeding paid separately, refer chapter-03 for details.										
		<b>Geosynthetics mat on the slope</b>										
7.18	706	Furnishing and installing of the Geosynthetics mat for control of erosion of slopes including supplying and laying the mat, spreading soil and seeding to promote the design of vegetation, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.										
		<b>Unit = sqm</b>										
		<b>Taking output = 100 sqm</b>										
		<b>a) Labour</b>										

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mazdoor for preparation of ground and laying of the Geocell	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Skilled Mazdoor	day	0.500	0.500	0.500	388.00	194.00	194.00	194.00	L-15
		<b>b) Material</b>									
		Geosynthetics mat	sqm	100.000	100.000	100.000	45.00	4500.00	4500.00	4500.00	M308
		Add 10 percent of the cost of Geosynthetics mat for wastage, overlaps and accessories for anchoring with the ground, other protective elements for Geosynthetics mat and other miscellaneous activities required to complete the item in all respect including transportation & takes.						450.00	450.00	450.00	
		<b>c) Overhead Charges on (a+b)</b>						437.56	546.95	656.34	
		<b>d) Contractor's profit on (a+b+c)</b>						590.71	601.65	612.58	
		<b>Cost for 100 sqm = a+b+c+d</b>						6497.77	6618.10	6738.42	
		<b>Rate per sqm = (a+b+c+d)/100</b>						64.98	66.18	67.38	
		<b>Note</b>						<b>say</b>	<b>66.20</b>	<b>67.40</b>	
		Soil filling/spreading, turfing/seeding paid separately, refer chapter-03 for details.									
7.19	707	<b>Natural Geotextile on the slope</b>									
		Furnishing and installing of the natural Geotextile for control of erosion of slopes including supplying and laying the natural Geotextile, spreading soil and seeding to promote the design of vegetation, watering and all other incidentals including all other items to complete the work as per these specifications drawing or as directed by the Engineer.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mazdoor for preparation of ground and laying of the natural Geotextile	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Skilled Mazdoor	day	0.500	0.500	0.500	388.00	194.00	194.00	194.00	L-15
		<b>b) Material</b>									
		Natural Geotextile	sqm	100.000	100.000	100.000	84.55	8455.00	8455.00	8455.00	M309

**Analysis of Rate  
GEOSYNTHETICS AND REINFORCED EARTH**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Cost (₹)			Remarks/ Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 10 percent of the cost of natural Geotextile for wastage, overlaps and accessories for anchoring with the ground, other protective elements for natural Geotextile and other miscellaneous activities required to complete the item in all respect including transportation & takes.					845.50	845.50	845.50		
		c) Overhead Charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)	785.60	982.00	1178.40		
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)	1060.56	1080.20	1099.84		
		Cost for 100 sqm = a+b+c+d					11666.16	11882.20	12098.24		
		Rate per sqm = (a+b+c+d)/100					116.66	118.82	120.98		
		Note Soil filling/spreading, turfing/seeding paid separately, refer chapter-03 for details.					say	116.70	118.80	121.00	

**CHAPTER - 8**  
**TRAFFIC SIGNS, MARKINGS**  
**AND**  
**OTHER ROAD APPURATENANCES**





## CHAPTER-8

### TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES

#### PREAMBLES :

- 1 Rate analysis for fencing has been done for two different heights, i.e., 1.20 m and 1.80 m. Any of these two can be adopted depending upon a particular situation and design.
- 2 Rate analysis for fencing provides for three types as under :
  - a) Barbed wire fencing
  - b) Welded steel wire fabric with mesh size of 75×25 mm
  - c) Welded steel wire fabric with mesh size of 75×50 mm
- 3 Kerb stone laying and road marking has been provided for laying by mechanical means.
- 4 Back filling of foundation of boundary pillars has been proposed with stone spalls, tightly packed and compacted.
- 5 The item pertaining to road traffic signals has not been analyzed as this is a specialized work and rates can be obtained from firms having specialization for design and installation of this work.
- 6 For metal beam crash barrier, a 'w' shaped beam of size 311×83 mm flange width made with structural steel corrugated plate 3 mm thick and having a length of 4.5 m has been provided, over a channel post of 150×75×5 mm with a spacer of channel section 150×75×5 mm, 330 mm long.
- 7 Printing of letters and signs on item Nos. 18 to 21 is required to be measured and paid separately. A separate rate analysis for lettering has been prepared and included in this chapter for this purpose.
- 8 Two supports have been provided for direction and place identification signs where size is more than 0.9 sqm. Only one is provided for size upto 0.9 sqm.
- 9 The Traffic signs proposed are of retro-reflectorized type made of encapsulated lens type reflective sheeting fixed over aluminum sheeting as per Clause 801.3 and installation.
- 10 The size, location of traffic signs shall be as per IRC : 67.
- 11 The analyses for rigid, semi-rigid and flexible crash barriers have been included.
- 12 Provision has been made for a crane for installation of overhead signs.
- 13 Separate rate analysis has been made for Tubular steel railing with RCC posts and MS steel posts.
- 14 The organization and financial aspects are required to be finalized in consultation with administrative and traffic authorities.



- 15 The rate for the message display board for gantry mounted variable message sign is required to be ascertained from the market, this being a commercially produced item by specialized firms.
- 16 The rate analyses for traffic impact attenuators at abutments and piers have been included.
- 17 In the case of road signs and direction boards the depth of foundation and quantity of cement concrete provided in the rate analysis are indicative. These may be suitably increased in areas of higher wind velocities
- 18 **Ducts for Utility Services Along and Across the Expressway/Highway :**  
The running meter cost of duct along the road including inspection chambers (where applicable) or across the road depend upon the approved design. The various items involved are earthen work, plain cement concrete, brick stone masonry, reinforcement cement concrete, form work, steel reinforcement, laying of pipe line (where duct is of pipe) and cast iron/RCC cover for the inspection chamber. The rate for these items are available under  
respective clauses which can be applied and running meter cost of duct worked out as per the approved design and drawing for particular situations. In case cast iron cover for the inspection chamber, the rate can be ascertained from the market for the size provided in the design and approved drawings.
- 19 **Noise Barriers :**  
Noise barrier can be provided in the form of a brick wall of a suitable height as per the site requirement and approved design. The items involved for the construction of this barrier like earthwork, brick masonry, plain cement concrete, etc. are available in the Data Book, which can be applied to arrive at the cost of noise barrier based on the design adopted.  
Alternatively, wherever space permits, cluster of trees, shrubs and plants can be grown by the road side 6 m away from the edge of the roadway. This will intercept the annoying sound waves and fumes from road vehicles.
- 20 Items and rate analysis for ATMS, HTMS and solar Road Studs has been included.



**Summary of Rate Analysis**  
**CHAPTER - 8**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
<b>8.01</b>	<b>Cast-in-Situ Cement Concrete M20 Kerb</b> (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-15 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 409)				
(i)	PCC M15 for Kerb Base	RM	135.80	138.20	140.70
(ii)	PCC M20 for Kerb cast in situ	RM	169.20	172.20	175.40
<b>8.02</b>	<b>Cast in Situ Cement Concrete M 20 Kerb with Channel</b> (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M15 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCCM20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409)				
(i)	PCC M15 for Kerb Base	RM	137.30	139.80	142.30
(ii)	PCC M20 for Kerb Cast in situ	RM	236.30	240.60	245.00
<b>8.03</b>	<b>Printing New Letter and Figures of any Shade</b> (Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade)				
(i)	<b>Hindi</b> ( Matras commas and the like not to be measured and paid for Half letter shall be counted as half )	per cm height per letter	1.00	1.00	1.00
(ii)	<b>English and Roman</b> (Hyphens and the like not to be measured and paid for)	per cm height per letter	0.60	0.60	0.60
<b>8.04</b>	<b>Retro-Reflectorised Traffic Signs</b>				
<b>A</b>	Providing and fixing of retro- reflectorised cautionary, mandatory and inforatory sign as per IRC :67 made of class-B Type IV retro reflective sheeting fixed cover 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick aluminium composite material sheet depending on the size of the sign fixed over back support frame of min 25 x 25 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.				
(i)	<b>120 cm equilateral triangle</b>	Each	9101.40	9270.50	9441.70
(ii)	<b>90 cm equilateral triangle</b>	Each	6171.20	6286.00	6402.90
(iii)	<b>75 cm equilateral triangle</b>	Each	5022.70	5116.30	5211.90
(iv)	<b>60 cm equilateral triangle</b>	Each	4078.20	4154.30	4232.40
(v)	<b>120 cm circular</b>	Each	14543.30	14813.20	15085.10
(vi)	<b>90 cm circular</b>	Each	9230.20	9401.70	9575.30
(vii)	<b>75 cm circular</b>	Each	7147.90	7280.90	7415.80



Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
(viii)	60 cm circular	Each	5441.30	5542.70	5646.00
(ix)	90 cm x 75 cm rectangular	Each	9648.80	9828.10	10009.40
(x)	80 cm x 60 cm rectangular	Each	7555.80	7696.30	7838.80
(xi)	60 cm x 50 cm rectangular	Each	5623.80	5728.50	5835.20
(xii)	60 cm x 45 cm rectangular	Each	5301.80	5400.50	5501.30
(xiii)	60 cm x 60 cm square	Each	6267.80	6384.40	6503.10
(xiv)	120 cm high octagon	Each	15208.80	15491.00	15775.20
(xv)	90 cm high octagon	Each	9605.90	9784.40	9964.80
(xvi)	75 cm high octagon	Each	7190.90	7324.60	7460.40
<b>B</b>	Providing and fixing of retro- reflectorised cautionary, mandatory and inforatory sign as per IRC :67 made of class-C Type XI retro reflective sheeting fixed over 2mm thick aluminium sheeting vide clause 801.3, 3/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over back support frame of min 25 x 25 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.				
(i)	120 cm equilateral triangle	Each	9101.40	9270.50	9441.70
(ii)	90 cm equilateral triangle	Each	6171.20	6286.00	6402.90
(iii)	75 cm equilateral triangle	Each	5022.70	5116.30	5211.90
(iv)	60 cm equilateral triangle	Each	4078.20	4154.30	4232.40
(v)	120 cm circular	Each	14543.30	14813.20	15085.10
(vi)	90 cm circular	Each	9230.20	9401.70	9575.30
(vii)	75 cm circular	Each	7147.90	7280.90	7415.80
(viii)	60 cm circular	Each	5441.30	5542.70	5646.00
(ix)	90 cm x 75 cm rectangular	Each	9648.80	9828.10	10009.40
(x)	80 cm x 60 cm rectangular	Each	7555.80	7696.30	7838.80
(xi)	60 cm x 50 cm rectangular	Each	5623.80	5728.50	5835.20
(xii)	60 cm x 45 cm rectangular	Each	5301.80	5400.50	5501.30
(xiii)	60 cm x 60 cm square	Each	6267.80	6384.40	6503.10
(xiv)	120 cm high octagon	Each	15208.80	15491.00	15775.20
(xv)	90 cm high octagon	Each	9605.90	9784.40	9964.80
(xvi)	75 cm high octagon	Each	7190.90	7324.60	7460.40
<b>8.05</b>	<b>Direction and Place Identification Signs upto 0.9 sqm Size Board.</b> (Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick or Aluminium composite material sheet with overall thickness of 4 mm with area not exceeding 0.9 sqm fixed over back support frame of min 35 x 35 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)	Each	13812.90	14069.30	14328.00



**Summary of Rate Analysis**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.06	<b>Direction and Place Identification Signs with size more than 0.9 sqm size Board.</b> (Providing and erecting direction and place identification retro- reflectorised sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick or Aluminium composite material sheet with overall thickness of 4 mm with area exceeding 0.9 sqm fixed over back support frame of min 40 x 40 x 5 mm Angle mounted on two nos. of mild steel circular pipe 65 NB, 3.2mm thickness and 4.5m meter total height firmly fixed to the ground by means of properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)	Each	14471.90	14740.70	15012.10
8.07	<b>Overhead Signs</b> (Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans & as per IRC: 67)				
A	Truss and Vertical Support	tonne	86000.40	87593.00	89185.60
B	Aluminium Alloy Plate for Over Head Sign	sqm	11403.80	11614.90	11826.10
8.08	<b>Painting Two Coats on New Concrete Surfaces</b> (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	sqm	81.60	83.10	84.70
8.09	<b>Painting on Steel Surfaces</b> (Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade)	sqm	71.50	72.80	74.10
8.10	<b>Painting on Wood Surfaces</b> (Providing and applying two coats of ready mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade)	sqm	79.70	81.20	82.70
8.11	<b>Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work</b> (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)	Over 10 cm in width	sqm	128.50	130.90	133.30
(ii)	Up to 10 cm in width	sqm	111.30	113.40	115.40



Summary of Rate Analysis

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.12	<b>Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work</b> (Painting lines, dashes, arrows etc on roads in two coats on old 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)	Over 10 cm in width	sqm	88.10	89.80	91.40
(ii)	Up to 10 cm in width	sqm	94.30	96.10	97.80
8.13	<b>Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface</b> (Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.)	sqm	638.60	650.40	662.30
8.14	<b>Kilometre Stone</b> (Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc)				
(i)	5th kilometre stone (precast)	Nos	3379.80	3441.10	3509.40
(ii)	Ordinary kilometer stone (precast)	Nos	1938.00	1973.90	2014.60
(iii)	Hectometer stone (precast)	Nos	600.00	611.30	623.60
8.15	<b>Road Delineators</b> (Supplying and installation of delineators (Road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79 and the drawings.)	Each	1161.40	1182.90	1204.40
8.16	<b>Boundary pillar</b> (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting)	Each	499.10	508.00	517.50
8.17	<b>G.I Barbed Wire Fencing 1.2 Metre High</b> (Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 817 )	RM	313.90	319.70	325.50



**Summary of Rate Analysis**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.18	<b>G.I Barbed Wire Fencing 1.8 Metre High</b> (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 808)	RM	518.20	527.80	537.40
8.19 Suggestive	<b>Fencing With Welded Steel Wire Fabric 75 mm x 50 mm</b> (Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be strutted, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects.)	Rm	683.00	695.60	708.20
8.20	<b>Tubular Steel Railing on Medium Weight Steel Channel ( ISMC series) 100 mm x 50 mm</b> (Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings)	RM	1920.60	1956.50	1993.40
8.21	<b>Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level</b> (Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts 1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing)	RM	3314.90	3378.90	3451.80
8.22	<b>Reinforced Cement Concrete Crash Barrier</b>				
A	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with HYSD reinforcement conforming to MoRT&H specification and as per details given IRC-5 (Fig.-5, b) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer, all as specified. (Area- 0.243 sqm./meter, single face)				
	(i) M 25 grade concrete	Linear metre	1965.90	2004.00	2046.50
	(ii) M 30 grade concrete	Linear metre	1965.90	2004.00	2046.50





**Summary of Rate Analysis**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
<b>B</b>	Provision of an Reinforced cement concrete New Jersey crash barrier at the medians constructed with Reinforced cement concrete with HYSD reinforcement conforming to MoRT&H specification and as per details given IRC-119 (Fig.-26) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer, all as specified. (Area- 0.261 sqm./meter, Double Face)				
	(i) M 25 grade concrete	Linear metre	2357.60	2372.40	2387.60
	(ii) M 30 grade concrete	Linear metre	2401.80	2416.60	2431.90
<b>8.23</b>	<b>Metal Beam Crash Barrier</b>				
<b>A</b>	<b>Type - A, "W" : Metal Beam Crash Barrier</b> (Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 811)	RM	3254.90	3315.10	3375.40
<b>B</b>	<b>Type - B, "THRIE" : Metal Beam Crash Barrier</b> (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 811)	RM	4048.80	4123.80	4198.70
<b>8.24</b>	<b>Road Traffic Signals electrically operated</b> (Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.)				



Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.25 Suggestive	<b>Flexible Crash Barrier, Wire Rope Safety Barrier</b> (Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (ISMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 45° inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.)	RM	2419.50	2464.20	2509.00
8.26 Suggestive	<b>Anti-Glare Devices in Median</b>				
A	<b>Plantation</b> (Plantation of shrubs and plants of approved species in the median. apart from cutting off glare from vehicle coming from opposite direction, these plants provide a pleasant environment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture. )				
B	<b>Anti-glare screen with 25 mm steel pipe framework fixed with circular and rectangular vans</b> (Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 metre height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.)	RM	3548.90	3614.50	3680.20
C	<b>Anti-glare screen with rectangular vane of MS sheet</b> (Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 45° to the direction of flow of traffic, 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in M-15 cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings)	RM	1044.20	1063.60	1082.90

Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.27 Suggestive	<b>Street Lighting</b> (Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 10 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.)				
	(i) For Fixing in Median	Each	#VALUE!	#VALUE!	#VALUE!
	(ii) For fixing in Footpath	Each	#VALUE!	#VALUE!	#VALUE!
8.28 Suggestive	<b>Lighting on Bridges</b> (Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp)	Each	#VALUE!	#VALUE!	#VALUE!
8.29 Suggestive	<b>Cable Duct Across the Road</b> (Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.)				
	(i) Single row for one utility service	RM	1237.00	1251.50	1265.90
	(ii) Double row for two utility services	RM	2207.50	2236.30	2265.20
	(iii) Triple Row for three utility services	RM	3196.00	3239.50	3283.10
8.30 Suggestive	<b>Highway Patrolling and Traffic Aid Post.</b> It is proposed to locate one Traffic Aid Post every 50-60 km of the highway. The organisation and financial aspect are required to be finalised in consultation with administrative and traffic authorities .				
8.31 Suggestive	<b>Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge</b> (The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings)				

Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item. No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
<b>8.32</b> <b>Suggestive</b>	<b>Traffic Control System and Communication System</b> (Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system. These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing. As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location)				
<b>8.33</b> <b>Suggestive</b>	<b>Gantry Mounted Variable Message Sign Board</b>				
(i)	Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3	tonne	85366.30	86947.20	88528.10
(ii)	<b>Message Display</b> (Message display board 6 sqm electronically operated with complete electronic fittings for flashing the pre-determined messages. This is a specialised commercial product and the lumpsum rate including erection at site is required to be ascertained from the market and including in the rate analysis. The size of the board will vary depending upon specific location. The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board as ascertained from the market at (ii) above)				
<b>8.34</b> <b>Suggestive</b>	<b>Traffic Impact Attenuators at Abutments and Piers</b>				
<b>A</b>	<b>With Scrap Tyres</b> (Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.)	sqm	941.50	958.90	976.40
<b>B</b>	<b>Using Plastic/Steel Barrel, Filled with Sand</b> (Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with 20 mm steel wire rope as per approved design and drawings)	sqm	917.40	934.40	951.30



**Summary of Rate Analysis**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
C	<b>With HI - DRO cell Sandwich (Patented)</b> (In this patented HI - DRO cell system, water gets discharged from plastic tubes on impact over a pre-determined time, thus absorbing the energy)	sqm	#VALUE!	#VALUE!	#VALUE!
8.35 Suggestive	<b>Solar Powered Road Marker (Solar Stud)</b> Supplying of Solar Raised Pavement Markers made of polycarbonate molded body with circular shape, solar powered, LED self illumination in active mode 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 20000 kg tested in accordance to ASTM D 4280. The marker should be resistant to dust and water ingress according to IP 65 standards and should withstand temperatures in the range of 0 C to 70 C. Color of lighting could be provided in red or yellow (amber) as per requirement and typical frequency of blinking in 1 Hz. There should be current losses of less than 20 microamperes at 2.4 V in sleepcharging mode to enhance the life of the marker and a full charge should provide for a minimum autonomy of 50 hours. The height, width and length of the marker shall not be less than 10mmx100mmx100 mm. Also, the surface diameter of the marker shall not be less than 100 mm respectively. The weight of the marker shall not exceed 0.5 Kilograms. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive and complete as directed by the engineer.)	Nos	252.30	257.00	261.70
8.36 Suggestive	<b>Traffic Cone</b> (Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873)	Each	#VALUE!	#VALUE!	#VALUE!
8.37 Suggestive	<b>Roadside Amenities</b>				
A	<b>Rest areas</b> (Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system. Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions.)				
B	<b>Parking areas and bus laybys for trucks, buses and light vehicles</b> (Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.)				



Summary of Rate Analysis

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
C	<b>Lawn</b> (Providing a lawn planted with grass and its maintenance .Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings)				
8.38 Suggestive	<b>Rumble Strips</b> (Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.)	sqm			
8.39 Suggestive	<b>Policeman Umbrella</b> (Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint)	Each	#VALUE!	#VALUE!	#VALUE!
8.40 Suggestive	<b>High Mast Pole Lighting at Interchanges and Flyovers</b> (Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightning conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings.This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms along with their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally donot undertake such jobs.)				
8.41	<b>Toll Plaza</b> (The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings)				

Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.42	<b>Safety Devices and Signs in Construction Zones</b> (Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55)	Each			
8.43 Suggestive	<b>Portable Barricade in Construction Zone</b> (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 45°, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55)	Each	3372.20	3434.60	3497.10
8.44 Suggestive	<b>Permanent Type Barricade in Construction Zone</b>				
A	<b>With steel components</b> (Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55)	Each	5294.60	5392.70	5490.70
B	<b>With wooden components</b> (Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55 )	Each	10391.00	10583.40	10775.90
C	<b>With bricks</b> (Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips)	Each	16056.30	16353.60	16651.00
8.45 Suggestive	<b>Drum Delineator in Construction Zone</b> (Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55)	Each	563.80	574.20	584.60



**Summary of Rate Analysis**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Item No.	Description	Unit	Rate as per project category		
			Large	Medium	Small
8.46 Suggestive	<b>Water filled barricades work zone sheeting</b> (Providing water filled barricades made up of LDPE to segregate the vehicular movement and work zone as per IRC SP 55 shall be in Trapezoidal Shape 800 mm to 1000 mm in length, 700 mm in height for Major Roads and expressway and 500 mm tall for other roads with interlocking arrangements, To be placed 0.5 m from the edge of the carriageway for expressway and 0.3 m for other roads. It should have rebouddable work zone sheeting as per ASTM D 4956 S2.)	Each	#VALUE!	#VALUE!	#VALUE!
8.47 Suggestive	<b>Tubular Marker/ Spring Post 450 mm</b> (Providing Tubular Marker made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular marker having height upto 450 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker shall be done as per IRC SP 55.)	Each	#VALUE!	#VALUE!	#VALUE!
8.48 Suggestive	<b>Tubular Marker/ Spring Post 700 mm</b> (Providing Tubular Marker made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular marker having minimum height 700 mm shall be having minimum 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker shall be done as per IRC SP 55.)	Each	#VALUE!	#VALUE!	#VALUE!
8.49 Suggestive	<b>Flagman</b> (Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic)	Each	480.30	489.20	498.10
8.50	<b>Advanced Traffic Management System ( ATMS)</b> work shall cover design, supply, installation, commissioning and / or operation and maintenance of Advance Traffic Management Systems (which is one of the components of intelligent Transport Systems- ITS). The system would include out-door equipment including emergency call boxes, variable message sign systems, meteorological data system, close circuit TV camera (CCTV) system, traffic counting and classification system and transmission system. The indoor equipment would comprise a large display board, central computer (with Network Management System- NMS), CCTV monitor system, call centre system or management of emergency call boxes housed in a control centre with uninterrupted power supply.				
A	Traffic Management Command Centre Equipment				
B	Advanced Traffic Management System ( ATMS) Software				
C	PTZ Closed Circuit Television System				
D	Video Incident Detection System Equipment (VIDS)				
E	Automatic Traffic Counters-cum-classifier System Equipment (ATCC)				
F	Variable Message Sign Equipment (VMS)				
G	UPS and Power system				
H	Meteorological Observation System (MOS)				
I	Digital Transmission System (DTS)				





Summary of Rate Analysis

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item. No.	Description	Unit	Rate as per perobject category		
			Large	Medium	Small
8.51 Suggestive	<b>Fiber Reinforced Cement Concrete New Jersey Crash Barrier</b>				
<b>A</b>	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with fiber steel and as per details given IRC -5 ( Fig.- 5, b) including dowel bars 25 mm dia, 450mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the engineer, all as specified. (Area- 0.243 Sqm/ Metre, Single Face)	Linear metre	#VALUE!	#VALUE!	#VALUE!
<b>B</b>	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with fiber steel and as per details given IRC- 119 (Fig. -26) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer ,all as specified. (Area-0.261 Sqm./ meter, Double Face)	Linear metre	#VALUE!	#VALUE!	#VALUE!

**Analysis of Rate**

**CHAPTER - 8**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
8.01	409	<b>Cast-in-Situ Cement Concrete M20 Kerb</b> 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-15 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 409									
		<b>Unit = Running metre</b>									
		<b>Taking output = 360 metre</b>									
		<b>Using Concrete Batching and Mixing Plant</b>									
	(i)	<b>PCC M15 for Kerb Base</b>									
		Total Concrete = 11.610 cu.m									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mason	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-10
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>b) Machinery</b>									
		<b>Transit truck agitator</b>									
		For Transportation Transit truck agitator 6 cum capacity	t.km	26.703xL1	26.703xL1	26.703xL1	10.33	275.84	275.84	275.84	PM76001
		For loading and unloading	hour	3.729	3.729	3.729	1860.00	6935.94	6935.94	6935.94	PM34001
		Water tanker (Speed @ 30 km/hr and return speed @ 20km/hr and spreading speed @ 3 km/hr									
		(i) 16 KL Capacity	hour	0.011xL1 +0.12			1121.00	146.85			PM11001
		(ii) 12 KL capacity	hour		0.015xL1 +0.12		947.00		127.85		PM11002
		(iii) 6 KL Capacity	hour			0.03xL1 +0.12	707.00			106.05	PM11003
		<b>c) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.20)	cum	11.610	11.610	11.610	2727.10	31661.63	31661.63	31661.63	21.20
		Cost of water	KL	1.602	1.602	1.602	56.20	90.03	90.03	90.03	M-191
		Total cost without OH & CP						41150.30	41131.29	41109.50	

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		3292.02	4113.13	4933.14	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		4444.23	4524.44	4604.26	
		Cost of 360 meter= a+b+c+d+e						48886.55	49768.86	50646.90	
		<b>Rate per meter= (a+b+c+d+e)/360</b>					Say	135.80	138.25	140.69	
	(ii)	<b>PCC M20 for Kerb cast in situ</b>						<b>135.80</b>	<b>138.20</b>	<b>140.70</b>	
		Total Concrete = 12.600 cu.m									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060		19.50	19.50	19.50	L-12
		Mason	day	0.500	0.500	0.500		184.50	184.50	184.50	L-10
		Mazdoor	day	1.000	1.000	1.000		306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Kerb Casting machine @ 120 metres/hour	hour	3.000	3.000	3.000		4404.00	4404.00	4404.00	PM37001
		<b>Transit truck agitator</b>									
		For Transportation Transit truck agitator 6 cum capacity	t.km	28.980xL1	28.980xL1	28.980xL1		299.36	299.36	299.36	PM76001
		For loading and Unloading time	hour	3.140	3.140	3.140		5840.40	5840.40	5840.40	PM34001
		Concrete cutting machine	hour	6.000	6.000	6.000		1020.00	1020.00	1020.00	PM61002
		Water tanker (Speed @ 30 km/hr and return speed @ 20km/hr and spreading speed @ 3 km/hr									
		(i) 16 KL Capacity	hour	0.042xL1 +0.12				181.60			PM11001
		(ii) 12 KL capacity	hour		0.056xL1 +0.12			947.00	166.67		PM11002
		(iii) 6 KL Capacity	hour			0.113xL1 +0.12		707.00		164.73	PM11003
		<b>c) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.21)	cum	12.600	12.600	12.600		3068.40	38661.84	38661.84	21.21
		Cost of water	KL	6.086	6.086	6.086		56.20	342.03	342.03	M-191
		Total cost without OH & CP						51299.24	51244.31	51242.37	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		4100.74	5124.43	6149.08	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		5536.00	5636.87	5739.15	
		Cost of meter= a+b+c+d+e						60895.98	62005.61	63130.60	
		<b>Rate per meter= (a+b+c+d+e)/360</b>					Say	169.16	172.24	175.36	
		<b>Cast in Situ Cement Concrete M 20 Kerb with Channel</b>						<b>169.20</b>	<b>172.20</b>	<b>175.40</b>	
8.02	409										



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M15 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCCM20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409									
		<b>Unit = Running metre</b>									
		<b>Taking output = 300 metre</b>									
		<b>Total Concrete = 9.675 cum.</b>									
		<b>Using Concrete Batching and Mixing Plant</b>									
	(i)	<b>PCC M15 for Kerb Base</b>									
		Total Concrete = 9.675 cu.m									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mason	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-10
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>b) Machinery</b>									
		<b>Transit truck agitator</b>									
		For Transportation Transit truck agitator 6 cum capacity	t.km	26.703xL1	26.703xL1	26.703xL1	10.33	275.84	275.84	275.84	PM76001
		For loading and Unloading time	hour	3.108	3.108	3.108	1860.00	5780.88	5780.88	5780.88	PM34001
		Water tanker (Speed @ 30 km/hr and return speed @ 20km/hr and spreading speed @ 3 km/hr									
		(i) 16 KL Capacity	hour	0.009xL1 +0.1			1121.00	122.19			PM11001
		(ii) 12 KL capacity	hour		0.012xL1 +0.1		947.00		106.06		PM11002
		(iii) 6 KL Capacity	hour			0.025xL1 +0.1	707.00			88.38	PM11003
		<b>c) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.20)	cum	9.675	9.675	9.675	2727.10	26384.69	26384.69	26384.69	21.20
		Cost of water	KL	1.335	1.335	1.335	56.20	75.03	75.03	75.03	M-191
		Total cost without OH & CP						34678.63	34662.51	34644.82	
		<b>d) Overhead charges on (a+b+c)</b>									
		<b>e) Contractor's profit on (a+b+c+d)</b>									
		Cost of 300 meter= a+b+c+d+e						3745.29	3812.88	3880.22	
		<b>Rate per meter= (a+b+c+d+e)/300</b>						4198.21	41941.63	42682.41	
							Say	137.33	139.81	142.27	
								<b>137.30</b>	<b>139.80</b>	<b>142.30</b>	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
	(ii)	PCC M20 for Kerb Cast in situ									
		Total Concrete = 15.000 cu.m									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mason	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-10
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Kerb Casting machine @ 90 metres/hour	hour	3.333	3.333	3.333	1468.00	4892.84	4892.84	4892.84	PM37001
		<b>Transit truck agitator</b>									
		For Transportation Transit truck agitator 6 cum capacity	t.km	28.980xL1	28.980xL1	28.980xL1	10.33	299.36	299.36	299.36	PM76001
		For loading and Unloading time	hour	3.500	3.500	3.500	1860.00	6510.00	6510.00	6510.00	PM34001
		Concrete cutting machine	hour	5.000	5.000	5.000	170.00	850.00	850.00	850.00	PM61002
		Water tanker (Speed @ 30 km/hr and return speed @ 20km/hr and spreading @ 3 km/hr)									
		(i) 16 KL Capacity	hour	0.05xL1 +0.1			1121.00	168.15			PM11001
		(ii) 12 KL capacity	hour		0.067xL1 +0.1		947.00		158.15		PM11002
		(iii) 6 KL Capacity	hour			0.134xL1 +0.1	707.00			165.44	PM11003
		<b>c) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.21)	cum	15.000	15.000	15.000	3068.40	46026.00	46026.00	46026.00	21.21
		Cost of water	KL	7.245	7.245	7.245	56.20	407.17	407.17	407.17	M-191
		Total cost without OH & CP						59663.53	59663.53	59660.81	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		4773.08	5965.35	7159.30	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		6443.66	6561.89	6682.01	
		Cost of 300meter= a+b+c+d+e						70880.27	72180.77	73502.12	
		<b>Rate per meter= (a+b+c+d+e)/300</b>						236.27	240.60	245.01	
							Say	<b>236.30</b>	<b>240.60</b>	<b>245.00</b>	
8.03	801	<b>Printing New Letter and Figures of any Shade</b>									
		Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade									
	(i)	Hindi ( Matras commas and the like not to be measured and paid for Half letter shall be counted as half )									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<i>Details for 100 letters of 16 cm height i.e. 1600 cm</i>									
		Unit = per cm height per letter									
		Taking output= 1600.00 cm									
		a) Labour									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Painter	day	2.000	2.000	2.000	391.00	782.00	782.00	782.00	L-18
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		b) Material									
		Paint	Litre	0.700	0.700	0.700	246.65	172.66	172.66	172.66	M-130
		Total cost without OH & CP						1299.66	1299.66	1299.66	
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		103.97	129.97	155.96	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		140.36	142.96	145.56	
		Cost for 1600 cm = a+b+c+d						1543.99	1572.58	1601.17	
		Rate per cm height per letter = (a+b+c+ d)/1600						0.96	0.98	1.00	
							Say	1.00	1.00	1.00	
8.03	(ii)	English and Roman									
		Hyphens and the like not to be measured and paid for									
		Detail for 100 letters of 16 cm height. i.e. 1600 cm									
		Unit = per cm height per letter									
		Taking output= 1600.00 cm									
		a) Labour									
		Mate	day	0.070	0.070	0.070	325.00	22.75	22.75	22.75	L-12
		Painter 1st class	day	1.250	1.250	1.250	391.00	488.75	488.75	488.75	L-18
		Mazdoor	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		b) Material									
		Paint	Litre	0.500	0.500	0.500	246.65	123.33	123.33	123.33	M-130
		Total cost without OH & CP						787.83	787.83	787.83	
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		63.03	78.78	94.54	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		85.09	86.66	88.24	
		Cost for 1600 cm = a+b+c+d						935.94	953.27	970.60	
		Rate per cm height per letter = (a+b+c +d)/1600						0.58	0.60	0.61	
							Say	0.60	0.60	0.60	
8.04	801	Retro-Reflectorised Traffic Signs									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
	A	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of class-B Type IV retro reflective sheeting fixed cover 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick aluminium composite material sheet depending on the size of the sign fixed over back support frame of min 25 x 25 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.									
		<b>Unit = Each</b>									
		<b>Taking output = one traffic sign</b>									
		i) Excavation for foundation	cum	0.122	0.122	0.122	132.60-L 135.10-M 137.60-S	16.18	16.48	16.79	9.01 A (i)
		(Rate taken from item No. 9.01 A (i) including OH & CP)									
		ii) Cement concrete M25 grade	sqm	0.122	0.122	0.122	5139.40-L 5239.50-M 5356.20-S	627.01	639.22	653.46	9.06 E Case-II
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		iii) Painting angle iron post two coats	sqm	1.414	1.414	1.414	71.50-L 72.80-M 74.10-S (+ii+iii)	101.10	102.94	104.78	8.09
		(Rate taken from item No. 8.09 including OH & CP)									
		<b>a) Labour (For fixing at site)</b>									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		Mild steel 'L' angle back support frame 25 x 25 x 3 mm	kg	2.2	2.2	2.2	57.03	125.47	125.47	125.47	M181/1000
		Mild steel circular pipe 65 NB, 3.2 mm thickness, 3.6 meter height	kg	20.556	20.556	20.556	57.03	1172.37	1172.37	1172.37	M181/1000

**Analysis of Rate  
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable									
	(i)	120 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.624	0.624	0.624	8945.43	5581.95	5581.95	5581.95	M-061
		or						68.80	68.80	68.80	
	(ii)	90 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.351	0.351	0.351	8945.43	3139.85	3139.85	3139.85	M-061
		or						44.38	44.38	44.38	
	(iii)	75 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.244	0.244	0.244	8945.43	2182.68	2182.68	2182.68	M-061
		or						34.81	34.81	34.81	
	(iv)	60 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.156	0.156	0.156	8945.43	1395.49	1395.49	1395.49	M-061
		or						26.93	26.93	26.93	
	(v)	120 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	1.131	1.131	1.131	8945.43	10117.28	10117.28	10117.28	M-061
		or						114.15	114.15	114.15	
	(vi)	90 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.636	0.636	0.636	8945.43	5689.29	5689.29	5689.29	M-061
		or						69.87	69.87	69.87	
	(vii)	75 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.442	0.442	0.442	8945.43	3953.88	3953.88	3953.88	M-061
		or						52.52	52.52	52.52	
	(viii)	60 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.283	0.283	0.283	8945.43	2531.56	2531.56	2531.56	M-061
		or						38.29	38.29	38.29	
	(ix)	90 cm x 75 cm rectangular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.675	0.675	0.675	8945.43	6038.17	6038.17	6038.17	M-061
		or						73.36	73.36	73.36	
		or									



