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SCHEDULE OF RATES - 2018

ROAD CONSTRUCTION DEPARTMENT



Part of Elevated Road Corridor from AIIMS to Digha in Patna

PUBLISHED BY STATE LEVEL SCHEDULE RATE COMMITTEE
BIHAR, PATNA

Effective from 01.04.2018

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बिहार सरकार

बिहार सरकार
GOVERNMENT OF BIHAR

पथ निर्माण विभाग

(राष्ट्रीय उच्च पथ उपभाग सहित)

Road Construction Department
(Including National Highway Wing)

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

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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 कंण्डिका 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 स्टैण्डर्ड 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, 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)	मुख्य अभियंता (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0, पटना	सदस्य
(vii)	अभियंता प्रमुख, तकनीकी परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना	सदस्य
(viii)	अभियंता प्रमुख, लघु जल संसाधन विभाग, बिहार, 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
द्वादश संस्करण	:	01.04.2017

समिति द्वारा एकादश संस्करण में आवश्यक संशोधन एवं पुनरीक्षण के पश्चात् इसके द्वादश संस्करण दिनांक–01.04.2017 को किया गया।

त्रयोदश संस्करण करने के लिए राज्य अनुसूचित दर निर्धारण समिति की बैठक दिनांक–13.03.2018 को आहूत की गई।

दिनांक–13.03.2018 के बैठक में उपस्थित सभी सदस्यों द्वारा कुछ संशोधन के साथ अनुसूचित दर पुस्तिका को दिनांक–01.04.2018 से त्रयोदश 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 जिन्हे विभागीय वेबसाइट www.rcd.bih.nic.in 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 एवं Software पर आधारित अनुसूचित दर पुस्त का यह त्रयोदश 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. ई0 सोहैल अख्तर, अधीक्षण अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग पटना।
2. ई0 श्याम कुमार, तकनीकी सलाहकार, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
3. ई0 श्रीमन नारायण शर्मा, कार्यपालक अभि0, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
4. ई0 सुनील कुमार, कार्यपालक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
5. ई0 संजू कुमारी, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
6. ई0 संजीव कुमार, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
7. ई0 प्रियंका कुमारी, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
8. ई0 रामनाथ प्रसाद, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
9. ई0 दिनेश कुमार, सहायक अभियंता, मुख्यालय निरूपण अंचल,पथ निर्माण विभाग, पटना।
10. ई0 अजय कुमार, सहायक अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
11. ई0 राम दुलार राम, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
12. ई0 संध्या रानी, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।
13. ई0 विमलेश्वर कुमार सिन्हा, कनीय अभियंता, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग,पटना।
14. श्री मो0 कमालउद्दीन अशरफ, सहायक, मुख्यालय निरूपण अंचल, पथ निर्माण विभाग, पटना।

राज्य स्तरीय अनुसूचित दर निर्धारण समिति यांत्रिक उपभाग के प्रभारी मुख्य अभियंता सह अधीक्षण अभियंता, श्री अशोक कुमार एवं कार्यपालक अभियंता, श्री संजीव कुमार 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 www.rcd.bih.nic.in पर भी उपलब्ध है।

यह अनुसूचित दर पुस्त दिनांक 01.04.2018 से प्रभावी होगा।

स्थान– पटना
दिनांक–

(लक्ष्मी नारायण दास)
संयोजक
राज्य स्तरीय अनुसूचित दर निर्धारण समिति
–सह– अभियंता प्रमुख
–सह–अपर आयुक्त–सह–विशेष सचिव,
पथ निर्माण विभाग, बिहार, पटना।

MORT&H Standard Data Book एवं इसके Software पर आधारित पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिये अनुसूचित दर पुस्तिका (दर विश्लेषण सहित) के त्रयोदश संस्करण 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 कंडिका–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 01.04.2018 से प्रभावी) के पुनरीक्षण के लिए दिनांक 13.03.2018 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 01.04.2017 से प्रभावी अनुसूचित दर पुस्त (दर विश्लेषण सहित) – द्वादश संस्करण में आवश्यक संशोधन एवं पुनरीक्षण के पश्चात् इसके **त्रयोदश** संस्करण (दिनांक–01.04.2018 से प्रभावी) का अनुमोदन किया जाता है। अनुसूचित दर तैयार करने में निम्नलिखित प्रक्रिया अपनाई गई है:–

(i) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू डाटा बुक एवं सॉफ्टवेयर के Basic Approach/Guide Lines for Road & Bridges के आधार पर 10% Contractor's Profit शामिल किया गया है।

(ii) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू डाटा बुक एवं सॉफ्टवेयर के Basic Approach/Guide Lines for Road & Bridges के आधार पर दर विश्लेषण में Overhead Charges निम्न प्रकार से लिये गये हैं :–

  (a) Chapter 1 से 11 तक में ₹50 Crores तक के Road Projects के लिए Overhead charges 10% लिया गया है ।

  (b) Chapter 12 से 15 तक में Major Bridges के लिए Overhead charges 25% लिया गया है।

  (c) Chapter 16 में Repair & Rehabilitation Work में Overhead charges 30% लिया गया है।

(iii) राष्ट्रीय राजमार्ग एवं भूतल परिवहन मंत्रालय के लिए लागू स्टैन्र्डड डाटा बुक में दिये गये Guidelines for Road & Bridges के अनुसार Road Works के लिए ₹50 Crores से ऊपर के कार्य के लिए 8% Overhead charges एवं Minor Bridges included in the Road Packages के लिए Overhead charges 20% का प्रावधान रखा गया है। अतएव दर विश्लेषण के विभिन्न Chapters के कार्यमद दर विभिन्न स्थितियों में निम्नलिखित Factor को कार्यमद दर से Multiply किया जाय :–

(A)

(a) Chapter 1 से 11 तक में जिसमें ₹50 Crores तक के Road project का दर है उसमें Overhead charges 10% एवं CP 10% के आधार पर दर तैयार किया गया है, इसमें Multiplying Factor लागू नहीं होगा।

(b) यदि Road project का cost ₹ 50 Crores से ज्यादा हो तो Overhead charges 8% एवं CP 10% देय होने के कारण (a) के दर में Multiplying Factor 0.982 होगा।

(B)

(a) Chapter 12 से 15 तक Major Bridge including state of Art Bridge और Minor Bridge के लिए Overhead charges 25% एवं CP 10% के आधार पर दर तैयार किया गया है, इसलिए इन कार्यो के लिए इसमें Multiplying Factor लागू नहीं होगा।

(b) Chapter 12 से 15 का मद (जिसमें OH 25% एवं CP 10% है) का इस्तेमाल ₹50 करोड़ रूपये के लागत के अन्तर्गत पथ परियोजनाओं (जिसमें OH 10% एवं CP 10% देय होगा) के लिये उपयोग में लायी जाती है, तो उक्त मद के दर में Multiplying Factor 0.88 होगा।

(c) Chapter 12 से 15 का मद (जिसमें OH 25% एवं CP 10% है) का इस्तेमाल ₹50 करोड़ रूपये से अधिक लागत के पथ परियोजनाओं (जिसमें OH 8% एवं CP 10% देय होगा) के लिये उपयोग में लायी जाती है, तो उक्त मद के दर में Multiplying Factor 0.864 होगा।

(d) Chapter 12 से 15 का मद (जिसमें OH 25% एवं CP 10% है) का इस्तेमाल Minor bridges included in Road Project (जिसमें OH 20% एवं CP 10% देय होगा) के लिये उपयोग में लायी जाती है, तो उक्त मद के दर में Multiplying Factor 0.96 होगा।

(C) Chapter 16 में Repair & Rehabilitation Work of Bridge में Overhead charges 30% एवं CP 10% के आधार पर दर तैयार किया गया है, इसमें Multyplying Factor लागू नहीं होगा।

(iv) (a) सिमेन्ट 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।

(b) स्टील के दर में TMT Bar के लिये Fe 500 HYSD के दर को दर विश्लेषण के लिए व्यवहार में लाया गया है।

(c) 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 RS-1 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।

(d) M-197 में Ex- Patna VG-40 के दर को विश्लेषण में लिया गया है।

(e) Brick 100 "A" का दर Patna Urban के लिये लागू दर को व्यवहार में लया गया है।

(v) (a) खान एवं भूतत्व विभाग, बिहार सरकार, पटना के ज्ञापांक–प्र0–1(विविध) बैठक–15/17–285/एम0, पटना दिनांक–15.01.2018 एवं ज्ञापांक–5015 दिनांक–20.10.2017 के आलोक में 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। उक्त चार कम्पनियों यथा TATA, SAIL RINL एवं Shyam Steel Industries Ltd, Kolkata का स्टील निर्माण कार्यो में उपयोग करने हेतु पूर्व से अनुमोदित है।

इसके अतिरिक्त वैसे Original Steel Producers (who manufacture billets directly from iron ores and roll the billets to produce steel conforming to IS 1786), जिनको अनिवार्य रूप से Valid BIS Certification प्राप्त है तथा जिनके स्टील Product पर BIS का Standard Mark मुद्रित है एवं जो IS 1786:2008 (With Amendement 1- November-2012) के सभी प्रावधानों को पूरा करते हों, के स्टील को निम्नांकित शर्त्तो के साथ कार्य करानेवाले विभाग/एजेंसी के द्वारा उपयोग में लाया जा सकता है:–

1) Quality of steel must conform to the provisions of IS 1786:2008(With Amendement 1-November-2012).No re-rolled steel shall be incorporated in the works.
2) The steel for all works must mandatorily be tested from NABL (National Accreditation Board for Testing & calibration Laboratories) accredited laboratories for conformity with IS-1786:2008(With Amendement 1- November-2012).
3) Chief Engineer/equivalent rank officer of the Works Department shall approve the steel manufactures for each project under their jurisdiction.
4) Sample of steel must be taken and got tested by Engineer in charge as per provisions in the relevant BIS Codes. In case, the test result indicates that the steel

arranged by the contractor does not conform to the specifications, the same shall stand rejected and it shall be removed from the site of work by the Contractor at his cost within a week's time on written order of Engineer in charge to do so.

5) The Contractor shall supply free of charge the steel required for testing including its transportation to testing laboratories. The cost of test shall be borne by the Contractor.

विश्लेषित दर में अब किसी तरह का Taxes, Royalty शामिल नहीं है।

(vi) (a) Seigniorage Fee (मालिकाना शुल्क) का प्रावधान एवं कटौती खान एवं भूतत्व विभाग की अधिसूचना सं0– 4042, पटना दिनांक 17.10.2017 एवं खान एवं भूतत्व विभाग का ज्ञापांक (memo)–136 दिनांक 09.11.2017 के अनुसार किया गया है, जो इस प्रकार है :–

For the new Schemes sanctioned after 01.11.2017, at the time of preparing the estimate on the basic cost of the minor minerals (excluding the royalty) and then at the end of the estimate, add 2% as the seigniorage Fee. This seigniorage Fee should be deducted from each running bill of the contractor and deposited with the Mines Department.

(b) MORD (Ministry of Rural development) के अनुसार Basic Approach and general Conditions and assumptions for the Preparation of Standard Data Book के Page No- BA-2 पर Sales / turn over tax को इस प्रकार वर्णित किया गया है:–

"Sales/turnover tax has been assumed at 4%. In case this tax is more than 4%, the percentage of overheads should be increased correspondingly for such states."

जिसके क्रम से संयोजक सह अभियंता प्रमुख, पथ निर्माण विभाग के पत्रांक–39 पटना दिनांक–13.05.2010 के द्वारा इस प्रकार उल्लेखित किया गया है "चूँकि Overhead charges में 4% VAT सन्निहित रहता है । यदि VAT 4% से अधिक देय होता है तो VAT का अतिरिक्त प्रतिशत को दर में जोड़ दिया जाय ।" उपरोक्त तथ्यों के आलोक में समिति द्वारा यह निर्णय लिया गया कि अनुसूचित दर पुस्त (SOR) के प्रत्येक मद का अंतिम दर निर्धारण उस मद के Basic दर में मद विशेष में व्यवहृत प्रत्येक सामग्री की अधिसूचित GST दर (MORTH Standard Data Book के Overhead मद में पूर्व से सम्मिलित 4% VAT को Minus करते हुए) जोड़कर किया जाए।

(c) राज्य अनुसूचित दर निर्धारण समिति द्वारा MORD (Ministery of Rural Development) में दिये गये विश्लेषण के आधार पर 40-60TPH का दर विश्लेषण (with Mechanical Paver Finisher) Chapter -5B में दिया गया है जिस पर समिति के सदस्यों की सहमति प्राप्त है।

(vii) 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 38 (अनु0) दिनांक–13.05.2010 के द्वारा दिये गये निर्देश का अनुपालन सुनिश्चित करने की जिम्मेदारी क्षेत्रीय पदाधिकारीयों की होगी।

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

(viii) रेलवे द्वारा निर्माण सामग्री की ढुलाई का दर निर्धारण हेतु रेल मंत्रालय (रेलवे बोर्ड) भारत सरकार, महाप्रबंधक (परिचालन)/वाणिज्य के पत्रांक–2009/टी–टी III /27/1, नई दिल्ली दिनांक–**06.10.2009** के द्वारा माल ढुलाई हेतु Route Chart उपलब्ध कराया है जिसे क्षेत्रीय पदाधिकारी जाँचोपरांत व्यवहार में लायेगें। 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–16.03.2015 (Rate Circular No- 08 of 2015) एवं पत्रांक– TCR/1078/2015/07, नई दिल्ली दिनांक–18.11.2016 (Corrigendum no-17 to Rate Circular No-08 of 2015), Freight rate circulars 2017 & 2018 की छायाप्रति इस अनुसूचित दर पुस्त में संलग्न कर दी गई है।

(a) 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 kuchcha 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.

(ix) Chapter 5A में 100-120 TPH with Mechanical Paver finisher (For different items) का दर विश्लेषण किया गया है, जिस पर समिति के सदस्यों की सहमति प्राप्त है।

(x) 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।

Chapter-1 (Carriage of Materials) में दिये गये दरों में Contractor's profit (10%) and Overhead charges (10%) include कर दिया गया है।

1. <u>बिटुमेन से संबंधित दर</u> :–

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 द्वारा इन कम्पनियों से प्राप्त दर में GST को घटाकर विभिन्न Grades के Bitumen का दर अनुमोदित करने का निर्णय लिया गया। समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M4" के अनुसार बिटुमेन के विभिन्न Grades/प्रकार के दर को अनुमोदित किया गया।

2. <u>सिमेंट का दर</u> :–

(i) **Ordinary Portland Cement (43 Grade)** का दर विभिन्न कंपनियों 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। समिति के द्वारा इसपर विस्तार से विचार–विमर्श किया गया तथा समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, दिनांक–18.01.2018 को आहूत राज्यस्तरीय अनुसूचित दर निर्धारण समिति की बैठक में बिना GST के अनुमोदित अनुसूची "M2" के दर को व्यवहार में लाने का निर्णय लिया गया।

(iii) **Portland Pozzolona Cement (PPC)** का दर विभिन्न कंपनियों से प्राप्त हुआ है। इस दर में शामिल GST को घटाकर प्रति बोरा दर अनुमोदित करने का निर्णय लिया गया। समिति के द्वारा सर्वसम्मति से पूर्णविचारोपरान्त, संलग्न अनुसूची "M3A" के दर को अनुमोदित किया गया।

(iv) **Portland Slag Cement (PSC)** का दर विभिन्न कंपनियों 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।

3. <u>Steel से संबंधित निर्माण सामग्रियो का दर</u> :–

a. **G.C. Sheet का दर** :– G.C. Sheet का दर TATA एवं SAIL से प्राप्त हुआ है। तद्नुसार TATA एवं SAIL से प्राप्त न्यूनतम दर बिना GST के 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, तद्नुसार 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। तद्नुसार 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 500) का दर** :– TMT Bar का दर TATA, RINL SAILएवं 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 निर्माण SAIL,TATA, RINL द्वारा नहीं किया जा रहा है अतः इसका वर्तमान में इस्तेमाल नहीं होने तथा दर के अनुपलब्धता के कारण इस पुस्तिका से विलोपित किया जा रहा है।

4. **<u>Plant & Machinery का Usage charge के दर पुनरीक्षण के संबंध में।</u>**

Plant & Machinery के अन्तर्गत 101 मद हैं , जिनमें से पथ निर्माण कार्य में प्रयुक्त होनेवाले मशीनों जिनके Item no:- P&M002, P&M-010, P&M017, P&M-018, P&M-021, P&M-022, P&M-023, P&M-024, P&M-031, P&M-032, P&M-034, P&M-035 , P&M-044, P&M-048, P&M-059, P&M-080 , P&M-081 , P&M-094, तथा WMM Paver finisher, Tipping Truck 14cum, 6.5KVA Generator, Vibratory Earth Compactor, Tractor (25HP),5KVA Generator एवं **Mini Hot mix Plant (6-10) TPH** के दर का पुनरीक्षण यांत्रिक उपभाग, पथ निर्माण विभाग से प्राप्त प्रस्ताव के अनुसार राज्य स्तरीय अनुसूचित दर निर्धारण समिति की बैठक में अनुमोदित करने का निर्णय लिया गया । शेष मशीनों के मदों के Usage Charges के दर का पुनरीक्षण हेतु यांत्रिक उपभाग, पथ निर्माण विभाग/लोक स्वास्थ्य अभियंत्रण विभाग/जल संसाधन विभाग तथा भवन निर्माण विभाग, बिहार, पटना को अनेकों बार लिखित एवं मौखिक अनुरोध के बावजूद भी दर प्राप्त नहीं होने के कारण कार्यहित में पूर्व प्रधान सचिव श्री आर0 के0 सिंह द्वारा संचिका सं0– मु0 नि0 (पथ–08/2006) पृष्ठ 10 से 12) में दिये गये निर्देश के आलोक में Plant & Machinery के शेष मदों (P&M-003, P&M-009, एवं P&M-047 को छोड़कर) के दर का पुनरीक्षण किया गया है। इसमें Usage Charges के दर में इसके विभिन्न Components यथा Ownership Charges, Operational Charges, POL Charges & Establishment Charges का मान क्रमशः 20%, 30%, 25% एवं 25% रखने का निर्णय राज्य स्तरीय अनुसूचित दर निर्धारण समिति के द्वारा दिनांक– 05.12.2006 के बैठक में लिया गया था, जिसके आधार पर इन विभिन्न Components के RBI द्वारा निर्गत Wholesale Price Index के moving average में हुए बढ़ोत्तरी/घटोत्तरी के अनुसार Usage Charges के दर में Weighted mean की गणना के अधार पर अद्यतन करने का निर्णय लिया गया।

उक्त गणना से आकलित Usage Charges में 2017–18 के दर में औसतन 4.68% की बढ़ोत्तरी एवं शेष मशीनरी मदों में (P&M-003, P&M-009 एवं P&M-047 को छोड़कर) Usage Charges में बढ़ोत्तरी करते हुए दर पुनरीक्षित करने पर सदस्यों द्वारा सर्वसम्मति से निर्णय लिया गया।

P&M-003 (Batching & Mixing plant 15-20cum capacity) का दर P&M-002(Batching & Mixing plant 30cum capacity) के पुनरीक्षित दर रू0 2775 प्रति घंटा के आधार पर उनके Output के अनुरूप Pro-data basis से 2860 x (13/20) = 1859/hr निर्धारित करने पर सर्वसम्मति से निर्णय लिया गया।

P&M-009 (Concrete Mixer 0.4/0.28cum capacity) का दर P&M-10 (Concrete Mixer 01 cum capacity) के पुनरीक्षित दर रू0 240 प्रति घंटा के आधार पर उनके Output के अनुरूप Pro-data basis से (251 x 2.5/7.5) = 84.00/hr निर्धारित करने का निर्णय लिया गया।

इस संबंध में विशेष सुझाव हेतु सड़क पोत परिवहन एवं राष्ट्रीय राज्य मार्ग मंत्रालय के Director General (Roads) cum Special Secretary को भी संयोजक , राज्य अनुसूचित दर निर्धारण समिति के द्वारा पत्रांक सं0–26 (अनु0) दिनांक–04.02.13 के माध्यम से अनुरोध किया गया है।

<u>P&M-047 Tipper 5cum का Tonne-km दर</u>

वर्ष 2001–02 में per tonne - km दर	Rs. 1.74
वर्ष 2001–02 में per hr per tipper(5 cum capacity) दर	Rs. 200.00
वर्ष 2016–17 में per hr per tipper(5 cum capacity) दर	Rs. 1015.00

वर्ष 2017–18 में पुनरीक्षित दर Per tonne-km में Rs. 1015 x 1.74/200 = 8.83

P&M-047 Tipper (5cum capacity) के लिये उक्त तरीके से प्राप्त per Tonne-km दर ₹8.83 को अनुमोदित करने का निर्णय लिया गया।

WMM Plant 100 TPH(P&M-093) के दर को पूर्व की भाँति WMM Plant 75 TPH(P&M-094) के दर के सामान ही रखने पर सदस्यों द्वारा सहमति व्यक्त की गई।

5. **<u>Carriage का दर पुनरीक्षण के संबंध में</u>** :–

Carriage of materials by Tipper & Tractor :- MORT&H Standard Data Book के Chapter-1 के Item no. 1.1, 1.2, 1.3, 1.4(i), 1.4(ii) and 1.4(iii) **को अद्यतन मशीनरी दर एवं श्रम दर के आधार पर संलगन अनुसूची** "Carriage of Materials by Tipper" and "Carriage of Materials by Tractor" के अनुसार पुनरीक्षित करने पर सर्वसम्मति से सदस्यों द्वारा अनुमोदित करने का निर्णय लिया गया।

6. **<u>ईंट एवं ईंट से संबंधित निर्माण सामग्रियों का दर पुनरीक्षण</u>** :–

विभिन्न ग्रेड के ईंट एवं ईंट से संबंधित निर्माण सामग्रियों के दर की मांग अभियंता प्रमुख, भवन निर्माण विभाग, एवं सभी अधीक्षण अभियंता, पथ निर्माण विभाग से की गई, लेकिन कहीं से भी दर की प्राप्ति नहीं हुई। जिसके आलोक में RBI द्वारा निर्गत Plain Bricks के Wholesale Price Index के moving average के आधार पर बिना GST के ईंट के दर में संशोधन करने का निर्णय सदस्यों द्वारा लिया गया।

7. **<u>स्टोन एवं स्टोन चीप्स से संबंधित निर्माण सामग्रियों का दर पुनरीक्षण</u>** :–

पथ निर्माण विभाग (राष्ट्रीय उच्च पथ सहित) के लिए दिनांक–01.04.2018 से प्रभावी अनुसूची दर में व्यवहृत स्टोन बोल्डर, मेटल्स एवं विभिन्न आकार के चीप्स के दरों को राज्य स्तरीय अनुसूचित दर निर्धारण समिति के द्वारा RBI से निर्गत Stone, Chip के Wholesale Price Index (मूल्य

सूचकांक) के Moving Averages के आधार पर Aggregate का दर M-01 से M-55 तक (M-004 एवं M-005 को छोड़कर) के दर को तद्नुसार पूर्णविचारोपरान्त बिना GST एवं बिना Royalty के अनुसूची "Schedule-M / MORTH-1" के अनुसार अनुमोदित करने का निर्णय लिया गया।

8. **Coarse Sand** का दर पुनरीक्षण – खान एवं भूतत्व विभाग, बिहार सरकार, पटना के ज्ञापांक–प्र0–1 (विविध) बैठक–15/17–285/एम0 पटना दिनांक–15.01.2018 एवं ज्ञापांक–5015 दिनांक–20.10.2017 के आलोक में Schedule-M/MORTH-1 के Item संख्या M-004 एवं M-005 पर अंकित Coarse Sand (Yellow Sand) के दर को समिति के सदस्यों द्वारा पूर्ण विचारोपरान्त अनुमोदित करने का निर्णय लिया गया।

9. **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 में से कई मदों को विभिन्न श्रेणियों में रखते हुए RBI द्वारा निर्गत Wholesale Price Index के moving average के आधार पर बिना GST के दर को अद्यतन किया गया है, जो निम्न प्रकार से है :–

Material Code	Name of Commodity	% Change
M-56	Asbestos Corrugated Sheet	0.97% Increase
M-57,58,131,132,146,190	Manufacture of paints	0.535% Increase
M-59,60	Aluminium alloy	2.172% Increase
M-61	Aluminium Metal	3.815% Increase
M-62,71,90,91,92,96,99,100,112,113,116,120,122,134, 140,141,143,144,147,152,155,159,160,161,162,163,165 ,166,167,168,187,189	All Commodities	3.44% Increase
M-63,72,123,124,125,192	M.S. Wire rods	8.791% Increase
M-64,65, 88, 93,127,128,173,178	Alloy Steel Castings	4.0588% Increase
M-66,67,68,69,70	Manufacturing of bearing, gear etc.	2.503 % Increase
M-80	Cost Iron, Castings	0.923% Increase
M-84,133	Fibres	6.790% Increase
M-86	Copper metals	11.54% Increase
M-87,103	Steel Structure	1.942% Increase
M-89	Non-metallic-heavy	1.682% Decrease
M-94	Manufacture of electric equipments	0.956% Increase

M-95,97,98	Epoxy Liquid	2.53% Increase
M-101,102	Galvanised Iron Pipe	4.764% Increase
M-104	Gelatin	3.432% Decrease
M-105,106,107, 108, 109	Manufacture of made of up textile article	2.94% Increase
M-110,129,130,158	Bolts, Screw, Nuts & Bolts of Iron & Steel.	9.52% Increase
M-111	Injection Pump	0.7796% Decrease
M-114,115,138,139	Plastic tubes	0.0693% Increase
M-117,118,137,164	Plastic Components	3.03% Increase
M-119	Stainless steel, bars and rods	8.88% Increase
M-121	Cordage/ ropes wire of jute & coir.	0.0068% Increase
M-135, 149,150,151	Manufacture of Article of Cement concrete	2.432% Increase
M-136	Insecticides.& Pesticides	1.51% Decrease
M-142,148,169,182	Stone, Chips	2.46% Decrease
M-174, 175	Steel Pipes tube & pols	4.85% Increase
M-172	Steel drum & Barrels	6.95% Increase
M-176,177	Steel Cables	13.58% Increase
M-180	Plasticizer	9.185% Increase
M-184	Ceramic & utilities	0.467% Decrease
M-185,193,194, 196	Timber	4.85% Decrease
M-188	Lime & Calcium Carbonate	3.302% Increase
M-191	Alloy Steel wire rods	10.23% Increase
M-79	Plain Bricks	3.333% Decrease
M-199,201	Cement Concrete block	4.53% Increase

Kerb Stone (size 375mmx300mmx150mm) Input क्रम सं0 M-200 के दर का विश्लेषण M-30 ग्रेड PCC के आधार पर करने का निर्णय लिया गया। इस आधार पर कार्य

मदों में व्यवहृत विभिन्न निर्माण सामग्रियों का दर M-56 से M-201(M-198 को छोड़कर) तक के दर में तदनुसार पूर्णविचारोपरान्त अनुसूची '' Schedule- M/MORTH-1A" के अनुसार अनुमोदित करने का निर्णय लिया गया।

10. **<u>निर्माण कार्यो (सडके, बाँध तथा सिंचाई कार्य) में नियोजित विभिन्न श्रेणी के मजदूरों का संशोधित न्यूनतम दैनिक मजदूरी के दर पुनरीक्षण हेतु लिये गये निर्णय</u>** :–

श्रम संसाधन विभाग, बिहार, पटना के अधिसूचना सं0–4835, दिनांक–15.09.2017 के आलोक में पथ निर्माण कार्यो में प्रयुक्त 72 प्रकार के विभिन्न कर्मियों तथा बांध निर्माण एवं सिंचाई कार्यो के लिये प्रयुक्त 71 प्रकार के कर्मियों के न्यूनतम दैनिक श्रम दर का अनुमोदन दिनांक–14.11.2017 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 भवन निर्माण, ग्रामीण कार्य विभाग, लोक स्वास्थ्य अभियंत्रण विभाग एवं अन्य कार्य विभाग के अंतर्गत कराये जानेवाले निर्माण कार्यो के उपयोग में भी लाया जा सकता है।

11. **<u>Fly Ash Brick</u>:-**

दिनांक–08.07.2013 को अनुसूचित दर निर्धारण समिति की राज्यस्तरीय बैठक में Fly Ash Brick के दर को N.T.P.C. एवं B.M.T.P.C. के Guidelines के आधार पर अनुसूचित दर पुस्तिका में सम्मिलित किया गया था। उपरोक्त Guidelines के आधार पर Labour, Material तथा Machineries के बढ़े नये दर के अनुरूप की गई, दर विश्लेषण के आधार पर Fly Ash Brick का दर प्रति एक हजार 5156/–रू0 GST एवं Royalty छोड़कर आता है, जिसे "Schedule-M/ MORTH-1A" के क्रम सं0–M-198 के अनुसार अनुमोदित करने का निर्णय लिया गया।

12. MORT&H Specification for Roads and Bridges work के fifth revision पर आधारित MORT&H के Standard Data Book for analysis of Rates का revision प्रक्रियाधीन है। Standard Data Book for analysis of Rates के revision हुए बिना अनुसूचित दर पुस्त का दर विश्लेषण MORT&H Specification for Roads and Bridges work के fifth revision के अनुसार किया जाना संभव नहीं है। इस अनुसूचित दर पुस्त का दर विश्लेषण Standard Data Book के 1st revision के आधार पर ही करने का निर्णय पूर्णविचारोपरान्त सर्वसम्मति से समिति के सदस्यों द्वारा लिया गया।

13. **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–01.04.2018 से लागू किये जाने का सर्वसम्मति से निर्णय लिया गया।

राज्य स्तरीय अनुसूचित दर निर्धारण समिति द्वारा अनुसूचित दर पुस्त को दिनांक–01.04.2018 को प्रकाशित करने का निर्णय लिया जाता है।

सदस्य
राज्य स्तरीय अनुसूचित दर
निर्धारण समिति–सह–अभियंता प्रमुख,
भवन 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 जल संसाधन विभाग,
बिहार, पटना।

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

सदस्य
राज्य स्तरीय अनुसूचित दर
निर्धारण समिति–सह–
मुख्य अभियंता (विद्युत),
भवन 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)
जल संसाधन विभाग,
बिहार, पटना।

संयोजक
राज्य स्तरीय अनुसूचित दर
निर्धारण समिति–सह–अभियंता प्रमुख
–सह–अपर आयुक्त–सह–विशेष सचिव,
पथ निर्माण विभाग, बिहार, पटना।

LABOUR RATE

SCHEDULE - I **Dtd.: 14.11.2017**

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. 2787 /28.09.11	Lab. Deptt. Noti. No. 1225/ 01.04.16	Lab. Deptt. Noti. No. 4175/ 30.09.16	Lab. Deptt. Noti. No. 4971/ 29.11.16	Lab. Deptt. Noti. No. 1194/ 28.03.17	Lab. Deptt. Noti. No. 4835/ 15.09.17
1	2	3	4	5(1.01624xcl4)	6((1.43xcl3)*1.15)	7(1.02336xcl6)	8
1	Unskilled labour	144.00	206.00	209.00	237.00	242.00	247.00
2	Sweeper	144.00	206.00	209.00	237.00	242.00	247.00
3	Mistry	144.00	206.00	209.00	237.00	242.00	247.00
4	Cleaner	144.00	206.00	209.00	237.00	242.00	247.00
5	Helper	144.00	206.00	209.00	237.00	242.00	247.00
6	Khalsi/Chainman	144.00	206.00	209.00	237.00	242.00	247.00
7	Marker	184.00	264.00	268.00	302.00	309.00	309.00
8	Fitter grade-I	199.00	284.00	289.00	328.00	336.00	336.00
	Fitter grade-II	175.00	249.00	253.00	288.00	295.00	295.00
9	Turner	175.00	249.00	253.00	288.00	295.00	295.00
10	Mechanic grade-I	225.00	323.00	328.00	370.00	379.00	379.00
	Mechanic grade-II	209.00	299.00	304.00	344.00	352.00	352.00
11	Electrician grade-I	185.00	265.00	269.00	305.00	312.00	312.00
	Electrician grade-II	175.00	249.00	253.00	288.00	295.00	295.00
12	Lineman/Wireman	169.00	243.00	247.00	278.00	284.00	284.00
13	Chargeman	209.00	299.00	304.00	344.00	352.00	352.00
14	Foreman	247.00	354.00	360.00	406.00	415.00	415.00
15	Welder grade-I	220.00	315.00	320.00	362.00	370.00	370.00
	Welder grade-II	185.00	265.00	269.00	305.00	312.00	312.00
16	Glazier	164.00	233.00	237.00	270.00	276.00	276.00
17	Carpenter	175.00	249.00	253.00	288.00	295.00	295.00
18	Head Carpenter	196.00	279.00	284.00	322.00	330.00	330.00
19	Checker	177.00	252.00	256.00	291.00	298.00	298.00
20	Hammerman	153.00	220.00	224.00	252.00	258.00	258.00
21	Tin smith	199.00	284.00	289.00	328.00	336.00	336.00
22	Tin plate maker	209.00	299.00	304.00	344.00	352.00	352.00
23	Black Smith	175.00	249.00	253.00	288.00	295.00	295.00
24	Head black smith	196.00	279.00	284.00	322.00	330.00	330.00
25	Tile layer	155.00	222.00	226.00	255.00	261.00	261.00
26	Thatcher	155.00	222.00	226.00	255.00	261.00	261.00
27	Plumber	185.00	265.00	269.00	305.00	312.00	312.00
28	Grader	177.00	252.00	256.00	291.00	298.00	298.00
29	Road binder	164.00	233.00	237.00	270.00	276.00	276.00
30	Mason	175.00	249.00	253.00	288.00	295.00	295.00
31	Head Mason	196.00	279.00	284.00	322.00	330.00	330.00
32	Stone layer	175.00	249.00	253.00	288.00	295.00	295.00
33	Tarman	153.00	220.00	224.00	252.00	258.00	258.00
34	Fireman	155.00	222.00	226.00	255.00	261.00	261.00
35	Grinder	175.00	249.00	253.00	288.00	295.00	295.00
36	Gas cutter	184.00	264.00	268.00	302.00	309.00	309.00
37	Rigger	177.00	252.00	256.00	291.00	298.00	298.00
38	Sarang	209.00	299.00	304.00	344.00	352.00	352.00
39	Chipper-cum-rivetter	184.00	264.00	268.00	302.00	309.00	309.00
40	Tractor operator	209.00	299.00	304.00	344.00	352.00	352.00
41	Dozer operator grade-I	247.00	354.00	360.00	406.00	415.00	415.00
	Dozer operator grade-II	220.00	315.00	320.00	362.00	370.00	370.00
42	Dumper operator	210.00	300.00	305.00	345.00	353.00	353.00
43	Viberator Operator	163.00	232.00	236.00	268.00	274.00	274.00
44	Pump driver grade-I	185.00	265.00	269.00	305.00	312.00	312.00
	Pump driver grade-II	175.00	249.00	253.00	288.00	295.00	295.00
45	Dragline operator grade-I	247.00	354.00	360.00	406.00	415.00	415.00
	Dragline operator grade-II	220.00	315.00	320.00	362.00	370.00	370.00
46	Concrete mixer operator grade-I	185.00	265.00	269.00	305.00	312.00	312.00
	Concrete mixer operator grade-II	175.00	249.00	253.00	288.00	295.00	295.00
47	Compressor operator grade-I	185.00	265.00	269.00	305.00	312.00	312.00
	Compressor operator grade-II	175.00	249.00	253.00	288.00	295.00	295.00

SCHEDULE - I **Dtd.: 14.11.2017**

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. 2787 /28.09.11	Lab. Deptt. Noti. No. 1225/ 01.04.16	Lab. Deptt. Noti. No. 4175/ 30.09.16	Lab. Deptt. Noti. No. 4971/ 29.11.16	Lab. Deptt. Noti. No. 1194/ 28.03.17	Lab. Deptt. Noti. No. 4835/ 15.09.17
1	2	3	4	5(1.01624xcl4)	6((1.43xcl3)*1.15)	7(1.02336xcl6)	8
48	Earth excavator						
	(a) For every 110 cu. ft for soft earth	144.00	207.00	210.00	237.00	243.00	243.00
	(b) For every 100 cu. ft for hard earth	144.00	207.00	210.00	237.00	243.00	243.00
	(c) For every 90 cu. ft for highly hard earth	144.00	207.00	210.00	237.00	243.00	243.00
49	Truck driver	209.00	299.00	304.00	344.00	352.00	352.00
50	Car/Jeep driver	184.00	264.00	268.00	302.00	309.00	309.00
51	Crane operator grade-I	247.00	354.00	360.00	406.00	415.00	415.00
	Crane operator grade-II	220.00	315.00	320.00	362.00	370.00	370.00
52	Winch operator	185.00	265.00	269.00	305.00	312.00	312.00
53	Road roller driver	252.00	361.00	367.00	414.00	424.00	424.00
54	Blaster	243.00	347.00	353.00	399.00	408.00	408.00
55	Painter grade-I	185.00	265.00	269.00	305.00	312.00	312.00
56	Polisher	155.00	222.00	226.00	255.00	261.00	261.00
57	Peon / Darvan / Choukidar	153.00	220.00	224.00	252.00	258.00	258.00
58	Clerk / Typist / Typist clerk	173.00	247.00	251.00	284.00	291.00	291.00
59	Time keeper	173.00	247.00	251.00	284.00	291.00	291.00
60	Store Assistant / Storeman	187.00	268.00	272.00	307.00	314.00	314.00
61	Store head	178.00	253.00	257.00	293.00	300.00	300.00
62	Material chaser	178.00	253.00	257.00	293.00	300.00	300.00
63	Mate and Road mate	155.00	222.00	226.00	255.00	261.00	261.00
64	Munshi	163.00	232.00	236.00	268.00	274.00	274.00
65	Work Supervisor	164.00	233.00	237.00	270.00	276.00	276.00
66	Amin	173.00	247.00	251.00	284.00	291.00	291.00
67	Surveyer	177.00	252.00	256.00	291.00	298.00	298.00
68	Supervisory diploma holder	237.00	338.00	343.00	390.00	399.00	399.00
69	Supervisory non-diploma holder	175.00	249.00	253.00	288.00	295.00	295.00
70	Any other category of semi-skilled workers not mentioned above	150.00	215.00	218.00	247.00	252.00	257.00
71	Any other category of skilled workers not mentioned above	183.00	262.00	266.00	301.00	307.00	313.00
72	Highly skilled labour	223.00	319.00	323.00	367.00	374.00	381.00

Note :- The above rates has been calculated as (-) % decrease in Labour Dept. Notification No. 4835 Dtd. 15.09.2017. As per Labour Dept. guideline mentioned in above Notification as "If the Index fall below the point on which minimum rates of wages have been fixed / revised, there will not be any reduction in the minimum wages fixed / revised." Labour Dept. changed only four category of labour Rate. Hence, all other types Labour Rate is kept same as earlier.

14/11/17
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख
भवन निर्माण विभाग, बिहार, पटना।

14.11.17
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।

14-XI-17
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–मुख्य अभियंता (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
बिहार, पटना।

14/11/17
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–मुख्य अभियंता (विद्युत),
भवन निर्माण विभाग, बिहार, पटना।

14/11/17
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख, तकनीकी परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

14/11/17
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

14/11/17
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख,
मुख्यालय, जल संसाधन विभाग, बिहार, पटना।

14/11/17
संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

SCHEDULE - II Dtd.:- 14.11.2017

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. 2787 /28.09.11	Lab. Deptt. Noti. No. 1225/ 01.04.16	Lab. Deptt. Noti. No. 4175/ 30.09.16	Lab. Deptt. Noti. No. 4971/ 29.11.16	Lab. Deptt. Noti. No. 1194/ 28.03.17	Lab. Deptt. Noti. No. 4835/ 15.09.17
1	2	3	4	5(1.01624xcl4)	6((1.43xcl3)*1.15)	7(1.02336xcl6)	8
1	Unskilled labour	144.00	206.00	209.00	237.00	242.00	247.00
2	Mate	158.00	225.00	229.00	260.00	266.00	266.00
3	Head Mason	196.00	279.00	284.00	322.00	330.00	330.00
4	Mason	175.00	249.00	253.00	288.00	295.00	295.00
5	Printer Class-I	185.00	265.00	269.00	305.00	312.00	312.00
6	Printer Class-II	175.00	249.00	253.00	288.00	295.00	295.00
7	Head Carpenter	196.00	279.00	284.00	322.00	330.00	330.00
8	Carpenter	175.00	249.00	253.00	288.00	295.00	295.00
9	Head black smith	196.00	279.00	284.00	322.00	330.00	330.00
10	Black Smith	175.00	249.00	253.00	288.00	295.00	295.00
11	Glazier	155.00	222.00	226.00	255.00	261.00	261.00
12	Stone Dresser	185.00	265.00	269.00	305.00	312.00	312.00
13	Water Carrier	144.00	207.00	210.00	237.00	243.00	243.00
14	Fitter Class-I	199.00	284.00	289.00	328.00	336.00	336.00
15	Fitter Class-II	175.00	249.00	253.00	288.00	295.00	295.00
16	Helper	153.00	220.00	224.00	252.00	258.00	258.00
17	Hammer man	153.00	220.00	224.00	252.00	258.00	258.00
18	Bellowman	144.00	207.00	210.00	237.00	243.00	243.00
19	Road Roller Driver	252.00	361.00	367.00	414.00	424.00	424.00
20	Concrete Mixer Operator, Class-I	185.00	265.00	269.00	305.00	312.00	312.00
21	Concrete Mixer Operator, Class-II	175.00	249.00	253.00	288.00	295.00	295.00
22	Stone Crusher Driver, Class-I	185.00	265.00	269.00	305.00	312.00	312.00
23	Stone Crusher Driver, Class-II	175.00	249.00	253.00	288.00	295.00	295.00
24	Truck Driver	209.00	299.00	304.00	344.00	352.00	352.00
25	Compresser Operator, Class-I	185.00	265.00	269.00	305.00	312.00	312.00
26	Compresser Operator, Class-II	175.00	249.00	253.00	288.00	295.00	295.00
27	Pump Driver, Class-I	185.00	265.00	269.00	305.00	312.00	312.00
28	Pump Driver, Class-II	175.00	249.00	253.00	288.00	295.00	295.00
29	Concrete Mixer Attendant	153.00	220.00	224.00	252.00	258.00	258.00
30	Cleaner or Oilman	148.00	213.00	216.00	244.00	250.00	250.00
31	TarBoiler Man	175.00	249.00	253.00	288.00	295.00	295.00
32	Plumber	185.00	265.00	269.00	305.00	312.00	312.00
33	Thatcher	155.00	222.00	226.00	255.00	261.00	261.00
34	Khalasi / Chainman	155.00	222.00	226.00	255.00	261.00	261.00
35	Sweeper	148.00	213.00	216.00	244.00	250.00	250.00
36	Watchamn	148.00	213.00	216.00	244.00	250.00	250.00
37	Stone Breaker	148.00	213.00	216.00	244.00	250.00	250.00
38	Work Sarker	164.00	233.00	237.00	270.00	276.00	276.00
39	Time Keeper	173.00	247.00	251.00	284.00	291.00	291.00
40	Welder, Grade-I	220.00	315.00	320.00	362.00	370.00	370.00
41	Welder, Grade-I	185.00	265.00	269.00	305.00	312.00	312.00
42	Wireman/Lineman	169.00	243.00	247.00	278.00	284.00	284.00
43	Mechanic, Grade-I	225.00	323.00	328.00	370.00	379.00	379.00
44	Mechanic, Grade-II	209.00	299.00	304.00	344.00	352.00	352.00
45	Sarang	209.00	299.00	304.00	344.00	352.00	352.00
46	Drill Operator	175.00	249.00	253.00	288.00	295.00	295.00
47	Tractor Operator	209.00	299.00	304.00	344.00	352.00	352.00
48	Gauge Reader-cum-silt Observer	153.00	220.00	224.00	252.00	258.00	258.00
49	Crane Operator, Grade-I	247.00	354.00	360.00	406.00	415.00	415.00
50	Crane Operator, Grade-II	220.00	315.00	320.00	362.00	370.00	370.00
51	Dragline / Scraper / Showel Operator Grade-I	247.00	354.00	360.00	406.00	415.00	415.00
52	Dragline/Scraper/Showel Operator Grade-II	220.00	315.00	320.00	362.00	370.00	370.00
53	Dumper Operator	210.00	300.00	305.00	345.00	353.00	353.00
54	Foreman	247.00	354.00	360.00	406.00	415.00	415.00

SCHEDULE - II Dtd.:- 14.11.2017

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. 2787 /28.09.11	Lab. Deptt. Noti. No. 1225/ 01.04.16	Lab. Deptt. Noti. No. 4175/ 30.09.16	Lab. Deptt. Noti. No. 4971/ 29.11.16	Lab. Deptt. Noti. No. 1194/ 28.03.17	Lab. Deptt. Noti. No. 4835/ 15.09.17
1	2	3	4	5(1.01624xcl4)	6((1.43xcl3)*1.15)	7(1.02336xcl6)	8
55	Junior Forman	220.00	315.00	320.00	362.00	370.00	370.00
56	Chargeman	210.00	300.00	305.00	345.00	353.00	353.00
57	Electrician, Grade-I	185.00	265.00	269.00	305.00	312.00	312.00
58	Electrician, Grade-II	175.00	249.00	253.00	288.00	295.00	295.00
59	Electrician, Grade-III	153.00	220.00	224.00	252.00	258.00	258.00
60	Turner	175.00	249.00	253.00	288.00	295.00	295.00
61	Compounder	175.00	249.00	253.00	288.00	295.00	295.00
62	Superviser / (Diploma holder)	237.00	338.00	343.00	390.00	399.00	399.00
63	Surveyer / Supervisor	175.00	249.00	253.00	288.00	295.00	295.00
64	Blue Printer	153.00	220.00	224.00	252.00	258.00	258.00
65	Tracer	153.00	220.00	224.00	252.00	258.00	258.00
66	Vibrator Operator	163.00	232.00	236.00	268.00	274.00	274.00
67	Clerk / Typist / Typist Clerk	173.00	247.00	251.00	284.00	291.00	291.00
68	Earth Excavator,						
	(a) For every 110 cubic feet of soft earth	144.00	207.00	210.00	237.00	243.00	243.00
	(b) For every 100 cubic feet of hard earth	144.00	207.00	210.00	237.00	243.00	243.00
	(c) For every 90 cubic feet of highly hard earth	144.00	207.00	210.00	237.00	243.00	243.00
69	Any other category of semi-skilled workers not mentioned above	150.00	215.00	218.00	247.00	252.00	257.00
70	Any other category of skilled workers not mentioned above	183.00	262.00	266.00	301.00	307.00	313.00
71	Highly skilled labour	223.00	319.00	323.00	367.00	374.00	381.00

Note :- The above rates has been calculated as (-) % decrease in Labour Dept. Notification No. 4835 Dtd. 15.09.2017. As per Labour Dept. guideline mentioned in above Notification as "If the Index fall below the point on which minimum rates of wages have been fixed / revised, there will not be any reduction in the minimum wages fixed / revised." Labour Dept. changed only four category of labour Rate. Hence, all other types Labour Rate is kept same as earlier.

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

CONSTRUCTION MATERIAL RATE

Schedule : M1

Date: 13.03.18

List of Rates of Ordinary Portland Cement approved by State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST.

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Ordinary Portland Cement	Per bag of 50 Kg	Patna	246.10	Rupees Two Hundred Forty Six and Paise Ten Only
	(O.P.C. - 43 Grade)		Muzaffarpur	246.10	Rupees Two Hundred Forty Six and Paise Ten Only
			Darbhanga	246.10	Rupees Two Hundred Forty Six and Paise Ten Only
			Bhagalpur	242.30	Rupees Two Hundred Forty Two and Paise Thirty Only
			Munger	242.30	Rupees Two Hundred Forty Two and Paise Thirty Only
			Saharsa	246.10	Rupees Two Hundred Forty Six and Paise Ten Only
			Purnea	246.10	Rupees Two Hundred Forty Six and Paise Ten Only
			Gaya	233.00	Rupees Two Hundred Thirty Three and Paise Zero Only
			Saran	241.90	Rupees Two Hundred Forty One and Paise Ninety Only

Note:- The above rate of cement is exclusive of 28% GST.

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M2

Date: 18.01.18

List of Rates of Ordinary Portland Cement approved by State Level Schedule Rate Committee for the year 2018- 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST.

Sl. No.	Name & Description of Material	Unit	Zones	Approved Rate	
				in figure (₹)	in words
1	2	3	4	5	6
1	Ordinary Portland Cement	Per bag of 50 Kg	Patna	210.90	Rupees Two Hundred Ten and Paise Ninety Only
	(O.P.C. - 33 Grade)		Muzaffarpur	213.90	Rupees Two Hundred Thirteen and Paise Ninety Only
			Darbhanga	220.90	Rupees Two Hundred Twenty and Paise Ninety Only
			Bhagalpur	220.90	Rupees Two Hundred Twenty and Paise Ninety Only
			Munger	220.90	Rupees Two Hundred Twenty and Paise Ninety Only
			Saharsa	228.10	Rupees Two Hundred Twenty Eight and Paise Ten Only
			Purnea	228.10	Rupees Two Hundred Twenty Eight and Paise Ten Only
			Gaya	199.60	Rupees One Hundred Ninety Nine and Paise Sixty Only
			Saran	213.90	Rupees Two Hundred Thirteen and Paise Ninety Only

Note:- The above rate of cement is exclusive of 28% GST.

18/1/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख
भवन निर्माण विभाग, बिहार, पटना।

18-1-18
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।

18-1-18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–मुख्य अभियंता (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
बिहार, पटना।

18/1/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–मुख्य अभियंता (विद्युत),
भवन निर्माण विभाग, बिहार, पटना।

18/1/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख, तकनीकी परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

18.1.2018
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

18/1/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, मुख्यालय,
जल संसाधन विभाग, बिहार, पटना।

18/1/18
संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M3A

Date: 13.03.18

List of Rates of Portland Pozzolana Cement received from different Companies for the approval of State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST.

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	226.60	Rupees Two Hundred Twenty Six and Paise Sixty Only
			Muzaffarpur	218.80	Rupees Two Hundred Eighteen and Paise Eighty Only
			Darbhanga	218.80	Rupees Two Hundred Eighteen and Paise Eighty Only
			Bhagalpur	226.60	Rupees Two Hundred Twenty Six and Paise Sixty Only
			Munger	224.50	Rupees Two Hundred Twenty Four and Paise Fifty Only
			Saharsa	222.70	Rupees Two Hundred Twenty Two and Paise Seventy Only
			Purnea	230.30	Rupees Two Hundred Thirty and Paise Thirty Only
			Gaya	199.20	Rupees One Hundred Ninety Nine and Paise Twenty Only
			Saran	221.40	Rupees Two Hundred Twenty One and Paise Forty Only

Note:- The above rate of cement is exclusive of 28% GST.

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M3B

Date: 13.03.18

List of Rates of Portland Slag Cement received from different Companies for the approval of State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT & H Specifications.

Rates are exclusive of GST.

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	273.40	Rupees Two Hundred Seventy Three and Paise Forty Only
			Muzaffarpur	271.90	Rupees Two Hundred Seventy One and Paise Ninety Only
			Darbhanga	266.40	Rupees Two Hundred Sixty Six and Paise Forty Only
			Bhagalpur	272.70	Rupees Two Hundred Seventy Two and Paise Seventy Only
			Munger	262.60	Rupees Two Hundred Sixty Two and Paise Sixty Only
			Saharsa	271.10	Rupees Two Hundred Seventy One and Paise Ten Only
			Purnea	266.40	Rupees Two Hundred Sixty Six and Paise Forty Only
			Gaya	261.70	Rupees Two Hundred Sixty One and Paise Seventy Only
			Saran	269.20	Rupees Two Hundred Sixty Nine and Paise Twenty Only

Note:- The above rate of cement is exclusive of 28%GST.

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख
भवन निर्माण विभाग, बिहार, पटना।

13/3
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।

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–मुख्य अभियंता (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
बिहार, पटना।

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–मुख्य अभियंता (विद्युत),
भवन निर्माण विभाग, बिहार, पटना।

13/3/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख, तकनीकी परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

13.3.18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

13/3/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, मुख्यालय,
जल संसाधन विभाग, बिहार, पटना।

13/3/18
संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M4

Date: 13.03.18

List of Rates of Different Grades of Bitumen approved by State Level Schedule Rate Committee for the year 2018 - 19 for the preparation of Schedule of Rates only. Materials should confirm to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST @ 18%.

