

PREPARATION OF ESTIMATES FOR CIVIL
WORKS SUCH AS
BUILDINGS,ROADS,FOOTPATHS,DRAINS
AND CULVERTS,ETC

By

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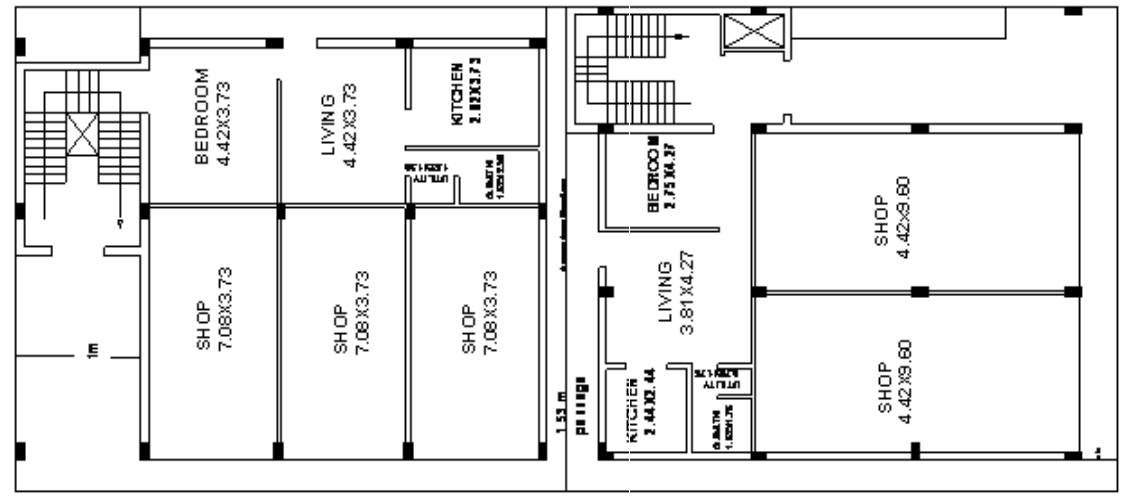
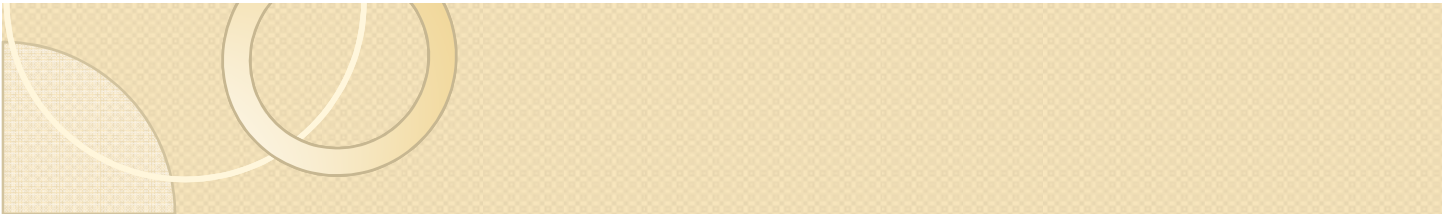
EXECUTIVE ENGINEER (RETIRED)

PW&IWT &ID



PREPARATION OF ESTIMATE FOR BUILDINGS

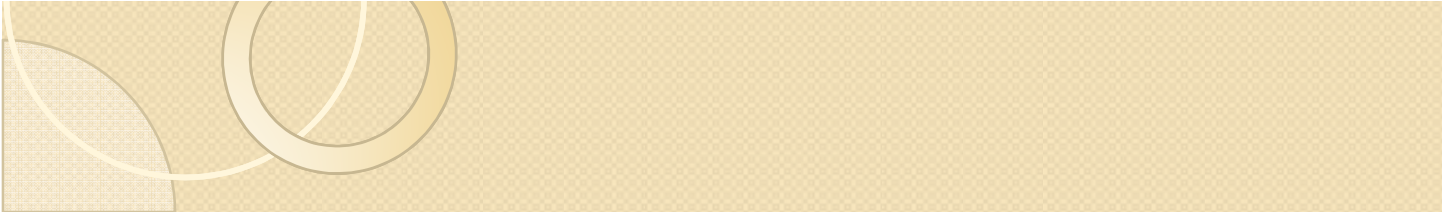
- Lay out plan showing location of site
- Plan , elevation & cross section
- Verification of set backs , internal dimensions & FAR as per NBC / BBMP norms
- Trial pit or trial bore details
- Soil classification & SBC
- Design details
- Quarry map & lead statement
- Report accompanying the estimate must be comprehensive , cogent and contain all the basic information
- Rate analysis
- Measurement sheet
- Abstract sheet
- Construction schedule