**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	(x)	80 cm x 60 cm rectangular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.480	0.480	0.480	8945.43	4293.81	4293.81	4293.81	M-061
		or						55.92	55.92	55.92	
	(xi)	60 cm x 50 cm rectangular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.300	0.300	0.300	8945.43	2683.63	2683.63	2683.63	M-061
		or						39.81	39.81	39.81	
	(xii)	60 cm x 45 cm rectangular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.270	0.270	0.270	8945.43	2415.27	2415.27	2415.27	M-061
		or						37.13	37.13	37.13	
	(xiii)	60 cm x 60 cm square Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.360	0.360	0.360	8945.43	3220.35	3220.35	3220.35	M-061
		or						45.18	45.18	45.18	
	(xiv)	120 cm high octagon Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	1.193	1.193	1.193	8945.43	10671.90	10671.90	10671.90	M-061
		or						119.70	119.70	119.70	
	(xv)	90 cm high octagon Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.671	0.671	0.671	8945.43	6002.38	6002.38	6002.38	M-061
		or						73.00	73.00	73.00	
	(xvi)	75 cm high octagon Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.446	0.446	0.446	8945.43	3989.66	3989.66	3989.66	M-061
		or						52.88	52.88	52.88	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.010	0.010	0.010	629.00	6.29	6.29	6.29	PM12001
	(i)	120 cm equilateral triangle					(a+b+c)	7034.63	7034.63	7034.63	
		d) Overhead charges on (a+b+c)						562.77	703.46	844.16	
		e) Contractor's profit on (a+b+c+d)						787.88	773.81	787.88	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	9101.42	9270.54	9441.68	
	(ii)	90 cm equilateral triangle						9101.40	9270.50	9441.70	
		or									
		(a+b+c)						4568.11	4568.11	4568.11	
		d) Overhead charges on (a+b+c)						365.45	456.81	548.17	
		e) Contractor's profit on (a+b+c+d)						493.36	502.49	511.63	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	6171.19	6286.05	6402.93	
								6171.20	6286.00	6402.90	



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	(iii)	75 cm equilateral triangle					(a+b+c)	3601.37	3601.37	3601.37	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		288.11	360.14	432.16	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		388.95	396.15	403.35	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	5022.72	5116.30	5211.91	
	(iv)	60 cm equilateral triangle					(a+b+c)	2806.30	2806.30	2806.30	
	d)	Overhead charges		(@ 8%)	(@ 10%)	(@ 12%)		224.50	280.63	336.76	
	e)	Contractor's profit		(@ 10%)	(@ 10%)	(@ 10%)		303.08	308.69	314.31	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	4078.17	4154.27	4232.39	
	(v)	120 cm circular					(a+b+c)	11615.32	11615.32	11615.32	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		929.23	1161.53	1393.84	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		1254.45	1277.68	1300.92	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	14543.28	14813.17	15085.09	
	(vi)	90 cm circular					(a+b+c)	7143.05	7143.05	7143.05	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		571.44	714.30	857.17	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		771.45	785.74	800.02	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	9230.23	9401.73	9575.26	
	(vii)	75 cm circular					(a+b+c)	5390.28	5390.28	5390.28	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		431.22	539.03	646.83	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		582.15	592.93	603.71	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	7147.94	7280.88	7415.85	
	(viii)	60 cm circular					(a+b+c)	3953.73	3953.73	3953.73	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		316.30	395.37	474.45	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		427.00	434.91	442.82	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	5441.32	5542.66	5646.02	
	(ix)	90 cm x 75 cm rectangular					(a+b+c)	7495.41	7495.41	7495.41	
	d)	Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		599.63	749.54	899.45	
	e)	Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		809.50	824.49	839.49	

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	9648.83	9828.08	10009.36	
	( x )	80 cm x 60 cm rectangular						<b>9648.80</b>	<b>9828.10</b>	<b>10009.40</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	5733.61	5733.61	5733.61	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		458.69	573.36	688.03	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	619.23	630.70	642.16	
								7555.81	7696.30	7838.82	
	( xi )	60 cm x 50 cm rectangular					say	<b>7555.80</b>	<b>7696.30</b>	<b>7838.80</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	4107.33	4107.33	4107.33	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		328.59	410.73	492.88	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	443.59	451.81	460.02	
								5623.79	5728.51	5835.25	
	( xii )	60 cm x 45 cm rectangular					say	<b>5623.80</b>	<b>5728.50</b>	<b>5835.20</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	3836.28	3836.28	3836.28	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		306.90	383.63	460.35	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	414.32	421.99	429.66	
								5301.79	5400.54	5501.32	
	( xiii )	60 cm x 60 cm square					say	<b>5301.80</b>	<b>5400.50</b>	<b>5501.30</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	4649.42	4649.42	4649.42	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		371.95	464.94	557.93	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	502.14	511.44	520.74	
								6267.80	6384.44	6503.11	
	( xiv )	120 cm high octagon					say	<b>6267.80</b>	<b>6384.40</b>	<b>6503.10</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	12175.48	12175.48	12175.48	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		974.04	1217.55	1461.06	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	1314.95	1339.30	1363.65	
								15208.75	15490.97	15775.21	
	( xv )	90 cm high octagon					say	<b>15208.80</b>	<b>15491.00</b>	<b>15775.20</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	7459.27	7459.27	7459.27	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		596.74	745.93	895.11	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	805.60	820.52	836.44	
								9605.90	9784.36	9964.84	
	( xvi )	75 cm high octagon					say	<b>9605.90</b>	<b>9784.40</b>	<b>9964.80</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	5426.42	5426.42	5426.42	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)					



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		434.11	542.64	651.17	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		586.05	596.91	607.76	
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)					say	7190.87	7324.61	7460.37	
8.04	B	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of class-C Type XI retro reflective sheeting fixed over 2mm thick aluminium sheeting vide clause 801.3, 3/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over back support frame of min 25 x 25 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.									
		<b>Unit = Each</b>									
		<b>Taking output = one traffic sign</b>									
		i) Excavation for foundation	cum	0.122	0.122	0.122		16.18	16.48	16.79	9.01 A (I)
		(Rate taken from item No. 9.01 A (I) including OH & CP)									
		ii) Cement concrete M25 grade	sqm	0.122	0.122	0.122		627.01	639.22	653.46	9.06 E Case-II
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		iii) Painting angle iron post two coats	sqm	1.414	1.414	1.414		101.10	102.94	104.78	8.09
		(Rate taken from item No. 8.09 including OH & CP)									
		<b>a) Labour (For fixing at site)</b>									
		Mate	day	0.01	0.01	0.01		3.25	3.25	3.25	L-12
		Mazdoor	day	0.25	0.25	0.25		76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		Mild steel 'L' angle back support 25 x 25 x 3 mm	kg	2.200	2.200	2.200		125.47	125.47	125.47	M181/1000
		Mild steel circular pipe 65 NB, 3.2 mm thickness,	kg	20.556	20.556	20.556		1172.37	1172.37	1172.37	M181/1000

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable									
	(i)	120 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.624	0.624	0.624	8945.43	5581.95	5581.95	5581.95	M-061
								68.80	68.80	68.80	
	(ii)	90 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.351	0.351	0.351	8945.43	3139.85	3139.85	3139.85	M-061
								44.38	44.38	44.38	
	(iii)	75 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.244	0.244	0.244	8945.43	2182.68	2182.68	2182.68	M-061
								34.81	34.81	34.81	
	(iv)	60 cm equilateral triangle Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.156	0.156	0.156	8945.43	1395.49	1395.49	1395.49	M-061
								26.93	26.93	26.93	
	(v)	120 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	1.131	1.131	1.131	8945.43	10117.28	10117.28	10117.28	M-061
								114.15	114.15	114.15	
	(vi)	90 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.636	0.636	0.636	8945.43	5689.29	5689.29	5689.29	M-061
								69.87	69.87	69.87	
	(vii)	75 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.442	0.442	0.442	8945.43	3953.88	3953.88	3953.88	M-061
								52.52	52.52	52.52	
	(viii)	60 cm circular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.283	0.283	0.283	8945.43	2531.56	2531.56	2531.56	M-061
								38.29	38.29	38.29	
	(ix)	90 cm x 75 cm rectangular Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.	sqm	0.675	0.675	0.675	8945.43	6038.17	6038.17	6038.17	M-061
								73.36	73.36	73.36	
	(x)	80 cm x 60 cm rectangular	sqm	0.480	0.480	0.480	8945.43	4293.81	4293.81	4293.81	M-061

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						55.92	55.92	55.92	
		or									
	(xi)	60 cm x 50 cm rectangular	sqm	0.300	0.300	0.300	8945.43	2683.63	2683.63	2683.63	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						39.81	39.81	39.81	
		or									
	(xii)	60 cm x 45 cm rectangular	sqm	0.270	0.270	0.270	8945.43	2415.27	2415.27	2415.27	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						37.13	37.13	37.13	
		or									
	(xiii)	60 cm x 60 cm square	sqm	0.360	0.360	0.360	8945.43	3220.35	3220.35	3220.35	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						45.18	45.18	45.18	
		or									
	(xiv)	120 cm high octagon	sqm	1.193	1.193	1.193	8945.43	10671.90	10671.90	10671.90	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						119.70	119.70	119.70	
		or									
	(xv)	90 cm high octagon	sqm	0.671	0.671	0.671	8945.43	6002.38	6002.38	6002.38	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						73.00	73.00	73.00	
		or									
	(xvi)	75 cm high octagon	sqm	0.446	0.446	0.446	8945.43	3989.66	3989.66	3989.66	M-061
		Add 1 per cent of cost of material (b) towards cost of drilling holes, nuts, bolts etc.						52.88	52.88	52.88	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.010	0.010	0.010	629.00	6.29	6.29	6.29	PM12001
	(i)	<b>120 cm equilateral triangle</b>									
							(a+b+c)	7034.63	7034.63	7034.63	
		<b>d) Overhead charges on (a+b+c)</b>						562.77	703.46	844.16	
		<b>e) Contractor's profit on (a+b+c+d)</b>						759.74	773.81	787.88	
		<b>Rate per traffic sign = (i+ii+iii+a+b+c+d+e)</b>						9101.42	9270.54	9441.68	
							<b>say</b>	<b>9101.40</b>	<b>9270.50</b>	<b>9441.70</b>	
	(ii)	<b>90 cm equilateral triangle</b>									
							(a+b+c)	4568.11	4568.11	4568.11	
		<b>d) Overhead charges on (a+b+c)</b>						365.45	456.81	548.17	
		<b>e) Contractor's profit on (a+b+c+d)</b>						493.36	502.49	511.63	

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	6171.19	6286.05	6402.93	
	(iii)	75 cm equilateral triangle						<b>6171.20</b>	<b>6286.00</b>	<b>6402.90</b>	
							(a+b+c)	3601.37	3601.37	3601.37	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		288.11	360.14	432.16	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		388.95	396.15	403.35	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	5022.72	5116.30	5211.91	
	(iv)	60 cm equilateral triangle						<b>5022.70</b>	<b>5116.30</b>	<b>5211.90</b>	
							(a+b+c)	2806.30	2806.30	2806.30	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		224.50	280.63	336.76	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		303.08	308.69	314.31	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	4078.17	4154.27	4232.39	
	(v)	120 cm circular						<b>4078.20</b>	<b>4154.30</b>	<b>4232.40</b>	
							(a+b+c)	11615.32	11615.32	11615.32	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		929.23	1161.53	1393.84	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		1254.45	1277.68	1300.92	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	14543.28	14813.17	15085.09	
	(vi)	90 cm circular						<b>14543.30</b>	<b>14813.20</b>	<b>15085.10</b>	
							(a+b+c)	7143.05	7143.05	7143.05	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		571.44	714.30	867.17	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		771.45	785.74	800.02	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	9230.23	9401.73	9575.26	
	(vii)	75 cm circular						<b>9230.20</b>	<b>9401.70</b>	<b>9575.30</b>	
							(a+b+c)	5390.28	5390.28	5390.28	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		431.22	539.03	646.83	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		582.15	592.93	603.71	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	7147.94	7280.88	7415.85	
	(viii)	60 cm circular						<b>7147.90</b>	<b>7280.90</b>	<b>7415.80</b>	
							(a+b+c)	3953.73	3953.73	3953.73	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		316.30	395.37	474.45	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		427.00	434.91	442.82	
		Rate per traffic sign = ( i+ii+iii+a+b+c+d+e)					say	5441.32	5542.66	5646.02	
	(ix)	90 cm x 75 cm rectangular						<b>5441.30</b>	<b>5542.70</b>	<b>5646.00</b>	
							(a+b+c)	7495.41	7495.41	7495.41	



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		599.63	749.54	899.45	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		809.50	824.49	839.49	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	9648.83	9828.08	10009.36	
	(x)	80 cm x 60 cm rectangular						<b>9648.80</b>	<b>9828.10</b>	<b>10009.40</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	5733.61	5733.61	5733.61	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		458.69	573.36	688.03	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	619.23	630.70	642.16	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	7555.81	7696.30	7838.82	
	(xi)	60 cm x 50 cm rectangular						<b>7555.80</b>	<b>7696.30</b>	<b>7838.80</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	4107.33	4107.33	4107.33	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		328.59	410.73	492.88	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	443.59	451.81	460.02	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	5623.79	5728.51	5835.25	
	(xii)	60 cm x 45 cm rectangular						<b>5623.80</b>	<b>5728.50</b>	<b>5835.20</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	3836.28	3836.28	3836.28	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		306.90	383.63	460.35	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	414.32	421.99	429.66	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	5301.79	5400.54	5501.32	
	(xiii)	60 cm x 60 cm square						<b>5301.80</b>	<b>5400.50</b>	<b>5501.30</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	4649.42	4649.42	4649.42	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		371.95	464.94	557.93	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	502.14	511.44	520.74	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	6267.80	6384.44	6503.11	
	(xiv)	120 cm high octagon						<b>6267.80</b>	<b>6384.40</b>	<b>6503.10</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	12175.48	12175.48	12175.48	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		974.04	1217.55	1461.06	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	1314.95	1339.30	1363.65	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	15208.75	15490.97	15775.21	
	(xv)	90 cm high octagon						<b>15208.80</b>	<b>15491.00</b>	<b>15775.20</b>	
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)	(a+b+c)	7459.27	7459.27	7459.27	
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		596.74	745.93	895.11	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	805.60	820.52	835.44	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	9605.90	9784.36	9964.84	
		Rate per traffic sign = ( i+i+ii+iii+a+b+c+d+e)					say	<b>9605.90</b>	<b>9784.40</b>	<b>9964.80</b>	



**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	(xvi)	75 cm high octagon									
		d) Overhead charges on (a+b+c)		(@ 8%)	(@ 10%)	(a+b+c)	5426.42	5426.42	5426.42		
		e) Contractor's profit on (a+b+c+d)		(@ 10%)	(@ 10%)		434.11	542.64	651.17		
		Rate per traffic sign = (i+ii+iii+a+b+c+d+e)					586.05	596.91	607.76		
	Note					say	7190.87	7324.61	7460.37		
		1. Any one area of aluminium sheeting given at (i) to (xvi) may be adopted as per site requirement and in accordance with IRC : 67									
		2. Rate for excavation, cement concrete M-25 and painting may be taken from respective chapters- 08 & 09 respectively.									
		3. The depth of foundation and quantity of cement concrete in the foundation are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards.									
8.05	801	<b>Direction and Place Identification Signs upto 0.9 sqm Size Board.</b>									
		Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick or Aluminium composite material sheet with overall thickness of 4 mm with area not exceeding 0.9 sqm fixed over back support frame of min 35 x 35 x 3 mm Angle mounted on a mild steel circular pipe 65 NB, firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing									
		<b>Unit = Each</b>									
		<b>Taking output = 0.9 sqm</b>									
		i) Excavation for foundation	cum	0.122	0.122	132.60-L 135.10-M 137.60-S	16.18	16.48	16.79		9.01 A (I)
		(Rate taken from item No. 9.01 A (I) including OH & CP)									



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		ii) Cement concrete M25 grade	sqm	0.122	0.122	0.122	5139.40-L 5239.50-M 5356.20-S	627.01	639.22	653.46	9.06 E Case-II
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		iii) Painting angle iron post two coats	sqm	1.414	1.414	1.414	71.50-L 72.80-M 74.10-S (i + ii + iii)	101.10	102.94	104.78	8.09 A
		(Rate taken from item No. 8.09 A including OH & CP)									
		<b>a) Labour (For fixing at site)</b>									
		Mate	day	0.008	0.008	0.008	325.00	2.60	2.60	2.60	L-12
		Mazdoor	day	0.200	0.200	0.200	306.00	61.20	61.20	61.20	L-13
		<b>b) Material</b>									
		Mild steel 'L' angle back support 35 x 35 x 3 mm	kg	6.080	6.080	6.080	57.03	346.76	346.76	346.76	M181/1000
		Mild steel circular pipe 65 NB, 3.2 mm thickness, 3.6 meter height	kg	20.556	20.556	20.556	57.03	1172.37	1172.37	1172.37	M181/1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	0.900	0.900	8945.43	8050.89	8050.89	8050.89	M-061
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.						191.40	191.40	191.40	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.020	0.020	0.020	629.000	12.58	12.58	12.58	PM12001
		(a+b+c)						9837.80	9837.80	9837.80	
		<b>d) Overhead charges on (a+b+c)</b>									
				(@ 8%)	(@ 10%)	(@ 12%)		787.02	983.78	1180.54	
		<b>e) Contractor's profit on (a+b+c+d)</b>									
				(@ 10%)	(@ 10%)	(@ 10%)		1062.48	1082.16	1101.83	
		Cost for 0.9 sqm = (i+ii+iii+a+b+c+d+e)						12431.59	12662.38	12895.19	
		<b>Rate per sqm (for sign having area upto 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/0.90</b>						13812.88	14069.31	14327.99	
							<b>say</b>	<b>13812.90</b>	<b>14069.30</b>	<b>14328.00</b>	
		<b>Note</b>									
		i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately									
		ii) Rate for excavation, cement concrete M-25 and painting may be taken from respective chapters-09 & 08 respectively.									
8.06	801	<b>Direction and Place Identification Signs with size more than 0.9 sqm size Board.</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick or Aluminium composite material sheet with overall thickness of 4 mm with area exceeding 0.9 sqm fixed over back support frame of min 40 x 40 x 5 mm Angle mounted on two nos. of mild steel circular pipe 65 NB, 3.2mm thickness and 4.5m meter total height firmly fixed to the ground by means of properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing									
		<b>Unit = Each</b>									
		<b>Taking output = 1.5 sqm</b>									
		i) Excavation for foundation	cum	0.243	0.243	0.243	132.60-L 135.10-M 137.60-S	32.22	32.83	33.44	9.01 A (I)
		(Rate taken from item No. 9.01 A (I) including OH & CP)									
		ii) Cement concrete M25 grade	sqm	0.243	0.243	0.243	5139.40-L 5239.50-M 5356.20-S	1248.87	1273.20	1301.56	9.06 E Case-II
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		iii) Painting angle iron post two coats	sqm	2.827	2.827	2.827	71.50-L 72.80-M 74.10-S	202.13	205.81	209.48	8.09
		(Rate taken from item No. 8.09 including OH & CP)									
		(+ii+iii)						1483.23	1511.83	1544.47	
		<b>a) Labour (For fixing at site)</b>									
		Mate	day	0.012	0.012	0.012	325.00	3.90	3.90	3.90	L-12
		Mazdoor	day	0.300	0.300	0.300	306.00	91.80	91.80	91.80	L-13
		<b>b) Material</b>									
		Mild steel 'L' angle back support 40 x 40 x 5 mm	kg	14.400	14.400	14.400	57.03	821.28	821.28	821.28	M181/ 1000
		Mild steel circular pipe 65 NB, 3.2 mm thickness, 3.6 meter height	kg	41.112	41.112	41.112	57.03	2344.74	2344.74	2344.74	M181/ 1000
		Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	1.500	1.500	8945.43	13418.15	13418.15	13418.15	M-061

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.						331.68	331.68	331.68	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.020	0.020	0.020	629.00	12.58	12.58	12.58	PM12001
		(a+b+c)						17024.12	17024.12	17024.12	
		<b>d) Overhead charges on (a+b+c)</b>									
		<b>e) Contractor's profit on (a+b+c+d)</b>									
		Cost for 1.5 sqm= (i+ii+iii+a+b+c+d+e)									
		<b>Rate per sqm (for sign having area more than 0.9 sqm)= ( i+ii+iii+a+b+c+d+e)/1.50</b>									
		<b>Note</b>									
		i) Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been analysed separately									
		ii) Rate for excavation, cement concrete M-25 and painting may be taken from respective chapters-09 & 08 respectively.									
<b>8.07</b>	<b>802</b>	<b>Overhead Signs</b>									
		Providing and erecting overhead signs with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans & as per IRC: 67									
	<b>A</b>	<b>Truss and Vertical Support</b>									
		<b>Unit = tonne</b>									
		<b>Taking output = 1 tonne</b>									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Blacksmith	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-25
		Mazdoor including for handling & fixing at site.	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>b) Material</b>									
		Aluminium alloy/galvanised steel including 2 per cent wastage	tonne	1.020	1.020	1.020	57033.00	58173.66	58173.66	58173.66	M-060
		Add 1 per cent on cost of material for nuts, bolts and drilling and welding consumables						581.74	581.74	581.74	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Add 15 per cent on cost of material for fabrication of trusses as per approved design						8726.05	8726.05	8726.05	
		<b>c) Machinery</b>									
		Crane 3 tonne capacity	hour	3.000	3.000	3.000	728.00	2184.00	2184.00	2184.00	PM63001
		Truck	hour	0.500	0.500	0.500	1371.00	685.50	685.50	685.50	PM6004
		Total cost without OH & CP						72390.95	72390.95	72390.95	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		5791.28	7239.09	8686.91	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		7818.22	7963.00	8107.79	
		<b>Rate per tonne = (a+b+c+d+e)</b>						86000.44	87593.04	89185.64	
<b>8.07</b>	<b>B</b>	<b>Aluminium Alloy Plate for Over Head Sign</b>					<b>Say</b>	<b>86000.40</b>	<b>87593.00</b>	<b>89185.60</b>	
		Unit = sqm									
		Taking output = 1 sqm									
		<b>a) Labour</b>									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Blacksmith	day	0.100	0.100	0.100	369.00	36.90	36.90	36.90	L-25
		Mazdoor	day	0.150	0.150	0.150	306.00	45.90	45.90	45.90	L-13
		<b>b) Material</b>									
		Aluminium alloy plate, 2 mm thick, fixed with high intensity grade sheeting vide clause 801.3	sqm	1.000	1.000	1.000	9512.21	9512.21	9512.21	9512.21	M-059
		<b>Miscellaneous</b>									
		Add 1 per cent of cost of labour for lifting arrangement, like ladders, pulleys, ropes etc						0.86	0.86	0.86	
		Total cost without OH & CP						9599.12	9599.12	9599.12	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		767.93	959.91	1151.89	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1036.71	1055.90	1075.10	
		<b>Rate per sqm = (a+b+c+d)</b>						11403.76	11614.94	11826.12	
		<b>Note</b>					<b>say</b>	<b>11403.80</b>	<b>11614.90</b>	<b>11826.10</b>	
		1. The cost of excavation and foundation concrete for fixing of vertical support system to be worked out separately as per the approved drawing/design and to be included in the estimate.									
		2. Lettering and arrow marks on sign board to be provided separately as per actual requirement. Rates for these items have been included separately in this chapter.									
<b>8.08</b>	<b>803</b>	<b>Painting Two Coats on New Concrete Surfaces</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces									
		<b>Unit = sqm</b>									
		<b>Taking output = 40 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Painter	day	2.000	2.000	2.000	391.00	782.00	782.00	782.00	L-18
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Material</b>									
		Paint conforming to requirement of clause 803.3.	Litre	6.000	6.000	6.000	246.65	1479.90	1479.90	1479.90	M-130
		Add for scaffolding @ 1 percent of labour cost where required						11.27	11.27	11.27	
		Add @ 5 percent cost of labour and materials to prepare the surface by filling minutes roughness on the surface and priming the surface before laying 2 coats of painting.						130.35	130.35	130.35	
		Total cost without OH & CP						2748.52	2748.52	2748.52	
		<b>c) Overhead charges on (a+b)</b>						219.88	274.85	329.82	
		<b>d) Contractor's profit on (a+b+c)</b>						296.84	302.34	307.83	
		<b>Cost for 40 sqm = a+b+c+d</b>						3265.24	3325.70	3386.17	
		<b>Rate per sqm = (a+b+c+d) /40</b>						81.63	83.14	84.65	
								<b>Say</b>	<b>83.10</b>	<b>84.70</b>	
<b>8.09</b>	<b>803</b>	<b>Painting on Steel Surfaces</b>									
		Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade									
		<b>Unit = sqm</b>									
		<b>Taking output = 10 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.028	0.028	0.028	325.00	9.10	9.10	9.10	L-12
		Painter	day	0.450	0.450	0.450	391.00	175.95	175.95	175.95	L-18
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		Paint ready mixed approved brand.	Litre	1.250	1.250	1.250	246.65	308.31	308.31	308.31	M-130
		Add @ 1 per cent on cost of material for scaffolding						3.08	3.08	3.08	

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Add @ 5 percent cost of labour and materials to prepare the surface by filling minutes roughness on the surface and priming the surface before laying 2 coats of painting.					28.49	28.49	28.49		
		Total cost without OH & CP					601.44	601.44	601.44		
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)	48.12	60.14	72.17		
		<b>d) Contractor's profit (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)	64.96	66.16	67.36		
		Cost for 10 sqm = a+b+c+d					714.51	727.74	740.97		
		<b>Rate per sqm= (a+b+c+d)/10</b>					71.45	72.77	74.10		
							<b>71.50</b>	<b>72.80</b>	<b>74.10</b>		
<b>8.10</b>	<b>803</b>	<b>Painting on Wood Surfaces</b>									
		Providing and applying two coats of ready mix paint of approved brand on wood surface after thorough cleaning of surface to give an even shade									
		<b>Unit = sqm</b>									
		<b>Taking output = 10 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.028	0.028	0.028	9.10	9.10	9.10	L-12	
		Painter	day	0.500	0.500	0.500	195.50	195.50	195.50	L-18	
		Mazdoor	day	0.200	0.200	0.200	61.20	61.20	61.20	L-13	
		<b>b) Material</b>									
		Paint ready mixed of approved brand.	Litre	1.500	1.500	1.500	369.98	369.98	369.98	M-130	
		Add @ 1 per cent on cost of material for scaffolding					3.70	3.70	3.70		
		Add @ 5 percent cost of labour and materials to prepare the surface by filling minutes roughness on the surface and priming the surface before laying 2 coats of painting.					31.79	31.79	31.79		
		Total cost without OH & CP					671.26	671.26	671.26		
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)	53.70	67.13	80.55		
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)	72.50	73.84	75.18		
		Cost for 10 sqm = a+b+c+d					797.46	812.23	827.00		
		<b>Rate per sqm = (a+b+c+d)/10</b>					79.75	81.22	82.70		
							<b>79.70</b>	<b>81.20</b>	<b>82.70</b>		
<b>8.11</b>	<b>803</b>	<b>Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		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)	Over 10 cm in width									
		Unit = sqm									
		Taking output = 10 sqm									
		a) Labour									
		Mate	day	0.084	0.084	0.084	325.00	27.30	27.30	27.30	L-12
		Painter	day	0.550	0.550	0.550	391.00	215.05	215.05	215.05	L-18
		Mazdoor	day	1.550	1.550	1.550	306.00	474.30	474.30	474.30	L-13
		b) Material									
		Road marking Paint as per IS :164	Litre	1.480	1.480	1.480	246.65	365.04	365.04	365.04	M-131
		Total cost without OH & CP						1081.69	1081.69	1081.69	
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		86.54	108.17	129.80	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		116.82	118.99	121.15	
		Cost for 10 sqm = a+b+c+d						1285.05	1308.85	1332.64	
		Rate per sqm= (a+b+c+d)/10						128.51	130.88	133.26	
8.11	(ii)	Up to 10 cm in width					Say	128.50	130.90	133.30	
		Unit = sqm									
		Taking output = 10 sqm									
		a) Labour									
		Mate	day	0.068	0.068	0.068	325.00	22.10	22.10	22.10	L-12
		Painter	day	0.350	0.350	0.350	391.00	136.85	136.85	136.85	L-18
		Mazdoor	day	1.350	1.350	1.350	306.00	413.10	413.10	413.10	L-13
		b) Material									
		Road marking paint	Litre	1.480	1.480	1.480	246.65	365.04	365.04	365.04	M-131
		Total cost without OH & CP						937.09	937.09	937.09	
		c) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		74.97	93.71	112.45	
		d) Contractor's profit on (a+b+c)		(@ 10%)	(@ 10%)	(@ 10%)		101.21	103.08	104.95	
		Cost for 10 sqm = a+b+c+d						1113.27	1133.88	1154.50	
		Rate per sqm = (a+b+c+d)/10						111.33	113.39	115.45	
8.12	803	Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work					Say	111.30	113.40	115.40	



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Painting lines, dashes, arrows etc on roads in two coats on old 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)	<b>Over 10 cm in width</b>									
		<b>Unit = sqm</b>									
		<b>Taking output = 10 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.062	0.062	0.062	325.00	20.15	20.15	20.15	L-12
		Painter 1st class	day	0.300	0.300	0.300	391.00	117.30	117.30	117.30	L-18
		Mazdoor	day	1.250	1.250	1.250	306.00	382.50	382.50	382.50	L-13
		<b>b) Material</b>									
		Road marking paint	Litre	0.900	0.900	0.900	246.65	221.99	221.99	221.99	M-131
		Total cost without OH & CP						741.94	741.94	741.94	
		<b>c) Overhead charges on (a+b)</b>		@ 8%	@ 10%	@ 12%		59.35	74.19	89.03	
		<b>d) Contractor's profit on (a+b+c)</b>		@ 10%	@ 10%	@ 10%		80.13	81.61	83.10	
		Cost for 10 sqm = a+b+c+d						881.42	897.74	914.06	
		<b>Rate per sqm = (a+b+c+d)/10</b>						88.14	89.77	91.41	
<b>8.12</b>	(ii)	<b>Up to 10 cm in width</b>					<b>Say</b>	<b>88.10</b>	<b>89.80</b>	<b>91.40</b>	
		<b>Unit = sqm</b>									
		<b>Taking output = 10 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.068	0.068	0.068	325.00	22.10	22.10	22.10	L-12
		Painter 1st class	day	0.350	0.350	0.350	391.00	136.85	136.85	136.85	L-18
		Mazdoor	day	1.350	1.350	1.350	306.00	413.10	413.10	413.10	L-13
		<b>b) Material</b>									
		Road marking Paint	Litre	0.900	0.900	0.900	246.65	221.99	221.99	221.99	M-131
		Total cost without OH & CP						794.04	794.04	794.04	
		<b>c) Overhead charges on (a+b)</b>		@ 8%	@ 10%	@ 12%		63.52	79.40	95.28	
		<b>d) Contractor's profit on (a+b+c)</b>		@ 10%	@ 10%	@ 10%		85.76	87.34	88.93	
		Cost for 10 sqm= a+b+c+d						943.31	960.78	978.25	
		<b>Rate per sqm = (a+b+c+d)/10</b>						94.33	96.08	97.83	
<b>8.13</b>	<b>803</b>	<b>Road Marking with Hot Applied Thermoplastic Compound with Reflectorsing Glass Beads on Bituminous Surface</b>					<b>Say</b>	<b>94.30</b>	<b>96.10</b>	<b>97.80</b>	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.									
		<b>Unit = sqm</b>									
		<b>Taking output = 600 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.00	9.75	9.75	9.75	L-12
		Mazdoor	day	0.750	0.750	0.750	306.00	229.50	229.50	229.50	L-13
		<b>b) Machinery</b>									
		Road marking machine @ 60 sqm per hour	hour	10.000	10.000	10.000	1349.00	13490.00	13490.00	13490.00	PM40001
		Tractor-trolley	hour	0.500	0.500	0.500	629.00	314.50	314.50	314.50	PM12001
		<b>c) Material</b>									
		Hot applied thermoplastic compound	Litre	1500.000	1500.000	1500.000	198.46	297690.00	297690.00	297690.00	M-117
		Reflectorising glass beads	kg	150.000	150.000	150.000	72.00	10800.00	10800.00	10800.00	M-153
		Total cost without OH & CP						322533.75	322533.75	322533.75	
		<b>d) Overhead charges on (a+b+c)</b>						25802.70	32253.38	38704.05	
		<b>e) Contractor's profit on (a+b+c+d)</b>						34833.65	35478.71	36123.78	
		Cost for 600 sqm = a+b+c+d+e						383170.10	390265.84	397361.58	
		<b>Rate per sqm = a+b+c+d+e)/600</b>						638.62	650.44	662.27	
		<b>Note</b>						<b>Say</b>	<b>638.60</b>	<b>662.30</b>	
		1. A sealing primer may be applied in advance on cement concrete pavement to ensure proper bonding. Any laitance and/or curing compound to be removed where paint is required to be applied on concrete surface.									
		2. Cost of painter is already included in hire charges of road marking machine.									
<b>8.14</b>	<b>804</b>	<b>Kilometre Stone</b>									
		Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc									
		<b>5th kilometre stone (precast)</b>									
		<b>Unit = Nos.</b>									
		<b>Taking output = 6 Nos.</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		a) M-15 grade of concrete	cum	2.350	2.350	2.350	4080.70-L 4161.10-M 4258.30-S	9589.65	9778.59	10007.01	9.06 A Case-II
		(Rate taken from item No. 9.06, A, Case-II including OH & CP)									
		b) Steel reinforcement @ 5 kg per sqm	kg	22.080	22.080	22.080	70.34-L 71.69-M 73.09-S	1553.02	1582.86	1613.77	9.07/ 1000
		(Rate taken from items 9.07/1000 including OH & CP)									
		c) Excavation in soil for foundation	cum	1.680	1.680	1.680	132.60-L 135.10-M 137.60-S	222.77	226.97	231.17	9.01 A (i)
		(Rate taken from item No. 9.01 A (i) including OH & CP)									
		d) Painting two coats on concrete surface	sqm	9.850	9.850	9.850	81.60-L 83.10-M 84.70-S	803.76	818.54	834.30	8.08
		(Rate taken from item No. 8.08 including OH & CP)									
		e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	1800.000	1800.000	0.60	1080.00	1080.00	1080.00	8.03(ii)
		(Rate taken from item No. 8.03(ii) including OH & CP)									
		<b>Transportation and fixing</b>									
		<b>f) Labour</b>									
		Mate	day	0.264	0.264	0.264	325.00	85.80	85.80	85.80	L-12
		Mason	day	0.600	0.600	0.600	369.00	221.40	221.40	221.40	L-10
		Mazdoor including loading/unloading	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>g) Machinery</b>									
		Tractor-trolley	hour	6.000	6.000	6.000	629.00	3774.00	3774.00	3774.00	PM12001
		<b>h) Overhead charges on (f+g)</b>		(@ 8%)	(@ 10%)	(@ 12%)		473.38	591.72	710.06	
		<b>i) Contractor's profit on (f+g+h)</b>		(@ 10%)	(@ 10%)	(@ 10%)		639.06	650.89	662.73	
		Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h + i						20278.83	20646.76	21056.23	
		<b>Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/ 6</b>						3379.80	3441.13	3509.37	
							<b>say</b>	<b>3379.80</b>	<b>3441.10</b>	<b>3509.40</b>	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
8.14	(ii)	Ordinary kilometer stone (precast)									
		Unit = Nos.									
		Taking output = 14 Nos.									
		a) M-15 grade of concrete	cum	3.770	3.770	3.770	4080.70-L 4161.10-M 4258.30-S	15384.24	15687.35	16053.79	9.06 A Case-II
		(Rate taken from item No. 9.06, A, Case-II including OH & CP)									
		b) Steel reinforcement @ 5 kg per sqm	kg	26.320	26.320	26.320	70.34-L 71.69-M 73.09-S	1851.25	1886.82	1923.66	9.07/ 1000
		(Rate taken from items 9.07/1000 including OH & CP)									
		c) Excavation in soil for foundation	cum	2.770	2.770	2.770	132.60-L 135.10-M 137.60-S	367.30	374.23	381.15	9.01 A (I)
		(Rate taken from item No. 9.01 A (I) including OH & CP)									
		d) Painting two coats on concrete surface	sqm	11.410	11.410	11.410	81.60-L 83.10-M 84.70-S	931.06	948.17	966.43	8.08
		(Rate taken from item No. 8.08 including OH & CP)									
		e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	1680.000	1680.000	0.600	1008.00	1008.00	1008.00	8.03(ii)
		(Rate taken from item No. 8.03 (ii) including OH & CP)									
		<b>Transportation and fixing</b>									
		<b>f) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mason	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-10
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		<b>g) Machinery</b>									
		Tractor-trolley	hour	6.000	6.000	6.000	629.00	3774.00	3774.00	3774.00	PM12001
		<b>h) Overhead charges on (f+g)</b>		(@ 8%)	(@ 10%)	(@ 12%)		511.12	638.90	766.68	
		<b>i) Contractor's profit on (f+g+h)</b>		(@ 10%)	(@ 10%)	(@ 10%)		690.01	702.79	715.57	
		Cost for 14 Nos. ordinary km stone = (a+b+ c+d+e+f+g+h+i)						27131.98	27635.25	28204.28	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Rate for each ordinary km stone = (a+b+ c+d+e+ft+g+h+i) /14					1938.00	1973.95	2014.59		
8.14	(iii)	Hectometer stone (precast)				say	1938.00	1973.90	2014.60		
		Unit = Nos.									
		Taking output = 33 Nos.									
		a) M-15 grade of concrete	cum	1.580	1.580	1.580	6447.51	6574.54	6728.11	9.06 A	Case-II
		(Rate taken from item No. 9.06, A, Case-II including OH & CP)									
		b) Steel reinforcement @ 5 kg per sqm	kg	66.000	66.000	66.000	4642.18	4731.38	4823.78	9.07/1000	
		(Rate taken from items 9.07/1000 including OH & CP)									
		c) Excavation in soil for foundation	cum	1.390	1.390	1.390	184.31	187.79	191.26	9.01 A (I)	
		(Rate taken from item No. 9.01 A (I) including OH & CP)									
		d) Painting two coats on concrete surface	sqm	6.270	6.270	6.270	511.63	521.04	531.07	8.08	
		(Rate taken from item No. 8.08 including OH & CP)									
		e) Lettering on km post ( average 1 letter of 10 cm height each)	per cm per letter	330.000	330.000	330.000	198.00	198.00	198.00	8.03 (ii)	
		(Rate taken from item No. 8.03(ii) including OH & CP)									
		Transportation and fixing									
		f) Labour									
		Mate	day	0.340	0.340	0.340	110.50	110.50	110.50	L-12	
		Mason	day	1.500	1.500	1.500	553.50	553.50	553.50	L-10	
		Mazdoor	day	7.000	7.000	7.000	2142.00	2142.00	2142.00	L-13	
		g) Machinery									
		Tractor-trolley	hour	6.000	6.000	6.000	3774.00	3774.00	3774.00	PM12001	
		h) Overhead charges on (ft+g)		(@ 8%)	(@ 10%)	(@ 12%)	526.40	658.00	789.60		