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure(₹)	in words
1	2	3	4	5
1	Bitumen Grade VG-40(30/40)Packed			
	(iv)Ex. Patna	Per MT	33187.50	Rupees Thirty Three Thousand One Hundred Eighty Seven and Paise Fifty Only
	(v)Ex. Muzaffarpur	Per MT	33437.50	Rupees Thirty Three Thousand Four Hundred Thirty Seven and Paise Fifty Only
	(vi) Ex. Gaya	Per MT	32990.00	Rupees Thirty Two Thousand Nine Hundred Ninety and Paise Zero Only
2	Bitumen Grade VG-30(60/70) Packed			
	(i)Ex.Barauni	Per MT	32160.00	Rupees Thirty Two Thousand One Hundred Sixty and Paise Zero Only
	(ii) Ex. Gaya	Per MT	31730.00	Rupees Thirty One Thousand Seven Hundred Thirty and Paise Zero Only
	(vi) Ex. Patna	Per MT	31927.50	Rupees Thirty One Thousand Nine Hundred Twenty Seven and Paise Fifty Only
	(vii) Ex. Muzaffarpur	Per MT	32177.50	Rupees Thirty Two Thousand One Hundred Seventy Seven and Paise Fifty Only
3	Bitumen Grade VG-10(80/100) Packed			
	(i) Ex. Barauni	Per MT	31360.00	Rupees Thirty One Thousand Three Hundred Sixty and Paise Zero Only
	(ii) Ex. Gaya	Per MT	30930.00	Rupees Thirty Thousand Nine Hundred Thirty and Paise Zero Only
	(vi) Ex. Patna	Per MT	31127.50	Rupees Thirty One Thousand One Hundred Twenty Seven and Paise Fifty Only
	(vii) Ex. Muzaffarpur	Per MT	31377.50	Rupees Thirty One Thousand Three Hundred Seventy Seven and Paise Fifty Only
4	Bitumen Grade VG-30(60/70) Bulk			
	(i) Ex. Barauni	Per MT	28380.00	Rupees Twenty Eight Thousand Three Hundred Eighty and Paise Zero Only
5	Bitumen Grade VG-10(80/100) Bulk			
	(i) Ex. Barauni	Per MT	27580.00	Rupees Twenty Seven Thousand Five Hundred Eighty and Paise Zero Only
6	Modified Graded Bitumen			
	(i) CRMB-50 Packed Ex. Barauni	Per MT		
	(ii) CRMB-50 Packed Ex. Muzaffarpur	Per MT		
	(iii) CRMB-50 Packed Ex. Gaya	Per MT		
	(vi) CRMB-50 Packed Ex. Patna	Per MT		
	(v) CRMB-55 Packed Ex. Barauni	Per MT	34300.00	Rupees Thirty Four Thousand Three Hundred and Paise Zero Only
	(vi) CRMB-55 Packed Ex. Gaya	Per MT	35480.00	Rupees Thirty Five Thousand Four Hundred Eighty and Paise Zero Only
	(vii) CRMB-55 Packed Ex. Patna	Per MT	34377.50	Rupees Thirty Four Thousand Three Hundred Seventy Seven and Paise Fifty Only
	(viii) CRMB-55 Packed Ex. Muzaffarpur	Per MT	35927.50	Rupees Thirty Five Thousand Nine Hundred Twenty Seven and Paise Fifty Only
	(ix) CRMB-60 Packed Ex. Barauni	Per MT		
	(x) CRMB-60 Packed Ex. Patna	Per MT		
	(xi) CRMB-60 Packed Ex. Muzaffarpur	Per MT		
	(xii) CRMB-60 Packed Ex. Gaya	Per MT		
7	Bitumen Emulsion RS1(Packed) Drum			
	(i) Ex. Patna	Per MT	35980.00	Rupees Thirty Five Thousand Nine Hundred Eighty and Paise Zero Only
	(ii) Ex. Gaya	Per MT	36180.00	Rupees Thirty Six Thousand One Hundred Eighty and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	35730.00	Rupees Thirty Five Thousand Seven Hundred Thirty and Paise Zero Only

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure(₹)	in words
8	Bitumen Emulsion MS(Packed) Drum			
	(i) Ex. Patna	Per MT	37883.00	Rupees Thirty Seven Thousand Eight Hundred Eighty Three and Paise Zero Only
	(ii) Ex. Gaya	Per MT	38033.00	Rupees Thirty Eight Thousand Thirty Three and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	37583.00	Rupees Thirty Seven Thousand Five Hundred Eighty Three and Paise Zero Only
9	Bitumen Emulsion SS1(Packed) Drum			
	(i) Ex. Patna	Per MT	38088.00	Rupees Thirty Eight Thousand Eighty Eight and Paise Zero Only
	(ii) Ex. Gaya	Per MT	38288.00	Rupees Thirty Eight Thousand Two Hundred Eighty Eight and Paise Zero Only
	(iii) Ex. Muzaffarpur	Per MT	37838.00	Rupees Thirty Seven Thousand Eight Hundred Thirty Eight 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M5

Date: 13.03.18

Approved new rate of G.C. Sheet by State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT & H Specifications.

Rates are exclusive of GST@ 18%.

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	G. C. Sheet in mm			
1	0.63	Per MT	54915.25	Rupees Fifty Four Thousand Nine Hundred Fifteen and Paise Twenty Five Only
2	0.50	Per MT	56440.68	Rupees Fifty Six Thousand Four Hundred Forty and Paise Sixty Eight Only
3	0.40	Per MT	70050.00	Rupees Seventy Thousand Fifty and Paise Zero Only
3	0.35	Per MT	71650.85	Rupees Seventy One Thousand Six Hundred Fifty and Paise Eighty Five 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M6

Date: 13.03.18

Approved rate of Steel - Wire Rod in Coil by State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST@ 18%.

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	Wire Rod in Coil			
1	5.5 mm	Per MT	44090.00	Rupees Forty Four Thousand Ninety and Paise Zero Only
2	6.0 mm	Per MT	43960.00	Rupees Forty Three Thousand Nine Hundred Sixty and Paise Zero Only
3	6.5 mm	Per MT	43820.00	Rupees Forty Three Thousand Eight Hundred Twenty and Paise Zero Only
4	7.0 mm	Per MT	43960.00	Rupees Forty Three Thousand Nine Hundred Sixty and Paise Zero Only
5	8.0 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty and Paise Zero Only
6	10.0 mm	Per MT	44090.00	Rupees Forty Four Thousand Ninety and Paise Zero Only
7	12.0/12.7 mm	Per MT	44090.00	Rupees Forty Four Thousand Ninety 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M8

Date: 13.03.18

Approved rate of Steel Channel by State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST@ 18%.

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	39220.00	Rupees Thirty Nine Thousand Two Hundred Twenty and Paise Zero Only
2	Channel 125 x 65	Per MT	39220.00	Rupees Thirty Nine Thousand Two Hundred Twenty and Paise Zero Only
3	Channel 150 x 75	Per MT	39220.00	Rupees Thirty Nine Thousand Two Hundred Twenty 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M9

Date: 13.03.18

Approved rate of Steel Angles by State Level Schedule Rate Committee for the year 2018 - 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST@ 18%.

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	STEEL ANGLES			
1	75 x 75 x 6	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
2	80 x 80 x 8 /10/12	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
3	90 x 90 x 6/8	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
4	100 x 100 x 8/10/12	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
5	110 x 110 x 8/10/12	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
6	130 x 130 x 10/12	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
7	150 x 150 x 12/16/20	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty and Paise Zero Only
8	200 x 200 x 16/18/20	Per MT	37350.00	Rupees Thirty Seven Thousand Three Hundred Fifty 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule : M10A

Date: 13.03.18

Approved rate of Steel - TMT BARS (Fe 500) State Level Schedule Rate Committee for the year 2018- 19 (for Preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MORT&H Specifications.

Rates are exclusive of GST@ 18%.

Sl. No.	Name & Description of Material	Unit	Approved Rate	
			in figure (₹)	in words
1	2	3	4	5
	STEEL TMT BARS			
1	TMT Fe 500 - 8 mm	Per MT	44630.00	Rupees Forty Four Thousand Six Hundred Thirty and Paise Zero Only
2	TMT Fe 500 -10 mm	Per MT	43740.00	Rupees Forty Three Thousand Seven Hundred Forty and Paise Zero Only
3	TMT Fe 500 -12 mm	Per MT	43290.00	Rupees Forty Three Thousand Two Hundred Ninety and Paise Zero Only
4	TMT Fe 500 -16 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty and Paise Zero Only
5	TMT Fe 500 -20 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty and Paise Zero Only
6	TMT Fe 500 -25 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty and Paise Zero Only
7	TMT Fe 500 -28 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty and Paise Zero Only
8	TMT Fe 500 -32 mm	Per MT	43560.00	Rupees Forty Three Thousand Five Hundred Sixty 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

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Schedule: M11

Date:13.03.18

Approved Rate of Bricks & Bricks related materials by the State Level Schedule Rate Committee for the year 2018-19 (for preparation of Schedule of Rates only) - Materials should conform to relevant BIS/IRC/MoRT&H Specifications.

Rates are Exclusive of all taxes,Royalty, Contractor's profit and Overhead charges (Rates at source).				
Sr. No.	Materials	Unit	Approved Rate	
			in figure (₹)	in words
1	**100 A Bricks**			
	(i) For urban Patna	Nos/1000	6247.00	Rupees Six Thousand Two Hundred Forty Seven and Paise Zero Only
	(ii) For Darbhanga,Bhagalpur, Munger & Muzaffarpur	Nos/1000	5267.00	Rupees Five Thousand Two Hundred Sixty Seven and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4981.00	Rupees Four Thousand Nine Hundred Eighty One and Paise Zero Only
	(iv) For Saharsa	Nos/1000	5411.00	Rupees Five Thousand Four Hundred Eleven and Paise Zero Only
	(v) For Purnea	Nos/1000	5699.00	Rupees Five Thousand Six Hundred Ninety Nine and Paise Zero Only
	(vi) For rural Patna	Nos/1000	5196.00	Rupees Five Thousand One Hundred Ninety Six and Paise Zero Only
2	**100 B Bricks**			
	(i) For urban Patna	Nos/1000	5796.00	Rupees Five Thousand Seven Hundred Ninety Six and Paise Zero Only
	(ii) For Darbhanga, Bhagalpur, Munger & Muzaffarpur	Nos/1000	4835.00	Rupees Four Thousand Eight Hundred Thirty Five and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4549.00	Rupees Four Thousand Five Hundred Forty Nine and Paise Zero Only
	(iv) For Saharsa	Nos/1000	4981.00	Rupees Four Thousand Nine Hundred Eighty One and Paise Zero Only
	(v) For Purnea	Nos/1000	5267.00	Rupees Five Thousand Two Hundred Sixty Seven and Paise Zero Only
	(vi) For rural Patna	Nos/1000	4746.00	Rupees Four Thousand Seven Hundred Forty Six and Paise Zero Only
3	**Brick Tiles (300mmx150mmx50mm)**			
	(i) For urban Patna and rural Patna	Nos/1000	6247.00	Rupees Six Thousand Two Hundred Forty Seven and Paise Zero Only
	(ii) For Saharsa, Bhagalpur, Darbhanga & Muzaffarpur	Nos/1000	6274.00	Rupees Six Thousand Two Hundred Seventy Four and Paise Zero Only
	(iii) For Purnea	Nos/1000	6563.00	Rupees Six Thousand Five Hundred Sixty Three and Paise Zero Only
	(iv) For other places	Nos/1000	5986.00	Rupees Five Thousand Nine Hundred Eighty Six and Paise Zero Only
4	**Picket Jhama Bricks**			
	(i) For urban Patna	Nos/1000	5348.00	Rupees Five Thousand Three Hundred Forty Eight and Paise Zero Only
	(ii) For Darbhanga, Bhagalpur, Munger & Muzaffarpur	Nos/1000	4406.00	Rupees Four Thousand Four Hundred Six and Paise Zero Only
	(iii) For Gaya & Saran	Nos/1000	4114.00	Rupees Four Thousand One Hundred Fourteen and Paise Zero Only
	(iv) For Purnea	Nos/1000	4835.00	Rupees Four Thousand Eight Hundred Thirty Five and Paise Zero Only
	(v) For Saharsa	Nos/1000	4549.00	Rupees Four Thousand Five Hundred Forty Nine and Paise Zero Only
	(vi) For rural Patna	Nos/1000	4306.00	Rupees Four Thousand Three Hundred Six and Paise Zero Only
5	**Brick Bats**			
	(i) For urban Patna	Per m^3	1095.00	Rupees One Thousand Ninety Five and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m^3	1050.00	Rupees One Thousand Fifty and Paise Zero Only
	(iii) For other places	Per m^3	1004.00	Rupees One Thousand Four and Paise Zero Only
	(iv) For rural Patna	Per m^3	1049.00	Rupees One Thousand Forty Nine and Paise Zero Only
6	**Jhama Metals**			
	(a) 63 mm to 40 mm size			
	(i) For urban Patna	Per m^3	1303.00	Rupees One Thousand Three Hundred Three and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m^3	1247.00	Rupees One Thousand Two Hundred Forty Seven and Paise Zero Only
	(iii) For other places	Per m^3	1222.00	Rupees One Thousand Two Hundred Twenty Two and Paise Zero Only
	(iv) For rural Patna	Per m^3	1273.00	Rupees One Thousand Two Hundred Seventy Three and Paise Zero Only
	(b) 40 mm to 20 mm size			
	(i) For urban Patna	Per m^3	1452.00	Rupees One Thousand Four Hundred Fifty Two and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m^3	1392.00	Rupees One Thousand Three Hundred Ninety Two and Paise Zero Only
	(iii) For other places	Per m^3	1351.00	Rupees One Thousand Three Hundred Fifty One and Paise Zero Only
	(iv) For rural Patna	Per m^3	1408.00	Rupees One Thousand Four Hundred Eight and Paise Zero Only
	(c) 20 mm and down			
	(i) For urban Patna	Per m^3	1665.00	Rupees One Thousand Six Hundred Sixty Five and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m^3	1595.00	Rupees One Thousand Five Hundred Ninety Five and Paise Zero Only
	(iii) For other places	Per m^3	1538.00	Rupees One Thousand Five Hundred Thirty Eight and Paise Zero Only
	(iv) For rural Patna	Per m^3	1606.00	Rupees One Thousand Six Hundred Six and Paise Zero Only

Sr. No.	Materials	Unit	Approved Rate	
			in figure (₹)	in words
7	**Surkhi**			
	(i) For urban Patna	Per m^3	1724.00	Rupees One Thousand Seven Hundred Twenty Four and Paise Zero Only
	(ii) For Purnea, Saharsa, Bhagalpur, Munger & Darbhanga	Per m^3	1653.00	Rupees One Thousand Six Hundred Fifty Three and Paise Zero Only
	(iii) For other places	Per m^3	1595.00	Rupees One Thousand Five Hundred Ninety Five and Paise Zero Only
	(iv) For rural Patna	Per m^3	1665.00	Rupees One Thousand Six Hundred Sixty Five 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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Approved Rate for Coarse Sand (Yellow Sand) for year 2018-19

खान एवं भूतत्व विभाग, बिहार सरकार, पटना के ज्ञापांक–प्र0–1 (विविध) बैठक–15/17–285/एम0, पटना दिनांक–15.01.2018 एवं ज्ञापांक–5015 दिनांक–20.10.2017 के अनुसार

1) Rate of Coarse Sand (Yellow Sand) at source (with Royalty & loading)

= Rs 900/-per 100 cft+5% BSMC Commission

= Rs 945/- per 100 cft

i.e. Rs 333.69/cum

Taking Royalty of Sand = Rs 50.00/m3 & loading-unloading charge (by tipper)

= Rs 173.00/m3

Now Rate of Coarse Sand at source excluding Royalty, loading-unloading charge & GST Charge = Rs 333.69 - 50 – 173.00

= Rs 110.69 /m3

समिति के सदस्यों द्वारा पूर्ण विचारोपरान्त Schedule-M/MORTH-1 के मद संख्या M-004 एवं M-005 पर अंकित Coarse Sand का दर Rs 110.69/cum अनुमोदित करने का निर्णय लिया गया।

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule - M / MORTH - 1 Date: 13.03.18

List of Approved Rates of Stone Materials for the Preparation of Schedule of Rates only by the State Level Schedule Rate Committee (Materials Should conform to relevant BIS, MoRD and MoRT&H Specifications). The rates are exclusive of Royality ,GST and Contractor's profit. "Rates are at source"

Sl. No.	Description of materials	Unit	Approved Rate (₹)	Remarks
M-001	Stone Boulder of size 150 mm and below at Crusher Plant	cum	206.33	Excluding Royalty @ ₹ 100.0 per Cum
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at site	cum	206.33	Excluding Royalty @ ₹ 100.0 per Cum
M-003	Boulder with minimum size of 300 mm for Pitching at Site	cum	206.33	Excluding Royalty @ ₹ 100.0 per Cum
M-004	Coarse sand i) at source Quarry Koilwar/Sone sand	cum	110.69	Excluding Royalty @ ₹ 50.0 per Cum
M-005	Coarse sand ii) Equivalent to Koilwar/ Sone sand	cum	110.69	Excluding Royalty @ ₹ 50.0 per Cum
M-006	Fine sand at Site	cum	67.66	Excluding Royalty @ ₹ 50.0 per Cum
M-007	Moorum at Site	cum	77.21	Excluding Royalty @ ₹ 55.0 per Cum
M-008	Gravel/Quarry spall at Site	Cum	206.33	Excluding Royalty @ ₹ 100.0 per Cum
M-009	Granular Material or hard murrum for GSB works at Site	Cum	82.52	Excluding Royalty @ ₹ 50.0 per Cum
M-010	Granular Material or hard murrum for GSB works at Mixing Plant	Cum	82.52	Excluding Royalty @ ₹ 50.0 per Cum
M-011	Fly ash conforming to IS: 3812 (Part II & I) at HMP Plant / Batching Plant / Crushing Plant	Cum	0.00	Nil
M-012	Filter media/Filter Material as per Table 300-3 (MORT&H Specification)	Cum	363.19	Excluding Royalty @ ₹ 50.0 per Cum
M-013	Close graded Granular sub-base Material 53 mm to 9.5 mm	cum	472.08	Excluding Royalty @ ₹ 50.0 per Cum
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	448.09	Excluding Royalty @ ₹ 50.0 per Cum
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	509.43	Excluding Royalty @ ₹ 50.0 per Cum
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	487.25	Excluding Royalty @ ₹ 50.0 per Cum
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm	cum	365.72	Excluding Royalty @ ₹ 50.0 per Cum
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm	cum	154.77	Excluding Royalty @ ₹ 50.0 per Cum
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm	cum	140.08	Excluding Royalty @ ₹ 50.0 per Cum
M-020	Close graded Granular sub-base Material 2.36 mm	cum	140.08	Excluding Royalty @ ₹ 50.0 per Cum
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve.	cum	89.38	Excluding Royalty @ 10.0 % of price
M-022	Coarse graded Granular sub-base Material 2.36 mm & below	cum	86.98	Excluding Royalty @ ₹ 100.0 per Cum
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm		86.98	Excluding Royalty @ ₹ 100.0 per Cum
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm	cum	101.67	Excluding Royalty @ ₹ 100.0 per Cum
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm	cum	434.15	Excluding Royalty @ ₹ 100.0 per Cum
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm	cum	404.62	Excluding Royalty @ ₹ 100.0 per Cum
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm	cum	456.33	Excluding Royalty @ ₹ 100.0 per Cum
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm	cum	394.98	Excluding Royalty @ ₹ 100.0 per Cum
M-029	Coarse graded Granular sub-base Material 53 mm to 26 .5mm	cum	362.57	Excluding Royalty @ ₹ 100.0 per Cum
M-030	Aggregates below 5.6 mm	cum	101.67	Excluding Royalty @ ₹ 100.0 per Cum
M-031	Aggregates 22.4 mm to 2.36 mm	cum	433.34	Excluding Royalty @ ₹ 100.0 per Cum
M-032	Aggregates 22.4 mm to 5.6 mm	cum	433.34	Excluding Royalty @ ₹ 100.0 per Cum
M-033	Aggregates 45 mm to 2.8 mm	cum	375.44	Excluding Royalty @ ₹ 100.0 per Cum
M-034	Aggregates 45 mm to 22.4 mm	cum	383.71	Excluding Royalty @ ₹ 100.0 per Cum
M-035	Aggregates 53 mm to 2.8 mm	cum	375.44	Excluding Royalty @ ₹ 100.0 per Cum

Sl. No.	Description of materials	Unit	Approved Rate (₹)	Remarks
M-036	Aggregates 53 mm to 22.4 mm	cum	362.57	Excluding Royalty @ ₹ 100.0 per Cum
M-037	Aggregates 63 mm to 2.8 mm	cum	331.78	Excluding Royalty @ ₹ 100.0 per Cum
M-038	Aggregates 63 mm to 45 mm	cum	331.67	Excluding Royalty @ ₹ 100.0 per Cum
M-039	Aggregates 90 mm to 45 mm	cum	299.84	Excluding Royalty @ ₹ 100.0 per Cum
M-040	Aggregates 10 mm to 5 mm	cum	434.15	Excluding Royalty @ ₹ 100.0 per Cum
M-041	Aggregates 11.2 mm to 0.09 mm	cum	248.50	Excluding Royalty @ ₹ 100.0 per Cum
M-042	Aggregates 13.2 mm to 0.09 mm	cum	374.53	Excluding Royalty @ ₹ 100.0 per Cum
M-043	Aggregates 13.2 mm to 5.6 mm	cum	520.42	Excluding Royalty @ ₹ 100.0 per Cum
M-044	Aggregates 13.2 mm to 10 mm	cum	549.26	Excluding Royalty @ ₹ 100.0 per Cum
M-045	Aggregates 20 mm to 10 mm	cum	549.26	Excluding Royalty @ ₹ 100.0 per Cum
M-046	Aggregates 25 mm to 10 mm	cum	518.82	Excluding Royalty @ ₹ 100.0 per Cum
M-047	Aggregates 19 mm to 6 mm	cum	433.34	Excluding Royalty @ ₹ 100.0 per Cum
M-048	Aggregates 37.5 mm to 19 mm	cum	383.71	Excluding Royalty @ ₹ 100.0 per Cum
M-049	Aggregates 37.5 mm to 25 mm	cum	383.71	Excluding Royalty @ ₹ 100.0 per Cum
M-050	Aggregates 6 mm nominal size	cum	312.49	Excluding Royalty @ ₹ 100.0 per Cum
M-051	Aggregates 10 mm nominal size	cum	520.42	Excluding Royalty @ ₹ 100.0 per Cum
M-052	Aggregates 13.2/12.5 mm nominal size	cum	549.26	Excluding Royalty @ ₹ 100.0 per Cum
M-053	Aggregates 20 mm nominal size	cum	456.33	Excluding Royalty @ ₹ 100.0 per Cum
M-054	Aggregates 25 mm nominal size	cum	430.48	Excluding Royalty @ ₹ 100.0 per Cum
M-055	Aggregates 40 mm nominal size	cum	345.22	Excluding Royalty @ ₹ 100.0 per Cum

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख
भवन निर्माण विभाग, बिहार, पटना।

13/3
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।

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–मुख्य अभियंता (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
बिहार, पटना।

13/3/18
सदस्य
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–मुख्य अभियंता (विद्युत),
भवन निर्माण विभाग, बिहार, पटना।

13/3/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख, तकनीकी परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

13.3.18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना।

13/3/18
सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख,
मुख्यालय, जल संसाधन विभाग, बिहार, पटना।

13/3/18
संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

List of Approved Rates of Construction Materials for the Preparation of Schedule of Rates only by the State Level Schedule Rate Committee (Materials Should conform to relevant B.I.S., MoRD and MoRT&H Specifications). The rates are exclusive of all taxes, Royality, GST and Contractor's profit.

Sl. No.	Description	Unit	Basic Approved Rate (₹)
M-056	AC pipe 100 mm dia	metre	39.91
M-057	Acrylic polymer bonding coat	litre	input
M-058	Alluminium Paint	litre	108.61
M-059	Aluminium alloy plate 2mm Thick	sqm	8315.84
M-060	Aluminium alloy/galvanised steel	tonne	33263.33
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	7886.03
M-062	Road Stud with Micro Prismatic lens reflectors(with shank)	each	158.56
M-063	Barbed wire	kg	52.81
M-064	Bearing (Cost of parts)	nos	input
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne)	nos	74589.42
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	0.57
M-067	Bearing (Forged steel roller bearing of 250 tonne)	nos	44082.73
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	MT	132.47
	(a) Fixed POT-PTFE Bearing	MT	132.47
	(b) Free POT-PTFE Bearing	MT	141.93
	(c) Guide Slide (L) POT-PTFE Bearing	MT	151.39
	(d) Guide Slide (T) POT-PTFE Bearing	MT	146.66
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)	nos	input
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)	nos	29685.34
M-071	Bentonite	kg	3.400
M-072	Binding wire	kg	53.72
M-073	Bitumen (Cationic Emulsion) Ex- Patna (R.S1) Packed	tonne	35980.00
M-074	Bitumen (60-70 grade) Packed Ex- Barauni	tonne	32160.00
M-075	Bitumen (80-100 grade) Packed Ex- Barauni	tonne	31360.00
M-076	Bitumen (Cutback) Packed Ex- Barauni	tonne	32160.00
M-077	Bitumen (emulsion) Packed Ex- Patna (M.S)	tonne	37883.00
M-078	Bitumen (modified graded) Packed Ex - Barauni (CRMB - 55)	tonne	34300.00
M-079	Brick 100A for - Patna Urban	each	6.247
M-080	C.I. shoes for the pile	kg	41.50
M-081	Cement - OPC 43 Grade at Patna	tonne	4922.00
M-082	Cold twisted bars (HYSD Bars) - Fe 500	tonne	43682.50
M-083	Coller for joints 300 mm dia	nos	input
M-084	Compressible Fibre Board (20mm thick)	sqm	939.47
M-085	Connectors / Staples	each	input
M-086	Copper Plate (12m long x 250mm wide)	kg	684.89
M-087	Corrosion resistant Structural steel	tonne	39280.03
M-088	Corrugated sheet, 3 mm thick, "Thrie" beam section railing	kg	43.29
M-089	Credit for excavated rock found suitable for use	cum	108.40
M-090	Curing compound	litre	115.31
M-091	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	744.17
M-092	Earth Cost or compensation for earth taken from private land	cum	1.71
M-093	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	24868.88

Sl. No.	Description	Unit	Basic Approved Rate (₹)
M-094	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	100 nos	562.73
M-095	Epoxy compound with accessories for preparing epoxy mortar	kg	500.07
M-096	Epoxy mortar	kg	691.89
M-097	Epoxy primer	kg	11.43
M-098	Epoxy resin-hardner mix for prime coat	kg	607.22
M-099	Flag of red color cloth 600 x 600 mm	each	48.65
M-100	Flowering Plants	each	32.44
M-101	Galvanised MS flat clamp	nos	13.85
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	90.20
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long	kg	39.25
M-104	Gelatin 80%	kg	799.42
M-105	Geo grids	sqm	input
M-106	Geomembrane	sqm	input
M-107	Geonets	sqm	98.62
M-108	Geotextile	sqm	77.10
M-109	Geotextile filter fabric	sqm	77.10
M-110	GI bolt 10 mm Dia	nos	14.36
M-111	Grouting pump with agitator	hour	138.24
M-112	Grass (Doob)	kg	4.20
M-113	Grass (Fine)	kg	4.20
M-114	HDPE pipes 75mm dia	metre	190.27
M-115	HDPE pipes 90mm dia	metre	190.27
M-116	Hedge plants	each	32.44
M-117	Helical pipes 600mm diameter	metre	input
M-118	Hot applied thermoplastic compound (Sp. Gravity - 2.10)	litre	186.78
M-119	HTS strand	tonne	64458.30
M-120	Joint Sealant Compound	kg	23.06
M-121	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching	sqm	34.84
M-122	LDO for steam curing	litre	input
M-123	M.S. Clamps	nos	31.03
M-124	M.S. Clamps	kg	56.17
M-125	M.S.shoes @ 35 Kg per pile of 15 m	kg	21.48
M-126	Mild Steel bars (Av-M6)	tonne	43939.00

Sl. No.	Description	Unit	Basic Approved Rate (₹)
M-127	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	27406.49
M-128	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	input
M-129	Nipples 12mm	nos	input
M-130	Nuts and bolts	kg	55.53
M-131	Paint	litre	214.82
M-132	Pavement Marking Paint	litre	214.82
M-133	Paving Fabric	sqm	input
M-134	Perforated geosynthetic pipe 150 mm dia	metre	24.84
M-135	Perforated pipe of cement concrete, internal dia 100 mm	metre	103.87
M-136	Pesticide	kg	73.26
M-137	Pipes 200 mm dia, 2.5 m long for drainage	metre	163.25
M-138	Plastic sheath, 1.25 mm thick for dowel bars	sqm	14.25
M-139	Plastic tubes 50 cm dia, 1.2 m high	nos	input
M-140	Polymer braids	metre	input
M-141	Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	900.90
M-142	Pre-coated stone chips of 13.2 mm nominal size	cum	495.97
M-143	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-144	Pre-moulded asphalt filler board	sqm	900.90
M-145	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days	kg	input
M-146	Primer	kg	11.84
M-147	Quick setting compound	kg	input
M-148	Random Rubble Stone	cum	191.14
M-149	RCC Pipe NP 4 heavy duty non presure pipe 1000 mm dia	metre	2675.47
M-150	RCC Pipe NP 4 heavy duty non presure pipe 1200 mm dia	metre	3803.69
M-151	RCC Pipe NP 4 heavy duty non presure pipe 300 mm dia	metre	489.97
M-152	Reflectorising glass beads	kg	60.95
M-153	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)	metre	input
M-154	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)	metre	input
M-155	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/polymeric strips)	metre	input
M-156	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)	metre	input
M-157	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Aluminium strips)	metre	input
M-158	Rivets	each	7.30
M-159	Sand bags (Cost of sand and Empty cement bag)	nos	5.52
M-160	Sapling 2 m high 25 mm dia	each	21.63
M-161	Scrap tyres of size 900 x 20	nos	72.07
M-162	Seeds	kg	32.44
M-163	Selected earth (Excluding royalty @ ₹22.0 per cum & compensation @ ₹1.65 per cum)	cum	1.71
M-164	Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	14.35

Sl. No.	Description	Unit	Basic Approved Rate (₹)
M-165	Sheathing duct	metre	79.29
M-166	Shrubs	each	16.21
M-167	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing	cum	729.73
M-168	Sodium vapour lamp	each	input
M-169	Square Rubble Coursed Stone	cum	191.13
M-170	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level	each	input
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	input
M-172	Steel drum 300 mm dia 1.2 m high/empty bitumen drum	nos	114.15
M-173	Steel helmet and cushion block on top of pile head during driving.	kg	36.58
M-174	Steel pipe 25 mm external dia as per IS:1239	metre	115.21
M-175	Steel pipe 50 mm external dia as per IS:1239	metre	206.18
M-176	Steel wire rope 20 mm	kg	39.89
M-177	Steel wire rope 40 mm	kg	39.89
M-178	Strip seal expansion join	metre	7715.33
M-179	Structural Steel	tonne	40170.00
M-180	Super plastisizer admixture IS marked as per 9103-1999	kg	152.14
M-181	Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	input
M-182	Through and bond stone	each	10.61
M-183	Tie rods 20mm diameter	nos	input
M-184	Tiles size 300 x 300 mm and 25 mm thick	each	41.79
M-185	Timber	cum	42694.18
M-186	Traffic cones with 150 mm reflective sleeve	nos	input
M-187	Tube anchorage set complete with bearing plate, permanent wedges etc	nos	43.24
M-188	Unslaked lime	tonne	3389.30
M-189	Water	KL	243.23
M-190	Water based cement paint	litre	109.33
M-191	Welded steel wire fabric	kg	37.47
M-192	Wire mesh 50mm x 50mm size of 3mm wire	kg	36.98
M-193	Wooden ballies 2" Dia for bracing (Sal)	each	21.21
M-194	Wooden ballies 8" Dia and 9 m long (9 m @ ₹67.41/m) - Sal	each	513.12
M-195	Wooden packing	cum	input
M-196	Wooden staff for fastening of flag 25 mm dia, 1.0 m long	each	26.52
M-197	Bitumen (30/40 grade) Ex-Patna Packed	tonne	33187.50
M-198	Fly Ash Brick conforming to IS: 3812 (Part I & II) (Excluding the carrige cost* of Fly Ash from point of production to Kiln site without OH&CP) **(*Carrige cost of fly ash is same as of sand)(Cost of 1000nos. is** ₹5156**)**	each	5.156

Sl. No.	Description		Unit	Basic Approved Rate (₹)
M-199	Paver Block (Excluding GST)			
	(i) M -35 Grade and 60 mm thickness	(a) White	sqm	433.26
		(b) Red	sqm	440.98
		(c) Yellow	sqm	454.82
	(ii) M-40 Grade and 80mm thickness	(a) White	sqm	497.19
		(b) Red	sqm	510.20
		(c) Yellow	sqm	526.65
M-200	Kerb-Stone Block- M30 Grade (Size 375mm x 300mm x150mm)		each	73.25
M-201	Autoclaved Aerated Concrete (AAC) Block		cum	2101.20

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

PLANT & MACHINERY RATE

Schedule - P&M / MORTH - 1A

Date-13.03.18

Approved Usages Rates of Plants and Machinery. The Usages charges for the machines include ownership charges, cost of repair & maintenance including replacement of tyre and running and operating charges which includes crew, fuel & lubricants. These rates are for the preparation of Schedule of Rates only.

Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (Rs)
P&M-001	Air Compressor	General Purpose	capacity in cfm	170/250	hour	457.00
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2860.00
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	1859.00
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1531.00
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	283.00
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	1395.00
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	365.00
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	23.00
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	84.00
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	251.00
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1827.00
P&M-012	Cranes b) 35 tonnes	Lifting Purpose			hour	1217.00
P&M-013	Cranes c) 3 tonnes	Lifting Purpose			hour	510.00
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	5313.00
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	3150.00
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	1142.00
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	1371.00
P&M-018	Generator (a) 125 KVA	Genration of electric Energy	KVA	100	hour	2643.00
P&M-019	Generator(b) 63 KVA	Genration of electric Energy	KVA	50	hour	1008.00
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1484.00
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	51955.00
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	39484.00
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	33249.00
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	23182.00
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	3762.00
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1858.00
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	12373.00
P&M-028	Integrated Stone Crusher 200 THP	Crushing of Spalls	TPH	200	hour	26029.00
P&M-029	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	443.00
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	88.00
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	551.00
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/50/50	hour	2715.00
P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	1439.00
P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	3502.00
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1388.00
P&M-036	Piling Rig with Bantonite Pump	0.75 m dia to 1.2 m dia Boring attachment	Rm/hour	2 to 3	hour	7802.00
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1777.00
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	5954.00

Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (Rs)
P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	1294.00
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	184.00
P&M-041	Ripper	Scarifying	cum/hour	60	hour	41.00
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	25.00
P&M-043	Road marking machine	Road marking	Sqm/hour	100	hour	134.00
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	777.00
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1634.00
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	km	35.00
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	tonne.km	8.83
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.5	hour	1015.00
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	1327.00
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	6.59
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	1217.00
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	8.77
P&M-053	Tractor	Pulling	capacity in HP	50	hour	518.00
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	541.00
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	558.00
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	31.00
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	882.00
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	3.29
P&M-059	Vibratory Roller 8 tonne	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	2029.00
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	174.00
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	36.00
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1720.00
Sl. No.	**Description of Machine**				**Unit**	**Rate (Rs)**
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay.				hour	886.00
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour				hour	3540.00
P&M-065	Belt conveyor system				hour	input
P&M-066	Boat to carry atleast 20 persons				hour	222.00
P&M-067	Cement concrete batch mix plant @ 175 cum per hour (effective output)				hour	7434.00
P&M-068	Cement concrete batch mix plant @ 75 cum per hour				hour	3185.00
P&M-069	Cold milling machine @ 20 cum per hour				hour	1327.00
P&M-070	Crane 5 tonne capacity				hour	1217.00
P&M-071	Crane 10 tonne capacity				hour	1217.00
P&M-072	Crane 15 tonne capacity				hour	1217.00
P&M-073	Crane 20 tonne capacity				hour	1217.00
P&M-074	Crane 40 T capacity				hour	1827.00
P&M-075	Crane with grab 0.75 cum capacity				hour	1827.00
P&M-076	Compressor with guniting equipment along with accessories				hour	222.00
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.				hour	1720.00
P&M-078	Epoxy Injection gun				hour	165.00
P&M-079	Generator 33 KVA				hour	531.00
P&M-080	Generator 100 KVA				hour	1927.00

Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (Rs)
P&M-081	Generator 250 KVA				hour	3700.00
P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.				hour	input
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)				hour	332.00
P&M-084	Jack for Lifting 40 tonne lifting capacity.				day	1217.00
P&M-085	Piling rig Including double acting pile driving hammer (Hydraulic rig)				hrs	7802.00
P&M-086	Plate compactor				hour	443.00
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour				hour	input
P&M-088	Texturing machine (for rigid pavement)				hour	112.00
P&M-089	Truck Trailor 30 tonne capacity				hour	3540.00
P&M-090	Truck Trailor 30 tonne capacity				t.km	3.29
P&M-091	Tunnel Boring machine				hour	input
P&M-092	Vibrating Pile driving hammer complete with power unit and accessories.				hour	input
P&M-093	Wet Mix Plant 100 TPH				hour	2803.00
P&M-094	Wet Mix Plant 75 TPH				hour	2803.00

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule - P & M / MORTH -1 B

Dt. :- 13.03.2018

Approved Usages Rates of Plants and Machinery. The Usages charges for the machines include ownership charges, cost of repair & maintenance including replacement of tyre and running and operating charges which includes crew, fuel & lubricants, These rates are for the preparation of Schedule of Rates only.

Sl. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate
1	WMM Paver Finisher	Paving of WMM/Paving of DLC.	Cum/hour		hour	1596.00
2	Tipping Truck 14 M ^3	Transportation of Soil, GSB, WMM, Hot mix etc.	Capacity in cum		hour	2325.00
3	6.5 KVA Generator	Generation of electric Energy	KVA		hour	255.00
4	Vibratory Earth Compactor		Cum/hour		hour	1849.00
5	Tractor (25 HP)	Carriage	25 HP Capacity	2.25 cum	hour	521.00
6	5 KVA Silent Type Generator	Generation of electric Energy	KVA		hour	223.00
7	Mini HOT MIX PLANT - (6-10) TPH		Cum/hour	2.7	hour	3615.00

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 (असैनिक),
बिहार स्टेट पावर होल्डिंग कंपनी लि0
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 परीक्षण कोषांग,
निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण
समिति–सह–अभियंता प्रमुख, लोक
स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule - HMP1

पथ निर्माण विभाग में उपलब्ध **Hot Mix Plant** एवं अन्य संलग्न यंत्रों–संयंत्रों से तैयार किये जा रहे **Production/Carriage/ Laying/Compaction** का **Usage Charge Per MT** की पुनरीक्षित दर गणना

Sr. No.	P& M Code	Machinery	Unit	Quantity	Rate (₹)	Cost (₹)
1	P&M-024	Batch mix HMP 40-60 TPH @ 37.4 tonne per hour actual output	hour	6.000	23182.00	139092.00
2	P&M-031	Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	551.00	1212.20
3	P&M-035	Paver finisher Mechanical	hour	6.000	1388.00	8328.00
		OR				
3	P&M-034	Sensor Paver Finisher	hour	6.000	3502.00	21012.00
4	P&M-018	Generator 125 KVA	hour	6.000	2643.00	15858.00
5	P&M-017	Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00
6	P&M-044	Smooth wheeled Roller 8 -10 tonnes for initial break down rolling	hour	12.00x0.65*	777.00	6060.60
7	P&M-059	Vibratory Roller 8 - 10 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.10

Total cost of usages charge using Paver Finisher (Mechanical) in Rupees ₹ **186689.90**

and

Total cost of usages charge using Paver Finisher (Sensor) in Rupees ₹ **199373.90**

Output of Plant = 17*2.2*6 = 224.4 MT per day

(a) Cost per MT with Mechanical Paver finisher (with 0.0 km Lead) = **186689.9 / 224.4 = 832.00**

Say ₹ **832.00** / MT

and

(b) Cost per MT with Sensor Paver finisher (with 0.0 km Lead) = **199373.9 / 224.4 = 888.50**

Say ₹ **889.00** / MT

In addition to the above, following points shall be considered while calculating Usages Rate per MT :-

(i) **For carriage of Mix by Tipper @ ₹8.5 per t-km will be charged extra as per Lead from the Government Hot Mix Plant.**

(ii) **The cost of labour for Bitumen feeding & laying at Paver site will be arranged by the Contractor.**

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule - WMP1

पथ निर्माण विभाग में उपलब्ध **Wet Mix Macadam (WMM) Plant** एवं अन्य संलग्न यंत्रों–संयंत्रों से तैयार किये जा रहे **Production/Carriage/ Laying/Compaction** का **Usage Charge Per MT** की पुनरीक्षित दर गणना

Sr. No.	P& M Code	Machinery	Unit	Quantity	Rate (₹)	Cost (₹)
1	P&M-094	Wet Mix Macadam Plant 75 TPH @ 68.75 tonne per hour actual output	hour	6.000	2803.00	16818.00
2	P&M-031	Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	551.00	1212.00
3	-	WMM Paver finisher	hour	6.000	1596.00	9576.00
4	P&M-080	Generator 100 KVA	hour	6.000	1927.00	11562.00
5	P&M-017	Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00
6	P&M-044	Smooth wheeled Roller 8 -10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.00
7	P&M-059	Vibratory Roller 8 - 10 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.00
8	-	Vibratory Earth Compactor	hour	6.00x0.65*	1849.00	7211.00
				Total cost in Rupees	**(₹)**	**65548.00**

Output of Plant = 31.25*2.2*6 = 412.5 MT per day

Cost per MT (with 0.0 km Lead) = **65548.0** **/ 412.5 =** **158.90**

Say ₹ **159.00** / MT

In addition to the above, following points shall be considered while calculating Usages Rate per MT :-

For carriage of Mix by Tipper @ ₹8.5 per t-km will be charged extra as per Lead from the Government Hot Mix Plant.

The cost of Labour at Plant site & laying at Paver site will be arranged by the Contractor.

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule - HMP2(Mini HMP)

पथ निर्माण विभाग में उपलब्ध **Mini Hot Mix Plant** एवं अन्य संलग्न यंत्रों–संयंत्रों से तैयार किये जा रहे **Production/Carriage/ Laying/Compaction** का **Usage Charge Per MT** की पुनरीक्षित दर गणना

Sr. No.	P& M Code	Machinery	Unit	Quantity	Rate (₹)	Cost (₹)
1		Mini Hot Mix Plant 6-10 TPH @ 5.96 tonne per hour actual output	hour	6.000	3615.00	21690.00
2	P&M-044	Smooth wheeled Roller 8 -10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.00
		Total cost of usages charge in Rupees ₹				**24720.00**

Output of Plant = 35.76 MT per day

(a) Cost per MT (with 0.0 km Lead) = **24720.0 / 35.76 = 691.30**

Say ₹ **691.00** / MT

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

INPUT USED IN SOR

INPUT

(A) Usage Rates of Plant and Machinery

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
P&M-001	Air Compressor	General Purpose	capacity in cfm	170/250	hour	457.00
P&M-002	Batching and Mixing Plant (a) 30 cum capacity	Concrete Mixing	cum/hour	20	hour	2860.00
P&M-003	Batching and Mixing Plant (b) 15 - 20 cum capacity	Concrete Mixing	cum/hour	13	hour	1859.00
P&M-004	Bitumen Pressure Distributor	Applying bitumen tack coat	sqm/hour	1750	hour	1531.00
P&M-005	Bitumen Boiler oil fired	Bitumen Spraying	capacity in litre	1500	hour	283.00
P&M-006	Concrete Paver Finisher with 40 HP Motor	Paving of concrete surface	cum / hour	20	hour	1395.00
P&M-007	Concrete Pump of 45 & 30 cum capacity	Pumping of concrete	cum / hour	33 / 22	hour	365.00
P&M-008	Concrete Bucket	For Pouring concrete	capacity in cum	1	hour	23.00
P&M-009	Concrete Mixer (a) 0.4/0.28 cum	Concrete Mixing	cum/hour	2.5	hour	84.00
P&M-010	Concrete Mixer (b) 1 cum	Concrete Mixing	cum/hour	7.5	hour	251.00
P&M-011	Crane (a) 80 tonnes	Lifting Purpose			hour	1827.00
P&M-012	Crane (b) 35 tonnes	Lifting Purpose			hour	1217.00
P&M-013	Crane (c) 3 tonnes	Lifting Purpose			hour	510.00
P&M-014	Dozer D - 80 - A 12	Spreading /Cutting / Clearing	cum/hour	300/ 150/250	hour	5313.00
P&M-015	Dozer D - 50 - A 15	Spreading /Cutting / Clearing	cum/hour	200/ 120/150	hour	3150.00
P&M-016	Emulsion Pressure Distributor	Applying emulsion tack coat	sqm/hour	1750	hour	1142.00
P&M-017	Front End loader 1 cum bucket capacity	Soil loading / Aggregate loading	cum/hour	60 /25	hour	1371.00
P&M-018	Generator (a) 125 KVA	Genration of electric Energy	KVA	100	hour	2643.00
P&M-019	Generator (b) 63 KVA	Genration of electric Energy	KVA	50	hour	1008.00
P&M-020	GSB Plant 50 cum	Producing GSB	cum/hour	40	hour	1484.00
P&M-021	Hotmix Plant - 120 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	40	hour	51955.00
P&M-022	Hotmix Plant - 100 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	30	hour	39484.00
P&M-023	Hotmix Plant - 60 to 90 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	25	hour	33249.00
P&M-024	Hotmix Plant - 40 to 60 TPH capacity	DBM/BM/SDC/ Premix	cum/hour	17	hour	23182.00
P&M-025	Hydraulic Chip Spreader	Surface Dressing	sqm/hour	1500	hour	3762.00
P&M-026	Hydraulic Excavator of 1 cum bucket	Soil Ordinary/Soil Marshy / Soil Unsuitable	cum/hour	60 /60 /60	hour	1858.00
P&M-027	Integrated Stone Crusher 100THP	Crushing of Spalls	TPH	100	hour	12373.00
P&M-028	Integrated Stone Crusher 200 HP	Crushing of Spalls	TPH	200	hour	26029.00
P&M-029	Kerb Casting Machine	Kerb Making	Rm/hour	80	hour	443.00
P&M-030	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1	hour	88.00
P&M-031	Mechanical Broom Hydraulic	Surface Cleaning	sqm/hour	1250	hour	551.00
P&M-032	Motor Grader 3.35 mtr blade	Clearing /Spreading /GSB /WBM	cum/hour	200/200/ 50/50	hour	2715.00
P&M-033	Mobile slurry seal equipment	Mixing and laying slurry seal	sqm/hour	2700	hour	1439.00
P&M-034	Paver Finisher Hydrostatic with sensor control 100 TPH	Paving of DBM/ BM/SDC/ Premix	cum/hour	40	hour	3502.00
P&M-035	Paver Finisher Mechanical 100 TPH	Paving of WMM /Paving of DLC	cum/hour	40/30	hour	1388.00
P&M-036	Piling Rig with Bantonite Pump	0.75 m dia to 1.2 m dia Boring attachment	Rm/hour	2 to 3	hour	7802.00
P&M-037	Pneumatic Road Roller	Rolling of Asphalt Surface	cum/hour	25	hour	1777.00
P&M-038	Pneumatic Sinking Plant	Pneumatic Sinking of wells	cum/hour	1.5 to 2.00	hour	5954.00
P&M-039	Pot Hole Repair Machine	Repair of potholes	cum/hour	4	hour	1294.00
P&M-040	Prestressing Jack with Pump & access	Stressing of steel wires/stands			hour	184.00
P&M-041	Ripper	Scarifying	cum/hour	60	hour	41.00
P&M-042	Rotavator	Scarifying	cum/hour	25	hour	25.00
P&M-043	Road marking machine	Road marking	sqm/hour	100	hour	134.00
P&M-044	Smooth Wheeled Roller 8 tonne	Soil Compaction /BM Compaction	cum/hour	70/25	hour	777.00
P&M-045	Tandem Road Roller	Rolling of Aspalt Surface	cum/hour	30	hour	1634.00
P&M-046	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	capacity in cum	5.5	km	35.00

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	capacity in cum	5.5	tonne.km	8.83
P&M-048	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	capacity in cum	5.5	hour	1015.00
P&M-049	Transit Mixer 4.0/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	hour	1327.00
P&M-050	Transit Mixer 4/4.5 cum	Transportation of Concrete Mix to site	cum/hour	4.5	tonne.km	6.59
P&M-051	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	hour	1217.00
P&M-052	Transit Mixer 3.0 cum	Transportation of Concrete Mix to site	cum/hour	3	tonne.km	8.77
P&M-053	Tractor	Pulling	capacity in HP	50	hour	518.00
P&M-054	Tractor with Rotevator	Rate of Tractor + Rotevator			hour	541.00
P&M-055	Tractor with Ripper	Rate of Tractor 6+ Ripper			hour	558.00
P&M-056	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	km	31.00
P&M-057	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	hour	882.00
P&M-058	Truck 5.5 cum per 10 tonnes	Material Transport	capacity/cum	4.5	tonne.km	3.29
P&M-059	Vibratory Roller 8 tonne	Earth or soil / GSB / WBM	cum/hour	100/60/60	hour	2029.00
P&M-060	Water Tanker	Water Transport	capacity in KL	6	hour	174.00
P&M-061	Water Tanker	Water Transport	capacity in KL	6	km	36.00
P&M-062	Wet Mix Plant 60 TPH	Wet Mix	cum/hour	25	hour	1720.00
Sr. No.	**Description of Machine**				**Unit**	
P&M-063	Air compressor with pneumatic chisel attachment for cutting hard clay				hour	886.00
P&M-064	Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour				hour	3540.00
P&M-065	Belt conveyor system				hour	input
P&M-066	Boat to carry atleast 20 persons				hour	222.00
P&M-067	Cement concrete batch mix plant @ 175 cum per hour (effective output)				hour	7434.00
P&M-068	Cement concrete batch mix plant @ 75 cum per hour				hour	3185.00
P&M-069	Cold milling machine @ 20 cum per hour				hour	1327.00
P&M-070	Crane 5 tonne capacity				hour	1217.00
P&M-071	Crane 10 tonne capacity				hour	1217.00
P&M-072	Crane 15 tonne capacity				hour	1217.00
P&M-073	Crane 20 tonne capacity				hour	1217.00
P&M-074	Crane 40 T capacity				hour	1827.00
P&M-075	Crane with grab 0.75 cum capacity				hour	1827.00
P&M-076	Compressor with guniting equipment along with accessories				hour	222.00
P&M-077	Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.				hour	1720.00
P&M-078	Epoxy Injection gun				hour	165.00
P&M-079	Generator 33 KVA				hour	531.00
P&M-080	Generator 100 KVA				hour	1927.00
P&M-081	Generator 250 KVA				hour	3700.00
P&M-082	Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.				hour	input
P&M-083	Joint Cutting Machine with 2-3 blades (for rigid pavement)				hour	332.00
P&M-084	Jack for Lifting 40 tonne lifting capacity.				day	1217.00
P&M-085	Piling rig Including double acting pile driving hammer (Hydraulic rig)				hrs	7802.00
P&M-086	Plate compactor				hour	443.00
P&M-087	Snow blower equipment 140 HP @ 600 cum per hour				hour	input
P&M-088	Texturing machine (for rigid pavement)				hour	112.00
P&M-089	Truck Trailor 30 tonne capacity				hour	3540.00
P&M-090	Truck Trailor 30 tonne capacity				t.km	3.29
P&M-091	Tunnel Boring machine				hour	input
P&M-092	Vibrating Pile driving hammer complete with power unit and accessories.				hour	input

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
P&M-093	Wet Mix Plant 100 TPH				hour	2803.00
P&M-094	Wet Mix Plant 75 TPH				hour	2803.00

Sr. No.	Description of Labour	Unit	Rate (₹)
L-01	Blacksmith (IInd class)	day	295.00
L-02a	Blacksmith (Ist class)	day	330.00
L-02b	Welder	day	370.00
L-02c	Plumber	day	312.00
L-02d	Electrician	day	312.00
L-03	Blaster (Stone cutter)	day	408.00
L-04	Carpenter I Class	day	330.00
L-05	Chiseller (Head Mazdoor)	day	309.00
L-06	Driller (Jumper)	day	295.00
L-07	Diver (Sarang)	day	352.00
L-08	Fitter	day	336.00
L-09	Mali	day	309.00
L-10	Mason (IInd class)	day	295.00
L-11	Mason (Ist class)	day	330.00
L-12	Mate / Supervisor	day	261.00
L-13	Mazdoor	day	247.00
L-14	Mazdoor/Dresser (Semi Skilled)	day	257.00
L-15	Mazdoor/Dresser/Sinker (Skilled)	day	313.00
L-16	Medical Officer	day	918.00
L-17	Operator(grouting)	day	274.00
L-18	Painter I class	day	312.00
L-19	Para medical personnel	day	452.00