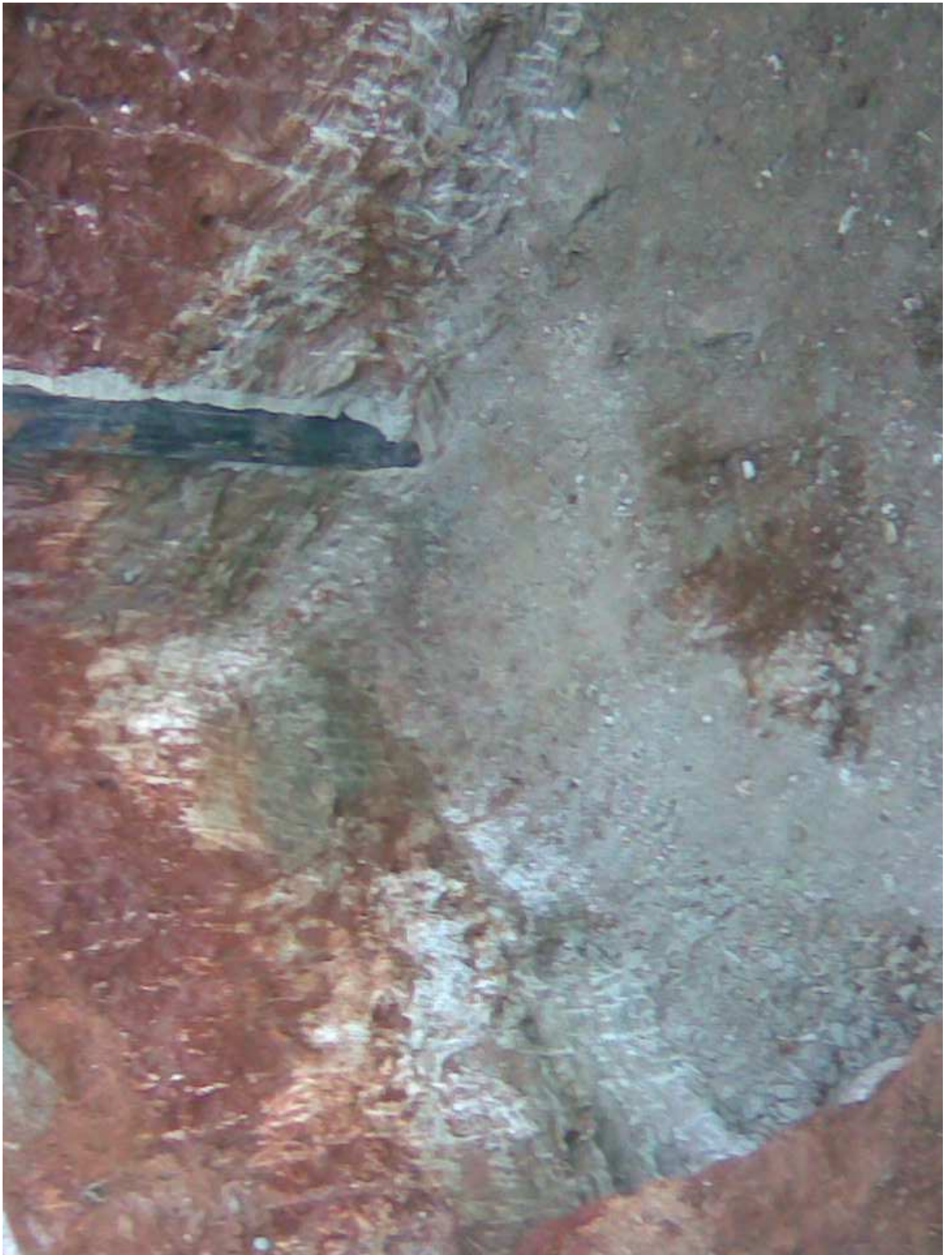
ROAD AT WEST

ROAD AT SOUTH

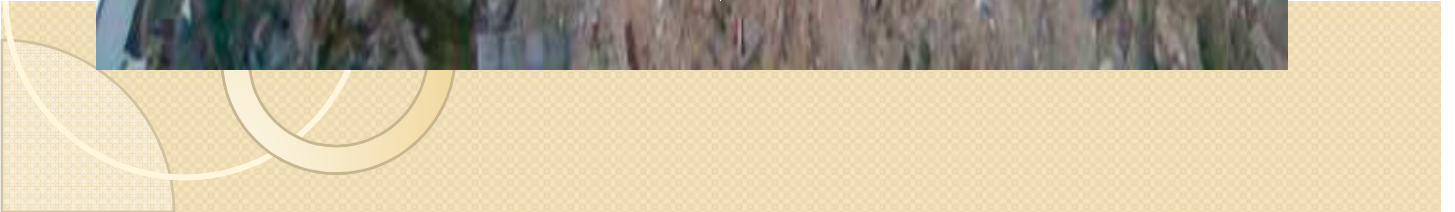
All dimensions in meters



















Preparation of estimate for roads

- name of the road indicating chainage
- Drawing showing L/S & C/S with all details
- Subgrade soil details
- Design details & intensity of traffic details
- Life cycle cost that includes cost of construction & maintenance
- Report accompanying the estimate justifying the work to be taken up
- Estimate to be as per the IRC codes

Abstract of Typical Estimate for Road Work for 1 km Length

Item No.	Description	Quantity	Unit	Rate (Rs.)
1	Providing Earthwork in embankment and below the shoulder with approved material obtained from Govt. and with 50 m lead laying in layers, dressing to required lines curves grade, and section watering and compaction @ 97 per cent Proctor density complete to specification requirements as per MoRTH Specifications Clause 305 and its sub clauses where required.	3	Cum	7406.25
2	Providing Earthwork in subgrade with approved material obtained from Govt. land with 50 m lead laying in layers, dressing to required lines curves grade, and section watering and compaction with vibratory roller at 100 per cent Proctor density complete to specification requirements as per MoRTH Specifications Clause 305 and its sub clauses where required.	3066	Cum	50
3	Providing Earthwork in shoulder with approved material obtained from Govt. land with 50 m lead laying in layers, dressing to required lines curves grade, and section watering and compaction with vibratory roller at 100 per cent Proctor density complete to specification requirements as per MoRTH Specifications Clause 305 and its sub clauses where required.	607.5	Cum	50
4	Providing laying, spreading and compacting specified graded sand as drainage layer with vibratory roller including cost of labour, material and machinery etc complete as per specifications.	9.36	Cum	138
5	Providing and laying the material and sand to 150 mm compacted layers giving soaked C.B.F. of not less than 20 per cent, containing of sand, marum, Metal, laterite, kankar or combination thereof with manual mixing including lifts, spreading, sectioning, watering with sprayer and compacting in layers with vibratory roller as per Clause No. 201 of MoRTH Specifications.	1.02	Cum	138