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		i) <b>Contractor's profit on (f+g+h)</b> Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+ g+h+i) <b>Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i) / 33</b>		(@ 10%)	(@ 10%)	(@ 10%)		710.64	723.80	736.96	
							19800.67	20174.55	20578.78		
						say	600.02	611.35	623.60		
		<b>Note</b> The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					<b>600.00</b>	<b>611.30</b>	<b>623.60</b>		
<b>8.15</b>	<b>805</b>	<b>Road Delineators</b> Supplying and installation of delineators (Road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79 and the drawings.									
		<b>Unit = Each</b>									
		<b>Taking output= 30 Nos.</b>									
		a) <b>Labour</b>									
		Mate	day	0.040	0.040	0.040		13.00	13.00	13.00	L-12
		Mazdoor for fixing	day	1.000	1.000	1.000		306.00	306.00	306.00	L-13
		b) <b>Material</b>									
		Cost of approved type of delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	30.000	30.000	30.000		26371.50	26371.50	26371.50	M-092
		Add 10 per cent cost of material for installation						2637.15	2637.15	2637.15	
		Total cost without OH & CP						29327.65	29327.65	29327.65	
		c) <b>Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2346.21	2932.77	3519.32	
		d) <b>Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3167.39	3226.04	3284.70	
		Cost for 30 Nos. delineators = (a+b+ c+d)						34841.25	35486.46	36131.66	
		<b>Rate per delineators = (a+b+c+d) /30</b>						1161.37	1182.88	1204.39	
		<b>Note</b> In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.				say	<b>1161.40</b>	<b>1182.90</b>	<b>1204.40</b>		
<b>8.16</b>	<b>806</b>	<b>Boundary pillar</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting									
		<b>Unit = Each</b>									
		<b>Taking output = 57 Nos.</b>									
		a) M-15 grade of the boundary stone									
		(Rate taken from item No. 9.06, A, Case-II including OH & CP)	cum	1.250	1.250	1.250	4080.70-L 4161.10-M 4258.30-S	5100.88	5201.38	5322.88	9.06 A Case-II
		b) Steel reinforcement	kg	79.800	79.800	79.800	70.34-L 71.69-M 73.09-S	5612.82	5720.67	5832.38	9.07/1000
		(Rate taken from items 9.07/1000 including OH & CP)									
		c) Excavation in soil									
		(Rate taken from item No. 9.01 A (I) including OH & CP)	cum	10.720	10.720	10.720	132.60-L 135.10-M 137.60-S	1421.47	1448.27	1475.07	9.01 A (I)
		d) Lettering, each 10 cm high									
		(Rate taken from item No. 8.03(ii) including OH & CP)	per letter per cm high	2280.000	2280.000	2280.000	0.60	1368.00	1368.00	1368.00	8.03 (ii)
		<b>Transportation and fixing</b>									
		e) Labour									
		Mate	day	0.570	0.570	0.570	325.000	185.25	185.25	185.25	L-12
		Mazdoor	day	14.250	14.250	14.250	306.000	4360.50	4360.50	4360.50	L-13
		f) Machinery									
		Tractor-trolley	hour	6.000	6.000	6.000	629.000	3774.00	3774.00	3774.00	PM12001
		g) Material									
		Stone spall	cum	11.970	11.970	11.970	355.790	4258.81	4258.81	4258.81	M-008
		<b>h) Overhead charges on (e+f+g)</b>									
		<b>Contractor's profit on (e+f+g+h)</b>									
		Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i)									
		<b>Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i)/57</b>									
							say	499.10	508.00	517.50	
		<b>Note</b>	In case of soft ground, a proper foundation may be provided as per approved design. In case foundation is required to be provided, the items of excavation and foundation concrete are required to be measured and paid separately.								

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
8.17	808	<b>G.I Barbed Wire Fencing 1.2 Metre High</b> Providing and fixing 1.2 metres high GI barbed wire fencing with 1.8 m angle iron posts 40 mm x 40 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 9 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 817									
		<b>Unit = per running metre</b>									
		<b>Taking output = 30 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.090	0.090	325.00	29.25	29.25	29.25	L-12	
		Blacksmith	day	0.250	0.250	369.00	92.25	92.25	92.25	L-25	
		Mazdoor	day	2.000	2.000	306.00	612.00	612.00	612.00	L-13	
		<b>b) Material</b>									
		Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	31.420	73.770	2317.85	2317.85	2317.85	M-063	
		MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	80.500	57.033	4591.16	4591.16	4591.16	M181	
		Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material					138.18	138.18	138.18		
		<b>c) Painting</b>									
		Applying two coats of painting on exposed surface of angle iron posts ( Rate as per item no. 8.08 without OH & CP)	sqm	2.110	2.110	68.71	144.98	144.98	144.98	8.08	
		Total cost without OH & CP					7925.67	7925.67	7925.67		
		<b>d) Overhead charges on (a+b+c)</b>					634.05	792.57	951.08		
		<b>e) Contractor's profit on (a+b+c+d)</b>					855.97	871.82	887.68		
		Cost for 30 metres fencing = a+b+c+d+e					9415.70	9590.07	9764.43		
		<b>Rate per metre = (a+b+c+d+e)/30</b>					313.86	319.67	325.48		
		<b>Note</b>					<b>say</b>	<b>313.90</b>	<b>319.70</b>	<b>325.50</b>	
		Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.									



**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
8.18	808	<b>G.I Barbed Wire Fencing 1.8 Metre High</b> Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be struted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 808									
		<b>Unit = per running metre</b>									
		<b>Taking output = 30 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.116	0.116	0.116	325.00	37.70	37.70	37.70	L-12
		Blacksmith	day	0.400	0.400	0.400	369.00	147.60	147.60	147.60	L-25
		Mazdoor	day	2.500	2.500	2.500	306.00	765.00	765.00	765.00	L-13
		<b>b) Material</b>									
		Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	40.150	40.150	73.77	2961.87	2961.87	2961.87	M-063
		MS angle iron 50 mm x 50 mm x 6 mm, 33.8 metres in length @ 4.5 kg per metre	kg	152.000	152.000	152.000	57.03	8669.02	8669.02	8669.02	M181/1000
		Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material						232.62	232.62	232.62	
		<b>c) Painting</b>									
		Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	3.960	3.960	68.71	272.10	272.10	272.10	8.08
		Total cost without OH & CP						13085.90	13085.90	13085.90	
		<b>d) Overhead charges on (a+b+c)</b>						1046.87	1308.59	1570.31	
		<b>e) Contractor's profit on (a+b+c+d)</b>						1413.28	1439.45	1465.62	
		Cost for 30 metres fencing = a+b+c+d+e						15546.05	15833.94	16121.83	
		<b>Rate per metre fencing = (a+b+c+d+e)/30</b>						518.20	527.80	537.39	
							<b>say</b>	<b>518.20</b>	<b>527.80</b>	<b>537.40</b>	
		<b>Note</b>									
		Cost of excavation for foundation and foundation concrete to be added separately in the cost estimate as per approved design. The rate for these items may be taken from respective chapters.									
8.19	Suggestive	<b>Fencing With Welded Steel Wire Fabric 75 mm x 50 mm</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing 1.20 metre high fencing with angle iron posts 50 mm x 50 mm x 6 mm at 3 metre center to center with 0.40 metre embedded in M15 grade cement concrete, corner, end and every 10th post to be struttred, provided with welded steel wire fabric of 75 mm x 50 mm mesh or 75 mm x 25 mm mesh and fixed to iron posts by flat iron 50 x 5 mm and bolts etc. complete in all respects <b>Unit = Running metre</b>									
		<b>Taking output = 30 m</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Welder	day	1.000	1.000	1.000	413.00	413.00	413.00	413.00	L-02
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Material</b>									
		i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	106.000	106.000	57.03	6045.50	6045.50	6045.50	M181/1000
		ii) Runner flat 50 x 5 mm	kg	26.000	26.000	26.000	57.03	1482.86	1482.86	1482.86	M181/1000
		iii) Welded steel wire fabric 75x50 mm mesh @ 4 kg/sqm; 4 x 30 x 1.2 + 5 per cent wastage <b>OR</b>	kg	151.000	151.000	151.000	51.18	7728.18	7728.18	7728.18	M-193
		Welded steel wire fabric 75 x 25 mm mesh @ 7.75 kg/sqm, 7.75 x 30 x 1.2 + 5 per cent wastage	kg	293.000	293.000	293.000					M-193
		Add 2.5 per cent of cost of material for drilling holes in angles, flats, splitting angle at bottom, nuts and bolts and welded consumables						381.41	381.41	381.41	
		<b>c) Machinery</b>									
		Tractor-trolley (a+b+c)	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001
		<b>d) Painting</b>						16764.85	16764.85	16764.85	
		Painting two coats including priming	sqm	8.000	8.000	8.000	71.50-L 72.80-M 74.10-S	572.00	582.40	592.80	item 8.9
		<b>e) Overhead charges (a+b+c)</b>						1341.19	1676.48	2011.78	
		<b>f) Contractor's profit (a+b+c+e)</b>						1810.60	1844.13	1877.66	
		Cost for 30 metre = a+b+c+d+e+f						20488.64	20867.87	21247.09	
		<b>Rate per metre = (a+b+c+d+e+f)/30</b>						682.95	695.60	708.24	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
	<b>Note</b>	i) Adopt any one type of welded steel wire fabric 75 x 50 mm or 75 x 25 mm as per approved design. ii) The item of excavation and cement concrete in foundation shall be measured and paid separately				say	683.00	695.60	708.20		
8.20	808	<b>Tubular Steel Railing on Medium Weight Steel Channel ( ISMC series) 100 mm x 50 mm</b>  Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings <b>Unit = Running metre</b> <b>Taking output = 10metres</b>	cum	1.296	1.296	1.296	132.60-L 135.10-M 137.60-S	171.85	175.09	178.33	9.01 A (I)
		i) Excavation for foundation (6 Nos) 6 x 0.6 x 0.6 x 0.6 (Rate taken from item No. 9.01 A (I) including OH & CP)	cum	0.648	0.648	0.648	4080.70-L 4161.10-M 4258.30-S	2644.29	2696.39	2759.38	9.06 A Case-II
		iii) Painting of pipe (Rate taken from item No. 8.09 including OH & CP)	sqm	4.710	4.710	4.710	71.50-L 72.80-M 74.10-S	336.77	342.89	349.01	8.09
		iv) Painting of channel section 6 nos, 1.8 metres each 0.2x1.8x6=2.16	sqm	2.160	2.160	2.160	71.50-L 72.80-M 74.10-S	154.44	157.25	160.06	item 8.9
		<b>a) Labour (For fixing at site)</b>									
		Mate	day	0.010	0.010	0.010	325.000	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.000	76.50	76.50	76.50	L-13
		Plumber	day	0.010	0.010	0.010	413.000	4.13	4.13	4.13	L-02
		<b>b) Material</b>									
		Steel pipe 50 mm external dia as per IS:1239	metre	30.000	30.000	30.000	244.890	7346.70	7346.70	7346.70	M-176

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Medium weight steel channel (ISMC series) 100 mm x 50 mm, 10.8 metres length @ 9.2 kg per metre	kg	99.360	99.360	99.360	57.033	5666.80	5666.80	5666.80	M181/1000
		Add for drilling holes @ 2 per cent. of cost of channels						260.27	260.27	260.27	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.040	0.040	0.040	629.000	25.160	25.160	25.160	PM12001
		(a+b+c)						13382.81	13382.81	13382.81	
		<b>d) Overhead charges on (a+b+c)</b>						1070.62	1338.28	1605.94	
		<b>e) Contractor's profit on (a+b+c+d)</b>						1445.34	1472.11	1498.87	
		Cost for 10 metre = i+ii+iii+iv+ a+b+c+d+e						19206.13	19564.82	19934.40	
		<b>Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10</b>						1920.61	1956.48	1993.44	
							say	<b>1920.60</b>	<b>1956.50</b>	<b>1993.40</b>	
8.21	808	<b>Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level</b>									
		Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts 1.8 metres high (1.2 m above GL) with 3 holes 50 mm dia for pipe, fixed 2 metres centre to, complete as per approved drawing									
		<b>Unit = Running metre</b>									
		<b>Taking output = 10metres</b>									
		j) Excavation for foundation (6 Nos) 6 x 0.6 x 0.6 x 0.6									
		(Rate taken from item No. 9.01 A (I) including OH & CP)	cum	1.296	1.296	1.296	132.60-L 135.10-M 137.60-S	171.85	175.09	178.33	9.01 A (I)
		ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3									
		(Rate taken from item No. 9.06, A, Case-II including OH & CP)	cum	0.648	0.648	0.648	4080.70-L 4161.10-M 4258.30-S	2644.29	2696.39	2759.38	9.06 A Case-II
		iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each									
		(Rate taken from item No. 9.06, B, Case-II including OH & CP)	cum	4.710	4.710	4.710	4526.70-L 4615.40-M 4720.80-S	21320.76	21738.53	22234.97	9.06 B Case-II
		iv) Painting of pipe									
		(Rate taken from item No. 8.09 including OH & CP)	cum	2.160	2.160	2.160	71.50-L 72.80-M 74.10-S	154.44	157.25	160.06	8.09

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		a) Labour									
		Mate	day	0.010	0.010	0.010	325.000	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.000	76.50	76.50	76.50	L-13
		Plumber	day	0.010	0.010	0.010	413.000	4.13	4.13	4.13	L-02
		b) Material									
		Steel pipe 50 mm dia as per IS:1239	metre	30.000	30.000	30.000	244.890	7346.70	7346.70	7346.70	M-176
		c) Machinery									
		Tractor-trolley	hour	0.040	0.040	0.040	629.000	25.16	25.16	25.16	PM12001
		(a+b+c)						7455.74	7455.74	7455.74	
		d) Overhead charges on (a+b+c)						596.46	745.57	894.69	
		e) Contractor's profit on (a+b+c+d)						805.22	820.13	835.04	
		Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e						33148.76	33788.71	34518.20	
		Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10						3314.88	3378.87	3451.82	
								3314.90	3378.90	3451.80	
8.22	811	<b>Reinforced Cement Concrete Crash Barrier</b>									
	A	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with HYSD reinforcement conforming to MoRT&H specification and as per details given IRC-5 (Fig.-5, b) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer, all as specified. (Area- 0.243 sqm./meter, single face)									
		Unit = Linear metre									
		Taking output = 20 m									
A	(i)	M 25 grade concrete									
		a) M 25 grade concrete & HYSD steel reinforcement									
		M 25 grade concrete ( Area-0.243 sqm/meter)	cum	4.860	4.860	4.860	5139.40-L	24977.48	25463.97	26031.13	9.06 E Case-II
							5239.50-M				
							5356.20-S				
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		Providing HYSD steel reinforcement including dowel bars including OH & CP	tonne	0.194	0.194	0.194	70336.10-L	13645.20	13907.39	14178.98	9.07
							71687.60-M				
							73087.50-S				
		b) Labour									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>c) Material</b>									
		Pre-moulded asphalt filler board	sqm	0.250	0.250	0.250	1064.18	266.05	266.05	266.05	M-143
		<b>d) Overhead charges on (b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46.80	58.50	70.21	
		<b>e) Contractor's profit on (b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		63.18	64.35	65.53	
		Cost for 20 metre = a+b+c+d+e						39317.72	40079.27	40930.88	
		<b>Rate per metre = (a+b+c+d+e)/20</b>					<b>say</b>	<b>1965.89</b>	<b>2003.96</b>	<b>2046.54</b>	
<b>8.22</b>	<b>A (ii)</b>	<b>M 30 grade concrete</b>									
		<b>a) M 30 grade concrete &amp; HYSD steel reinforcement</b>									
		M 30 grade concrete ( Area-0.243 sqm/meter	cum	4.860	4.860	4.860	5139.40-L 5239.50-M 5356.20-S	24977.48	25463.97	26031.13	9.06 E Case-II
		(Rate taken from item No. 9.06, E, Case-II including OH & CP)									
		Providing HYSD steel reinforcement including dowel bars including OH & CP	tonne	0.194	0.194	0.194	70336.10-L 71687.60-M 73087.50-S	13645.20	13907.39	14178.98	9.07
		<b>b) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.000	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.000	306.00	306.00	306.00	L-13
		<b>c) Material</b>									
		Pre-moulded asphalt filler board	sqm	0.250	0.250	0.250	1064.180	266.05	266.05	266.05	M-143
		<b>d) Overhead charges on (b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46.80	58.50	70.21	
		<b>e) Contractor's profit on (b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		63.18	64.35	65.53	
		Cost for 20 metre = a+b+c+d+e						39317.72	40079.27	40930.88	
		<b>Rate per metre = (a+b+c+d+e)/20</b>					<b>say</b>	<b>1965.89</b>	<b>2003.96</b>	<b>2046.54</b>	
		<b>Note</b>									
		i) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) If PCC required below crash barrier then it should be measured & Paid separately.									
		iii) Rate for RCC M 30 may be taken from chapter-12 on foundation.									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
	<b>B</b>	Provision of an Reinforced cement concrete New Jersey crash barrier at the medians constructed with Reinforced cement concrete with HYSD reinforcement conforming to MoRT&H specification and as per details given IRC-119 (Fig.-26) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer, all as specified. (Area- 0.261 sqm./meter, Double Face)									
		<b>Unit = Linear metre</b>									
		<b>Taking output = 20 m</b>									
	<b>(i)</b>	<b>M 25 grade concrete</b>									
		<b>a) M 25 grade concrete &amp; HYSD steel reinforcement</b>									
		M 25 grade concrete ( Area=0.261 sqm/meter	cum	5.220	5.220	5.220	6083.70	31756.91	31756.91	31756.91	12.11 A (ii) Case-II
		(Rate taken from item No. 12.11 A (ii), Case-II including OH & CP)									
		Providing HYSD steel reinforcement including dowel bars including OH & CP	tonne	0.209	0.209	0.209	70336.10-L 71687.60-M 73087.50-S	14700.24	14982.71	15275.29	9.07
		<b>b) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>c) Material</b>									
		Pre-moulded asphalt filler board	sqm	0.250	0.250	0.250	1064.18	266.05	266.05	266.05	M-143
		<b>d) Overhead charges on (b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		46.80	58.50	70.21	
		<b>e) Contractor's profit on (b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		63.18	64.35	65.53	
		Cost for 20 metre = a+b+c+d+e						47152.19	47447.53	47752.98	
		<b>Rate per metre = (a+b+c+d+e)/20</b>						2357.61	2372.38	2387.65	
							say	<b>2357.60</b>	<b>2372.40</b>	<b>2387.60</b>	
	<b>Note</b>	j) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) If PCC required below crash barrier then it should be measured & Paid separately.									
		iii) Rate for RCC M 25 may be taken from chapter-12 on foundation.									
<b>8.22</b>	<b>B</b>	<b>(ii)</b>									
		<b>M 30 grade concrete</b>									
		<b>a) M 30 grade concrete &amp; HYSD steel reinforcement</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		M 30 grade concrete (Area=0.261 sqm/meter	cum	5.220	5.220	5.220	6253.20	32641.70	32641.70	32641.70	12.11 A(iii) Case-II
		(Rate taken from item No. 12.11 A (iii), Case-II including OH & CP)									
		Providing HYSD steel reinforcement including dowel bars including OH & CP	tonne	0.209	0.209	0.209	70336.10-L 71687.60-M 73087.50-S	14700.24	14982.71	15275.29	9.07
		<b>b) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>c) Material</b>									
		Pre-moulded asphalt filler board	sqm	0.250	0.250	0.250	1064.18	266.05	266.05	266.05	M-143
		<b>d) Overhead charges on (b+c)</b>						46.80	58.50	70.21	
		<b>e) Contractor's profit on (b+c+d)</b>						63.18	64.35	65.53	
		Cost for 20 metre = a+b+c+d+e						48036.98	48332.32	48637.77	
		<b>Rate per metre = (a+b+c+d+e)/20</b>					<b>say</b>	2401.85	2416.62	2431.89	
		<b>Note</b>									
		i) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) If PCC required below crash barrier then it should be measured & Paid separately.									
		iii) Rate for RCC M 30 may be taken from chapter-12 on foundation.									
<b>8.23</b>	<b>811</b>	<b>Metal Beam Crash Barrier</b>									
	<b>A</b>	<b>Type - A, "W" : Metal Beam Crash Barrier</b>									
		Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 811									
		<b>Unit = Running metre</b>									
		<b>Taking output = 4.5 metre length</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Blacksmith	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-25



**Analysis of Rate**

Sl. No.	Ref. to M	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001
		<b>c) Material</b>									
		Corrugated sheet,3 mm thick, "W" beam section ralling,4.5 m in length	kg	41.210	41.210	41.210	49.62	2044.84	2044.84	2044.84	M-089
		Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	88.560	88.560	57.03	5050.84	5050.84	5050.84	M181/1000
		Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	16.240	16.240	57.03	926.22	926.22	926.22	M181/1000
		Nuts and bolts	kg	20.000	20.000	20.000	69.15	1383.00	1383.00	1383.00	M-129
		Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)						2351.22	2351.22	2351.22	
		Total cost without OH & CP						12329.02	12329.02	12329.02	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		986.32	1232.90	1479.48	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1331.53	1356.19	1380.85	
		Cost for 4.5 metre = a+b+c+d+e						14646.88	14918.12	15189.36	
		<b>Rate per metre = (a+b+c+d+e)/4.5</b>						3254.86	3315.14	3375.41	
							<b>say</b>	<b>3254.90</b>	<b>3315.10</b>	<b>3375.40</b>	
<b>8.23</b>	<b>B</b>	<b>Type - B, "THRIE" : Metal Beam Crash Barrier</b>									
		Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m high with 1.15 m below ground level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 811									
		<b>Unit = Running metre</b>									
		<b>Taking output = 4.5 metre length</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Blacksmith	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-25
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>c) Material</b>									
		Corrugated sheet, 3 mm thick, "Thrie" beam section railing, 4.5 m in length	kg	72.940	72.940	72.940	49.62	3619.28	3619.28	3619.28	M-089
		Channel post 150 x 75 x 5 mm, 2 m long, 3 Nos @ 16.4 kg per metre	kg	98.400	98.400	98.400	57.03	5612.05	5612.05	5612.05	M181/1000
		Spacer 150 x 75 x 5 mm channel 0.546 m long, 3 Nos	kg	26.860	26.860	26.860	57.03	1531.91	1531.91	1531.91	M181/1000
		Nuts and bolts	kg	30.000	30.000	30.000	69.15	2074.50	2074.50	2074.50	M-129
		Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)						1925.66	1925.66	1925.66	
		Total cost without OH & CP						15336.30	15336.30	15336.30	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1226.90	1533.63	1840.36	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1656.32	1686.99	1717.67	
		Cost for 4.5 metre = a+b+c+d+e						18219.52	18556.92	18894.32	
		<b>Rate per metre= (a+b+c+d+e)/4.5</b>						4048.78	4123.76	4198.74	
							say	<b>4048.80</b>	<b>4123.80</b>	<b>4198.70</b>	
		<b>Note</b>	In the case of median crash barrier, 'W' metal beamor thrie beam section should be provided on both sides of the vertical posts fixed in the median. Extra provision for metal beam railing and spacer is required to be made when fixed in the median depending on approved design.								
<b>8.24</b>	<b>811</b>	<b>Road Traffic Signals electrically operated</b>									
		<b>Note</b>	Since it is a ready made item commercially produced and erected by specialised firm in the electrical and electronic field, rate may be taken based on market enquiry from firms specialised in this field and ISI certified for the approved design and drawing.								
<b>8.25</b>	<b>Suggestive</b>	<b>Flexible Crash Barrier, Wire Rope Safety Barrier</b>									

**Analysis of Rate  
TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing and erecting a wire rope safety barrier with vertical posts of medium weight RS Joist (SMB series) 100 mm x 75 mm (11.50 kg/m), 1.50 m long 0.85 m above ground and 0.65 m below ground level, split at the bottom for better grip, embedded in M 15 grade cement concrete 450 x 450 mm, 1.50 m center to center and with 4 horizontal steel wire rope 40 mm dia and anchored at terminal posts 15 m apart. Terminal post to be embedded in M 15 grade cement concrete foundation 2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 45° inclination and a tie 100 x 8 mm, 1.50 m long at the bottom, all embedded in foundation concrete as per approved design and drawing, rate excluding excavation and cement concrete.									
		<b>Unit = Running metre</b>									
		<b>Taking output = 15 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		Blacksmith	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-25
		<b>b) Material</b>									
		i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	190.000	190.000	57.03	10836.27	10836.27	10836.27	M181/1000
		ii) Struts - 2 Nos. for terminal posts, 2 m long each 2 x 2 x 11.50	kg	46.000	46.000	46.000	57.03	2623.52	2623.52	2623.52	M181/1000
		iii) Tie 2 Nos. of 8 mm steel plate, 1.5 sqm each for terminal posts @ 62.80 kg/sqm (2 x 1.5)	kg	188.400	188.400	188.400	57.03	10745.02	10745.02	10745.02	M181/1000
		iv) Steel wire rope 40 mm, including 7.50 per cent extra for fixing at ends 15 x 4 x 1.075 @ 1 kg per m	kg	65.000	65.000	65.000	43.42	2822.30	2822.30	2822.30	M-179
		Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables						1351.36	1351.36	1351.36	
		(a+b)						29398.46	29398.46	29398.46	
		<b>c) Painting</b>									
		Applying 2 coats of painting on exposed surface	sqm	16.500	16.500	16.500	71.50-L 72.80-M 74.10-S	1179.75	1201.20	1222.65	8.09
		(Rate taken from item no. 8.09 including OH & CP)									



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		d) Machinery									
		Tractor-trolley	hour	0.250	0.250	0.250	629.00	157.25	157.25	157.25	PM12001
		e) Overhead charges on (a+b+d)		(@ 8%)	(@ 10%)	(@ 12%)		2364.46	2955.57	3546.69	
		f) Contractor's profit on (a+b+d+e)		(@ 10%)	(@ 10%)	(@ 10%)		3192.02	3251.13	3310.24	
		Cost for 15 m = a+b+c+d+e+f						36291.93	36963.61	37635.29	
		Rate per m = (a+b+c+d+e+f)/15					say	2419.46	2464.24	2509.02	
								2419.50	2464.20	2509.00	
		Note		The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.							
8.26	Suggestive	Anti-Glare Devices in Median									
	A	Plantation									
		Plantation of shrubs and plants of approved species in the median. apart from cutting off glare from vehicle coming from opposite direction, these plants provide a pleasant environment and are eco-friendly. The rate for this item is available in the chapter 11 on horticulture.									
	B	Anti-glare screen with 25 mm steel pipe framework fixed with circular and rectangular vans									
		Providing and erecting an anti - glare screen with 25 mm dia vertical pipes fabricated and framed in the form of panels of one metre length and 1.75 metre height fixed with circular vane 250 mm dia at top and rectangular vane 600 x 300 mm at the middle, made out of steel sheet of 3 mm thickness, end vertical pipes of the panel made larger for embedding in foundation concrete, applying 2 coats of paint on all exposed surfaces, all as per approved design and drawings.									
		Unit = Running metre									
		Taking output = one metre									
	a)	Labour									
		Mate	day	0.004	0.004	0.004	325.00	1.30	1.30	1.30	L-12
		Mazdoor	day	0.100	0.100	0.100	306.00	30.60	30.60	30.60	L-13
	b)	Material									
		i) 25 mm steel pipe	metre	16.000	16.000	16.000	136.85	2189.60	2189.60	2189.60	M-175
		ii) MS sheet for 600 x 300 x 3 mm rectangular vane, one number @ 24kg/sqm	kg	4.320	4.320	4.320	57.03	246.38	246.38	246.38	M181/ 1000

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		iii) MS sheet for 250 mm dia circular vane 3 mm thick, 4 numbers @ 24 kg/sqm	kg	4.800	4.800	4.800	57.03	273.76	273.76	273.76	M181/1000
		Add 5 per cent cost of material for fabrication, welding, bending, nuts, bolts etc						135.49	135.49	135.49	
		<b>c) Painting</b>									
		Applying 2 coats of painting on exposed surface	sqm	1.830	1.830	1.830	71.50-L 72.80-M 74.10-S	130.85	133.22	135.60	8.09
		(Rate taken from item no. 8.09 including OH & CP)									
		<b>d) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		230.17	287.71	345.26	
		<b>e) Contractor's profit on (a+b+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		310.73	316.48	322.24	
		<b>Rate per metre = a+b+c+d+e</b>						3548.87	3614.55	3680.22	
							<b>say</b>	<b>3548.90</b>	<b>3614.50</b>	<b>3680.20</b>	
		<b>Note</b>	The items of excavation and cement concrete as per approved design to be measured and paid separately								
8.26	C	<b>Anti-glare screen with rectangular vane of MS sheet</b>									
		Providing and erecting anti - glare screen with rectangular vanes of size 750 x 500 mm made from MS sheet, 3 mm thick and fixed on MS angle 50 x 50 x 6 mm at an angle of 45° to the direction of flow of traffic; 1.5 m center to center, top edge of the screen 1.75 m above ground level, vertical post firmly embedded in M-15 cement concrete foundation 0.60 m below ground level, applying 2 coats of paint on exposed faces, all complete as per approved design and drawings									
		<b>Unit = Running metre</b>									
		<b>Taking output = 1.50 metre</b>									
		<b>a) Labour</b>									
		Mate	day	0.004	0.004	0.004	325.00	1.30	1.30	1.30	L-12
		Mazdoor	day	0.100	0.100	0.100	306.00	30.60	30.60	30.60	L-13
		<b>b) Material</b>									
		i) Angle iron post, 50 x 50 x 6 mm, length 2.35 m	kg	10.580	10.580	10.580	57.03	603.41	603.41	603.41	M181/1000
		ii) MS sheet 3 mm thick @ 24 kg/sqm	kg	9.000	9.000	9.000	57.03	513.30	513.30	513.30	M181/1000
		Add 5 percent of cost of material for fabrication, nuts, bolts etc						55.84	55.84	55.84	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001
		<b>d) Painting</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Applying 2 coats of painting	sqm	0.850	0.850	0.850	71.50-L 72.80-M 74.10-S	60.73	61.86	62.98	8.09
		(Rate taken from item no. 8.09 including OH & CP)									
		<b>e) Overhead charges on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		101.39	126.73	152.08	
		<b>f) Contractor's profit on (a+b+c+e)</b>		@ 10%	@ 10%	@ 10%		136.87	139.41	141.94	
		Cost for 1.5 m = a+b+c+d+e+f						1566.33	1595.34	1624.35	
		<b>Rate per metre = (a+b+c+d+e+f)/1.50</b>					say	1044.22	1063.56	1082.90	
		<b>Note</b>						<b>1044.20</b>	<b>1063.60</b>	<b>1082.90</b>	
		The items of excavation and cement concrete as per approved design to be measured and paid separately. Rate of painting has been analysed separately in this chapter.									
<b>8.27</b>	<b>Suggestive</b>	<b>Street Lighting</b>									
		Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 10 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.									
		<b>Unit = Each</b>									
		<b>Taking output = one light</b>									
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.00	9.75	9.75	9.75	L-12
		Mazdoor	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		Electrician	day	0.250	0.250	0.250	413.00	103.25	103.25	103.25	L-02
		<b>b) Material</b>									
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 10 m height above road level	each	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-172
		ii) Sodium vapour lamp	each	1.000	1.000	1.000	188.94	188.94	188.94	188.94	M-169
		Add 5 percent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc						#VALUE!	#VALUE!	#VALUE!	
		<b>c) Painting</b>									
		For Fixing in Median									
		Providing two coats of alluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	5.750	5.750	71.50-L 72.80-M 74.10-S	411.13	418.60	426.08	item 8.9
		For fixing in Footpath									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing two coats of alluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	4.630	4.630	71.50-L 72.80-M 74.10-S	331.05	337.06	343.08	item 8.9
	(i)	<b>For Fixing in Median</b>									
		d) Overhead charges on (a+b)		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		e) Contractor's profit on (a+b+d)		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per light for fixing in Median= a+b+c+d+e</b>						#VALUE!	#VALUE!	#VALUE!	
	(ii)	<b>For fixing in Footpath</b>									
		<b>Rate per light for Fixing in Footpath = a+b+c+d+e</b>									
		<b>Note</b>									
		The items of excavation and cement concrete foundation will be measured and included separately in the estimate as per approved design and drawing. The rate for painting has been analysed in this chapter.									
<b>8.28</b>	<b>Suggestive</b>	<b>Lighting on Bridges</b>									
		Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp									
		<b>Unit = Each</b>									
		<b>Taking output = one light</b>									
		<b>a) Labour</b>									
		Mate	day	0.024	0.024	0.024	325.00	7.80	7.80	7.80	L-12
		Mazdoor	day	0.400	0.400	0.400	306.00	122.40	122.40	122.40	L-13
		Electrician	day	0.200	0.200	0.200	413.00	82.60	82.60	82.60	L-02
		<b>b) Material</b>									
		i) Steel circular hollow pole of standard specification for street lighting to mount light at 5 m above deck level	each	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-171
		ii) Sodium vapour lamp 70 watt	each	1.000	1.000	1.000	188.94	188.94	188.94	188.94	M-169
		Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc						#VALUE!	#VALUE!	#VALUE!	
		<b>c) Painting</b>									
		Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	2.760	2.760	71.50-L 72.80-M 74.10-S	197.34	200.93	204.52	8.09
		(Rate taken from item no. 8.09 including OH & CP)									
		<b>d) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit @ on (a+b+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per light = a+b+c+d+e</b>					#VALUE!	#VALUE!	#VALUE!		
	<b>Note</b>	The items of cement concrete to be measured and paid separately as per approved design. The rate for painting has already been analysed in this chapter.									
<b>8.29</b>	<b>Suggestive</b>	<b>Cable Duct Across the Road</b> Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.									
	<b>(i)</b>	<b>Single row for one utility service</b>									
		<b>Unit = Running metre</b>									
		<b>Taking output = 20metres</b>									
		a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both side	cum	2.360	2.360	2.360	9109.36	9109.36	9109.36	12.07 (B)	
		<b>( Rate taken from item no. 12.07(B) including OH &amp; CP)</b>									
		<b>b) Labour</b>									
		Mate	day	0.050	0.050	0.050	16.25	16.25	16.25	L-12	
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	L-13	
		Mazdoor skilled	day	0.250	0.250	0.250	388.00	97.00	97.00	L-15	
		<b>c) Material</b>									
		Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	20.000	20.000	10644.80	10644.80	10644.80	M-152	
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	7.200	7.200	1190.16	1190.16	1190.16	M-009	
		Collar for joints 300 mm dia	each	9.000	9.000	9.000	56.00	504.00	504.00	M-084	
		Cement mortar 1:2 for joints	cum	0.020	0.020	0.020	4211.40	84.23	84.23	15.05 (B)	
		<b>( Rate taken from item no. 15.05 B)</b>									
		<b>d) Machinery</b>									
		Tractor-trolley	hour	0.500	0.500	0.500	629.00	314.50	314.50	PM12001	
		<b>e) Overhead charges on (b+c+d)</b>									
				(@ 8%)	(@ 10%)	(@ 12%)	1052.56	1315.69	1578.83		