(C) Materials

Sr. No.	Description of Material	Unit	Rate (₹)
M-001	Stone Boulder of size 150 mm and below at Quarry	cum	206.33
M-002	Supply of quarried stone 150 - 200 mm size for Hand Broken at Quarry	cum	206.33
M-003	Boulder with minimum size of 300 mm for Pitching at Quarry	cum	206.33
M-004	Coarse sand at source Quarry Koliwar sand/sone sand	cum	110.69
M-005	Coarse sand (Equivalent to Koliwar sand)	cum	110.69
M-006	Fine sand at Quarry	cum	67.66
M-007	Moorum at Quarry	cum	77.21
M-008	Gravel/Quarry spall at Quarry	Cum	206.33
M-009	Granular Material or hard murrum for GSB works at Quarry	Cum	82.52
M-010	Granular Material or hard murrum for GSB works at Quarry	Cum	82.52
M-011	Fly ash conforming to IS: 3812 (Part II & I) at source	Cum	0.00
M-012	Filter media/Filter Material as per Table 300-3 (MoRT&H Specification) at Quarry	Cum	363.19

	Description of Material	Unit	Rate (₹) at Plant (HMP /	
M-013	Close graded Granular sub-base Material 53 mm to 9.5 mm at Quarry	cum	472.08	472.08
M-014	Close graded Granular sub-base Material 37.5 mm to 9.5 mm at Quarry	cum	448.09	448.09

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
M-015	Close graded Granular sub-base Material 26.5 mm to 9.5 mm at Quarry			cum	509.43	509.43
M-016	Close graded Granular sub-base Material 9.5 mm to 4.75 mm at Quarry			cum	487.25	487.25
M-017	Close graded Granular sub-base Material 9.5 mm to 2.36 mm at Quarry			cum	365.72	365.72
M-018	Close graded Granular sub-base Material 4.75mm to 2.36 mm at Quarry			cum	154.77	154.77
M-019	Close graded Granular sub-base Material 4.75mm to 75 micron mm at Quarry			cum	140.08	140.08
M-020	Close graded Granular sub-base Material 2.36 mm at Quarry			cum	140.08	140.08
M-021	Stone crusher dust finer than 3mm with not more than 10% passing 0.075 sieve at Quarry			cum	89.38	89.38
M-022	Coarse graded Granular sub-base Material 2.36 mm & below at Quarry			cum	86.98	86.98
M-023	Coarse graded Granular sub-base Material 4.75mm to 75 micron mm at Quarry			cum	86.98	86.98
M-024	Coarse graded Granular sub-base Material 4.75 mm to 2.36 mm at Quarry			cum	101.67	101.67
M-025	Coarse graded Granular sub-base Material 9.5 mm to 4.75 mm at Quarry			cum	434.15	434.15
M-026	Coarse graded Granular sub-base Material 26.5 mm to 4.75 mm at Quarry			cum	404.62	404.62
M-027	Coarse graded Granular sub-base Material 26.5 mm to 9.5 mm at Quarry			cum	456.33	456.33
M-028	Coarse graded Granular sub-base Material 37.5 mm to 9.5 mm at Quarry			cum	394.98	394.98
M-029	Coarse graded Granular sub-base Material 53 mm to 26 .5 mm at Quarry			cum	362.57	362.57
M-030	Aggregates below 5.6 mm at Quarry			cum	101.67	101.67
M-031	Aggregates 22.4 mm to 2.36 mm at Quarry			cum	433.34	433.34
M-032	Aggregates 22.4 mm to 5.6 mm at Quarry			cum	433.34	433.34
M-033	Aggregates 45 mm to 2.8 mm at Quarry			cum	375.44	375.44
M-034	Aggregates 45 mm to 22.4 mm at Quarry			cum	383.71	383.71
M-035	Aggregates 53 mm to 2.8 mm at Quarry			cum	375.44	375.44
M-036	Aggregates 53 mm to 22.4 mm at Quarry			cum	362.57	362.57
M-037	Aggregates 63 mm to 2.8 mm at Quarry			cum	331.78	331.78
M-038	Aggregates 63 mm to 45 mm at Quarry			cum	331.67	331.67
M-039	Aggregates 90 mm to 45 mm at Quarry			cum	299.84	299.84
M-040	Aggregates 10 mm to 5 mm at Quarry			cum	434.15	434.15
M-041	Aggregates 11.2 mm to 0.09 mm at Quarry			cum	248.50	248.50
M-042	Aggregates 13.2 mm to 0.09 mm at Quarry			cum	374.53	374.53
M-043	Aggregates 13.2 mm to 5.6 mm at Quarry			cum	520.42	520.42
M-044	Aggregates 13.2 mm to 10 mm at Quarry			cum	549.26	549.26
M-045	Aggregates 20 mm to 10 mm at Quarry			cum	549.26	549.26
M-046	Aggregates 25 mm to 10 mm at Quarry			cum	518.82	518.82
M-047	Aggregates 19 mm to 6 mm at Quarry			cum	433.34	433.34
M-048	Aggregates 37.5 mm to 19 mm at Quarry			cum	383.71	383.71
M-049	Aggregates 37.5 mm to 25 mm at Quarry			cum	383.71	383.71
M-050	Aggregates 6 mm nominal size at Quarry			cum	312.49	312.49
M-051	Aggregates 10 mm nominal size at Quarry			cum	520.42	520.42
M-052	Aggregates 13.2/12.5 mm nominal size at Quarry			cum	549.26	549.26
M-053	Aggregates 20 mm nominal size at Quarry			cum	456.33	456.33
M-054	Aggregates 25 mm nominal size at Quarry			cum	430.48	430.48
M-055	Aggregates 40 mm nominal size at Quarry			cum	345.22	345.22

Sr. No.	Description of Material	Unit	Rate (₹)
M-056	AC pipe 100 mm dia	metre	39.91
M-057	Acrylic polymer bonding coat	litre	input
M-058	Alluminium Paint	litre	108.61
M-059	Aluminium alloy plate 2mm Thick	sqm	8315.84

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
M-060	Aluminium alloy/galvanised steel				tonne	33263.33
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	7886.03
M-062	Road Stud with Micro Prismatic lens reflectors(with shank)				each	158.56
M-063	Barbed wire				kg	52.81
M-064	Bearing (Cost of parts)				nos	input
M-065	Bearing (Cast steel rocker bearing assembly of 250 tonne)				nos	74589.42
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	0.57
M-067	Bearing (Forged steel roller bearing of 250 tonne				nos	44082.73
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				nos	132.47
	(a) Fixed POT-PTFE Bearing				MT	132.47
	(b) Free POT-PTFE Bearing				MT	141.93
	(c) Guide Slide (L) POT-PTFE Bearing				MT	151.39
	(d) Guide Slide (T) POT-PTFE Bearing				MT	146.66
M-069	Bearing (PTFE sliding plate bearing assembly of 80 tonnes)				nos	input
M-070	Bearing (Supply of sliding plate bearing of 80 tonne)				nos	29685.34
M-071	Bentonite				kg	3.40
M-072	Binding wire				kg	53.72
M-073	Bitumen (Cationic Emulsion) Ex- Patna(R.S1) Packed				tonne	35980.00
M-074	Bitumen (60-70 grade) Ex- Barauni Packed				tonne	32160.00
M-075	Bitumen (80-100 grade) Ex- Barauni Packed				tonne	31360.00
M-076	Bitumen (Cutback) Ex- Barauni Packed(60/70)				tonne	32160.00
M-077	Bitumen (Emulsion) Ex- Patna (M.S) Packed				tonne	37883.00
M-078	Bitumen (modified graded) Ex - Barauni (CRMB - 55) Packed				tonne	34300.00
M-079	Brick - Patna Urban				each	6.247
M-080	C.I. Shoes for the pile				kg	41.50
M-081	Cement (OPC at Patna)				tonne	4922.00
M-082	TMT bars (HYSD Bars) (Average rate of Fe 500)				tonne	43682.50
M-083	Coller for joints 300 mm dia				nos	input
M-084	Compressible Fibre Board (20mm thick)				sqm	939.47
M-085	Connectors /Staples				each	input
M-086	Copper Plate (12m long x 250mm wide)				kg	684.89
M-087	Corrosion resistant Structural steel				tonne	39280.03
M-088	Corrugated sheet, 3 mm thick, "Thrie" beam section railing				kg	43.29
M-089	Credit for excavated rock found suitable for use				cum	108.40
M-090	Curing compound				litre	115.31
M-091	Delineators from ISI certified firm as per the standard drawing given in IRC - 79				each	744.17
M-092	Earth Cost or compensation for earth taken from private land				cum	1.71
M-093	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	24868.88
M-094	Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each				100 nos	562.73
M-095	Epoxy compound with accessories for preparing epoxy mortar				kg	500.07
M-096	Epoxy mortar				kg	691.89
M-097	Epoxy primer				kg	11.43
M-098	Epoxy resin-hardner mix for prime coat				kg	607.22
M-099	Flag of red color cloth 600 x 600 mm				each	48.65
M-100	Flowering Plants				each	32.44
M-101	Galvanised MS flat clamp				nos	13.85

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
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	90.20
M-103	Galvanised structural steel plate 200 mm wide, 6 mm thick, 24 m long				kg	39.25
M-104	Gelatin 80%				kg	799.42
M-105	Geo grids				sqm	input
M-106	Geomembrane				sqm	input
M-107	Geonets				sqm	98.62
M-108	Geotextile				sqm	77.10
M-109	Geotextile filter fabric				sqm	77.10
M-110	GI bolt 10 mm Dia				nos	14.36
M-111	Grouting pump with agitator				hour	138.24
M-112	Grass (Doob)				kg	4.20
M-113	Grass (Fine)				kg	4.20
M-114	HDPE pipes 75mm dia				metre	190.27
M-115	HDPE pipes 90mm dia				metre	190.27
M-116	Hedge plants				nos	32.44
M-117	Helical pipes 600mm diameter				metre	input
M-118	Hot applied thermoplastic compound (Sp. Gravity - 2.10)				litre	186.78
M-119	HTS strand				tonne	64458.30
M-120	Joint Sealant Compound				kg	23.06
M-121	Jute netting, open weave, 2.5 cm square opening for seeding and Mulching				sqm	34.84
M-122	LDO for steam curing				litre	input
M-123	M.S. Clamps				nos	31.03
M-124	M.S. Clamps				kg	56.17
M-125	M.S.shoes @ 35 Kg per pile of 15 m				kg	21.48
M-126	Mild Steel bars				tonne	43939.00
M-127	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	27406.49
M-128	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	input
M-129	Nipples 12mm				nos	input
M-130	Nuts and bolts				kg	55.53
M-131	Paint				litre	214.82
M-132	Pavement Marking Paint				litre	214.82
M-133	Paving Fabric				sqm	input
M-134	Perforated geosynthetic pipe 150 mm dia				metre	24.84
M-135	Perforated pipe of cement concrete, internal dia 100 mm				metre	103.87
M-136	Pesticide				kg	73.26
M-137	Pipes 200 mm dia, 2.5 m long for drainage				metre	163.25
M-138	Plastic sheath, 1.25 mm thick for dowel bars				sqm	14.25
M-139	Plastic tubes 50 cm dia, 1.2 m high				nos	input
M-140	Polymer braids				metre	input
M-141	Pre moulded Joint filler, 25 mm thick for expansion joint.				sqm	900.90
M-142	Pre-coated stone chips of 13.2 mm nominal size				cum	495.97
M-143	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-144	Pre-moulded asphalt filler board				sqm	900.90
M-145	Pre-packed cement based polymer concrete of strength 45 Mpa at 28 days				kg	input
M-146	Primer				kg	11.84

INPUT

Sr. No.	Description of Machine	Activity	Output of Machine	Output	Unit	Rate (₹)
M-147	Quick setting compound				kg	input
M-148	Random Rubble Stone				cum	191.14
M-149	RCC Pipe NP 4 heavy duty non presure pipe 1000 mm dia				metre	2675.47
M-150	RCC Pipe NP 4 heavy duty non presure pipe 1200 mm dia				metre	3803.69
M-151	RCC Pipe NP 4 heavy duty non presure pipe 300 mm dia				metre	489.97
M-152	Reflectorising glass beads				kg	60.95
M-153	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Copper Strips)				metre	input
M-154	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Galvanised carbon steel strips)				metre	input
M-155	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Glass reinforced polymer/fibre reinforced polymer/polymeric strips)				metre	input
M-156	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Stainless steel strips)				metre	input
M-157	Reinforcement strips 60 mm wide 5 mm thick as per clause 3102. (Aluminium strips)				metre	input
M-158	Rivets				each	7.30
M-159	Sand bags (Cost of sand and Empty cement bag)				nos	5.52
M-160	Sapling 2 m high 25 mm dia				each	21.63
M-161	Scrap tyres of size 900 x 20				nos	72.07
M-162	Seeds				kg	32.44
M-163	Selected earth (Excluding royalty @ ₹22.0 per cum & compensation @ ₹1.65 per cum)				cum	1.71
M-164	Separation Membrane of impermeable plastic sheeting 125 micron thick				sqm	14.35
M-165	Sheathing duct				metre	79.29
M-166	Shrubs				each	16.21
M-167	Sludge / Farm yard manure @ 0.18 cum per 100 sqm at site of work for turfing				cum	729.73
M-168	Sodium vapour lamp				each	input
M-169	Square Rubble Coursed Stone				cum	191.13
M-170	Steel circular hollow pole of standard specification for street lighting to mount light at 5 m height above deck level				each	input
M-171	Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level				each	input
M-172	Steel drum 300 mm dia 1.2 m high/empty bitumen drum				nos	114.15
M-173	Steel helmet and cushion block on top of pile head during driving.				kg	36.58
M-174	Steel pipe 25 mm external dia as per IS:1239				metre	115.21
M-175	Steel pipe 50 mm external dia as per IS:1239				metre	206.18
M-176	Steel wire rope 20 mm				kg	39.89
M-177	Steel wire rope 40 mm				kg	39.89
M-178	Strip seal expansion joint				metre	7715.33
M-179	Structural Steel (Average rate of $M_6 + M_8 + M_9$)				tonne	40170.00
M-180	Super plastisizer admixture IS marked as per 9103-1999				kg	152.14
M-181	Synthetic Geogrids as per clause 3102.8 and approved design and specifications				sqm	input
M-182	Through and bond stone				nos	10.61
M-183	Tie rods 20mm diameter				nos	input
M-184	Tiles size 300 x 300 mm and 25 mm thick				each	41.79
M-185	Timber				cum	42694.18
M-186	Traffic cones with 150 mm reflective sleeve				nos	input
M-187	Tube anchorage set complete with bearing plate, permanent wedges etc.				nos	43.24
M-188	Unslaked lime				tonne	3389.30
M-189	Water				KL	243.23
M-190	Water based cement paint				litre	109.33
M-191	Welded steel wire fabric				kg	37.47
M-192	Wire mesh 50mm x 50mm size of 3mm wire				kg	36.98
M-193	Wooden ballies 2" Dia for bracing				each	21.21
M-194	Wooden ballies 8" Dia and 9 m long (9 m @ ₹67.94/m)				each	513.12
M-195	Wooden packing				cum	input

INPUT

Sr. No.	Description of Machine	Activity		Output of Machine	Output	Unit	Rate (₹)
M-196	Wooden staff for fastening of flag 25 mm dia, 1.0 m long					each	26.52
M-197	Bitumen (30/40 grade) Ex-Patna Packed					tonne	33187.50
M-198	Fly Ash Brick conforming to IS: 3812 (Part I & II) (Excluding the carrige cost* of Fly Ash from point of production to Kiln site without OH &CP) **(*Carrige cost of Fly Ash is same as sand) (cost of 1000 nos. is** ₹5156**)**					each	5.156
M-199	Paver Block (Excluding GST)						
	(i) M -35 Grade and 60 mm thickness	(a) White				sqm	433.26
		(b) Red				sqm	440.98
		(c) Yellow				sqm	454.82
	(ii) M-40 Grade and 80 mm thickness	(a) White				sqm	497.19
		(b) Red				sqm	510.20
		(c) Yellow				sqm	526.65
M-200	Kerb-Stone Block- M30 Grade (Size:375mm x 300mm x150mm)					each	73.25
M-201	Autoclaved Aerated Concrete (AAC) Block					cum	2101.20
	Overheads for Road Works	0.10					
	Contractor's profit for Road Works	0.10					
	Overheads for Bridge Works	0.25		for input of Overheads or Contractor's profit please type in column C as like below			
	Overheads for Bridge Works (Rehabilitation)	0.30		Type symbol of apostrope(') then input value then one space then symble of percentage (%) for example ' 08 %			
	Contractor's profit for Bridge Works	0.10					
	Lead from Mixing Plant to working site	1.0	km				
	Lead for E/W borrow area to site	1.0	km				

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

INPUT

Item No.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate (₹)
Item 8.3	Printing new letter and figures of any shade (ii) English Roman	per cm height per letter	0.48
Item 8.8	Painting Two Coats on New Concrete Surfaces	sqm	66.70
Item 8.9	Painting angle iron post two coats	sqm	58.20
Item 12.6 (B)	Cement mortor 1:2 (Excluding OH & CP)	cum	3644.00
Item 12.6 (A)	Cement mortor 1:3 (Excluding OH & CP)	cum	2859.00
Item 12.6 (D)	Cement mortor 1:6 (Excluding OH & CP)	cum	1798.00
Item 12.7 (A)	Course Rubble masonary in cement mortor 1:3 (including OH & CP)	cum	2909.90
Item 12.7 (Addl.B)	Random Rubble masonary in cement mortor 1:6 (including OH & CP)	cum	2358.00
Item 12.8 (A)	PCC Grade M15 including OH & CP for Open Foundation by Mixer	cum	3683.00
Item 12.8 (A)	PCC Grade M15 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	2576.00
Item 12.8 (B) PCC	PCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	2749.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	2816.00
Item 12.8 (C) RCC	RCC Grade M20 including OH & CP for Open Foundation by Batching Plant	cum	3930.00
Item 12.8 (C)	RCC Grade M20 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	2748.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3021.00
Item 12.8 (D)	PCC Grade M25 including OH & CP for Open Foundation by Batching Plant	cum	4215.00
Item 12.8 (D)	PCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	2954.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3092.00
Item 12.8 (E)	RCC Grade M25 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3269.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3050.00
Item 12.8 (F)	PCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	2981.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3108.00
Item 12.8 (G)	RCC Grade M30 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3041.00
Item 12.8 (H) Case I	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3184.00
Item 12.8 (H) Case II	RCC Grade M35 including OH & CP for Open Foundation by Batching Plant	cum	4777.00
Item 12.8 (H)	RCC Grade M35 excluding OH & CP for Open Foundation by Batching Plant	cum	3474.00
Item 12.8 (H)	RCC Grade M35 for Open Foundation Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3373.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3270.00
Item 12.11 (C) i	PCC Grade M20 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3049.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3445.00
Item 12.11 (C) ii	PCC Grade M25 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3222.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3474.00
Item 12.11 (C) iii	PCC Grade M30 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3253.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Mixer	cum	3543.00
Item 12.11 (C) iv	PCC Grade M35 including OH & CP for Well Foundation (Bottom Plug) by Batching Plant	cum	4759.00
Item 12.11 (C) iv	PCC Grade M35 for Open Foundation (Bottom Plug) Per Cum Basic Cost of Labour, Material & Mechinery by Batching Plant	cum	3321.00
Item 12.11 (F) iv	RCC Grade M35 including OH & CP for Well Foundation (Well Cap) by Batching Plant	cum	4413.00
Item No. 3.13 A	Excavation for Structures (Manual Means)	cum	249.00
Item No. 3.13 B	Excavation for Structures (Mechenical Means)	cum	53.30
Item 14.1(A)	RCC Grade M20 for super-structure including OH & CP by Batching Plant	cum	4484.00
Item 14.1(B)	RCC Grade M25 for super-structure including OH & CP by Batching Plant	cum	4960.00
Item 14.1(E)	PSC Grade M-40 for super-structure including OH & CP by Batching Plant	cum	5998.00
Item 14.1(C) case II	RCC Grade M30 for super-structure including formwork and excluding OH & CP by Batching Plant	cum	3652.00
Item 14.1(C) case II	RCC Grade M30 for super-structure excluding formwork and excluding OH & CP by Batching Plant	cum	3043.00

INPUT

Item No.	Summary of Rates calculated and used for analysis of rates of other items	Unit	Rate (₹)
Item 14.2 A	Supplying ,fitting and placing HYSD bar reinforcement in super-structure exncluding OH & CP	tonne	49377.00
Item 13.6	Supplying, fitting and placing HYSD including OH & CP for sub-structure	tonne	66747.00
Item 5.17	Fog Spray	sqm	36.20
Item 5.21 Case-I	Crack Prevention courses. Case-I Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm	46.20
Item 5.21 Case-II	Crack Prevention courses. Case-II Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm	57.00
Item 5.21 Case-III	Crack Prevention courses. Case-III Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %	sqm	75.00
Item 5.21 Case-IV	Crack Prevention courses. Case-IV Bitumen Impregnated Geotextile	sqm	147.00
Item 5.15 Case-I	Slurry Seal Case I, 5 mm thickness	sqm	60.50
Item 5.15 Case-II	Slurry Seal Case II, 3 mm thickness	sqm	42.30
Item 5.15 Case-III	Slurry Seal Case III, 1.5 mm thickness	sqm	26.40
Item 5.9 Case-I	Surface Dressing Case I, 19 mm nominal chipping size	sqm	63.20
Item 5.9 Case-II	Surface Dressing Case II, 13 mm nominal chipping size	sqm	54.80

RAILWAY ROUTE CHART & FREIGHT

Government of India (Bharat Sarkar)
Ministry of Railways (Rail Mantralaya)
(Railway Board)

No. 2009/TT-III/S/27/1 New Delhi, dt. 6-10-2009

The General Managers (Operating)/(Commercial),

All Indian Railways including Production Units

GENERAL ORDER NO. 1/2009
(RATIONALISATION SCHEME)
(EFFECTIVE FROM 15.10.2009)

Whereas in the opinion of the Railway Board it is necessary to do so in the public interest:

Now, therefore, in exercise of the powers conferred by 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 23rd 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 as specified in this order:

S.No.	From	To	Via
1		**Eastern Railway**	
1.1	Coal Traffic from PANEM served by Pakur	Destinations on N.R. and N.C.R.	via Pakur-Sainthia-Andal-Pradhankhunta-Mughalsarai
2		**East Coast Railway**	
2.1	All goods traffic	Stations reached via Cuttuck except stations on Nergundi-Cuttuck-Paradeep section	via Barang-Kapilas Road-bye pass avoiding Cuttuck
2.2	All Goods traffic loaded on ECOR, SCR and SR (except for traffic originating/terminating on the section Jakhapura - Jarauli - DPS)	To destinations for which shortest route is Jakhapura-Nayagarh-Jarauli-Baspani	via Bhadrak
3		**Northern Railway**	
3.1	All Goods Traffic	Destinations reached via Delhi Area or originating / terminating in Delhi Area	via Goods Avoiding Line/Delhi Avoiding Line/Tughalakabad which ever is applicable
	Note: (1) Traffic for Subzi Mandi will also be routed by the direct route.		
3.2	All Goods Traffic from and via Varanasi	Lucknow and beyond	via Janghai - Pratapgarh - Rai Bareily
3.3	Foodgrains traffic originating on Northern Railway and Jodhpur and Bikaner Divisions of North Western Railway	Station on Nagpur – Rourkela (excl.) section including Raipur – Vizianagaram and Jharsuguda – Titlagarh sections for which the shorter route is via Anuppur – Bilaspur	Via Itarsi – Amla – Nagpur / Ajni Bye Pass.

Contd.../3/

4		**North Eastern Railway**	
4.1	All goods traffic from stations of ER, ECR,SER and ECOR and vice versa	To stations on CR,WCR, NR, NCR, NWR and WR and vice versa for which the present shortest route is via MGS-BSB-MBS-ALY	via Mughalsarai - Mirzapur-Allahabad
5		**South Eastern Railway**	
5.1	Iron Ore traffic from Barsuan – Bondamunda section of S.E.Railway	To stations for which shortest route is via Jaruli –Jakhpura and to stations on Kharagpur-Bhadrak-Jhakhpura –Vizianagaram (inclusive) section , Jhakhpura – Paradeep Port and Jhakhpura - Budhapank	Via Tatanagar – Kharagpur- Bhadrak subject to observing Para 2.1 above.
5.2	Iron ore traffic originating at Bolanikhadan, Barbil, Barajamda, Gua , Noamundi and Dongoaposi stations and their associate sidings on South Eastern Railway	Stations on Jaruli-Jakhpura-Cuttack-Paradeep section for which the shortest route is via Banspani-Jaruli-Jakhapura	Via Tatanagar-Kharagpur-Bhadrak
5.3	Iron ore traffic originating at Bolanikhadan, Barbil, Barajamda, Gua and Noamundi stations and their associate sidings on South Eastern Railway	Stations on Kapilas Road – Barang Bye pass and stations on Barang – Visakhapatnam section and via Duvada for which the shortest route is via Banspani-Jaruli-Jakhapura	Via Tatanagar - Kharagpur - Bhadrak subject to observing Para 2.1 above.
6		**South East Central Railway**	
6.1	Coal from Korea-Rewa Coal field of Bilaspur Division of SECR	Stations on Central and via	Via Katni Marwara (KMZ)

6.10.09

Contd... 4/-

6.2	Coal from Korea-Rewa Coal field of Bilaspur Division of SECR	Stations on Southern and South Central Railway and Stations of Bombay Division of Western Railway	Via Katni Marwara (KMZ)-Bina-Khandwa-Bhusaval
6.3	All goods traffic originating on main line of Bilaspur Division {Jharsuguda (exclusive) - Durg (Inclusive) and Uslapur (exclusive)} including all branch lines connected on this section.	Stations on Vadodara & Rajkot Divisions of Western Railway	Via Nagpur - Bhusawal - Jalgaon - Surat.
6.4	All Goods Traffic originating from Bhilai Steel Plant and Durg	Stations on Southern Railway	via Nagpur- Balharshah instead of via R.V. line.

7. The provisions of the Rationalisation Scheme shall not apply to Over Dimensional Consignments, POL traffic and edible salt i.e. salt for human consumption.

8. The rate to be charged will be those chargeable by the route specified above.

9. 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.

10. This order is issued in suppression of General Order No. 1/2008 issued under Board's letter No. 2008/TT-III/27/1 dated 11.06.2008 and will come into force with effect from 15.10.2009 and unless cancelled earlier will remain in force up to 31.10.2010.

Please acknowledge receipt.

6-10-09

(Sarat Kumar)
Joint Director Traffic Transp.
Railway Board

DA: 25 spares

Contd..../5/..

No. 2009/TT-III(S)/27/1 New Delhi, dt: 6-10-09

Copy forwarded for information and necessary action to:

1. The Joint Director (Rail Movement), Eastern Railway House, Fairlie Place, 17, N.S. Road, Kolkata.
2. The FA&CAOs ,All Indian Railways.
3. ADAI (Railways) with 10 copies spare, 2nd floor, Rail Bhawan, New Delhi.
4. The Principal, Railway Staff College, Vadodara.
5. Managing Director, Centre for Railway Information System (CRIS), Chanakya Puri, New Delhi.
6. The CAO, FOIS C/o CRIS, Chanakyapuri, New Delhi.
7. The Managing Director, Container Corporation of India Ltd. (CONCOR), CONCOR Bhavan, C-3 Mathura Road, Opposite Apollo Hospital, New Delhi 110076
8. Managing Director, Konkan Railway Corporation Limited, Belapur Bhavan, Plot No.6, Sector 11, CBD, Belapur, Navi Mumbai 400614.
9. The Cabinet Secretariat, Rashtrapati Bhawan, New Delhi.
10. The Planning Commission, Yojna Bhawan, New Delhi.
11. All Ministries of Government of India.
12. The Chief Secretaries, All State Governments.
13. The Salt Commissioner, 2-A Lawan Bhawan, Lawan Marg, Jhalana Dhungari, Post Box No. 139, Jaipur – 302 004.
14. The Dy. Director General, Railway Movement, Army Headquarters, QMG's Branch, DHQ P.O. Sena Bhawan, New Delhi.
15. The Director, Indian Bureau of Mines, Nagpur.
16. The Traffic Manager, Kolkata Port Trust Railway, Kolkata.
17. The Manager, Madras Port Trust Railway, Chennai
18. The Manager, Bombay Port Trust Railway, Mumbai
19. The Chief Traffic Manager, FCI, 16-20 Barakhamba Lane, New Delhi.
20. The Dy.Traffic Manager (Movement) Rates, FCI, 16-20 Barakhamba Lane, New Delhi.
21. The Coal Controller, 1 Council House Street, Kolkata.
22. The State Trading Corporation of India, Chandralok, 30th Janpath, New Delhi.
23. The Chairman, Paradeep Port Trust, Paradip Port, Orissa 754142
24. The Chairman, Tuticorin Port Trust, Tuticorin, 628004.
25. The Chairman, Cochin Port Trust, Willington Island, cochin 682009.
26. The Chairman, Chennai Port Trust, Chennai 600001.
27. The Chairman, Kandala Port Trust, P.O.Box. No.50, Administrative Building, Gandhidham, Kutch, 370201.

6.10.09

(Sanat Kumar)
Joint Director Traffic Trans.
Railway Board

EDTT(M), EDTT(S), EDTT(F), EDFM, EDPM, EDFC, ED(C&IS), EDV (T), EDP, ED(T&C), ED (LRDSS), E.D.A. DTT(G), DTT(COORD), DF(C), DTC (G), DPM, Dir(T&C), DFM, DFA, DF(CCA), DTC (R), Dir(FM), JDTT(POL) CHG/CONTROL,DDTC(CR), DTT(F), DDTT(V), DDTT-III(M), DDTT-III(NB),DDTT-I, DDTC(R),TT-I, TT-II, TT-IV, TT-V, FC, TC (CR), TC-I, TC-II, TC-III, TC-IV, TC (FM), Branches of Railway Board.

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

No.TCR/1078/2015/07 New Delhi, dated: 18.11.2016

General Managers
All Indian Railways

Sub: Adjustment in Base Freight Rates- Classification of Commodities

Ref: Board's letter No. TCR/1078/2015/07 dated 16.03.2015 and 20.03.2015 (Rates Circular No. 8 of 2015 and Corrigendum thereto).

1.0 Please refer Board's letter under reference notifying adjustment in Base Freight Rates with effect from 01.04.2015.

2.1 Sanction of the competent authority is hereby accorded to revise the classification of **"Ochre"** appearing under the Main Commodity Head- Clay and Sand from Class-150 to Class-120.

2.2 Accordingly the entries "**Ochre in lumps; Ochre in powder and Ochre, NOC**" may be deleted from Group 7 (a) and be placed in Group No. 7 (b) under the Main Commodity Head- Clay and Sand at Page No. 11 in the Goods Tariff No. 48 Part I (Vol. II).

3.0 All other details of the Rates Circular under reference will continue to apply unchanged.

4.0 These instructions shall come into effect from 24.11.2016 and shall remain in force till further advice.

5.0 This issues with the concurrence of Finance Directorate of Ministry of Railways.

latakumari

(Lata Kumari)
Director, Traffic Commercial (Rates)
(Railway Board)

No.TCR/1078/2015/07 New Delhi, dated: 18.11.2016

FA & CAO, All Indian Railways.
Dy. C&AG(Rlys), Room No.222, Rail Bhavan, New Delhi.

18/11/16.

***for* Financial Commissioner(Railways)**

...2/-

No.TCR/1078/2015/07 New Delhi, dated: | 8.11.2016

Copy for information and necessary action to:

1. CCM, All Indian Railways
2. COMs, All Indian Railways
3. Managing Director, CRIS, Chanakya Puri, New Delhi-23
4. The Chief Administrative Officer, FOIS, Northern Railway, Camp: CRIS, Chanakya Puri, New Delhi-23.
5. Managing Director, Konkan Railway Corporation, Belapur Bhavan, Sector-11, CBD Belapur, New Mumbai-400614.
6. Director General, National Academy of Indian Railways, Vadodara.
7. Director, Indian Railways Institute of Transport Management, Campus: Hardoi Bye Pass Road, Village & Post office: Kanausi, Manaknagar, Lucknow.
8. Secretary, Railway Rates Tribunal, 5, P.V.Cherian Road, Crecent Road, Egmore, Chennai- 600105
9. Commissioner of Railway Safety (CRS), Lucknow.

latakumari

(Lata Kumari)
Director, Traffic Commercial (Rates)
(Railway Board)

Copy to:-
OSD to MT
PSO to FC
PPS to: AM(C), AM(T), AM (Vig),
Adv(F), AdvTT(M),
ED(FM),EDTC(R), EDF(C), EDTT(F), EDTT(S), EDME(Frt.),
DF(C), DME(Frt.), D(FM), DDF(C),
TC(CR),TC-I, TC(FM), TT-IV, F(C), Stat-II, Stat(CA), Stat-V, Stat(Econ),
Economic Cell and Budget Branches of Railway Board.

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

No. TCR/1078/2015/07 New Delhi, dated 16.03.2015

The General Managers,
All Indian Railways.

Sub: *Adjustments in Base Freight rates effective from 01.04.2015.*

1. Sanction of the Central Government is hereby accorded for the following adjustments in Base Freight rates **with effect from 01.04.2015.**

1.1 The freight structure for the Base Class-100 has been increased by 10%.

1.2 The classification of following commodities has been reduced as under:-

S.No.	Commodity	Existing Class	**Revised Class**
1	Salt for Human consumption	110	**100**
2	Cement	150	**140**
3	Coal and Coke	150	**145**
4	Limestone, Dolomite & Manganese ore	160	**145**
5	Metal Scrap and Pig Iron	160	**150**
6	Slag	150	**140**
7	Iron or Steel	180	**165**
8	Iron ores	180	**165**
9	Petroleum Products	200	**180**
10	Bitumen, Coal Tar and Coal Tar Pitch	170	**160**
11	Kerosene Oil, Liquefied Petroleum Gas (LPG)	180	**165**

2. Rationalisation of Distance Slabs

2.1 The distance slabs beyond 1500 kms have been revised from 250 km to125 km between1501-3500 kms.

2.2 A copy of the combined revised Goods Tariff No.48 Part I (Vol.II) and Goods Tariff No.48, Part-II (Freight Rates Tables) is enclosed herewith.

3. Zonal Railways should ensure that requisite number of copies of the revised Goods Tariff No.48 Part.I (Vol.II) and Goods Tariff No.48 Part.II (Freight Rates Tables) are collected from the General Secretary, IRCA and distributed in time.

...2/-

Rates Circular No 8 of 2015

4. 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.

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

(Aashima Mehrotra)
Director, Traffic Comml (Rates)
Railway Board.

No. TCR/1078/2015/07 New Delhi, dated 16.03.2015

Copy for information:-

FA & CAOs, All Indian Railways
Dy.C&AG (Rlys.), Room No.222, Rail Bhavan, New Delhi.

***for* Financial Commissioner(Railways)**

No. TCR/1078/2015/07 New Delhi, dated 16.03.2015

Copy for information and necessary action to:

1. Chief Commercial Managers, All Indian Railways.
2. Executive Director, CRIS Chanakya Puri, New Delhi-21.
3. The Chief Administrative Officer, FOIS, Northern Railway, CRIS, Chanakya Puri, New Delhi-21, to ensure that all relevant provision are duly incorporated in TMS.
4. Managing Director, Konkan Railway Corporation, Belapur Bhavan, Sector-11, CBD Belapur, New Mumbai-400614.
5. Director General, National Academy for IR, Vadodara.
6. GS/IRCA, New Delhi.
7. Director, IRITM, Campus: Hardoi Bye Pass Road, Village & Post office, Kanausi, Manaknagar, Lucknow.
8. Managing Director, Pipavav Railway Corporation Ltd., Jeevan Tara Building, 1st Floor, Gate No.4, Sansad Marg, New Delhi - 110001.

(Aashima Mehrotra)
Director, Traffic Comml (Rates)
Railway Board.

Copy to:-

CRB, FC, MT,
AM.(C),AM (Vig), AM (T&C), AM (C&IS), AM(T), Adv.(F), EDPG, EDPM, ED(T&C), EDTT(F), EDTT(M), EDVT, EDF(C), D(FM),
TC(CR),TC-I, TC-II, TC-III, TC-IV, TT-I, TT-II,TC(FM), STAT-II, STAT(CA),
STAT-V, STAT(Econ), F(C), Economic Cell and Budget Branches of Railway Board.

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 Heads and three divisions of low rated commodities.

2.0 The classification of different commodities under the Main Commodity Head 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).

2.1 Certain articles have been arranged into divisions distinguished by letters of the alphabet, and certain other into group indexed to a main-head to which they belong under the words *"Includes"* or *"As under"*. They are also entered in their position in alphabetical order in the classification. The items indexed to a main-head under the word *"Includes"* do not necessarily exhaust the definition of the main head but items indexed to a main-head under the words *"As under"* must be considered as exhaustive.

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:-

Type of wagon	Applicable Class
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:-

	Trainload Class	**Wagonload Class**
(a)	Up to Class LR_1	Class 120
(b)	Above Class LR_1 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 Exceptions in the classification or weight for charge etc. have been indicated in a "subhead" given in the Goods Tariff below the particular Main Commodity Head.

7.0 In case of any disparity in classification between English and Hindi version, the classification given in English version shall prevail.

8.0 Dangerous/hazardous commodities are indicated with alphabet "d" in the column 'Type of commodity'. These commodities are to be charged at the class indicated for the Main Commodity Head. 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".

8.1 All conditions for carriage of dangerous/hazardous commodities, as laid down in the Red Tariff, must be followed.

9.0 The chargeable weight for all commodities shall be Permissible Carrying Capacity (PCC) of the wagon notified from time to time.

10.0 Minimum distance for charge shall be 125 kms for all commodities.

11.0 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.

12.0 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.

13.0 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.

14.0 Packing condition given against the main commodity head shall also apply to all commodities mentioned under that main commodity head unless other packing condition is specifically mentioned against the respective commodity.

14.1 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.

14.2 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

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GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GENERAL TARIFF LINES							
1	**Acids and Alcohols**	P5	PCC	p	RR		**200**
	As under:-						
	Absolute Alcohols					d	
	Acetic Acid					d	
	Benzoic Acid						
	Benzyl Alcohols						
	Boric Acid						
	Butyl alcohol						
	Citric Acid						
	Hydrochloric Acid					d	
	Nitric Acid					d	
	Phosphoric Acid					d	
	Spirit					d	
	Sulphuric Acid					d	
2	**Alloys and Metals**	P2(a)	PCC	p	RR		**180**
	As under:-						
	Alloy pipes						
	Alloy Steel						
	Alumina						
	Aluminimum Ingots & Billets						
	Aluminium Powder					d	
	Brass						
	Copper Anode & Cathode						
	Copper concentrates						
	Copper Ingot & Slab						
	Ferro Chrome						
	Ferro Manganese						
	Ferro Silicon					d	
	Kansa						
	Lead						
	Silico Chrome						
	Silicon						
	Silicon Manganese						
	Tin plate						
	Zinc						
3	**Bricks and Stones**	P2(a)	PCC	p	OR		**150**
	As under:-						
	Ballast						
	Ballast chips						
	Ceramic tiles						
	Chakkees						
	Flooring tiles						
	Flooring Stone						
	Glass Stone						
	Granite						
	Gravel						
	Kota Stone						
	Kunker						
	Marble chips						
	Marble dressed						
	Marble un-dressed						
	Mill Stone						
	Quartz (Chips, Gravels, Powder & Stone)						
	Roller Stone						

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Sanitory wares						
	Slate						
	Slate Stone						
	Stone Dust						
	Stone Grit						
	Stone Pillars						
	Stone Ware						
	Stone, Cut and/or Engraved						
3 (a)	Bricks broken						**130**
	Fire bricks						
4	**Caustic Potash and Soda**	P1 or P5	PCC	p	RR		**140**
	As under:-						
	Caustic potash liquor					d	
	Caustic potash solid						
	Caustic soda						
	Caustic soda liquor					d	
	Caustic soda lye					d	
	Chlorate of Soda					d	
	Soda ash						
	Soda Bicarbonate						
	Sulphur	P1					
	Washing soda						
5	**Cement**	P1	PCC	p	RR		**140**
	As under:-						
	Acid resisting Cement	P5					
	Asbestos	P1					
	Cement Blocks						
	Cement Clinker	P2(a)					
	Cement manufactured	P2(b), P4					
	Cement Pipes	P2(b)					
	Cement sheets						
	Cement Tiles	P4					
	Coloured Cement						
	Superfine Cement	P1					
	White Cement						
5 (a)	Fly ash	P2(a)		p			**120**
6	**Chemical Manures***	P1	PCC	p	RR		**130**
	As under:-						
	Ammonium Nitrophosphate						
	Ammonium Phosphate						
	Ammonium Sulphate Nitrate						
	Bentonite Sulphur Pastilles (Straight Sulphur Fertilizer)						
	Calcium Ammonium Nitrate						
	Calcium Nitrate					d	
	Calcium Sulphate						
	Complex Fertilizers						
	Cynamide						
	Di-Ammonium Phosphate						
	Ground Phosphate						
	Lime Nitrogen						
	Manure mixture						
	Mineral Phosphate						
	Muriate of Ammonia (Ammonia Chloride)						
	Muriate of Potash						
	Mycelium						

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	N.P.K.Fertilizer Nitrolim Nitrophoska Rock Phosphate (in Bag) Rock Phosphate (in Loose) Single Super Phosphate Sulphate of Ammonia Sulphate of Zinc Super Phosphate Triple Super Phosphate Urea Urea Ammonium Phosphate 20.20.0 Urvara Water Soluble fertilizer	P2(a)					
Note	***Apart from the commodities listed above as Chemical Manures, the Chemical Manures included in the Fertiliser Control Order issued by the Ministry of Agriculture and Rural Development (Department of Agriculture and Co-operation), would be treated as Chemical Manures and may be charged at Class notified for Chemical Manures"***						
7	**Clay and Sand** *Includes:-* Brick Earth Ground silica Luting sand Ochre Red Mud White Clay (Lumps/Powder)	P2(a)	PCC	p	RR		**150**
7 (a)	Bentonite powder China Clay Fire Clay						**120**
8	**Coal and Coke** *Includes:-* Calcined Petroleum coke Coal Dust Coal Shale Coke hard Coke soft Coking coal Coke Lignite Metallurgical coke Patent Fuel (as coal) Petroleum coke Raw Petroleum coke Middling Run of Mines Coal (ROM) Steam coal Washed Coal	P2(a)	PCC	p	OR		**145**

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
9	**Foodgrains, Flours and Pulses** *Includes:-* Atta Bajra Besan Chana Dal Gram Jowar Maida Maize Moong Dal Musoor Dal Paddy Rice Suji Toor Dal Urad Dal Wheat	P1 & S2	PCC	p	RR		**130**
10	**Fish Meal** Floating Fish Feed	P1	PCC	p	RR		**100**
11	***Hydrogenated and Other Edible Oils** *As under:-* All refined & non-refined edible oils Castor oil Groundnut Oil Mustard Oil Palm Oil Sunflower oil Vanaspati Ghee **Note** ***will be charged at Class-LR3, when booked in covered wagons and Class-100 when booked in 4 wheeled Tank Wagon.***	P5	PCC	p	RR		**140**
12	**Iron or Steel** *Includes:-* Angles Billets Blooms Cold Rolled Sheets / Coils Colliery Arch & Z-Piling Flat, iron or steel Girders Hot Rolled Sheets / Coils Ingots Iron Mill Scale Stainless steel Lattice/Transmission Tower Parts	P2(b)	PCC	p	RR		**165**
12(a)	Steel Pipes Wire rod coils						**130**

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
13	**Leather, Rubber and Plastic** *As under:-* Hides & Skins Leather cloth Leather goods Leather refuse Plastic Goods PVC Pipes Rubber crude Rubber Tyres & Tubes	P2(b)or P4 P3	PCC	p	OR		**100**
13 (a)	PVC Powder						**110**
14	**Minerals and Ores** *Includes:-* Alunite Barytes powder Bauxite Calcite Chrome ore Dunite Ilmenite ore Iron pyrites Laterite Lithium ores Pyroxinite Soap Stone Zinc ores	P2(a)	PCC	p	RR		**160**
14 (a)	Chemical Gypsum Gypsum Gypsum in lumps / powder						**150**
14 (b)	Hot Briquetted Iron Iron Ores Iron ores for Export *(distance based charge shall be levied in addition)* Sinter						**165**
14 (c)	Dolomite Dolomite powder/lumps Lime (including Hydrated Lime, Quick Lime, Burnt Lime & Lime Powder) Lime stone Lime stone powder / lumps Manganese ores						**145**
15	**Machinery and Machine tools** *As under:-* Boilers Cranes Engines Machinery parts Sewing machine	P4	PCC	p	OR		**100**

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
16	**Metal Scrap and Pig Iron** *As under:-* Brass scrap Copper scrap Iron scrap Sponge Iron	P2(a) & S1	PCC	p	RR		**150**
16 (a)	Ground Granulated Blast Furnace Slag Slag						**140**
17	**Oil Cakes and Seeds** *As under:-* Cotton Seed Cotton Seed oil cakes Cotton Seed waste De-oiled Cakes (Pellets/Powder) De-oiled rice bran Gingerly Seed Linseed Mustard Seed Rape Seed Soyabean Sunflower Sal Seed	P1	PCC	p	RR		**120**
18	**Petroleum Products and *Gases** *As under:-* Aviation spirit Aviation Turbine Fuel (ATF) Carbon Black Feed Stock (CBFS) Compressed gases Crude oil Diesel Oil Furnace oil Hexane High Speed Diesel (HSD) Light Diesel Oil Low sulphur heavy stock Methane gas Naphtha Paraffin oil Petrol (Motor Spirit) Alkylate Reformat Residual Fuel Oil (RFO)		PCC	p	RR	d	**180**
18 (a)	Bitumen Coal Tar Coal Tar Pitch (Solid) Coal Tar Pitch	P5 P1					**160**
18 (b)	Kerosene Oil Liquefied Petroleum Gas (LPG)					d	**165**
18 (c)*	*Ammonia liquified gas* *Argon gas* *Nitrogen gas*						**200**

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
19	**Salt** *As under:-* Earth Salt Iodised Salt Non-refined Salt Ordinary non-refined salt for human consumption (Iodised Salt / Salt meant for human consumption) Refined Salt Rock Salt Vacuum Salt	P1 & S3	PCC	p	OR		**100**
19 (a)	Salt for Industrial use	P1					**120**
20	**Soap** *As under:-* Liquid soap Synthetic soap	P1 or P2(a) or P4 or P5	PCC	p	RR		**120**
21	**Sugar** *As under:-* Sugar candy	P1	PCC	p	RR		**120**
22	**Miscellaneous**		PCC	p	RR		
	Betel Nuts	P1					**150**
	Chalk Calcium Carbonate	P1					**140**
	Chalk in lumps or powder	P1					**140**
	Glucose	P4 or P5					**150**
	Gunnies	P3					**120**
	Household effects	P3					**150**
	Molasses	P5					**150**
	Mono Calcium Phosphate for Animal, Aqua and Poultry feed	P1					**130**
	Putty	P2(a)					**150**
	Starch	P1 or P4 or P5					**120**
LOW RATED TARIFF LINES							
23	**DIVISION -'A'**						
	Electrical appliances and fittings *As under:-* Dry Batteries, Dynamos Electric Motors / Pumps / Generators Electric wires Electrical Bulbs Electrical Fans Fuse wire	P4	PCC	p	RR		**LR1**
	Empty drums, Jerrycans and Barrels	P2(b)			RR		**LR1**
	Jagree and Jagree Powder	P1			RR		
	Fireworks				RR	d	
	Jute	P3			RR		
	Milk and Milk products	P4 or P5			OR		
	Organic Manures	P2(a)			RR		
	Paints and Polishes Colours and Dyes	P5			RR		

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Timber	P2(b)			RR		**LR1**
	As under:-						
	Fire Wood				OR		
	Plywood in boards, panels						
	Sandal wood						
	Splints for matches						
	Wood pieces						
	Timber waste						**LR2**
	Vegetable oil pitches	P5			RR		**LR1**
	Water				RR		**LR1**
24	**DIVISION -'B'**						
	Boiler Components	P4	PCC	p	RR		**LR2**
	Charcoal	P2(a)			OR		
	Paper	P3			RR		
	As under:-						
	Card Boards						
	Paper in reels / rolls						
	Paper waste						
	Paper cuttings						
	Paper sludge						
25	**DIVISION -'C'**						
	Bamboos	P2(b)	PCC	p	RR		**LR3**
	As under:-						
	Bamboo chips						
	Bamboo Crushed						
	Bamboo pulp						
	Sticks						
	Brooms	P2(b)			RR		
	Coffee and Tea	P4			RR		
	Coir	P2(b)			RR		
	Cotton and other Textiles	P3			RR		**LR3**
	As under:-						
	Bed Sheets						
	Cotton half / full pressed						
	Cotton raw						
	Hand spun yarn cotton						
	Khaddar						
	Silk						
	Synthetic Yarns						
	Towels						
	Wool						
	Fodder and Husk	P2(a)			RR		**LR3**
	As under:-						
	Bhoosa						
	Chari						
	Dry Grass						
	Cotton Seed Husk						
	Coconut husk	P1					
	Gram husk	P1					
	Kirby	P1					
	Kirby Kutti (Kuttar)						
	Paddy Husk	P1					
	Peas husk	P1					
	Toor husk						
	Wheat bran (chokar)	P1					
	Chuni	P1					**LR1**

GENERAL CLASSIFICATION OF GOODS

Group No	Commodity	Packing Conditions	Chargeable Weight	Payment freight	Risk Rate	Type of commodity	Base Class (Trainload)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fruits and Vegetables	P2(a)			OR		**LR3**
	As under:-						
	Banana						
	Dates						
	Garlic						
	Mango	P4					
	Orange	P4					
	Onions	P2(a)					
	Potatoes	P2(a)					
	Groceries	P1			RR		**LR3**
	As under:-						
	Alum						
	Chillies, Dry Chillies						
	Edible snacks						
	Extruded foods						
	Jeera						
	Pepper						
	Spices						
	Maize Flakes						
	Rice flakes						
	Rice Parched						
	Sago common						
	Turmeric						
	Soya Protein Textured						**120**
	I V and Insecticide fluid	P5			RR		**LR3**
	Live stock				OR		
	***Motor vehicles**	P6 (a)&(b)			OR		
Note	** The "standardized" CC of NMG & BCCN wagons shall be 58.8 tonnes.*						
	Sugarcane & Bagasse	P2(a)			RR		

INDIAN RAILWAY CONFERENCE ASSOCIATION

FREIGHT RATE TABLES

APPLICABLE ON INDIAN RAILWAYS

With effect from 01.04.2015

GOODS TARIFF NO.48 (Part II)

Distance (kilometres)	FREIGHT RATE PER TONNE (in ₹)					
	LR3	LR2	LR1	Class-100	Class-110	Class-120
1 - 125	99.20	113.40	134.70	141.80	156.00	170.20
126 - 150	115.20	131.80	164.30	172.90	190.20	207.50
151 - 175	129.30	147.70	184.10	193.80	213.20	232.60
176 - 200	144.40	165.10	205.90	216.70	238.40	260.00
201 - 225	158.60	181.30	226.00	237.90	261.70	285.50
226 - 250	173.80	198.70	247.70	260.70	286.80	312.80
251 - 275	189.00	215.90	269.30	283.50	311.90	340.20
276 - 300	204.10	233.10	290.70	306.00	336.60	367.20
301 - 325	218.10	249.30	310.90	327.30	360.00	392.80
326 - 350	232.90	266.10	331.90	349.40	384.30	419.30
351 - 375	247.60	283.00	352.90	371.50	408.70	445.80
376 - 400	262.80	300.30	374.30	394.00	433.40	472.80
401 - 425	277.90	317.50	395.90	416.70	458.40	500.00
426 - 450	292.80	334.60	417.20	439.20	483.10	527.00
451 - 475	307.60	351.50	438.20	461.30	507.40	553.60
476 - 500	323.00	369.10	460.20	484.40	532.80	581.30
501 - 550	353.30	403.90	503.60	530.10	583.10	636.10
551 - 600	383.60	438.40	546.60	575.40	632.90	690.50
601 - 650	413.50	472.60	589.30	620.30	682.30	744.40
651 - 700	443.40	506.70	631.80	665.00	731.50	798.00
701 - 750	473.30	541.00	674.60	710.10	781.10	852.10
751 - 800	502.80	574.60	716.60	754.30	829.70	905.20
801 - 850	532.40	608.40	758.70	798.60	878.50	958.30
851 - 900	561.90	642.10	800.60	842.70	927.00	1011.20
901 - 950	591.10	675.60	842.40	886.70	975.40	1064.00
951 - 1000	620.50	709.20	884.20	930.70	1023.80	1116.80
1001 - 1100	679.70	776.90	968.60	1019.60	1121.60	1223.50
1101 - 1200	739.20	844.80	1053.30	1108.70	1219.60	1330.40
1201 - 1300	798.30	912.30	1137.50	1197.40	1317.10	1436.90
1301 - 1400	857.10	979.60	1221.30	1285.60	1414.20	1542.70
1401 - 1500	915.90	1046.70	1305.10	1373.80	1511.20	1648.60
1501 - 1625	973.10	1111.90	1386.40	1459.40	1605.30	1751.30
1626 - 1750	1047.90	1197.50	1493.10	1571.70	1728.90	1886.00
1751 - 1875	1077.50	1231.50	1535.40	1616.20	1777.80	1939.40
1876 - 2000	1149.30	1313.50	1637.70	1723.90	1896.30	2068.70
2001 - 2125	1160.80	1326.70	1654.20	1741.30	1915.40	2089.60
2126 - 2250	1229.10	1404.70	1751.50	1843.70	2028.10	2212.40
2251 - 2375	1240.40	1417.50	1767.40	1860.40	2046.40	2232.50
2376 - 2500	1305.60	1492.00	1860.40	1958.30	2154.10	2350.00
2501 - 2625	1325.90	1515.50	1889.60	1989.10	2188.00	2386.90
2626 - 2750	1389.10	1587.60	1979.60	2083.80	2292.20	2500.60
2751 - 2875	1408.90	1610.20	2007.60	2113.30	2324.60	2536.00
2876 - 3000	1470.20	1680.10	2094.90	2205.20	2425.70	2646.20
3001 - 3125	1489.10	1701.70	2121.90	2233.60	2457.00	2680.30
3126 - 3250	1548.60	1769.80	2206.90	2323.00	2555.30	2787.60
3251 - 3375	1567.20	1791.00	2233.30	2350.80	2585.90	2821.00
3376 - 3500	1625.30	1857.40	2315.90	2437.80	2681.60	2925.40