6	Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound specification including dressing in uniform thickness, hand packing, rolling with vibratory roller of 8-10 tonnes in stages to proper grade and binder, applying and brooming requisite type of screening/ binding materials to fill-up the interstices of coarse aggregate, dressing and rolling, finishing, necessary earthen bund to protect edges, lighting, guarding barricading and maintenance of diversion etc. and including 5 km lead for metal as per Clause No. 404 of MoRTH Specifications.			
6(1)	Grading of No. II Material (63-45 mm size) with screening material Type B and binding material, 75 mm thick	303.75	Cum	280

Item No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
		3	4	5	6
1	2 Grading of No. II Material (63-45 mm size) with screening material Type B and binding material, 75 mm thick	281.25	Cum	280	78,820
2	3 Grading of No. III Material (53-22.4 mm size) with screening material Type B and binding material, 75 mm thick	281.25	Cum	340	95,625
3	4 Clearing the existing WBM road surface including removing of binding materials and other foreign matter with wire brushes and small picks, sweeping with brooms or soft brushes and finally dusting with compressed air to receive bituminous treatment following the specification under section, 502.4.2 and 503.3.1 of MoRT&H Specifications for Road and Bridge Works	3750	Sqrm	1.6	6,000
4	5 Providing and applying primer or over prepared surface of granular base with bitumen emulsion @ 7 kg/10 m ² with spray jet complete as per Clause No. 502 of MoRT&H Specifications	3750	Sqrm	10	37,500
5	6 Providing and applying tack coat over prepared surface with bitumen emulsion @ 2.5 kg/10 m ² with spray jet complete as per Clause No. 503 of MoRT&H Specifications	3750	Sqrm	8	30,000
6	7 Providing 20 mm thick open graded premix bituminous carpet, including supplying all material, as directed, preparing & cleaning base, heating bitumen of 60/70 grade, laying carpet and compacting with vibrating roller without seal coat on B.T. surface and hot mix laid with paver finisher complete as per Clause No. 509 of MoRT&H Specifications	3750	Sqrm	65	2,43,750
7	8 Providing bituminous liquid seal coat (Type A) to black top surface, including supplying all materials including all loads, preparing existing road surface, heating & applying bitumen, spreading chips & rolling complete as per Clause No. 513 of MoRT&H Specifications	3750	Sqrm	20	75,000
Total					4,10,151