**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		<b>f) Contractor's profit on (b+c+d+e)</b> Cost for 20 metre = a+b+c+d+e+f									
		<b>Rate per metre = (a+b+c+d+e+f)/20</b>				say					
8.29	(ii)	<b>Double row for two utility services</b> <b>Unit = Running metre</b> <b>Taking output = 20metres</b>									
		a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.									
		<b>(Rate taken from item no. 12.07 B)</b>									
		<b>b) Labour</b>	cum	3.370	3.370	3.370	3859.90	13007.86	13007.86	13007.86	12.07 B
		Mate	day	0.090	0.090	0.090	325.00	29.25	29.25	29.25	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		Mazdoor skilled	day	0.250	0.250	0.250	388.00	97.00	97.00	97.00	L-15
		<b>c) Material</b>									
		Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	40.000	40.000	532.24	21289.60	21289.60	21289.60	M-152
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	14.400	14.400	165.30	2380.32	2380.32	2380.32	M-009
		Collar for joints 300 mm dia	each	18.000	18.000	18.000	56.00	1008.00	1008.00	1008.00	M-084
		Cement mortar 1:2 for joints	cum	0.040	0.040	0.040	4211.40	168.46	168.46	168.46	15.05 B
		<b>(Rate taken from item no. 15.05 B)</b>									
		<b>d) Machinery</b>									
		Tractor-trolley	hour	1.000	1.000	1.000	629.00	629.00	629.00	629.00	PM12001
		(b+c+d)									
		<b>e) Overhead charges on (b+c+d)</b>									
		<b>f) Contractor's profit on (b+c+d+e)</b> Cost for 20 metre = a+b+c+d+e+f									
		<b>Rate per metre = (a+b+c+d+e+f)/20</b>				say					
8.29	(iii)	<b>Triple Row for three utility services</b> <b>Unit = Running metre</b> <b>Taking output = 20metres</b>									
		a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both sides.									
		<b>(Rate taken from Item No. 12.07 B including OH &amp; CP)</b>									
		<b>b) Labour</b>	cum	4.380	4.380	4.380	3859.90	16906.36	16906.36	16906.36	12.07 B

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Mazdoor skilled	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		<b>c) Material</b>									
		Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	60.000	60.000	532.24	31934.40	31934.40	31934.40	M-152
		Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	21.600	21.600	165.30	3570.48	3570.48	3570.48	M-009
		Collar for joints 300 mm dia	each	27.000	27.000	27.000	56.00	1512.00	1512.00	1512.00	M-084
		Cement mortar 1:2 for joints									
		(Rate taken from sub-analysis 21.01 B)	cum	0.060	0.060	0.060	4253.90	255.23	255.23	255.23	21.01 B
		<b>d) Machinery</b>									
		Tractor-trolley	hour	1.500	1.500	1.500	629.00	943.50	943.50	943.50	PM12001
		(b+c+d)						39573.61	39573.61	39573.61	
		<b>e) Overhead charges on (b+c+d)</b>						3165.89	3957.36	4748.83	
		<b>f) Contractor's profit on (b+c+d+e)</b>						4273.95	4353.10	4432.24	
		Cost for 20 metre = a+b+c+d+e+f						63919.82	64790.43	65661.05	
		<b>Rate per metre = (a+b+c+d+e+f)/20</b>						3195.99	3239.52	3283.05	
		<b>Note</b>					<b>say</b>	<b>3196.00</b>	<b>3239.50</b>	<b>3283.10</b>	
		1. Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.									
		2. The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.									
<b>8.30</b>	<b>Suggestive</b>	<b>Highway Patrolling and Traffic Aid Post</b>									
		It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.									
		The organisation and financial aspect are required to be finalised in consultation with administrative and traffic authorities .									
<b>8.31</b>	<b>Suggestive</b>	<b>Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge</b>									
		The items involved for underpass/ subway/ overhead bridge/ overhead foot bridge are earthwork, plain cement concrete, plastering, painting, information sign etc. The rates for these items are available in respective chapters which can be adopted for the quantities derived from the approved designs and drawings									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
8.32	Suggestive	<b>Traffic Control System and Communication System</b>									
		Providing a traffic control centre and communication system including telecommunication facilities and related accessories, CCTV, radar, vehicle detection camera, central computer system									
		These are specialised item of telecommunication system and are the commercial products. The designer is required to contact the manufacturers to ascertain market prices. In case of civil works required to be executed for these installations, pricing may be done as per rates in relevant chapters for quantities derived as per approved design and drawing.									
		As regards the locations where such devices are required to be installed, the traffic control authority should be consulted to finalise the location									
8.33	Suggestive	<b>Gantry Mounted Variable Message Sign Board</b>									
	(i)	Providing and erecting gantry mounted variable message sign board electronically operated capable of flashing the desired message over a designed support system of aluminium alloy or galvanised steel, erected as per approved design and drawings and with lateral clearance as per clause 802.3									
		<b>Gantry Support System</b>									
		<b>Unit = tonne</b>									
		<b>Taking output=1 tonne</b>									
	a)	<b>Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		Blacksmith	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-25
	b)	<b>Material</b>									
		Alluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	1.050	1.050	57033.00	59884.65	59884.65	59884.65	M-060



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Add 15 per cent. of cost of material for fabrication and erection.						8982.70	8982.70	8982.70	
		Add 1 per cent. of cost of material for nuts, bolts and welding						598.85	598.85	598.85	
		<b>c) Machinery</b>									
		Truck 10 tonne	hour	1.000	1.000	1.000	1371.00	1371.00	1371.00	1371.00	PM6004
		Total cost without OH & CP						71857.19	71857.19	71857.19	
		<b>d) Overhead charges on (a+b+c)</b>						5748.58	7185.72	8622.86	
		<b>e) Contractor's profit on (a+b+c+d)</b>						7760.58	7904.29	8048.01	
		<b>Rate per tonne = a+b+c+d+e</b>						85366.35	86947.20	88528.06	
<b>8.33</b>	(ii)	<b>Message Display</b>					say	<b>85366.30</b>	<b>86947.20</b>	<b>88528.10</b>	
		Message display board 6 sqm electronically operated with complete electronic fittings for flashing the pre-determined messages. This is a specialised commercial product and the lumpsum rate including erection at site is required to be ascertained from the market and including in the rate analysis. The size of the board will vary depending upon specific location. The rate for the gantry mounted variable sign would be the addition of cost of gantry support system as per approved design determined at (i) above and the cost of message display board as ascertained from the market at (ii) above									
<b>8.34</b>	<b>Suggestive</b>	<b>Traffic Impact Attenuators at Abutments and Piers</b>									
	<b>A</b>	<b>With Scrap Tyres</b>									
		Provision and installation of traffic attenuators at abutment/pier of flyovers bridges using scrap tyres of size 100 x 20 retrieved from trucks laid in 2 rows and 4 tiers, one above the other and tied with 20 mm wire rope as per approved design and drawings.									
		<b>Unit = sqm</b>									
		<b>Taking output = 20sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.070	0.070	0.070	325.00	22.75	22.75	22.75	L-12
		Mazdoor	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		Blacksmith	day	0.250	0.250	0.250	369.00	92.25	92.25	92.25	L-25
		<b>b) Material</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Scrap tyres of size 900 x 20	each	80.000	80.000	80.000	85.14	6811.20	6811.20	6811.20	M-162
		20 mm steel wire rope	kg	150.000	150.000	150.000	43.42	6513.00	6513.00	6513.00	M-178
		Add 1 per cent of cost of wire rope for clamps etc.						65.13	65.13	65.13	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	3.000	3.000	3.000	629.00	1887.00	1887.00	1887.00	PM12001
		Total cost without OH & CP						15850.33	15850.33	15850.33	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1268.03	1585.03	1902.04	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1711.84	1743.54	1775.24	
		Cost for 20 sqm = a+b+c+d+e						18830.19	19178.90	19527.61	
		<b>Rate per sqm = (a+b+c+d+e)/20</b>					say	941.51	958.94	976.38	
								<b>941.50</b>	<b>958.90</b>	<b>976.40</b>	
<b>8.34</b>	<b>B</b>	<b>Using Plastic/Steel Barrel, Filled with Sand</b>									
		Provision and installation of traffic impact attenuator at abutment/pier of flyovers bridges using plastic/steel barrels 0.60 m dia and 1.0 m in height, filled with sand in three rows and tied with 20 mm steel wire rope as per approved design and drawings									
		<b>Unit = sqm</b>									
		<b>Taking output = 20sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.130	0.130	0.130	325.00	42.25	42.25	42.25	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Blacksmith	day	0.250	0.250	0.250	369.00	92.25	92.25	92.25	L-25
		<b>b) Material</b>									
		Plastic barrels	each	50.000	50.000	50.000					
		or									
		Steel barrels	each	50.000	50.000	50.000	170.47	8523.50	8523.50	8523.50	M-173
		Sand	cum	8.000	8.000	8.000	494.00	3952.00	3952.00	3952.00	M-004
		20 mm steel wire rope	kg	15.000	15.000	15.000	43.42	651.30	651.30	651.30	M-178
		Add 1 per cent of cost of wire rope for clamps etc.						6.51	6.51	6.51	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	2.000	2.000	2.000	629.00	1258.00	1258.00	1258.00	PM12001
		Total cost without OH & CP						15443.81	15443.81	15443.81	
		<b>d) Overhead charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1235.51	1544.38	1853.26	
		<b>e) Contractor's profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1667.93	1698.82	1729.71	
		Cost for 20 sqm = a+b+c+d+e						18347.25	18687.01	19026.78	
		<b>Rate per sqm = (a+b+c+d+e)/20</b>					say	917.36	934.35	951.34	
								<b>917.40</b>	<b>934.40</b>	<b>951.30</b>	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
8.34	C	<b>With HI - DRO cell Sandwich (Patented)</b>  (In this patented HI - DRO cell system, water gets discharged from plastic tubes on impact over a pre-determined time, thus absorbing the energy)  Providing and installing a patentend HI - DRO cell system as a traffic impact attenuators, using plastic tubes 50 cm dia, 1.2 m in height, 25 mm opening at the top, placed in three rows, filled with water and tied with a 20 mm steel wire rope									
		<b>Unit = sqm</b>									
		<b>Taking output = 10sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100	325.00	32.50	32.50	32.50	L-12
		Mazdoor	day	2.500	2.500	2.500	306.00	765.00	765.00	765.00	L-13
		<b>b) Material</b>									
		Plastic tubes 50 cm dia, 1.2 m high	each	40.000	40.000	40.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-138
		Cost of water	KL	12.000	12.000	12.000	56.20	674.40	674.40	674.40	M-191
		20 mm steel wire rope	kg	100.000	100.000	100.000	43.42	4342.00	4342.00	4342.00	M-178
		Add 1 per cent of cost of wire rope for clamps etc.						43.42	43.42	43.42	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	2.000	2.000	2.000	629.00	1258.00	1258.00	1258.00	PM12001
		Water tanker 6 KL capacity	hour	2.000	2.000	2.000	707.00	1414.00	1414.00	1414.00	PM11003
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>						#VALUE!	#VALUE!	#VALUE!	
		Cost for 10 sqm = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per sqm = (a+b+c+d+e)/10</b>						#VALUE!	#VALUE!	#VALUE!	
8.35	Suggestive	<b>Solar Powered Road Marker (Solar Stud)</b>									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Supplying of Solar Raised Pavement Markers made of polycarbonate molded body with circular shape, solar powered, LED self illumination in active mode, 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 13635 kg tested in accordance to ASTM D 4280. The marker should be resistant to dust and water ingress according to IP 65 standards and should withstand temperatures in the range of 0 C to 70 C. Color of lighting could be provided in red or yellow (amber) as per requirement and typical frequency of blinking in 1 Hz. There should be current losses of less than 20 microamperes at 2.4 V in sleepcharging mode to enhance the life of the marker and a full charge should provide for a minimum autonomy of 50 hours. The height, width and length of the marker shall not be less than 10mm x 100 mm x 100 mm. Also, the surface diameter of the marker shall not be less than 100 mm respectively. The weight of the marker shall not exceed 0.5 Kilograms. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive and complete as directed by the engineer.									
		<b>Unit = Nos</b>									
		<b>Taking output = 50Nos</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Material</b>									
		Poly carbonate or ABS body and shall support a load of 13635 kg tested in accordance to ASTM D 4280 with height not exceeding 20 mm and width/length not exceeding 130mm	each	50.000	50.000	50.000	187.29	9364.50	9364.50	9364.50	M-062
		Add 10 per cent of cost of material for fixing and installation						936.45	936.45	936.45	
		Total cost without OH & CP						10619.95	10619.95	10619.95	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		849.60	1062.00	1274.39	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1146.95	1168.19	1189.43	



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Cost for 50 studs = a+b+c+d						12616.50	12850.14	13083.78	
		<b>Rate per studs = (a+b+c+d)/50</b>					say	252.33	257.00	261.68	
								<b>252.30</b>	<b>257.00</b>	<b>261.70</b>	
<b>8.36</b>	<b>Suggestive</b>	<b>Traffic Cone</b>									
		Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873									
		<b>Unit = Each</b>									
		<b>Taking output = 68 Nos.</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020		6.50	6.50	6.50	L-12
		Mazdoor	day	0.500	0.500	0.500		153.00	153.00	153.00	L-13
		<b>b) Material</b>									
		Traffic cones with 150 mm reflective sleeve	each	68.000	68.000	68.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-188
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100		62.90	62.90	62.90	PM12001
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overhead charges on (a+b+c)</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (a+b+c+d)</b>						#VALUE!	#VALUE!	#VALUE!	
		Cost for 68 Nos. = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per no = (a+b+c+d+e)/68</b>						#VALUE!	#VALUE!	#VALUE!	
<b>8.37</b>	<b>Suggestive</b>	<b>Roadside Amenities</b>									
	<b>A</b>	<b>Rest areas</b>									
		Providing plainly furnished accommodation for rest rooms, dormitories, restaurants, stalls, shops, petrol pump, telephone booth, first aid room, traffic aid post, police assistance booth, including electricity, toilet and sewerage system. Pricing may be done based on current plinth area rates approved by PWD/CPWD/MES for a particular zone. Area is required to be assessed for specific location as per actual site conditions.									
	<b>B</b>	<b>Parking areas and bus laybys for trucks, buses and light vehicles</b>									



**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Pricing of parking areas may be done for the quantities of various items based on the approved dimensions and pavement design for a particular terrain and soil. Rates for items may be from respective chapters.									
	C	<b>Lawn</b>									
		Providing a lawn planted with grass and its maintenance									
		Pricing of lawn may be done as per rates given in the chapter on horticulture for the quantities as per approved dimensions in the drawings									
8.38	Suggestive	<b>Rumble Strips</b> Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm (including gaps)</b>									
		The rate per sqm of premix carpet and road marking may be adopted from chapter 5 & 8 respectively for the quantities calculated from approved drawings									
8.39	Suggestive	<b>Policeman Umbrella</b> Provision of a 2 m high (floor to roof) umbrella for traffic policeman at road crossings, where necessary, installed on a raised platform, built on a central support of a steel pipe 100 mm dia, roof made of 25 mm dia steel pipe to provide covered area of 3 sqm, roofed with CGI sheets, all steel parts to be given 2 coats of paint									
		<b>Unit = each</b>									
		<b>Taking output = one number</b>									
		Earthwork	cum								
		Cement Concrete/brick masonry or	cum								
			cum								



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		stone masonry	cum								
		Painting									
		(Rate taken from item no. 8.09 including OH & CP)	sqm	2.500	2.500	2.500	71.50-L 72.80-M 74.10-S	178.75	182.00	185.25	8.09
		<b>a) Labour</b>									
		Mate	day	0.090	0.090	0.090	325.00	29.25	29.25	29.25	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Blacksmith	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-25
		Welder	day	0.250	0.250	0.250	413.00	103.25	103.25	103.25	L-02
		<b>b) Material</b>									
		Steel pipe 100 mm dia	metre	3.500	3.500	3.500	INPUT	#VALUE!	#VALUE!	#VALUE!	M-177
		Steel pipe 25 mm dia	metre	10.000	10.000	10.000	136.85	1368.50	1368.50	1368.50	M-175
		CGI sheets	kg	8.000	8.000	8.000	94.51	756.08	756.08	756.08	M-082
		Add 25 per cent of cost of material for fabrication						#VALUE!	#VALUE!	#VALUE!	
		Add 2 per cent of cost of material for welding consumables, J-hooks, washers etc.						#VALUE!	#VALUE!	#VALUE!	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.500	0.500	0.500	629.00	314.50	314.50	314.50	PM12001
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Overheads charges on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractors Profit on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per policeman umbrella = a+b+c+d+e</b>						#VALUE!	#VALUE!	#VALUE!	
<b>8.40</b>	<b>Suggestive</b>	<b>High Mast Pole Lighting at Interchanges and Flyovers</b>									
		Providing and erecting a high mast pole lighting with 30 m high hot dip galvanised mast designed to withstand forces exerted with wind speeds of 180 km per hour with 3 seconds gust, as per IS:875 (Part 3) - 1978, fitted with a base flange, door at the base of mast with heavy duty internal lock, lantern carriage, suitable winching arrangement for safe working load of 750 kg and high powered electrically driven power tools for raising and lowering of lantern carriage, flexible 8 core electric cable, lightening conductor, earthing terminal, and fixing 2 nos aviation obstruction lights on top of the mast, all complete as per approved design and drawings									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
8.41		This is a specialised work and is generally done by firms who specialise in such jobs. The detailed designs and estimates are submitted by the firms along with their tender for checks by the Department. The cost of this work is required to be worked out based on approved design, drawings and estimate of the lowest tender. A separate contract for this work is concluded as the contractors for road and bridge works generally do not undertake such jobs.									
		<b>Toll Plaza</b>									
		The construction, operation and maintenance of Toll Plaza can be broken into separate items of work as under based on the approved design and drawings:-									
		a) Provision of toll collection service lane to separate different categories of vehicles for purpose of toll collection. This involves considerable increase in carriage way width									
		b) Provision of 2.5 m wide separators for different toll collection service lanes for safety									
		c) Toll booths with integrated roof cover									
		d) Barrier gates for individual lanes									
		e) Provision of building to provide facility to toll plaza personnel									
		f) Toll plaza office equipment and furniture									
		g) Water supply, electricity, sanitation, septic-tank system and drainage									
		h) Telephone, intercoms, wireless communication system									
		i) High mast lighting									
		j) Pavement marking									
		k) Overhead signs									
		l) Fixed message signs (Advance)									
		m) Variable message signs									
		n) Traffic cones and pylons									
		o) First aid post									
		p) Traffic aid post and security									



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
8.42		The quantities for the above mentioned items may be calculated from the approved design and drawings and their rates adopted from respective chapters of the Standard Data Book									
		<b>Safety Devices and Signs in Construction Zones</b> Provision and fixing of traffic signs for limited period at suitable locations in construction zone comprising of warning zone, approach transition zone, working zone and terminal transition zone with a minimum distance of 60 cm from the edge of the kerb in case of kerbed roads and 2 to 3 m from the edge of the carriageway in case of un-kerbed roads, the bottom edge of the lowest sign plate to be not less than 2 m above the road level, fixed on 60 mm x 60 mm x 6 mm angle iron post, founded and installed as per approved design and drawings, removed and disposed of after completion of construction work, all as per IRC:SP:55									
		<b>Unit = each</b>									
		<b>Taking output = one sign post</b>									
		Following types of signs are required to be fixed in construction zones for safety of traffic									
		a) Diversion one km ahead									
		b) Traffic sign ahead									
		c) Road ahead closed									
		d) Men at work									
		e) Road narrow									
		f) Single file traffic									
		g) Right lane diverted									
		h) Left lane diverted									
		i) Right lane closed									
		j) Left lane closed									
		k) Median closed									
		l) Diversion to other carriageway									
		m) Traffic signal ahead									
		n) Two way traffic									
		o) Un - even road									
		p) Slippery road									
		q) Loose chippings									
		r) Dual carriageway ends									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		s) Diversion									
		t) Do not enter									
		u) Road closed									
		v) Stop									
		w) Slow									
		x) One way									
		y) Give way									
		z) Overtaking prohibited									
		aa) Speed limit									
		bb) Weight limit									
		cc) Height and length limit									
		dd) No stopping or standing									
		ee) Any other warning or regulatory safety sign as per site requirement and consistent with IRC:SP:55 and IRC:67									
		The rate for traffic signs are already worked out and given elsewhere in this chapter. The same may be adopted.									
8.43	Suggestive	<b>Portable Barricade in Construction Zone</b>									
		Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 45°, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55									
		<b>Unit = each</b>									
		<b>Taking output = one steel portable barricade</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		Painter	day	0.500	0.500	0.500	391.00	195.50	195.50	195.50	L-18
		Welder	day	0.250	0.250	0.250	413.00	103.25	103.25	103.25	L-02
		<b>b) Material</b>									
		Angle iron 45 x 45 x 5 mm	kg	25.000	25.000	25.000	57.03	1425.83	1425.83	1425.83	M181/1000
		MS sheet 300 mm wide, 2.5 m long and 2.6 mm thick	kg	15.000	15.000	15.000	57.03	855.50	855.50	855.50	M181/1000

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input Ref
				Large	Medium	Small		Large	Medium	Small	
		Paint	litre	0.500	0.500	0.500	246.65	123.33	123.33	123.33	M-130
		Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes						45.63	45.63	45.63	
		Total cost without OH & CP						2838.52	2838.52	2838.52	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		227.08	283.85	340.62	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		306.56	312.24	317.91	
		<b>Rate per barricade = a+b+c+d</b>					say	3372.16	3434.61	3497.06	
<b>8.44</b>	<b>Suggestive</b>	<b>Permanent Type Barricade in Construction Zone</b>									
	<b>A</b>	<b>With steel components</b>									
		Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC.SP:55									
		<b>Unit = each</b>									
		<b>Taking output = one barricade</b>									
		<b>a) Labour</b>									
		Mate	day	0.048	0.048	0.048	325.00	15.60	15.60	15.60	L-12
		Mazdoor	day	0.300	0.300	0.300	306.00	91.80	91.80	91.80	L-13
		Painter	day	0.600	0.600	0.600	391.00	234.60	234.60	234.60	L-18
		Welder	day	0.300	0.300	0.300	413.00	123.90	123.90	123.90	L-02
		<b>b) Material</b>									
		Angle iron 50 x 50 x 5 mm, 2 m long, 2 Nos.	kg	15.000	15.000	15.000	57.03	855.50	855.50	855.50	M181/1000
		MS sheet of 12 SWG, 3 Nos of 200 mm width and 4 m length	kg	50.000	50.000	50.000	57.03	2851.65	2851.65	2851.65	M181/1000
		Paint	litre	1.000	1.000	1.000	246.65	246.65	246.65	246.65	M-130
		Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes						37.07	37.07	37.07	
		Total cost without OH & CP						4456.77	4456.77	4456.77	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		356.54	445.68	534.81	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		481.33	490.24	499.16	
		<b>Rate per barricade = a+b+c+d</b>					say	5294.64	5392.69	5490.74	
<b>8.44</b>	<b>B</b>	<b>With wooden components</b>									

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Construction of a permanent type barricade made of wooden components, 1.5 m high from road level, fitted with 3 horizontal planks 200 mm wide and 3.66 m long on 100 x 100mm wooden vertical post, painted with yellow and white strips, 150 mm in width at an angle of 45°, complete as per IRC:SP:55									
		<b>Unit = each</b>									
		<b>Taking output = one barricade</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mazdoor	day	0.300	0.300	0.300	306.00	91.80	91.80	91.80	L-13
		Painter	day	0.600	0.600	0.600	391.00	234.60	234.60	234.60	L-18
		Carpenter	day	0.600	0.600	0.600	413.00	247.80	247.80	247.80	L-04
		<b>b) Material</b>									
		Timber	cum	0.180	0.180	0.180	44845.72	8072.23	8072.23	8072.23	M-187
		Add 1 per cent of cost of timber for nuts & bolts, nails, etc.						80.72	80.72	80.72	
		Total cost without OH & CP						8746.65	8746.65	8746.65	
		<b>c) Overhead charges on (a+b)</b>						699.73	874.67	1049.60	
		<b>d) Contractor's profit on (a+b+c)</b>						944.64	962.13	979.63	
		<b>Rate per barricade = a+b+c+d</b>						10391.02	10583.45	10775.88	
							<b>say</b>	<b>10391.00</b>	<b>10583.40</b>	<b>10775.90</b>	
<b>8.44</b>	<b>C</b>	<b>With bricks</b>									
		Construction of a permanent type barricade made with brick work in mud mortar, 1.5 m high, 4 m long, 600 mm thick, plastered with cement mortar 1:6, painted with yellow and white strips									
		<b>Unit = each</b>									
		<b>Taking output = one barricade</b>									
		<b>a) Labour</b>									
		Mate	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Painter	day	1.000	1.000	1.000	391.00	391.00	391.00	391.00	L-18
		Mason	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-10
		<b>b) Material</b>									
		Brick	each	1800.000	1800.000	1800.000	6.069	10924.20	10924.20	10924.20	M-079
		Cement	kg	22.000	22.000	22.000	5.16	113.43	113.43	113.43	M081/1000
		Sand	cum	0.090	0.090	0.090	494.00	44.46	44.46	44.46	M-004

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Paint	litre	1.250	1.250	1.250	246.65	308.31	308.31	308.31	M-130
		Total cost without OH & CP						13515.40	13515.40	13515.40	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1081.23	1351.54	1621.85	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1459.66	1486.69	1513.73	
		<b>Rate per barricade = a+b+c+d</b>					say	16056.30	16353.64	16650.98	
		<b>16056.30</b>					say	<b>16056.30</b>	<b>16353.60</b>	<b>16651.00</b>	
<b>8.45</b>	<b>Suggestive</b>	<b>Drum Delineator in Construction Zone</b>									
		Provision of metal drum/empty bitumen drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferential strips of alternate black and white 100 mm wide fitted with reflectors 3 Nos of 7.5 cm dia, all as per IRC:SP:55									
		<b>Unit = each</b>									
		<b>Taking output = one drum delineator</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		Painter	day	0.250	0.250	0.250	391.00	97.75	97.75	97.75	L-18
		<b>b) Material</b>									
		Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	1.000	1.000	170.47	170.47	170.47	170.47	M-173
		Paint	litre	0.500	0.500	0.500	246.65	123.33	123.33	123.33	M-130
		Total cost without OH & CP						474.55	474.55	474.55	
		<b>c) Overhead charges on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		37.96	47.45	56.95	
		<b>d) Contractor's profit on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		51.25	52.20	53.15	
		<b>Rate per drum delineator = a+b+c+d</b>					say	563.76	574.20	584.64	
		<b>563.80</b>					say	<b>563.80</b>	<b>574.20</b>	<b>584.60</b>	
<b>8.46</b>	<b>Suggestive</b>	<b>Water filled barricades work zone sheeting</b>									
		Providing water filled barricades made up of LDPE to segregate the vehicular movement and work zone as per IRC SP 55 shall be in Trapezoidal Shape 800 mm to 1000 mm in length, 700 mm in height for Major Roads and expressway and 500 mm tall for other roads with interlocking arrangements. To be placed 0.5 m from the edge of the carriageway for expressway and 0.3 m for other roads. It should have rebouddable work zone sheeting as per ASTM D 4956 S2.									



Analysis of Rate

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Unit = each									
		Taking output = one drum delineator									
		a) Labour									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		b) Material									
		Water filled barricades work zone sheeting	each	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-238
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		c) Overhead charges on (a+b)						#VALUE!	#VALUE!	#VALUE!	
		d) Contractor's profit on (a+b+c)						#VALUE!	#VALUE!	#VALUE!	
		Rate per drum delineator = a+b+c+d						#VALUE!	#VALUE!	#VALUE!	
8.47	suggestive	<b>Tubular Marker/ Spring Post 450 mm</b>									
		Providing Tubular Marker made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular marker having height upto 450 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker shall be done as per IRC SP 55.									
		Unit = each									
		Taking output = one drum delineator									
		a) Labour									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		b) Material									
		Tubular Marker/ Spring Post 450 mm	each	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-237
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		c) Overhead charges on (a+b)						#VALUE!	#VALUE!	#VALUE!	
		d) Contractor's profit on (a+b+c)						#VALUE!	#VALUE!	#VALUE!	
		Rate per drum delineator = a+b+c+d						#VALUE!	#VALUE!	#VALUE!	
8.48	suggestive	<b>Tubular Marker/ Spring Post 700 mm</b>									



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		Providing Tubular Marker made up of Polyurethane used to divide opposing lanes of road users shall be flexible in nature. Tubular marker having minimum height 700 mm shall be having minimum 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2. Application of Tubular Marker shall be done as per IRC SP 55.									
		<b>Unit = each</b>									
		<b>Taking output = one drum delineator</b>									
		<b>a) Labour</b>									
		Mate	day	0.010	0.010	0.010	325.00	3.25	3.25	3.25	L-12
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		Tubular Marker/ Spring Post 700 mm	each	1.000	1.000	1.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-236
		Total cost without OH & CP						#VALUE!	#VALUE!	#VALUE!	
		<b>c) Overhead charges on (a+b)</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>d) Contractor's profit on (a+b+c)</b>						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per drum delineator = a+b+c+d</b>						#VALUE!	#VALUE!	#VALUE!	
<b>8.49</b>	<b>Suggestive</b>	<b>Flagman</b>									
		Positioning of a smart flagman with a yellow vest and a yellow cap and a red flag 600 x 600 mm securely fastened to a staff 1 m in length for guiding the traffic									
		<b>Unit = each</b>									
		<b>Taking output = one flagman</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Material</b>									
		Flag of red color cloth 600 x 600 mm	each	1.000	1.000	1.000	57.46	57.46	57.46	57.46	M-099
		Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	1.000	1.000	27.86	27.86	27.86	27.86	M-198
		Total cost without OH & CP						404.32	404.32	404.32	
		<b>c) Overhead charges on (a+b)</b>						32.35	40.43	48.52	
		<b>d) Contractor's profit on (a+b+c)</b>						43.67	44.48	45.28	
		<b>Rate per flagman = a+b+c+d</b>						480.33	489.23	498.12	
							<b>say</b>	<b>480.30</b>	<b>489.20</b>	<b>498.10</b>	

Analysis of Rate

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
8.50	816	<b>Advanced Traffic Management System ( ATMS)</b> work shall cover design, supply, installation, commissioning and / or operation and maintenance of Advance Traffic Management Systems (which is one of the components of intelligent Transport Systems- ITS). The system would include out-door equipment including emergency call boxes, variable message sign systems, meteorological data system, close circuit TV camera (CCTV) system, traffic counting and classification system and transmission system. The indoor equipment would comprise a large display board, central computer (with Network Management System-NMS), CCTV monitor system, call centre system or management of emergency call boxes housed in a control centre with uninterrupted power supply.									
	<b>A</b>	<b>Traffic Management Command Centre Equipment</b>									
		<b>Material</b>									
	<b>A1</b>	Control Centre Server	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-244
	<b>A2</b>	Hot Standby Backup Server	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-245
	<b>A3</b>	NAS Video Server with storage Minimum 70 TB	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-246
	<b>A4</b>	Backup Video (only Incidents) Server	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-247
	<b>A5</b>	Graphic Display ( 70" LED DLP in 3x2 Matrix)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-248
	<b>A6</b>	Graphic Display Controller and software including Video Switches	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-249
	<b>A7</b>	CCTV Monitoring Workstation	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-250
	<b>A8</b>	Emergency Telephone (1033) console	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-251
	<b>A9</b>	VIDS- Workstation	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-252
	<b>A10</b>	Administrative Workstation	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-253
	<b>A11</b>	ATMS Operator Workstation	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-254
	<b>A12</b>	CCTV Joystick	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-255
	<b>A13</b>	Operations Laser Printer ( Colour)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-256
	<b>A14</b>	Operations Laser Printer ( Black)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-257
	<b>A15</b>	Rack 19"	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-258
	<b>B</b>	<b>Advanced Traffic Management System ( ATMS) Software</b>									
	<b>B1</b>	ATMS Control Room Software (integrated with VIDS, ATCC, VMS, MOS)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-259



**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	B2	Video Management Software with atleast 150 VMS Lic.	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-260
	B3	Facility Monitoring System Controller Software	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-261
	B4	Server & Database license	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-262
	B5	Antivirus license	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-263
	C	<b>PTZ Closed Circuit Television System</b>									
	C1	PTZ Camera ( including CCTV Controller)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-264
	C2	Solar System with UPS, Battery & 12 m Pole & Cabinet	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-265
	D	<b>Video Incident Detection System Equipment (VIDS)</b>									
	D1	VIDS Camera (including Image Processing unit)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-266
	D2	Warning Amber Lights with hooters, 72 Hrs solar backup, 5m poles and foundation	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-267
	D3	Cabinet	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-268
	D4	12m Pole ( including manufacturing and galvanizing)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-269
	D5	Solar System with UPS & batteries	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-270
	E	<b>Automatic Traffic Counters-cum-classifier System Equipment (ATCC)</b>									
	E1	Equipment, Sensor unit, Processing unit, Solar power supply	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-271
	E2	Solar System with UPS, batteries	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-272
	F	<b>Variable Message Sign Equipment (VMS)</b>									
	F1	VMS (Variable Message Sign- M type)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-273
	F2	Gantry (including manufacturing and galvanizing)	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-274
	F3	Solar System with UPS, battery and cabinet for M type VMS	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-275
	G	<b>UPS and Power system</b>									
	G1	Uninterruptible Power Supply (UPS) For Server Rack (10 KVA)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-276
	G2	Uninterruptible Power Supply (UPS) For TMC (30 KVA)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-277
	G3	Power Distribution Board ( Essential & Critical Supply)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-278
	H	<b>Meteorological Observation System (MOS)</b>									

**Analysis of Rate**

**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per perobject category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
	H1	MOS sensor equipment ( including MOS controller)	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-279
	H2	Cabinet	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-280
	H3	Pole	Nos.	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-281
	H4	Steel fence for protection	Set	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-282
	I	<b>Digital Transmission System (DTS)</b>									
	I1	24 Core Armored OFC + all accessories	km	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-283
	I2	40mm PLB HDPE duct as per latest TSEC specifications + all accessories	km	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-284
	I3	Trenching of 1.8 metres, laying & backfilling for PLB HDPE duct	km	1	1	1	INPUT	#VALUE!	#VALUE!	#VALUE!	M-285
	<b>Note</b>	Overhead and contractor's profit will be added separately on item no. 8.50.									
		Civil works required to be executed for these installations. Drilling may be done as per rates in relevant chapters									
<b>8.51</b>	<b>Suggestive</b>	<b>Fiber Reinforced Cement Concrete New Jersey Crash Barrier</b>									
		<b>Unit= Linear metre</b>									
		<b>Taking Output= 20 m</b>									
<b>A</b>		Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with fiber steel and as per details given IRC -5 ( Fig. - 5, b) including dowel bars 25 mm dia, 450mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the engineer, all as specified. (Area- 0.243 Sqm/ Metre, Single Face)									
	<b>a)</b>	<b>M30 Grade concrete</b>	cum	4.860	4.860	4.860	6253.20	30390.55	30390.55	30390.55	12.11 A (iii) Case II
		M30 grade concrete (Area- 0.243 Sqm/ Metre)									
		(Rate taken from item No. 12.11 A (iii) Case II including OH & CP)									
	<b>b)</b>	<b>Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
	<b>c)</b>	<b>Material</b>									
		Fiber Steel (35 Kg/Cum)	tonne	0.170	0.170	0.170	INPUT	#VALUE!	#VALUE!	#VALUE!	M-225
	<b>d)</b>	<b>Overhead charges on (b+c)</b>									
				(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
	<b>e)</b>	<b>Contractor's profit on (b+c+d)</b>									
				(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 20 metre = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	

**Analysis of Rate**  
**TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES**

Sl. No.	Ref. to M	Description	Unit	Quantity as per project category			Rate (Rs)	Amount			Input_ Ref
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per metre = (a+b+c+d+e)/20</b>									
	<b>Note</b>	i) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) If PCC required below crash barrier then it should be measured & Paid separately.									
		iii) Rate for RCC M30 may be taken from chapter on 12.									
	<b>B</b>	Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with Reinforced Cement Concrete with fiber steel and as per details given IRC- 119 (Fig. -26) including dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board etc., as per approved drawing and at locations directed by the Engineer, all as specified. (Area- 0.261 Sqm./ meter, Double Face)									
		<b>M30 Grade concrete</b>									
		M30 grade concrete (Area-0.261 Sqm/ Metre)	cum	5.220	5.220	5.220	6253.20	32641.70	32641.70	32641.70	12.11 A (iii) Case II
		(Rate taken from item No. 12.11 A (iii) Case II including OH & CP)									
		<b>b) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>c) Material</b>									
		Fiber Steel (35 Kg/Cum)	tonne	0.183	0.183	0.183	INPUT	#VALUE!	#VALUE!	#VALUE!	M-225
		<b>d) Overhead charges on (b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit on (b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 20 metre = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per metre = (a+b+c+d+e)/20</b>						#VALUE!	#VALUE!	#VALUE!	
	<b>Note</b>	i) Excavation and backfilling are incidental to work and not to be measured separately.									
		ii) If PCC required below crash barrier then it should be measured & Paid separately.									
		iii) Rate for RCC M30 may be taken from chapter on 12.									