Distance (kilometres)	FREIGHT RATE PER TONNE (in ₹)					
	Class-130	Class-140	Class-145	Class-150	Class-160	Class-165
1 - 125	184.30	198.50	205.60	212.70	226.90	234.00
126 - 150	224.80	242.10	250.70	259.40	276.60	285.30
151 - 175	251.90	271.30	281.00	290.70	310.10	319.80
176 - 200	281.70	303.40	314.20	325.10	346.70	357.60
201 - 225	309.30	333.10	345.00	356.90	380.60	392.50
226 - 250	338.90	365.00	378.00	391.10	417.10	430.20
251 - 275	368.60	396.90	411.10	425.30	453.60	467.80
276 - 300	397.80	428.40	443.70	459.00	489.60	504.90
301 - 325	425.50	458.20	474.60	491.00	523.70	540.00
326 - 350	454.20	489.20	506.60	524.10	559.00	576.50
351 - 375	483.00	520.10	538.70	557.30	594.40	613.00
376 - 400	512.20	551.60	571.30	591.00	630.40	650.10
401 - 425	541.70	583.40	604.20	625.10	666.70	687.60
426 - 450	571.00	614.90	636.80	658.80	702.70	724.70
451 - 475	599.70	645.80	668.90	692.00	738.10	761.10
476 - 500	629.70	678.20	702.40	726.60	775.00	799.30
501 - 550	689.10	742.10	768.60	795.20	848.20	874.70
551 - 600	748.00	805.60	834.30	863.10	920.60	949.40
601 - 650	806.40	868.40	899.40	930.50	992.50	1023.50
651 - 700	864.50	931.00	964.30	997.50	1064.00	1097.30
701 - 750	923.10	994.10	1029.60	1065.20	1136.20	1171.70
751 - 800	980.60	1056.00	1093.70	1131.50	1206.90	1244.60
801 - 850	1038.20	1118.00	1158.00	1197.90	1277.80	1317.70
851 - 900	1095.50	1179.80	1221.90	1264.10	1348.30	1390.50
901 - 950	1152.70	1241.40	1285.70	1330.10	1418.70	1463.10
951 - 1000	1209.90	1303.00	1349.50	1396.10	1489.10	1535.70
1001 - 1100	1325.50	1427.40	1478.40	1529.40	1631.40	1682.30
1101 - 1200	1441.30	1552.20	1607.60	1663.10	1773.90	1829.40
1201 - 1300	1556.60	1676.40	1736.20	1796.10	1915.80	1975.70
1301 - 1400	1671.30	1799.80	1864.10	1928.40	2057.00	2121.20
1401 - 1500	1785.90	1923.30	1992.00	2060.70	2198.10	2266.80
1501 - 1625	1897.20	2043.20	2116.10	2189.10	2335.00	2408.00
1626 - 1750	2043.20	2200.40	2279.00	2357.60	2514.70	2593.30
1751 - 1875	2101.10	2262.70	2343.50	2424.30	2585.90	2666.70
1876 - 2000	2241.10	2413.50	2499.70	2585.90	2758.20	2844.40
2001 - 2125	2263.70	2437.80	2524.90	2612.00	2786.10	2873.10
2126 - 2250	2396.80	2581.20	2673.40	2765.60	2949.90	3042.10
2251 - 2375	2418.50	2604.60	2697.60	2790.60	2976.60	3069.70
2376 - 2500	2545.80	2741.60	2839.50	2937.50	3133.30	3231.20
2501 - 2625	2585.80	2784.70	2884.20	2983.70	3182.60	3282.00
2626 - 2750	2708.90	2917.30	3021.50	3125.70	3334.10	3438.30
2751 - 2875	2747.30	2958.60	3064.30	3170.00	3381.30	3486.90
2876 - 3000	2866.80	3087.30	3197.50	3307.80	3528.30	3638.60
3001 - 3125	2903.70	3127.00	3238.70	3350.40	3573.80	3685.40
3126 - 3250	3019.90	3252.20	3368.40	3484.50	3716.80	3833.00
3251 - 3375	3056.00	3291.10	3408.70	3526.20	3761.30	3878.80
3376 - 3500	3169.10	3412.90	3534.80	3656.70	3900.50	4022.40

Distance (kilometres)	FREIGHT RATE PER TONNE (in ₹)			
	Class-170	Class-180	Class-190	Class-200
1 - 125	241.10	255.20	269.40	283.60
126 - 150	293.90	311.20	328.50	345.80
151 - 175	329.50	348.80	368.20	387.60
176 - 200	368.40	390.10	411.70	433.40
201 - 225	404.40	428.20	452.00	475.80
226 - 250	443.20	469.30	495.30	521.40
251 - 275	482.00	510.30	538.70	567.00
276 - 300	520.20	550.80	581.40	612.00
301 - 325	556.40	589.10	621.90	654.60
326 - 350	594.00	628.90	663.90	698.80
351 - 375	631.60	668.70	705.90	743.00
376 - 400	669.80	709.20	748.60	788.00
401 - 425	708.40	750.10	791.70	833.40
426 - 450	746.60	790.60	834.50	878.40
451 - 475	784.20	830.30	876.50	922.60
476 - 500	823.50	871.90	920.40	968.80
501 - 550	901.20	954.20	1007.20	1060.20
551 - 600	978.20	1035.70	1093.30	1150.80
601 - 650	1054.50	1116.50	1178.60	1240.60
651 - 700	1130.50	1197.00	1263.50	1330.00
701 - 750	1207.20	1278.20	1349.20	1420.20
751 - 800	1282.30	1357.70	1433.20	1508.60
801 - 850	1357.60	1437.50	1517.30	1597.20
851 - 900	1432.60	1516.90	1601.10	1685.40
901 - 950	1507.40	1596.10	1684.70	1773.40
951 - 1000	1582.20	1675.30	1768.30	1861.40
1001 - 1100	1733.30	1835.30	1937.20	2039.20
1101 - 1200	1884.80	1995.70	2106.50	2217.40
1201 - 1300	2035.60	2155.30	2275.10	2394.80
1301 - 1400	2185.50	2314.10	2442.60	2571.20
1401 - 1500	2335.50	2472.80	2610.20	2747.60
1501 - 1625	2481.00	2626.90	2772.90	2918.80
1626 - 1750	2671.90	2829.10	2986.20	3143.40
1751 - 1875	2747.50	2909.20	3070.80	3232.40
1876 - 2000	2930.60	3103.00	3275.40	3447.80
2001 - 2125	2960.20	3134.30	3308.50	3482.60
2126 - 2250	3134.30	3318.70	3503.00	3687.40
2251 - 2375	3162.70	3348.70	3534.80	3720.80
2376 - 2500	3329.10	3524.90	3720.80	3916.60
2501 - 2625	3381.50	3580.40	3779.30	3978.20
2626 - 2750	3542.50	3750.80	3959.20	4167.60
2751 - 2875	3592.60	3803.90	4015.30	4226.60
2876 - 3000	3748.80	3969.40	4189.90	4410.40
3001 - 3125	3797.10	4020.50	4243.80	4467.20
3126 - 3250	3949.10	4181.40	4413.70	4646.00
3251 - 3375	3996.40	4231.40	4466.50	4701.60
3376 - 3500	4144.30	4388.00	4631.80	4875.60

FREIGHT RATE CIRCULARS - 2017

Rate Ins. No.	Letter No.	Subject	Issued Date	Ref.	Supersedes	Superseded by	Validity	
							From	To
Corrigendum No- 12 to Rates Master Circular/PCC/2015/0 NEW	TCR/1394/2017/05	Designed Tre weight, Permissible Carrying Capacity and Loading Tolerance of BRN wagon	21.12.2017	RMC/PCC/2015/0 dated 19.10.2015 and corrigenda thereto.	-	-	25.12.2017	TFA
Corrigendum No- 11 to Rates Master Circular/PCC/2015/0 NEW	TCR/1394/2017/04	Permissible Carrying Capacity (PCC), Standard Rake Size and Loading Tolerance of BOXNS Wagons.	15.12.2017	RMC/2016 dated 14.07.2016 on Block Rake/Mini Rake/Two point combination and corrigenda thereto. And RMC/PCC/2015/0 dated 19.10.2015 and corrigenda thereto.	-	-	18.12.2017	TFA
Corrigendum No- 11 to Rates Master Circular dated 14.07.2006 /Block Rakes/Mini Rake/Two Point Combination etc	TCR/1394/2017/04	Permissible Carrying Capacity (PCC), Standard Rake Size and Loading Tolerance of BOXNS Wagons.	15.12.2017	RMC/2016 dated 14.07.2016 on Block Rake/Mini Rake/Two point combination and corrigenda thereto. And RMC/PCC/2015/0 dated 19.10.2015 and corrigenda thereto.	-	-	18.12.2017	TFA
Corrigendum No- 10 to RMC/2016 on Block Rakes/ Mini Rakes/ Two Point Combination Etc.	TCR/1017/2017/03	Policy Guidelines-Transportation Products- Two point combination for steel traffic.	20.11.2017	RMC/2016 dated 14.07.2016 on Block Rake/Mini Rake/Two point combination and corrigenda thereto.	Corrigendum No- 09 to RMC/2016 on Block Rakes/ Mini Rakes/ Two Point Combination Etc.	-	21.11.2017	TFA
Corrigendum No- 09 to RMC/2016/Block Rakes/ Mini Rakes/ Two Point Combination Etc.	TCR/1017/2017/03	Policy Guidelines-Transportation Products- Two point combination for steel traffic	20.11.2017	RMC/2016 dated 14.07.2016 on Block Rake/Mini Rake/Two point combination and corrigenda thereto	-	Corrigendum No- 10 to RMC/2016 on Block Rakes/ Mini Rakes/ Two Point Combination Etc.	21.11.2017	TFA
Corrigendum-2 to RMC/Demurrage-Wharfage/2016/0	TC-I/2016/201/1	Free Time for loading of Rakes of Coal and Iron Ore	07.11.2017				07.11.2017	31.03.2018
Corigendum No. 13to RMC/CRT-CCR-Hub & Spoke/2015/0	TC-1/2014/302/2	Container Rail Terminal (CRT), Container Class Rate(CCR) and Hub & Spoke System of Charging	06.11.2017	-	-	-	06.11.2017	TFA
Corrigendum No 10 to Rates Master Circular/PCC/2015/0	TCR/1394/2017/02	Permissible Carrying Capacity of "BFNS 22.9" Wagons (Maximum Axle Load 22.9 T)	30.10.2017	Board's Rates Master Circular/PCC/2015/0 dated 19.10.2015	-	-	03.11.2017	TFA
Corrigendum No. 8 to Rates Master Circular/ 2016 dated 14.07.2016 on Block Rakes/Mini Rakes/Two Point Combination etc.	TCR/1017/2016/1	Standard Rake composition of BTFLN	24.10.2017	RMC dated 14.07.2016 on Block Rakes/Two Point Combination etc./2016/0 and its corrigendum 1 to 7	-	-	27.10.2017	TFA
Corrigendum to RC-27 of 2016	TCR/1078/2015/05 Pt	Freight Incentive Scheme for Loading of Bagged Consignmenty in Open and Flat Wagons	23.10.2017	RC 27 of 2016	-	-	24.10.2016	23.10.2017
RC-25	TCR/1644/2014/03	Rebate in Freight for traffic transported in privately owned wagons.	29.09.2017	RC-26 of 2015	-	-	01.10.2017	30.09.2019
Corrigendum No.7 to Rates Master Circular/2016 dated 14.07.2016 on Block Rakes/Mini Rake/Two Point Combination etc.	TCR/1017/2017/01	Policy Guidelines-Transportation Products (Block Rake/Mini Rake/Two Point Combination)	28.09.2017	-	-	-	-	-
RC-24	TCR/1078/2016/05	Adjustment in Base Freight Rates for short lead goods traffic.	28.09.2017	RC-20 of 2017	-	-	01.10.2017	31.03.2018

RC-23 Addendum dated 25.08.2017 e-gazette website	TC-I/2015/223/1	Notified Stations.	24.08.2017	RC-04 of 2017	-	-	25.08.2017	25.02.2018
Corrigendum No. 12 to RMC/CRT-CCR-Hub & Spoke/2015/0 NEW	TC-I/2014/302/2	Container Rail Terminal (CRT), Container Class Rate (CCR) and Hub & Spoke System of charging	25.07.2017	RMC/CRT-CCR-Hub&Spoke/2015/0	-	-	27.07.2017	26.07.2018
Corrigendum No. 21 to RC- 08 of 2015	TCR/1078/2015/07	Adjustment in Base Freight Rates-Rationlization of Coal & Coke Tariff structure..	24.07.2017	Corrigenda No. 20 to RC- 08 of 2015	-	-	26.07.2017	30.06.2018
RC.22 of 2017	TC-I/2014/302/2	Haulage charges for running of Double Stack Dwarf Container	14.07.2017	RC.41 of 2014	-	-	14.07.2017	31.03.2018
Corrigendum No. 20 to RC- 08 of 2015	TCR/1078/2015/07	Adjustment in Base Freight Rates-Rationlization of Coal & Coke Tariff structure..	06.07.2017	Corrigenda No. 14 & 15 to RC- 08 of 2015	-	-	10.07.2017	TFA
RC-21	TCR/1078/2017/24	Classification of Purified Terephthalic Acid (PTA) in powder form	05.07.2017	-	-	-	10.07.2017	TFA
RC-20	TCR/1078/2016/05	Adjustment in Base Freight Rates for Short Lead Goods Traffic.	30.06.2017	RC-20 of 2016, RC-24 of 2016 & RC-15 of 2017	-	-	01.07.2017	30.09.2017
RC-19	TCR/1078/2017/19	Levy of Goods and Service Tax (GST) on Transportation of Goods by Rail	30.06.2017	Board's letter no TC-II/2910/2017/GST/2 dated 09.06.2017	-	-	01.07.2017	TFA
RC-18	2016/TC-I/104/2 Pt.	Payment of freight charges through Debit/Credit cards using Point of Sale(PoS) machines	01.06.2017	Commercial Circular No.69 of 2016	-	-	with immediate effect	-
RC-17 NEW	TCR/1015/2015/01	Rates for Automobile Traffic carried on NMG/BCCNR and BCACM wagons.	23.05.2017	Rates Circular No 19 of 2016 dated 07.06.2016.	-	-	01.06.2017	31.05.2018
RC-16 of 2017	TC-I/2002/2014/5	All India Engine Hour Cost (AIEHC) for recovery of Siding and Shunting Charges	16.05.2017	-	-	-	01.07.2017	TFA
Addendum to RC-27 of 2016	TCR/1078/2015/05 Pt.	Freight Incentive Scheme for Loading Bagged Consignment in Open and Flat Wagons.	26.04.2017	RC-27 of 2016	-	-	01.05.2017	TFA
Addendum to RMC/CRT-CCR-Hub& Scope/2015/0	TC-I/2016/103/1	Issue of multiple RRs for a single container train	20.04.2017	RMC/CRT-CCR-Hub&Spoke/2015/0	-	-	-	-
Corrigendum No. 9 to RMC/PCC/2015/0	TCR/1394/2017/02	Permissible Carrying Capacity of "BFNS 22.9" Wagons (Maximum Axle Load 22.9 T).	19.04.2017	Rates Master Circular/PCC/2015/0	-	-	19.04.2017	TFA
Corrigendum No. 11 to Rates Master Circular/CRT-CCR-Hub & Spoke/2015/0	No.2007/TC-I/302/1 Pt.H	Container Rail Terminal (CRT), Container Class Rate(CCR) and Hub & Spoke System of charging	10.04.2017	Rates Master Circular/CRT-CCR-Hub & Spoke/2015/0 dt.07.04.2015 and its corrigenda	-	-	10.04.2017	10.04.2018
Corrigendum 10 to Rates Master Circular/CRT-CCR-Hub Spoke/2015/0	No.2007/TC-I/302/1 Pt.H	Container Class Rate(CCR) and Hub & Spoke System of charging	10.04.2017	Rates Master Circular/CRT-CCR-Hub & Spoke/2015/0 and its corrigenda	-	-	12.04.2017	11.04.2018

RC-15	TCR/1078/2016/05	Adjustment in Base Freight Rates for Short Lead goods traffic	31.03.2016	RC-20 & RC-24 of 2016	-	-	01.04.2017	30.06.2017
RC-14	TCR/1078/2016/14	Long Term Tariff Contract (LTTC) with Key Customers using pre-determined price escalation principle	30.03.2017	-	-	-	-	-
Corrigendum 9 to RMC/CRT-CCR-Hub Spoke/2015/0	TC-I/2014/302/2	Container Rail Terminal (CRT)m Container Class Rate(CCR) and Hub & Spoke System of charging.	30.03.2017	RMC/CRT-CCR-Hub & Spoke/2015/0 and it corrigendum 4 dated 15.06.2016	-	-	-	-
Corrigendum No. 2 to RC 23 of 2015	TCR/1078/2008/11 Pt.	Levy of Congestion Surcharge for traffic booked to Bangladesh	30.03.2017	Corrigendum to RC 23 of 2015 dated 10.01.2017	-	-	01.04.2017	31.03.2018
Corrigendum No. 19 to RC 08 of 2015	TCR/1078/2015/07	Adjustment in Freight Rates-Classification of Commodities	30.03.2017	Corrigendum No. 13 to RC 08 of 2015 dated 31.05.2016	-	-	01.04.2017	31.03.2018
Corrigendum No. 2 to RC 29 of 2016	TCR/1078/2015/05 Pt. I	Liberalized Automatic Freight Rebate Scheme for traffic loaded in Traditional Empty Flow Directions (TEFD)	30.03.2017	RC 29 of 2016 and Corrigendum No. 1 thereto	-	-	01.04.2017	31.03.2018
Corrigendum No.6 to Rates Master Circular/provision of Weighbridges/2014/0 NEW!	TC-I/2005/108/3-Pt.III	Guidelines regarding provision,installation and functioning of weighbridges	29.03.2017	Corrigendum No.5 dt.30.10.2015	-	-	01.04.2017	31.03..2018
RC-13 NEW!	TCR/1078/2014/27	Congestion Surcharge on Goods Traffic Originating from Ports.	24.03.2017	RC-13 of 2016	-	-	31.03.2017	31.03.2018
RC-12 NEW!	TCR/1078/2015/24	Classification of Iron Ore	21.03.2016	RC-16 of 2016	-	-	01.04.2017	31.03.2018
RC-11	TCR/2201/2004/1	Revision of Rates of Miscellaneous charges	21.03.2017	-	-	-	01.04.2017	31.03.2018
RC-10	TCR/1543/2009/01	Rates of Terminal Charges to be collected by Port Trust Railways from Customers	17.03.2017	RC 07 of 2015 & 88 of 2007	-	-	01.04.2017	31.03.2019
RC-09	TCR/1055/95/01	Revision of Charges payable to Tuticorin Port Trust Railway	08.03.2017	RC 12 of 2015	RC 12 of 2015		W.e.f. the date of publication in official Gazette	TFA
RC-08	TCR/1055/95/01	Revision of rates on Port Trust Railway	08.03.2017	RC 11 of 2015	RC 11 of 2015		W.e.f. Suitable date after proper notice to Public & other Railways	TFA
RC-07 NEW!	TCR/1055/95/01	Revision of Haulage charges payable to Port Trusts	08.03.2017	RC 10 of 2015	RC 10 of 2015		01.04.2015	TFA
Corrigendum No. 6 to Rates Master Circular/2016 dated 14.07.2016 on Block Rakes/Mini Rake/Two Point Combination etc.	TCR/1017/2017/02	Policy Guidelines-Transportation Products- Block Rake, Mini Rake, Two Point Combination etc.	08.03.2017	Rates Master Circular/2016 dated 14.07.2016 on Block Rakes/Mini Rake/Two Point Combination etc.	-	-	10.03.2017	TFA
Corrigendum No.08 to RMC/PCC/2015/0	TCR/1394/2004/02/Vol.IV	Notification of CC+8 Routes	08.03.2017	RMC/PCC/2015/0	-	-	10.03.2017	TFA
RC-06	2007/TC-I/302/1 Pt.B	Operation of container trains by Private Container Operator (PCO) in Railway owned terminals	07.03.2017	RC-08 of 2016	-	-	01.04.2017	31.03.2018

Corrigendum-18 to RC-08 of 2015	TCR/1078/2015/07	Adjustment in Base Freight Rates-Classification of Commodities	07.03.2017	Rate Circular No.08	-	-		
RC-04 Addendum dated 07.03.2017	TC-I/2015/223/1	Notified Stations	22.02.2017	Rates Circular No. 22 of 2016 and Addendum thereto	-	-	25.02.2017	24.08.2017
RC-03	TCR/1099/2016/03	Inflation in distance for charge between Bibinagar to Nadikude section of Guntur Division of South Central Railway	13.02.2017	Board's letter No. TCR/1099/87/6 dt. 17.02.1989 & XXR wireless No. TCR/1099/92/6 dt. 28.07.1992	-	-	15.02.2017	TFA
Addendum to RC 06 of 2016	**TCR/1078/2007/22**	Movement of HSD Oil in BTPN rakes from Numaligarh Refinery Siding (NRSR) to Parbatipur, Bangladesh via Radhikapur- Birol route.	07.02.2017	RC 06 of 2016	-	-	13.02.2017	TFA
Corrigendum No. 2 to RMC of E-Payment	TC-I/2015/104/5	Guidelines for Electronic Payment System.	03.02.2017	RMC/E-Payment/2014/1 and itw corrigendum & addendum	-	-	-	-
Corrigendum No. 4 to RMC Block Rake/Mini Rake/Two Point Combination	TCR/1017/2017/01	Policy Guidedlines-Transportation Products	03.02.2017	-	-	-	-	-
RC-02	TC-I/2015/104/5	Issue of Railway Receipt (RR) under conventional mode of payment	03.02.2017	Board's Letter No. TC-I/2014/103/3 dt. 26.12.2014	-	-	15.02.2017	-
Corrigendum to RC-03 of 2016	TCR/1394/2016/01	Carrying Capacity of BTAP Wagons	20.01.2017	RC-03 of 2016	-	-	23.01.2017	TFA
Corrigendum No. 8 to RMC/CRT-CCR-Hub Spoke/2015/0	2007/TC-I/302/1 Pt.B	Container Rail Terminal (CRT)	20.01.2017	RMC/CRT-CCR-Hub & Spoke/2015/0 & corrigenda thereto	-	-	-	-
Corrigendum to RC-23 of 2015	TCR/1078/2008/11	Levy of Congestion Surcharge for traffic booked to Bangladesh.	10.01.2017	Ref: RC 23 of 2015 & Corrigendum thereto	-	-	12.01.2017	31.03.2017
Corrigendum No. 1 to RC-29 of 2016 TCR/1078/2015/05 Pt.1 dated 05.01.2017	TCR/1078/2015/05 Pt. I	Liberalized Automatic Freight Rebate Scheme for traffic loaded in Traditional Empty Flow Directions (TEFD)	05.01.2017	RC-29 of 2016	-	-	05.01.2017	-
RC-01	TC-I/2011/109/11	Exemption from mandatory (100%) weighment for the commodities loaded in standard bags of uniform size	04.01.2017	RMC/Weighment/ 2014/0	TC-I/2011/109/11/ dated 18.09.2015	TC-I/2011/109/11 dated 04.01.2017	04.01.2017	TFA

FREIGHT RATE CIRCULARS - 2018

Rate Ins. No.	Letter No.	Subject	Issued Date	Ref.	Supersedes	Superseded by	Validity	
							From	To
Corrigendum No. 22 to RC-08 of 2015	TCR/1078/2015/07	Adjustment in Base Freight Rates - Classification of commodities	27.02.2018	RC-08 of 2015 & corrigendum thereto	-	-	01.04.2018	31.03.2019
Corrigendum No. 14 to RMC/CRT-CCR-Hub & Spoke/2015/0	TC-I/2014/302/2	Charging of Kota Stone in containers.	27.02.2018	RMC/CRT-CCR-Hub & Spoke/2015/0, its corrigendum No. 9, RC-41 of 2014	-	-	-	-
RC-05	TC-I/2018/302/2	Operation of container trains by Private Container Operator (PCO) in Railway owned terminals.	27.02.2018	-	-	-	01.04.2018	31.03.2019
RC-04 NEW!	TCR/2201/2004/1	Revision of Rates of miscellaneous charges.	27.02.2018	-	-	-	01.04.2018	31.03.2019
RC-3 NEW!	TCR/1078/2014/27	Congestion Surcharge on Goods Traffic Oginating from Ports.	26.02.2018	RC-13 of 2017	-	-	01.04.2018	31.03.2019
Corrigendum No. 14 to RMC/PCC/2015/0	TCR/1394/2004/2 Vol.IV-Pt.I	Running of freight trains on CC+8 routes	23.02.2018	RMC/PCC/2015/0 dated 19.10.2015 and corrigendum thereto.	-	-	25.02.2018	TFA
RC-2 of 2018 Addendum dated 26.02.2018 NEW! e-Gazette.nic.in	TC-I/2015/223/1	Notified Stations	16.02.2018	-	-		25.02.2018	24.08.2018
Corrigendum No.03 to RC-23 of 2015	TCR/1078/2008/11 Pt.	Levy of Congestion Surcharge for traffic booked to Bangladesh	13.02.2018	RC-13 of 2015 and corrigendun thereto.	-	-	01.04.2018	31.03.2019
Crrigendum No 13 to Rates Master Circular/PCC/2015/0 and Corrigendum No 02 to Letter No TC-I/2010/108/4 dated 16.09.2011	TCR/1394/2017/05	Designed Tare Weight, Permissible Carrying Capacity and Loading Tolerance of BRN Wagons.	18.01.2018	Corrigendum No 12 to RMC/PCC/2015/0 and Corrigendum No 01 to Letter No TC-I/2010/108/4 dated 16.09.2011	-	-	-	-
Corrigendum No. 7 to RMC/Weighbridge/2014/0	TC-I/2017/109/8	Guidelines regarding provision, installation and functioning of weighbridges.	10.01.2018	RMC/Weighbridge/2014/0	-	-	11.01.2018	TFA
Corrigendum No. 2 to RMC/Weighment/2014/0	TC-I/2017/109/8	Weighment of wagons/rake, exeption from weightment,	10.01.2018	RMC/Weighment/2014/0	-	-	11.01.2018	TFA

		procedure to deal with overloaded wagon(s) and levy of Detention Charge etc.						
RC- 01	TCR/1078/2015/07	Adjustment in Base Freight Rates- Rationalization of tariff structure for transportation of Coal & Coke by Rail.	09.01.2018	Corrigenda Nos. 14, 15, 20 & 21 to RC No. 08 of 2015.	-	-	15.01.2018	TFA

प्रधान सचिव, खान एवं भूतत्त्व विभाग की अध्यक्षता में दिनांक 06.01.2018 को मध्यान् 12.00 बजे विभागीय समीक्षात्मक बैठक की कार्यवाही।

उपस्थिति संलग्नः–

विशेष सचिव–सह–निदेशक द्वारा बैठक में उपस्थित सभी पदाधिकारियों एवं कर्मचारियों को नववर्ष 2018 की शुभकामना के साथ बैठक की कार्यवाही प्रारंभ की गई एवं आवश्यक निर्देश दिए गये :–

विशेष सचिव–सह–निदेशक द्वारा यह बताया गया कि पूर्व की बैठक में दिये गये दिशा–निर्देश का अनुपालन सही ढंग से नहीं किया जा रहा है। विश्वस्त सूत्रों से निदेशक महोदय को जानकारी प्राप्त हो रहीं है कि विभाग द्वारा दिये गये दिशा–निर्देश को स्पष्ट तौर पर क्षेत्रीय वरीय प्रभारी पदाधिकारियों को मुख्यतः समझने में कठिनाई हो रही हैं, जिसके कारण अनेकों समस्याएँ उत्पन्न हो रही हैं। निदेशक महोदय द्वारा यह भी बताया गया कि आने वाले दिनों में इस तरह की Confusion नहीं होनी चाहिए।

समीक्षोपरान्त यह भी निर्देश दिया गया कि पिछले बैठक में भी चेतावनी दी गई थी, विभागीय मामलों को आम जनता/मिडिया या अन्य किसी स्त्रोत से गलत सूचना से अफवाहें न फैले। इस संबंध में सचेष्ट रहें। विभाग के वरीय पदाधिकारियों से सम्पर्क स्थापित कर वास्तविक जानकारी हासिल करने का निर्देश दिया गया।

समीक्षा के क्रम में निदेशक द्वारा बताया गया कि BSMC के अधीनस्थ कर्मियों को जिला खनन पदाधिकारी के नियंत्रण में कार्य करना है एवं जिला खनन पदाधिकारी को अधीनस्थ जिला पदाधिकारी के नियंत्रण में नियमानुसार कार्य करना है।

1. अवैध खनन के विरूद्ध समीक्षाः–

दिनांक 01.12.2017 से 31.12.2017 एवं 01.01.2018 से 05.01.2018 तक अवैध खनन/परिवहन/भंडारण से संबंधित प्राप्त प्रतिवेदन/सूचना के आधार पर जिन–जिन जिलों का गिरफ्तारी शून्य है उन–उन जिलों को सख्त निदेश दिया गया कि अगले माह की विभागीय समीक्षात्क बैठक में कम–से–कम दस (10) गिरफ्तारी पूर्ण होना चाहिए।

विभिन्न जिलों यथाः– शेखपुरा के MMD/खान निरीक्षक, खगड़िया, सीतामढ़ी, अररिया एवं मोतिहारी, किशनगंज, समस्तीपुर, मधुबनी, कैमूर, गोपालगंज एवं अरवल जिलों का कार्य असंतोषजनक रहने के कारण उन जिलों के प्रभारी पदाधिकारियों से स्पष्टीकरण पूछने का निदेश दिया गया तथा तत्काल वेतन बंद का आदेश दिया गया।

समीक्षोपरान्त निदेशक द्वारा अवगत कराया गया कि सूदूर सीमावर्ती क्षेत्रों से ट्रकध ट्रैक्टर एवं हाईवा के माध्यम से लघु खनिजों को परिवहन किया जा रहा है जिस पर समुचित कार्रवाई नहीं हो पा रही हैं एवं Border Area पर भी सख्त निगरानी रखने का निर्देश दिया गया।

2. ईंट भट्ठो का परिवहनः–

समीक्षा के क्रम में प्रधान सचिव द्वारा बताया गया कि 15.01.2018 से ईंट भट्ठों का परिवहन ई–चालान के माध्यम से किया जायेगा। जब्त ईंटों को दिनांक 15.01.2018 से Buffer Stock में जमा करने का निर्देश दिया गया। तत्काल उन ट्रैक्टर ट्रकों में GPS की आवश्यकता नहीं है जो ईंटों का परिचालन कर रहे हैं।

ईंट–संचालकों द्वारा समेकित स्वामित्व का वगैर भुगतान किए कई वर्षों से ईट–भट्ठा का संचालन किया जा रहा है, जिस पर कार्रवाई की जाए, साथ ही संचालित ईंट–भट्ठों/असंचालित ईंट भट्ठा की सूची मुख्यालय को उपलब्ध करने का निर्देश दिया गया।

अन्य महत्वपूर्ण बिन्दुः–

1. बिहार राज्य खनिज निगम (BSMC) को लघु खनिजों को निश्चित मात्रा Buffer Stock के रूप में रखने हेतु 20 जिलों द्वारा भूमि का चयन किया जा चुका हैं, बाकि 16 जिलों के प्रभारी पदाधिकारी/डिपो प्रबंधक को सख्त निर्देश दिया गया कि वे दो दिनों के अन्दर भूमि का चयन कर अद्यतन प्रतिवेदन मुख्यालय को उपलब्ध करावें, ताकि आवश्यक कार्रवाई की जा सके।
2. समीक्षा के क्रम में प्रधान सचिव द्वारा बताया गया कि जिन जिलों द्वारा 1/–(एक रूपया) प्रति वर्गफीट के हिसाब से भूमि का चयन किया गया हैं, उसे घटाकर 50/–पैसा प्रति वर्गफीट करना सुनिश्चित करें। 19 जिलों में 50 पैसा प्रति वर्गफीट के हिसाब से जमीन देने के लिए तैयार हो गया है। इस संबंध में अद्यतन प्रतिवेदन उपलब्ध कराने का निर्देश दिया गया। सभी संबंधित प्रभारी पदा०/डिपो प्रबंधक को चेतावनी दी गई है कि वे यथाशीघ्र 50/– पैसा प्रति वर्गफीट की दर से जमीन की खोज करें, अन्यथा आपकी मिलीभगत मानी जायेगी एवं इस आशय का पत्र संसूचित कर दिया जायेगा।
3. Buffer Stock में लघु खनिजों का नाप–तौल की सही पद्वति संबंधित डिपों प्रबंधक को दी गई हैं। डिपो प्रबंधक की जबावदेही बनती हैं कि वे पंजी में लघु खनिज लदे वाहनों का आगमन/प्रस्थान, तिथि एवं समय का सही ढंग से इन्ट्री करें, ताकि सही वस्तुस्थिति की जानकारी प्राप्त हो सके। प्रतिदिन इन्ट्री करने के बाद ही डिपों प्रबंधक अपने घर प्रस्थान करेंगे।
4. छापेमारी के दौरान पकड़े गए ट्रक/ट्रैक्टर में लदे बालू को जब्त कर Buffer Stock में Unloading करने का निर्देश दिया गया। सर्वप्रथम First Phase में Buffer Stock पर 1–1 लाख CFT बालू का भंडारण नितान्त आवश्यक है।
5. बड़े–बड़े निर्माण कार्यों के लिए जिसमें बालू की उपलब्धता काफी बड़े पैमाने पर होती है। इस संबंध में कार्य विभागों के लिए PMU द्वारा एक System विकसित किया गया है। इस संबंध में सभी संबंधित जिला

पदाधिकारी को भी पत्र संसूचित किया गया है एवं नोडल पदाधिकारी का भी गठन किया गया है।

6. प्रधान सचिव द्वारा निदेश दिया गया कि सभी जिलों में गठित टॉस्क फोर्स की बैठक में कार्य विभाग के इंजीनियर्स के साथ बैठक सुनिश्चित करें साथ–ही–साथ DEIAA एवं DEAC की भी बैठक संयुक्त रूप से कराई जाय। बैठक की कार्यवाही पर अगले दिन सदस्यों का हस्ताक्षर कर विभाग को भी भेजना सुनिश्चित करें।

7. जिलों में गठित Buffer Stock केन्द्रों पर सुरक्षा बलों को ठहरने के लिए तम्बू (Tent) की व्यवस्था सुनिश्चित करें।

8. समीक्षा के क्रम में प्रधान सचिव द्वारा बताया गया कि बड़ी–बड़ी योजनाओं के लिए घाट पर 900/–रूपये प्रति 100 CFT एवं 5% BSMC कमीशन के साथ छोटी–छोटी योजनाओं के लिए 2400/– रूपये प्रति 100 CFT 5% BSMC कमीशन के साथ Buffer Stock से दिये गये दिशा–निर्देश के आलोक में कार्रवाई सुनिश्चित करनी है।

9. PMU के कर्मियों को प्रधान सचिव द्वारा निर्देश दिया गया कि System में GPS तथा गाड़ी का नम्बर दोनो इन्ट्री करना नितान्त आवश्यक है, ताकि सही दिशा–निर्देश का अवलोकन हो सके।

10. जिन–जिन जिलों से बैंक गारंटी प्राप्त हो चुके हैं प्रभारी पदाधिकारी को निदेश दिया गया कि वे संबंधित बैंक मैनेजर से सत्यापित करा लें।

11. समीक्षा के क्रम में आई0टी0 प्रबंधक को निदेश दिया कि जिन जिलों में Bluetooth Printer/Computer/Printer इत्यादि की आवश्यकता हो तो उसकी सूची बनाकर श्री संतोष कुमार, आई0 टी0 प्रबंधक को लिखित रूप में देना सुनिश्चित करें।

12. सभी नियंत्री पदाधिकारी (DDO) को निर्देश दिया गया कि जिन–जिन मदों में आवश्यकतानुसार राशि की आवश्यकता हो उसे विहित प्रपत्र में लिखित रूप में भेजें, ताकि राशि सरेण्डर न हो सके ।

<u>अन्त में प्रधान सचिव द्वारा सभी पदाधिकारियों एवं कर्मियों को पूरी पारदर्शिता, कर्मठता एवं उत्तरदायित्व के साथ कार्य करने का निदेश दिया गया।</u>

<u>धन्यवाद ज्ञापन के साथ बैठक की कार्यवाही संपन्न की गई।</u>

ह0/–
(के0के0पाठक)
प्रधान सचिव

बिहार सरकार
खान एवं भूतत्व विभाग

ज्ञापांक– प्र01(विविध) बैठक–15/17–285 /एम0, पटना, दिनांक – 15/1/18

प्रतिलिपिः– माननीय मंत्री, खान एवं भूतत्व विभाग, बिहार पटना के आप्त सचिव/ प्रधान सचिव, खान एवं भूतत्व विभाग, बिहार, पटना के प्रधान आप्त सचिव/ विशेष सचिव–सह–निदेशक, खान एवं भूतत्व विभाग, बिहार पटना/विशेष सचिव, खान एवं भूतत्व विभाग, बिहार, पटना। विशेष कार्य पदाधिकारी/अवर सचिव/सहायक आन्तरिक वित्तीय सलाहकार/उप निदेशक (मु0)/सहायक निदेशक (मु0)/सभी उप निदेशक/सभी सहायक निदेशक/सभी खनिज विकास पदाधिकारी/सभी खान निरीक्षक–सह–सक्षम पदाधिकारी/प्रशाखा पदाधिकारी/ सभी सहायक/ आई0टी0 प्रबंधक/श्री मृणाल किशोर, डाटा इंट्री ऑपरेटर/PMU को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

15/1/18

15/1/18
(राजेश कुमार)
विशेष कार्य पदाधिकारी

के. के. पाठक, भा.प्र.से.
प्रधान सचिव,
खान एवं भूतत्व विभाग
बिहार सरकार
विकास भवन, पटना–800 015
दूरभाष : 0612–2215857 (का०)

सत्यमेव जयते
बिहार सरकार

K. K. PATHAK, IAS
Principal Secretary
Department of Mines & Geology
Government of Bihar
Vikas Bhawan, Patna - 800 015
Tel : 0612-2215857 (Off.)
Fax : 0612-2232930
E-mail : secymine-bih@nic.in

DO No. ..... / Patna, Dated .....

Sub: - Regarding Seigniorage Fee.

Please refer to your Letter No. 9836 dated 06.11.2017.

2. In the said letter, you have primarily raised two issues regarding the Seigniorage Fee for schemes concerning Building Construction Department. These are: -

a. As per your letter, there are various components of any scheme of Building Construction Department where no minor minerals are used. For example – electrification, water supply, interior decoration etc. These constitute roughly about 20 – 25% of the estimates.

b. As per your letter, the Seigniorage Fee should be added only for the new schemes sanctioned after 01.11.2017 and not for the ongoing schemes as this will affect the Agreemented cost of the ongoing schemes

3. On the above two issues, I share your concern. However, you may recall that the existing system had many complications as under: -

i. The calculations of royalty, minor mineral wise, are very complicated for the Works Department and they have, over the years continuously failed to tell the Mines Department how much royalty was deducted for sand or brick or ordinary earth or stone chips. Till today, the Mines Department is in the dark about the royalty collection, minor mineral wise.

ii. The system required deduction of royalty at the Executive Engineer level and then subsequent reimbursement of the same to the contractor under Form M and Form N.

iii. The procedure under Form M and Form N resulted in lot of corruption, delays and invited audit objection, AG objection and PAC paras, which continued for many years in the Works Department as well as Mines Department.

4. You may recall that this was discussed in a presentation (on the new Bihar Minor Mineral Rules) before all the senior officers and it was decided that, to take care of the above problems, we should introduce a flat rate system, which will provide lot of ease of calculation and rid us of corruption and audit objections.

5. Due to the above problem, we introduced a Seigniorage Fee system at a flat rate of

applicable only for the Works Department with effect from 01.11.2017 and does not concern ordinary people.

6. To answer your concern at Para 2(a) above, I wish to state that, at present, the royalty received by the Mines Department from the various Works Department, on an average, is as under:-

Department	Royalty Rate (on an average)
Water Resources Department	4% of the **Total Estimate**
Rural Works Department	4% of the **Total Estimate**
Road Construction Department	3.5% of the **Total Estimate**
Panchayati Raj Department	3% of the **Total Estimate**
Building construction Department	2.5% of the **Total Estimate**
PHED	0.5% of the **Total Estimate**
Energy Department	0.5% of the **Total Estimate** (for Power Holding Company) 1% of the **Total Estimate** (for Power Grid Company Project)

7. The above calculations are as per the experience of the Mines Department over the years. You will agree that other than PHED and Energy Department (which are low budget Departments), the present Seigniorage Fee of 2% is less than the prevailing royalty rates in case of all the other Departments (some of which are big Departments like Road Construction Department and Water Resources Department). Therefore, you will agree that by charging a Seigniorage Fee of 2% at a flat rate, the Mines Department may, at the end of the day, not have any advantage or disadvantage in any form. Last year, we got a royalty of Rs. 360 crores from all the Works Departments. Under the new reformed system, we will still get the same amount approximately. The royalty collection under the new system may, slightly, go up or down by Rs. 20-30 crores, depending upon the performance of the major Departments like Water Resources Department and Road Construction Department.

8. Therefore, from the above analysis, you will agree that charging Seigniorage Fee at a flat rate of 2% on the total estimate fetches the Mines Department same amount of revenue, which we got when we charged royalty on minor minerals only, under the old system, which was complicated and had elements of corruption.

9. Coming to your other issue at Para 2(b) above, I wish to state that if we exclude the existing schemes, it would not help us migrate to the new system. This is because the new existing schemes sanctioned before 01.11.2017 would continue to linger on for many-many years and therefore, for those many years, we will have two systems of deduction of royalty side by side, complicating the system further.

10. Moreover, the new system of Seigniorage Fee would not impact the Agreemented cost of the existing schemes. This is because the royalty of existing schemes shall be subsumed in the Seigniorage Fee itself.

11. To understand it further, I propose the system of Seigniorage Fee as under: -

11.1 *For new schemes sanctioned after 01.11.2017*: - At the time of preparing the estimates, the Works Department makes an estimate on the basic cost of the minor minerals (excluding the royalty) and then at the end of the estimate, add 2% of the

Seigniorage Fee. This Seigniorage Fee should be deducted from each running bill of the contractor and deposited with the Mines Department.

Here, there is no need for any reimbursement to the contractor and there is no need for Form M/N and thus, this system is simple and free of corruption.

11.2 *For existing schemes sanctioned before 01.11.2017* : - For the existing schemes, from the running bills submitted by the contractor after 01.11.2017, the Works Department should continue to deduct royalty (as before) and deposit it in their miscellaneous head (as before) and this need not be remitted to the Mines Department. Instead, the Works Department should deposit a flat of 2% amount of the running bill with the Mines Department.

Here also, there is no need for any reimbursement and there is no need for Form M/N and thus, the system is simple and free of corruption.

12. I hope the above explains your two concerns mentioned in the letter. I reiterate that the system of flat rate Seigniorage Fee is only introduced for the sake of simplicity of royalty calculation of the works Departments and its subsequent remittance to the Mines Department. This new system rids all the Departments of 'Form M/N problem' and the resultant corruption.

Yours Sincerely

Sd/-
K.K. Pathak

To,

Sri Chanchal Kumar, IAS
Principal Secretary
Building Construction Department, Patna

Memo No. 136 Patna/Dated 09-11-17

Copy to: Principal Secretary, Water Resources Department/Rural Works Department/Road Construction Department/Panchayati Raj Department/Building construction Department /PHED/Energy Department for information.

K.K. Pathak

बिहार सरकार
खान एवं भूतत्व विभाग।

अधिसूचना

पटना, दिनांक 17/10/17

सं0सं0–सी0सी0–01/14–(खण्ड)–4042/एम0 विभागीय अधिसूचना संख्या–3031/एम0 दिनांक 11.10.2017 द्वारा बिहार लघु खनिज नियमावली, 2017 के प्रावधानों के तहत मालिकाना फीस (Seigniorage Fee) की कटौती के संबंध में दिशा–निदेश निर्गत किये गये हैं। उक्त अधिसूचना के क्रम में निम्नवत् दिशा–निदेश निर्गत किये जा रहे हैं:–

(1) मालिकाना फीस (Seigniorage Fee) की दर परियोजना के कुल प्राक्कलन (Agreemented Cost) की दो प्रतिशत होगी। सभी कार्य विभाग अपने स्कीमों एवं परियोजनाओं के लिए प्राक्कलन राशि के दो प्रतिशत की कटौती कर खान एवं भूतत्व विभाग के खनन शीर्ष–"0853" में जमा करना सुनिश्चित करेंगे।

(2) मालिकाना फीस (Seigniorage Fee), उन नई योजनाओं, जिनकी स्वीकृति दिनांक 01.11.2017 के पश्चात दी जायगी, पर लागू होगी। दिनांक 01.11.2017 के प्रभाव से जो भी योजनायें स्वीकृत हों, उनमें संवेदक के साथ किए जाने वाले एकरारनामा में मालिकाना फीस (Seigniorage Fee) का स्पष्ट उल्लेख रहे।

(3) जहाँ तक वर्तमान में चल रही योजनाओं का प्रश्न है तो यह स्पष्ट किया जाता है कि दिनांक 01.11.2017 के प्रभाव से इन योजनाओं में पारित किये जाने वाले Running Bill पर भी दो प्रतिशत की दर से मालिकाना फीस (Seigniorage Fee) कटौती के उपरांत ही भुगतान किया जाय।

(4) यदि कोई पूर्व लंबित 'एम' एवं 'एन' का मामला हो एवं जिसपर अबतक कोई Royalty की वापसी नहीं की गयी है, तो दिनांक 11.10.2017 के उपरांत किसी प्रकार की Royalty की वापसी अब नहीं की जायेगी।

(5) मालिकाना फीस (Seigniorage Fee) प्रणाली दिनांक 01.11.2017 के प्रभाव से लागू होगी।

पूर्व निर्गत विभागीय अधिसूचना संख्या–3031/एम0 दिनांक 11.10.2017 को इस हद तक संशोधित समझा जाय। अधिसूचना की शेष तथ्य यथावत रहेंगे।

बिहार राज्यपाल के आदेश से

17/10/17

(अरूण प्रकाश)
सरकार के विशेष सचिव

ज्ञापांक– सी0सी0–01/14–(खण्ड)–4042/एम0, पटना, दिनांक–17/10/17

प्रतिलिपि:– प्रधान सचिव, भवन निर्माण विभाग/पथ निर्माण विभाग/ग्रामीण कार्य विभाग/जल संसाधन विभाग/ग्रामीण विकास विभाग/लघु सिंचाई विभाग/शहरी विकास विभाग/लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना/**अभियंता प्रमुख**, भवन निर्माण विभाग/पथ निर्माण विभाग/ग्रामीण कार्य विभाग/जल संसाधन विभाग/लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना/अभियंता प्रमुख, राष्ट्रीय उच्च पथ प्रमंडल, पटना/**महाप्रबंधक**, क्षेत्रीय कार्यालय, NHAI, D-03, प्रथम तल, राजेश कुमार पथ, श्रीकृष्णापुरी, बोरिंग रोड़, पटना/**प्रबंध निदेशक**, बिहार राज्य शैक्षिणक आधारभूत संरचना विकास निगम, शिक्षा भवन, राष्ट्रभाषा कॉम्प्लेक्स, सैदपुर, पटना/**प्रबंध निदेशक**, बिहार राज्य पुलिस निर्माण निगम, निर्माण निगम, बी0एम0पी0–5 कैम्पस, शेखपुरा, पटना–14/**प्रबंध निदेशक**, बिहार राज्य भवन निर्माण निगम, पटना/**प्रबंध निदेशक**, बिहार राज्य पुल निर्माण निगम, पटना/**प्रबंध निदेशक**, नॉर्थ बिहार पावर डिस्ट्रीब्यूशन कॉरपोरेशन

D/Sanjay/Narendra/Adhisuchna

लि0, द्वितीय तल्ला, विद्युत भवन, बेली रोड़ बिहार,, पटना/प्रबंध निदेशक, नॉर्थ बिहार पावर जेनरेशन कॉरपोरेशन लि0, विद्युत भवन, बेली रोड बिहार, पटना/प्रबंध निदेशक, साउथ बिहार पावर जेनरेशन कॉरपोरेशन लि0, विद्युत भवन, बेली रोड, बिहार, पटना /प्रबंध निदेशक, बिहार ग्रीड कॉरपोरेशन लि0, विद्युत भवन, बेली रोड बिहार पटना को सूचनार्थ एवं अनुरोध है कि सभी अधीनस्थ कार्यपालक अभियंता को प्रावधानों से अवगत करावें ।

सरकार के विशेष सचिव

E-mail/Fax

ज्ञापांक– सी0सी0–01/14–(खण्ड)–4042 /एम0, पटना, दिनांक–17/10/17

प्रतिलिपिः– National Building Construction Corporation Ltd. Maurya Complex, Patna/प्रबंधक (वित्त), राष्ट्रीय भवन निर्माण निगम लि0, पटना/FA & CAO/EC, Railway CON/MX/Patna/Ircon International Ltd. Sone Bhawan, P.P. Roy Path, Patna/Sr. AFA (Con.) E.C Railway, North Estern Frontier Railway/The Head IWD, IIT, Patna Project, IIT, Patna/वरीय अभियंता (टी0एनटी0), पावर ग्रिड कारपोरेशन ऑफ इन्डिया लि0, पटना/महाप्रबंधक, केन्द्रीय लोक निर्माण विभाग, पटना/महाप्रबंधक, एन0टी0पी0सी0, बाढ़, बिहार/मुख्य अभियंता, भारत संचार निगम लिमिटेड, पटना/क्षेत्रीय पदाधिकारी, अर्न्तराष्ट्रीय सड़क राजमार्ग, किदवईपुरी, पटना/कार्यपालक निदेशक, नेशनल हाइड्रो पावर कॉरपोरेशन, पटना/प्रबंध निदेशक, एन0पी0सी0सी0, कॉटी बिजली उत्पाद निगम, पटना/प्रबंध निदेशक, रेल विकास निगम, पटना/प्रबंध निदेशक, एयरपोर्ट ऑथरिटी ऑफ इंडिया, पटना/गया/गैरिसन इंजिनियर, दानापुर कैन्ट, पटना/क्षेत्रीय पदाधिकारी, एन0एच0ए0आई0, किदवईपुरी, पटना/महाप्रबंधक, इंडियन ऑयल कॉरपोरेशन लि0, पटना, मार्केटिंग डिवीजन लोकनायक जयप्रकाश भवन, डाकबंगला चौराहा, पटना/महाप्रबंधक, बरौनी थर्मल पावर स्टेशन, बरौनी/कार्यपालक निदेशक, इंडियन ऑयल कॉरपोरेशन लि0, रिफाईन्री डिवीजन, बरौनी

सरकार के विशेष/सचिव

ज्ञापांक– सी0सी0–01/14–(खण्ड)–4042 /एम0, पटना, दिनांक–17/10/17

प्रतिलिपिः–सभी कार्यपालक अभियंता, सभी प्रमण्डल, भवन निर्माण विभाग/पथ निर्माण विभाग/ग्रामीण कार्य विभाग/जल संसाधन विभाग/ग्रामीण विकास विभाग/लघु सिंचाई विभाग/शहरी विकास विभाग/लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना एवं भूतत्व विभाग, बिहार, पटना को सूचनार्थ एवं आवश्यक कार्यार्थ प्रेषित।

सरकार के विशेष सचिव

ज्ञापांक– सी0सी0–01/14–(खण्ड)–4042 /एम0, पटना, दिनांक–17/10/17

प्रतिलिपिः–I.T Manger, खान एवं भूतत्व विभाग, बिहार, पटना को सूचनार्थ एवं आवश्यक कार्यार्थ प्रेषित।

सरकार के विशेष सचिव

बिहार सरकार
खान एवं भूतत्व विभाग।

अधिसूचना

पटना, दिनांक 11/10/17

संo संo–सीo सीo–01/14–(खण्ड)–3031/एमo अबतक बिहार लघु खनिज समनुदान नियमावली, 1972 के प्रावधानों के तहत सभी कार्य विभागों को कार्य संवेदकों द्वारा समर्पित विपत्रों के आलोक में प्रपत्र 'एम' एवं 'एन' के सत्यापन के उपरांत ही भुगतान करने का प्रावधान था।

2. विदित हो कि बिहार लघु खनिज समनुदान नियमावली, 1972 को निरसित करते हुए अधिसूचना संख्या–3018 दिनांक 10.10.2017 द्वारा नई बिहार लघु खनिज नियमावली, 2017 प्रवृत की गयी है, जिसके नियम–69 में सरकारी परियोजनाओं से मालिकाना फीस (Seigniorage Fee) का प्रावधान किया गया है। उक्त नियम निम्नवत् उद्धृत है:–

"69:(1) अपने स्कीमों या परियोजनाओं के लिए किसी लघु खनिज का उपयोग करने वाले सभी सरकारी विभाग विशिष्टतः निर्माण विभाग ऐसे लघु खनिजों के अपने आपूर्तिकर्ताओं या ठेकेदारों से मालिकाना फीस (Seigniorage Fee) की कटौती करेंगे।

(2) ऐसी मालिकाना फीस (Seigniorage Fee) की सामान्य दर दो प्रतिशत होगी और विभाग द्वारा अपने आपूर्तिकर्ताओं और ठेकेदारों से उसकी कटौती की जायेगी तथा जिला खनन पदाधिकारियों के पास जमा की जायेगी, परन्तु राज्य सरकार समय–समय पर मालिकाना फीस (Seigniorage Fee) में वृद्धि या कमी कर सकती है।"

3. अतः सभी कार्य विभाग अपने स्कीमों एवं परियोजनाओं के लिए दो प्रतिशत मालिकाना फीस (Seigniorage Fee) की कटौती कर बिहार लघु खनिज नियमावली, 2017 खान एवं भूतत्व विभाग के खनन शीर्ष '0853' में जमा करना सुनिश्चित करेंगे। इस कटौती को संबंधित संवेदक को किसी भी परिस्थिति में वापस नहीं करना है।

4. यह अधिसूचना तत्काल प्रभाव से लागू होगी।

बिहार राज्यपाल के आदेश से

(अरूण प्रकाश)
सरकार के विशेष सचिव

ज्ञापांक– सीo सीo–01/14–(खण्ड)–3031/एमo, पटना, दिनांक–11/10/17

प्रतिलिपिः– **प्रधान सचिव**, भवन निर्माण विभाग/पथ निर्माण विभाग/ग्रामीण कार्य विभाग/जल संसाधन विभाग/ग्रामीण विकास विभाग/शहरी विकास विभाग/लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना/**अभियंता प्रमुख**, भवन निर्माण विभाग/पथ निर्माण विभाग/ग्रामीण कार्य विभाग/जल संसाधन विभाग/लोक स्वास्थ्य अभियंत्रण विभाग, बिहार, पटना/**अभियंता प्रमुख**, राष्ट्रीय उच्च पथ प्रमंडल, पटना/**महाप्रबंधक**, क्षेत्रीय कार्यालय, NHAI, D-03, प्रथम तल, राजेश कुमार पथ, श्रीकृष्णापुरी, बोरिंग रोड़, पटना/**प्रबंध निदेशक**, बिहार राज्य शैक्षिणक आधारभूत संरचना विकास निगम, शिक्षा भवन, राष्ट्रभाषा कॉम्प्लेक्स, सैदपुर, पटना/**प्रबंध निदेशक**, बिहार राज्य पुलिस निर्माण निगम, निर्माण निग, बीoएमoपीo–5 कैम्पस, शेखपुरा, पटना–14/**प्रबंध निदेशक**, बिहार राज्य भवन निर्माण निगम, पटना/**प्रबंध निदेशक**, बिहार राज्य पुल निर्माण निगम, पटना/**प्रबंध** निदेशक, नॉर्थ बिहार पावर डिस्ट्रीब्यूशन कॉरपोरेशन लि0, द्वितीय तल्ला, विधुत भवन, बेली रोड़ बिहार,, पटना/**प्रबंध निदेशक**, नॉर्थ बिहार पावर जेनरेशन कॉरपोरेशन लि0, विधुत भवन, बेली रोड बिहार, पटना/**प्रबंध निदेशक**, साउथ बिहार पावर जेनरेशन कॉरपोरेशन लि0, विधुत भवन, बेली रोड, बिहार, पटना/**प्रबंध निदेशक**, बिहार ग्रीड कॉरपोरेशन लि0, विधुत भवन, बेली रोड बिहार पटना को सूचनार्थ एवं आवश्यक कार्यार्थ प्रेषित।

सरकार के विशेष सचिव

P.T.O.