1. Leads for material are not considered in the above estimate.
2. The cost of transportation of material should be added as per the actual lead of the material.
3. Rates considered are typical and may vary from state to state and place to place within the state.
4. The provisions considered in the above estimate are typical and provisions for drainage and CD works etc. will have to add separately.

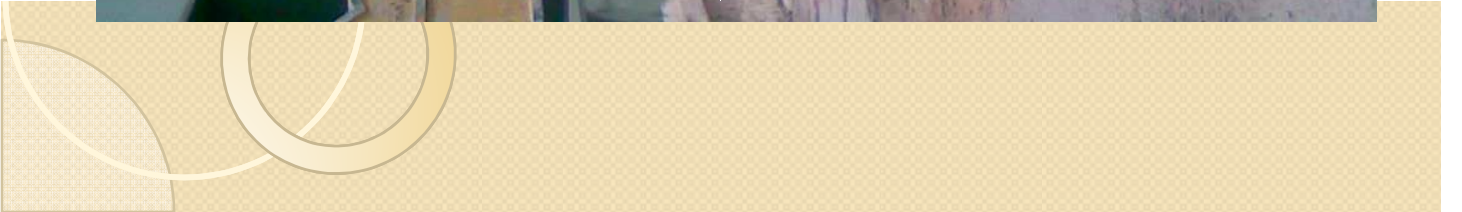
Assumptions:

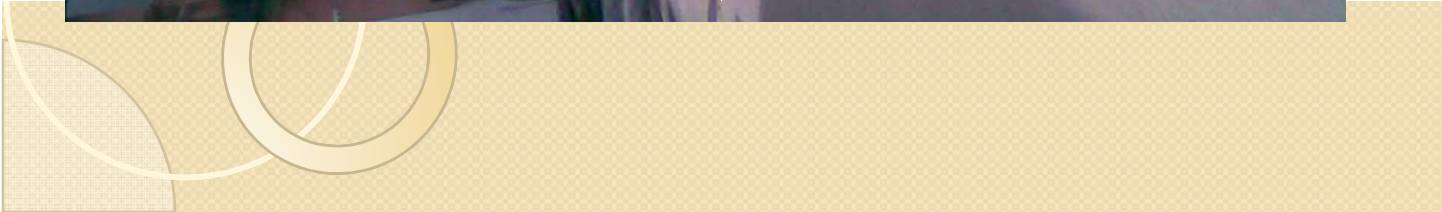
Soil sub-grade CBR	3 per cent
Traffic	45-150 eqsd
Carriageway width	3.75 m
Rainfall	1000-1500 mm/year
Designed thickness	475 mm (total)
Proposed base	100 mm
GSB	150 mm
WBM-II	150 mm
WBM-III	75 mm
PMC - Seal coat	20 mm