**CHAPTER - 9**  
**PILE CULVERTS**





**CHAPTER-9**  
**PIPE CULVERTS**

**PREAMBLES :**

- 1 Excavation for structures has been provided both by manual and mechanical means. The rate relevant to a particular situation may be adopted.
- 2 The earth excavated from foundation has been proposed to be backfilled and balance quantity utilized for road work locally except for marshy soil where disposal has been provided.
- 3 Pipe culverts of size 1000mm, 1200mm & 1500 mm dia in single row and double row which are generally used on roads, have been included. Only laying pipe has been included in the rate. Auxiliary works such as excavation, backfilling, concrete and masonry shall be paid for separately, as provided under the respective clauses.
- 4 Any river training and protection work like stone pitching, apron, revetment, curtain wall etc. may be provided under the respective clause included in Chapter 16.
- 5 The choice between first class bedding and cement cradle bedding will depend on particular situations and approved design.
- 6 The joining of pipes is proposed by collar or flush joints.
- 7 Backfilling upto 300 mm above top of the pipe shall be carefully done and the soil thoroughly rammed, tamped or vibrated in layers not exceeding 150 mm.
- 8 Head walls and other ancillary works shall be executed under respective clauses.
- 9 Pipe shall be laid at least 600 mm below from the top of road.





**Summary of Rate Analysis**

**CHAPTER - 9  
PIPE CULVERTS**

SL. No.	Description	Unit	Rate		
			Large	Medium	Small
9.01	<b>Excavation for structures</b>				
	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.				
	<b>I Ordinary soil</b>				
	<b>A Manual Means</b>				
	(i) <b>Depth upto 3 m</b>	Cum	132.60	135.10	137.60
9.01	(ii) <b>Depth 3 m to 6 m</b>	Cum	170.50	173.70	176.90
9.01	(iii) <b>Depth above 6 m</b>	Cum	227.40	231.60	235.80
9.01	<b>B(i) Mechanical Means( Depth upto 3 m )</b>	Cum	84.60	89.40	112.50
9.01	<b>B(ii) Mechanical Means( Depth 3 m to 6 m)</b>	Cum	93.60	98.80	124.40
9.01	<b>B(iii) Mechanical Means( Depth above 6 m)</b>	Cum	104.70	110.50	139.20
9.01	<b>II Ordinary Rock ( not requiring blasting)</b>				
	<b>A Manual Means</b>				
	(i) <b>Depth upto 3 m</b>	Cum	189.50	193.00	196.50
9.01	<b>B Mechanical Means</b>	Cum	535.80	577.80	605.70
9.01	<b>III Hard Rock ( requiring blasting)</b>				
	<b>A Manual Means</b>	Cum	803.60	818.50	833.30
9.01	<b>III Hard Rock ( requiring blasting)</b>				
	Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes , collection of the excavated rock by a dozer , loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No . 303				
	<b>B Mechanical Means</b>	Cum	#VALUE!	#VALUE!	#VALUE!
9.01	<b>IV Hard Rock ( blasting prohibited))</b>				
	<b>A Mechanical Means</b>	Cum	722.50	820.70	951.90
9.01	<b>V Marshy Soil</b>				
	<b>A Manual Means</b>	Cum	578.50	589.20	599.90
	<b>B Mechanical Means</b>	Cum	227.00	238.80	298.70
9.02	<b>Sand Filling in Foundation Trenches as per Drawing &amp; Technical Specification</b>	Cum	723.80	737.70	753.30
9.03	<b>PCC 1:3:6 in Foundation</b>				
	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	3403.50	3468.30	3539.40
9.04	<b>Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Single Row .</b>				



**Summary of Rate Analysis**

**PIPE CULVERTS**

SL. No.	Description	Unit	Rate		
			Large	Medium	Small
	Laying Reinforced cement concrete pipe NP4 / prestressed concrete pipe for culverts on first class bedding of granular material 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 .				
	<b>A 1000 mm dia</b>	Metre	6938.60	7067.00	7195.50
	<b>B 1200 mm dia</b>	Metre	8122.30	8272.80	8423.20
	<b>C 1500 mm dia</b>	Metre	8163.00	8314.10	8465.30
<b>9.05</b>	<b>Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Double Row .</b>				
	Laying Reinforced cement concrete pipe NP4 / prestressed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .				
	<b>A 1000 mm dia</b>	Metre	13932.20	14190.20	14448.20
	<b>B 1200 mm dia</b>	Metre	16303.70	16605.60	16907.50
	<b>C 1500 mm dia</b>	Metre	16390.70	16694.30	16997.80
<b>9.06</b>	<b>Plain/ Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications .</b>	Cum			
<b>9.06 A</b>	<b>PCC Grade M15</b>				
	Case I PCC Grade M15 using batching plant , transit mixer & Concrete pump	Cum	3874.10	3950.70	4044.10
	Case II PCC Grade M15 using batching plant , transit mixer & manual placing	<b>Cum</b>	4080.70	4161.10	4258.30
<b>9.06 B</b>	<b>PCC Grade M20</b>				
	Case I PCC Grade M20 using batching plant , transit mixer & Concrete pump	Cum	4320.10	4405.00	4506.60
	Case II PCC Grade M20 using batching plant , transit mixer & manual placing	Cum	4526.70	4615.40	4720.80
<b>9.06 C</b>	<b>RCC Grade M20</b>				
	Case I RCC Grade M20 using batching plant , transit mixer & Concrete pump	Cum	4313.60	4398.30	4499.90
	Case II RCC Grade M20 using batching plant , transit mixer & manual placing	Cum	4534.10	4622.90	4728.50
<b>9.06 D</b>	<b>PCC Grade M25</b>				
	Case I PCC Grade M25 using batching plant , transit mixer & Concrete pump	Cum	4696.30	4788.10	4896.70
	Case II PCC Grade M25 using batching plant , transit mixer & manual placing	Cum	4903.00	4998.60	5111.00
<b>9.06 E</b>	<b>RCC Grade M25</b>				
	Case I RCC Grade M25 using batching plant , transit mixer & Concrete pump	Cum	4918.90	5014.90	5127.60
	Case II RCC Grade M25 using batching plant , transit mixer & manual placing	Cum	5139.40	5239.50	5356.20
<b>9.07</b>	<b>Supplying ,Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.</b>	MT	70336.10	71687.60	73087.50

**Analysis of Rate**  
**CHAPTER - 9**  
**PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
9.01	304	<b>Excavation for structures</b> 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.									
	I	Ordinary soil									
		Unit = cum									
	A	Taking output = 10 cum									
	(i)	Manual Means									
		Depth upto 3 m									
		a) Labour									
		Mate	day	0.140	0.140	0.140	325.00	45.50	45.50	45.50	L-12
		Mazdoor	day	3.500	3.500	3.500	306.00	1071.00	1071.00	1071.00	L-13
		b) Overhead charges @ on (a)		(@ 8%)	(@ 10%)	(@ 12%)		89.32	111.65	133.98	
		c) Contractor's profit @ on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		120.58	122.82	125.05	
		Cost for 10 cum = a+b+c						1326.40	1350.97	1375.53	
		Rate per cum = (a+b+c)/10						132.64	135.10	137.55	
							Say	132.60	135.10	137.60	
		<b>Note</b>									
		1. Cost of dewatering may be added where required upto, 10 percent of labour cost Assessment for dewatering shall be made as per site conditions.									
		2. The excavated earth can be used partially for backfilling of foundation pit and partly for road work except for marshy soil .Hence cost of disposal has not been added except for marshy soil . This remark is common to all cases of item 9.01 excluding marshy soil .									
		3 . The cost of shoring and shuttering , where needed , may be added @ 1 percent on cost of excavation for open foundation .									
9.01	A	(ii) Depth 3 m to 6 m									
		a) Labour									
		Mate / Supervisor	day	0.180	0.180	0.180	325.00	58.50	58.50	58.50	L-12

**Analysis of Rate**

**PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	4.500	4.500	4.500	306.00	1377.00	1377.00	1377.00	L-13
		<b>b) Overhead charges @ on (a)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		114.84	143.55	172.26	
		<b>c) Contractor's profit @ on (a+b)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		155.03	157.91	160.78	
		Cost for 10 cum = a+b+c						1705.37	1736.96	1768.54	
		<b>Rate per cum = (a+b+c)/10</b>					<b>Say</b>	<b>170.50</b>	<b>173.70</b>	<b>176.90</b>	
		<b>Note</b> 1. Cost of dewatering may be added where required upto 15 percent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.									
<b>9.01</b>	<b>A</b>	<b>(iii)</b> <b>Depth above 6 m</b>									
		<b>a) Labour</b>									
		Mate / Supervisor	day	0.240	0.240	0.240	325.00	78.00	78.00	78.00	L-12
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Overhead charges @ on (a)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		153.12	191.40	229.68	
		<b>c) Contractor's profit @ on (a+b)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		206.71	210.54	214.37	
		Cost for 10 cum = a+b+c						2273.83	2315.94	2358.05	
		<b>Rate per cum = (a+b+c)/10</b>					<b>Say</b>	<b>227.38</b>	<b>231.59</b>	<b>235.80</b>	
		<b>Note</b> 1. Cost of dewatering may be added where required upto 20 percent of labour cost. 2. Assessment for dewatering shall be made as per site conditions.									
<b>9.01</b>	<b>B</b>	<b>(i)</b> <b>Mechanical Means (Depth upto 3 m)</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 330 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery Hydraulic Excavator</b>									
		<b>For excavation</b>									
		(i) 1.2 cum bucket capacity	hour	4.627			2703.00	12506.78			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.329		2432.00		12960.13		PM3004
		(iii) 0.9 cum bucket capacity	hour			7.450	2202.00		16404.90		PM3005
		For backfilling ( considering 60 % of the excavated material )									
		(i) 1.2 cum bucket capacity	hour	2.776			2703.00	7503.53			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.197		2432.00		7775.10		PM3004

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 0.9 cum bucket capacity	hour			4.470	2202.00			9842.94	PM3005
		<b>Tipper for transportation</b> of excess material to dumping yard considering lead @ 1 km									
		(i) 18 cum capacity	t-km	198.000			4.80	950.40			PM72001
		(ii) 14 cum capacity	t-km		198.000		5.48		1085.04		PM73001
		(iii) 10 cum capacity	t-km			198.000	6.80			1346.40	PM74001
		<b>c) Overhead charges @ on (a+b)</b>						1881.02	2437.23	3617.55	
		<b>d) Contractor's profit @ on (a+b+c)</b>						2539.37	2680.95	3376.38	
		Cost for 330 cum = a+b+c+d						27933.10	29490.45	37140.17	
		<b>Rate per cum = (a+b+c+d)/ 330</b>						84.65	89.36	112.55	
							<b>Say</b>	<b>84.60</b>	<b>89.40</b>	<b>112.50</b>	
<b>9.01</b>	<b>B (ii)</b>	<b>Mechanical Means ( Depth 3 m to 6 m)</b>									
		Unit = cum									
		Taking output = 300 cum									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery Hydraulic Excavator</b>									
		<b>For excavation</b>									
		(i) 1.2 cum bucket capacity	hour	4.674			2703.00	12633.82			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.383		2432.00		13091.46		PM3004
		(iii) 0.9 cum bucket capacity	hour			7.325	2202.00			16570.05	PM3005
		<b>For backfilling ( considering 60 % of the excavated material )</b>									
		(i) 1.2 cum bucket capacity	hour	2.804			2703.00	7579.21			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.230		2432.00		7855.36		PM3004
		(iii) 0.9 cum bucket capacity	hour			4.515	2202.00			9942.03	PM3005
		<b>Tipper for transportation</b> of excess material to dumping yard considering lead @ 1 km									
		(i) 18 cum capacity	t-km	180.000			4.80	864.00			PM72001
		(ii) 14 cum capacity	t-km		180.000		5.48		986.40		PM73001



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t-km			180.000	6.80			1224.00	PM74001
		<b>c) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1890.32	2448.52	3634.57	
		<b>d) Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2551.94	2693.37	3392.26	
		Cost for 300 cum = a+b+c+d						28071.29	29627.11	37314.91	
		<b>Rate per cum = (a+b+c+d)/ 300</b>					<b>Say</b>	93.57	98.76	124.38	
<b>9.01</b>	<b>B</b>	<b>(iii) Mechanical Means (Depth above 6 m)</b>						<b>93.60</b>	<b>98.80</b>	<b>124.40</b>	
		Unit = cum									
		Taking output = 270 cum									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery Hydraulic Excavator</b>									
		<b>For excavation</b>									
		(i) 1.2 cum bucket capacity	hour	4.732			2703.00	12790.60			PM3003
		(ii) 1.1 cum bucket capacity	hour		5.450		2432.00	13254.40			PM3004
		(iii) 0.9 cum bucket capacity	hour			7.619	2202.00	16777.04			PM3005
		<b>For backfilling ( considering 60 % of the excavated material )</b>									
		(i) 1.2 cum bucket capacity	hour	2.839			2703.00	7673.82			PM3003
		(ii) 1.1 cum bucket capacity	hour		3.270		2432.00	7952.64			PM3004
		(iii) 0.9 cum bucket capacity	hour			4.571	2202.00	10065.34			PM3005
		<b>Tipper for transportation of excess material to dumping yard considering lead @ 1 km</b>									
		(i) 18 cum capacity	t-km	162.000			4.80	777.60			PM72001
		(ii) 14 cum capacity	t-km		162.000		5.48	887.76			PM73001
		(iii) 10 cum capacity	t-km			162.000	6.80		1101.60		PM74001
		<b>c) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1903.52	2464.68	3659.52	
		<b>d) Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2569.75	2711.15	3415.55	
		Cost for 270 cum = a+b+c+d						28267.29	29822.63	37571.05	
		<b>Rate per cum = (a+b+c+d)/ 270</b>					<b>Say</b>	104.69	110.45	139.15	
<b>9.01</b>	<b>II</b>	<b>Ordinary Rock ( not requiring blasting)</b>						<b>104.70</b>	<b>110.50</b>	<b>139.20</b>	
	<b>A</b>	<b>Manual Means</b>									

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) Depth upto 3 m									
		Unit = cum									
		Taking output = 10 cum									
		a) Labour									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mazdoor	day	5.000	5.000	5.000	306.00	1530.00	1530.00	1530.00	L-13
		b) Overhead charges @ on (a)		(@ 8%)	(@ 10%)	(@ 12%)		127.60	159.50	191.40	
		c) Contractor's profit @ on (a+b)		(@ 10%)	(@ 10%)	(@ 10%)		172.26	175.45	178.64	
		Cost for 10 cum = a+b+c						1894.86	1929.95	1965.04	
		Rate per cum = (a+b+c)/10						189.49	193.00	196.50	
							<b>Say</b>	<b>189.50</b>	<b>193.00</b>	<b>196.50</b>	
		<b>Note</b>									
		Cost of dewatering upto 10 percent of labour cost may be added , where required. Assessment for dewatering shall be made as per site conditions.									
9.01		<b>B Mechanical Means</b>									
		Unit = cum									
		Taking output = 50 cum									
		a) Labour									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		b) Machinery Hydraulic Excavator									
		Excavator for excavation									
		(i) 1.2 cum bucket capacity	hour	5.818			2703.00	15726.05			PM3003
		(ii) 1.1 cum bucket capacity	hour		6.845		2432.00		16647.04		PM3004
		(iii) 0.9 cum bucket capacity	hour			7.273	2202.00			16015.15	PM3005
		<b>For loading</b>									
		(i) 1.2 cum bucket capacity	hour	0.872			2703.00	2357.02			PM3003
		(ii) 1.1 cum bucket capacity	hour		1.005		2432.00		2444.16		PM3004
		(iii) 0.9 cum bucket capacity	hour			1.405	2202.00			3093.81	PM3005
		Jack Hammer	hour	5.818	6.845	7.273	206.00	1198.51	1410.07	1498.24	PM4001
		<b>Tipper for transportation considering lead @ 1 km</b>									
		(i) 18 cum capacity	t-km	75.000			4.80	360.00			PM72001
		(ii) 14 cum capacity	t-km		75.000		5.48		411.00		PM73001

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t-km			75.000	6.80			510.00	PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18 cum capacity	hour	0.872			2239.00	1952.41			PM6001
		(ii) 14 cum capacity	hour		1.005		1998.00		2007.99		PM6002
		(iii) 10 cum capacity	hour			1.405	1785.00			2507.93	PM6003
		<b>c) Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		1804.08	2387.73	2949.85	
		<b>d) Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		2435.51	2626.50	2753.20	
		Cost for 50 cum = a+b+c+d						26790.57	28891.48	30285.17	
		<b>Rate per cum = (a+b+c+d)/ 50</b>						535.81	577.83	605.70	
							<b>Say</b>	<b>535.80</b>	<b>577.80</b>	<b>605.70</b>	
9.01	301 & 302	<b>Hard Rock ( requiring blasting)</b>									
		<b>A</b>									
		<b>Manual Means</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 10 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.350	0.350	0.350	325.00	113.75	113.75	113.75	L-12
		Driller	day	0.500	0.500	0.500	318.00	159.00	159.00	159.00	L-06
		Blaster	day	0.250	0.250	0.250	508.00	127.00	127.00	127.00	L-03
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>b) Machinery</b>									
		Air Compressor 250 cfm with 2 jack hammer for drilling	hour	1.000	1.000	1.000	413.00	413.00	413.00	413.00	PM15001+2 x PM45001
		<b>c) Material</b>									
		Explosives (Blasting Material)	kg	3.500	3.500	3.500	976.21	3416.74	3416.74	3416.74	M-215
		Detonator electric	each	14.000	14.000	14.000	6.19	86.66	86.66	86.66	M-217
		<b>c) Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		541.13	676.41	811.70	
		<b>d) Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		730.53	744.06	757.58	
		Cost for 10 cum = a+b+c+d						8035.80	8184.62	8333.43	
		<b>Rate per cum = (a+b+c+d)/ 10</b>						803.58	818.46	833.34	
							<b>Say</b>	<b>803.60</b>	<b>818.50</b>	<b>833.30</b>	
		<b>Note</b>									
		Cost of dewatering @ 10 percent of (a+b) may be added , where required . Assessment for dewatering shall be made as per site conditions.									
9.01	301, 302	<b>Hard Rock ( requiring blasting)</b>									

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Carrying out excavation in hard rock to achieve a specified slope of the rock face by controlled use of explosives and blasting accessories in properly aligned and spaced drill holes , collection of the excavated rock by a dozer , loading in tipper by a front end loader and disposing of the material with all lifts and lead upto 1000 m, all as specified in clause No . 303									
		<b>B Mechanical Means</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 120 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.210	0.210	0.210	325.00	68.25	68.25	68.25	L-12
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		Driller	day	2.000	2.000	2.000	318.00	636.00	636.00	636.00	L-06
		Blaster	day	0.250	0.250	0.250	508.00	127.00	127.00	127.00	L-03
		<b>b) Machinery</b>									
		Air Compressor	hour	6.000	6.000	6.000	391.00	2346.00	2346.00	2346.00	PM15001
		Jack Hammer for drilling holes (@4.5 m per hour)	hour	24.000	24.000	24.000	206.00	4944.02	4944.02	4944.02	PM4001
		Jack Hammer (consider 5% of the volume for dressing)	hour	1.024	1.024	1.024	206.00	210.94	210.94	210.94	PM4001
		<b>Hydraulic Excavator</b>									
		<b>Excavator for excavation</b>									
		(i) 1.2 cum bucket capacity	hour	1.024			2703.00	2767.87			PM3003
		(ii) 1.1 cum bucket capacity	hour		1.024		2432.00		2490.37		PM3004
		(iii) 0.9 cum bucket capacity	hour			1.024	2202.00			2254.85	PM3005
		<b>For loading</b>									
		(i) 1.2 cum bucket capacity	hour	2.094			2703.00	5660.08			PM3003
		(ii) 1.1 cum bucket capacity	hour		2.411		2432.00		5863.55		PM3004
		(iii) 0.9 cum bucket capacity	hour			3.371	2202.00			7422.94	PM3005
		<b>Tipper</b>									
		<b>For transportation considering lead @ 1 km</b>									
		(i) 18 cum capacity	t-km	180.000			4.80	864.00			PM72001
		(ii) 14 cum capacity	t-km		180.000		5.48		986.40		PM73001

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 10 cum capacity	t-km			180.000	6.80			1224.00	PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18 cum capacity	hour	2.094			2239.00				PM6001
		(ii) 14 cum capacity	hour		2.411		1998.00		4817.18		PM6002
		(iii) 10 cum capacity	hour			3.371	1785.00			6017.24	PM6003
		<b>c) Materials</b>									
		Small dia Explosive at 0.40 kg / cum for 120 cum (120x0.40) Explosive at 0.20 kg / cum for secondary blast @ 5 % of the total volume (120x0.2x5%)	kg	48.000	48.000	48.000	976.21	46858.08	46858.08	46858.08	M-215
		Electric detonators at 1 per hole for main blast holes (21x3+20*2)= 103 nos	no	69.000	69.000	69.000	6.19	427.11	427.11	427.11	M-217
		Ordinary detonators @ 1 per hole for 10 secondary holes ( required for 5 % of the total quantity @ 0.6 m per hole for 1 cum )	no	7.000	7.000	7.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-216
		Detonating fuse coil	m	213.000	213.000	213.000	INPUT	#VALUE!	#VALUE!	#VALUE!	M-218
		<b>d) Overhead charges @ on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		#VALUE!	#VALUE!	#VALUE!	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		#VALUE!	#VALUE!	#VALUE!	
		Cost for 120 cum = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per cum = (a+b+c+d+e)/ 120</b>						#VALUE!	#VALUE!	#VALUE!	
							<b>Say</b>	#VALUE!	#VALUE!	#VALUE!	
9.01		<b>IV Hard Rock ( blasting prohibited)</b>									
		Unit = cum									
		Taking output = 35 cum									
		<b>A Mechanical Means</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Jack Hammer	hour	5.973	7.467	9.190	206.00	1230.44	1538.20	1893.14	PM4001
		Hydraulic Excavator									
		<b>Excavator for excavation</b>									
		(i) 1.2 cum bucket capacity	hour	5.973			2703.00	16145.02			PM3003
		(ii) 1.1 cum bucket capacity	hour		7.467		2432.00		18159.74		PM3004
		(iii) 0.9 cum bucket capacity	hour			9.190	2202.00			20236.38	PM3005
		<b>For loading</b>									
		(i) 1.2 cum bucket capacity	hour	0.611			2703.00	1651.53			PM3003

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(ii) 1.1 cum bucket capacity	hour		0.703		2432.00	1709.70			PM3004
		(iii) 0.9 cum bucket capacity	hour			0.983	2202.00		2164.57		PM3005
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @ 1 km</b>									
		(i) 18 cum capacity	t-km	52.500			4.80	252.00			PM72001
		(ii) 14 cum capacity	t-km		52.500		5.48		287.70		PM73001
		(iii) 10 cum capacity	t-km			52.500	6.80		357.00		PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18 cum capacity	hour	0.611			2239.00	1368.03			PM6001
		(ii) 14 cum capacity	hour		0.703		1998.00		1404.59		PM6002
		(iii) 10 cum capacity	hour			0.983	1785.00		1754.66		PM6003
		<b>c) Overhead charges @ on (a+b)</b>				(@ 8%)		1702.80	2373.79	3245.25	
		<b>d) Contractor's profit @ on (a+b+c)</b>				(@ 10%)		2298.78	2611.17	3028.90	
		Cost for 35 cum = a+b+c+d				(@ 10%)		25286.60	28722.90	33317.89	
		<b>Rate per cum = (a+b+c+d) / 35</b>						722.47	820.65	951.94	
							<b>Say</b>	<b>722.50</b>	<b>820.70</b>	<b>951.90</b>	
9.01		<b>V Marshy Soil</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 10 cum</b>									
		<b>Depth upto 3 m</b>									
		<b>A Manual Means</b>									
		<b>a) Labour</b>									
		Mate / Supervisor	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley for removal	hour	2.670	2.670	2.670	629.00	1679.43	1679.43	1679.43	PM12001
		<b>c) Overhead charges @ on (a+b)</b>				(@ 8%)		389.55	486.94	584.33	
		<b>d) Contractor's profit @ on (a+b+c)</b>				(@ 10%)		525.90	535.64	545.38	
		Cost for 10 cum = a+b+c+d				(@ 10%)		5784.88	5892.01	5999.14	
		<b>Rate per cum = (a+b+c+d) / 10</b>						578.49	589.20	599.91	
							<b>Say</b>	<b>578.50</b>	<b>589.20</b>	<b>599.90</b>	
		<b>Note</b>									
		1. Cost of dewatering @ 30 percent of (a), may be added, where required. Assessment for dewatering shall be made as per site conditions.									
		2. Shoring & strutting 15 percent of (a), where required may be added									

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
9.01		3. It is assumed that Marshy Soil will be available upto 3 m depth only .For deeper excavation below 3 m depth , refer analysis in item 12.01 (i) to (iv) for ordinary soil									
		<b>B Mechanical Means</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 260 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		<b>Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	8.506			2703.00	22991.72			PM3003
		(ii) 1.1 cum bucket capacity	hour		9.796		2432.00		23823.87		PM3004
		(iii) 0.9 cum bucket capacity	hour			13.695	2202.00			30156.39	PM3005
		<b>Tipper</b>									
		<b>For transportation to dumping yard considering lead @ 1 km</b>									
		(i) 18 cum capacity	t-km	390.000			4.80	1872.00			PM72001
		(ii) 14 cum capacity	t-km		390.000		5.48		2137.20		PM73001
		(iii) 10 cum capacity	t-km			390.000	6.80			2652.00	PM74001
		<b>For loading &amp; unloading time</b>									
		(i) 18 cum capacity	hour	8.506			2239.00	19044.93			PM6001
		(ii) 14 cum capacity	hour		9.796		1998.00		19572.41		PM6002
		(iii) 10 cum capacity	hour			13.695	1785.00			24445.58	PM6003
		<b>c) Material</b>									
		Selected earth for refilling	cum	156.000	156.000	156.000	35.01	5461.56	5461.56	5461.56	M-164
		<b>d) Overhead charges @ on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		3975.14	5131.40	7564.14	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		5366.43	5644.54	7059.87	
		Cost for 260 cum = a+b+c+d+e						59030.78	62089.99	77658.53	
		<b>Rate per cum = (a+b+c+d+e)/ 260</b>						227.04	238.81	298.69	
							<b>Say</b>	<b>227.00</b>	<b>238.80</b>	<b>298.70</b>	
9.02	304	<b>Sand Filling in Foundation Trenches as per Drawing &amp; Technical Specification</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 100 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Water tanker ( speed @ Water tanker speed km / hr and return speed @ 20 km / hr and spreading speed @ 2.5 Km / hr . )									
		(i) 16 KL capacity	hour	0.125xL1+ 0.16			1121.00	319.49			PM11001
		(ii) 12 KL capacity	hour	0.167xL1+ 0.213			947.00		359.86		PM11002
		(iii) 6 KL capacity	hour			0.333xL1+ 0.427	707.00			537.32	PM11003
		<b>c) Material</b>									
		Sand ( assuming 20 percent voids) at site	cum	120.000	120.000	120.000	494.00	59280.00	59280.00	59280.00	M-005*
		Water	KL	18.000	18.000	18.000	56.20	1011.60	1011.60	1011.60	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		@ 8%	@ 10%	@ 12%		4874.41	6097.05	7337.75	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		@ 10%	@ 10%	@ 10%		6580.45	6706.75	6848.57	
		Cost for 100 cum = a+b+c+d+e						72384.94	73774.26	75334.24	
		<b>Rate per cum = (a+b+c+d+e) / 100</b>						723.85	737.74	753.34	
		<b>PCC 1:3:6 in Foundation</b>					<b>Say</b>	<b>723.80</b>	<b>737.70</b>	<b>753.30</b>	
9.03		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.									
		<b>Unit = cum</b>									
		<b>Taking output = 15 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mason	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-10
		Mazdoor	day	7.000	7.000	7.000	306.00	2142.00	2142.00	2142.00	L-13
		<b>b) Material</b>									
		Plain cement concrete 1:3:6 nominal mix using batching plant ( Rate taken from sub-analysis 21.02)	cum	15.000	15.000	15.000	2644.30	39664.50	39664.50	39664.50	21.02
		Water	KL	3.240	3.240	3.240	56.20	182.09	182.09	182.09	M-191
		<b>c) Machinery</b>									
		Plate Compactor	hour	1.000	1.000	1.000	335.00	335.00	335.00	335.00	PM46001
		Water tanker ( speed @ km /hr and return speed @ km/hr and 30 mins for unloading )									
		(i) 16 KL capacity	hour	0.023xL1+ 0.135			1121.00	177.12			PM11001
		(ii) 12 KL capacity	hour	0.03xL1+ 0.18			947.00		198.87		PM11002



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(iii) 6 KL capacity	hour			0.06XL1+0.36	707.00			296.94	PM11003
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		3437.90	4299.55	5171.22	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		4641.16	4729.50	4826.48	
		Cost for 15 cum = a+b+c+d+e						51052.76	52024.50	53091.23	
		<b>Rate per cum = (a+b+c+d+e)/ 15</b>					<b>Say</b>	3403.52	3468.30	3539.42	
		<b>Note</b>						<b>3403.50</b>	<b>3468.30</b>	<b>3539.40</b>	
		Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.									
9.04	2900	<b>Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Single Row .</b>									
		Laying Reinforced cement concrete pipe NP4 / prestressed concrete pipe for culverts on first class bedding of granular material 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.									
		<b>Unit = metre</b>									
		<b>Taking output = 12.5 metres ( 5 pipes of 2.5 m length each )</b>									
		<b>A</b>									
		<b>1000 mm dia</b>									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100	325.00	32.50	32.50	32.50	L-12
		Mason	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-10
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Material</b>									
		Sand at site	cum	0.070	0.070	0.070	494.00	34.58	34.58	34.58	M-005*
		Cement at site	tonne	0.050	0.050	0.050	5156.00	257.80	257.80	257.80	M-081
		RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	12.500	12.500	12.500	5570.00	69625.00	69625.00	69625.00	M-148
		Granular material passing 5.6 mm sieve for bedding	cum	4.500	4.500	4.500	165.30	743.85	743.85	743.85	M-009
		<b>c) Machinery</b>									
		Light Crane 3 tonnes capacity for placing of Hume pipe	hour	2.083	2.083	2.083	728.00	1516.42	1516.42	1516.42	PM63001
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		5840.53	7300.67	8760.80	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		7884.72	8030.73	8176.75	
		Cost for 12.5 metres = a+b+c+d+e						86731.90	88338.05	89944.20	
		<b>Rate per metre = (a+b+c+d+e)/ 12.5</b>					<b>Say</b>	6938.55	7067.04	7195.54	
								<b>6938.60</b>	<b>7067.00</b>	<b>7195.50</b>	

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRT H Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
9.04		<b>Note</b> 1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added . 2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections									
		<b>B</b> 1200 mm dia									
		a) Labour									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mason	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-10
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		b) Material									
		Sand at site	cum	0.090	0.090	0.090	494.00	44.46	44.46	44.46	M-005*
		Cement at site	tonne	0.070	0.070	0.070	5156.00	360.92	360.92	360.92	M-081
		RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	12.500	12.500	12.500	6510.00	81375.00	81375.00	81375.00	M-149
		Granular material passing 5.6 mm sieve for class bedding	cum	5.000	5.000	5.000	165.30	826.50	826.50	826.50	M-009
		c) Machinery									
		Light Crane 3 tonnes capacity for handling Hume pipe	hour	2.083	2.083	2.083	728.00	1516.42	1516.42	1516.42	PM63001
		d) Overhead charges @ on (a+b+c)						6836.98	8546.23	10255.48	
		e) Contractor's profit @ on (a+b+c+d)						9229.93	9400.85	9571.78	
		Cost for 12.5 metres = a+b+c+d+e						101529.22	103409.39	105289.56	
		Rate per metre = (a+b+c+d+e) / 12.5						8122.34	8272.75	8423.16	
							<b>Say</b>	<b>8122.30</b>	<b>8272.80</b>	<b>8423.20</b>	
		<b>Note</b> 1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added . 2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections									
9.04		<b>C</b> 1500 mm dia									
		a) Labour									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Mason	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-10