D/Sanjay/Narendraji/Adhisuchna

बिहार सरकार

खान एवं भूतत्व विभाग

अधिसूचना

पटना, दिनांक- 27/1/12

एस0ओ0सं0- 245 /ख.40, बिहार लघु खनिज समनुदान नियमावली, 1972 के नियम 26(क) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुये राज्य के अन्तर्गत स्थित विभिन्न क्षेत्रों में असैनिक निर्माण कार्य की स्थिति, जनसंख्या स्थिति; औद्योगिक निर्माण कार्य की स्थिति, शहरीकरण की अवस्था एवं औद्योगिक विकास की गति को ध्यान में रखते हुये बिहार के राज्यपाल के पूर्व की अधिसूचना एस0ओ0सं0 27 दिनांक 24.3.2001 का संशोधन करते हैं एवं विभिन्न क्षेत्रों को श्रेणियों में विभाजित करते हुये प्रत्येक स्थायी चिमनी एवं बंगला ईट भट्ठों के लिये ईंटों की संख्या और उस पर ईट भट्ठा मालिकों / ईंट मिट्टी हटाने वालों द्वारा प्रति भट्ठा प्रति वर्ष राज्य सरकार को देय समेकित स्वामिस्व की राशि निर्धारित करते हैं जो निम्नलिखित तालिका में दिखाई 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 भट्ठा के निर्मित ईट	स्वामिस्व - प्रति भट्ठा प्रति वर्ष 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	130500/-रू0
2	II	अन्य शहरी क्षेत्र	35 लाख ईट	101500/-रू0
3	III	ग्रामीण क्षेत्र	25 लाख ईट	72500/-रू0
4	IV	बंगला भट्ठा	1 (एक लाख) ईट	4350/-रू0

2- यह अधिसूचना निर्गत की तिथि से प्रवृत्त होगी ।

टिप्पणी I- समेकित स्वामिस्व का भुगतान दो किस्तों में किया जायेगा, यथा:-

(i) प्रथम किस्त - कुल देय स्वामिस्व राशि का 50 प्रतिशत भट्ठा आरंभ करने के पूर्व, तथा

(ii) द्वितीय किस्त :- कुल राशि का शेष 50 प्रतिशत 31 मार्च के पूर्व ।

(iii) भट्ठेदारों द्वारा कुल देय स्वामिस्व का भुगतान अगर एक मुस्त कर दिया जाता है तो कुल भुगतेय स्वामिस्व पर 5 प्रतिशत की छूट दी जायेगी ।

टिप्पणी II- "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 हैं ।

टिप्पणी III- अव्यवसायिक, व्यक्तिगत उपयोग हेतु बंगला भट्ठा में निर्मित ईंट / ईंट मिट्टी पर कोई स्वामिस्व भुगतेय नहीं होगा ।

4/बी0मु020-22/09

बिहार राज्यपाल के आदेश से,

27.1.12

सरकार के संयुक्त सचिव ।

एस0ओ0सं0- 245 /एम0, पटना, दिनांक- 27/1/12 का अंग्रेजी में निम्नलिखित अनुवाद बिहार राज्यपाल के प्राधिकार से इसके द्वारा प्रकाशित किया जाता है जिसे भारतीय संविधान के अनुच्छेद 348 के खण्ड (3) के अधीन अंग्रेजी भाषा में उसका प्राधिकृत पाठ समझा जायेगा ।

4/बी0मु020-22/09

बिहार राज्यपाल के आदेश से,

27.1.12

सरकार के संयुक्त सचिव ।

S.O. No. 245 /M, 27.1.12 In exercise of the powers conferred by rule 26(A) of the Bihar Minor Mineral Concession Rules, 1972 and having regard to position of Civil Construction, work position of Industrial Construction, position of situated population, position of Urbanisation and pace of industrial growth in different areas of the State, the Governor of Bihar is pleased to amend the previous notification S.O. No. 27 dated 24 March 2001 and reclassify such areas to determine the number of bricks per fixed kiln and Bangla Bhatta and consolidated amount of royalty to be paid thereon by brick kiln owner/brick earth remover per kiln per annum to the State Government for different areas as shown in the table below:-

अधिसूचना

पटना, दिनांक 27/1/12

एस0 ओ0 सं0 250 एम0,खान एवं खनिज (विकास एवं विनियमन) अधिनियम,1957 (अधिनियम सं0 67,1957) की धारा–15 के द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए बिहार राज्यपाल बिहार लघु खनिज समनुदान नियमावली,1972 के नियम 26 (1) (क) और (ख) की क्रमशः अनुसूची I एवं II में निम्नलिखित संशोधन करते है जो तुरत प्रवृत्त होगा :–

संशोधन

उक्त नियमावली में,

1. विद्यमान अनुसूची I, निम्नलिखित द्वारा प्रतिस्थापित की जायेगी, यथा:–

अनुसूची I

[नियम 26 (1) (क) द्रष्टव्य]

अनिवार्य लगान

अवधि	अनिवार्य लगान की दर (रूपये में)
1	2
पट्टा की सम्पूर्ण अवधि के लिएप्रति वर्ष की दर	30,000 रू0 प्रति एकड़ प्रति वर्ष

2. विद्यमान अनुसूची II निम्नलिखित द्वारा प्रतिस्थापित की जायेगी :–

अनुसूची II

[नियम 26 (1) (ख) द्रष्टव्य]

स्वामित्व (रॉयल्टी)

क्रम संख्या	खनिज का नाम	प्रति घन मीटर दर (रूपये में)
1	2	3
1	(क) किसी भी नाम से यथा परिभाषित बोल्डर,ग्रेवेल शिंगिल अथवा पत्थर (ख) नीलामी द्वारा बंदोबस्त पत्थर	100=00 नीलामी की दशा में नीलामी की राशि
2	(क) निर्माण प्रयोजनों में व्यवहृत साधारण बालू (ख) नीलाम घाटों का साधारण बालू	50=00 नीलामी की दशा में नीलामी की राशि
3	ईंट बनाने की मिट्टी (400 मानक ईंट के समतुल्य)	11=60(एस0 ओ0 सं0 244,दिनांक 27-01-12 द्वारा प्रख्यापित)
4	साधारण मिट्टी-मिट्टी जिसका उपयोग रानीगंज खपड़ा,वाणिज्यिक कार्यों, यथा बांध, सड़क,भवन आदि के निर्माण या उसे समतल करने अथवा अन्य वाणिज्येक कार्यों के लिए किया जाता हो।	22=00

5	निर्माण सामग्री के रूप में व्यवहृत चूने के विनिर्माण के लिए भट्ठे में काम आनेवाला लाईम शेल,चूना पत्थर और कंकड़ तथा बटन के विनिर्माण में व्यवहृत लाईम शेल।	110=00
6	मोरम	55=00
7	केवल गोला मिल (बॉल मिल) के प्रयोजनार्थ व्यवहृत केल्सेडोनी गुटिका (पेबल)।	73=00
8	कंकड़युक्त पहाड़ी मिट्टी (ग्रैंडुलर अर्थ)	55=00
9	भवन निर्माण के प्रयोजनार्थ या सड़क बनाने के काम में आनेवाला क्वार्टजाईट	73=00
10	रेह मिट्टी	26=00
11	शोरा (साल्ट पीटर)	29=00
12	स्लेट और शेल जब उनका उपयोग भवन निर्माण सामग्री के रूप में किया जाय	73=00
13	मुल्तानी मिट्टी (फुलर्स अर्थ)	95=00
14	चक्की (ग्राइनडिंग) पत्थर सहित घरेलू बर्तन बनाने के काम में आनेवाला पत्थर	36=00
15	प्रति सैकड़ा स्टोन सेट्स तथा पत्थर ईट (स्टोन ब्रिक्स)	73=00
16	पत्थर चूर्ण (स्टोन डस्ट)	विक्रय मूल्य की 10 प्रतिशत राशि
17	ग्रेनाईट (सजावट पत्थर के रूप में उपयोग होने पर) प्रति सैकड़ा (i) 60 से0 मी0 से अधिक के ब्लॉक के लिये । (ii) 60 से0 मी0 से कम के ब्लॉक के लिये ।	 545=00 273=00
18	अन्य सभी खनिज	बिक्रय मूल्य का 25 प्रतिशत राशि

टिप्पणी I बिहार लघु खनिज समानुदान नियमावली,1972 या अन्यथा में किसी विरुद्ध बात के अन्तर्विष्ट होते हुए भी, नीलामी की राशि के समतुल्य से अधिक पत्थर का उत्खनन एवं प्रेषित किये जाने पर, बंदोबस्तधारी अधिक उत्खनित पत्थर की मात्रा के लिए अतिरिक्त स्वामित्व (रॉयलटी) का भुगतान करेगा।

टिप्पणी II नीलामी की राशि के समतुल्य बालू की मात्रा से अधिक बालू के निकाले जाने और प्रेषित किये जाने पर, बंदोबस्तधारी अधिक निकाले गए बालू की मात्रा के लिए अतिरिक्त स्वामित्व (रॉयलटी) का भुगतान करेगा।

12/वी0/मु0 70–2/03
बिहार राज्यपाल के आदेश से
सरकार के उप सचिव।

एस0ओ0 .....250.....एम0,का अंग्रेजी में निम्नलिखित अनुवाद बिहार राज्यपाल के प्राधिकार से इसके द्वारा प्रकाशित किया जाता है जिसे भारतीय संविधान के अनुच्छेद 348 के खण्ड (3) के अधीन अंग्रजी में उसका प्राधिकृत पाठ समझा जायेगा।

12/वी0/मु0 70–2/03
बिहार राज्यपाल के आदेश से
27.1.12
सरकार के उप सचिव।

S.O No. 250 /M, In exercise of the power conferred by Section 15 of the Mines & Mineral (Development and Regulation) Act. 1957 (Act no.67 of 1957), The Governor of Bihar is pleased to make the following amendment in schedule I & II of Rule 26(1) (a) & (b) respectively of Bihar Minor Mineral concession Rule,1972 which shall come into force with immediate effect:-

AMENDMENTS

In the said Rules:-

1. Existing schedule I shall be substituted by the following, namely:-

Schedule I

(see Rule 26(1) (a))

Dead Rent

Period	Rate of dead rent (In Rs.)
1	2
Rate per year for entire period of lease	30,000 per acre per year

2. Exiting Schedule II shall be substituted by the following, namely:-

Schedule II

(see Rule 26(1) (b))

Royalty

Sr.No.	Name of minerals	Rate per Cubic meter in Rupess.
1	2	3
1	(a) Boulder, Gravel, shingle or stone as defined by name whichever (b) Stone settled by way of auction	100–00 In case of auction the amount of auction
2	(a) Ordinary sand used for construction purpose (b) Ordinary sand of auctioned ghats	50=00 In case of auction the amount of auction
3	Brick earth (equivalent to 400 standard bricks)	11=60 (S.O. No. 244, Dated 27-01-12)
4	Ordinary clay- clay which is used for manufacturing of Rani ganj tiles, commercial works which is used for construction of embankment, Road. Building or levelling the same of used for other commercial orks.	22=00
5	Lime shell, Lime stone and kankar used in Kilns for manufacturing of lime used as construction material and Lime shall used for manufacture of bottons.	110=00

6	Murram	55=00
7	Chalcedony Pebbles used for Boll Mill purpose only	73=00
8	Granduler earth	55=00
9	Quartzite used for the purpose of Building Construction or for making road.	73=00
10	Rch Mitti	26=00
11	Saltpetre	29=00
12	Slate and shell when used for making Building material	73=00
13	Fullers earth	95=00
14	Stone used for making houschold utensils including grinding stone	36=00
15	Stone sets and Stone Bricks Per hundred	73=00
16	Stone dust	10 Percent Amount of sale price .
17	Granite (In case of use for decorating stone) per hundred (i) Block more than 60 c.m (ii) Block less than 60 c.m	 545=00 273=00
18	All other minerals	25 Percent of sale price

Note :- (I) Notwithstanding any thing contained repugnant in Bihar Minor Mineral Concession Rules,1972 or otherwise, the settlee shall pay the extra Royalty for the excess quantity of extracted and dispatched stone more than the equivalent auction amount .

Note :- (II) The settlee shall pay the extra Royalty for the excess quantity of extracted and dispatched sand more than the equivalent auction amount.

12/B/MU 70-2/03

By the order of Governor of Bihar

27-1-2012

Deputy Secretary to Government

ज्ञापांक 12/वी0/मु0 70–2/03 २८८ /एम0,दिनांक २७/१/१२

प्रतिलिपि अवर सचिव,वित्त विभाग,बिहार,पटना को सी0डी0 के साथ प्रेषित करते हुये उनसे अनुरोध है कि अधिसूचना की 500 प्रतियॉ बिहार राजपत्र (गजट) में प्रकाशित कराने हेतु राजकीय मुद्रणालय,गुलजार बाग, पटना को भेजी जाय तथा उसकी प्रतियॉ विभाग को उपलब्ध करायी जाय।

27-1-2012

सरकार के उप सचिव।

ज्ञापांक २८९ /एम0,दिनांक २७/१/१२

प्रतिलिपि: सभी प्रमण्डीय आयुक्त/सभी जिला पदाधिकारी/अपर निदेशक/सभी उप निदेशक/सभी सहायक निदेशक,खान एवं भूतत्व विभाग/सभी खनिज विकास पदाधिकारी,खान एवं भूतत्व विभाग/सभी खान निरीक्षक,खान एवं भूतत्व विभाग को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

27-1-2012

सरकार के उप सचिव।

ज्ञापांक 250 /एम0,दिनांक 27/1/12

प्रतिलिपि: सचिव सह–विधि परामर्शी,विधि विभाग,बिहार/प्रधान सचिव,वित्त विभाग,बिहार/प्रधान सचिव, मंत्रिमंडल सचिवालय एवं समन्वय विभाग, बिहार, पटना को सूचनार्थ एवं प्रेषित।

27.1.2012

सरकार के उप सचिव।

बिहार सरकार

राज्य स्तरीय अनुसूचित दर निर्धारण समिति

पथ निर्माण विभाग, बिहार, पटना।

पत्रांक – मु0 नि0 (पथ) – 38(अनु0) पटना/दिनांक – 13/05/10

प्रेषक,

रामध्यान राम,
संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

सेवा में,

सभी मुख्य अभियंता(राष्ट्रीय उच्च पथ सहित), पथ निर्माण विभाग, बिहार, पटना।
सभी अधीक्षण अभियंता(राष्ट्रीय उच्च पथ सहित), पथ निर्माण विभाग, बिहार, पटना।
प्रबंध निदेशक, बिहार राज्य पुल निर्माण निगम, बिहार, पटना।
प्रबंध निदेशक, बिहार राज्य पथ विकास निगम, बिहार, पटना।
सभी कार्यपालक अभियंता(राष्ट्रीय उच्च पथ सहित), पथ निर्माण विभाग, बिहार, पटना।

विषयः– बिहार भवन एवं अन्य सन्निमार्ण कर्मकार कल्याण बोर्ड में प्रत्येक योजनाओं के लागत का 1 % (एक प्रतिशत) "सेस" के रूप में जमा करने के संबंध में ।

प्रसंगः– पथ निर्माण विभाग, बिहार का पत्रांक 746(E) We पटना, दिनांक – 25.02.2010 ।

महाशय,

वित्त विभाग, बिहार सरकार द्वारा लिये गये निर्णय के आलोक में विभिन्न निर्माण कार्यों के विपत्रों से 1% (एक प्रतिशत) की राशि की कटौती श्रमिक कल्याण कोष हेतु सेस के रूप में की जानी है ।

उक्त आलोक में कराये जानेवाले योजनाओं के प्राक्कलन के सृजन हेतु प्रयुक्त प्रत्येक मद के दर में वर्णित सेस हेतु 1 % (एक प्रतिशत) की राशि का अतिरिक्त प्रावधान श्रमिक कल्याण कोष के लिये करते हुए दर विश्लेषण करना सुनिश्चित करें ।

अनु0:– 1. प्रसंगाधीन पत्र की छाया प्रति ।
2. श्रम संसाधन विभाग का पत्रांक 4984 पटना दिनांक–01.10.08 ।

विश्वासभाजन

13.5.10

(रामध्यान राम)
संयोजक,
राज्य स्तरीय अनुसूचित दर निर्धारण समिति
–सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–
विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना

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

प्रत्रांकः– प्र.6 / नियम–10 / 2008 746 (E)W 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।

विषयः **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–बी0सी0डब्लू0सी0–14 / 2008–श्र.स.–4984 दिनांक 01.10.08 (सानुलग्नक 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 सेवाशर्त्त विनियमन) अधिनियम, 1996 के निर्देशों के अनुपालनार्थ निर्माण कार्यों के संवेदक के विपत्रों से देय 1% (एक प्रतिशत) सेस के निमित निर्माण कार्य के प्राक्कलन में कार्य मूल्य का 1% (एक प्रतिशत) की दर से "सेस" की राशि जोडकर प्राक्कलन का प्राविधिक 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।

विश्वासभाजन

(रामध्यान राम)
अभियंता प्रमुख–सह–अपर आयुक्त –सह–विशेष सचिव
पथ निर्माण विभाग,बिहार,पटना।

कृ0पृ0उ0

24/2/10

ज्ञापांकः प्र.6 / नियम–10 / 2008 पटना, दिनांक

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

24.2.10

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

ज्ञापांकः 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।

24.2.10

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

ज्ञापांकः 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।

24.2.10

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

24/2/10

संचिका सं0–बी0सी0डब्लू0सी0–14/2008, श्र0सं0– 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,

अभियंता प्रमुख–सह–सचिव,
पथ निर्माण विभाग,बिहार,पटना।

पटना, दिनांक–01-10-08

विषयः– अर्द्ध सरकारी पत्र संख्या– बी0सी0डब्लू0सी0 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 सं0–बी0सी0डब्लू0सी0–01/2008–922,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।

अनुलग्नकः यथोक्त।

विश्वासभाजन,

1.10.08
(राजेन्द्र प्रसाद मण्डल)
संयुक्त श्रमायुक्त–सह–सचिव,
बिहार भवन एवं अन्य सन्निमार्ण
कर्मकार कल्याण बोर्ड,पटना।

Vyas Ji, IAS
Principal Secretary

Tel : +91-612-2223855
Fax : +91-612-2222704
e-mail : vyas56@hotmail.com
secllab-bih@nic.in

बिहार सरकार
श्रम संसाधन विभाग
विकास भवन, पटना 800015, बिहार

Government of Bihar
Department of Labour Resources
Vikas Bhawan, Patna - 800015, Bihar

अर्द्ध सरकारी पत्र सं0 निर्मा॰ श्रमि॰ कल्या॰ बो॰-01/2005 विक॰-332 पटना दिनांक 21/2/18

प्रिय महाशय,

निमार्ण श्रमिकों के संबंध में वर्ष,1996 में निम्नलिखित दो केन्द्रीय अधिनियम प्रभावशील हैं :–

(i) भवन तथा अन्य सन्निर्माण कर्मकार (नियोजन तथा सेवा शर्त्त विनियमन) अधिनियम,1996 तथा

(ii) भवन तथा अन्य सन्निर्गाण कर्मकार कल्याण उपकार अधिनियम, 1996.

2. **उक्त द्वितीय अधिनियम के तहत नियम भी केन्द्र 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 18.2.18 की प्रकाशित अधिसूचना द्वारा कर दिया है ।**

3. उक्त द्वितीय अधिनियम के धारा 3 के तहत् निर्माण कार्यो 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 निमार्ण श्रमिकों के कल्याण की विभिन्न गतिविधियों के संचालन में किया जाएगा । (केन्द्र 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 शर्त्ते 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 कार्यो में कृपया उक्त अधिनियमों / नियमों का पालन सूनिश्चित करने का कष्ट करें । इस संबंध में निम्नलिखित विन्दु ध्यान देने योग्य है :–

(i) विभाग / सार्वजनिक उपक्रम / संविधिक प्राधिकारिय के कार्यो में निर्माण श्रमिकों को नियोजित करने वाले सभी ठेकेदार अपनी–अपनी स्थापनाओं को उक्त प्रथम अधिनियम की धारा –7 के तहत अविलम्ब पंजीकृत करा लें, और भविष्य में आरम्भ होने वाले सभी निर्माण कार्यो 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 शर्ते विनियमन) नियमावली, 2005 के निमय 27के 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 तहत् 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 तहत् 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 सार्वाजनिक उपकर्मो तथा सांविधिक प्राधिकारियों द्वारा निर्माण कार्यो के लिये भविष्य में जो निविदा प्रपत्र तथा अनुबंध के प्रारूप का उपयोग किया जाय । उनमें कंडिका 1 में उल्लेखित अधिनियमों के पालन की शर्त्ते का विशिष्ठ 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 तहत् निर्माण कार्यो 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 तहत् बने केन्द्रीय नियमों के नियम 4 (3) के अनुसार शासकिय विभागों और सार्वजनिक उपक्रमों के निर्माण कार्यो 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 दिन की अवधि में कल्याण बोर्ड को क्रोस्ड 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 रहें निर्माण कार्यो 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, अभारी हाऊगा यदि पत्र के प्रसंग में की गई कार्रवाई से आप मुझे अवगत करा दें और इसे विषय पर अधीनस्थ अधिकारियों, सार्वजनिक उपक्रमों तथा संविधिक प्रधिकारियों 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 है ।

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

भवदीय

([illegible])

EXTRACT FROM THE GAZETTE OF INDIA : PART II, SEC. 3, SUB-SEC. (ii)
Appeared on page No. 3166
Dated : 12-10-96

श्रम मंत्रालय

MINISTRY OF LABOUR

अधिसूचना

नई दिल्ली, 26 सितम्बर, 1996

का. आ. 2899.—केन्द्रीय सरकार, भवन और अन्य संनिर्माण कर्मकार उपकर अधिनियम, 1996 (1996 का 28) की धारा 3 की उपधारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए भारत सरकार के श्रम मंत्रालय की अधिसूचना सं. का. आ. 1767, तारीख 17 मई, 1996 को अधिक्रमित करते हुए केन्द्र सरकार संनिर्माण कर्मकार (विनियमन तथा सेवा की शर्तें विनियमन) अधिनियम, 1996 (1996 का 27) के प्रयोजनों के लिए किसी नियोक्ता द्वारा किए गए संनिर्माण खर्चे से 1 प्रतिशत की दर से अंशदान विनिर्दिष्ट करती है।

[सं. ई. एल-20101/1/95-आर डब्ल्यू (भाग I)]
डी. के. त्रेहन, श्रम एवं नियोजन सलाहकार

NOTIFICATION

New Delhi, the 26th September, 1996

S.O. 2899.—In exercise of powers conferred by sub-section (1) of section 3 of the Building and Other Construction Workers' Welfare Cess Act, 1996 (28 of 1996) and in supersession 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 Conditions of 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-20101/1/95-RW (Part-I)]
D. K. TREHAN, Labour & Employment Adviser

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

The basic approach for the preparation of Standard Data Book for Analysis of Rates for Rural Roads is indicated as under:

1. **Description of Items**

The description of items is given briefly and linked with the relevant Sections and Clauses of the Ministry of Rural Development (MORD) Specifications for Rural Roads 2004 referred as Technical Specifications in the description of items, wherever feasible, which may be referred for detailed description, provisions and interpretation.

2. **Use of Machinery**

2.1. The Standard Data Book is based on the assumption that Rural Roads are to be constructed with intermediate technology, i.e., manual means with medium input of machinery, wherever required to ensure the required quality of work.

2.2. For rolling, use of static roller has been generally considered. However, use of vibratory/pneumatic tyre roller has been considered wherever required as per provisions of MORD Specifications.

3. **Working Conditions**

3.1. Rates have been analysed for average working conditions prevailing in the country.

3.2. Average achievable outputs of machinery and labour have been considered taking into account the job and management factors.

3.3. Since, the outputs of machinery and labour reduces substantially in hilly areas as the altitude increases, reduced outputs have been considered for hilly areas as indicated in the Preamble of Chapter 8.

4. **Overheads**

The overheads are considered as 10 per cent for items of road works, 20 per cent for items of bridge works and 15 per cent for items of protection works. This is assumed to include interalia the following elements:

i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.

ii. Site office infrastructure.

iii. Expenditure on:

(a) Corporate office of the Contractor
(b) Site supervision by the Contractor
(c) Preparation of "as built" drawings

iv. Mobilisation/demobilisation of resources.

v. Labour camps with minimum amenities, required as per labour laws.

vi. Light vehicles for site supervision including administrative and managerial requirements.

vii. Setting up of laboratories for quality control, field and laboratory testing for control of quality of various items of work and documentation of test results as per requirements of the MORD Specifications.

viii. Minor Tools & Plants (T&P) including needle vibrators required for concrete work.

ix. Survey instruments and the task of setting out of works including verification of line and dimensions (but excluding construction of benchmarks and reference pillars which are separate items under setting out).

x. Taking of trial pits and bore holes, where required as per the MORD Specifications.

xi. Watch and ward.

xii. Arrangement for traffic and traffic management during construction.

xiii. Expenditure on safeguarding environment during construction.

xiv. Sundries.

xv. Financing expenditure of the Contractor.

xvi. Work insurance/compensation.

xvii. Sales/Turnover tax has been assumed at 4 per cent. In case this tax is more than 4 per cent, the percentage of overheads should be increased correspondingly for such States.

5. **Contractor's Profit**

Contractor's profit is considered @ 10 per cent uniformly and is added on Overheads also.

6. **General**

6.1. The Section and Clause numbers refer to the MORD Specifications for Rural Roads 2004.

6.2. Additional assumptions made for analysing different items have been indicated in respective Chapters in the form of Preamble and notes/footnotes wherever required.

6.3. For some of the items, certain size/specifications have been assumed. If size/specifications other than the same are adopted, corresponding modifications may be made in the inputs of analysis.

6.4. In the rate analysis of some items, the quantities of sub-items involved in that analysis, like, excavation for foundation, foundation concrete, masonry work, painting, lettering, etc. have been given. For rate analysis of such sub-items, reference may be made to relevant Chapters dealing with the sub-items.

6.5. The sources of all materials and samples of materials are required to be approved by the Engineer before start of any work.

6.6. For reinforcing steel both HYSD and TMT bars conforming to IS:1786 have been considered.

6.7. For pipe culverts both NP3 and NP4 pipes have been considered.

6.8. Quality control of works shall be governed by the relevant MORD Specifications.

7. **Basic Inputs**

7.1. The Standard Data Book is based on the requirements of basic inputs of materials, labour and machineries for various items.

7.2. The rates for labour, material and usage charges of machinery for the area where the project is located are to be ascertained from local authorities/enquiries to prepare SOR for the area.

7.3. The basic rates of materials, such as, stone boulders, stone for masonry, stone ballast (hand broken/ machine broken), crushed aggregate, stone dust, moorum, gravel, lime, manure, sludge, quarry sweep, kankar, bricks, brick ballast, crushed slag, etc. at quarry/crusher sites shall be fixed by the respective States for various zones from time to time.

7.4. While preparing estimates/Detailed Notice Inviting Tender/Analysis of rates, only the basic rates fixed by respective States for concerned zones should be adopted.

7.5. The cost of materials should include the cost at source and the cost of their carriage upto the work site.

7.6. Although market rates for supply of aggregates at site are generally adopted for estimation purpose, rates for crushing of aggregates have also been analysed as most Contractors prefer to crush their own aggregates in case of larger sized projects. The cost of materials shall be evaluated considering the cost at crushing plants and its carriage upto the work site. These should be compared with rates for own crushing and carriage by the construction agency and lesser of the rates should be adopted for estimation purpose.

8. **Plants and Equipment**

8.1. Keeping in view the job and managerial factors and the age factor of machines, the output of plant and equipment is taken approximately 70 per cent of the rated capacity given by manufacturer under ideal conditions.

MISCELLANEOUS

The 29th June 2017
Notification No. 1/2017-State Tax (Rate)

S.O 65 dated 29th June 2017—In exercise of the powers conferred by sub-section (1) of section 9 of the Bihar Goods and Services Tax Act, 2017 (Bihar Act 12 of 2017), the Governor of Bihar, on the recommendations of the Council, hereby notifies the rate of the State tax of-

(i) 2.5 per cent. in respect of goods specified in Schedule I,

(ii) 6 per cent. in respect of goods specified in Schedule II,

(iii) 9 per cent. in respect of goods specified in Schedule III,

(iv) 14 per cent. in respect of goods specified in Schedule IV,

(v) 1.5 per cent. in respect of goods specified in Schedule V, and

(vi) 0.125 per cent. in respect of goods specified in Schedule VI

appended to this notification (hereinafter referred to as the said Schedules), that shall be levied on intra-State supplies of goods, the description of which is specified in the corresponding entry in column (3) of the said Schedules, falling under the tariff item, sub-heading, heading or Chapter, as the case may be, as specified in the corresponding entry in column (2) of the said Schedules.

Schedule I – 2.5%

S. No.	Chapter / Heading / Sub-heading / Tariff item	Description of Goods
(1)	(2)	(3)
1.	0303	Fish, frozen, excluding fish fillets and other fish meat of heading 0304
2.	0304	Fish fillets and other fish meat (whether or not minced), frozen
3.	0305	Fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process; flours, meals and pellets of fish, fit for human consumption
4.	0306	Crustaceans, whether in shell or not, frozen, dried, salted or in brine; crustaceans, in shell, cooked by steaming or by boiling in water, frozen, dried, salted or in brine; flours, meals and pellets of crustaceans, fit for human consumption
5.	0307	Molluscs, whether in shell or not, frozen, dried, salted or in brine; aquatic invertebrates other than crustaceans and molluscs, frozen, dried, salted or in brine; flours, meals and pellets of aquatic invertebra other than crustaceans, fit for human consumption
6.	0308	Aquatic invertebrates other than crustaceans and molluscs, frozen, dried, salted or in brine; smoked aquatic invertebrates other than crustaceans and molluscs, whether or not cooked before or during the smoking process: flours, meals and pellets of aquatic invertebrates other than crustaceans and molluscs, fit for human consumption
7.	0401	Ultra High Temperature (UHT) milk
8.	0402	Milk and cream, concentrated or containing added sugar or other sweetening matter, including skimmed milk powder, milk food for babies [other than condensed milk]
9.	0403	Cream, yogurt, kephir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa
10.	0404	Whey, whether or not concentrated or containing added sugar or other sweetening matter; products consisting of natural milk constituents, whether or not containing added sugar or other sweetening matter, not

S. No.	Chapter / Heading / Sub-heading / Tariff item	Description of Goods
(1)	(2)	(3)
3.	7104	Synthetic or reconstructed precious or semi-precious stones, unworked or simply sawn or roughly shaped

Explanation. –For the purposes of this notification,-

(i) The phrase "unit container" means a package, whether large or small (for example, tin, can, box, jar, bottle, bag, or carton, drum, barrel, or canister) designed to hold a pre-determined quantity or number, which is indicated on such package.

(ii) The phrase "brand name" means brand name or trade name, that is to say, a name or a mark, such as symbol, monogram, label, signature or invented word or writing which is used in relation to such specified goods for the purpose of indicating, or so as to indicate a connection in the course of trade between such specified goods and some person using such name or mark with or without any indication of the identity of that person.

(iii) The phrase "registered brand name" means a brand which is registered under the Trade Marks Act, 1999.

(iv) "Tariff item", "sub-heading" "heading" and "Chapter" shall mean respectively a tariff item, sub-heading, heading and chapter as specified in the First Schedule to the Customs Tariff Act, 1975 (51 of 1975).

(v) The rules for the interpretation of the First Schedule to the Customs Tariff Act, 1975 (51 of 1975), including the Section and Chapter Notes and the General Explanatory Notes of the First Schedule shall, so far as may be, apply to the interpretation of this notification.

2. This notification shall come into force with effect from the 1st day of July, 2017.

[(File No. Bikri-kar/GST/Vividh-13/2017-1)]

By the order of Governor of Bihar,
SUJATA CHATURVEDI,
Commissioner-cum-Principal Secretary
Commercial Taxes Department.

अधीक्षक, सचिवालय मुद्रणालय,
बिहार, पटना द्वारा प्रकाशित एवं मुद्रित,
बिहार गजट (असाधारण)544+571+10-डी0टी0पी0।
Website: http://egazette.bih.nic.in

[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 asassigned 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 andcess;

(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 thefamily;

(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;

RCD/SOR_13th Edition_April 2018

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 hisemployment.

2. Services by any court or Tribunal established under any law for the time being inforce.

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।
बिहार गजट (असाधारण) 377-571+400-डी0टी0पी0।
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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^3	1.00	6.00 M^3
2.	Earth	6.00 M^3	0.80	4.80 M^3
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
	(x) 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 5.00 cum		5.4 cum	0.924
	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

Important Points to be Noted

1. The rate analysis of chapter 12 to 15 have been framed on 25% Overhead Charges for Major Bridges including State of Art Bridges & Minor Bridges. When the rate of chapter 12 to 15 have to be used for Minor Bridges included in the road package it must be converted into 20% Overhead Charges by multiplying 0.96 to the basic rate of chapter 12 to 15.

2. The rate analysis of Road Works have been framed on 10% Overhead Charges up to cost ₹50.00 Crores. When the cost is above ₹50.00 Crores, it must be converted into 8% Overhead Charges by multiplying 0.982 to the basic rates of Road Works.

3. The materials rate of Patna Civil Division have been taken into analysis (in case of 100A Brick, Patna Urban), if the rate of other Civil Division is provided, in that case the difference of cost of materials with proper Overhead & CP must be calculated by addition or subtraction as required in the basic SOR.

4. The maximum lead to be considered as per T.E.C. norms is as follows:-

   (i) For local sand 3 km with 1 km on kuchcha road.
   (ii) For brick 8 km with 1 km kuchcha road.
   (iii) For coarse sand, stone metals, stone chips, stone boulder, bitumen as per actual lead without provision of kuchcha lead as per requirement of site condition.

5. It is advised to users to read the concerned specification and detail rate analysis carefully before using the rates as this Rate of Analysis is based on the recent development in technology in the field of Highway Construction.

6. In chapter - 1(Carriage of Materials), Contractor's profit (10%) and Overhead charges (10%) have been included in the rate analysis.

ABBREVIATIONS

mm	Millimetre
cm	Centimetre
m	Metre
km	Kilometre
Sqm	Square metre
Ha	Hectare
Sq. km	Square Kilometre
cum	Cubic metre
l	Litre
kl	Kilolitre
kg	Kilogram
q	quintal
t	tonne
t.km	tonne kilometer
MoRT&H	Ministry of Road Transport and Highways
IS	Indian Standard
IRC	Indian Roads Congress
T&P	Tools and Plants
GI	Galvanised Iron
CI	Cast Iron
RCC	Reinforced Cement Concrete
PCC	Plain Cement Concrete
GL	Ground Level
₹	Indian Rupees
Dia	Diameter
Min	Minimum
Max	Maximum
No.	Number
hr	Hour
i.e.	That is
eg	For example
WBM	Water Bound Macadam
BM	Bituminous Macadam
SDBC	Semi-Dense Bituminous Concrete
BC	Bituminous Concrete
F E loader	Front end Loader
OMC	Optimum Moisture Content
L	Lead in Kilometre
HMP	Hot Mix Plant
RR	Road Roller
WMM	Wet Mix Macadam

PART - A
ROAD WORK

A. Road Works

Basic Approach and General conditions for the preparation of Standard Data Book

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 is given briefly and linked with the relevant clause of the MoRT&H Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

2. Mechanical Means

Due to mechanization of construction work, rate analysis for various items has been prepared using mechanical means. However, manual means have also been provided for certain cases, where areas may be inaccessible for machines or quantum of work may not be large enough to justify use of machines.

3. Overhead Charges

The overhead charges include the following elements :

i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
ii. Office furniture, equipment and communications.
iii. Expenditure on
   a). Corporate office of contractor
   b) Site supervision
   c) Documentation and "as built" drawings
iv. Mobilisation/de-mobilisation of resources
v. Labour camps with minimum 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 work, including verification of line, dimensions, trial pits and bore holes, where required
ix. Watch and ward
x. Traffic management during construction
xi. Expenditure on safeguarding environment
xii. Sundries
xiii. Financing Expenditure
xiv. Sales/Turn over tax
xv. Work Insurance/compensation.

3.1 For the purpose of calculation of Overhead charges, the projects are categorized into 2 types as under and Overhead charges, provided as indicated against each.

Category 1 : Cost up to ₹50 crores 10 Per cent

Category 2 : Cost above ₹50 crores 8 Per cent

4. Contractor's Profit

10 per cent of cost of works

Contractor's profit is also added on overhead charges.

5. Basic Inputs

Basic Inputs are only given in the standard data book. The rates for material and labour are to be obtained from local authorities for the area where the project is located.

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 job and managerial factors and the age factor of machines, the output of plant equipment is taken approximately 70 per cent of the rated capacity given by manufacture under ideal conditions.

6.3 It has been assumed that a water tanker would make one trip per hour on an average. 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 charges for machines include ownership charges, cost of repair and maintenance including replacement of tyres and running and operating charges which includes crew, fuel and lubricants.

7. Materials

7.1 Quantities of materials given in the rate analysis are approximate for the purpose of estimating and include normal wastages. Actual consumption would have to be based on mix design.

7.2 The rates of material should include basic cost at locations of stone crushers, loading, unloading, cost of carriage and stacking at plant sites as the case may be.

7.3 The alternative proposal for curshing 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.

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 Skilled labour includes mason, carpenter, blacksmith, mechanics and other trades.

9. Carriage of Materials

9.1 The unit for vehicle 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 materials and the same are required to be 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 chapter 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 hours per shift of 8 hours.

10.8 The cost of earthwork in urban roads will be comparatively higher due to following reasons :-

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 per cent.

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 venders, parking of vehicles by the road side, encroachments by the shopkeepers and local shops who make use of the berms of the road in front of these shops and unauthorized 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 judgment and cater for the additional cost to the extent of 2 to 3 per cent, keeping in view the severity of factors mentioned above. Support details for the extra cost based on actual site conditions in specific cases will have to be given in justification.

10.9 Credit for Dismantled Material

The dismantled materials should be examined and a realistic assessment made for the credit for such materials, which can be utilized for works or auctioned.

10.10 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.

10.11 The source of material and samples are required to be approved by the Engineer before start of any work.

10.12 The rates of items include cost of testing of soil, materials and works.

10.13 The use of surface by construction vehicles shall be governed by Clause 119 of MoRT&H Specifications.

10.14 The contractor shall arrange to provide and maintain an adequate equipped field laboratory as per Clause 121.

10.15 Quality Control of works shall be governed by Section 900 of MoRT&H Specifications.

10.16 The various activities of works shall also be documented by photographs and video cassettes as per Clauses 125 & 126 of MoRT&H Specifications.

10.17 The classification of soil shall be as per Clause 301.2 of MoRT&H Specifications.

10.18 The earth excavated from foundations has been considered to be backfilled and balance utilized locally for road work except in the case of marshy soil.

10.19 The rate analysis for removal of unsuitable soil does not provide for replacement by suitable soil which will have to be paid separately.

10.20 Items for hilly terrain have been analysed separately.

10.21 10 per cent extra cement may be provided for concreting under water, where required.

10.22 Grade of cement may be adopted as per mix design.

10.23 Quantities of cement in various grades of cement concrete have been taken as per IRC: 21- 2000 and IRC: 18-2000.

10.24 The rates for rigid, semi-rigid and flexible crash barriers have been analysed in Chapter-8.

10.25 The coarse and fine aggregates shall conform to IS: 383.

10.26 Certain equipments like road rollers are required to be available at site for complete period of the shift, though from the consideration of their output, they may be required only for 3 to 4 hours. This is necessitated to match with the output of other associated machines like HMP,

Pavers etc. In such cases, the hire charges of road rollers have been multiplied with a factor of 0.65 to account for the idle period.

10.27 For pricing of RCC slab culverts, the items given in respective chapters in bridge section may be referred.

10.28 Wherever electric generator has not been provided to run a plant or equipment, it is assumed that it is fitted with a diesel engine.

10.29 Some of the firms in the field of construction chemicals have evolved new brands of chemicals for water proofing, sealing of cracks, cementing compounds etc. The market can be explored to meet such requirements.

10.30 Some of major steel producing firms have evolved thermo-mechanically treated steel which has enhanced strength, better corrosion resistance, ductility, weld ability and high temperature thermal resistance. Enquiries from these firms can be made on technical specifications and use of such products considered in works based on performance in works where these have already been used.

10.31 Provision of fly ash has been made in embankment construction, sub-base construction and in cement concrete pavement.

10.32 The Standard Data Book is for Department use only. It cannot be produced in Court of Law as reference/authority and thus is a privilege document.

10.33 In case it is decided to include the following items and their maintenance in the BOQ, the scope and specifications should be worked out and defined in a detailed manner in the tender document to avoid any dispute during execution.

MoRT&H Clause	Item
120	Site office and furniture for Engineer and his staff.
122	Site residential accommodation for Engineer and other supervisory staff.
124	Providing and maintaining vehicle for Engineer.

CHAPTER–1

CARRIAGE OF MATERIALS

Chapter – 1

Carriage of Materials

Preamble:

1. The provision of tipper has been made in hours where lead is known like disposal of the materials upto 1000m. In case where lead is variable like carriage of hot mix or concrete mix from plants or earth from borrow areas, provision has been made in terms of tonne-kilometer (t-km), which can be adopted as per actual conditions.
2. Provision has been made for a tractor trolley instead of tipper where dismantled materials of sorts or material having more volume as compared with weight are required to be transported. This arrangement will be economical.
3. The cost of carriage will vary depending upon the riding surface of the road. Provision has accordingly been made considering surface roads, unsurfaced graveled roads and katcha tracks.
4. Analysis for loading has been done both for manual and mechanical means for adoption as per actual situations.
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 has been made at rate of 10 per cent of cost of carriage to account for time taken by the tipper for getting loaded at the plant and un-loading in the paver or otherwise at site.
6. Although the market rates for supply of aggregates at site are generally taken for estimation purpose, rate for crushing of aggregate have also been analysed as most of the contractors prefer to crush their own aggregate in case of large projects exceeding ₹50 crores in value.
7. The cost of material shall be evaluated considering the cost at crushing plants and cost of carriage including loading and unloading or the rates for supply at site depending upon system being followed at particular locations. These rates should be compared with the rates for own crushing and carriage by the construction agency.

Schedule :- CARRIAGE OF MATERIALS (By TIPPER) Date: 13.03.18

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
1.1			**Loading and Unloading of Stone Boulder/ Stone aggregates/Sand /Kanker/Moorum**	cum				
			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 = 5.5 cum					
			Time required for					
			i) Positioning of tipper at loading point		1 Min			
			ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		13 Min			
			iii) Maneuvering, reversing, dumping and turning for return		2 Min			
			iv) Waiting time, unforeseen contingencies etc		4 Min			
			Total		**20 Min**			
			a) Machinery					
			Tipper 5.5 tonnes capacity	hour	0.330	1015.00	334.95	P&M-048
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1371.00	452.43	P&M-017
			b) Overhead charges @ 0.1 on (a)				78.74	
			c) Contractor's profit @ 0.1 on (a+b)				86.61	
			Cost for 5.5 cum = a+b+c				952.73	
			Rate per cum = (a+b+c)/ 5.5				173.22	
		Note	**Unloading will be by tipping.**			**say**	**173.00**	
1.2			**Loading and Unloading of Boulders by Manual Means**					
			Unit = cum					
			Taking output = 5.5 cum					
			a) Labour					
			Mate	day	0.110	261.00	28.71	L-12
			Mazdoor for loading and unloading	day	0.750	247.00	185.25	L-13
			b) Machinery					
			Tipper 5.5 tonne capacity	hour	0.750	1015.00	761.25	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				97.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				107.27	
			Cost for 5.5 cum = a+b+c+d				1180.00	
			Rate per cum = (a+b+c+d)/5.5				214.55	
		Note	**Unloading will be by tipping.**			**say**	**215.00**	
1.3			**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**					
			Unit = tonne					
			Taking output = 10 tonnes					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor for loading and unloading	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	2.000	882.00	1764.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				227.89	
			d) Contractor's profit @ 0.1 on (a+b+c)				250.68	
			Cost for 10 tonnes = a+b+c+d				2757.44	
			Rate per tonnes = (a+b+c+d)/10				275.74	
						say	**276.00**	
1.4			**Cost of Haulage Excluding Loading and Unloading**					
			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					
		(i)	**Surfaced Road**					
			Speed with load : 25 km / hour.					
			Speed while Returning empty :35 km / hour.					