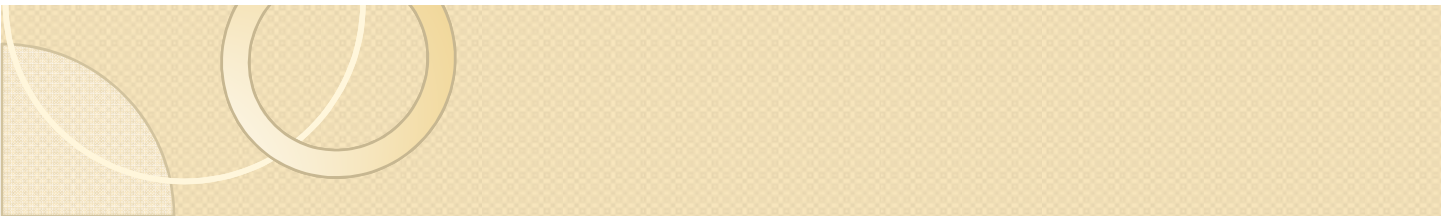
Measurement Sheet

Item No.	Description	Unit	Length (m)	Width (m)	Depth (m)
1.	Providing Earthwork in embankment and below the shoulder with approved material obtained from Govt. land with 50 m lead laying in layers, breaking clods, dressing to required lines curves grade, and section watering and compaction at 97 per cent Proctor density, complete to specification requirements as per MoRT&H Specifications Clause 303 and its sub clauses where required	Cum	1000	11.5 (for embankment) - 4.35 (below shoulder)	0.6 (for embankment) - 0.075 (below shoulder)
2.	Providing Earthwork in subgrade with approved material obtained from Govt. land with 50 m lead laying in layers, breaking clods, dressing to required lines curves grade, and section watering and compaction with vibratory roller at 100 per cent Proctor density complete to specification requirements as per MoRT&H Specifications Clause 305 and its sub-clauses where required.	Cum	1000	1.0	0.3
3.	Providing Earthwork in shoulder with approved material obtained from Govt. land with 50 m lead laying in layers, breaking clods, dressing to required lines curves grade, and section watering and compaction with vibratory roller at 100 per cent Proctor density complete to specification requirements as per MoRT&H Specifications Clause 305 and its sub-clauses where required.	Cum	1000	4.05	0.15
4.	Providing laying, spreading and compacting specified graded sand as drainage layer with vibratory roller including cost of labour, material and machinery etc., complete as per Specifications	Cum	1000	9.2	0.1
5.	Providing and laying granular sub-base in 15 cm compacted layers giving soaked C.B.R. of not less than 20 per cent, consisting of sand, murrum, Metal, laterite, kankar or combination thereof with manual mixing including lifts, spreading, sectioning, watering with sprayer and compacting in layers with vibratory roller as per Clause 401 of MoRT&H Specifications.	Cum	1000	8.7	0.15
6.	Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound specification including spreading in uniform thickness, hand packing, rolling with vibratory roller of 8-10 tonnes 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 rolling, making necessary earthen bund to protect edges, lighting, guarding barricading and maintenance of diversion etc. and including 5 km lead for metal as per Clause 404 of MoRT&H Specifications.				
6 (1)	Grading of No. II Material (63-45 mm size) with screening material Type B and binding material, 75 mm thick	Cum	1000	4.05	0.075

6. (ii)	Grading of No. II Material (63-45 mm size) with screening material Type B and binding material, 75 mm thick	Cum	1000	3.75	0.075	281.25
6. (iii)	Grading of No. III Material (53-22.4 mm size) with screening material Type B and binding material, 75 mm thick	Cum	1000	3.75	0.075	281.25
7.	Clearing the existing WBM road surface including removing of binding materials and other foreign matter with wire brushes and small picks, sweeping with brooms or soft brushes and finally dusting with compressed air to receive bituminous treatment following the specification under Sections 502.4.2 and 503.3.1 of MoRT&H Specifications for Road and Bridge Works	Sqm	1000	3.75		3750
8.	Providing and applying primer coat over prepared surface of granular base with bitumen emulsion @ 7 kg/10 m ² with-spray jet complete as per Clause 502 of MoRT&H Specifications	Sqm	1000	3.75		3750
9.	Providing and applying tack coat over prepared surface with bitumen emulsion @ 2.5 kg/10 m ² with spray jet complete as per Clause 503 of MoRT&H Specifications	Sqm	1000	3.75		3750
10.	Providing 20 mm thick open graded premix bituminous carpet, including supplying all material, as directed, preparing & cleaning base, heating bitumen of 60/70 grade, laying carpet and compacting with vibrating roller without seal coat on B.T. surface and hot mix laid with paver finisher complete as per Clause 509 of MoRT&H Specifications	Sqm	1000	3.75		3750
11.	Providing bituminous liquid seal coat (Type A) to black top surface, including supplying all materials including oil heads, preparing existing road surface, heating and applying bitumen, spreading chips and rolling complete as per Clause 513 of MoRT&H Specifications.	Sqm	1000	3.75		3750











Estimation for footpaths

- Minimum width of foot path is 1.5m, generally varies from 1.5m to 3m according to the intensity of pedestrian.
- Footpath dimension should be as per norms laid down in NBC/ BBMP.
- Kerbs Of height 300mm is to be provided.
- Good gravelly soil is to be filled up & compacted to the required density.
- Turfing with local grass/paved with 40mm BS slab/paved with pcc tiles