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Material</b>									
		Sand at site	cum	0.090	0.090	0.090	494.00	44.46	44.46	44.46	M-005*
		Cement at site	tonne	0.070	0.070	0.070	5156.00	360.92	360.92	360.92	M-081
		RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	12.500	12.500	12.500	6510.00	81375.00	81375.00	81375.00	M293
		Granular material passing 5.6 mm sieve for class bedding	cum	5.750	5.750	5.750	165.30	950.48	950.48	950.48	M-009
		<b>c) Machinery</b>									
		Light Crane 3 tonnes capacity for handling Hume pipe	hour	2.500	2.500	2.500	728.00	1820.00	1820.00	1820.00	PM63001
		<b>d) Overhead charges @ on (a+b+c)</b>						6871.19	8588.99	10306.78	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>						9276.10	9447.88	9619.66	
		Cost for 12.5 metres = a+b+c+d+e						102037.15	103926.72	105816.30	
		<b>Rate per metre = (a+b+c+d+e) / 12.5</b>					<b>Say</b>	8162.97	8314.14	8465.30	
		<b>Note</b>									
		1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .									
		2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections									
9.05	2900	<b>Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Double Row .</b>									
		Laying Reinforced cement concrete pipe NP4 / prestressed concrete pipe for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets .									
		<b>Unit = metre</b>									
		<b>Taking output = 12.5 metres ( 10 pipes of 2.5 m length each in two rows.)</b>									
	<b>A</b>	<b>1000 mm dia</b>									
		<b>a) Labour</b>									
		Mate	day	0.200	0.200	0.200	325.00	65.00	65.00	65.00	L-12
		Mason	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-10
		Mazdoor	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>b) Material</b>									
		Sand at site	cum	0.140	0.140	0.140	494.00	69.16	69.16	69.16	M-005*
		Cement at site	tonne	0.100	0.100	0.100	5156.00	515.60	515.60	515.60	M-081
		RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	25.000	25.000	25.000	5570.00	139250.00	139250.00	139250.00	M-148
		Granular material passing 5.6 mm sieve for bedding	cum	12.500	12.500	12.500	165.30	2066.25	2066.25	2066.25	M-009
		<b>c) Machinery</b>									
		Light Crane 3 tonnes capacity for handling Hume pipe	hour	4.167	4.167	4.167	728.00	3033.58	3033.58	3033.58	PM63001
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		11727.41	14659.26	17591.11	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		15832.00	16125.18	16418.37	
		Cost for 12.5 metres = a+b+c+d+e						174151.99	177377.03	180602.07	
		<b>Rate per metre = (a+b+c+d+e) / 12.5</b>					<b>Say</b>	13932.16	14190.16	14448.17	
								<b>13932.20</b>	<b>14190.20</b>	<b>14448.20</b>	
		<b>Note</b>									
		1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added.									
		2. The rate analysis does not include excavation, cement/masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections									
<b>9.05</b>		<b>B 1200 mm dia</b>									
		<b>a) Labour</b>									
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12
		Mason	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-10
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13
		<b>b) Material</b>									
		Sand at site	cum	0.180	0.180	0.180	494.00	88.92	88.92	88.92	M-005*
		Cement at site	tonne	0.140	0.140	0.140	5156.00	721.84	721.84	721.84	M-081
		RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	25.000	25.000	25.000	6510.00	162750.00	162750.00	162750.00	M-149
		Granular material passing 5.6 mm sieve for class bedding	cum	13.750	13.750	13.750	165.30	2272.88	2272.88	2272.88	M-009
		<b>c) Machinery</b>									
		Light Crane 3 tonnes capacity for handling Hume pipe	hour	4.167	4.167	4.167	728.00	3033.58	3033.58	3033.58	PM63001
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		13723.62	17154.52	20585.43	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		18526.88	18869.97	19213.06	
		Cost for 12.5 metres = a+b+c+d+e						203795.71	207569.71	211343.70	
		<b>Rate per metre = (a+b+c+d+e) / 12.5</b>					<b>Say</b>	16303.66	16605.58	16907.50	
								<b>16303.70</b>	<b>16605.60</b>	<b>16907.50</b>	

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.	
				Large	Medium	Small		Large	Medium	Small		
9.05		<p><b>Note</b></p> <p>1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .</p> <p>2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections</p>										
		<b>C 1500 mm dia</b>										
		<b>a) Labour</b>										
		Mate	day	0.320	0.320	0.320	325.00	104.00	104.00	104.00	L-12	
		Mason	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-10	
		Mazdoor	day	6.000	6.000	6.000	306.00	1836.00	1836.00	1836.00	L-13	
		<b>b) Material</b>										
		Sand at site	cum	0.180	0.180	0.180	494.00	88.92	88.92	88.92	M-005*	
		Cement at site	tonne	0.140	0.140	0.140	5156.00	721.84	721.84	721.84	M-081	
		RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	25.000	25.000	25.000	6510.00	162750.00	162750.00	162750.00	M293	
		Granular material passing 5.6 mm sieve for class bedding	cum	15.625	15.625	15.625	165.30	2582.81	2582.81	2582.81	M-009	
		<b>c) Machinery</b>										
		Light Crane 3 tonnes capacity for handling Hume pipe	hour	5.000	5.000	5.000	728.00	3640.00	3640.00	3640.00	PM63001	
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		13796.93	17246.16	20695.39		
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		18625.85	18970.77	19315.70		
		<b>Cost for 12.5 metres = a+b+c+d+e</b>						204884.35	208678.50	212472.66		
		<b>Rate per metre = (a+b+c+d+e)/ 12.5</b>					<b>Say</b>	16390.75	16694.28	16997.81		
		<b>Note</b>										
		1. In case of cement cradle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .										
		2. The rate analysis does not include excavation, cement /masonry works in head walls, backfilling, protection works and parapet walls. The same are to be calculated as per approved design and drawings and priced separately on rates available under respective sections										
9.06	1500 , 1700& 2100	<b>Plain/ Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications .</b>										



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
9.06	A	PCC Grade M15									
	Case I	PCC Grade M15 using batching plant, transit mixer & Concrete pump									
		Unit = cum									
		Taking output = 30 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.03)	cum	30.000	30.000	30.000	2727.10	81813.00	81813.00	81813.00	21.03
		Water for curing	KL	15.750	15.750	15.750	56.20	885.15	885.15	885.15	M-191
		b) Labour									
		For pouring and placing									
		Mate	day	0.113	0.113	0.113	325.00	36.73	36.73	36.73	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	1.325	1.325	1.325	306.00	405.45	405.45	405.45	L-13
		c) Machinery									
		Transit truck agitator	tonne-km	75xL1	75xL1	75xL1	10.33	774.75	774.75	774.75	PM76001
		For transportation (6 cum Capacity)	hour	0.650	0.650	0.650	1860.00	1209.00	1209.00	1209.00	PM34001
		Hydraulic Boom placer pump	hour	0.650	0.650	0.650	3695.00	2401.75	2401.75	2401.75	PM36001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.109xL1+0.656			1121.00	857.57			PM11001
		(ii) 12 KL capacity	hour		0.146xL1+0.875		947.00		966.89		PM11002
		(iii) 6 KL capacity	hour			0.292xL1+1.75	707.00			1443.69	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						8893.69	8904.62	8952.30	
		e) Overhead charges @ on (a+b+c+d)						7826.45	9795.08	11817.04	
		f) Contractor's profit @ on (a+b+c+d+e)						10565.70	10774.59	11029.24	
		Cost for 30 cum = a+b+c+d+e+f						116222.73	118520.51	121321.60	
		Rate per cum = (a+b+c+d+e+f)/ 30						3874.09	3950.68	4044.05	
							Say	3874.10	3950.70	4044.10	
	Case II	PCC Grade M15 using batching plant, transit mixer & manual placing									
		Unit = cum									
		Taking output = 15 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.03)	cum	15.000	15.000	15.000	2727.10	40906.50	40906.50	40906.50	21.03
		Water for curing	KL	7.875	7.875	7.875	56.20	442.58	442.58	442.58	M-191
		b) Labour									

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>For pouring and placing</b>									
		Mate	day	0.380	0.380	0.380	325.00	123.50	123.50	123.50	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>c) Machinery</b>									
		Transit truck agitator									
		For transportation (6 cum Capacity)	tonne-km	37.5xL1	37.5xL1	37.5xL1	10.33	387.38	387.38	387.38	PM76001
		For unloading	hour	0.833	0.833	0.833	1860.00	1549.38	1549.38	1549.38	PM34001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.055xL1+ 0.328			1121.00	429.34			PM11001
		(ii) 12 KL capacity	hour	0.073xL1+ 0.438			947.00		483.92		PM11002
		(iii) 6 KL capacity	hour				707.00			721.85	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						4684.02	4689.47	4713.27	
		<b>e) Overhead charges @ on (a+b+c+d)</b>						4121.94	5158.42	6221.51	
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>						5564.61	5674.26	5806.75	
		Cost for 15 cum = a+b+c+d+e+f						61210.74	62416.91	63874.20	
		<b>Rate per cum = (a+b+c+d+e+f)/ 15</b>						4080.72	4161.13	4258.28	
							<b>Say</b>	<b>4080.70</b>	<b>4161.10</b>	<b>4258.30</b>	
<b>9.06</b>	<b>B</b>	<b>PCC Grade M20</b>									
		Case I									
		PCC Grade M20 using batching plant , transit mixer & Concrete pump									
		<b>Unit = cum</b>									
		<b>Taking output = 30 cum</b>									
		<b>a) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.04 )	cum	30.000	30.000	30.000	3068.40	92052.00	92052.00	92052.00	21.04
		Water for curing	KL	15.750	15.750	15.750	56.20	885.15	885.15	885.15	M-191
		<b>b) Labour</b>									
		<b>For pouring and placing</b>									
		Mate	day	0.113	0.113	0.113	325.00	36.73	36.73	36.73	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	1.325	1.325	1.325	306.00	405.45	405.45	405.45	L-13
		<b>c) Machinery</b>									
		Transit truck agitator									
		For transportation (6 cum Capacity)	tonne-km	75xL1	75xL1	75xL1	10.33	774.75	774.75	774.75	PM76001

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		For unloading	hour	0.650	0.650	0.650	1860.00	1209.00	1209.00	1209.00	PM34001
		Hydraulic Boom placer pump	hour	0.650	0.650	0.650	3695.00	2401.75	2401.75	2401.75	PM36001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)	hour	0.109xL1+ 0.656			1121.00	857.57			PM11001
		(i) 16 KL capacity	hour								
		(ii) 12 KL capacity	hour		0.146xL1+ 0.875		947.00		966.89		PM11002
		(iii) 6 KL capacity	hour			0.292XL1+ 1.75	707.00			1443.69	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						9917.59	9928.52	9976.20	
		<b>e) Overhead charges @ on (a+b+c+d)</b>						8727.48	10921.37	13168.59	
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>						11782.10	12013.51	12290.68	
		Cost for 30 cum = a+b+c+d+e+f						129603.05	132148.62	135197.49	
		<b>Rate per cum = (a+b+c+d+e+f) / 30</b>					<b>Say</b>	4320.10	4404.95	4506.58	
								<b>4320.10</b>	<b>4405.00</b>	<b>4506.60</b>	
		Case II									
		PCC Grade M20 using batching plant , transit mixer & manual placing									
		<b>Unit = cum</b>									
		<b>Taking output = 15 cum</b>									
		<b>a) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.04 )	cum	15.000	15.000	15.000	3068.40	46026.00	46026.00	46026.00	21.04
		Water for curing	KL	7.875	7.875	7.875	56.20	442.58	442.58	442.58	M-191
		<b>b) Labour</b>									
		<b>For pouring and placing</b>									
		Mate	day	0.380	0.380	0.380	325.00	123.50	123.50	123.50	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>c) Machinery</b>									
		Transit truck agitator	tonne-km	37.5xL1	37.5xL1	37.5xL1	10.33	387.38	387.38	387.38	PM76001
		For transportation (6 cum Capacity)	hour	0.833	0.833	0.833	1860.00	1549.38	1549.38	1549.38	PM34001
		For unloading									
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)	hour	0.055xL1+ 0.328			1121.00	429.34			PM11001
		(i) 16 KL capacity	hour				947.00		483.92		PM11002
		(ii) 12 KL capacity	hour		0.073xL1+ 0.438						
		(iii) 6 KL capacity	hour			0.146XL1+ 0.875	707.00			721.85	PM11003



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						5195.97	5201.42	5225.22	
		e) Overhead charges @ on (a+b+c+d)						4572.45	5721.57	6897.29	
		f) Contractor's profit @ on (a+b+c+d+e)						6172.81	6293.72	6437.47	
		Cost for 15 cum = a+b+c+d+e+f						67900.90	69230.96	70812.15	
		Rate per cum = (a+b+c+d+e+f)/ 15						4526.73	4615.40	4720.81	
								<b>4526.70</b>	<b>4615.40</b>	<b>4720.80</b>	
9.06	C	RCC Grade M20									
	Case I	RCC Grade M20 using batching plant , transit mixer & Concrete pump									
		Unit = cum									
		Taking output = 30 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 2.1.05 )	cum	30.000	30.000	30.000	3052.80	91584.00	91584.00	91584.00	21.05
		Water for curing	KL	15.750	15.750	15.750	56.20	885.15	885.15	885.15	M-191
		b) Labour									
		For pouring and placing									
		Mate	day	0.153	0.153	0.153	325.00	49.73	49.73	49.73	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	2.325	2.325	2.325	306.00	711.45	711.45	711.45	L-13
		c) Machinery									
		Transit truck agitator	tonne-km	75xL1	75xL1	75xL1	10.33	774.75	774.75	774.75	PM76001
		For transportation (6 cum Capacity)									
		For unloading	hour	0.650	0.650	0.650	1860.00	1209.00	1209.00	1209.00	PM34001
		Hydraulic Boom placer pump	hour	0.650	0.650	0.650	3695.00	2401.75	2401.75	2401.75	PM36001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.109xL1 + 0.656			1121.00	857.57			PM11001
		(ii) 12 KL capacity	hour		0.146xL1 + 0.875		947.00		966.89		PM11002
		(iii) 6 KL capacity	hour			0.292xL1 + 1.75	707.00			1443.69	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						9902.69	9913.62	9961.30	
		e) Overhead charges @ on (a+b+c+d)						8714.37	10904.98	13148.92	
		f) Contractor's profit @ on (a+b+c+d+e)						11764.39	11995.48	12272.32	
		Cost for 30 cum = a+b+c+d+e+f						129408.34	131950.30	134995.56	
		Rate per cum = (a+b+c+d+e+f)/ 30						4313.61	4398.34	4499.85	

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
	Case II	RCC Grade M20 using batching plant, transit mixer & manual placing					Say	4313.60	4398.30	4499.90	
		Unit = cum									
		Taking output = 15 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.05)	cum	15.000	15.000	15.000	3052.80	45792.00	45792.00	45792.00	21.05
		Water for curing	KL	7.875	7.875	7.875	56.20	442.58	442.58	442.58	M-191
		b) Labour									
		For pouring and placing									
		Mate	day	0.420	0.420	0.420	325.00	136.50	136.50	136.50	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	9.000	9.000	9.000	306.00	2754.00	2754.00	2754.00	L-13
		c) Machinery									
		Transit truck agitator									
		For transportation (6 cum Capacity)	tonne-km	37.5xL1	37.5xL1	37.5xL1	10.33	387.38	387.38	387.38	PM76001
		For unloading	hour	0.833	0.833	0.833	1860.00	1549.38	1549.38	1549.38	PM34001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.055xL1+0.328			1121.00	429.34			PM11001
		(ii) 12 KL capacity	hour		0.073xL1+0.438		947.00		483.92		PM11002
		(iii) 6 KL capacity	hour			0.146xL1+0.875	707.00			721.85	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material, labour and machinery						5204.47	5209.92	5233.72	
		e) Overhead charges @ on (a+b+c+d)						4579.93	5730.92	6908.51	
		f) Contractor's profit @ on (a+b+c+d+e)						6182.91	6304.01	6447.94	
		Cost for 15 cum = a+b+c+d+e+f						68011.98	69344.10	70927.34	
		Rate per cum = (a+b+c+d+e+f)/ 15						4534.13	4622.94	4728.49	
							Say	4534.10	4622.90	4728.50	
9.06	D	PCC Grade M25									
	Case I	PCC Grade M25 using batching plant, transit mixer & Concrete pump									
		Unit = cum									
		Taking output = 30 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.06)	cum	30.000	30.000	30.000	3356.30	100689.00	100689.00	100689.00	21.06

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Water for curing	KL	15.750	15.750	15.750	56.20	885.15	885.15	885.15	M-191
		<b>b) Labour</b>									
		<b>For pouring and placing</b>									
		Mate	day	0.113	0.113	0.113	325.00	36.73	36.73	36.73	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	1.325	1.325	1.325	306.00	405.45	405.45	405.45	L-13
		<b>c) Machinery</b>									
		Transit truck agitator	tonne-km	75xL1	75xL1	75xL1	10.33	774.75	774.75	774.75	PM76001
		For transportation (6 cum Capacity)	hour	0.650	0.650	0.650	1860.00	1209.00	1209.00	1209.00	PM34001
		For unloading	hour	0.650	0.650	0.650	3695.00	2401.75	2401.75	2401.75	PM36001
		Hydraulic Boom placer pump									
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.109xL1+ 0.656			1121.00	857.57			PM11001
		(ii) 12 KL capacity	hour		0.146xL1+ 0.875		947.00		966.89		PM11002
		(iii) 6 KL capacity	hour			0.292xL1+ 1.75	707.00		1443.69		PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						10781.29	10792.22	10839.90	
		<b>e) Overhead charges @ on (a+b+c+d)</b>						9487.53	11871.44	14308.67	
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>						12808.17	13058.59	13354.76	
		Cost for 30 cum = a+b+c+d+e+f						140889.88	143644.46	146902.35	
		<b>Rate per cum = (a+b+c+d+e+f)/ 30</b>						4696.33	4788.15	4896.75	
		<b>Case II</b>					<b>Say</b>	<b>4696.30</b>	<b>4788.10</b>	<b>4896.70</b>	
		<b>PCC Grade M25 using batching plant , transit mixer &amp; manual placing</b>									
		<b>Unit = cum</b>									
		<b>Taking output = 15 cum</b>									
		<b>a) Material</b>									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.06 )	cum	15.000	15.000	15.000	3356.30	50344.50	50344.50	50344.50	21.06
		Water for curing	KL	7.875	7.875	7.875	56.20	442.58	442.58	442.58	M-191
		<b>b) Labour</b>									
		<b>For pouring and placing</b>									
		Mate	day	0.380	0.380	0.380	325.00	123.50	123.50	123.50	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	8.000	8.000	8.000	306.00	2448.00	2448.00	2448.00	L-13
		<b>c) Machinery</b>									



**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Transit truck agitator									
		For transportation (6 cum Capacity)	tonne-km	37.5xL1	37.5xL1	37.5xL1	10.33	387.38	387.38	387.38	PM76001
		For unloading	hour	0.833	0.833	0.833	1860.00	1549.38	1549.38	1549.38	PM34001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.055xL1+0.328			1121.00	429.34			PM11001
		(ii) 12 KL capacity	hour		0.073xL1+0.438		947.00		483.92		PM11002
		(iii) 6 KL capacity	hour			0.146xL1+0.875	707.00			721.85	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						5627.82	5633.27	5657.07	
		e) Overhead charges @ on (a+b+c+d)						4952.48	6196.60	7467.33	
		f) Contractor's profit @ on (a+b+c+d+e)						6685.85	6816.26	6969.51	
		Cost for 15 cum = a+b+c+d+e+f						73544.32	74978.89	76664.58	
		Rate per cum = (a+b+c+d+e+f) / 15						4902.95	4998.59	5110.97	
							Say	4903.00	4998.60	5111.00	
9.06	E	<b>RCC Grade M25</b>									
		Case I									
		RCC Grade M25 using batching plant , transit mixer & Concrete pump									
		Unit = cum									
		Taking output = 30 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 2.1.07 )	cum	30.000	30.000	30.000	3516.00	105480.00	105480.00	105480.00	21.07
		Water for curing	KL	15.750	15.750	15.750	56.20	885.15	885.15	885.15	M-191
		b) Labour									
		For pouring and placing									
		Mate	day	0.153	0.153	0.153	325.00	49.73	49.73	49.73	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	2.325	2.325	2.325	306.00	711.45	711.45	711.45	L-13
		c) Machinery									
		Transit truck agitator	t-km	75xL1	75xL1	75xL1	10.33	774.75	774.75	774.75	PM76001
		For transportation (6 cum Capacity)	hour	0.650	0.650	0.650	1860.00	1209.00	1209.00	1209.00	PM34001
		For unloading	hour	0.650	0.650	0.650	3695.00	2401.75	2401.75	2401.75	PM36001
		Hydraulic Boom placer pump									
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 16 KL capacity	hour	0.109xL1+ 0.656			1121.00	857.57			PM11001
		(ii) 12 KL capacity	hour		0.146xL1+ 0.875		947.00		966.89		PM11002
		(iii) 6 KL capacity	hour			0.292xL1+ 1.75	707.00			1443.69	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						11292.29	11303.22	11350.90	
		e) Overhead charges @ on (a+b+c+d)		(@ 8%)	(@ 10%)	(@ 12%)		9937.21	12433.54	14983.19	
		f) Contractor's profit @ on (a+b+c+d+e)		(@ 10%)	(@ 10%)	(@ 10%)		13415.24	13676.90	13984.31	
		Cost for 30 cum = a+b+c+d+e+f						147567.63	150445.87	153827.42	
		Rate per cum = (a+b+c+d+e+f)/ 30					Say	4918.92	5014.86	5127.58	
		Case II						4918.90	5014.90	5127.60	
		RCC Grade M25 using batching plant , transit mixer & manual placing									
		Unit = cum									
		Taking output = 15 cum									
		a) Material									
		Per Cum Basic Cost (Rate taken from sub-analysis 21.07 )	cum	15.000	15.000	15.000	3516.00	52740.00	52740.00	52740.00	21.07
		Water for curing	KL	7.875	7.875	7.875	56.20	442.58	442.58	442.58	M-191
		b) Labour									
		For pouring and placing									
		Mate	day	0.420	0.420	0.420	325.00	136.50	136.50	136.50	L-12
		Mason	day	1.500	1.500	1.500	369.00	553.50	553.50	553.50	L-10
		Mazdoor	day	9.000	9.000	9.000	306.00	2754.00	2754.00	2754.00	L-13
		c) Machinery									
		Transit truck agitator									
		For transportation (6 cum Capacity)	t-km	37.5xL1	37.5xL1	37.5xL1	10.33	387.38	387.38	387.38	PM76001
		For unloading	hour	0.833	0.833	0.833	1860.00	1549.38	1549.38	1549.38	PM34001
		Water tanker ( speed @ km / hr and return speed @ km / hr and 30 mins for unloading)									
		(i) 16 KL capacity	hour	0.055xL1+ 0.328			1121.00	429.34			PM11001
		(ii) 12 KL capacity	hour		0.073xL1+ 0.438		947.00		483.92		PM11002
		(iii) 6 KL capacity	hour			0.146xL1+ 0.875	707.00			721.85	PM11003
		d) Formwork @ 10 percent on cost of concrete i.e. cost of material , labour and machinery						5899.27	5904.72	5928.52	

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		e) Overhead charges @ on (a+b+c+d)		(@ 8%)	(@ 10%)	(@ 12%)		5191.36	6495.20	7825.64	
		f) Contractor's profit @ on (a+b+c+d+e)		(@ 10%)	(@ 10%)	(@ 10%)		7008.33	7144.72	7303.93	
		Cost for 15 cum = a+b+c+d+e+f						77091.63	78591.89	80343.27	
		Rate per cum = (a+b+c+d+e+f)/ 15					Say	5139.44	5239.46	5356.22	
9.07	1600	Supplying ,Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.									
		Unit = MT									
		Taking output = 8 MT									
		a) Material									
		HYSD bars including 5 percent overlaps and wastage	tonne	8.400	8.400	8.400	54810.00	460404.00	460404.00	460404.00	M-083
		Binding wire	Kg	48.000	48.000	48.000	75.04	3601.92	3601.92	3601.92	M-072
		b) Labour for									
		straightening , cutting ,bending , shifting to site , tying and placing in position									
		Mate	day	0.160	0.160	0.160	325.00	52.00	52.00	52.00	L-12
		Blacksmith	day	1.000	1.000	1.000	369.00	369.00	369.00	369.00	L-25
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		c) Machinery									
		Cutting Machine & Bending Machine	hour	5.333	5.333	5.333	309.00	1647.90	1647.90	1647.90	PM43001
		Electric generator 15 KVA	hour	5.333	5.333	5.333	274.00	1461.24	1461.24	1461.24	PM22009
		Tipper									
		Tipper for transportation									
		(i) 18 cum capacity	t-km	8xL1			4.80	38.40			PM72001
		(ii) 14 cum capacity	t-km	8xL1			5.48		43.84		PM73001
		(iii) 10 cum capacity	t-km		8xL1		6.80			54.40	PM74001
		loading & unloading time									
		(i) 18 cum capacity	hour	1.000			2239.00	2239.00			PM6001
		(ii) 14 cum capacity	hour		1.280		1998.00		2557.44		PM6002
		(iii) 10 cum capacity	hour			1.778	1785.00			3173.73	PM6003
		Light weight Crane									
		At cutting bending yard	hour	2.000	2.000	2.000	728.00	1456.00	1456.00	1456.00	PM63001
		At site	hour	2.000	2.000	2.000	728.00	1456.00	1456.00	1456.00	PM63001
		d) Overhead charges @ on (a+b+c)		(@ 8%)	(@ 10%)	(@ 12%)		37891.48	47396.73	56951.30	
		e) Contractor's profit @ on (a+b+c+d)		(@ 10%)	(@ 10%)	(@ 10%)		51153.49	52136.41	53154.55	

**Analysis of Rate  
PIPE CULVERTS**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (Rs.)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 8 MT (a+b+c+d+e)						562688.43	573500.48	584700.04	
		Rate for per MT (a+b+c+d+e)/ 8					Say	70336.05	71687.56	73087.51	
								<b>70336.10</b>	<b>71687.60</b>	<b>73087.50</b>	



**CHAPTER - 10**  
**MAINTENANCE OF ROADS**





## CHAPTER-10

### MAINTENANCE OF ROADS

#### PREAMBLES :

- 1 In case of rain cuts, it has been assumed that some material cut by rain, approximately 25 percent, will be available at site which can be retrieved and re-used and the balance 75 percent is required to be provided as fresh material.
- 2 For making up earthen shoulders, it has been assumed that on an average 150 mm filling will be required. Similarly, for stripping of excess soil from the shoulder, an average depth of 75 mm has been assumed.
- 3 In the case of chocking of drain, it has been assumed that half the depth of drain has been filled with earth/debris, which requires clearance.
- 4 During the process of landslide clearance on hill roads, it has been assumed that earth will be disposed off by the dozer on the valley side. In case there is any objection to this arrangement due to particular site conditions, resources like loader and tripper will have to be provided for disposal of earth/debris for the lead involved.
- 5 Pot hole repair and patchwork are provided to be done by mechanical means.
- 6 The rates for items like slurry seal, for spray, crack prevention courses, surface dressing & micro-surfacing for maintenance works have been included in Chapter-5.
- 7 The cost of other items like repair of ruts and undulation maintenance of earthen shoulders, cross drainage works, minor and major bridges and miscellaneous items like turfing and arboriculture, painting and lettering on km stones, repair to signage, repair to footpath, street light, railing, dividers, separators and under passes for pedestrians has been given in the "Report of the Committee on Norms for Maintenance on Roads in India" published by IRC in January 2001 which may be referred for guidance.
- 8 The repair items related to bridges have been given in Chapter-17.





**Summary of Rate Analysis**  
**CHAPTER - 10**  
**MAINTENANCE OF ROADS**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
10.01	<b>Restoration of Rain Cuts</b>				
	Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes	Cum	106.60	109.70	115.20
10.02	<b>Maintenance of Earthen Shoulder (filling with fresh soil)</b>				
	Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.	Sqm	66.80	68.20	70.10
10.03	<b>Maintenance of Earth Shoulder (stripping excess soil)</b>				
	Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor	Sqm	25.40	25.90	26.30
10.04	<b>Filling Pot-holes and Patch Repairs with open-Graded Premix surfacing, 20mm.</b>				
	Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 510, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2	Sqm	154.90	157.20	160.30
10.05	<b>Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm.</b>				
	Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2				
10.05	(i) <b>for grading I Material</b>	Sqm	443.30	450.00	458.80
10.05	(ii) <b>for grading II Material</b>	Sqm	433.00	439.60	448.10
10.06	<b>Crack Filling</b>				
	Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.	Running Metre	5.00	5.10	5.20
10.07	<b>Dusting</b>				
	Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.	Sqm	0.80	0.80	0.80
10.08	<b>Fog Seal</b>	sqm			
	<b>Crack Prevention courses.</b>				
	(i) Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm			
	(ii) Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm			
	(iii) Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 percent	sqm			
	(iv) Bitumen Impregnated Geotextile	sqm			



**Summary of Rate Analysis**  
**MAINTENANCE OF ROADS**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
<b>10.08</b>	<b>Slurry Seal</b>				
	(i) 5 mm thickness	sqm			
	(ii) 3 mm thickness	sqm			
	(iii) 1.5 mm thickness	sqm			
<b>10.08</b>	<b>Surface Dressing for maintenance works.</b>				
	(i) 19 mm nominal chipping size	sqm			
	(ii) 13 mm nominal size chipping	sqm			
	The above mentioned items have already been included in chapter				
<b>10.09</b>	<b>Repair of Joint Grooves with Epoxy Mortar</b>				
	Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete.	Running Metre	794.50	809.20	823.90
<b>10.10</b>	<b>Repair of old Joints Sealant</b>				
	Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material.	Running Metre	26.80	27.30	27.80
<b>10.11</b>	<b>Hill Side Drain Clearance</b>				
	Removal of earth from the choked hill side drain and disposing it on the valley side manually	Running Metre	37.90	38.60	39.30
<b>10.12</b>	<b>Land Slide Clearance in soil</b>				
	Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side	Cum	88.10	89.70	91.40
<b>10.13</b>	<b>Landslide Clearance in Hard Rock Requiring Blasting</b>				
	Clearing of land slide in hard rock requiring blasting for 50 per cent of the boulders and disposal of the same on the valley side.	Cum	313.70	319.50	325.40
<b>10.14</b>	<b>Snow Clearance on Roads with Dozer</b>				
	Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side	Cum	6.10	6.20	6.30
<b>10.15</b>	<b>Snow Clearance on Roads with Snow Blowers</b>				
	Snow clearance from road surface by a snow blower and disposing on the valley side.	Cum	8.60	8.80	8.90
<b>10.16</b>	<b>Replacement of Metal Beam Crash Barrier</b>				
	<b>A</b> Type - A , " W" : Metal Beam Crash Barrier	Running Metre	#VALUE!	#VALUE!	#VALUE!
	Replacement of "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail , 70 cm above road / ground level , fixed on ISMC series channel vertical post , 150x75x5 mm spaced 2 m centre to centre, 1.8 m high , 1.1 m below ground /road level, all steel parts and fitments to be galvanised by hot dip process , all fittings to conform to IS: 1367 and IS :1364 , metal beam rail to be fixed on the vertical post with a spacer of channel section 150x75x5 mm ,330 mm long complete as per clause 811				
<b>10.16</b>	<b>B</b> Type - B , " THRIE" : Metal Beam Crash Barier	Running Metre	#VALUE!	#VALUE!	#VALUE!