Schedule :- CARRIAGE OF MATERIALS (By TIPPER) Date: 13.03.18

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Machinery.					
			Tipper 10 tonne capacity					
			Time taken for onward haulage with load	hour	0.400	1015.00	406.00	P&M-048
			Time taken for empty return trip.	hour	0.290	1015.00	294.35	P&M-048
			b) Overhead charges @ 0.1 on (a)				70.04	
			c) Contractor's profit @ 0.1 on (a+b)				77.04	
			cost for 100 t km = a+b+c				847.42	
			Rate per t.km = (a+b+c)/100				8.47	
						say	**8.50**	
1.4		**(ii)**	**Unsurfaced Graveled Road**					
			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	1015.00	507.50	P&M-048
			Time taken for empty return trip	hour	0.330	1015.00	334.95	P&M-048
			b) Overhead charges @ 0.1 on (a)				84.25	
			c) Contractor's profit @ 0.1 on (a+b)				92.67	
			Cost for 100 t .km = a+b+c				1019.36	
			Rate per t.Km = (a+b+c)/100				10.19	
						say	**10.20**	
1.4		**(iii)**	**Katcha Track and Track in River Bed/Nallah Bed and Choe Bed.**					
			Speed with load :10 km / hour					
			Speed while returning empty:15 km / hour					
			a) Machinery					
			Tipper 10 tonnes capacity					
			Time taken for onward haulage	hour	1.000	1015.00	1015.00	P&M-048
			Time taken for empty return trip	hour	0.670	1015.00	680.05	P&M-048
			b) Overhead charges @ 0.1 on (a)				169.51	
			c) Contractor's profit @ 0.1 on (a+b)				186.46	
			Cost for 100 t .km = a+b+c				2051.01	
			Rate per t.Km = (a+b+c)/100				20.51	
						say	**20.50**	

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

सदस्य,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति–सह–अभियंता प्रमुख, लोक स्वास्थ्य अभियंत्रण 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–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

Schedule :- CARRIAGE OF MATERIALS (By TRACTOR) Date: 13.03.18

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
1.1			**Loading and Unloading of Stone Boulder/ Stone aggregates/Sand /Kanker/Moorum**	cum				
			Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip					
			Unit = cum					
			Taking output = 2.25 cum					
			Time required for					
			i) Positioning of Tractor at loading point		1 Min			
			ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		5 Min			
			iii) Maneuvering, reversing, dumping and turning for return		0 Min			
			iv) Waiting time, unforeseen contingencies etc		0 Min			
			Total		**6 Min**			
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor for loading and unloading	day	0.720	247.00	177.84	L-13
			b) Machinery					
			Tractor 3.60 tonnes capacity	hour	0.100	521.00	52.10	
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.083	1371.00	113.79	P&M-017
			c) Overhead charges @ 0.1 on (a+b)				35.16	
			d) Contractor's profit @ 0.1 on (a+b+c)				38.67	
			Cost for 2.25 cum = a+b+c+d				425.39	
			Rate per cum = (a+b+c+d)/ 2.25				189.06	
		Note	**Unloading will be done manually.**			**say**	**189.00**	
1.2			**Loading and Unloading of Boulders by Manual Means**					
			Unit = cum					
			Taking output = 2.25 cum					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor for loading and unloading	day	0.310	247.00	76.57	L-13
			b) Machinery					
			Tractor 3.60 tonne capacity	hour	0.310	521.00	161.51	
			c) Overhead charges @ 0.1 on (a+b)				25.11	
			d) Contractor's profit @ 0.1 on (a+b+c)				27.62	
			Cost for 2.25 cum = a+b+c+d				303.87	
			Rate per cum = (a+b+c+d)/2.25				135.05	
		Note	**Unloading will be done manually.**			**say**	**135.00**	
1.3			**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**					
			Unit = tonne					
			Taking output = 3.60 tonnes					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor for loading and unloading	day	0.720	247.00	177.84	L-13
			b) Machinery					
			Tractor 3.60 tonne capacity	hour	0.720	521.00	375.12	
			c) Overhead charges @ 0.1 on (a+b)				56.08	
			d) Contractor's profit @ 0.1 on (a+b+c)				61.69	
			Cost for 3.60 tonnes = a+b+c+d				678.56	
			Rate per tonnes = (a+b+c+d)/3.60				188.49	
						say	**188.00**	
1.4			**Cost of Haulage Excluding Loading and Unloading**					
			Haulage of materials by Tractor excluding cost of loading, unloading and stacking.					
			Unit = t.km					
			Taking output 3.60 tonnes load and lead 10 km = 36.0 t.km					
		(i)	**Surfaced Road**					
			Speed with load : 15 km / hour.					
			Speed while Returning empty :25 km / hour.					
			a) Machinery.					
			Tractor 3.6 tonne capacity					

Schedule :- CARRIAGE OF MATERIALS (By TRACTOR) Date: 13.03.18

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Time taken for onward haulage with load	hour	0.667	521.00	347.51	
			Time taken for empty return trip.	hour	0.400	521.00	208.40	
			b) Overhead charges @ 0.1 on (a)				55.59	
			c) Contractor's profit @ 0.1 on (a+b)				61.15	
			cost for 36 t km = a+b+c				672.65	
			Rate per t.km = (a+b+c)/36				18.68	
						say	**18.70**	
1.4		**(ii)**	**Unsurfaced Graveled Road**					
			Speed with load: 12 km / hour					
			Speed for empty return trip :20 km / hour					
			a) Machinery					
			Tractor 3.6 tonnes capacity					
			Time taken for onward haulage with load	hour	0.833	521.00	433.99	
			Time taken for empty return trip	hour	0.500	521.00	260.50	
			b) Overhead charges @ 0.1 on (a)				69.45	
			c) Contractor's profit @ 0.1 on (a+b)				76.39	
			Cost for 36 t .km = a+b+c				840.34	
			Rate per t.Km = (a+b+c)/36				23.34	
						say	**23.30**	
1.4		**(iii)**	**Katcha Track and Track in River Bed/Nallah Bed and Choe Bed.**					
			Speed with load :10 km / hour					
			Speed while returning empty:15 km / hour					
			a) Machinery					
			Tractor 3.6 tonnes capacity					
			Time taken for onward haulage	hour	1.000	521.00	521.00	
			Time taken for empty return trip	hour	0.667	521.00	347.51	
			b) Overhead charges @ 0.1 on (a)				86.85	
			c) Contractor's profit @ 0.1 on (a+b)				95.54	
			Cost for 36 t .km = a+b+c				1050.89	
			Rate per t.Km = (a+b+c)/36				29.19	
						say	**29.20**	

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

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 (असैनिक), बिहार स्टेट पावर होल्डिंग कंपनी लि0 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 परीक्षण कोषांग, निगरानी विभाग, बिहार, पटना।

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

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

संयोजक,
राज्यस्तरीय अनुसूचित दर निर्धारण समिति –सह–अभियंता प्रमुख–सह–अपर आयुक्त–सह–विशेष सचिव, पथ निर्माण विभाग, बिहार, पटना।

CHAPTER - 1

CARRIAGE OF MATERIALS

Item No.	Description	Unit	Rate (₹)
1.1	**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.)	cum	173.00
1.2	**Loading and Unloading of Boulders by Manual Means**	cum	215.00
1.3	**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**	tonne	276.00
1.4	**Cost of Haulage Excluding Loading and Unloading**		
(i)	**Surfaced Road**	tonne.km	8.50
(ii)	**Unsurfaced Gravelled Road**	tonne.km	10.20
(iii)	**Katcha Track and Track in River Bed / Nallah Bed and Choe Bed.**	tonne.km	20.50
1.5	**Hand Broken Stone Aggregates 63 mm nominal size** (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	742.00
1.6	**Crushing of Stone Aggregates 13.2 mm nominal size.** (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13.2 mm nominal size.)	cum	716.00
1.7	**Crushing of Stone Aggregates 20 mm nominal size** (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size.)	cum	608.00
1.8	**Crushing of Stone Aggregates 40 mm nominal size** (Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 40 mm nominal size.)	cum	513.00

CHAPTER - 1
CARRIAGE OF MATERIALS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks / Input ref.
1.1			**Loading and Unloading of Stone Boulder/ Stone aggregates/Sand/ Kanker/Moorum**	cum				
			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 = 5.5 cum					
			Time required for					
			i) Positioning of tipper at loading point		1 Min			
			ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour		13 Min			
			iii) Maneuvering, reversing, dumping and turning for return		2 Min			
			iv) Waiting time, unforeseen contingencies etc.		4 Min			
			Total		**20 Min**			
			a) Machinery					
			Tipper 5.5 tonnes capacity	hour	0.330	1015.00	334.95	P&M-048
			Front end-loader 1 cum bucket capacity @ 25 cum/hour	hour	0.330	1371.00	452.43	P&M-017
			b) Overhead charges @ 0.1 on (a)				78.74	
			c) Contractor's profit @ 0.1 on (a+b)				86.61	
			Cost for 5.5 cum = a+b+c				952.73	
			Rate per cum = (a+b+c)/ 5.5				173.22	
		Note	**Unloading will be by tipping.**			**say**	**173.00**	
1.2			**Loading and Unloading of Boulders by Manual Means**					
			Unit = cum					
			Taking output = 5.5 cum					
			a) Labour					
			Mate	day	0.110	261.00	28.71	L-12
			Mazdoor for loading and unloading	day	0.750	247.00	185.25	L-13
			b) Machinery					
			Tipper 5.5 tonne capacity	hour	0.750	1015.00	761.25	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				97.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				107.27	
			Cost for 5.5 cum = a+b+c+d				1180.00	
			Rate per cum = (a+b+c+d)/5.5				214.55	
		Note	**Unloading will be by tipping.**			**say**	**215.00**	
1.3			**Loading and Unloading of Cement or Steel by Manual Means and Stacking.**					
			Unit = tonne					
			Taking output = 10 tonnes					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor for loading and unloading	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Truck 10 tonne capacity	hour	2.000	882.00	1764.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				227.89	
			d) Contractor's profit @ 0.1 on (a+b+c)				250.68	
			Cost for 10 tonnes = a+b+c+d				2757.44	
			Rate per tonnes = (a+b+c+d)/10				275.74	
						say	**276.00**	

CARRIAGE OF MATERIALS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks / Input ref.
1.4			**Cost of Haulage Excluding Loading and Unloading**					
			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					
		(i)	**Surfaced Road**					
			Speed with load : 25 km / hour.					
			Speed while Returning empty :35 km / hour.					
			a) Machinery.					
			Tipper 10 tonne capacity					
			Time taken for onward haulage with load	hour	0.400	1015.00	406.00	P&M-048
			Time taken for empty return trip.	hour	0.290	1015.00	294.35	P&M-048
			b) Overhead charges @ 0.1 on (a)				70.04	
			c) Contractor's profit @ 0.1 on (a+b)				77.04	
			cost for 100 t km = a+b+c				847.42	
			Rate per t.km = (a+b+c)/100				8.47	
						say	**8.50**	
1.4		**(ii)**	**Unsurfaced Graveled Road**					
			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	1015.00	507.50	P&M-048
			Time taken for empty return trip	hour	0.330	1015.00	334.95	P&M-048
			b) Overhead charges @ 0.1 on (a)				84.25	
			c) Contractor's profit @ 0.1 on (a+b)				92.67	
			Cost for 100 t.km = a+b+c				1019.36	
			Rate per t.Km = (a+b+c)/100				10.19	
						say	**10.20**	
1.4		**(iii)**	**Katcha Track and Track in River Bed/Nallah Bed and Choe Bed**					
			Speed with load :10 km / hour					
			Speed while returning empty:15 km / hour					
			a) Machinery					
			Tipper 10 tonnes capacity					
			Time taken for onward haulage	hour	1.000	1015.00	1015.00	P&M-048
			Time taken for empty return trip	hour	0.670	1015.00	680.05	P&M-048
			b) Overhead charges @ 0.1 on (a)				169.51	
			c) Contractor's profit @ 0.1 on (a+b)				186.46	
			Cost for 100 t.km = a+b+c				2051.01	
			Rate per t.Km = (a+b+c)/100				20.51	
						say	**20.50**	

CARRIAGE OF MATERIALS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks / Input ref.
1.5			**Hand Broken Stone Aggregates 63 mm Nominal Size**					
			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 cum					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Mazdoor	day	1.500	247.00	370.50	L-13
			b) Material					
			Supply of quarried stone 150 - 200 mm size	cum	1.100	206.33	226.96	M-002
			c) Overhead charges @ 0.1 on (a+b)				61.31	
			d) Contractor's profit @ 0.1 on (a+b+c)				67.44	
			Rate per cum = a+b+c+d				741.88	
						say	**742.00**	
1.6			**Crushing of Stone Aggregates 13.2 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13.2 mm nominal size.					
			Unit = cum					
			Taking Output = 600 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	261.00	198.36	L-12
			Mazdoor Skilled	day	2.000	313.00	626.00	L-15
			Mazdoor including breaking of any oversize boulder.	day	17.000	247.00	4199.00	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	206.33	165064.00	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	26029.00	156174.00	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	1371.00	27420.00	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	1015.00	20300.00	P&M-048
			d) Overhead charges @ 0.1 on (a+b+c)				37398.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				41137.95	
			Cost for 600 cum = (a+b+c+d+e)x0.95				429891.57	
			Rate per cum = (a+b+c+d+e) * 0.95 / 600				**716.49**	
						say	**716.00**	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
			2. 95 per cent of above cost will be attributed to the production of 600 cum of stone chips of 13.2 mm size and balance 5 per cent to the production of stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					
1.7			**Crushing of Stone Aggregates 20 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size.					

CARRIAGE OF MATERIALS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks / Input ref.
			Unit = cum					
			Taking Output = 670 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	261.00	198.36	L-12
			Mazdoor Skilled	day	2.000	313.00	626.00	L-15
			Mazdoor including breaking of any size boulder.	day	17.000	247.00	4199.00	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	206.33	165064.00	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	26029.00	156174.00	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	1371.00	27420.00	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	1015.00	20300.00	P&M-048
			d) Overhead charges @ 0.1 on (a+b+c)				37398.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				41137.95	
			Cost for 670 cum = (a+b+c+d+e)x0.90				407265.70	
			Rate per cum = (a+b+c+d+e) * 0.90 / 670				**607.86**	
						say	**608.00**	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 20 and 40 mm.					
			2. 90 per cent of above cost will be attributed to the production of 670 cum of stone aggregates of 20mm size and balance 10 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					
1.8			**Crushing of Stone Aggregates 40 mm Nominal Size**					
			Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 40 mm nominal size.					
			Unit = cum					
			Taking Output = 750 cum at crusher location.					
			a) Labour					
			Mate	day	0.760	261.00	198.36	L-12
			Mazdoor Skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	17.000	247.00	4199.00	L-13
			b) Material					
			Stone Boulder of size 150 mm and below	cum	800.000	206.33	165064.00	M-001
			c) Machinery					
			Integrated stone crusher of 200 TPH including belt conveyor and vibrating screens	Hour	6.000	26029.00	156174.00	P&M-028
			Front end loader 1 cum bucket capacity	Hour	20.000	1371.00	27420.00	P&M-017
			Tipper 5.5 cum capacity	Hour	20.000	1015.00	20300.00	P&M-048
			d) Overhead charges @ 0.1 on (a+b+c)				37398.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				41137.95	
			Cost for 750 cum = (a+b+c+d+e)x0.85				384639.83	
			Rate per cum = (a+b+c+d+e)x0.85/750				**512.85**	
						say	**513.00**	
		Note	1. 800 cum of stone boulders are needed to get 600 cum of stone chips of size 13.2 mm.					
			2. 85 per cent of above cost will be attributed to the production of 750 cum of stone aggregates of 40mm size and balance 15 per cent will be for smaller size aggregates and stone dust which comes out as a by-product.					
			3. The integrated stone crusher includes primary and secondary crushing units.					

CHAPTER–2

SITE CLEARANCE

Chapter – 2

Site Clearance

Preamble:

1. 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 m.
2. The rates include T&P and scaffolding required for items of dismantling.
3. Carriage of dismantled materials, bushes, branches of tree etc. has been catered with a tractor-trolley of 3 tonnes capacity with manual loading and unloading @ 2 trips per hour within a lead of 1000 m. This will be economical for such works as compared with a tipper.
4. For cutting of trees above 1800 mm girth, 4 mazdoors have been considered to cater for large size trees, which will fall in this category.
5. Where only grass/wild growth is met, item No. 2 i.e. clearing grass and removal of rubbish can be applied. As regards wild growth disposal of grass, the same can be dried and burnt .
6. 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.
7. Cutting of rivets has been provided separately.
8. Dismantling of Hume pipes has been catered manually as pipes can be easily rolled by men to a suitable stacking place within the right of way.
9. For dismantling of structures, which remain submerged in water, the cost may be enhanced by 50 per cent
10. Dismantling of utilities is required to be done under the supervision of concerned departments with prior information to the users.
11. In certain items of dismantling, like, pipe culvert, 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.
12. The dismantled materials should be examined and realistic assessment and provision made after due process for the credit for such materials, which can be utilized for works or auctioned.
13. In case where lead for disposal is more than 1000 m, extra cost of carriage is required to be added based on tonne-kilometerage.
14. All minor T&P items required for dismantling are already included in overhead charges.
15. For dismantling of utility services like water pipe lines, electric and telephone lines, prior intimation should be given to users.

CHAPTER - 2
SITE CLEARANCE

Item No.	Description	Unit	Rate (₹)
2.1	**Cutting of Trees, including Cutting of Trunks, Branches and Removal** (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)		
(i)	**Girth from 300 mm to 600 mm**	each	248.00
(ii)	**Girth from 600 mm to 900 mm**	each	470.00
(iii)	**Girth from 900 mm to 1800 mm**	each	874.00
(iv)	**Girth above 1800 mm**	each	1622.00
2.2	**Clearing Grass and Removal of Rubbish**	hectare	15575.00
2.3	**Clearing and Grubbing Road Land** (Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.)		
(i)	**By Manual Means**		
A	**In area of light jungle**	hectare	47352.00
B	**In area of thorny jungle**	hectare	63554.00
(ii)	**By Mechanical Means**		
A	**In area of light jungle**	hectare	66160.00
B	**In area of thorny jungle**	hectare	79954.00
2.4	**Dismantling of Structures** (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres.)		
(i)	**Lime /Cement Concrete**		
I	**By Manual Means**		
A	**Lime Concrete, cement concrete grade M-10 and below**	cum	385.00
B	**Cement Concrete Grade M-15 & M-20**	cum	447.00
C	**Prestressed / Reinforced cement concrete grade M-20 & above**	cum	1090.00
II	**By Mechanical Means for items No. 202 (b) & (c)**		
A	**Cement Concrete Grade M-15 & M-20**	cum	559.00
B	**Prestressed / Reinforced cement concrete grade M-20 & above**	cum	894.00
(ii)	**Dismantling Brick / Tile work**		
A	**In lime mortar**	cum	260.00
B	**In cement mortar**	cum	322.00
C	**In mud mortar**	cum	235.00
D	**Dry brick pitching or brick soling**	cum	223.00
(iii)	**Dismantling Stone Masonry**		
A	**Rubble stone masonry in lime mortar**	cum	285.00
B	**Rubble stone masonry in cement mortar**	cum	322.00
C	**Rubble Stone Masonry in mud mortar**	cum	260.00
D	**Dry rubble masonry**	cum	248.00
E	**Dismantling stone pitching/ dry stone spalls**	cum	235.00
F	**Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials**	cum	260.00
(iv)	**Wood work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level**	cum	549.00
(v)	**Steel work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet**		
A	**Including dismembering**	tonne	1327.00

Item No.	Description	Unit	Rate (₹)
B	**Excluding dismembering**	tonne	995.00
C	**Extra over Item No. (V) A and (V) B for cutting rivets.**	each	9.40
(vi)	**Scraping of bricks dismantled from brick work including stacking**		
A	**In lime/Cement mortar**	1000 nos.	1090.00
B	**In mud mortar**	1001 nos.	389.00
(vii)	**Scraping of Stone from dismantled stone masonry**		
A	**In cement and lime mortar**	cum	437.00
B	**In Mud mortar**	cum	92.80
(viii)	**Scarping plaster in lime or cement mortar from brick/ stone masonry**	sqm	14.50
(ix)	**Removing all type of hume pipes and stacking within a lead of 1000 metres including earthwork and dismantling of masonry works**		
A	**Up to 600 mm dia**	metre	162.00
B	**Above 600 mm to 900 mm dia**	metre	219.00
C	**Above 900 mm**	metre	374.00
2.5	**Dismantling of Flexible Pavements** (Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately)		
I	**By Manual Means**		
A	**Bituminous courses**	cum	705.00
B	**Granular courses**	cum	518.00
II	**By Mechanical Means**		
A	**Bituminous course**	cum	342.00
2.6	**Dismantling of Cement Concrete Pavement** (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	1520.00
2.7	**Dismantling Guard Rails** (Dismantling 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	78.10
2.8	**Dismantling Kerb Stone** (Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre.)	metre	17.30
2.9	**Dismantling Kerb Stone Channel** (Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre.)	metre	26.00
2.10	**Dismantling Kilometre Stone** (Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.)		
A	**5th KM stone**	each	359.00
B	**Ordinary KM Stone**	each	218.00
C	**Hectometre Stone**	each	43.70
2.11	**Dismantling of Fencing** (Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.)	metre	44.60
2.12	**Dismantling of CI Water Pipe Line** (Dismantling of CI water pipe line 600 mm 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	130.00
2.13	**Removal of Cement Concrete Pipe of Sewer Gutter** (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	229.00
2.14	**Removal of Telephone / Electric Poles and Lines** (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	161.00

CHAPTER - 2
SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.1	201		**Cutting of Trees, including cutting of Trunks, Branches and Removal**					
			Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 metres and earth filling in the depression / pit.					
			Unit = Each					
		(i)	**Girth from 300 mm to 600 mm**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres lead by manual means.	day	0.600	247.00	148.20	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				20.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				22.57	
			Rate for each tree = a+b+c+d				248.32	
						say	**248.00**	
2.1		(ii)	**Girth from 600 mm to 900 mm**					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling, and stacking of serviceable materials within 1000 metres lead by manual means.	day	0.900	247.00	222.30	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	518.00	155.40	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				38.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				42.70	
			Rate for each tree = a+b+c+d				469.65	
						say	**470.00**	
2.1		(iii)	**Girth from 900 mm to 1800 mm**					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.400	518.00	207.20	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				72.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				79.43	
			Rate for each tree = a+b+c+d				873.72	
						say	**874.00**	
2.1		(iv)	**Girth above 1800 mm**					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoors for cutting trees including cutting, refilling, compaction of backfilling and stacking of serviceable materials within 1000 metres	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.600	518.00	310.80	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				134.06	
			d) Contractor's profit @ 0.1 on (a+b+c)				147.46	
			Rate for each tree = a+b+c+d				1622.08	
						say	**1622.00**	

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.2	201		**Clearing Grass and Removal of Rubbish**					
			Clearing grass and removal of rubbish up to a distance of 50 metres outside the periphery of the area .					
			By Manual Means					
			Unit = Hectare					
			Taking output = 1 Hectare					
			a) Labour					
			Mate	day	2.000	261.00	522.00	L-12
			Mazdoor	day	50.000	247.00	12350.00	L-13
			b) Overhead charges @ 0.1 on (a)				1287.20	
			c) Contractor's profit @ 0.1 on (a+b)				1415.92	
			Rate per Hectare = a+b+c				15575.12	
						say	**15575.00**	
2.3	201		**Clearing and Grubbing Road Land**					
			Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.					
			Unit = Hectare					
			Taking output = 1 Hectare					
		(i)	**By Manual Means**					
		A	**In area of light jungle**					
			a) Labour					
			Mate	day	6.000	261.00	1566.00	L-12
			Mazdoor	day	150.000	247.00	37050.00	L-13
			b) Machinery					
			Tractor-trolley	hour	1.000	518.00	518.00	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				3913.40	
			d) Contractor's profit @ 0.1 on (a+b+c)				4304.74	
			Rate per Hectare = a+b+c+d				47352.14	
						say	**47352.00**	
2.3 (i)		B	**In area of thorny jungle**					
			a) Labour					
			Mate	day	8.000	261.00	2088.00	L-12
			Mazdoor	day	200.000	247.00	49400.00	L-13
			b) Machinery					
			Tractor-trolley	hour	2.000	518.00	1036.00	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				5252.40	
			d) Contractor's profit @ 0.1 on (a+b+c)				5777.64	
			Rate per Hectare = a+b+c+d				63554.04	
						say	**63554.00**	
2.3		(ii)	**By Mechanical Means**					
		A	**In area of light jungle**					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	10.000	5313.00	53130.00	P&M-014
			Tractor-trolley	hour	1.000	518.00	518.00	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				5467.78	
			d) Contractor's profit @ 0.1 on (a+b+c)				6014.55	
			Rate per Hectare = a+b+c+d				66160.09	
						say	**66160.00**	

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.3 (ii)		B	**In area of thorny jungle**					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Dozer 80 HP with attachment for removal of trees & stumps	hour	12.000	5313.00	63756.00	P&M-014
			Tractor-trolley	hour	1.500	518.00	777.00	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				6607.76	
			d) Contractor's profit @ 0.1 on (a+b+c)				7268.54	
			Rate per Hectare = a+b+c+d				79953.94	
						say	**79954.00**	
2.4	202		**Dismantling of Structures**					
			Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres.					
			Unit = cum					
			Taking output = 1.25 cum					
		(i)	**Lime /Cement Concrete**					
		I	**By Manual Means**					
		A	**Lime Concrete, cement concrete grade M-10 and below**					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor for dismantling and loading	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				39.73	
			d) Contractor's profit @ 0.1 on (a+b+c)				43.70	
			Cost for 1.25 cum = a+b+c+d				480.73	
			Rate per cum = (a+b+c+d)/ 1.25				384.59	
						say	**385.00**	
2.4 (i)		B	**Cement Concrete Grade M-15 & M-20**					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor for dismantling and loading	day	1.250	247.00	308.75	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				46.17	
			d) Contractor's profit @ 0.1 on (a+b+c)				50.78	
			Cost for 1.25 cum = a+b+c+d				558.61	
			Rate per cum = (a+b+c+d)/ 1.25				446.89	
						say	**447.00**	
2.4 (i)		C	**Prestressed / Reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.150	261.00	39.15	L-12
			Blacksmith	day	0.250	330.00	82.50	L-02a
			Mazdoor for dismantling, loading and unloading	day	3.500	247.00	864.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				112.60	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				123.86	
			Cost for 1.25 cum = a+b+c+d				1362.47	
			Rate per cum = (a+b+c+d)/ 1.25				1089.98	
						say	**1090.00**	
2.4		**II**	**By Mechanical Means for items No. 202 (B) & (C)**					
		A	**Cement Concrete Grade M-15 & M-20**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for loading and unloading	day	0.250	247.00	61.75	L-13
			Mazdoor with Pneumatic breaker	day	0.250	257.00	64.25	L-14
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.5 cum per hour	hour	0.670	457.00	306.19	P&M-001
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				57.73	
			d) Contractor's profit @ 0.1 on (a+b+c)				63.50	
			Cost for 1.25 cum = a+b+c+d				698.50	
			Rate per cum = (a+b+c+d)/ 1.25				558.80	
						say	**559.00**	
2.4 II		**B**	**Prestressed / reinforced cement concrete grade M-20 & above**					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor with Pneumatic breaker	day	0.660	257.00	169.62	L-14
			Blacksmith	day	0.250	330.00	82.50	L-02a
			Mazdoor for loading and unloading	day	0.250	247.00	61.75	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1.00 cum per hour	hour	1.000	457.00	457.00	P&M-001
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				92.38	
			d) Contractor's profit @ 0.1 on (a+b+c)				101.62	
			Cost for 1.25 cum = a+b+c+d				1117.77	
			Rate per cum = (a+b+c+d)/ 1.25				894.22	
						say	**894.00**	
2.4		**(ii)**	**Dismantling Brick / Tile work**					
		A	**In lime mortar**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				26.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				29.54	
			Cost for 1.25 cum = a+b+c+d				324.98	
			Rate per cum = (a+b+c+d)/ 1.25				259.99	
						say	**260.00**	
2.4 (ii)		**B**	**In cement mortar**					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor for dismantling, loading and unloading	day	0.750	247.00	185.25	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				33.29	

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				36.62	
			Cost for 1.25 cum = a+b+c+d				402.86	
			Rate per cum = (a+b+c+d)/ 1.25				322.29	
						say	**322.00**	
2.4 (ii)		**C**	**In mud mortar**					
			a) Labour					
			Mate	day	0.016	261.00	4.18	L-12
			Mazdoor for dismantling and loading	day	0.400	247.00	98.80	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				24.28	
			d) Contractor's profit @ 0.1 on (a+b+c)				26.71	
			Cost for 1.25 cum = a+b+c+d				293.83	
			Rate per cum = (a+b+c+d)/ 1.25				235.07	
						say	**235.00**	
2.4 (ii)		**D**	**Dry brick pitching or brick soling**					
			a) Labour					
			Mate	day	0.014	261.00	3.65	L-12
			Mazdoor for Dismantling, loading and unloading	day	0.350	247.00	86.45	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				23.00	
			d) Contractor's profit @ 0.1 on (a+b+c)				25.30	
			Cost for 1.25 cum = a+b+c+d				278.26	
			Rate per cum = (a+b+c+d)/ 1.25				222.61	
						say	**223.00**	
2.4		**(iii)**	**Dismantling Stone Masonry**					
		A	**Rubble stone masonry in lime mortar**					
			a) Labour					
			Mate	day	0.024	261.00	6.26	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.600	247.00	148.20	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				29.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				32.38	
			Cost for 1.25 cum = a+b+c+d				356.13	
			Rate per cum = (a+b+c+d)/ 1.25				284.91	
						say	**285.00**	
2.4 (iii)		**B**	**Rubble stone masonry in cement mortar**					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.750	247.00	185.25	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				33.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				36.62	
			Cost for 1.25 cum = a+b+c+d				402.86	
			Rate per cum = (a+b+c+d)/ 1.25				322.29	
						say	**322.00**	
2.4 (iii)		**C**	**Rubble Stone Masonry in mud mortar**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.500	247.00	123.50	L-13

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				26.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				29.54	
			Cost for 1.25 cum = a+b+c+d				324.98	
			Rate per cum = (a+b+c+d)/ 1.25				259.99	
						say	**260.00**	
2.4 (iii)		**D**	**Dry rubble masonry**					
			a) Labour					
			Mate	day	0.018	261.00	4.70	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.450	247.00	111.15	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				25.57	
			d) Contractor's profit @ 0.1 on (a+b+c)				28.13	
			Cost for 1.25 cum = a+b+c+d				309.41	
			Rate per cum = (a+b+c+d)/ 1.25				247.53	
						say	**248.00**	
2.4 (iii)		**E**	**Dismantling stone pitching/ dry stone spalls.**					
			a) Labour					
			Mate	day	0.016	261.00	4.18	L-12
			Mazdoor for dismantling, loading and unloading.	day	0.400	247.00	98.80	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				24.28	
			d) Contractor's profit @ 0.1 on (a+b+c)				26.71	
			Cost for 1.25 cum = a+b+c+d				293.83	
			Rate per cum = (a+b+c+d)/ 1.25				235.07	
						say	**235.00**	
2.4 (iii)		**F**	**Dismantling boulders laid in wire crates including opening of crates and stacking dismantled materials.**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for dismantling, loading and unloading	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				26.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				29.54	
			Cost for 1.25 cum = a+b+c+d				324.98	
			Rate per cum = (a+b+c+d)/ 1.25				259.99	
						say	**260.00**	
2.4		**(iv)**	**Wood Work wrought framed and fixed in frames of trusses upto a height of 5 m above plinth level**					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Carpenter	day	0.500	330.00	165.00	L-04
			Mazdoor for dismantling, loading and unloading.	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.270	518.00	139.86	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				56.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				62.43	
			Cost for 1.25 cum = a+b+c+d				686.70	
			Rate per cum = (a+b+c+d)/ 1.25				549.36	
						say	**549.00**	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.4		**(v)**	**Steel Work in all types of sections upto a height of 5 m above plinth level excluding cutting of rivet**					
			Unit = tonne					
			Taking output = 1 tonne					
		A	**Including dismembering**					
			a) Labour					
			Mate	day	0.140	261.00	36.54	L-12
			Blacksmith	day	1.000	330.00	330.00	L-02a
			Mazdoor for dismantling, loading and unloading	day	2.500	247.00	617.50	L-13
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				**24.60**	
			b) Machinery					
			Tractor-trolley	hour	0.170	518.00	88.06	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				109.67	
			d) Contractor's profit @ 0.1 on (a+b+c)				120.64	
			Rate per tonne = a+b+c+d				1327.01	
						say	**1327.00**	
2.4 (v)		**B**	**Excluding dismembering**					
			a) Labour					
			Mate	day	0.220	261.00	57.42	L-12
			Mazdoor for dismantling, loading and unloading	day	2.000	247.00	494.00	L-13
			Blacksmith	day	0.500	330.00	165.00	L-02a
			Add 2.5 per cent of cost of labour for gas cutting, ropes, pulleys etc.				**17.91**	
			b) Machinery					
			Tractor-trolley	hour	0.170	518.00	88.06	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				82.24	
			d) Contractor's profit @ 0.1 on (a+b+c)				90.46	
			Rate per tonne = a+b+c+d				995.09	
						say	**995.00**	
2.4 (v)		**C**	**Extra over item No. (v) A and (v) B for cutting rivets**					
			Unit = each					
			Taking output = 10 rivets					
			a) Labour					
			Mate	day	0.010	261.00	2.61	L-12
			Blacksmith	day	0.130	330.00	42.90	L-02a
			Mazdoor	day	0.130	247.00	32.11	L-13
			b) Overhead charges @ 0.1 on (a)				7.76	
			c) Contractor's profit @ 0.1 on (a+b)				8.54	
			Cost for 10 rivets = a+b+c				93.92	
			Rate for each rivet = (a+b+c)/10				9.39	
						say	**9.40**	
2.4		**(vi)**	**Scraping of Bricks Dismantled from Brick Work including Stacking.**					
			Unit = numbers					
			Taking output = 1000 numbers					
		A	**In lime/Cement mortar**					
			a) Labour					
			Mate	day	0.140	261.00	36.54	L-12
			Mazdoor	day	3.500	247.00	864.50	L-13
			b) Overhead charges @ 0.1 on (a)				90.10	
			c) Contractor's profit @ 0.1 on (a+b)				99.11	
			Rate per 1000 Nos. = a+b+c				1090.26	
						say	**1090.00**	

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.4 (vi)		B	**In mud mortar**					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	1.250	247.00	308.75	L-13
			b) Overhead charges @ 0.1 on (a)				32.18	
			c) Contractor's profit @ 0.1 on (a+b)				35.40	
			Rate per1000 Nos = a+b+c				389.38	
						say	**389.00**	
2.4		(vii)	**Scraping of Stone from Dismantled Stone Masonry**					
			Unit = cum					
			Taking output = 1 cum					
		A	**In cement and lime mortar**					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Mazdoor	day	1.400	247.00	345.80	L-13
			b) Overhead charges @ 0.1 on (a)				36.15	
			c) Contractor's profit @ 0.1 on (a+b)				39.76	
			Rate per cum = a+b+c				437.37	
						say	**437.00**	
2.4 (vii)		B	**In mud mortar**					
			a) Labour					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.300	247.00	74.10	L-13
			b) Overhead charges @ 0.1 on (a)				7.67	
			c) Contractor's profit @ 0.1 on (a+b)				8.44	
			Rate per cum = a+b+c				92.82	
						say	**92.80**	
2.4		(viii)	**Scarping Plaster in Lime or Cement Mortar from Brick/ Stone Masonry**					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor for scarping and loading	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.320	518.00	165.76	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				119.55	
			d) Contractor's profit @ 0.1 on (a+b+c)				131.51	
			Cost for 100 sqm = a+b+c+d				1446.58	
			Rate per sqm = (a+b+c+d)/100				14.47	
						say	**14.50**	
2.4		(ix)	**Removing all type of Hume Pipes and Stacking within a lead of 1000 metres including Earthwork and Dismantling of Masonry Works**					
			Unit = metre					
			Taking output = 1 metre					
		A	**Up to 600 mm dia**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.520	247.00	128.44	L-13
			b) Overhead charges @ 0.1 on (a)				13.37	
			c) Contractor's profit @ 0.1 on (a+b)				14.70	
			Rate per metre = a+b+c				161.73	
						say	**162.00**	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.4 (ix)		**B**	**Above 600 mm to 900 mm dia**					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor	day	0.700	247.00	172.90	L-13
			b) Overhead charges @ 0.1 on (a)				18.07	
			c) Contractor's profit @ 0.1 on (a+b)				19.88	
			Rate per metre = a+b+c				218.68	
						say	**219.00**	
2.4 (ix)		**C**	**Above 900 mm**					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	1.200	247.00	296.40	L-13
			b) Overhead charges @ 0.1 on (a)				30.95	
			c) Contractor's profit @ 0.1 on (a+b)				34.04	
			Rate per metre = a+b+c				374.43	
						say	**374.00**	
		Note	1. The excavation of earth, dismantling of stone masonry work in head walls and protection works 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.					
2.5	**202**		**Dismantling of Flexible Pavements**					
			Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.					
			Unit = cum					
			Taking output = 1 cum					
		I	**By Manual Means**					
		A	**Bituminous courses**					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Mazdoor for dismantling, loading and unloading	day	1.500	247.00	370.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.380	518.00	196.84	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				58.30	
			d) Contractor's profit @ 0.1 on (a+b+c)				64.13	
			Rate per cum = a+b+c+d				705.43	
						say	**705.00**	
2.5 I		**B**	**Granular courses**					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor for dismantling, loading and unloading	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.330	518.00	170.94	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				42.84	
			d) Contractor's profit @ 0.1 on (a+b+c)				47.12	
			Rate per cum = a+b+c+d				518.34	
						say	**518.00**	
2.5		**II**	**By Mechanical Means**					
		A	**Bituminous course**					
			a) Labour					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.300	247.00	74.10	L-13

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Tractor-trolley	hour	0.380	518.00	196.84	P&M-053
			Farm tractor with ripper @ 60 cum per hour	hour	0.017	558.00	9.49	P&M-055
			c) Overhead charges @ 0.1 on (a+b)				28.30	
			d) Contractor's profit @ 0.1 on (a+b+c)				31.13	
			Rate per cum = a+b+c+d				342.47	
						say	**342.00**	
2.6	**202**		**Dismantling of Cement Concrete Pavement**					
			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.					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Semi skilled mazdoor for operating pneumatic tools	day	0.500	257.00	128.50	L-14
			Mazdoors as helpers including loading and unloading	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Air compressor 250 cfm with two leads for pneumatic cutters/ hammers @ 1 cum per hour	hour	1.000	457.00	457.00	P&M-001
			Tractor-trolley	hour	0.400	518.00	207.20	P&M-053
			Joint Cutting Machine with 2-3 blades	hour	1.000	332.00	332.00	P&M-083
			c) Overhead charges @ 0.1 on (a+b)				125.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				138.16	
			Rate per cum = a+b+c+d				1519.80	
						say	**1520.00**	
		Note	The above analysis is for removal of complete pavement. In case full depth repair work is required to be done after dismantling, provision of a concrete cutting and sawing machine may be added for 0.25 hours.					
2.7	**202**		**Dismantling of Guard Rails**					
			Dismantling 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.					
			Unit = running metre					
			Taking output = 1 metre					
			a) Labour					
			Mate	day	0.006	261.00	1.57	L-12
			Mazdoor including loading and unloading	day	0.150	247.00	37.05	L-13
			b) Machinery					
			Tractor-trolley	hour	0.050	518.00	25.90	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				6.45	
			d) Contractor's profit @ 0.1 on (a+b+c)				7.10	
			Rate per metre = a+b+c+d				78.06	
						say	**78.10**	
2.8	**202**		**Dismantling of Kerb Stone**					
			Dismantling kerb stone by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre.					
			Unit = running metre					
			Taking output = 10 metre					
			a) Labour					

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor including loading and unloading	day	0.150	247.00	37.05	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	518.00	103.60	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				14.33	
			d) Contractor's profit @ 0.1 on (a+b+c)				15.76	
			Cost for 10 m = a+b+c+d				173.34	
			Rate per metre = (a+b+c+d)/10				17.33	
						say	**17.30**	
2.9	**202**		**Dismantling of Kerb Stone Channel**					
			Dismantling kerb stone channel by manual means and disposal of dismantled material with all lifts and up to a lead of 1000 metre.					
			Unit = running metre					
			Taking output = 10 metre					
			a) Labour					
			Mate	day	0.015	261.00	3.92	L-12
			Mazdoor including loading and unloading	day	0.225	247.00	55.58	L-13
			b) Machinery					
			Tractor-trolley	hour	0.300	518.00	155.40	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				21.49	
			d) Contractor's profit @ 0.1 on (a+b+c)				23.64	
			Cost for 10 m = a+b+c+d				260.02	
			Rate per metre = (a+b+c+d)/10				26.00	
						say	**26.00**	
2.10	**202**		**Dismantling of Kilometre Stone**					
			Dismantling of kilometre stone including cutting of earth, foundation and disposal of dismantled material with all lifts and lead upto 1000 m and back filling of pit.					
			Unit = Each					
			Taking output = one KM stone					
	A		**5th KM stone**					
			Quantity of cement concrete = 0.392 cum					
			a) Labour					
			Mate	day	0.130	261.00	33.93	L-12
			Mazdoor	day	0.750	247.00	185.25	L-13
			b) Machinery					
			Tractor-trolley	hour	0.150	518.00	77.70	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				29.69	
			d) Contractor's profit @ 0.1 on (a+b+c)				32.66	
			Rate for one 5th KM stone = a+b+c+d				359.22	
						say	**359.00**	
	B		**Ordinary KM Stone**					
			Quantity of cement concrete = 0.269 cum					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				18.05	
			d) Contractor's profit @ 0.1 on (a+b+c)				19.86	
			Rate for one ordinary KM stone = a+b+c+d				218.43	
						say	**218.00**	

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
	C		**Hectometre Stone**					
			Quantity of cement concrete = 0.048 cum					
			a) Labour					
			Mate	day	0.004	261.00	1.04	L-12
			Mazdoor	day	0.100	247.00	24.70	L-13
			b) Machinery					
			Tractor-trolley	hour	0.020	518.00	10.36	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				3.61	
			d) Contractor's profit @ 0.1 on (a+b+c)				3.97	
			Rate for one Hectometre stone = a+b+c+d				43.69	
						say	**43.70**	
2.11	**202**		**Dismantling of Fencing**					
			Dismantling of barbed wire fencing/ wire mesh fencing including posts, foundation concrete, back filling of pit by manual means including disposal of dismantled material with all lifts and up to a lead of 1000 metres, stacking serviceable material and unserviceable material separately.					
			Unit = running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.150	261.00	39.15	L-12
			Mazdoor including loading and unloading	day	3.000	247.00	741.00	L-13
			Blacksmith	day	0.750	330.00	247.50	L-02a
			b) Machinery					
			Tractor-trolley	hour	0.150	518.00	77.70	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				110.54	
			d) Contractor's profit @ 0.1 on (a+b+c)				121.59	
			Cost for 30 metres = a+b+c+d				1337.47	
			Rate per metre = (a+b+c+d)/30				44.58	
						say	**44.60**	
2.12	**202**		**Dismantling of CI Water Pipe Line**					
			Dismantling of CI water pipe line 600 mm 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.					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.090	261.00	23.49	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			Plumber	day	0.250	312.00	78.00	L-02c
			b) Machinery					
			Truck 10 tonne capacity	hour	0.250	882.00	220.50	P&M-057
			Light Crane 3 tonne capacity	hour	0.500	510.00	255.00	P&M-013
			c) Overhead charges @ 0.1 on (a+b)				107.10	
			d) Contractor's profit @ 0.1 on (a+b+c)				117.81	
			Cost for 10 metres = a+b+c+d				1295.90	
			Rate per metre = (a+b+c+d)/10				129.59	
						say	**130.00**	
		Note	The rate analysis does not include any excavation in earth or dismantling of masonry works which are to be measured and paid separately.					

SITE CLEARANCE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
2.13	**202**		**Removal of Cement Concrete Pipe of Sewer Gutter**					
			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.					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.100	261.00	26.10	L-12
			Mazdoor	day	2.500	247.00	617.50	L-13
			b) Machinery					
			Crane 5 tonne capacity	hour	0.300	1217.00	365.10	P&M-070
			Truck flat body 10 tonne	hour	1.000	882.00	882.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				189.07	
			d) Contractor's profit @ 0.1 on (a+b+c)				207.98	
			Cost for 10 metres = a+b+c+d				2287.75	
			Rate per metre = (a+b+c+d)/10				228.77	
						say	**229.00**	
		Note	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**		**Removal of Telephone / Electric Poles and Lines**					
			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.					
			Unit = each					
			Taking output = 30 Nos.					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			Electrician/Lineman	day	2.000	312.00	624.00	L-02d
			b) Machinery					
			Tractor-trolley	hour	1.500	518.00	777.00	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				399.63	
			d) Contractor's profit @ 0.1 on (a+b+c)				439.59	
			Cost for 30 poles = a+b+c+d				4835.50	
			Rate per pole = (a+b+c+d)/30				161.18	
						say	**161.00**	

CHAPTER–3

EARTHWORK, EROSION CONTROL AND DRAINAGE

Chapter – 3

Earthwork, Erosion Control and Drainage

Preamble:

1. The rates have been analysed using mechanical means. Manual means for certain items have also been provided which can be used for areas inaccessible to machines and for small jobs.
2. In the rate analyses of earthwork, only compacted volume of earth has been considered.
3. Rates have been analysed for average working conditions.
4. Average achievable outputs of machines have been considered taking into account job and management factors.
5. Cutting by dozer has been proposed where the cut earth can be utilized for filling of embankment within a lead of 100 m. A dozer can economically push the earth upto a distance of 100 m.
6. Where lead for transporting of earth is more than 100 m., excavator and tipper have been provided.
7. A water tanker of 6 KL capacity which is commonly used at construction sites has been considered.
8. 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-kilometerage.
9. 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.
10. In cases where embankment is constructed with earth taken from roadways, the cost of depositing the earth at the site of embankment is already included in the disposal of excavated earth.
11. For narrow and restricted areas, plate compactor has been proposed for compaction to achieve the desired density.
12. For small jobs where loading and unloading is required to be done manually, tractor – trolley has been proposed for carriage instead of a tipper.
13. In case excavated rock is found suitable for incorporation in works, suitable credit for the available rock shall be given.
14. 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.
15. 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.

16. 'L' 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.

17. For in habited 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.

18. Any work involved for water courses at culverts (Clause 312) will be priced under respective items like, excavation, grubbing, clearing etc. for which rate analysis have separately been made.

19. In the case of embankment made from earth taken from roadway cutting, the input of dozer for spreading earth can be deleted as the same is already provided in the cost of excavation.

20. Earth excavated from drains can be used in roadway berms. Hence, carriage for disposal of same is not provided.

21. In the rate analyses 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 shall be taken from relevant chapters where the same have already been analysed.

22. In case of rock fill embankment, it is assumed that material is available at site from rock cutting.

23. The item of preparation and surface treatment of formation (Clause 310) is required to be added in the cost estimate only if there is substantial time lag between completion of sub-grade and laying of sub – base. As this item is incidental to works, it is not required to be included in BOQ.

24. The items filling behind abutments and wing wall and provision of filter media has been included in chapter-15.

25. Excavation for structures beyond the depth of 3m has been included in chapter – 12.

26. In case of high altitude areas above 2100m, the percentage addition to the cost of manpower and usage rates of machines are required to be made as per the Table given on next page.

Extra Provision for High Altitude Areas

Considering loss of output of men and machines above 2100 mtrs. altitude, the percentage addition to cost of manpower and usage rates of machines are required to be made as under :-

Altitude in Mtrs	Percent of the value in Manpower to be added to rates	Percent of the value in Machines to be added to rates
2100 to 2400	7 per cent	3 per cent
2401 to 2700	15 per cent	6 per cent
2701 to 3000	25 per cent	9 per cent
3001 to 3300	32 per cent	12 per cent
3301 to 3600	48 per cent	15 per cent
3601 to 3900	66 per cent	18 per cent
3901 to 4200	86 per cent	21 per cent
4201 to 4500	108 per cent	24 per cent
4501 to 4800	132 per cent	27 per cent
4801 to 5100	186 per cent	30 per cent

The above provisions are based on the report of Defence institute of Physiology and Allied Sciences, Delhi Cantt. regarding quantitative reduction in the physical work capacity of individuals working in high altitude areas and the recommendation of the committee on cost of construction set up by Border Roads Development Board for reduction in output of machines while working in high altitudes. These figures are adopted from "Standard Schedule of Rates" of BRO as applicable to high altitude areas.

CHAPTER - 3
EARTH WORK, EROSION CONTROL AND DRAINAGE

Item No.	Description	Unit	Rate (₹)
3.1	**Excavation in Soil by Manual Means.** (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.)		
(i)	Excluding the cost of watering, rolling & compaction	cum	206.00
(ii)	Including cost of watering, rolling & compaction	cum	231.00
Note	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.	cum	206.00
3.2 (i)	**Excavation in ordinary rock by manual means** (Excavation in ordinary rock using manual means including loading in a truck and carrying of excavated material to embankment site with in all lifts and leads upto 1000 metres) Excluding cost of watering , rolling & compaction.	cum	271.00
(ii)	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. Including cost of watering , rolling & compaction.	cum	296.00
Note	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.	cum	271.00
3.3	**Excavation in Soil with Dozer with lead upto 100 metres (**Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	218.00
3.4	**Excavation in Ordinary Rock with Dozer with lead upto 100 metres** (Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.)	cum	366.00
3.5	**Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres** (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	657.00
3.6	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with disposal upto 1000 metres.** (Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity 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.)		
(i)	Excluding the cost of watering, rolling & compaction.	cum	94.00
(ii)	Including cost of watering, rolling & compaction.	cum	119.00
3.7	**Excavation in Ordinary Rockusing Hydraulic ExcavatorCK-90 and Tippers with disposal upto 1000 metres.** (Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
(i)	Excluding the cost of watering, rolling & compaction.	cum	115.00
(ii)	Including cost of watering, rolling & compaction.	cum	140.00
3.8	**Excavation in Hard Rock (blasting prohibited)** (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
A	**Mechanised**	cum	617.00
B	**Manual Method**	cum	1074.00

Item No.	Description	Unit	Rate (₹)
3.9	**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres** (Excavation for roadway in hard rock with controlled 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	699.00
3.10	**Excavation in Marshy Soil** (Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections.)		
(i)	Excluding the cost of watering, rolling & compaction.	cum	103.00
(ii)	Including cost of watering, rolling & compaction.	cum	128.00
3.11	**Removal of Unserviceable Soil with Disposal upto 1000 metres** (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	95.00
3.12	**Pre-splitting of Rock Excavation Slopes** (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 80 HP 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	254.00
3.13	**Excavation for Structures** (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)	**Ordinary soil**		
A	**Manual Means (Depth upto 3 m)**	cum	249.00
B	**Mechanical Means (Depth upto 3 m)**	cum	53.30
(ii)	**Ordinary rock (not requiring blasting)**		
A	**Manual Means (Depth upto 3 m)**	cum	312.00
B	**Mechanical Means**	cum	71.10
(iii)	**Hard rock (requiring blasting)**		
A	**Manual Means**	cum	810.00
(iv)	**Hard rock (blasting prohibited)**		
A	**Mechanical Means**	cum	709.00
(v)	**Marshy soil**		
A	**Manual means (upto 3 m depth)**	cum	480.00
B	**Mechanical Means**	cum	157.00
3.14	**Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means** (Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.)	sqm	26.00
3.15	**Scarifying existing bituminous surface to a depth of 50 mm by mechanical means** (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.)	sqm	7.50
3.16	**Embankment Construction with Material Obtained from Borrow Pits** (Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.)		
(i)	Rolling with vibratory roller	cum	230.00
(ii)	Rolling with smooth wheeled roller	cum	219.00
3.17	**Construction of Embankment with Material Deposited from Roadway Cutting** (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.)		
(i)	Rolling with vibratory roller	cum	170.00
(ii)	Rolling with smooth wheeled roller	cum	159.00
3.18	**Construction of Subgrade and Earthen Shoulders** (Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2.)		
(i)	Rolling with vibratory roller	cum	271.00
(ii)	Rolling with smooth wheeled roller	cum	257.00

Item No.	Description	Unit	Rate (₹)
3.19	**Compacting Original Ground**		
Case-I	**Compacting original ground supporting subgrade** (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.)		
(i)	Rolling with vibratory roller	cum	88.40
(ii)	Rolling with smooth wheeled roller	cum	74.50
Case-II	**Compacting original ground supporting embankment**		
(i)	Rolling with vibratory roller	cum	51.70
(ii)	Rolling with smooth wheeled roller	cum	37.70
3.20	**Stripping and Storing Top Soil** (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	220.00
3.21	**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.)	cum	131.00
3.22	**Turfing with Sods** (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 rods and watering.)	sqm	56.70
3.23	**Seeding and Mulching** (Preparation of seed bed on previously laid top soil, furnishing 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 watering for 3 months all as per clause 308.)	sqm	194.00
3.24	**Surface Drains in Soil** (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 50 metres (average lead 25 metres)		
A	**Mechanical means**	metre	82.00
B	**Manual Means**	metre	62.30
3.25	**Surface Drains in Ordinary Rock** (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 to 309. Excavated material to be used in embankment at site.)		
A	**Mechanical Means**	metre	166.00
B	**Manual Means**	metre	93.50
3.26	**Surface Drains in Hard Rock** (Rate per metre may be worked out based on quantity of hard rock as per design.)	metre	-
3.27	**Sub Surface Drains with Perforated Pipe** (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/asbestos cement/cement concrete/ PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site.)	metre	292.00
3.28	**Aggregate Sub- Surface Drains** (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	105.00
3.29	**Underground Drain at Edge of Pavement** (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads.)	metre	2025.00
3.30	**Preparation and Surface Treatment of formation.** (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 8-10 tonne smooth wheeled roller, complete as per clause 310.)	sqm	3.10
3.31	**Construction of Rock fill Embankment** (Construction of rock fill embankment 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	100.80
3.32	**Excavation in Hill Area in Soil by Mechanical Means** (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.)	cum	251.00
3.33	**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.** (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.)	cum	360.00

Item No.	Description	Unit	Rate (₹)
3.34	**Excavation in Hilly Areas in Hard Rock Requiring Blasting** (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	590.00
3.35	**Work in Urban Roads** (The cost of earth work in urban roads inhabited area will be comparatively higher due to **following reason**s:)		-
3.36	**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 - 2001 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200mm thickness each at OMC, all as specified in IRC: SP: 58-2001 and as per approved plans.)	cum	152.00

CHAPTER - 3

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
3.1	301		**Excavation in Soil by Manual Means**					
			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.					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	1.800	261.00	469.80	L-12
			Mazdoor	day	45.000	247.00	11115.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	882.00	8820.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				2040.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				2244.53	
			Cost of 120 cum = a+b+c+d				24689.81	
			Rate per cum = (a+b+c+d)/120				205.75	
			Rate per cum			**say**	**206.00**	
		(i)	**Including cost of watering, rolling & compaction**				**231.00**	Sub_Analysis
			Rate per cum			**say**	**231.00**	
		Note	**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.**				**206.00**	Sub_Analysis
			Rate per cum			**say**	**206.00**	
3.2	301		**Excavation in Ordinary Rock by Manual Means**					
		(i)	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 excluding watering, rolling & compaction.					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	2.800	261.00	730.80	L-12
			Mazdoor	day	70.000	247.00	17290.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	882.00	8820.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				2684.08	
			d) Contractor's profit @ 0.1 on (a+b+c)				2952.49	
			Cost for 120 cum = a+b+c+d				32477.37	
			Rate per cum = (a+b+c+d)/120				270.64	
			Rate per cum				270.64	
						say	**271.00**	
		(i)	**Including watering, rolling & compaction.**				**296.00**	Sub_Analysis
		Note	**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.**				**271.00**	Sub_Analysis
3.3	301		**Excavation in Soil with Dozer with lead upto 100 metres**					
			Excavation for road way in soil by mechanical means including cutting and pushing the earth to site of embankment upto a distance of 100 metres (average lead 50 metres), including trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	5313.00	31878.00	P&M-014

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.1 on (a+b)				3239.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				3563.22	
			Cost for 180 cum = a+b+c+d				39195.38	
			Rate per cum = (a+b+c+d)/180				217.75	
						say	**218.00**	
3.4	**301**		**Excavation in Ordinary Rock with Dozer with lead upto 100 metres**					
			Excavation for roadway in ordinary rock by deploying a dozer, 80 HP including cutting and pushing the cut earth to site of embankment upto a distance of 100 metres (average lead 50 metres), trimming bottom and side slopes in accordance with the requirements of lines, grades and cross sections.					
			Unit = cum					
			Taking output = 108 cum					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Dozer, 80 HP @ 20 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			c) Overhead charges @ 0.1 on (a+b)				3265.03	
			d) Contractor's profit @ 0.1 on (a+b+c)				3591.54	
			Cost for 108 cum = a+b+c+d				39506.89	
			Rate per cum = (a+b+c+d)/108				365.80	
						say	**366.00**	
3.5	**301**		**Excavation in Hard Rock (requiring blasting) with disposal upto 1000 metres**					
			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.					
			Unit = cum					
			Taking 0utput = 180 cum					
			a) Labour					
			Mate	day	0.220	261.00	57.42	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Driller	day	2.000	295.00	590.00	L-06
			Blaster	day	0.250	408.00	102.00	L-03
			b) Machinery					
			Dozer, 80 HP @ 30 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			Air compressor, 250 cfm with 2 jack hammer	hour	6.000	457.00	2742.00	P&M-001
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper10 tonne capacity	hour	11.250	1015.00	11418.75	P&M-048
			c) Materials					
			Gelatin 80 per cent	kg	63.000	799.42	50363.46	M-104
			Electric Detonators @ 1 detonator for 2 gelatin sticks of 125 gms each	each	252.000	5.63	1418.08	M-094 /100
			Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	**-108.40**	**-9756.00**	M-089
			d) Overhead charges @ 0.1 on (a+b+c)				9778.07	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				10755.88	
			Cost for 180 cum = a+b+c+d+e				118314.66	
			Rate per cum = (a+b+c+d+e)/180				657.30	
						say	**657.00**	
		Note	1. The quality 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.					
3.6	**301**		**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres.**					

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
		(i)	Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity 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 (excluding watering, rolling & compaction.)					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour	hour	16.000	1015.00	16240.00	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				2790.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				3069.32	
			Cost for 360 cum = a+b+c+d				33762.48	
			Rate per cum = (a+b+c+d)/360				93.78	
			Rate per cum				93.78	
						say	**94.00**	
		(ii)	**Including watering, rolling & compaction.**				**119.00**	Sub_Analysis
3.7	**301**		**Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal upto 1000 metres.**					
		(i)	Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections (excluding watering, rolling & compaction)					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	1015.00	11165.00	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				2282.79	
			d) Contractor's profit @ 0.1 on (a+b+c)				2511.07	
			Cost for 240 cum = a+b+c+d				27621.73	
			Rate per cum = (a+b+c+d)/240				115.09	
			Rate per cum				115.09	
						say	**115.00**	
		(ii)	**Including watering, rolling & compaction.**				**140.00**	Sub_Analysis
3.8	**301**		**Excavation in Hard Rock (blasting prohibited)**					
			Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.					