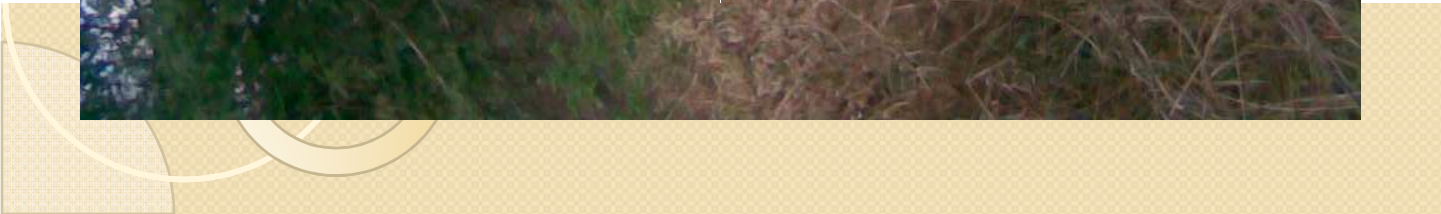






Estimation of drains

- Drawing showing the location of drain.
- Drawing showing L/S & C/S of drain.
- Design details considering hydrology.
- Quarry map & lead statement.
- Rate analysis.
- Measurement sheet.
- Abstract sheet.
- Report justifying the necessity of drain.
- To be verified with CPHEEO norms & NBC.
- Extra cover for steel & sulphate resistant cement to be used.







Estimation of culverts

- the estimate should give a general abstract of cost under the following heads.
- Preparatory works like site clearance, construction of site office, mobilisation, etc.
- Foundations, substructure, & superstructure.
- Protective works, approaches & miscellaneous items.
- Contingencies & departmental charges.



Drawings to be enclosed

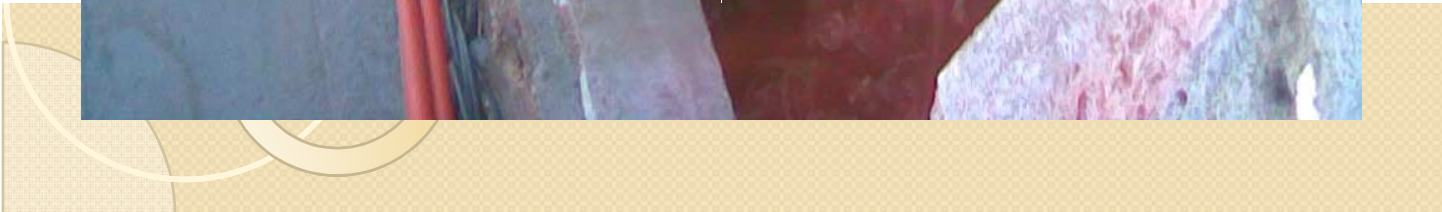
- Key map & index map.
- Contour survey plan & site plan.
- L/S & C/S.
- Bore log details.
- Plan ,C/S, elevation & reinforcement details.



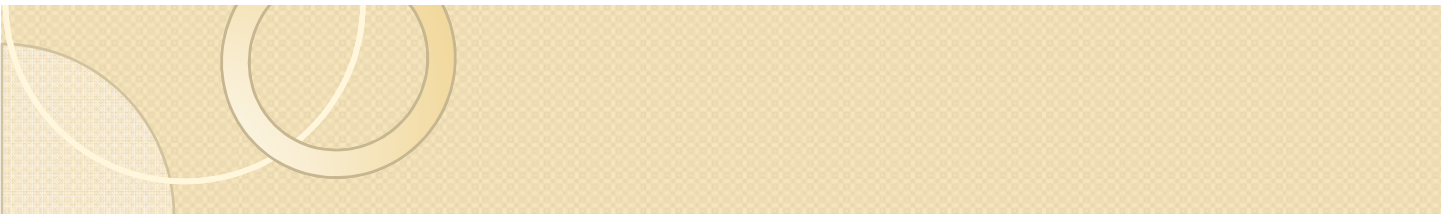
Project report

- Introductory report.
- Specifications.
- Design data & hydraulic and design calculations.
- Materials & resources.
- Estimation of quantities.
- Rate analysis.
- Abstract of estimate.
- Construction schedule.
- Economic feasibility.









THANK YOU
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