**Summary of Rate Analysis**  
**MAINTENANCE OF ROADS**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
	Replacement of "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail , 85 cm above road/ ground level , fixed on ISMC series channel vertical post , 150 x 75 x 5 mm spaced 2 m centre to centre,2 m high with 1.15 m below ground level, all steel parts and fitments to be galvanised by hot dip process ,all fittings to conform to IS: 1367 and IS :1364 , metal beam rail to be fixed on the vertical post with a space of channel section 150x75x5 mm, 546 mm long complete as per clause 811				
<b>10.17</b>	<b>Network Survey Vehicle (NSV) attached with SUV</b>				
	Data collection of longitudinal profiling (International Roughness Index),Transverse profiling (Rut Depth) , Pavement Texture in terms of Mean Profile Depth , Road Geometry Data (cross slope , gradient , curvature ) , GPS coordinates ( X , Y , Z ) viz. longitude , latitude & altitude , video imaging for Roadside furniture/ Road Assets and Video imaging for Pavement Surface Distresses and reports.	KM	855.60	871.50	887.30
<b>10.18</b>	<b>Falling weight deflectometer (FWD)</b>	KM	673.60	686.10	698.60
<b>10.19</b>	<b>Road Retro reflectometer attached with SUV</b>	KM	3615.70	3682.70	3749.60
<b>10.20</b>	<b>Automatic Vehicle Counter Classifier (ATCC)</b>	Location	116016.90	118165.30	120307.30





Analysis of Rate

CHAPTER - 10

MAINTENANCE OF ROADS

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
10.01	3002.0	<b>Restoration of Rain Cuts</b>									
		Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes									
		<b>Unit = cum</b>									
		<b>Taking output = 10 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	0.007			2703.00	18.92			PM3003
		(ii) 1.1 cum bucket capacity	hour		0.008		2432.00		19.46		PM3004
		(iii) 0.9 cum bucket capacity	hour			0.012	2202.00			26.42	PM3005
		<b>Tipper</b> for transportation to dumping yard considering lead @ 1 km									
		(i) 18 cum capacity	t-km	12xL2			4.80	57.60			PM72001
		(ii) 14 cum capacity	t-km	12xL2			5.48		65.76		PM73001
		(iii) 10 cum capacity	t-km			12xL2	6.80			81.60	PM74001
		For loading & unloading									
		(i) 18 cum capacity	hour	0.007			2239.00	15.67			PM6001
		(ii) 14 cum capacity	hour		0.008		1998.00		15.98		PM6002
		(iii) 10 cum capacity	hour			0.012	1785.00			21.42	PM6003
		Plate compactor	hour	0.500	0.500	0.500	335.00	167.50	167.50	167.50	PM46001
		<b>c) Overhead charges @ on (a+b)</b>						71.82	90.67	112.19	
		<b>d) Contractor's profit @ on (a+b+c)</b>						96.95	99.74	104.71	
		Cost for 10 cum = a+b+c+d						1066.46	1097.11	1151.85	
		<b>Rate per cum = (a+b+c+d)/10</b>						106.65	109.71	115.19	
							<b>Say</b>	<b>106.60</b>	<b>109.70</b>	<b>115.20</b>	
		<b>Note</b>									
		Only 75 percent of fresh material has been provided as 25 per cent can be retrieved at site from earth that is flown down the slope in the form of slurry and deposited at the foot of there in cuts									
10.02	3003.0	<b>Maintenance of Earthen Shoulder (filling with fresh soil)</b>									



**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment. <b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		Assuming average thickness of filling to be 150									
		Quantity of fresh material = 15 cum									
		<b>a) Labour</b>									
		Mate	day	0.180	0.180	0.180	325.00	58.50	58.50	58.50	L-12
		Mazdoor	day	4.500	4.500	4.500	306.00	1377.00	1377.00	1377.00	L-13
		<b>b) Machinery Hydraulic Excavator</b>									
		(i) 1.2 cum bucket capacity	hour	0.011			2703.00	29.73			PM3003
		(ii) 1.1 cum bucket capacity	hour		0.012		2432.00		29.18		PM3004
		(iii) 0.9 cum bucket capacity	hour			0.017	2202.00			37.43	PM3005
		<b>Tipper</b> For transportation to dumping yard considering lead @ 1 km									
		(i) 18 cum capacity	t-km	24xL2			4.80	115.20			PM72001
		(ii) 14 cum capacity	t-km		24xL2		5.48		131.52		PM73001
		(iii) 10 cum capacity	t-km			24xL2	6.80			163.20	PM74001
		For loading & unloading									
		(i) 18 cum capacity	hour	0.011			2239.00	24.63			PM6001
		(ii) 14 cum capacity	hour		0.012		1998.00		23.98		PM6002
		(iii) 10 cum capacity	hour			0.017	1785.00			30.35	PM6003
		Plate compactor @ 25 sqm per hour	hour	12.000	12.000	12.000	335.00	4020.00	4020.00	4020.00	PM46001
		<b>c) Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		450.00	564.02	682.38	
		<b>d) Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		607.51	620.42	636.89	
		Cost for 100 sqm = a+b+c+d						6682.57	6824.62	7005.74	
		<b>Rate per sqm = (a+b+c+d)/100</b>						66.83	68.25	70.06	
							<b>Say</b>	<b>66.80</b>	<b>68.20</b>	<b>70.10</b>	
10.03	3003.0	<b>Maintenance of Earth Shoulder (stripping excess soil)</b>									
		Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		Assuming average depth of stripping as 75 mm									
		Quantity of earth cutting involved = 7.5 cum									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100	325.00	32.50	32.50	32.50	L-12

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	2.500	2.500	2.500	306.00	765.00	765.00	765.00	L-13
		<b>b) Machinery</b>									
		Plate compactor @ 25 sqm per hour	hour	4.000	4.000	4.000	335.00	1340.00	1340.00	1340.00	PM46001
		<b>c) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		171.00	213.75	256.50	
		<b>d) Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		230.85	235.13	239.40	
		Cost for 100 sqm = a+b+c+d						2539.35	2586.38	2633.40	
		<b>Rate per sqm on = (a+b+c+d)/100</b>					<b>Say</b>	25.39	25.86	26.33	
		<b>Note</b>						<b>25.40</b>	<b>25.90</b>	<b>26.30</b>	
		The earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal.									
10.04	3004.2	<b>Filling Pot-holes and Patch Repairs with open-Graded Premix surfacing, 20mm.</b>									
		Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 510, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2									
		<b>Unit = Sqm</b>									
		<b>Taking out put = 10250 sqm</b>									
		<b>a) Labour</b>									
		Mate	Day	3.760	3.760	3.760	325.00	1222.00	1222.00	1222.00	L-12
		Mazdoor	Day	90.000	90.000	90.000	306.00	27540.00	27540.00	27540.00	L-13
		Mazdoor skilled	Day	4.000	4.000	4.000	388.00	1552.00	1552.00	1552.00	L-15
		<b>b) Machinery Hot mix Plant</b>									
		(i) HMP 200 TPH	hour	2.700			44761.00	120854.70			PM18001
		(i) HMP 160 TPH	hour		3.375		34660.00	116977.50			PM18002
		(i) HMP 120 TPH	hour			4.500	26375.00		118687.50		PM18003
		Mechanical broom (2.1m sweeping width)	hour	3.051	3.051	3.051	746.00	2276.05	2276.05	2276.05	PM23001
		Air compressor 250 cfm	hour	3.051	3.051	3.051	391.00	1192.94	1192.94	1192.94	PM15001
		<b>Electric generator</b>									
		(i) 500 KVA	hour	2.700			5360.00	14472.00			PM22002
		(ii) 400 KVA	hour		3.375		4323.00		14590.13		PM22003
		(iii) 250 KVA	hour			4.500	3034.00		13653.00		PM22004
		<b>Front end loader for feeding the plant</b>	tonne								
		(i) 3.1 Cum Capacity	hour	2.700			3433.00	9269.10			PM5001
		(ii) 2.1 Cum Capacity	hour		3.375		2033.00	6861.38			PM5002
		(iii) 1 Cum Capacity	hour			4.500	1366.00		6147.00		PM5003
		<b>Tipper</b>									
		For transportation									

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(i) 18 cum capacity	t-km	405xL			4.80	1944.00			PM72001
		(ii) 14 cum capacity	t-km				5.48		2219.40		PM73001
		(iii) 10 cum capacity	t-km			405xL	6.80			2754.00	PM74001
		For loading & unloading time									
		(i) 18 cum capacity	hour	2.700			2239.00	6045.30			PM6001
		(ii) 14 cum capacity	hour		3.375		1998.00		6743.25		PM6002
		(iii) 10 cum capacity	hour			4.500	1785.00			8032.50	PM6003
		<b>Smooth steel wheeled tandem roller</b> for static and vibratory passages	hour	14.512	14.512	14.512	1518.00	22029.22	22029.22	22029.22	PM8001
		<b>c) Material</b>									
		Crushed stone aggregates nominal size 13.2 mm	cum	184.500	184.500	184.500	586.00	108117.00	108117.00	108117.00	M-051
		Crushed stone aggregates nominal size 11.2 mm	cum	92.250	92.250	92.250	586.00	54058.50	54058.50	54058.50	M-050
		Bitumen 80/100	tonne	14.970	14.970	14.970	55614.00	832541.58	832541.58	832541.58	M-075
		Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	2.460	2.460	54270.00	133504.20	133504.20	133504.20	M-077
		<b>d) Overhead charges @ on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		106929.49	133142.51	159996.90	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		144354.81	146456.76	149330.44	
		Cost for 10250 sqm = a+b+c+d+e						1587902.88	1611024.41	1642634.82	
		<b>Rate per sqm = (a+b+c+d+e)/10250</b>						154.92	157.17	160.26	
							<b>Say</b>	<b>154.90</b>	<b>157.20</b>	<b>160.30</b>	
10.05	3004.2	<b>Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm.</b>									
		Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2									
		<b>Unit = Sqm</b>									
		<b>Taking out put = 4900 sqm</b>									
		<b>a) Labour</b>									
		Mate	Day	2.920	2.920	2.920	325.00	949.00	949.00	949.00	L-12
		Mazdoor	Day	70.000	70.000	70.000	306.00	21420.00	21420.00	21420.00	L-13
		Mazdoor skilled	Day	3.000	3.000	3.000	388.00	1164.00	1164.00	1164.00	L-15
		<b>b) Machinery Hot Mix Plant</b>									
		(i) HMP 200 TPH	hour	3.000			44761.00	134283.00			PM18001
		(ii) HMP 160 TPH	hour		3.750		34660.00		129975.00		PM18002
		(iii) HMP 120 TPH	hour			5.000	26375.00			131875.00	PM18003

**Analysis of Rate**

**MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mechanical broom (2.1m sweeping width)	hour	1.458	1.458	1.458	746.00	1087.67	1087.67	1087.67	PM23001
		Air compressor 250 cfm	hour	1.458	1.458	1.458	391.00	570.08	570.08	570.08	PM15001
		Electric generator									
		(i) 500 KVA	hour	3.000			5360.00	16080.00			PM22002
		(ii) 400 KVA	hour		3.750		4323.00		16211.25		PM22003
		(iii) 250 KVA	hour			5.000	3034.00		15170.00		PM22004
		Front end loader for feeding the plant									
		(i) 3.1 cum capacity	hour	3.000			3433.00	10299.00			PM5001
		(ii) 2.1 cum capacity	hour		3.750		2033.00		7623.75		PM5002
		(iii) 1 cum capacity	hour			5.000	1366.00		6830.00		PM5003
		<b>Tipper</b>									
		For Transportation									
		(i) 18 cum capacity	t.km	450x L			4.80	2160.00			PM72001
		(ii) 14 cum capacity	t.km		450x L		5.48		2466.00		PM73001
		(iii) 10 cum capacity	t.km			450x L	6.80		3060.00		PM74001
		For loading & unloading time									
		(i) 18 cum capacity	hour	3.000			2239.00	6717.00			PM6001
		(ii) 14 cum capacity	hour		3.750		1998.00		7492.50		PM6002
		(iii) 10 cum capacity	hour			5.000	1785.00		21062.25		PM6003
		Smooth steel wheeled tandem roller for static and vibratory passages	hour	13.875	13.875	13.875	1518.00	21062.25	21062.25	21062.25	PM8001
		<b>c) Material</b>									
		l) Bitumen	tonne	23.890	23.890	23.890	55614.00	1328618.46	1328618.46	1328618.46	M-075
		ii) Bitumen emulsion for tack coat..	tonne	1.180	1.180	1.180	54270.00	64038.60	64038.60	64038.60	M-077
		iii) Aggregates									
		<b>Grading I - 19mm (Nominal size)</b>									
		20-10mm 38 percent	cum	108.255	108.255	108.255	886.00	95913.93	95913.93	95913.93	M-044
		10-5 mm 17 percent	cum	48.430	48.430	48.430	586.000	28379.98	28379.98	28379.98	M-039
		5mm and below 43 per cent	cum	122.499	122.499	122.499	424.210	51965.30	51965.30	51965.30	M-029
		Filler @ 2 percent of weight of aggregates	tonne	8.546	8.546	8.546	3873.95	33106.78	33106.78	33106.78	M-190
		Add 5 per cent for wastage						10468.30	10468.30	10468.30	
		or									
		<b>Grading-II 13mm (Nominal size)</b>									
		13.2-10 mm 21 percent	cum	59.825	59.825	59.825	586.00	35057.45	35057.45	35057.45	M-043
		10-5 mm 17 percent	cum	48.430	48.430	48.430	586.00	28379.98	28379.98	28379.98	M-039
		5 mm and Below 60 percent	cum	170.928	170.928	170.928	424.21	72509.37	72509.37	72509.37	M-029
		Filler 2 percent	tonne	8.546	8.546	8.546	3873.95	33106.78	33106.78	33106.78	M-190
		Add 5 per cent for wastage						8452.68	8452.68	8452.68	
		Any one of the above alternatives of aggregate i.e. 19mm or 13mm nominal size may be adopted as per approved design.									
<b>10.05</b>		<b>(i) for grading I Material</b>									
		<b>d)Overhead charges @ on (a+b+c)</b>						146262.67	182251.28	218952.52	

**Analysis of Rate**

**MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		e)Contractor's profit @ on (a+b+c+d) Cost for 4900 sqm = a+b+c+d+e		@ 10%	@ 10%	@ 10%		197454.60	200476.41	204355.69	
		<b>Rate per sqm = (a+b+c+d+e)/4900</b>						2172000.61	2205240.54	2247912.55	
							<b>Say</b>	443.27	450.05	458.76	
10.05		(ii) for grading II Material						<b>443.30</b>	<b>450.00</b>	<b>458.80</b>	
		d)Overhead charges		@ 8%	@ 10%	@ 12%		142876.42	178018.48	213873.16	
		e)Contractor's profit		@ 10%	@ 10%	@ 10%		192883.17	195820.33	199614.95	
		Cost for 4900 sqm = a+b+c+d+e						2121714.91	2154023.62	2195764.41	
		<b>Rate per sqm = (a+b+c+d+e)/4900</b>						<b>433.00</b>	<b>439.60</b>	<b>448.12</b>	
							<b>Say</b>	<b>433.00</b>	<b>439.60</b>	<b>448.10</b>	
		<b>Note</b> For detailed working of quantities of aggregates, & bitumen refer item 5.05 of chapter 5.									
10.06	3004.3.3	<b>Crack Filling</b> Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.									
		<b>Unit = Running Meter</b>									
		<b>Taking out put = 500m</b>									
		a) <b>Labour</b>									
		Mate	day	0.040	0.040	0.040		13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000		306.00	306.00	306.00	L-13
		b) <b>Material</b>									
		Slow-curing bitumen emulsion	Kg	33.000	33.000	33.000		1790.91	1790.91	1790.91	M-077
		Stone crusher dust	cum	0.020	0.020	0.020		5.25	5.25	5.25	M-020
		c)Overhead charges @ (a+b)		@ 8%	@ 10%	@ 12%		169.21	211.52	253.82	
		d)Contractor's profit @ on (a+b+c)		@ 10%	@ 10%	@ 10%		228.44	232.67	236.90	
		Cost for 500m = a+b+c+d						2512.81	2559.34	2605.88	
		<b>Rate per meter = (a+b+c+d)/500</b>						5.03	5.12	5.21	
							<b>Say</b>	<b>5.00</b>	<b>5.10</b>	<b>5.20</b>	
10.07	3004.4	<b>Dusting</b> Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.									
		<b>Unit = Sqm</b>									
		<b>Taking output = 3500 sqm</b>									
		a) <b>Labour</b>									
		Mate	day	0.080	0.080	0.080		26.00	26.00	26.00	L-12
		Mazdoor	day	2.000	2.000	2.000		612.00	612.00	612.00	L-13
		b) <b>Material</b>									
		Stone crusher dust finer than 3mm with not more than 10 percent passing 0.075 sieve.	cum	6.250	6.250	6.250		1640.13	1640.13	1640.13	M-020
		c)Overhead charges @ on (a+b)		@ 8%	@ 10%	@ 12%		182.25	227.81	273.38	
		d)Contractor's profit @ on (a+b+c)		@ 10%	@ 10%	@ 10%		246.04	250.59	255.15	
		Cost for 3500sqm = a+b+c+d						2706.41	2756.53	2806.65	

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per sqm = (a+b+c+d)/3500</b>									
10.08	(A) 3004.3.2	Fog Seal	sqm				Say				
	(B) 3004.3.4	<b>Crack Prevention courses.</b>									
	(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm								
	(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm								
	(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 percent	sqm								
	(iv)	Bitumen Impregnated Geotextile	sqm								
10.08	(C) 3004.5	<b>Slurry Seal</b>									
	(i)	5 mm thickness	sqm								
	(ii)	3 mm thickness	sqm								
	(iii)	1.5 mm thickness	sqm								
10.08	(D) 3004.6	<b>Surface Dressing for maintenance works.</b>									
	(i)	19 mm nominal chipping size	sqm								
	(ii)	13 mm nominal size chipping	sqm								
		The above mentioned items have already been included in chapter 5.									
10.09	3005.1	<b>Repair of Joint Grooves with Epoxy Mortar</b>									
		Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete.									
		<b>Unit = running metre</b>									
		<b>Taking output = 10 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		Chiseller	day	0.500	0.500	0.500	474.00	237.00	237.00	237.00	L-05
		<b>b) Material</b>									
		Epoxy primer	kg	2.500	2.500	2.500	122.02	305.05	305.05	305.05	M-097
		Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	10.000	10.000	595.97	5959.70	5959.70	5959.70	M-095
		<b>c) Machinery</b>									
		Air compressor 250 cfm for cleaning	hour	0.050	0.050	0.050	391.00	19.55	19.55	19.55	PM15001
		<b>d) Overhead charges @ on (a+b+c)</b>						534.98	668.73	802.48	

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>e)Contractor's profit @ on (a+b+c+d)</b> Cost for 10 metres = a+b+c+d+e		(@ 10%)	(@ 10%)	(@ 10%)		722.23	735.60	748.98	
		<b>Rate per metre = (a+b+c+d+e)/10</b>						7944.51	8091.63	8238.75	
						<b>Say</b>		794.45	809.16	823.88	
								<b>794.50</b>	<b>809.20</b>	<b>823.90</b>	
<b>10.10</b>	<b>3005.2</b>	<b>Repair of old Joints Sealant</b> Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material.									
		<b>Unit = running metre</b>									
		<b>Taking output = 10 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mazdoor	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		<b>b) Material</b>									
		Primer	kg	0.250	0.250	0.250	77.60	19.40	19.40	19.40	M-145
		Sealant	kg	1.000	1.000	1.000	27.24	27.24	27.24	27.24	M-119
		<b>c) Machinery</b>									
		Air compressor 250 cfm for cleaning	hour	0.050	0.050	0.050	391.00	19.55	19.55	19.55	PM15001
		<b>d)Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		18.06	22.57	27.08	
		<b>e)Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		24.37	24.83	25.28	
		Cost for 10 metres = a+b+c+d+e						268.12	273.08	278.05	
		<b>Rate per metre = (a+b+c+d+e)/10</b>						26.81	27.31	27.81	
						<b>Say</b>		<b>26.80</b>	<b>27.30</b>	<b>27.80</b>	
<b>10.11</b>		<b>Hill Side Drain Clearance</b> Removal of earth from the choked hill side drain and disposing it on the valley side manually									
		<b>Unit = running metre</b>									
		<b>Taking output = 10 metres</b>									
		Assuming muck causing choking of drain to be 0.2 cum per metre, quantity of earth to be removed for 10 metres = 2 cum									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b)Overhead charges @ on (a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		25.52	31.90	38.28	
		<b>c)Contractor's profit @ on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		34.45	35.09	35.73	
		Cost for 10 metres = a+b+c						378.97	385.99	393.01	
		<b>Rate per metre = (a+b+c)/10</b>						37.90	38.60	39.30	
						<b>Say</b>		<b>37.90</b>	<b>38.60</b>	<b>39.30</b>	
<b>10.12</b>	<b>3000</b>	<b>Land Slide Clearance in soil</b> Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side									

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Unit = cum</b>									
		<b>Taking output = 100 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Dozer 175 HP	hour	1.670	1.670	1.670	4249.00	7095.83	7095.83	7095.83	PM1002
		<b>c)Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		593.19	741.48	889.78	
		<b>d)Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		800.80	815.63	830.46	
		Cost for 100 cum = a+b+c+d						8808.82	8971.94	9135.07	
		<b>Rate per cum = (a+b+c+d)/100</b>					<b>Say</b>	88.09	89.72	91.35	
								<b>88.10</b>	<b>89.70</b>	<b>91.40</b>	
		<b>Note</b>									
		Land Slide clearance involves pushing of loose earth slided on the road surface from hill face on the valley side. Since no cutting of original ground is involved, the output of dozer has been taken as 60 cum per hour for soil, ordinary rock and blasted hard rock. However, if there are objection to disposing of earth on valley side, additional resources for its disposal shall be considered as per site conditions.									
10.13	3000	<b> Landslide Clearance in Hard Rock Requiring Blasting</b>									
		Clearing of land slide in hard rock requiring blasting for 50 per cent of the boulders and disposal of the same on the valley side.									
		<b>Unit = cum</b>									
		<b>Taking output = 100 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.093	0.093	0.093	325.00	30.23	30.23	30.23	L-12
		Mazdoor	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		Driller	day	0.750	0.750	0.750	318.00	238.50	238.50	238.50	L-06
		Blaster	day	0.070	0.070	0.070	508.00	35.56	35.56	35.56	L-03
		<b>b) Machinery</b>									
		Dozer 175 HP	hour	1.670	1.670	1.670	4249.00	7095.83	7095.83	7095.83	PM1002
		Air compressor 250 cfm with two jack hammer	hour	2.500	2.500	2.500	413.00	1032.50	1032.50	1032.50	PM15001 + 2xPM45001
		<b>c) Materials</b>									
		Explosives	kg	17.500	17.500	17.500	976.21	17083.68	17083.68	17083.68	M-215
		Electric Detonators @ 1 Detonator for 2 Gelatin sticks of 125 gms each	each	70.000	70.000	70.000	6.19	433.30	433.30	433.30	M-217
		<b>d)Overhead charges @ on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		2112.69	2640.86	3169.03	



**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large (@ 10%)	Medium (@ 10%)	Small (@ 10%)		Large	Medium	Small	
		e)Contractor's profit @ on (a+b+c+d) Cost for 100 cum = a+b+c+d+e Rate per cum = (a+b+c+d+e)/100									
		Note Credit for the rock if found acceptable as construction material shall be afforded									
10.14	3000.0	<b>Snow Clearance on Roads with Dozer</b> Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side Unit = cum Taking output = 5000 cum									
		a) Labour	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mate	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		Mazdoor									
		b) Machinery	hour	5.880	5.880	5.880	4249.00	24984.12	24984.12	24984.12	PM1002
		Dozer 175 HP									
		c)Overhead charges @ on (a+b)						2049.77	2562.21	3074.65	
		d)Contractor's profit @ on (a+b+c)						2767.19	2818.43	2869.68	
		Cost for 5000 cum = a+b+c+d						30439.08	31002.77	31566.45	
		Rate per cum = (a+b+c+d)/5000						6.09	6.20	6.31	
		Note i) Labour provided will not be cutting the snow. They will be guiding the dozer operator on the alignment of the road as entire surface gets covered with snow and the edges of the road are not visible and for changing the blade angle. Also they will keep a watch on the hill side for any eventuality of avalanches, slide etc					Say	6.10	6.20	6.30	
10.15	3000	<b>Snow Clearance on Roads with Snow Blowers</b> Snow clearance from road surface by a snow blower and disposing on the valley side. Unit = cum Taking output = 3600 cum									
		a) Labour	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Mate	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		Mazdoor									
		b) Machinery	hour	6.000	6.000	6.000	4249.00	25494.00	25494.00	25494.00	PM1002
		Snow blower equipment 175 HP @ 600 cum per hour									
		c)Overhead charges @ on (a+b)						2090.56	2613.20	3135.84	
		d)Contractor's profit @ on (a+b+c)						2822.26	2874.52	2926.78	
		Cost for 3600 cum (a+b+c+d)						31044.82	31619.72	32194.62	

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Rate per cum = (a+b+c+d)/3600						8.62	8.78	8.94	
10.16	811	Replacement of Metal Beam Crash Barrier				Say		8.60	8.80	8.90	
	A	Type - A, "W" : Metal Beam Crash Barrier Replacement of "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road / ground level, fixed on ISMC series channel vertical post, 150x75x5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground /road level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS: 1367 and IS :1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150x75x5 mm, 330 mm long complete as per clause 811									
		Unit = Running metre									
		Taking output = 4.5 metre length									
		<b>a) Labour</b>									
		Mate	day	0.080	0.060	0.060	325.00	26.00	19.50	19.50	L-12
		Blacksmith	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-25
		Mazdoor	day	1.500	1.000	1.000	306.00	459.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001
		<b>c) Material</b>									
		Corrugated sheet, 3 mm thick, "W" beam section railing, 4.5 m in length	kg	41.210	41.210	41.210	49.62	2044.84	2044.84	2044.84	M-089
		Channel post 150x75x5 mm, 1.8 m long, 3 Nos @ 16.4 kg per metre	kg	88.560	88.560	88.560	57.03	5050.84	5050.84	5050.84	M-181
		Spacer 150x75x5 mm channel 0.33 m long, 3 Nos @ 16.4 kg per metre	kg	16.240	16.240	16.240	57.03	926.22	926.22	926.22	M-181
		Nuts and bolts	kg	20.000	20.000	20.000	69.15	1383.00	1383.00	1383.00	M-129

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Add 25 percent of the cost of material for fabrication , nuts , bolts and washers etc ..}									
		Credit for salvage value of dismantled material	kg	166.010	166.010	166.010	INPUT	#VALUE!	#VALUE!	#VALUE!	M305
		<b>d)Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e)Contractor profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 4.5 metre = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per metre = (a+b+c+d+e)/4.5</b>					<b>Say</b>	#VALUE!	#VALUE!	#VALUE!	
<b>10.16</b>		<b>B Type - B , " THRIE" : Metal Beam Crash Barrier</b>									
		Replacement of "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail , 85 cm above road/ ground level , fixed on ISMC series channel vertical post , 150 x 75 x 5 mm spaced 2 m centre to centre,2 m high with 1.15 m below ground level, all steel parts and fittings to be galvanised by hot dip process ,all fittings to conform to IS: 1367 and IS :1364 , metal beam rail to be fixed on the vertical post with a space of channel section 150x75x5 mm, 546 mm long complete as per clause 811									
		<b>Unit = Running metre</b>									
		<b>Taking output = 4.5 metre length</b>									
		<b>a) Labour</b>									
		Mate	day	0.080	0.080	0.080	325.00	26.00	26.00	26.00	L-12
		Blacksmith	day	0.500	0.500	0.500	369.00	184.50	184.50	184.50	L-25
		Mazdoor	day	1.500	1.500	1.500	306.00	459.00	459.00	459.00	L-13
		<b>b) Machinery</b>									
		Tractor-trolley	hour	0.100	0.100	0.100	629.00	62.90	62.90	62.90	PM12001
		<b>c) Material</b>									
		Corrugated sheet , 3 mm thick , "Thrie" beam section railing , 4.5 m in length	kg	72.940	72.940	72.940	49.62	3619.28	3619.28	3619.28	M-089
		Channel post 150x75x5 mm , 2 m long , 3 Nos @ 16.4 kg per metre	kg	98.400	98.400	98.400	57.03	5612.05	5612.05	5612.05	M-181
		Spacer 150x75x5 mm channel 0.546 m long , 3 Nos	kg	26.860	26.860	26.860	57.03	1531.91	1531.91	1531.91	M-181

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Nuts and bolts	kg	30.000	30.000	30.000	69.15	2074.50	2074.50	2074.50	M-129
		Add 15 percent of the cost of material for fabrication , nuts , bolts and washers etc						1925.66	1925.66	1925.66	
		Credit for salvage value of dismantled material	kg	228.200	228.200	228.200	INPUT	#VALUE!	#VALUE!	#VALUE!	M305
		<b>d)Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		#VALUE!	#VALUE!	#VALUE!	
		<b>e)Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		#VALUE!	#VALUE!	#VALUE!	
		Cost for 4.5 metre = a+b+c+d+e						#VALUE!	#VALUE!	#VALUE!	
		<b>Rate per metre = (a+b+c+d+e)/4.5</b>					Say	#VALUE!	#VALUE!	#VALUE!	
10.17		<b>Network Survey Vehicle (NSV) attached with SUV</b>									
		Data collection of longitudinal profiling (International Roughness Index), Transverse profiling (Rut Depth) , Pavement Texture in terms of Mean Profile Depth , Road Geometry Data (cross slope , gradient , curvature ) , GPS coordinates ( X , Y , Z ) viz. longitude , latitude & altitude , video imaging for Roadside furniture/ Road Assets and Video imaging for Pavement Surface Distresses and reports.									
		<b>Unit = Lane Kilometer</b>									
		<b>Taking output = 200 Lane Km.</b>									
		<b>a) Labour</b>									
		Mate	day	0.360	0.360	0.360	325.00	117.00	117.00	117.00	L-12
		Mazdoor (skilled)	day	9.000	9.000	9.000	388.00	3492.00	3492.00	3492.00	L-15
		<b>b) Machinery</b>									
		Network Survey Vehicle (NSV)	hour	8.000	8.000	8.000	6044.00	48352.00	48352.00	48352.00	PM/81001
		Network Survey Vehicle (NSV) Mobilization & demobilization	hour	15.000	15.000	15.000	6044.00	90660.00	90660.00	90660.00	PM/81001
		Add 1 percent of cost of a+b for Miscellaneous work						1426.21	1426.21	1426.21	
		<b>c)Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		11523.78	14404.72	17285.67	
		<b>d)Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		15557.10	15845.19	16133.29	
		Cost for 200 Km. = a+b+c+d						171128.09	174297.12	177466.16	
		<b>Rate per Km. = (a+b+c+d)/200</b>					Say	855.64	871.49	887.33	
		<b>Note</b>						<b>855.60</b>	<b>871.50</b>	<b>887.30</b>	
		(i) Average Distance has been considered 300 km for mobilization at working site and same for demobilization									
		(ii) Speed of vehicle 40 km/hr. has been considered .									

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
10.18		(iii) The survey speed shall be within 30 to 80 kmph . <b>Falling weight deflectometer (FWD)</b> <b>Unit = Lane Kilometer</b> <b>Taking output = 120 Lane Km.</b>									
		<b>a) Labour</b>									
		Mate	day	0.120	0.120	0.120	325.00	39.00	39.00	39.00	L-12
		Mazdoor (skilled)	day	1.000	1.000	1.000	388.00	388.00	388.00	388.00	L-15
		Mazdoor	day	2.000	2.000	2.000	306.00	612.00	612.00	612.00	L-13
		<b>b) Machinery</b>									
		Falling weight deflectometer (FWD)	hour	8.000	8.000	8.000	2884.00	23072.00	23072.00	23072.00	PM82001
		Equipment Falling weight deflectometer (FWD)	hour	15.000	15.000	15.000	2884.00	43260.00	43260.00	43260.00	PM82001
		Equipment Mobilization & demobilization									
		Add 1 percent of cost of a+b for Miscellaneous work						673.71	673.71	673.71	
		<b>c)Overhead charges @ on (a+b)</b>						5443.58	6804.47	8165.37	
		<b>d)Contractor's profit @ on (a+b+c)</b>						7348.83	7484.92	7621.01	
		Cost for 120 Km. = a+b+c+d						80837.12	82334.10	83831.08	
		<b>Rate per Km. = (a+b+c+d)/120</b>						673.64	686.12	698.59	
		<b>Note</b>						<b>Say</b>	<b>673.60</b>	<b>698.60</b>	
		(i) Average Distance has been considered 300 km for mobilization at working site and same for demobilization									
		(ii) Speed of vehicle 40 km/hr. has been consider.									
10.19		<b>Road Retro reflectometer attached with SUV</b> <b>Unit = Km.</b> <b>Taking output = 50 Km.</b>									
		<b>a) Labour</b>									
		Mate	day	1.200	1.200	1.200	325.00	390.00	390.00	390.00	L-12
		Mazdoor (skilled)	day	20.000	20.000	20.000	388.00	7760.00	7760.00	7760.00	L-15
		Mazdoor	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		<b>b) Machinery</b>									
		Road Retro reflectometer attached with SUV	hour	80.000	80.000	80.000	1468.00	117440.00	117440.00	117440.00	PM83001
		Road Retro reflectometer attached with SUV	hour	15.000	15.000	15.000	1468.00	22020.00	22020.00	22020.00	PM83001
		Mobilization & demobilization									
		Add 1 percent of cost of a+b as Miscellaneous work						1506.70	1506.70	1506.70	
		<b>c)Overhead charges @ on (a+b)</b>						12174.14	15217.67	18261.20	
		<b>d)Contractor's profit @ on (a+b+c)</b>						16435.08	16739.44	17043.79	
		Cost for 50 Km. = a+b+c+d						180785.92	184133.81	187481.69	

**Analysis of Rate  
MAINTENANCE OF ROADS**

Sl. No.	Ref. to MoRTH	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Rate per Km. = (a+b+c+d)/50</b>									
		<b>Note</b> (i) Average Distance has been considered 300 km for mobilization at working site and same for (ii) Speed of vehicle 40 km / hr. has been considered. (iii) The km is only for one side if road is more than 2 lane					<b>Say</b>				
<b>10.20</b>		<b>Automatic Vehicle Counter Classifier (ATCC)</b>									
		<b>Unit = Per Location</b>									
		<b>Taking output = 1 Location</b>									
		<b>a) Labour</b>									
		Mate	day	1.696	1.696	1.680	325.00	551.20	546.00	L-12	
		Mazdoor (skilled)	day	0.400	0.400	0.400	388.00	155.20	155.20	L-15	
		Mazdoor	day	42.000	42.000	42.000	306.00	12852.00	12852.00	L-13	
		<b>b) Machinery</b>									
		Automatic Vehicle Counter Classifier (ATCC) Equipment etc..	hour	168.000	168.000	168.000	74.00	12432.00	12432.00	PM85001	
		Sport utility vehicle (SUV) including Mobilization & demobilization	hour	72.000	72.000	72.000	975.00	70200.00	70200.00	PM84001	
		Data processing and Report charges	Lumpsum	1.000	1.000	1.000	500.00	500.00	500.00	Lumpsum	
		Add 1 percent of cost of a+b as Miscellaneous work						966.90	966.90	966.85	
		<b>c) Overhead charges @ on (a+b)</b>				<b>(@ 8%)</b>		7812.58	9765.73	11718.25	
		<b>d) Contractor's profit @ on (a+b+c)</b>				<b>(@ 10%)</b>		10546.99	10742.30	10937.03	
		Cost for 1 location . = a+b+c+d				<b>(@ 10%)</b>		116016.88	118165.34	120307.33	
		<b>Rate per Location = (a+b+c+d)/1</b>						116016.88	118165.34	120307.33	
		<b>Note</b> (i) Average interval of location has been considered 50 km. (ii) The duration of traffic counting 24 hours for 7 days has been considered for one location					<b>Say</b>	<b>116016.90</b>	<b>118165.30</b>	<b>120307.30</b>	



**CHAPTER - 11**  
**HORTICULTURE**





**CHAPTER-11**  
**HORTICULTURE**

**PREAMBLES :**

- 1 The items of turfing with sods and seeding and mulching have been included in the chapter of earthwork.
- 2 The analysis of rates for grassing of lawns and hedges has been included, as the same may be needed for resting places on highways.
- 3 Five types of tree guards as under have been provided.
  - a) Half brick circular type.
  - b) Tree guards made from empty bitumen drums 1.30 m high
  - c) Tree guards made from empty bitumen drums 2.00 m high
  - d) Tree guards with MS flat iron
  - e) Tree guards with MS angle and 3 mm steel wire welded on MS flat and bolted to angle iron posts

Section from above may be made as per actual situation and design.

- 4 Analysis of rates for wrought iron and mild steel welded work has been included to cater for any miscellaneous work in connection with horticulture, fencing and traffic sign.
- 5 Though the estimate for compensatory afforestation is made by the forest department, the rate for this item has been analysed and included for the purpose of estimation.
- 6 In the rate analysis of some items, the quantities of sub-items involved in that analysis, like excavation for foundation, foundation concrete, painting, lettering. etc. have been given. The rates for such items may be taken from relevant chapters where the same have already been analysed.





**Summary of Rate Analysis**

**CHAPTER - 11  
HORTICULTURE**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
11.01	<b>Spreading of Sludge Farm Yard Manure or/and good Earth</b>				
	Spreading of sludge farm yard manure or/and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately).	Cum	25.30	25.70	26.20
11.02	<b>Grassing with 'Doobs' Grass</b>				
	Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed.	Sqm			
	(i) <b>In rows 15 cm apart in either direction</b>	Sqm	16.70	17.00	17.30
	(ii) <b>In rows 7.5 cm apart in either direction</b>	Sqm	26.60	27.10	27.60
11.03	<b>Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod</b>				
	Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm.	Sqm	16.60	16.90	17.20
11.04	<b>Maintenance of Lawns or Turfing of Slopes</b>				
	Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc.	Sqm	225.40	229.60	233.70
11.05	<b>Turfing Lawns with Fine Grassing including Ploughing, Dressing</b>				
	Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of 0.6 cum per 100 sqm.	Sqm	21.80	22.20	22.70
11.06	<b>Maintenance of Lawns with Fine Grassing for the First Year</b>				
	Maintenance of lawns with fine grassing for the first year including watering etc	Sqm	247.40	251.90	256.50
11.07	<b>Planting and Maintaining of Permanent Hedges</b>				
	(a) <b>Planting permanent hedges including digging of trenches</b>	Running Metre	398.10	405.50	412.90
	Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart.				