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
		A	**Mechanised**					
			Unit = cum					
			Taking output = 36 cum					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor for trimming slopes including mannul loading in truck	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Hydraulic excavator with rock breaker attachment @ 6 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 1 trip per hour.	hour	6.500	1015.00	6597.50	P&M-048
			Credit for excavated rock found suitable for use @ 50 per cent of excavated quantity	cum	18.000	**-108.40**	**-1951.20**	M-089
			c) Overhead charges @ 0.1 on (a+b)				1836.87	
			d) Contractor's profit @ 0.1 on (a+b+c)				2020.56	
			Cost for 36 cum = a+b+c+d				22226.13	
			Rate per cum = (a+b+c+d)/36				617.39	
						say	**617.00**	
		Note	1. The quality 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 restricted/reduced to that extent.					
			3. Being small quantity, manual loading will be economical in this case and has been provided accordingly.					
3.8		**B**	**Manual Method**					
			Unit = cum					
			Taking output = 16 cum					
			a) Labour					
			Mate	day	1.640	261.00	428.04	L-12
			Mazdoor including loading in truck	day	16.000	247.00	3952.00	L-13
			Chiseller	day	24.000	309.00	7416.00	L-05
			Blacksmith	day	1.000	330.00	330.00	L-02a
			b) Machinery					
			Tipper 5.5 cum capacity, 1 trip per hour.	hour	2.900	1015.00	2943.50	P&M-048
			Credit for excavated rock found suitable for use @ 50 per cent of excavated	cum	8.000	**-108.40**	**-867.20**	M-089
			c) Overhead charges @ 0.1 on (a+b)				1420.23	
			d) Contractor's profit @ 0.1 on (a+b+c)				1562.26	
			Cost for 16 cum = a+b+c+d				17184.83	
			Rate per cum = (a+b+c+d)/16				1074.05	
						say	**1074.00**	
		Note	1. Credit is considered for 50 per cent 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.					
3.9	**301**		**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres**					
			Excavation for roadway in hard rock with controlled 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.					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.220	261.00	57.42	L-12

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	3.000	247.00	741.00	L-13
			Driller	day	2.000	295.00	590.00	L-06
			Blaster	day	0.500	408.00	204.00	L-03
			b) Machinery					
			Dozer 80 HP @ 30 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			Air compressor, 250 cfm with 2 jack hammers	hour	6.000	457.00	2742.00	P&M-001
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	8.200	1015.00	8323.00	P&M-048
			c) Materials					
			Gelatin 80 per cent	kg	63.000	799.42	50363.46	M-104
			Electric Detonators @ 1 detonator for1/2 gelatin stick of 125 gms each	each	1008.000	5.63	5672.32	M-094 /100
			Credit for excavated rock found suitable for use @ 50 per cent quantity blasted	cum	90.000	**-108.40**	**-9756.00**	M-089
			Add 5 per cent of cost of a+b+c towards muffling arrangements to guard against any rock fly off during blasting				**4952.06**	
			d) Overhead charges @ 0.1 on (a+b+c)				10399.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11439.26	
			Cost for 180 cum = a+b+c+d+e				125831.84	
			Rate per cum = (a+b+c+d+e)/180				699.07	
						say	**699.00**	
		Note	1. Credit is considered for 50 per cent of quantity of blastered rock, if found suitable for construction.					
			2. In case some rock is issued to the contractor at site, the item of carriage shall be reduced to that extent.					
3.10	**301**		**Excavation in Marshy Soil**					
		(i)	Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections (excluding watering, rolling & compaction)					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	1015.00	13844.60	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				2550.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				2805.82	
			Cost for 300 cum = a+b+c+d				30864.05	
			Rate per cum = (a+b+c+d)/300				102.88	
			Rate per cum				102.88	
						say	**103.00**	
		(ii)	**Including watering, rolling & compaction.**				**128.00**	Sub_Analysis
3.11	**301**		**Removal of Unserviceable Soil with Disposal upto 1000 metres**					
			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.					
			Unit = cum					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Excavator0.90 cum bucket capacity @ 60 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.360	1015.00	16605.40	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				2826.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				3109.51	
			Cost for 360 cum = a+b+c+d				34204.62	
			Rate per cum = (a+b+c+d)/360				95.01	
						say	**95.00**	
		Note	This item does not include replacement of unsuitable soil by suitable soil. Replacement, where required, is to be provided and paid separately under clause 305.					
3.12	**303**		**Presplitting of Rock Excavation Slopes**					
			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 80 HP 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.					
			Unit = sqm					
			Taking output = 400 sqm (120 cum considering 300mm average depth of excavation over the existing rock face)					
			a) Labour					
			Mate	day	0.600	261.00	156.60	L-12
			Mazdoor	day	15.000	247.00	3705.00	L-13
			b) Machinery					
			Air compressor 250 cfm with 2 leads @ 20 cum per hour	hour	6.000	457.00	2742.00	P&M-001
			Dozer, 80 HP	hour	6.000	5313.00	31878.00	P&M-014
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			c) Materials					
			Gelatin 80 per cent	kg	42.000	799.42	33575.64	M-104
			Electric Detonators @ 1 detonator for 1/2 gelatin stick of 125 gms each	each	672.000	5.63	3781.55	M-094 /100
			d) Overhead charges @ 0.1 on (a+b+c)				8406.48	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9247.13	
			Cost for 400 sqm = a+b+c+d+e				101718.39	
			Rate per sqm = (a+b+c+d+e)/400				254.30	
						say	**254.00**	
		Note	In case blasted rock is used to the contractor against payment for constructed work, the cost of carriage shall be reduced to that extent.					
3.13	**304**		**Excavation for Structures**					
			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)	**Ordinary soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual Means (Depth upto 3 m)**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.320	261.00	83.52	L-12
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Overhead charges @ 0.1 on (a)				205.95	
			c) Contractor's profit @ 0.1 on (a+b)				226.55	
			Cost for 10 cum = a+b+c				2492.02	
			Rate per cum = (a+b+c)/10				249.20	
						say	**249.00**	
		Note	Cost of dewatering may be added where required upto 10 per cent of labour cost Assessment for dewatering shall be made as per site conditions.					
3.13 (i)		**B**	**Mechanical Means (Depth upto 3 m)**					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.320	261.00	83.52	L-12
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.1 on (a+b)				1320.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				1452.83	
			Cost for 300 cum = a+b+c+d				15981.10	
			Rate per cum = (a+b+c+d)/300				53.27	
						say	**53.30**	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
3.13		**(ii)**	**Ordinary Rock (not requiring blasting)**					
		A	**Manual Means (Depth upto 3 m)**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Overhead charges @ 0.1 on (a)				257.44	
			c) Contractor's profit @ 0.1 on (a+b)				283.18	
			Cost for 10 cum = a+b+c				3115.02	
			Rate per cum = (a+b+c)/10				311.50	
						say	**312.00**	
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions.					
3.13 (ii)		**B**	**Mechanical Means**					
			Unit = cum					
			Taking output = 216 cum					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.000	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.1 on (a+b)				1269.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				1396.19	
			Cost for 216 cum = a+b+c+d				15358.09	
			Rate per cum = (a+b+c+d)/216				71.10	
						say	**71.10**	

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
		Note	1. Cost of dewatering upto 5 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond3 m is not dug and hence not included.					
3.13		**(iii)**	**Hard Rock (requiring blasting)**					
		A	**Manual Means**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			i) Mate	day	0.530	261.00	138.33	L-12
			ii) Driller	day	0.840	295.00	247.80	L-06
			iii) Blaster	day	0.400	408.00	163.20	L-03
			iv) Mazdoor	day	12.000	247.00	2964.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer @ 15 cum per hour	hour	0.67	457.00	306.19	P&M-001
			c) Material					
			Blasting Material	kg	3.500	799.42	2797.97	M-104
			Detonator electric	each	14.000	5.63	78.78	M-094 /100
			d) Overhead charges @ 0.1 on (a+b+c)				669.63	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				736.59	
			Cost for 10 cum = a+b+c+d+e				8102.49	
			Rate per cum = (a+b+c+d+e)/10				810.25	
						say	**810.00**	
		Note	Cost of dewatering @ 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions.					
3.13		**(iv)**	**Hard Rock (blasting prohibited)**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Mechanical Means**					
			a) Labour					
			Mate	day	0.200	261.00	52.20	L-12
			Mazdoor	day	5.000	247.00	1235.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker @ 1 cum per hour	hour	10.000	457.00	4570.00	P&M-001
			c) Overhead charges @ 0.1 on (a+b)				585.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				644.29	
			Cost for 10 cum = a+b+c+d				7087.21	
			Rate per cum = (a+b+c+d)/10				708.72	
						say	**709.00**	
		Note	1. Cost of dewatering upto 5 per cent of (a+b), may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2. In case of rock, foundation beyond 3 m is not dug and hence not included.					
3.13		**(v)**	**Marshy soil**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Manual means (upto 3 m depth)**					
			a) Labour					
			Mate/Supervisor	day	0.400	261.00	104.40	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Tractor-trolley	hour	2.670	518.00	1383.06	P&M-053

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			c) Material					
			Selected earth for refilling	cum	5.000	1.71	8.55	M-163
			d) Overhead charges @ 0.1 on (a+b+c)				396.60	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				436.26	
			Cost for 10 cum = a+b+c+d+e				4798.87	
			Rate per cum = (a+b+c+d+e)/ 10				479.89	
						say	**480.00**	
		Note	1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. Shoring & strutting 20 per cent of (a), where required may be added.					
			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 (v)		**B**	**Mechanical Means**					
			a) Labour					
			i) Mate	day	0.080	261.00	20.88	L-12
			ii) Mazdoor for dressing sides, bottom and backfilling	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.170	1858.00	315.86	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.450	1015.00	456.75	P&M-048
			c) Material					
			Selected earth for refilling	cum	5.000	1.71	8.55	M-163
			d) Overhead charges @ 0.1 on (a+b+c)				129.60	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				142.56	
			Cost for 10 cum = a+b+c+d+e				1568.21	
			Rate per cum = (a+b+c+d+e)/10				156.82	
						say	**157.00**	
		Note	1. Cost of dewatering @ 20 per cent of (a+b) may be added, where required.					
			2. Shoring & strutting @ 10 per cent of (a+b), where required may be added.					
			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.					
3.14	**305.4.3**		**Scarifying Existing Granular Surface to a Depth of 50 mm by Manual Means**					
			Scarifying the existing granular road surface to a depth of 50 mm and disposal of scarified material within all lifts and leads upto 1000 metres.					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.200	261.00	52.20	L-12
			Mazdoor including loading and unloading	day	5.000	247.00	1235.00	L-13
			b) Machinery					
			Tractor-trolley	hour	1.670	518.00	865.06	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				215.23	
			d) Contractor's profit @ 0.1 on (a+b+c)				236.75	
			Cost for 100 sqm = a+b+c+d				2604.23	
			Rate per sqm = (a+b+c+d)/100				26.04	
						say	**26.00**	
		Note	In case material is to be reused at site, transportation cost catered above for disposal shall be deleted.					

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
3.15	305.4.3		**Scarifying Existing Bituminous Surface to a depth of 50 mm by Mechanical Means**					
			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.					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Machinery					
			Tractor with ripper attachment @ 60 cum per hour	hour	0.080	558.00	44.64	P&M-055
			Front end loader 1 cum bucket capacity @ 25 cum per hour	hour	0.200	1371.00	274.20	P&M-017
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.230	1015.00	233.45	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				61.67	
			d) Contractor's profit @ 0.1 on (a+b+c)				67.83	
			Cost for 100 sqm = a+b+c+d				746.15	
			Rate per sqm = (a+b+c+d)/100				7.46	
						say	**7.50**	
3.16	305		**Construction of Embankment with Material obtained from Borrowpits**					
		(i)	Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.					
			Unit = cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Hydraulic Excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1858.00	3102.86	P&M-026
			Tipper 10 tonne capacity	tonne.km	160 x L	8.83	1412.80	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**141.28**	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2715.00	2715.00	P&M-032
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Vibratory roller 8 -10 tonnes @ 100 cum per hour	hour	1.000	2029.00	2029.00	P&M-059
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			Compensation for earth taken from private land	cum	100.000	1.71	171.00	M-092
			d) Overhead charges @ 0.1 on (a+b+c)				1901.94	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2092.13	
			Cost for 100 cum = a+b+c+d+e				23013.47	
			Rate per cum = (a+b+c+d+e)/100				230.13	
		(i)	**Rolling with vibratory roller**			**say**	**230.00**	
		Note	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.					
		(ii)	**Rolling with smooth wheeled roller**				**219.00**	Sub_Analysis

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
3.17	305		**Construction of Embankment with Material Deposited from Roadway Cutting**					
			Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2715.00	2715.00	P&M-032
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Vibratory roller 8-10 tonnes @ 100 cum per hour	hour	1.000	2029.00	2029.00	P&M-059
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				1406.27	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1546.90	
			Rate for 100 cum = a+b+c+d+e				17015.92	
			Rate per cum = (a+b+c+d+e)/100				170.16	
		(i)	**Rolling with vibratory roller**			**say**	**170.00**	
		Note	In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.					
		(ii)	**Rolling with smooth wheeled roller**				**159.00**	Sub_Analysis
3.18	305		**Construction of Subgrade and Earthen Shoulders**					
			Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Hydraulic excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1858.00	3102.86	P&M-026
			Tipper 10 tonne capacity	tonne.km	175xL	8.83	1545.25	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**154.53**	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 50 cum per hour	hour	2.000	2715.00	5430.00	P&M-032
			Water tanker with 6 km lead	hour	4.000	174.00	696.00	P&M-060
			Vibratory roller 8-10 tonnes @ 80 cum per hour	hour	1.250	2029.00	2536.25	P&M-059
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			Compensation & Royalty for earth taken from private land	cum	100.000	1.71	171.00	M-092
			d) Overhead charges @ 0.1 on (a+b+c)				2238.73	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2462.61	
			Cost for 100 cum = a+b+c+d+e				27088.69	
			Rate per cum = (a+b+c+d+e)/100				270.89	
		(i)	**Rolling with vibratory roller**			**say**	**271.00**	
		(ii)	**Rolling with smooth wheeled roller**				**257.00**	Sub_Analysis
3.19	**305.3.4**		**Compacting Original Ground**					
		Case-I	**Compacting original ground supporting sub-grade**					
			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.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	9.000	558.00	5022.00	P&M-055
			Motor grader for grading	hour	6.000	2715.00	16290.00	P&M-032
			Water tanker 6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Vibratory roller 8-10 tonne @ 80 cum/hour	hour	7.500	2029.00	15217.50	P&M-059
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				4383.53	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4821.89	
			Cost for 600 cum = a+b+c+d+e				53040.76	
			Rate per cum = (a+b+c+d+e)/600				88.40	
		(i)	**Rolling with vibratory roller**			**say**	**88.40**	
		(ii)	**Rolling with smooth wheeled roller**				**74.50**	Sub_Analysis
3.19		**Case-II**	**Compacting original ground supporting embankment**					
			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.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	6.000	558.00	3348.00	P&M-055
			Vibratory road roller 8-10 tonne capacity	hour	7.500	2029.00	15217.50	P&M-059
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				2561.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2817.53	
			Cost for 600 cum = (a+b+c+d+e)				30992.82	
			Rate per cum = (a+b+c+d+e)/600				51.65	
		(i)	**Rolling with vibratory roller**			**say**	**51.70**	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
		(ii)	**Rolling with smooth wheeled roller**				**37.70**	Sub_Analysis
3.20	**305**		**Stripping and Storing Top Soil**					
			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.					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.200	261.00	52.20	L-12
			Mazdoor	day	5.000	247.00	1235.00	L-13
			b) Machinery					
			Dozer 80 HP @ 100 cum per hour	hour	0.100	5313.00	531.30	P&M-014
			c) Overhead charges @ 0.1 on (a+b)				181.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				200.04	
			Cost for 10 cum = (a+b+c+d)				2200.39	
			Rate per cum = (a+b+c+d)/10				220.04	
						say	**220.00**	
3.21			**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 = 300 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Dozer, 80 HP	hour	6.000	5313.00	31878.00	P&M-014
			c) Overhead charges @ 0.1 on (a+b)				3239.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				3563.22	
			Cost for 300 cum = (a+b+c+d)				39195.38	
			Rate per cum = (a+b+c+d)/300				130.65	
						say	**131.00**	
3.22	**307**		**Turfing with Sods**					
			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.					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor for preparation of ground and fetching of sods	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Water tanker including watering for 3 months	hour	2.000	174.00	348.00	P&M-060
			Tractor-trolley	hour	1.000	518.00	518.00	P&M-053
			c) Material					
			Farm yard manure @ 0.18 cum per 100 sqm at site of work	cum	0.180	729.73	131.35	M-167
			Cost of water	KL	12.000	243.23	2918.76	M-189

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			d) Overhead charges @ 0.1 on (a+b+c)				468.84	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				515.73	
			Cost for 100 sqm = a+b+c+d+e				5673.00	
			Rate per 100 sqm = (a+b+c+d+e)/100				56.73	
						say	**56.70**	
3.23	**308**		**Seeding and Mulching**					
			Preparation of seed bed on previously laid top soil, furnishing 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 watering for 3 months all as per clause 308.					
			Unit = sqm					
			Taking output = 240 sqm					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Water tanker 6 KL capacity including watering for 3 months	hour	14.000	174.00	2436.00	P&M-060
			Tractor-trolley	hour	2.400	518.00	1243.20	P&M-053
			c) Material					
			Seeds	kg	3.600	32.44	116.78	M-162
			Sludge/Farm yard manure @ 0.18 cum per 100 sqm	cum	0.430	729.73	313.78	M-167
			Bitumen Emulsion	litre	55.200	37.883	2091.14	M-077
			Jute netting, open weave, 2.5 cm square opening	sqm	264.000	34.84	9197.76	M-121
			Cost of water for 3 months	KL	84.000	243.23	20431.32	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				3840.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4224.48	
			Cost for 240 sqm = a+b+c+d+e				46469.31	
			Rate per sqm = (a+b+c+d+e)/240				193.62	
						say	**194.00**	
3.24	**309**		**Surface Drains in Soil**					
			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 50 metres (average lead 25 metres).					
			Unit = metre					
			Taking output = 10 metres					
		A	**Mechanical means**					
			a) Labour					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor for dressing of bed and side of drain	day	0.250	247.00	61.75	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 30 metres per hour	hour	0.330	1858.00	613.14	P&M-026
			c) Overhead charges @ 0.1 on (a+b)				67.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				74.53	
			Cost for 10 metres = a+b+c+d				819.78	
			Rate per metre = (a+b+c+d)/10				81.98	
						say	**82.00**	
3.24		**B**	**Manual Means**					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Overhead charges @ 0.1 on (a)				51.49	
			c) Contractor's profit @ 0.1 on (a+b)				56.64	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 10 metres = a+b+c				623.00	
			Rate per metre = (a+b+c)/10				62.30	
						say	**62.30**	
		Note	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.					
3.25	**309**		**Surface Drains in Ordinary Rock**					
			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 to 309. Excavated material to be used in embankment at site.					
			Unit = metre					
			Taking output = 10 metres					
		A	**Mechanical Means**					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for dressing of bed and side of drain	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Hydraulic Excavator 0.3 cum bucket capacity @ 15 metres per hour	hour	0.670	1858.00	1244.86	P&M-026
			c) Overhead charges @ 0.1 on (a+b)				137.36	
			d) Contractor's profit @ 0.1 on (a+b+c)				151.09	
			Cost for 10 metres = a+b+c+d				1662.03	
			Rate per metre = (a+b+c+d)/10				166.20	
						say	**166.00**	
3.25		**B**	**Manual Means**					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Overhead charges @ 0.1 on (a)				77.23	
			c) Contractor's profit @ 0.1 on (a+b)				84.96	
			Cost for 10 metres = a+b+c				934.51	
			Rate per metre = (a+b+c)/10				93.45	
						say	**93.50**	
3.26	**309**		**Surface Drains in Hard Rock**					
			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.					
3.27	**309**		**Sub-Surface Drains with Perforated Pipe**					
			Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site.					
			Unit = metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor for excavation and back filling	day	2.000	247.00	494.00	L-13
			c) Material					
			Perforated pipe of cement concrete, internal dia 100 mm	metre	10.000	103.87	1038.70	M-135

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Crushed stone as per table 300-3	cum	2.400	363.19	871.66	M-012
			d) Overhead charges @ 0.1 on (a+b+c)				241.48	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				265.63	
			Cost for 10 metres = a+b+c+d+e				2921.90	
			Rate per metre = (a+b+c+d+e)/10				292.19	
						say	**292.00**	
		Note	Type of pipe may be modified depending upon provision in design.					
3.28	**309**		**Aggregate Sub-Surface Drains**					
			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.					
			Unit = metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor for excavation and back filling with aggregates	day	1.500	247.00	370.50	L-13
			b) Material					
			Crushed stone as per table 300-3	cum	1.350	363.19	490.31	M-012
			c) Overhead charges @ 0.1 on (a+b)				86.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				95.26	
			Cost for 10 metres = a+b+c+d				1047.89	
			Rate per metre = (a+b+c+d)/10				104.79	
						say	**105.00**	
3.29	**309**		**Underground Drain at Edge of Pavement**					
			Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads.					
			Unit = Running metre					
			Taking output = one metre					
			a) Earthwork in soil	cum	1.500	53.30	79.95	Item No. 3.13 B
			b) RCC work M-20	cum	0.495	3930.00	1945.35	Item 12.8 (C) RCC
			Rate per metre = (a+b)				2025.30	
			Rates for these items may be taken from chapters on earth work and substructures respectively.			**say**	**2025.00**	
3.30	**310**		**Preparation and Surface Treatment of Formation.**					
			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 8-10 tonne smooth wheeled roller, complete as per clause 310.					
			Unit = sqm					
			Taking output = 3500sqm					
			a) Labour					
			Mate	day	0.280	261.00	73.08	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			Mazdoor skilled	day	1.000	313.00	313.00	L-15
			b) Machinery					
			Smooth 3 wheeled steel roller 8-10 tonnes	hour	3.000	777.00	2331.00	P&M-044
			Water tanker 6 KL, one trip per hour	hour	3.000	174.00	522.00	P&M-060
			c) Material					
			Cost of water	KL	18.000	243.23	4378.14	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				909.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1000.91	
			Cost for 3500 sqm = a+b+c+d+e				11010.06	

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Rate per sqm = (a+b+c+d+e)/3500				3.15	
						say	**3.10**	
3.31	**313**		**Construction of Rock fill Embankment**					
			Construction of rock fill embankment 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.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.500	247.00	370.50	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Vibratory road roller 8-10 tonnes @ 100 cum per hour	hour	1.000	2029.00	2029.00	P&M-059
			Water tanker 6 KL, one trip per hour	hour	2.000	174.00	348.00	P&M-060
			c) Material					
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				833.32	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				916.65	
			Cost for 100 cum = a+b+c+d+e				10083.17	
			Rate per cum = (a+b+c+d+e)/100				100.83	
						say	**100.80**	
		Note	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 300 mm, breaking charges will have to be added.					
			EARTH WORK ON HILL ROAD					
3.32	**301**		**Excavation in Hill Area in Soil by Mechanical Means**					
			Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 260 cum					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor for trimming slopes and helping in excavation etc.	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12) @ 43.28 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			Front end loader	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	12.000	1015.00	12180.00	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				5382.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				5921.15	
			Cost for 260 cum = a+b+c+d				65132.65	
			Rate per cum = (a+b+c+d)/260				250.51	
						say	**251.00**	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth shall be disposed off on the valley side.					
3.33	**301**		**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting.**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.320	261.00	83.52	L-12
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Machinery					
			Dozer 80 HP (D-80 A 12) @ 28.32 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			Front end loader	hour	7.000	1371.00	9597.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	1015.00	7105.00	P&M-048
			c) Overhead charges @ 0.1 on (a+b)				5063.95	
			d) Contractor's profit @ 0.1 on (a+b+c)				5570.35	
			Cost for 170 cum = a+b+c+d				61273.82	
			Rate per cum = (a+b+c+d)/170				360.43	
						say	**360.00**	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					
3.34	**301**		**Excavation in Hilly Areas in Hard Rock Requiring Blasting**					
			Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.					
			Unit = cum					
			Taking output = 170 cum					
			a) Labour					
			Mate	day	0.490	261.00	127.89	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			Driller	day	2.000	295.00	590.00	L-06
			Blaster	day	0.250	408.00	102.00	L-03
			b) Machinery					
			Dozer 80 HP (D-80 A 12) @ 28.32 cum per hour	hour	6.000	5313.00	31878.00	P&M-014
			Air compressor 250 cfm with two jack hammer @ 20 cum per hour	hour	5.000	457.00	2285.00	P&M-001
			Front end loader	hour	7.000	1371.00	9597.00	P&M-017
			Tipper 5.5cum capacity, 4 trips per hour.	hour	7.000	1015.00	7105.00	P&M-048
			c) Materials					
			Gelatine 80 per cent	kg	35.000	799.42	27979.70	M-104
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	140.000	5.63	787.82	M-094 /100
			d) Overhead charges @ 0.1 on (a+b+c)				8292.24	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9121.47	
			Cost for 170 cum = a+b+c+d+e				100336.12	
			Rate per cum = (a+b+c+d+e)/170				590.21	
						say	**590.00**	
		Note	In case the land on the valley side is barren and there is no objection for disposing of excavated earth on the valley side, the provision of front end loader and tipper shall be deleted as excavated earth can be disposed off on the valley side.					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			In case of hill roads, the altitude effect comes into play. The output of men and machines decreases progressively after 2100 m elevation leading to increase in cost . High altitude effect has been explained in the basic approach.					
3.35			**Work in Urban Roads**					
			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, 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 per cent.					
			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 venders, parking of vehicles by the road side, encroachments 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 judgment and cater for the additional cost to the extent of 2 to 3 per cent, 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.					
3.36	**Suggestive**		**Embankment Construction with Flyash/Pond ash available from coal or lignite burning Thermal Plants as waste material.**					
			Construction of embankment with Flyash conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material, spread and compacted in layer of 200mm thickness each at OMC, all as specified in IRC: SP: 58-2001 and as per approved plans.					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum/hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 10T capacity fly ash 360 x 1.2 = 432 tonnes	tonne.km	432 x L	8.83	3814.56	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage for loading and unloading				**381.46**	
			Dozer 80 HP for spreading @ 200 cum/hour	hour	1.800	5313.00	9563.40	P&M-014
			Motor Grader for grading @ 100 cum/hour	hour	3.600	2715.00	9774.00	P&M-032
			Water tanker6 KL capacity	hour	12.000	174.00	2088.00	P&M-060
			Vibratory Roller 8-10 tonne @ 100 cum/hour	hour	3.600	2029.00	7304.40	P&M-059
			c) Overhead charges @ 0.1 on (a+b)				4510.36	
			d) Contractor's profit @ 0.1 on (a+b+c)				4961.39	
			Cost for 360 cum = a+b+c+d				54575.33	

EARTH WORK, EROSION CONTROL AND DRAINAGE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate(₹)	Cost (₹)	Remarks/ Input ref.
			Rate per cum = (a+b+c+d)/360				151.60	
						say	**152.00**	
		Note	1.As flyash is available free of cost as waste material from Thermal Plants, cost of material has not been added.					
			2.The earth cover on sides and intermediate layers of earth sandwiching the flyash have not been included in this analysis. The same are required to be provided as per approved design and priced separately as embankment construction.					

CHAPTER–4

SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

Chapter – 4

Sub-Bases, Bases (Non-Bituminous) and Shoulders

Preamble:

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, two alternatives as under have been provided:
    a. Mix in place method
    b. Plant mix method
3. Although plant mix method has not been provided in the MoRT&H Specifications, it is actually being adopted by some of the contractors who are holding the mixing plants to get better quality of mix. It is also found economical as it can achieve much more progress. It is recommended that this point may be kept in view during future revision of specifications of sub-base.
4. In the case of improvement of sub-grade with lime stabilization, soil is assumed to be available and has not been provided for. Only lime has been catered. In the case of lime stabilization of sub-base, soil has been provided to form the sub-base.
5. In the case of medians, separators and footpaths, plate compactor has been catered for compaction due to restricted space.
6. It has been assumed in the case of crushed cement concrete sub-base/base that during the process of dismantling, 25 per cent of aggregates will get segregated and only the remaining will have to be broken / crushed from dismantled concrete slab portions. Transportation of materials has been catered from place of dismantling to work site. In case, site is the same, transportation cost can be deleted.
7. Separate rate for penetration coat over top layer of crushed cement concrete base has been provided, as this item is optional.
8. While providing for the rate of materials, detailed local enquires should be made and prevailing market rates ascertained from concerned suppliers in the area keeping in view the location of crushing plants and lead involved.
9. The rate analyses for crushing of aggregates have also been included in Chapter-1. The cost of procured aggregated and crushed aggregates by own crusher should be compared and economic alternative adopted. It has generally been observed in practice that contractors are setting up their own crushing plants where quantities of aggregates are large especially for projects above ₹50 crores.
10. 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 uncompacted quantities.

CHAPTER - 4

SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

Item No.	Description	Unit	Rate (₹)
4.1	**Granular Sub-base with Close Graded Material (Table:- 400-1)**		
A	**Plant Mix Method** (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.)		
(i)	**for grading- I Material**	cum	993.00
(ii)	**for grading- II Material**	cum	955.00
(iii)	**for grading-III Material**	cum	859.00
B	**By Mix in Place Method** (Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.)		
(i)	**for grading- I Material**	cum	717.00
(ii)	**for grading- II Material**	cum	678.00
(iii)	**for grading-III Material**	cum	582.00
4.2	**Granular Sub-Base with Coarse Graded Material (Table:- 400- 2)** (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.)		
(i)	**for grading- I Material**	cum	651.00
(ii)	**for grading- II Material**	cum	649.00
(iii)	**for grading-III Material**	cum	637.00
4.3	**Lime Stabilisation for Improving Subgrade** (Laying and spreading available soil in the subgrade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime having minimum content of 70% 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.)		
A	**By Mechanical Means**	cum	429.00
B	**By Manual Means**	cum	414.00
4.4	**Lime Treated Soil for Sub- Base** (Providing, laying and spreading soil on a prepared sub grade, pulverising, mixing the spread soil in place with rotavator with 3 % slaked lime with minimum content of 70% of CaO, grading with motor grader and compacting with the road roller at OMC to achieve at least 98%of the max dry density to form a layer of sub base.)	cum	514.00
4.5	**Cement Treated Soil Sub Base/ Base** (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 the 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	715.00
4.6	**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4 in Sub base/ Base** (Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the 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.)		
(i)	For Sub-Base course	cum	1267.00
(ii)	For Base course	cum	1013.00
4.7	**Making 50 mm x 50 mm Furrows** (Making 50 mm x 50 mm furrows, 25mm 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) 25 mm deep furrow cutting	sqm	3.60
	ii) 50 mm deep furrow cutting	sqm	7.10
4.8	**Inverted Choke** (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	290.00
	For Koilwar sand	cum	290.00

Item No.	Description	Unit	Rate (₹)
4.9	**Water Bound Macadam** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes / Smooth 3 wheeled Steel 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.)		
A	**By Manual Means**		
(i)	**Grading- I (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	858.00
	With Smooth 3 wheeled Steel Roller	cum	849.00
(b)	**Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)**	cum	960.00
	With Smooth 3 wheeled Steel Roller	cum	950.00
(ii)	**Grading- II (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	904.00
	With Smooth 3 wheeled Steel Roller	cum	895.00
(b)	**Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)**	cum	956.75
	With Smooth 3 wheeled Steel Roller	cum	947.00
(c)	**Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)**	cum	964.00
	With Smooth 3 wheeled Steel Roller	cum	947.00
(iii)	**Grading- III (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	949.00
	With Smooth 3 wheeled Steel Roller	cum	940.00
(b)	**Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)**	cum	1002.00
	With Smooth 3 wheeled Steel Roller	cum	992.00
B	**By Mechanical Means:**		
(i)	**Grading- I (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	721.00
	With Smooth 3 wheeled Steel Roller	cum	711.00
(b)	**Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)**	cum	822.00
	With Smooth 3 wheeled Steel Roller	cum	813.00
(ii)	**Grading- II (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	767.00
	With Smooth 3 wheeled Steel Roller	cum	757.00
(b)	**Using Screening Type-A (13.2mm Agg.) (with Vibratory Roller)**	cum	819.00
	With Smooth 3 wheeled Steel Roller	cum	810.00
(c)	**Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)**	cum	827.00
	With Smooth 3 wheeled Steel Roller	cum	809.20
(iii)	**Grading- III (Using Screening Crushable type such as Moorum or Gravel)**		
(a)	**Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)**	cum	812.00
	With Smooth 3 wheeled Steel Roller	cum	802.00
(b)	**Using Screening Type-B (11.2mm Agg.) (with Vibratory Roller)**	cum	864.00
	With Smooth 3 wheeled Steel Roller	cum	854.00
4.10	**Crushed Cement Concrete Sub-base / Base** (Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L 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.)		
	With Vibratory Roller	cum	303.00
	With Smooth 3 wheeled Steel Roller	cum	294.00
4.11	**Penetration Coat Over Top Layer of Crushed Cement Concrete Base** (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.)	sqm	18.90

Item No.	Description	Unit	Rate (₹)
4.12	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)		
	With Vibratory Roller	cum	888.00
	With Smooth 3 wheeled Steel Roller	cum	896.00
4.13	**Construction of Median and Island with Soil Taken from Roadway Cutting** (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 407.)	cum	336.00
4.14	**Construction of Median and Island with Soil Taken from Borrow Areas** (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407.)	cum	390.00
4.15	**Construction of Shoulders** (A. Earthen Shoulders)		-
	B.) Hard Shoulders		-
	C.) Paved Shoulders		-
4.16	**Footpaths and Separators** (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 precast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel.)	sqm	799.00
4.17	**Crusher Run Macadam Base** (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 410 to form a layer of sub-base/Base.)		
A	**By Mix in Place Method**		
(i)	For 53 mm maximum size	cum	614.00
(ii)	For 45 mm maximum size	cum	611.00
B	**By Mixing Plant :**		
(i)	For 53 mm maximum size	cum	862.00
(ii)	For 45 mm maximum size	cum	883.00
4.18	**Lime, Fly ash stabalised soil sub-base** (Construction of Sub-base using lime - fly ash 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%, fly ash to conform to gradation as per clause 4.3 of IRC: 88-1984, lime + fly ash content ranging between 10 to 30%, the minimum un-confined compressive strength and CBR value after 28 days curing and 4 days soaking to be 7.5 kg/sq, cm and 25% respectively, all as specified in IRC: 88-1984.)	cum	415.00

CHAPTER - 4
SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.1	401		**Granular Sub-Base with Close Graded Material (Table:-400-1)**					
		A	**Plant Mix Method**					
			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.					
			Unit = cum					
			Taking output = 225 cum (450 tonne)					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne capacity per hour	hour	6.000	2803.00	16818.00	P&M-094
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Water tanker 6 KL capacity 5 km lead with one tripper hour	hour	4.500	174.00	783.00	P&M-060
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover loading and unloading				**397.35**	
			Motor Grader 110 HP	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8-10 t	hour	6.000	2029.00	12174.00	P&M-059
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	144.000	472.08	67979.52	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	57.000	365.72	20846.04	M-017
			2.36 mm below @ 30 per cent	cum	86.400	140.08	12102.91	M-020
			Cost of water	KL	27.000	243.23	6567.21	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	100.800	509.43	51350.54	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	72.000	365.72	26331.84	M-017
			2.36 mm below @ 40 per cent	cum	115.200	140.08	16137.22	M-020
			Cost of water	KL	27.000	243.23	6567.21	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	100.800	487.25	49114.80	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	36.000	154.77	5571.72	M-018
			2.36 mm below @ 52.5 per cent	cum	151.200	140.08	21180.10	M-020
			Cost of water	KL	27.000	243.23	6567.21	M-189
4.1A		(i)	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				18472.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				20319.41	
			Cost for 225 cum = a+b+c+d+e				223513.54	
			Rate per cum = (a+b+c+d+e)/225				993.39	
						say	**993.00**	
4.1A		(ii)	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				17761.31	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				19537.44	
			Cost for 225 cum = a+b+c+d+e				214911.80	
			Rate per cum = (a+b+c+d+e)/225				955.16	
						say	**955.00**	
4.1A		(iii)	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				15966.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				17562.61	
			Cost for 225 cum = a+b+c+d+e				193188.69	
			Rate per cum = (a+b+c+d+e)/225				858.62	
						say	**859.00**	
		Note	Any one of the grading for material may be adopted as per design.					

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.1		B	**By Mix in Place Method**					
			Construction of granular sub-base by providing close graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor unskilled	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 -10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Tractor - Rotavator	hour	12.000	541.00	6492.00	P&M-054
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			c) Material					
			Close graded Granular sub-base Material as per table 400-1					
			For Grading-I Material					
			53 mm to 9.5 mm @ 50 per cent	cum	192.000	472.08	90639.36	M-013
			9.5 mm to 2.36 mm @ 20 per cent	cum	76.000	365.72	27794.72	M-017
			2.36 mm below @ 30 per cent	cum	115.200	140.08	16137.22	M-020
			Cost of water	KL	18.000	243.23	4378.14	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 9.5 mm @ 35 per cent	cum	134.400	509.43	68467.39	M-015
			9.5 mm to 2.36 mm @ 25 per cent	cum	96.000	365.72	35109.12	M-017
			2.36 mm below @ 40 per cent	cum	153.600	140.08	21516.29	M-020
			Cost of water	KL	18.000	243.23	4378.14	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 35 per cent	cum	134.400	487.25	65486.40	M-016
			4.75 mm to 2.36 mm @ 12.5 per cent	cum	48.000	154.77	7428.96	M-018
			2.36 mm below @ 52.5 per cent	cum	201.600	140.08	28240.13	M-020
			Cost of water	KL	18.000	243.23	4378.14	M-189
4.1B		(i)	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				17764.87	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				19541.36	
			Cost for 300 cum = a+b+c+d+e				214954.95	
			Rate per cum = (a+b+c+d+e)/300				716.52	
						say	**717.00**	
4.1B		(ii)	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				16817.02	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18498.72	
			Cost for 300 cum = a+b+c+d+e				203485.97	
			Rate per cum = (a+b+c+d+e)/300				678.29	
						say	**678.00**	
4.1B		(iii)	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				14423.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				15865.62	
			Cost for 300 cum = a+b+c+d+e				174521.82	
			Rate per cum = (a+b+c+d+e)/300				581.74	
						say	**582.00**	
		Note	Any one of the grading for material may be adopted as per design.					

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.2	401		**Granular Sub-Base with Coarse Graded Material (Table:- 400- 2)**					
			Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Machinery					
			Mortar Grader 110 HP @ 50 cum per hour	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 -10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			c) Material					
			For coarse graded Granular sub-base Materials per table 400-2					
			For grading-I Material					
			53 mm to 26.5 mm @ 35 per cent	cum	134.400	362.57	48729.41	M-029
			26.5 mm to 4.75 mm @ 45 per cent	cum	172.800	404.62	69918.34	M-026
			2.36 mm below @ 20 per cent (Coarse Sand)	cum	76.800	86.98	6680.06	M-022
			Cost of water	KL	18.000	243.23	4378.14	M-189
			OR					
			For Grading-II Material					
			26.5 mm to 4.75 mm @ 75 per cent	cum	288.000	404.62	116530.56	M-026
			2.36 mm below @ 25 per cent	cum	96.000	86.98	8350.08	M-022
			Cost of water	KL	18.000	243.23	4378.14	M-189
			OR					
			For Grading-III Material					
			9.5 mm to 4.75 mm @ 66 per cent	cum	255.000	434.15	110708.25	M-025
			2.36 mm below @ 34 per cent	cum	129.000	86.98	11220.42	M-022
			Cost of water	KL	18.000	243.23	4378.14	M-189
4.2		(i)	**Rate per cum for grading-I Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				16139.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				17753.82	
			Cost for 300 cum = a+b+c+d+e				195292.00	
			Rate per cum = (a+b+c+d+e)/300				650.97	
						say	**651.00**	
4.2		(ii)	**Rate per cum for grading-II Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				16095.12	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				17704.63	
			Cost for 300 cum = a+b+c+d+e				194750.93	
			Rate per cum = (a+b+c+d+e)/300				649.17	
						say	**649.00**	
4.2		(iii)	**Rate per cum for grading-III Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				15799.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				17379.91	
			Cost for 300 cum = a+b+c+d+e				191179.04	
			Rate per cum = (a+b+c+d+e)/300				637.26	
						say	**637.00**	
		Note	Any one of the grading for material may be adopted as per design.					

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.3	402		**Lime Stabilisation for Improving Sub-grade**					
			Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with rotavator with 3 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.					
			Unit = cum					
			Taking output = 300 cum (525 tonne)					
		A	**By Mechanical Means**					
			a) Labour					
			Mate	day	0.360	261.00	93.96	L-12
			Skilled mazdoor for alignment and geometrics	day	1.000	313.00	313.00	L-15
			Mazdoor for spraying lime	day	8.000	247.00	1976.00	L-13
			b) Machinery					
			Tractor with ripper and rotavator attachments @ 60 cum per hour for ripping and 25 cum per hour for mixing	hour	12.000	558.00	6696.00	P&M-055
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne capacity	hour	**6.00x0.65***	2029.00	7913.10	P&M-059
			Water tanker 6 KL capacity	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Lime at site	tonne	15.750	3389.30	53381.48	M-188
			Cost of water	KL	72.000	243.23	17512.56	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				10626.41	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				11689.05	
			Cost for 300 cum= a+b+c+d+e				128579.55	
			Rate per cum =(a+b+c+d+e)/300				428.60	
						say	**429.00**	
		Note	* Though vibratory roller is required only for 3 hours as per norms, but the same has to be available at site for 6 hours as other machines for spreading and mixing will take 6 hours. The usage rates of roller have been multiplied with a factor of 0.65.					
4.3		B	**By Manual Means**					
			Unit = cum					
			Taking output = 150 cum (263 tonnes)					
			a) Labour					
			Mate	day	1.440	261.00	375.84	L-12
			Mazdoor skilled	day	1.000	313.00	313.00	L-15
			Mazdoor	day	35.000	247.00	8645.00	L-13
			b) Machinery					
			Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	2.500	2029.00	5072.50	P&M-059
			Water tanker 6 KL capacity	hour	6.000	174.00	1044.00	P&M-060
			c) Material					
			Lime at site	tonne	8.000	3389.30	27114.40	M-188
			Cost of water	KL	36.000	243.23	8756.28	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				5132.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5645.31	
			Cost for 150 cum= a+b+c+d+e				62098.43	
			Rate per cum =(a+b+c+d+e)/150				413.99	
						say	**414.00**	
4.4	402		**Lime Treated Soil for Sub- Base**					
			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.					