**Summary of Rate Analysis**

**HORTICULTURE**

Sl. No.	Description		Unit	Rate		
				Large	Medium	Small
	(b)	Maintenance of hedge for one year	Running Metre	215.10	219.10	223.10
11.08		<b>Planting and Maintaining of Flowering Plants and Shrubs</b>				
	(a)	Planting flowering plants and shrubs in central verge	Running Metre	37895.90	38597.60	39299.40
		200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3m and above.				
11.08	(b)	Maintenance of flowering plants and shrubs in central verge for one year	Km	229869.70	234126.60	238383.40
11.09		<b>Planting of Trees and their Maintenance for one Year</b>				
		Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year.	Each	958.70	976.40	994.20
11.10		<b>Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil</b>				
		Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure.	Sqm	17.60	17.90	18.20
11.11		<b>Supply at Site Well Decayed Farm Yard Manure</b>				
		Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking.	Cum	331.30	337.50	343.60
11.12		<b>Supply at Site of Work/ Store-Deoiled Neem Cake</b>				
		Supply at site of work/ store-deoiled neem cake duly packed in used gunny bags	Quintal	4752.00	4840.00	4928.00
11.13		<b>Supplying Sludge</b>				
		Supplying sludge duly stacked at site/ store	Cum	331.30	337.50	343.60
11.14		<b>Half Brick Circular Tree Guard, in 2nd Class Brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground</b>				
		Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete.	Each	1939.30	1975.20	2011.10



**Summary of Rate Analysis**

**HORTICULTURE**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
11.15	<b>Edging with 2nd Class Bricks, Laid Dry Lengthwise</b>				
	Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres.	Metre	40.20	41.00	41.70
11.16	<b>Suggestive Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums</b>				
	Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect.	Each	578.60	589.30	600.00
11.17	<b>Suggestive Making Tree Guard 53 cm dia and 2 Metre High as per Design from Empty Bitumen Drums</b>				
	Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, ( supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects.	Each	1141.80	1163.00	1184.10
11.18	<b>Suggestive Wrought Iron and Mild Steel Welded Work</b>				
	Wrought iron and mild steel welded work (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately	Quintal	9206.50	9377.00	9547.50
11.19	<b>Suggestive Tree Guard with MS Iron</b>				
	Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects.	Each	2413.50	2458.20	2502.90
11.20	<b>Suggestive Tree Guard with MS Angle Iron and Steel Wire</b>				
	Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm and steel wire 3 mm dia welded and fabricated as per design in two halves bolted together	Each	3099.40	3156.80	3214.20
11.21	<b>Compensatory Afforestation</b>				

**Summary of Rate Analysis**

**HORTICULTURE**

Sl. No.	Description	Unit	Rate		
			Large	Medium	Small
	Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering.	Hectare	118551.10	120746.50	122941.90
11.22	<b>Rain Water Harvesting</b> Constructing rain water harvesting recharge trench cum recharge shaft/well including grating passage joining storm water drain and trench having brick walls, RCC cover slab and filled with layers of filter media (size 75 mm to 100 mm), grating having brick walls and CC 1:2:4 base and PVC pipe shaft packed with gravel, provided with wire screen and bottom plug complete as per Drawing, direction of the Engineer and MORT&H Specifications sections 300, 1000, 1300, 1500, 1600 & 1700. (Dimension of rain water harvesting pit 6.5 m depth, 2.10 meter inner dia, wall width 375 mm and top slab thickness 150 mm).	Number	107934.50	110081.00	112981.20

**Analysis of Rate**  
**CHAPTER - 11**  
**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
11.01	307	<b>Spreading of Sludge Farm Yard Manure or/and good Earth</b>									
		Spreading of sludge farm yard manure or/and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately).									
		<b>Unit = cum</b>									
		<b>Taking output = 15 cum</b>									
		<b>a) Labour</b>									
		Mate	day	0.040	0.040	0.040	325.00	13.00	13.00	13.00	L-12
		Mazdoor	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Overhead charges @ on (a)</b>									
		<b>c) Contractor's profit @ on (a+b)</b>									
		Cost for 15 cum= a+b+c						34.45	35.09	35.73	
		<b>Rate per cum = (a+b+c)/15</b>						378.97	385.99	393.01	
								25.26	25.73	26.20	
								<b>Say</b>	<b>25.70</b>	<b>26.20</b>	
11.02	307	<b>Grassing with 'Doobs' Grass</b>									
		Grassing with 'Doobs' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>(i) In rows 15 cm apart in either direction</b>									
		<b>a) Labour</b>									
		Mate	day	0.070	0.070	0.070	325.00	22.75	22.75	22.75	L-12
		Mazdoor for grassing	day	0.750	0.750	0.750	306.00	229.50	229.50	229.50	L-13
		Mazdoor for maintenance for 30 days	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	0.500	0.500	0.500	707.00	353.50	353.50	353.50	PM11003
		<b>c) Material</b>									
		Doob grass	kg	100.000	100.000	100.000	4.96	496.00	496.00	496.00	M-111
		<b>d) Overhead charges @ on (a+b+c)</b>									
		<b>e) Contractor's profit @ on (a+b+c+d)</b>									
								112.62	140.78	168.93	
								152.04	154.85	157.67	



**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Cost for 100 sqm = a+b+c+d+e									
		<b>Rate per sqm = (a+b+c+d+e)/100</b>									
11.02		(ii) In rows 7.5 cm apart in either direction					Say				
		<b>a) Labour</b>									
		Mate	day	0.090	0.090	0.090	325.00	29.25	29.25	29.25	L-12
		Mazdoor for grassing.	day	1.250	1.250	1.250	306.00	382.50	382.50	382.50	L-13
		for maintenance for 30 days	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	0.750	0.750	0.750	707.00	530.25	530.25	530.25	PM11003
		<b>c) Material</b>									
		Doob grass	kg	200.000	200.000	200.000	4.96	992.00	992.00	992.00	M-111
		<b>d) Overhead charges @ on (a+b+c)</b>						179.20	224.00	268.80	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>						241.92	246.40	250.88	
		Cost for 100 sqm = a+b+c+d+e						2661.12	2710.40	2759.68	
		<b>Rate per sqm = (a+b+c+d+e)/100</b>						26.61	27.10	27.60	
							Say				
		<b>Note</b>									
		In the case of horticulture one mate has been provided for every 10 mazdoors as maintenance of grass and plants require more care.									
11.03	307	<b>Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod</b>									
		Making lawns including ploughing and breaking of clod, removal of rubbish, dressing and supplying doobs grass roots and planting at 15 cm apart, including supplying and spreading of farm yard manure at rate of 0.18 cum per 100 sqm.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.060	0.060	0.060	325.00	19.50	19.50	19.50	L-12
		Mazdoor for preparation of ground	day	0.500	0.500	0.500	306.00	153.00	153.00	153.00	L-13
		Mall for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	1.000	1.000	318.00	318.00	318.00	318.00	L-09
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	0.500	0.500	0.500	707.00	353.50	353.50	353.50	PM11003
		Tractor with tipper	hour	0.010	0.010	0.010	629.00	6.29	6.29	6.29	PM12001
		<b>c) Material</b>									



**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Supply of farm yard manure at site of work	cum	0.180	0.180	0.180	278.90	50.20	50.20	50.20	M-168
		Fine grass	kg	100.000	100.000	100.000	4.96	496.00	496.00	496.00	M-112
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		111.72	139.65	167.58	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		150.82	153.61	156.41	
		Cost for 100 sqm = a+b+c+d+e						1659.03	1689.76	1720.48	
		<b>Rate per sqm = (a+b+c+d+e)/100</b>					<b>Say</b>	16.59	16.90	17.20	
<b>11.04</b>	<b>307</b>	<b>Maintenance of Lawns or Turfing of Slopes</b>									
		Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mali	day	10.000	10.000	10.000	318.00	3180.00	3180.00	3180.00	L-09
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	15.000	15.000	15.000	707.00	10605.00	10605.00	10605.00	PM11003
		<b>c) Material</b>									
		Cost of water	KL	90.000	90.000	90.000	56.20	5058.00	5058.00	5058.00	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1517.84	1897.30	2276.76	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2049.08	2087.03	2124.98	
		Cost for 100 sqm = a+b+c+d+e						22539.92	22957.33	23374.74	
		<b>Rate per sqm = (a+b+c+d+e)/100</b>					<b>Say</b>	225.40	229.60	233.70	
<b>11.05</b>	<b>307</b>	<b>Turfing Lawns with Fine Grassing including Ploughing, Dressing</b>									
		Turfing lawns with fine grassing including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying doobs grass roots at 10 cm apart, including supplying and spreading of farm yard manure at rate of 0.6 cum per 100 sqm.									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.100	0.100	0.100	325.00	32.50	32.50	32.50	L-12
		Mazdoor for preparation of ground	day	1.000	1.000	1.000	306.00	306.00	306.00	306.00	L-13
		Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.500	1.500	1.500	318.00	477.00	477.00	477.00	L-09
		<b>b) Machinery</b>									

**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Water tanker 6 KL capacity	hour	0.500	0.500	0.500	707.00	353.50	353.50	353.50	PM11003
		Tractor with tiller	hour	0.010	0.010	0.010	629.00	6.29	6.29	6.29	PM12001
		<b>c) Material</b>									
		Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	0.600	0.600	278.90	167.34	167.34	167.34	M-168
		Fine grass	kg	100.000	100.000	100.000	4.96	496.00	496.00	496.00	M-112
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		147.09	183.86	220.64	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		198.57	202.25	205.93	
		Cost for 100 sqm = a+b+c+d+e						2184.29	2224.74	2265.19	
		<b>Rate per sqm = (a+b+c+d+e)/100</b>						21.84	22.25	22.65	
							<b>Say</b>	<b>21.80</b>	<b>22.20</b>	<b>22.70</b>	
11.06	307	<b>Maintenance of Lawns with Fine Grassing for the First Year</b>									
		Maintenance of lawns with fine grassing for the first year including watering etc									
		<b>Unit = sqm</b>									
		<b>Taking output = 100 sqm</b>									
		<b>a) Labour</b>									
		Mate	day	0.400	0.400	0.400	325.00	130.00	130.00	130.00	L-12
		Mali	day	10.000	10.000	10.000	318.00	3180.00	3180.00	3180.00	L-09
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	20.000	20.000	20.000	707.00	14140.00	14140.00	14140.00	PM11003
		<b>c) Material</b>									
		Cost of water	KL	60.000	60.000	60.000	56.20	3372.00	3372.00	3372.00	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1665.76	2082.20	2498.64	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		2248.78	2290.42	2332.06	
		Cost for 100 sqm = a+b+c+d+e						24736.54	25194.62	25652.70	
		<b>Rate per sqm = (a+b+c+d+e)/100</b>						247.37	251.95	256.53	
							<b>Say</b>	<b>247.40</b>	<b>251.90</b>	<b>256.50</b>	
11.07	307	<b>Planting and Maintaining of Permanent Hedges</b>									
		<b>(a) Planting permanent hedges including digging of trenches</b>									
		Planting permanent hedges including digging of trenches, 60 cm wide and 45 cm deep, refilling the excavated earth mixed with farmyard manure, supplied at the rate of 4.65 cum per 100 metres and supplying and planting hedge plants at 30 cm apart.									
		<b>Unit = Running metre</b>									
		<b>Taking output = 100 metre</b>									

**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>a) Labour</b>									
		Mate	day	0.560	0.560	0.560	325.00	182.00	182.00	182.00	L-12
		Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	10.000	10.000	306.00	3060.00	3060.00	3060.00	L-13
		Mazdoor for refilling the excavated earth mixed with cow dung, preparation of ground and digging of plant, from the nursery carriage to site and planting in position.	day	4.000	4.000	4.000	306.00	1224.00	1224.00	1224.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	0.500	0.500	0.500	707.00	353.50	353.50	353.50	PM11003
		<b>c) Material</b>									
		Cost of hedge plants 2 rows at 30 cm apart	each	2x340	2x340	2x340	40.00	27200.00	27200.00	27200.00	M-115
		Supply of farm yard manure at site of work	cum	4.670	4.670	4.670	278.90	1302.46	1302.46	1302.46	M-168
		Pesticide	kg	0.250	0.250	0.250	80.97	20.24	20.24	20.24	M-135
		Cost of water	KL	3.000	3.000	3.000	56.20	168.60	168.60	168.60	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		2680.86	3351.08	4021.30	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		3619.17	3686.19	3753.21	
		Cost for 100 metres = a+b+c+d+e						39810.84	40548.07	41285.31	
		<b>Rate per metre = a+b+c+d+e)/100</b>						398.11	405.48	412.85	
							<b>Say</b>	<b>398.10</b>	<b>405.50</b>	<b>412.90</b>	
		<b>(b) Maintenance of hedge for one year</b>									
		<b>Unit = Running metre</b>									
		<b>Taking output = 100 m</b>									
		<b>a) Labour</b>									
		Mate	day	1.200	1.200	1.200	325.00	390.00	390.00	390.00	L-12
		Mazdoor	day	30.000	30.000	30.000	306.00	9180.00	9180.00	9180.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	5.000	5.000	5.000	707.00	3535.00	3535.00	3535.00	PM11003
		<b>c) Material</b>									
		Manure sludge/Farm yard manure	cum	2.000	2.000	2.000	278.90	557.80	557.80	557.80	M-168
		Pesticide	kg	0.500	0.500	0.500	80.97	40.49	40.49	40.49	M-135
		Cost of water	KL	30.000	30.000	30.000	56.20	1686.00	1686.00	1686.00	M-191
		Cost of hedge plants @ 10 percent casualty	each	68.000	68.000	68.000	40.00	2720.00	2720.00	2720.00	M-115
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		1448.74	1810.93	2173.11	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		1955.80	1992.02	2028.24	
		Cost for 100 metres = a+b+c+d+e						21513.83	21912.23	22310.64	
		<b>Rate per metre = a+b+c+d+e)/100</b>						215.14	219.12	223.11	
							<b>Say</b>	<b>215.10</b>	<b>219.10</b>	<b>223.10</b>	
<b>11.08</b>	<b>307</b>	<b>Planting and Maintaining of Flowering Plants and Shrubs</b>									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		(a) Planting flowering plants and shrubs in central verge 200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3m and above.									
		<b>Unit = Running metre</b>									
		<b>Taking output = 1000 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.480	0.480	0.480	325.00	156.00	156.00	156.00	L-12
		Mazdoor	day	12.000	12.000	12.000	306.00	3672.00	3672.00	3672.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	6.000	6.000	6.000	707.00	4242.00	4242.00	4242.00	PM11003
		<b>c) Material</b>									
		Plants	each	200.000	200.000	200.000	9.00	1800.00	1800.00	1800.00	M-100
		Shrubs	each	800.000	800.000	800.000	2.77	2216.00	2216.00	2216.00	M-167
		Manure sludge/Farm yard manure	cum	63.640	63.640	63.640	278.90	17749.20	17749.20	17749.20	M-168
		Pesticide	kg	0.500	0.500	0.500	80.97	40.49	40.49	40.49	M-135
		Cost of water	KL	36.000	36.000	36.000	56.20	2023.20	2023.20	2023.20	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>						2551.91	3189.89	3827.87	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>						3445.08	3508.88	3572.67	
		<b>Rate per Km = (a+b+c+d+e)</b>						37895.87	38597.65	39299.42	
							<b>Say</b>	<b>37895.90</b>	<b>38597.60</b>	<b>39299.40</b>	
11.08		(b) Maintenance of flowering plants and shrubs in central verge for one year									
		Unit = km									
		<b>Taking output = one km</b>									
		<b>a) Labour</b>									
		Mate	day	14.600	14.600	14.600	325.00	4745.00	4745.00	4745.00	L-12
		Mazdoor	day	365.000	365.000	365.000	306.00	111690.00	111690.00	111690.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	90.000	90.000	90.000	707.00	63630.00	63630.00	63630.00	PM11003
		<b>c) Material</b>									
		Manure Sludge / farm yard manure at site	cum	10.000	10.000	10.000	278.90	2789.00	2789.00	2789.00	M-168
		Cost of water	KL	180.000	180.000	180.000	56.20	10116.00	10116.00	10116.00	M-191
		Replacement of casualties @ 10 percent									
		Plants	each	20.000	20.000	20.000	9.00	180.00	180.00	180.00	M-100
		Shrubs	each	80.000	80.000	80.000	2.77	221.60	221.60	221.60	M-167
		Pesticides	kg	1.500	1.500	1.500	80.97	121.46	121.46	121.46	M-135
		<b>d) Overhead charges @ on (a+b+c)</b>						15479.44	19349.31	23219.17	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>						20897.25	21284.24	21671.22	
		<b>Rate per Km for one year = (a+b+c+d+e)</b>						229869.75	234126.60	238383.44	

**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
11.09	307	<b>Planting of Trees and their Maintenance for one Year</b> Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year. <b>Unit = Each</b> <b>Taking output = 10 trees</b>				Say	229869.70	234126.60	238383.40		
		<b>a) Labour</b>									
		Mate	day	0.680	0.680			221.00	221.00	L-12	
		Mazdoor for planting	day	2.000	2.000			612.00	612.00	L-13	
		Mazdoor for maintenance for one year	day	15.000	15.000			4590.00	4590.00	L-13	
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	2.000	2.000			1414.00	1414.00	PM11003	
		<b>c) Material</b>									
		Sapling 2 m high 25 mm dia	each	10.000	10.000			255.50	255.50	M-161	
		Farm yard manure	cum	0.940	0.940			262.17	262.17	M-168	
		Pesticide	kg	0.500	0.500			40.49	40.49	M-135	
		Cost of water	KL	12.000	12.000			674.40	674.40	M-191	
		<b>d) Overhead charges @ on (a+b+c)</b>						645.56	806.96	968.35	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>						871.51	887.65	903.79	
		Cost for 10 trees = a+b+c+d+e						9586.63	9764.16	9941.69	
		<b>Rate per trees = (a+b+c+d+e)/10</b>						958.66	976.42	994.17	
11.10	308	<b>Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil</b> Renovation lawns including, weeding, forking the ground, top dressing with forked soil, watering and maintenance the lawns, for 30 days or more, till the grass forms a thick lawn, free from weeds, and fit for moving and disposal of rubbish as directed, including supplying good earth, if needed but excluding the cost of well decayed farm yard manure. <b>Unit = sqm</b> <b>Taking output = 100 sqm</b>				Say					
		<b>a) Labour</b>									
		Mate	day	0.120	0.120			39.00	39.00	L-12	

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Mazdoor	day	3.000	3.000	3.000	306.00	918.00	918.00	918.00	L-13
		<b>b) Machinery</b>									
		Water tanker 6 KL capacity	hour	0.500	0.500	0.500	707.00	353.50	353.50	353.50	PM11003
		<b>c) Material</b>									
		Cost of water	KL	3.000	3.000	3.000	56.20	168.60	168.60	168.60	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		118.33	147.91	177.49	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		159.74	162.70	165.66	
		Cost for 100 sqm = a+b+c+d+e						1757.17	1789.71	1822.25	
		<b>Rate per sqm = (a+b+c+d+e) / 100</b>						17.57	17.90	18.22	
							<b>Say</b>	<b>17.60</b>	<b>17.90</b>	<b>18.20</b>	
11.11	308.2	<b>Supply at Site Well Decayed Farm Yard Manure</b>									
		Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking.									
		<b>Unit = cum</b>									
		<b>Taking output = one cum</b>									
		<b>a) Material</b>									
		a) Cost of well decayed farm yard manure duly screened, loading, carriage, unloading and stacking at site	cum	1.000	1.000	1.000	278.90	278.90	278.90	278.90	M-168
		<b>b) Overhead charges @ on (a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		22.31	27.89	33.47	
		<b>c) Contractor's profit @ on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		30.12	30.68	31.24	
		<b>Rate per cum = (a+b+c)</b>						331.33	337.47	343.60	
							<b>Say</b>	<b>331.30</b>	<b>337.50</b>	<b>343.60</b>	
11.12	308.2	<b>Supply at Site of Work/ Store-Decoiled Neem Cake</b>									
		Supply at site of work/ store-decoiled neem cake duly packed in used gunny bags									
		<b>Unit = quintal</b>									
		<b>Taking output = one quintal</b>									
		a) Cost, carriage, loading, unloading and stacking in store/site	quintal	1.000	1.000	1.000	4000.00	4000.00	4000.00	4000.00	M-242
		<b>b) Overhead charges @ on (a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		320.00	400.00	480.00	
		<b>c) Contractor's profit @ on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		432.00	440.00	448.00	
		<b>Rate per quintal = a+b+c</b>						4752.00	4840.00	4928.00	
							<b>Say</b>	<b>4752.00</b>	<b>4840.00</b>	<b>4928.00</b>	
11.13	308.2	<b>Supplying Sludge</b>									
		Supplying sludge duly stacked at site/ store									
		<b>Unit = cum</b>									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Taking output = one cum</b>									
		a) Cost of sludge including carriage, loading, unloading and stacking at site	cum	1.000	1.000	1.000	278.90	278.90	278.90	278.90	M-168
		b) <b>Overhead charges @ on (a)</b>		(@ 8%)	(@ 10%)	(@ 12%)		22.31	27.89	33.47	
		c) <b>Contractor's profit @ on (a+b)</b>		(@ 10%)	(@ 10%)	(@ 10%)		30.12	30.68	31.24	
		<b>Rate per cum = a+b+c</b>					<b>Say</b>	331.33	337.47	343.60	
<b>11.14</b>	<b>308 &amp;1300</b>	<b>Half Brick Circular Tree Guard, in 2nd Class Brick, internal diameter 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground</b>									
		Half brick circular tree guard, in 2nd class brick, internal diameter 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete.									
		<b>Unit = Each</b>									
		<b>Taking output = one tree guard</b>									
		a) <b>Labour</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Mason	day	0.250	0.250	0.250	369.00	92.25	92.25	92.25	L-10
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		b) <b>Material</b>									
		Brick 2nd class including carriage	each	230.000	230.000	230.000	6.069	1395.87	1395.87	1395.87	M-079
		Cement mortar 1:6 (Rate taken from sub- analysis 2:1:0:1 D)	cum	0.025	0.025	0.025	2451.02	61.28	61.28	61.28	21.01
		c) <b>Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		130.59	163.24	195.89	
		d) <b>Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		176.30	179.56	182.83	
		<b>Rate per tree Guard = a+b+c+d</b>					<b>Say</b>	1939.29	1975.20	2011.11	
<b>11.15</b>	<b>308 &amp;1300</b>	<b>Edging with 2nd Class Bricks, Laid Dry Lengthwise</b>									
		Edging with 2nd class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres.									
		<b>Unit = Metre</b>									



**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Taking output= 10 metres</b>									
		<b>a) Labour</b>									
		Mate	day	0.004	0.004	0.004	325.00	1.30	1.30	1.30	L-12
		Mason	day	0.050	0.050	0.050	369.00	18.45	18.45	18.45	L-10
		Mazdoor	day	0.050	0.050	0.050	306.00	15.30	15.30	15.30	L-13
		<b>b) Material</b>									
		Brick 2nd class including carriage	each	50.000	50.000	50.000	6.069	303.45	303.45	303.45	M-079
		<b>c) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		27.08	33.85	40.62	
		<b>d) Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		36.56	37.24	37.91	
		Cost for 10 metre = a+b+c+d						402.14	409.59	417.03	
		<b>Rate per metre = (a+b+c+d)/10</b>					<b>Say</b>	40.21	40.96	41.70	
								<b>40.20</b>	<b>41.00</b>	<b>41.70</b>	
<b>11.16</b>	<b>Suggestive</b>	<b>Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums</b>									
		Making tree guard 53 cm dia and 1.3 m high as per design from empty bitumen drum, slit suitably to permit sun and air, (supplied by the department at stock issue rate) including providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets, complete in all respect.									
		<b>Unit = Each</b>									
		<b>Taking output = one tree guard</b>									
		<b>a) Labour</b>									
		Mate	day	0.009	0.009	0.009	325.00	2.93	2.93	2.93	L-12
		Blacksmith	day	0.150	0.150	0.150	369.00	55.35	55.35	55.35	L-25
		Mazdoor	day	0.070	0.070	0.070	306.00	21.42	21.42	21.42	L-13
		<b>b) Material</b>									
		Empty bitumen drum	each	1.000	1.000	1.000	170.47	170.47	170.47	170.47	M-173
		MS sheet 50 x 0.5 mm	kg	0.650	0.650	0.650	57.033	37.07	37.07	37.07	M-181
		Rivets 6 mm dia and 10 mm in length	each	22.000	22.000	22.000	9.08	199.76	199.76	199.76	M-159
		<b>c) Overhead charges @ on (a+b)</b>		(@ 8%)	(@ 10%)	(@ 12%)		38.96	48.70	58.44	
		<b>d) Contractor's profit @ on (a+b+c)</b>		(@ 10%)	(@ 10%)	(@ 10%)		52.60	53.57	54.54	
		<b>Rate for each tree guard = a+b+c+d</b>					<b>Say</b>	578.55	589.27	599.98	
								<b>578.60</b>	<b>589.30</b>	<b>600.00</b>	
<b>11.17</b>	<b>Suggestive</b>	<b>Making Tree Guard 53 cm dia and 2 Metre High as per Design from Empty Bitumen Drums</b>									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Making tree guard 53 cm dia and 2 metres high as per design from empty bitumen drums, slit suitably to permit sun and air, ( supplied by the department at stock issue rate) including providing and fixing four legs 40 cm long of 30 x 3 mm MS riveted to tree guard and providing and fixing 2 nos MS sheet rings 50 x 0.5 mm with rivets complete in all respects.									
		<b>Unit = Each</b>									
		<b>Taking output = one tree guard</b>									
		<b>a) Labour</b>									
		Mate	day	0.016	0.016	0.016	325.00	5.20	5.20	5.20	L-12
		Blacksmith	day	0.200	0.200	0.200	369.00	73.80	73.80	73.80	L-25
		Mazdoor	day	0.200	0.200	0.200	306.00	61.20	61.20	61.20	L-13
		<b>b) Material</b>									
		Empty bitumen drum	each	1.500	1.500	1.500	170.47	255.71	255.71	255.71	M-173
		MS sheet 50 x 0.5 mm	kg	0.650	0.650	0.650	57.033	37.07	37.07	37.07	M-181
		Rivets 6 mm dia and 10 mm in length	each	50.000	50.000	50.000	9.08	454.00	454.00	454.00	M-159
		MS plate 30 x 3 mm	kg	1.300	1.300	1.300	57.033	74.14	74.14	74.14	M-181
		<b>c) Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		76.89	96.11	115.33	
		<b>d) Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		103.80	105.72	107.65	
		<b>Rate for each tree guard = a+b+c+d</b>						1141.81	1162.95	1184.10	
							<b>Say</b>	<b>1141.80</b>	<b>1163.00</b>	<b>1184.10</b>	
11.18	Suggestive	<b>Wrought Iron and Mild Steel Welded Work</b>									
		Wrought iron and mild steel welded work (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately									
		<b>Unit = quintal</b>									
		<b>Taking output = one quintal</b>									
		<b>a) Labour</b>									
		Mate	day	0.180	0.180	0.180	325.00	58.50	58.50	58.50	L-12
		Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	2.000	2.000	369.00	738.00	738.00	738.00	L-25
		Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	2.500	2.500	306.00	765.00	765.00	765.00	L-13
		<b>b) Material</b>									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		Angle, tees, channels etc	quintal	1.050	1.050	1.050	5703.30	5988.47	5988.47	5988.47	M181/10
		Deduct the cost of scrap	quintal	0.050	0.050	0.050	-1901.10	(95.06)	(95.06)	(95.06)	M181/10/3
		Add 5 per cent of cost of material for welding rods and other welding accessories						294.67	294.67	294.67	
		<b>c) Overhead charges @ on (a+b)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		619.97	774.96	929.95	
		<b>d) Contractor's profit @ on (a+b+c)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		836.95	852.45	867.95	
		<b>Rate per quintal = a+b+c+d</b>					<b>Say</b>	<b>9206.50</b>	<b>9376.99</b>	<b>9547.48</b>	
<b>11.19</b>	<b>Suggestive</b>	<b>Tree Guard with MS Iron</b>									
		Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects.									
		<b>Unit = Each</b>									
		<b>Taking output = one tree guard</b>									
		<b>a) Labour</b>									
		Mate	day	0.020	0.020	0.020	325.00	6.50	6.50	6.50	L-12
		Blacksmith	day	0.250	0.250	0.250	369.00	92.25	92.25	92.25	L-25
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		MS iron 25 x 6 mm	kg	19.200	19.200	19.200	57.033	1095.03	1095.03	1095.03	M-181
		MS iron 25 x 3 mm	kg	9.600	9.600	9.600	57.033	547.52	547.52	547.52	M-181
		Add 5 percent of cost of material for riveting, bolting and welding accessories						82.13	82.13	82.13	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.040	0.040	0.040	629.00	25.16	25.16	25.16	PM12001
		<b>d) Painting</b>									
		Painting two coats including priming Rate for concrete may be adopted vide item no. 8.09	sqm	1.770	1.770	1.770	60.14	106.45	106.45	106.45	8.09
		<b>e) Overhead charges @ on (a+b+c+d)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		162.52	203.15	243.79	
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		219.41	223.47	227.53	
		<b>Rate per tree guard =a+b+c+d+e+f</b>					<b>Say</b>	<b>2413.47</b>	<b>2458.17</b>	<b>2502.86</b>	
		<b>Note</b>									
		1 The items of excavation and concreting to be measured and paid separately as per design .									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		2 . Rate of painting may be adopted from the chapter as Traffic signs.									
11.20	Suggestive	<b>Tree Guard with MS Angle Iron and Steel Wire</b> Providing and fixing tree guard 0.60 metre square, 2.00 metre high fabricated with MS angle iron 30 x 30 x 3 mm, MS iron 25 x 3 mm and steel wire 3 mm dia welded and fabricated as per design in two halves bolted together									
		<b>Unit = Each</b>									
		<b>Taking output = one</b>									
		<b>a) Labour</b>									
		Mate	day	0.030	0.030	0.030	325.00	9.75	9.75	9.75	L-12
		Blacksmith	day	0.250	0.250	0.250	369.00	92.25	92.25	92.25	L-25
		Welder	day	0.250	0.250	0.250	413.00	103.25	103.25	103.25	L-02
		Mazdoor	day	0.250	0.250	0.250	306.00	76.50	76.50	76.50	L-13
		<b>b) Material</b>									
		MS angle 30 x 30 x 3 mm	kg	13.500	13.500	13.500	57.033	769.95	769.95	769.95	M-181
		MS iron 25 x 3 mm	kg	18.000	18.000	18.000	57.033	1026.59	1026.59	1026.59	M-181
		Steel wire 3 mm dia	kg	6.000	6.000	6.000	51.660	309.96	309.96	309.96	M-194
		Add 5 per cent of cost of material for riveting, bolting and welding accessories						105.32	105.32	105.32	
		<b>c) Machinery</b>									
		Tractor-trolley	hour	0.040	0.040	0.040	629.00	25.16	25.16	25.16	PM12001
		<b>d) Painting</b>									
		Painting two coats including priming Rate for concrete may be adopted vide item no. 8.09	sqm	1.500	1.500	1.500	60.14	90.22	90.22	90.22	8.09
		<b>e) Overhead charges @ on (a+b+c+d)</b>									
		<b>f) Contractor's profit @ on (a+b+c+d+e)</b>									
		<b>Rate per tree guard = a+b+c+d+e+f</b>									
							<b>Say</b>	<b>3099.40</b>	<b>3156.80</b>	<b>3214.20</b>	
11.21		<b>Compensatory Afforestation</b> Planting trees as compensatory afforestation at the rate of 290 trees per hectare at a spacing of 6 m by grubbing and leveling the ground upto a depth of 150 mm, digging holes 0.9 m dia, 1 m deep, mixing farm yard/sludge manure with soil, planting of sapling 2 m high with 25 cm dia stem, backfilling the hole and watering.									

**Analysis of Rate  
HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Unit = Hectare</b>									
		<b>Taking output = one hectare</b>									
		<b>a) Labour</b>									
		<b>i) Planting</b>									
		Mate	day	1.000	1.000	1.000	325.00	325.00	325.00	325.00	L-12
		Mazdoor	day	25.000	25.000	25.000	306.00	7650.00	7650.00	7650.00	L-13
		<b>ii) For Maintenance for one year</b>									
		Mate	day	5.000	5.000	5.000	325.00	1625.00	1625.00	1625.00	L-12
		Mazdoor	day	50.000	50.000	50.000	306.00	15300.00	15300.00	15300.00	L-13
		<b>b) Machinery</b>									
		Dozer 90 HP @ 1000 sqm/hour	hour	10.000	10.000	10.000	2930.00	29300.00	29300.00	29300.00	PM1003
		Water tanker 6 KL capacity (for planting)	hour	3.000	3.000	3.000	707.00	2121.00	2121.00	2121.00	PM11003
		Water tanker 6 KL capacity (for maintenance)	hour	25.000	25.000	25.000	707.00	17675.00	17675.00	17675.00	PM11003
		<b>c) Material</b>									
		Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	290.000	290.000	20.44	5927.60	5927.60	5927.60	M161 x 0.8
		Add 10 per cent of sapling	each	29.000	29.000	29.000	20.44	592.76	592.76	592.76	M161 x 0.8
		Decayed farm yard/sludge manure (planting)	cum	60.900	60.900	60.900	278.90	16985.01	16985.01	16985.01	M-168
		Decayed farm yard/sludge manure (maintenance)	cum	4.000	4.000	4.000	278.90	1115.60	1115.60	1115.60	M-168
		Pesticides for planting	kg	0.500	0.500	0.500	80.97	40.49	40.49	40.49	M-135
		Pesticides for maintenance	kg	1.500	1.500	1.500	80.97	121.46	121.46	121.46	M-135
		Cost of water	KL	18.000	18.000	18.000	56.20	1011.60	1011.60	1011.60	M-191
		<b>d) Overhead charges @ on (a+b+c)</b>		<b>(@ 8%)</b>	<b>(@ 10%)</b>	<b>(@ 12%)</b>		<b>7983.24</b>	<b>9979.05</b>	<b>11974.86</b>	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		<b>(@ 10%)</b>	<b>(@ 10%)</b>	<b>(@ 10%)</b>		<b>10777.38</b>	<b>10976.96</b>	<b>11176.54</b>	
		<b>Rate per hectare = a+b+c+d+e</b>					<b>Say</b>	<b>118551.13</b>	<b>120746.52</b>	<b>122941.91</b>	
		<b>Note-</b>									
		Cost of fencing to be Provided as per size of plot and approved design, measured and paid separately									
11.22		<b>Rain Water Harvesting</b> Constructing rain water harvesting recharge trench cum recharge shaft/well including grating passage joining storm water drain and trench having brick walls, RCC cover slab and filled with layers of filter media (size 75 mm to 100 mm), grating having brick walls and CC 1:2:4 base and PVC pipe shaft packed with gravel, provided with wire screen and bottom plug complete as per Drawing, direction of the Engineer and MORT&H Specifications sections 300, 1000, 1300, 1500, 1600 & 1700. (Dimension of rain water harvesting pit 6.5 m depth, 2.10 meter inner dia, wall width 375 mm and top slab thickness 150 mm).									
		<b>Unit=Number</b>									



**Analysis of Rate**

**HORTICULTURE**

Sr. No.	Ref. to MoRTH Spec.	Description	Unit	Quantity as per project category			Rate (₹)	Amount			Input ref.
				Large	Medium	Small		Large	Medium	Small	
		<b>Taking output=10 Number</b>									
		<b>a) Material</b>									
		Excavation 12.01 (Rate taken from item NO.-12.01 (I) B (iii))	Cum	230.213	230.213	230.213	L-88.13 M-91.28 S-112.95	20287.74	21014.87	26002.11	12.01 (I) B (iii)
		Brick Wall (2.5 meter) (Rate taken from Item No.-12.05)	cum	61.819	61.819	61.819	L-4736.35 M-4739.44 S-4754.15	292796.31	292987.38	293896.85	12.05
		Brick wall (without Mortar-4 meter) (Rate taken from Item NO.-12.05×83%)	cum	98.910	98.910	98.910	L-3931.17 M-3933.73 S-3945.95	388831.93	389085.67	390293.44	12.05x0.83
		RCC M20 for slab (Rate taken from Item No.-12.08 C, Case-II)	cum	5.193	5.193	5.193	L-3924.07 M-3927.85 S-3944.35	20377.70	20397.35	20483.01	12.08 C, Case II
		Reinforcement (Rate taken from Item No.-12.42)	MT	0.415	0.415	0.415	L-59411.42 M-59451.90 S-59530.26	24655.74	24672.54	24705.06	12.42
		<b>b) Filter Material (Size from 75-100 mm)</b>	cum	225.020	225.020	225.020	678.14	152595.06	152595.06	152595.06	M-011
		<b>c) Add 1 percent of the cost of (a+b) for other miscellenus (i.e. Pipe etc) activities required to complete the item in all respect.</b>						8995.44	9007.53	9079.76	
		<b>d) Overhead charges @ on (a+b+c)</b>		(@ 8%)	(@ 10%)	(@ 12%)		72683.19	90976.04	110046.63	
		<b>e) Contractor's profit @ on (a+b+c+d)</b>		(@ 10%)	(@ 10%)	(@ 10%)		98122.31	100073.64	102710.19	
		Cost for 10 Nos.=a+b+c+d+e						1079345.43	1100810.07	1129812.12	
		<b>Rate per No.=(a+b+c+d+e)/10</b>					<b>Say</b>	107934.54	110081.01	112981.21	
								<b>107934.50</b>	<b>110081.00</b>	<b>112981.20</b>	





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