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = cum					
			Taking output = 300 cum (525 tonnes)					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Excavator 0.90 cum bucket capacity	hour	6.000	1858.00	11148.00	P&M-026
			Tipper for carriage of soil	tonne.km	525 x L	8.83	4635.75	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**463.58**	
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	541.00	6492.00	P&M-054
			Water tanker 6 KL capacity	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Lime at site	tonne	15.750	3389.30	53381.48	M-188
			Cost of water	KL	72.000	243.23	17512.56	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				12740.66	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				14014.73	
			Cost for 300 cum = a+b+c+d+e				154162.03	
			Rate per cum= (a+b+c+d+e)/300				513.87	
						say	**514.00**	
4.5	**403**		**Cement Treated Soil Sub Base/ Base**					
			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 the 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.					
			Unit = cum					
			Taking output = 300 cum (525 tonnes)					
			For 4 per cent quantity of cement by weight of soil					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Excavator 0.90 cum bucket capacity	hour	6.000	1858.00	11148.00	P&M-026
			Tipper for carriage of soil	tonne.km	525 x L	8.83	4635.75	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**463.58**	
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	541.00	6492.00	P&M-054
			Water tanker 6 KL capacity	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Cement at site (@ 4 per cent of 525 tonne)	tonne	21.000	4922.00	103362.00	M-081
			Cost of water	KL	72.000	243.23	17512.56	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				17738.72	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				19512.59	
			Cost for 300 cum = a+b+c+d+e				214638.47	
			Rate per cum= (a+b+c+d+e)/300				715.46	
						say	**715.00**	

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.6	**403**		**Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4 in Sub base/ Base**					
			Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the 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.					
			Unit = cum					
			Taking output = 300 cum (600 tonnes)					
			Quantity of cement assumed as 4 per cent of quantity of crushed rock by weight.					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Motor Grader 110 HP @ 50 cum per hour	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Tractor with Rotavator and blade @ 25 cum per hour	hour	12.000	541.00	6492.00	P&M-054
			Water tanker 6 KL capacity	hour	10.000	174.00	1740.00	P&M-060
			c) Material					
			Cement at site @ 4 per cent by weight of crushed aggregate (600 tonne)	tonne	24.000	4922.00	118128.00	M-081
			Grading of material for sub-base course					
			37.5 mm to 9.5 mm @ 55 per cent	cum	211.200	448.09	94636.61	M-014
			9.5 mm to 4.75 mm @ 20 per cent	cum	76.800	434.15	33342.72	M-025
			4.75 mm to 75 micron @ 25 per cent	cum	96.000	140.08	13447.68	M-019
			Cost of water	KL	60.000	243.23	14593.80	M-189
			or					
			Grading of material for Base course					
			37.5 mm to 9.5 mm @ 32.5 per cent	cum	124.800	394.98	49293.50	M-028
			9.5 mm to 4.75 mm @ 5 per cent	cum	19.200	434.15	8335.68	M-025
			4.75 mm to 75 micron @ 62.5 per cent	cum	240.000	86.98	20875.20	M-023
			Cost of water	KL	60.000	243.23	14593.80	M-189
4.6		**(i)**	**For Sub-Base course**					
			d) Overhead charges @ 0.1 on (a+b+c)				31406.61	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				34547.27	
			Cost for 300 cum = a+b+c+d+e				380019.97	
			Rate per cum = (a+b+c+d+e)/300				1266.73	
						say	**1267.00**	
4.6		**(ii)**	**For Base course**					
			d) Overhead charges @ 0.1 on (a+b+c)				25114.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				27625.78	
			Cost for 300 cum = a+b+c+d+e				303883.59	
			Rate per cum = (a+b+c+d+e)/300				1012.95	
						say	**1013.00**	
		Note	Quantities of aggregates provided under 'c' above are uncompacted quantities.					
4.7	**404.3.1**		**Making 50 mm x 50 mm Furrows**					
			Making 50 mm x 50 mm furrows, 25mm/ 50mm deep, 45^0C 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,					
			Unit = sqm					
			Taking output = 30 m x 7 m = 210 sqm					
		(i)	**25mm deep furrow cutting**					
			a) Labour					

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.200	518.00	103.60	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				61.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				68.03	
			Cost for 210 sqm= a+b+c+d				748.36	
			Rate per sqm =(a+b+c+d)/210				3.56	
						say	**3.60**	
		(ii)	**50mm deep furrow cutting**					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.400	518.00	207.20	P&M-053
			c) Overhead charges @ 0.1 on (a+b)				123.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				136.07	
			Cost for 210 sqm= a+b+c+d				1496.72	
			Rate per sqm =(a+b+c+d)/210				7.13	
						say	**7.10**	
4.8	**404.3.2**		**Inverted Choke**					
			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.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.920	261.00	240.12	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	21.000	247.00	5187.00	L-13
			b) Machinery					
			Motor Grader 110 HP	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8-10 tonnes @ 60 cum per hour	hour	6.000	2029.00	12174.00	P&M-059
			Water tanker 6 KL capacity	hour	18.000	174.00	3132.00	P&M-060
			c) Material					
			Screening type 'B' or coarse sand	cum	720.000	110.69	79696.80	M-004
			Cost of water	KL	108.000	243.23	26268.84	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				14361.48	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				15797.62	
			Cost for 600 cum = a+b+c+d+e				173773.86	
			Rate per cum = (a+b+c+d+e)/600				289.62	
						say	**290.00**	
4.9	**404**		**Water Bound Macadam**					
			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 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 compacting to the required density.					
		A	**By Manual Means**					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	10.080	261.00	2630.88	L-12

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	250.000	247.00	61750.00	L-13
			b) Machinery					
			Vibratory roller 8 - 10 tonne @ 60cum per hour	hour	6.000	2029.00	12174.00	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	174.00	4176.00	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9A		**(i)**	**Grading-I**					
			Aggregate					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	299.84	130610.30	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	374.53	36404.32	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	77.21	8338.68	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (i)		**(a)**	**Using Screening Crushable type such as Moorum or Gravel(Without binding material)**					
			d) Overhead charges @ 0.1 on (a+b+c)				25533.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				28086.41	
			Cost for 360 cum = a+b+c+d+e				308950.49	
			Rate per cum = (a+b+c+d+e)/360				858.20	
			With Vibratory Roller			**say**	**858.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**849.00**	Sub_Analysis
4.9A (i)		**(b)**	**Using Screening Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				28562.03	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31418.23	
			Cost for 360 cum = a+b+c+d+e				345600.52	
			Rate per cum = (a+b+c+d+e)/360				960.00	
			With Vibratory Roller			**say**	**960.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**950.00**	Sub_Analysis
4.9A		**(ii)**	**Grading-II**					
			Aggregate					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	331.67	144475.45	M-038 / M-036
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	374.53	21572.93	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			OR					
			Type B 11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	248.50	23858.49	M-041
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (ii)		**(a)**	**Using Screening Crushable type such as Moorum or Gravel(Without binding material)**					
			d) Overhead charges @ 0.1 on (a+b+c)				26901.01	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				29591.11	
			Cost for 360 cum = a+b+c+d+e				325502.17	
			Rate per cum = (a+b+c+d+e)/360				904.17	
			With Vibratory Roller			**say**	**904.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**895.00**	Sub_Analysis
4.9A (ii)		**(b)**	**Using Screening Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				28465.40	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31311.94	
			Cost for 360 cum = a+b+c+d+e				344431.37	
			Rate per cum = (a+b+c+d+e)/360				956.75	
			With Vibratory Roller			**say**	**956.75**	
			OR					
			With Smooth 3 wheeled Steel Roller				**947.00**	Sub_Analysis
4.9A (ii)		**(c)**	**Using Screening Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				28693.96	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31563.35	
			Cost for 360 cum = a+b+c+d+e				347196.90	
			Rate per cum = (a+b+c+d+e)/360				964.44	
			With Vibratory Roller			**say**	**964.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**947.00**	Sub_Analysis
4.9A		**(iii)**	**Grading-III**					
			Aggregate					
			Grading-III 53 mm to 22.4 mm@ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	362.57	157935.49	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (iii)		**(a)**	**Using Screening Crushable type such as Moorum or Gravel(Without binding material)**					
			d) Overhead charges @ 0.1 on (a+b+c)				28247.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31071.71	
			Cost for 360 cum = a+b+c+d+e				341788.82	
			Rate per cum = (a+b+c+d+e)/360				949.41	
			With Vibratory Roller			**say**	**949.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**940.00**	Sub_Analysis
4.9A (iii)		**(b)**	**Using Screening Type-B (11.2mm agg.)(With binding material)**					
			d) Overhead charges @ 0.1 on (a+b+c)				29801.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				32781.27	
			Cost for 360 cum = a+b+c+d+e				360593.96	
			Rate per cum = (a+b+c+d+e)/360				1001.65	
			With Vibratory Roller			**say**	**1002.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**992.00**	Sub_Analysis
			(Anyone of the aggregate grading, screening and binding material may be used as per design.)					
4.9		**B**	**By Mechanical Means**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.680	261.00	177.48	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	15.000	247.00	3705.00	L-13
			b) Machinery					
			Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2715.00	19548.00	P&M-032
			Vibratory roller 8-10 tonnes @ 60cum/hr.	hour	6.000	2029.00	12174.00	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000			
			Water tanker 6 KL capacity	hour	24.000	174.00	4176.00	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9B		**(i)**	**Grading-I**					
			Aggregate					
			Grading-I 90 mm to 45 mm @ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	299.84	130610.30	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	374.53	36404.32	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	77.21	8338.68	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (i)		**(a)**	**Using Screening Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 0.1 on (a+b+c)				21438.06	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				23581.86	
			Cost for 360 cum = a+b+c+d+e				259400.51	
			Rate per cum = (a+b+c+d+e)/360				720.56	
			With Vibratory Roller			**say**	**721.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**711.00**	Sub_Analysis
4.9B (i)		**(b)**	**Using Screening Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				24466.99	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26913.69	
			Cost for 360 cum = a+b+c+d+e				296050.54	
			Rate per cum = (a+b+c+d+e)/360				822.36	
			With Vibratory Roller			**say**	**822.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**813.00**	Sub_Analysis
4.9B		**(ii)**	**Grading-II**					
			Aggregate					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	331.67	144475.45	M-038 / M-036
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	374.53	21572.93	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			OR					
			Type B 11.2 mm for grading-III @ 0.20 cum per 10 sqm	cum	96.010	248.50	23858.49	M-041
			Binding material					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (ii)		(a)	**Using Screening Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 0.1 on (a+b+c)				22805.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				25086.56	
			Cost for 360 cum = a+b+c+d+e				275952.18	
			Rate per cum = (a+b+c+d+e)/360				766.53	
			With Vibratory Roller			**say**	**767.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**757.00**	Sub_Analysis
4.9B (ii)		(b)	**Using Screening Type-A (13.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				24370.36	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26807.40	
			Cost for 360 cum = a+b+c+d+e				294881.39	
			Rate per cum = (a+b+c+d+e)/360				819.11	
			With Vibratory Roller			**say**	**819.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**810.00**	Sub_Analysis
4.9B (ii)		(c)	**Using Screening Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				24598.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				27058.81	
			Cost for 360 cum = a+b+c+d+e				297646.91	
			Rate per cum = (a+b+c+d+e)/360				826.80	
			With Vibratory Roller			**say**	**827.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**809.20**	Sub_Analysis
4.9B		(iii)	**Grading-III**					
			Aggregate					
			Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	362.57	157935.49	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (iii)		(a)	**Using Screening Crushable type such as Moorum or Gravel**					
			d) Overhead charges @ 0.1 on (a+b+c)				24151.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26567.17	
			Cost for 360 cum = a+b+c+d+e				292238.83	
			Rate per cum = (a+b+c+d+e)/360				811.77	
			With Vibratory Roller			**say**	**812.00**	
			OR					
			With Smooth 3 wheeled Steel Roller				**802.00**	Sub_Analysis
4.9B (iii)		(b)	**Using Screening Type-B (11.2mm agg.) with binding material**					
			d) Overhead charges @ 0.1 on (a+b+c)				25706.11	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				28276.73	
			Cost for 360 cum = a+b+c+d+e				311043.98	
			Rate per cum = (a+b+c+d+e)/360				864.01	
			With Vibratory Roller			**say**	**864.00**	
			OR					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			With Smooth 3 wheeled Steel Roller				**854.00**	Sub_Analysis
		Note	As three wheeled smooth rollers are also very commonly used, the same has been provided as an alternative.					
4.10	**405**		**Crushed Cement Concrete Sub-base / Base**					
			Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L 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.					
			Unit = cum					
			Taking output =360 cum					
			a) Labour					
			Mate	day	4.160	261.00	1085.76	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	247.00	25194.00	L-13
			b) Machinery					
			Motor Grader,110 HP @ 50 cum/hr.	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne @ 60 cum per hour	hour	6.000	2029.00	12174.00	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000	777.00		P&M-044
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	720 x L	8.83	6357.60	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**635.76**	
			Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Material available from dismantled concrete slab after crushing / breaking and only carriage is required to be provided.					
			Cost of water	KL	72.000	243.23	17512.56	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				9018.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9920.86	
			Cost for 360 cum = a+b+c+d+e				109129.51	
			Rate per cum = (a+b+c+d+e)/360				303.14	
						say	**303.00**	
			With Vibratory Roller				**303.00**	
			With Smooth 3 wheeled Steel Roller				**294.00**	Sub_Analysis
		Note	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 L 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.					
4.11	**405.2**		**Penetration Coat Over Top Layer of Crushed Cement Concrete Base**					
			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.					
			Unit = sqm					
			Taking output = 7500 sqm					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.560	261.00	146.16	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	12.000	247.00	2964.00	L-13
			b) Machinery					
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	6.000	551.00	3306.00	P&M-031
			Hydraulic self propelled chips spreader	hour	6.000	3762.00	22572.00	P&M-025
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	hour	6.000	1015.00	6090.00	P&M-048
			Vibratory roller 8 -10 tonnes @ 30 cum per hour	hour	**6.00x0.65***	2029.00	7913.10	P&M-059
			Bitumen pressure distributor @ 1750 sqm per hour	hour	4.280	1531.00	6552.68	P&M-004
			c) Material					
			Crushed stone aggregate 11.2 mm size	cum	97.500	520.42	50740.95	M-051
			Bitumen (60-70 grade)	tonne	0.250	32160.00	8040.00	M-074
			d) Overhead charges @ 0.1 on (a+b+c)				11717.69	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12889.46	
			Cost for 7500 sqm = a+b+c+d+e				141784.04	
			Rate per sqm = (a+b+c+d+e)/7500				18.90	
						say	**18.90**	
		Note	Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65.					
4.12	**406**		**Wet Mix Macadam**					
			Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.					
			Unit = cum					
			Taking output = 225 cum (495 tonnes)					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Wet mix plant of 75 tonne hourly capacity	hour	6.600	2803.00	18499.80	P&M-094
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher	hour	6.000	1388.00	8328.00	P&M-035
			Vibratory roller 8 - 10 tonne	hour	**6x0.65***	2029.00	7913.10	P&M-059
			or					
			Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000	777.00		P&M-044
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			Tipper	tonne.km	495 x L	8.83	4370.85	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**437.09**	
			c) Material (Table 400-11)					
			45 mm to 22.4 mm @ 30 per cent	cum	89.100	383.71	34188.56	M-034
			22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	433.34	51480.79	M-031
			2.36 mm to 75 micron@ 30 per cent	cum	89.100	86.98	7749.92	M-022
			Cost of water	KL	18.000	243.23	4378.14	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				16517.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18169.09	

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 225 cum = a+b+c+d+e				199859.97	
			Rate per cum = (a+b+c+d+e)/225				888.27	
			With Vibratory Roller			**say**	**888.00**	
			With Smooth 3 wheeled Steel Roller				**896.00**	Sub_Analysis
		Note	1. Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65					
			2. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative which can be used if the thickness of individual layer does not exceed 100 mm.					
4.13	**407**		**Construction of Median and Island with Soil Taken from Roadway Cutting**					
			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 407.					
			Unit = cum					
			Taking output =21 cum					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Water tanker 6 KL with 5 km lead and 1 trip per hour	hour	1.000	174.00	174.00	P&M-060
			Plate compactor @ 3.5 cum per hour	hour	6.000	443.00	2658.00	P&M-086
			c) Material					
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				583.60	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				641.96	
			Cost for 21 cum = a+b+c+d+e				7061.58	
			Rate per cum = (a+b+c+d+e)/21				336.27	
						say	**336.00**	
		Note	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.					
4.14	**407**		**Construction of Median and Island with Soil Taken from Borrow Areas**					
			Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407.					
			Unit = cum					
			Taking output = 21 cum					
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			Water tanker with 5 km lead	hour	1.000	174.00	174.00	P&M-060
			Plate Compactor @ 3.5 cum per hour	hour	6.000	443.00	2658.00	P&M-086
			Hydraulic Excavator1.0 cum bucket capacity @60 cum per hour	hour	0.500	1858.00	929.00	P&M-026
			Tipper 10 tonne capacity	tonne.km	52.5 x L	8.83	463.58	Lead =1 km & P&M-047
			Add 10 per cent of cost of transportation to cover cost of loading and unloading				46.36	
			c) Material					
			Cost of water	KL	6.000	243.23	1459.38	M-189

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Overhead charges @ 0.1 on (a+b+c)				676.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				743.61	
			Cost for 21 cum = a+b+c+d+e				8179.69	
			Rate per cum = (a+b+c+d+e)/ 21				389.51	
						say	**390.00**	
		Note	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.					
4.15			**Construction of Shoulders**					
			A. Earthen Shoulders					
			The rate as applicable for sub-grade construction may be adopted.					
			B. Hard Shoulders					
			Rate as applicable for sub-base and or base may be adopted as per approved design.					
			C. Paved shoulders					
			The rate may be adopted as applicable for different layers of pavement depending upon approved design of paved shoulders.					
4.16	**409**		**Footpaths and Separators**					
			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..					
			Unit = sqm					
			Taking output = 300 sqm					
			a) Labour					
			Mate	day	1.360	261.00	354.96	L-12
			Mason	day	4.000	330.00	1320.00	L-11
			Mazdoor	day	30.000	247.00	7410.00	L-13
			b) Machinery					
			Vibratory road roller 8 -10 tonnes @60 cum per hour	hour	0.750	2029.00	1521.75	P&M-059
			Water tanker 6 KL capacity @ 1 trip per hour	hour	2.000	174.00	348.00	P&M-060
			Concrete mixer 0.4/0.28 cum per hour	hour	6.000	84.00	504.00	P&M-009
			c) Material					
			i) For Granular sub base material					
			53 mm to 26.5 mm @ 35 per cent	cum	20.790	362.57	7537.83	M-029
			26.5 mm to 4.75 mm @ 45 per cent	cum	26.730	404.62	10815.49	M-026
			2.36 mm below @ 20 per cent	cum	11.880	86.98	1033.32	M-022
			ii) For cement concrete grade M157.5 cum					
			Aggregate 12 mm crushed @ 0.9 cum of concrete	cum	6.750	549.26	3707.51	M-052
			Sand @ 0.45 cum/cum of concrete	cum	3.380	110.69	374.13	M-005
			Cement	tonne	1.880	4922.00	9253.36	M-081
			iii) For cement plaster 1:3					
			Sand	cum	3.840	110.69	425.05	M-005
			Cement	tonne	1.830	4922.00	9007.26	M-081
			iv) Pre-cast cement concrete tiles					
			Tiles size 300 x 300 mm and 25 mm thick	each	3300.000	41.79	137907.00	M-184
			v) RCC pipes					
			Pipes 200 mm dia,2.5 m long for drainage	metre	22.500	163.25	3673.13	M-137
			vi) Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				19811.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				21792.27	
			Cost for 300 sqm = a+b+c+d+e				239714.97	

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per sqm = (a+b+c+d+e)/300				799.05	
						say	**799.00**	
4.17	**410**		**Crusher Run Macadam Base**					
			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 410 to form a layer of sub-base/Base.					
			Unit = cum					
			Taking output = 360 cum					
		A	**By Mix in Place Method**					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Tractor attached with rotavator @ 25 cum per hour	hour	12.000	541.00	6492.00	P&M-054
			Motor grader 110 HP	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 -10 tonnes @ 60 cum per hour	hour	6.000	2029.00	12174.00	P&M-059
			Water tanker 6 KL capacity	hour	6.000	174.00	1044.00	P&M-060
			c) Material					
			Aggregate at site					
			i) For 53 mm maximum size					
			63 mm to 45 mm @ 33 per cent	cum	157.460	331.67	52224.76	M-038
			22.5 mm to 5.6 mm @ 32 per cent	cum	151.060	433.34	65460.34	M-032
			Below 5.6 mm @ 35 per cent	cum	166.680	101.67	16946.36	M-030
			Cost of water	KL	36.000	243.23	8756.28	M-189
			Or					
			ii) For 45 mm maximum size					
			45 mm to 22.5 mm @ 5 per cent	cum	24.120	383.71	9255.09	M-034
			22.4 mm to 5.6 mm @ 50 per cent	cum	237.600	433.34	102961.58	M-032
			Below 5.6 mm @ 45 per cent	cum	213.480	101.67	21704.51	M-030
			Cost of water	KL	36.000	243.23	8756.28	M-189
4.17A		**(i)**	**For 53 mm maximum size**					
			d) Overhead charges @ 0.1 on (a+b+c)				18260.90	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				20086.99	
			Cost for 360.0 cum = a+b+c+d+e				220956.91	
			Rate per cum = (a+b+c+d+e)/360				613.77	
			or			**say**	**614.00**	
4.17A		**(ii)**	**For 45 mm maximum size**					
			d) Overhead charges @ 0.1 on (a+b+c)				18189.87	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				20008.86	
			Cost for 360.0 cum = a+b+c+d+e				220097.48	
			Rate per cum = (a+b+c+d+e)/360				611.38	
						say	**611.00**	
		Note	Any one of the aggregate grading may be adopted.					
4.17		**B**	**By Mixing Plant :**					
			Unit = cum					
			Taking output = 225 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.280	261.00	73.08	L-12
			Mazdoor skilled	day	1.000	313.00	313.00	L-15
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Wet mix plant @ 75 tonne per hour	hour	6.000	2803.00	16818.00	P&M-093
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Motor grader 110 HP	hour	6.000	2715.00	16290.00	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			c) Material					
			Aggregate at site					
			i) For 53 mm maximum size					
			63 mm to 45 mm @ 33 per cent	cum	98.400	331.67	32636.33	M-038
			22.5 mm to 5.6 mm @ 32 per cent	cum	94.410	433.34	40911.63	M-032
			Below 5.6 mm @ 35 per cent	cum	104.180	101.67	10591.98	M-030
			Or					
			ii) For 45 mm maximum size					
			45 mm to 22.5 mm @ 5 per cent	cum	15.060	383.71	5778.67	M-034
			22.4 mm to 5.6 mm @ 50 per cent	cum	148.500	433.34	64350.99	M-032
			Below 5.6 mm @ 45 per cent	cum	133.430	101.67	13565.83	M-030
			Cost of water	KL	18.000	243.23	4378.14	M-189
4.17 B		**(i)**	**For 53 mm maximum size**					
			d) Overhead charges @ 0.1 on (a+b+c)				16026.69	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				17629.36	
			Cost for 225 cum = a+b+c+d+e				193922.91	
			Rate per cum = (a+b+c+d+e)/225				861.88	
						say	**862.00**	
4.17 B	**(ii)**		**For 45 mm maximum size**					
			d) Overhead charges @ 0.1 on (a+b+c)				16420.06	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18062.06	
			Cost for 225 cum = a+b+c+d+e				198682.68	
			Rate per cum = (a+b+c+d+e)/225				883.03	
						say	**883.00**	
4.18	**Suggesti ve**		**Lime, Flyash Stabilised Soil Sub-Base**					
			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: 88-1984.					
			Unit = cum					
			Taking output = 480 cum (720 tonnes, density 1.50 t/cum)					
			Assumptions made					
			Total mass taken for analysis = 720 t					
			Lime + Flyash admixture @ 20 per cent = 0.2 x 720=144 t					
			Soil = 720 -144 = 576 t					
			576 /1.6 = 360 cum					
			Lime + Flyash = 144 t					
			Ratio Lime 4 : Flyash 16					
			Lime = 29 kg.					
			Flyash = 115 kg.					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12

SUB-BASES, BASES (NON - BITUMINOUS) AND SHOULDERS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	6.000	247.00	1482.00	L-13
			Mazdoor (Skilled)	day	1.000	313.00	313.00	L-15
			b) Machinery					
			Hydraulic Excavator 0.90 cum bucket capacity @ 60cum/hr. for 360 cum soil	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 10T capacity for carriage of soil 576 tonnes	tonne.km	**578 x L**	8.83	5103.74	Lead =1 km & P&M-047
			Tipper 10T capacity for carriage of 115 tonnes Flyash	tonne.km	**115 x L**	8.83	1015.45	Lead =1 km & P&M-047
			Tipper 10T capacity for carriage of 29 tonnes of lime from store to work site	hour	3.000	1015.00	3045.00	P&M-048
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**304.50**	
			Tractor with disc harrows for pulverisation	hour	6.000	518.00	3108.00	P&M-053
			Motor Grader 110 HP @ 50 cum per hour for mixing in-place and grading	hour	9.600	2715.00	26064.00	P&M-032
			Vibratory roller 8 - 10 tonne	hour	6.000	2029.00	12174.00	P&M-059
			Water tanker 6 KL capacity	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Unslaked Lime	tonne	29.000	3389.30	98289.70	M-188
			Compensation for earth taken from private source	cum	360.000	1.71	615.60	M-092
			d) Overhead charges @ 0.1 on (a+b+c)				16481.36	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18129.50	
			Cost for 480 cum = a+b+c+d+e				199424.49	
			Rate per cum= (a+b+c+d+e)/480				415.47	
						say	**415.00**	
		Note	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.					
			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.					

CHAPTER–5

BASES AND SURFACE COURSES (BITUMINOUS)

Chapter – 5

Bases and Surface Courses (Bituminous)

Preamble:

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 Specificaions, which have been mentioned for each item, may be referred for detailed specifications and construction procedure. The rate analysis mentions only brief description.

3. The machinery and equipment included in various analysis are as per various specifications of MoRT&H and are mandatory. As per the present trend, contractors are procuring machinery and equipment of higher capacity. Provision has accordingly been made.

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 item of bituminous works required under maintenance has been added in the Chapter on maintenance.

7. Tack coat and prime coat, wherever provided, are required to be measured and paid separately.

8. 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 analysis 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 site as per provision in the rate analyses.

11. Spreading of bituminous materials shall be done by mechanical means except in areas where a mechanical paver cannot have access.

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 analysis are for the purpose 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 the guidelines given in Appendix-4 of MoRT&H Specifications.

15. The specification and requirements for modified binder with various type of modifiers have been laid down in Clause 521 of MoRT&H Specifications and IRC: SP: 53-2002 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 in the 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 (or by volume in unavoidable cases) 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.

CHAPTER - 5

BASES AND SURFACE COURSES (BITUMINOUS)

Item No.	Description	Unit	Rate (₹)
5.1	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	30.30
5.2	**Tack coat**		
	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	11.10
5.3	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.)		
(i)	**for Grading I (40 mm nominal size)**	cum	5406.00
(ii)	**for Grading II (19 mm nominal size)**	cum	5383.00
5.4	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction.)		
A	**50 mm thick**	sqm	246.00
B	**75 mm thick**	sqm	326.00
5.5	**Built-Up-Spray Grout** (Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm)	sqm	194.00
5.6	**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.)		
(i)	**for Grading I (40 mm nominal size)**	cum	6456.00
(ii)	**for Grading II (19 mm nominal size)**	cum	6525.00
5.7	**Semi - Dense Bituminous Concrete** (Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects)		
(i)	**for Grading I (13 mm nominal size)**	cum	6743.00
(ii)	**for Grading II (10 mm nominal size)**	cum	7142.00
5.8	**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects.)		
(i)	**for Grading I (13 mm nominal size)**	cum	7370.00
(ii)	**for Grading II (10 mm nominal size)**	cum	7342.00
5.9	**Surface Dressing** (Providing and laying surface dressing as wearing course in 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.)		
Case - I	**19 mm nominal chipping size**	sqm	63.00
Case - II	**13 mm nominal size chipping**	sqm	55.00

Item No.	Description	Unit	Rate (₹)
5.10	**Open - Graded Premix Surfacing** (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.)		
(i)	**Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .**	sqm	110.00
(ii)	**Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**	sqm	125.00
5.11	**Close Graded Premix Surfacing/Mixed Seal Surfacing (Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-a) or 13.2 mm to 0.09 mm (Type-b) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.)**		
	i) For Type A	sqm	129.00
	i) For Type B	sqm	122.00
5.12	**Seal Coat** (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)	**Case - I : Type A**	sqm	48.00
(ii)	**Case - II : Type B** (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.)	sqm	44.00
5.13	**Supply of Stone Aggregates for Pavement Courses** (Supply of stone aggregates from approved sources confirming to the physical requirement, specified in the respective specified clauses, including royalties, fees rents, collection, transportation, stacking and testing and measured in cum as per clause 514.5 Competitive market rates to be ascertained. Alternatively, rates for stone crushing given in chapter 1may be adopted, if found economical. In case for supply of aggregates at site are not available, nearest crusher site may be ascertained. Loading and un-loading charges and cost of carriage may be added to these rates to arrive at the cost at site.)	cum	
5.14	**Mastic Asphalt** (Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine-grained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	485.00
5.15	**Slurry Seal (**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)	**5 mm thickness**	sqm	61.00
(ii)	**3 mm thickness**	sqm	42.00
(iii)	**1.5 mm thickness**	sqm	26.40
5.16	**Recycling of Bituminous Pavement with Central Recycling Plant** (Recycling pavement by cold milling of exiting bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 % 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 thickness, all as specified in clause 517.)	cum	6308.00
5.17	**Fog Spray**	sqm	36.00
added	**1. In case it is decided by the engineer to blind the fog spray, the following may be added**	sqm	3.90
5.18	**Bituminous Cold Mix** (Including Gravel Emulsion) (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 9.5 mm or 13.2 mm nominal size aggregate**	cum	9226.00
(ii)	**Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate**	cum	9158.00
(iii)	**Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate**	cum	5472.00
(iv)	**Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate**	cum	5385.00

Item No.	Description	Unit	Rate (₹)
5.19	**Sand Asphalt Base Course** (Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.)	cum	6283.00
5.20	**Modified Binder** (Supply of modified binder produced by mixing bitumen with modifier such as natural rubber or crumb rubber or any other polymer found compatible with bitumen and which allows properties given in clause 521.3 and IRC: SP: 53 blending of modifier with bitumen to be done either at the refinery or at the site plant capable of producing the modified binder to be delivered in drums which shall be agitated in melted condition using suitable device before use to ensure uniform dispersion.)	tonne	
5.21	**Crack Prevention Courses**		
(i)	**Stress Absorbing Membrane (SAM) crack width less than 6 mm** (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 clause 521, 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	46.00
(ii)	**Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm** (Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	57.00
(iii)	**Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %** (Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 % after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902.)	sqm	75.00
(iv)	**Case - IV : Bitumen Impregnated Geotextile** (Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 704.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 704.4.5.)	sqm	147.00
5.22	**Recipe Cold Mix** (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 519.3.)		
(i)	**75 mm thickness**	cum	5647.00
(ii)	**40 mm thickness**	cum	8488.00
(iii)	**25 mm thickness**	cum	9565.00

CHAPTER - 5

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
5.1	502		**Prime Coat**					
			Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	551.00	1542.80	P&M-031
			Air compressor 250 cfm	hour	2.800	457.00	1279.60	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	2.000	1531.00	3062.00	P&M-004
			Water tanker 6 KL capacity @ 1 tripper hour	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 0.6 kg per sqm	tonne	2.100	37883.00	79554.30	M-077
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				8758.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9634.57	
			Cost for 3500 sqm = a+b+c+d+e				105980.22	
			Rate per sqm = (a+b+c+d+e)/3500				30.28	
						say	**30.30**	
		Note	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.					
5.2	503		**Tack Coat**					
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	551.00	1542.80	P&M-031
			Air compressor 250 cfm	hour	2.800	457.00	1279.60	P&M-001
			Emulsion pressure distributor @ 1750 sqm per hour	hour	2.000	1142.00	2284.00	P&M-016
			c) Material					
			Bitumen emulsion @ 0.2 kg per sqm	tonne	0.700	37883.00	26518.10	M-077
			d) Overhead charges @ 0.1 on (a+b+c)				3213.94	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3535.33	
			Cost for 3500 sqm = a+b+c+d+e				38888.65	
			Rate per sqm = (a+b+c+d+e)/3500				11.11	
						say	**11.10**	
		Note	1. 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 actual quantity approved by the Engineer after preliminary trials referred to in clause No. 503.4.3.					
			2. An output of 3500 sqm has been considered in case of prime coat and tack coat which can be covered by bituminous courses on the same day.					
5.3	504		**Bituminous Macadam**					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	39484.00	236904.00	P&M-022
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	551.00	1212.20	P&M-031
			Air compressor 250 cfm	hour	2.200	457.00	1005.40	P&M-001
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			i) Bitumen@ 3.3 per cent of mix	tonne	14.850	32160.00	477576.00	M-074
			weight of mix = 205 x 2.2 = 450 tonne					
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 14.85 tonnes					
			Weight of aggregate = 450 -14.85 = 435.15 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 290.1 cum					
			***Grading I (40 mm nominal size)**					
			37.5 - 25 mm 15 per cent	cum	43.510	383.71	16695.22	M-049
			25 - 10 mm 45 per cent	cum	130.550	518.82	67731.95	M-046
			10 - 5 mm 25 per cent	cum	72.530	434.15	31488.90	M-040
			5 mm and below15 per cent	cum	43.510	101.67	4423.66	M-030
			or					
			GradingII (19 mm nominal size)					
			25 - 10 mm 40 per cent	cum	116.040	518.82	60203.87	M-046
			10 - 5 mm 40 per cent	cum	116.040	434.15	50378.77	M-040
			5 mm and below 20 per cent	cum	58.020	101.67	5898.89	M-030
			* Any one of the alternative may be adopted as per approved design					
		(i)	**for Grading I (40 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				91589.84	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				100748.83	
			Cost for 205 cum = a+b+c+d+e				1108237.09	
			Rate per cum = (a+b+c+d+e)/205 (For Grading I)				5406.03	
						say	**5406.00**	
		(ii)	**for Grading II (19 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				91204.02	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				100324.42	
			Cost for 205 cum = a+b+c+d+e				1103568.67	
			Rate per cum = (a+b+c+d+e)/205 (For Grading-II)				5383.26	
						say	**5383.00**	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					
5.4	**505**		**Bituminous Penetration Macadam**					
			Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction					
		A	**50 mm thick**					
			Unit = sqm					
			Taking output = 4500 sqm (225 cum)					
			a) Labour					
			Mate	day	0.320	261.00	83.52	L-12
			Mazdoor including for brooming of key aggregates	day	6.000	247.00	1482.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 4500 x 2 sqm = 9000 sqm	hour	6.000	3762.00	22572.00	P&M-025
			Bitumen pressure distributor for @ 1750 sqm per hour	hour	2.570	1531.00	3934.67	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	1015.00	10150.00	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	2029.00	12174.00	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			c) Material					
			Bitumen @ 5 kg per sqm	tonne	22.500	32160.00	723600.00	M-074
			Crushed stone coarse aggregate passing 45 mm and retained on 2.8 mm sieve @ 0.06 cum per sqm	cum	270.000	375.44	101368.80	M-033
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.015 cum per sqm	cum	67.500	433.34	29250.45	M-031
			d) Overhead charges @ 0.1 on (a+b+c)				91346.74	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				100481.42	
			Cost for 4500 sqm = a+b+c+d+e				1105295.60	
			Rate per sqm = (a+b+c+d+e)/4500				245.62	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	246.00	
		Note	2 tippers will be needed to match the capacity of chip spreader and front end loader.					
5.4		B	**75 mm thick**					
			Unit = sqm					
			Taking output = 4500 sqm (337.5 cum compacted).					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	247.00	1976.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates@ 1500 sqm per hour for 4500 x 2 sqm	hour	6.000	3762.00	22572.00	P&M-025
			Bitumen pressure distributor for@ 1750 sqm per hour	hour	2.570	1531.00	3934.67	P&M-004
			Tipper 5.5 cum capacity for carriage of aggregates from stockpile to chip spreader	hour	10.000	1015.00	10150.00	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	2029.00	12174.00	P&M-059
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			c) Material					
			Bitumen@ 6.8 kg per sqm	tonne	30.600	32160.00	984096.00	M-074
			Crushed stone coarse aggregate (loose passing 63 mm and retained on 2.8 mm sieve @ 0.09 cum per sqm	cum	405.000	331.78	134370.90	M-037
			Key aggregates passing 26.5 mm and retained on 2.8 mm sieve @ 0.018 cum per sqm	cum	81.000	404.62	32774.22	M-026
			d) Overhead charges @ 0.1 on (a+b+c)				121100.42	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				133210.46	
			Cost for 4500 sqm = a+b+c+d+e				1465315.07	
			Rate per sqm = (a+b+c+d+e)/4500				325.63	
						say	326.00	
		Note	2 tippers and 2 rollers will be needed to match the capacity of chip spreader and front end loader.					
5.5	506		**Built-up-Spray Grout**					
			Providing, laying and rolling of built-up-spray grout layer over prepared base consisting of a two layer composite construction of compacted crushed coarse aggregates using motor grader for aggregates. key stone chips spreader may be used with application of bituminous binder after each layer, and with key aggregates placed on top of the second layer to serve as a Base conforming to the line, grades and cross-section specified, the compacted layer thickness being 75 mm					
			Unit = sqm					
			Taking output = 3000 sqm (225 cum)					
			a) Labour					
			Mate	day	0.400	261.00	104.40	L-12
			Mazdoor including for brooming of key aggregates	day	8.000	247.00	1976.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Hydraulic self propelled chip spreader both for aggregates and key aggregates @ 1500 sqm per hour for 3000 x 3 sqm	hour	6.000	3762.00	22572.00	P&M-025
			Bitumen pressure distributor for 3000 x 2 sqm @ 1750 sqm per hour	hour	3.430	1531.00	5251.33	P&M-004
			Tipper 5.5 cum capacity	hour	10.000	1015.00	10150.00	P&M-048
			Vibratory roller 8 tonnes	hour	6.000	2029.00	12174.00	P&M-059

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			c) Material					
			Bitumen 30 kg per 10 sqm @ 15 kg per 10 sqm for each layer	tonne	9.000	32160.00	289440.00	M-074
			Crushed stone coarse aggregate passing 53 mm and retained on 2.8 mm sieve @ 0.5 cum per 10 sqm for each layer	cum	300.000	375.44	112632.00	M-035
			Key aggregates passing 22.4 mm and retained on 2.8 mm sieve @ 0.13 cum per 10 sqm	cum	39.000	433.34	16900.26	M-031
			d) Overhead charges @ 0.1 on (a+b+c)				48005.20	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				52805.72	
			Cost for 3000 sqm = a+b+c+d+e				580862.91	
			Rate per sqm = (a+b+c+d+e)/3000				193.62	
						say	**194.00**	
		Note	2 tippers will be needed to match the capacity of hydraulic chip spreader and front end loader.					
5.6	**507**		**Dense Graded Bituminous Macadam**					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 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. 507 complete in all respects.					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Materials					
			Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	32160.00	615220.80	M-074
			Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 19.13 tonnes					
			Weight of aggregate = 450 -19.13 = 430.87 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 287.25 cum					
			Grading - I 40 mm (Nominal Size)					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			37.5 - 25 mm 22 per cent	cum	63.190	383.71	24246.63	M-049
			25 - 10 mm 13 per cent	cum	37.340	518.82	19372.74	M-046
			10 -4.75 mm 19 per cent	cum	54.580	434.15	23695.91	M-040
			4.75 mm and below 44 per cent	cum	126.390	101.67	12850.07	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading - II 19 mm (Nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	518.82	44701.53	M-046
			10 - 5 mm 28 per cent	cum	80.430	434.15	34918.68	M-040
			5 mm and below 40 per cent	cum	114.900	101.67	11681.88	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			* Any one of the alternative may be adopted as per approved design					
		(i)	**For Grading I (40 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				104036.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				114440.37	
			Cost for 195 cum = a+b+c+d+e				1258844.08	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				6455.61	
						say	**6456.00**	
		(ii)	**For GradingII (19 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				105150.38	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				115665.41	
			Cost for 195 cum = a+b+c+d+e				1272319.54	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				6524.72	
						say	**6525.00**	
		Note	*1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					
			5. The individual density for each size of aggregates to be used for construction I.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. 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 per cent by weight of dry aggregates.					
5.7	**508**		**Semi-Dense Bituminous Concrete**					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			*** Grading I: 13 mm (Nominal Size)**					
			i) Bitumen @ 4.5 per cent of weight of mix	tonne	20.250	32160.00	651240.00	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 20.25 tonnes					
			Weight of aggregate = 450-20.25 = 429.75 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 286.5 cum					
			13.2 - 10 mm20 per cent	cum	57.300	549.26	31472.60	M-044
			10 - 5 mm 38 per cent	cum	108.870	434.15	47265.91	M-040
			5 mm and below 40 per cent	cum	114.600	101.67	11651.38	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading II: 10 mm (Nominal Size)					
			Bitumen @ 5 per cent of weight of mix	tonne	22.500	32160.00	723600.00	M-074
			weight of mix = 450 tonne					
			Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					
			9.5 - 4.75 mm @ 57 per cent	cum	162.450	434.15	70527.67	M-040

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			4.75 and below @ 41 per cent	cum	116.850	101.67	11880.14	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			***Any one of the alternative may be adopted as per approved design**					
		(i)	**for Grading I (13 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				108661.07	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				119527.18	
			Cost for 195 cum = a+b+c+d+e				1314799.00	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				6742.56	
						say	**6743.00**	
5.7		**(ii)**	**for Grading II (10 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				115098.87	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				126608.75	
			Cost for 195 cum = a+b+c+d+e				1392696.28	
			Rate per cum = (a+b+c+d+e)/195 (For Grading-II)				7142.03	
						say	**7142.00**	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoor shall be deleted as the same has been included in the cost of tack coat.					
			5. The quantity of Bitumen to be adjusted as per job mix formula.					
5.8	**509**		**Bituminous Concrete**					
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects					
			Unit = cum					
			Taking output = 191 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller.	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			i) Bitumen @ 5 per cent of weight of mix	tonne	22.500	32160.00	723600.00	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					
			*** Grading - I-19 mm (Nominal Size)**					
			20 - 10 mm 35 per cent	cum	99.750	549.26	54788.69	M-045
			10 - 5 mm 23 per cent	cum	65.550	434.15	28458.53	M-040
			5 mm and below 40 per cent	cum	114.000	101.67	11590.38	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading - II-13 mm (Nominal Size)					
			13.2 - 10 mm 30 per cent	cum	85.500	549.26	46961.73	M-044
			10 - 5 mm 25 per cent	cum	71.250	434.15	30933.19	M-040
			5 mm and below 43 per cent	cum	122.550	101.67	12459.66	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			***Any one of the alternative may be adopted as per approved design**					
		(i)	**for Grading-I (13 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				116341.85	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				127976.03	
			Cost for 191 cum = a+b+c+d+e				1407736.33	
			Rate per cum = (a+b+c+d+e)/191				7370.35	
						say	**7370.00**	
5.8		**(ii)**	**for Grading-II (10 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				115893.54	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				127482.90	
			Cost for 191 cum = a+b+c+d+e				1402311.87	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				7341.95	
						say	**7342.00**	
		Note	*1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. 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 per cent by weight of dry aggregates.					
5.9	**510**		**Surface Dressing**					
			Providing and laying surface dressing as wearing course in 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 = 9000 sqm					
		Case -1	**:-19 mm nominal chipping size**					
			a) Labour					
			Mate	day	0.440	261.00	114.84	L-12
			Mazdoor	day	9.000	247.00	2223.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	7.200	551.00	3967.20	P&M-031
			Air compressor 250 cfm	hour	7.200	457.00	3290.40	P&M-001
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3762.00	22572.00	P&M-025
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	1015.00	6090.00	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Bitumen pressure distributor	hour	6.000	1531.00	9186.00	P&M-004
			Smooth wheeled roller 8-10 tonne weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Bitumen @ 1.20 kg per sqm	tonne	10.800	32160.00	347328.00	M-074
			Crushed stone chipping,19 mm nominal size @ 0.015 cum per sqm	cum	135.000	456.33	61604.55	M-053
			d) Overhead charges @ 0.1 on (a+b+c)				46989.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				51687.90	
			Cost for 9000 sqm = a+b+c+d+e				568566.89	
			Rate per sqm = (a+b+c+d+e)/9000				63.17	
						say	**63.00**	
5.9		**Case - II**	**13 mm nominal size chipping**					
			a) Labour					
			Mate	day	0.440	261.00	114.84	L-12
			Mazdoor	day	9.000	247.00	2223.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	7.200	551.00	3967.20	P&M-031
			Air compressor 250 cfm	hour	7.200	457.00	3290.40	P&M-001
			Hydraulic self propelled chip spreader @ 1500 sqm per hour	hour	6.000	3762.00	22572.00	P&M-025
			Tipper 10 tonne capacity for carriage of stone chips from stockpile on road side to chip spreader	hour	6.000	1015.00	6090.00	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Vibratory roller 8-10 tonne weight	hour	6.000	2029.00	12174.00	P&M-059
			c) Material					
			Bitumen @ 1.00 kg per sqm	tonne	9.000	32160.00	289440.00	M-074

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Crushed stone chipping,13 mm nominal size @ 0.01 cum per sqm	cum	90.000	549.26	49433.40	M-052
			d) Overhead charges @ 0.1 on (a+b+c)				40734.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44807.71	
			Cost for 9000 sqm = a+b+c+d+e				492884.84	
			Rate per sqm = (a+b+c+d+e)/9000				54.76	
						say	**55.00**	
		Note	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 pre-coated as per clause 510.2.5.					
			2. Input for the second coat, where required, will be the same as per the Ist coat mentioned above.					
5.10	**511**		**Open - Graded Premix Surfacing**					
			Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
		(i)	**Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .**					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			i) Batch type HMP 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			ii) Electric Generator Set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	3502.00	21012.00	P&M-034
			iv) Smooth wheeled/tandom roller 8-10 tonnes weight	hour	6.000	1634.00	9804.00	P&M-045
			c) Material					
			Bitumen @ 14.60 kg per 10 sqm	tonne	14.970	32160.00	481435.20	M-074
			Crushed stone chipping,13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	520.42	144026.24	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				93371.45	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				102708.60	
			Cost for 10250 sqm = a+b+c+d+e				1129794.58	
			Rate per sqm = (a+b+c+d+e)/10250				110.22	
						say	**110.00**	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	If a premix sand seal coat of 'B' type is proposed, the same is required to be provided over the open graded premix carpet immediately on the same day. As the same HMP and other machines will be used for laying of premix sand seal coat, out of 6 effective working hours, 4.00 hours may be utilised for laying of premix carpet and balance 2.00 hours for the seal coat. The rate for the premix sand seal coat under clause 513 (case II) has been worked out accordingly by utilising the HMP for 2.00 hours for the purpose of seal coat. In case type 'A' seal coat is proposed, HMP can be worked for six hours for the premix carpet as type 'A' seal coat does not require the use of HMP.					
5.10		**(ii)**	**Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**					
			Unit = sqm					
			Taking output = 900 sqm (24.3 cum)					
			a) Labour					
			Mate	day	0.800	261.00	208.80	L-12
			Mazdoor	day	18.000	247.00	4446.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Concrete mixer 0.4/0.28 cum capacity	hour	6.000	84.00	504.00	P&M-009
			Smooth wheeled steel roller 8-10 tonne	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	35980.00	69801.20	M-073
			Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	520.42	12646.21	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				9289.42	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				10218.36	
			Cost for 900 sqm = a+b+c+d+e				112401.99	
			Rate per sqm = (a+b+c+d+e)/900				124.89	
						say	**125.00**	
5.11	**512**		**Close Graded Premix Surfacing/Mixed Seal Surfacing**					
		Case I	Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.					
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-A) or 13.2 mm to 0.09 mm (Type-B) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			i) HMP of appropicate capacity - 75 t per hour	hour	6.000	39484.00	236904.00	P&M-022
			ii) Electric Generator Set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	3502.00	21012.00	P&M-034
			iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Type - A					
			* Bitumen @ 22 kg per 10 sqm	tonne	22.500	32160.00	723600.00	M-074
			Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	248.50	68772.38	M-041
			or					
			Type - B					
			Bitumen @ 19 kg per 10 sqm	tonne	19.480	32160.00	626476.80	M-074
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	374.53	103651.18	M-042
			d) Overhead charges @ 0.1 on (a+b+c)				109548.35	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				120503.18	
			Cost for 10250 sqm = a+b+c+d+e				1325534.99	
			Rate per sqm = (a+b+c+d+e)/10250				129.32	
			For Type 'A'			**say**	**129.00**	
			For Type 'B'			**say**	**122.00**	Sub_Analysis
			* Any one of the alternative may be adopted					
5.12	**513**		**Seal Coat**					
			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					
			Unit = sqm					
			Taking output = 10250 sqm (92.25 cum)					
		(i)	**Case - I : Type A**					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Hydraulic self propelled chip spreader	hour	6.000	3762.00	22572.00	P&M-025
			Tipper 5.5 cum capacity	hour	6.000	1015.00	6090.00	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Smooth wheeled roller 8 -10 tonne weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Bitumen @ 9.80 kg per 10 sqm	tonne	10.050	32160.00	323208.00	M-074
			Crushed stone chipping of 6.7 mm size defined as 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	312.49	28827.20	M-050
			d) Overhead charges @ 0.1 on (a+b+c)				40431.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44474.74	
			Cost for 10250 sqm = a+b+c+d+e				489222.17	
			Rate per sqm = (a+b+c+d+e)/10250				47.73	
						say	**48.00**	
		Note	Since seal coat is provided immediately over the bituminous layers, mechanical broom for clearing has not been catered.					
5.12		**(ii)**	**Case - II : Type B**					
			Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.					
			Unit = sqm					
			Taking output = 7858 sqm (47.16 cum)					
			a) Labour					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			HMP of 75 tonnes/hour.	hour	2.000	39484.00	78968.00	P&M-022
			Electric Generator Set 250 KVA	hour	2.000	3700.00	7400.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	2.000	1371.00	2742.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	104 x 'L'	8.83	918.32	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				91.83	
			Paver finisher hydrostatic with sensor attachment	hour	2.000	3502.00	7004.00	P&M-034
			Smooth wheeled 8-10 tonnes capacity	hour	2.000	777.00	1554.00	P&M-044
			c) Material					
			Bitumen @ 6.80 kg per 10 sqm	tonne	5.340	32160.00	171734.40	M-074
			Crushed stone chipping of 6.7 mm size defined as passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.06 cum per 10 sqm	cum	47.160	312.49	14737.03	M-050
			d) Overhead charges @ 0.1 on (a+b+c)				28617.93	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31479.73	
			Cost for 7858 sqm = a+b+c+d+e				346277.00	
			Rate per sqm = (a+b+c+d+e)/7858				44.07	
						say	**44.00**	
		Note	Since seal coat is required to be provided over the premix carpet on the same day, out of the 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours for the seal coat. Hence 2.00 hours have been considered for this case. This may be linked to rate analysis worked out under clause 511.					
5.13	**514**		**Supply of Stone Aggregates for Pavement Courses**					
			Supply of stone aggregates from approved sources conforming to the physical requirement, specified in the respective specified clauses, including royalties, fees rents, collection, transportation, stacking and testing and measured in cum as per clause 514.5					
			Competitive market rates to be ascertained. Alternatively, rates for stone crushing given in chapter 1may be adopted, if found economical. In case for supply of aggregates at site are not available, nearest crusher site may be ascertained. Loading and un-loading charges and cost of carriage may be added to these rates to arrive at the cost at site.					
5.14	**515**		**Mastic Asphalt**					
			Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated finegrained hard stone chipping of 13.2 mm nominal size at the rate of 0.005 cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces is not less than 100 ^{0}C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515					
			Unit = sqm					
			Taking output = 35.00 sqm (0.87 cum) assuming a density of 2.3 tonnes/cum.-2 tonnes					
			a) Labour					
			Mate	day	0.440	261.00	114.84	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			Mazdoor skilled	day	1.000	313.00	313.00	L-15

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.060	551.00	33.06	P&M-031
			Air compressor 250 cfm	hour	0.060	457.00	27.42	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.000	88.00	528.00	P&M-030
			Bitumen boiler 1500 litres capacity	hour	6.000	283.00	1698.00	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.000	518.00	518.00	P&M-053
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent					
			Coarse aggregate (6.3mm to 13.2 mm) = 40 per cent .					
			Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done by CRRI for a specific case)					
			I) Bitumen 85/25 or 30/40 @ 10.2 per cent by weight of mix. 2 x 10.2/100 = 0.204	tonne	0.204	33187.50	6770.25	M-197
			ii) Fine aggregate passing 2.36mm and retained on 0.075mm sieve @ 31.9 per cent by weight of mix = 2 x 31.9/100 = 0.638 tonnes = 0.638/1.625 = 0.39	cum	0.390	89.38	34.86	M-021
			iii) Lime stone dust filler with calcium content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = 2 x 17.92/100 = 0.36	tonne	0.360	3389.30	1220.15	M-188
			iv) Coarse aggregates 6.3 mm to 13.2 mm @ 40 per cent by weight of mix = 2 x 40/100 = 0.8 MT = 0.8/1.456 = 0.55	cum	0.550	520.42	286.23	M-043
			v) Pre-coated stone chips of 13.2 mm nominal size for skid resistance = 35 x 0.005/10 = 0.018	cum	0.018	495.97	8.93	M-142
			vi) Bitumen for coating of chips @ 2 per cent by weight = 0.018 x 1.456 x 2/100 = 0.0005 MT = 0.5kg	kg	0.500	33.19	16.59	M-197
			d) Overhead charges @ 0.1 on (a+b+c)				1403.93	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1544.33	
			Cost for 35.00 sqm = a+b+c+d+e				16987.59	
			Rate per sqm = (a+b+c+d+e)/35				485.36	
						say	**485.00**	
		Note	1.The rates for 50 mm & 40 mm 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.					
5.15	**516**		**Slurry Seal**					
			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.					
		Case (i)	**5 mm thickness**					
			Unit = sqm					
			Taking output = 16000 sqm (80 cum)					
			Taking density of 2.2 tonnes per cum					
			weight of mix = 176 tonnes					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	551.00	3306.00	P&M-031

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			Mobile slurry seal equipment	hour	6.000	1439.00	8634.00	P&M-033
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	1015.00	6090.00	P&M-048
			Pneumatic tyred roller with individual wheel load not exceeding 1.5 tonnes	hour	6.000	1777.00	10662.00	P&M-037
			Water tanker6 KL capacity	hour	2.000	174.00	348.00	P&M-060
			c) Material					
			Residual Binder @ 11 per cent of mix 80 x 2.2 x 0.11	tonne	19.360	37883.00	733414.88	M-077
			Fine aggregate 4.75 mm and below 87 per cent of total mix,80 x 2.2 x 0.87 = 153.12 tonnes. Taking density1.5, = 153.12/1.5 = 102.08 cum	cum	102.080	101.67	10378.47	M-030
			Filler @ 2 per cent of total mix = 80 x 2.2 x 0.02	tonne	3.520	3389.30	11930.34	M-188
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				80019.51	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				88021.46	
			Cost for 16000 sqm = a+b+c+d+e				968236.06	
			Rate per sqm = (a+b+c+d+e)/16000				60.51	
						say	**61.00**	
5.15		**Case (ii)**	**3 mm thickness**					
			Unit = sqm					
			Taking output = 20000 sqm (60 cum)					
			a) Labour					
			Mate	day	0.200	261.00	52.20	L-12
			Mazdoor	day	5.000	247.00	1235.00	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			Mobile slurry seal equipment	hour	6.000	1439.00	8634.00	P&M-033
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler	hour	6.000	1015.00	6090.00	P&M-048
			Water tanker6 KL capacity	hour	2.000	174.00	348.00	P&M-060
			c) Material					
			Residual Binder @ 13 per cent of mix = 60 x 2.2 x 0.13	tonne	17.160	37883.00	650072.28	M-077
			Fine aggregate 3 mm and below 85 per cent of total mix, 60x 2.2 x 0.85 = 112.2 tonnes. Taking density 1.5,	cum	74.800	86.98	6506.10	M-022
			Filler @ 2 per cent of total mix = 60x 2.2 x 0.02	tonne	2.640	3389.30	8947.75	M-188
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				69907.81	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				76898.59	
			Cost for 20000 sqm = a+b+c+d+e				845884.50	
			Rate per sqm = (a+b+c+d+e)/20000				42.29	
						say	**42.00**	
5.15		**Case (iii)**	**1.5 mm thickness**					
			Unit = sqm					
			Taking output = 24000 sqm (36 cum)					
			a) Labour					
			Mate	day	0.200	261.00	52.20	L-12

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	5.000	247.00	1235.00	L-13
			b) Machinery					
			Mechanical broom	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			Mobile slurry seal equipment	hour	6.000	1439.00	8634.00	P&M-033
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 5.5 cum capacity for carriage of aggregate from stockpile on road side to slurry equipment, bitumen emulsion and filler.	hour	6.000	1015.00	6090.00	P&M-048
			Water tanker6 KL capacity	hour	2.000	174.00	348.00	P&M-060
			c) Material					
			Residual Binder @ 16 per cent of mix, 36 x 2.2 x 0.16	tonne	12.670	37883.00	479977.61	M-077
			Fine aggregate 2.36 mm and below,82 per cent of total mix, 36x 2.2 x 0.82 = 64.94 tonnes. Taking density 1.5	cum	43.300	86.98	3766.23	M-022
			Filler @ 2 per cent of total mix = 36x 2.2 x 0.02	tonne	1.580	3389.30	5355.09	M-188
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				52265.09	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				57491.60	
			Cost for 24000 sqm = a+b+c+d+e				632407.59	
			Rate per sqm = (a+b+c+d+e)/24000				26.35	
						say	**26.40**	
		Note	1.Tack coat, if required to be provided, before laying slurry seal may be measured and paid separately					
5.16	**517**		**D.B.M.**					
			Recycling of Bituminous Pavement with Central Recycling Plant					
			Recycling pavement by cold milling of existing bituminous layers, planning the surface after cold milling, reclaiming excavated material to the extent of 30 per cent of the required quantity, hauling and stockpiling 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 thickness, all as specified in clause 517.					
			Unit = cum					
			Taking output = 120 cum (276 tonnes)					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor	day	10.000	247.00	2470.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Cold milling machine @ 20 cum per hour	hour	6.000	1327.00	7962.00	P&M-069
			Mechanical broom @ 1250 sqm per hour	hour	1.280	551.00	705.28	P&M-031
			Air compressor 250 cfm	hour	1.280	457.00	584.96	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	0.910	1531.00	1393.21	P&M-004
			Hot mix plant 100-120 TPH producing an average of 75 tonnes per hour	hour	3.000	51955.00	155865.00	P&M-021
			Electric generator set 250 KVA	hour	3.000	3700.00	11100.00	P&M-081
			Front end loader 1.00 cum bucket capacity	hour	3.000	1371.00	4113.00	P&M-017
			Tipper 5.5 cum capacity	hour	18.000	1015.00	18270.00	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	3.00x0.65*	777.00	1515.15	P&M-044
			Vibratory roller 8 tonnes	hour	3.00x0.65*	2029.00	3956.55	P&M-059
			Smooth wheeled tandem roller 6-8 tonnes	hour	3.00x0.65*	1634.00	3186.30	P&M-045
			c) Material					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			i) Bitumen					
			A bitumen content is 4.5 per cent bitumen weight of mix. For reclaimed material, fresh bitumen will be required to the extent of 60 per cent 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 per cent = 82.8 x 0.60 x0.045 = 2.24	tonne	2.2400	32160.00	72038.40	M-074
			Bitumen required for fresh mix of 193.2 tonnes = 193.2 x 0.045 = 8.694	tonne	8.649	32160.00	278164.70	M-074
			ii) Aggregates					
			Percentage of mix requiring fresh aggregates - 70 per cent					
			Weight of fresh mix = 276 x 0.70 = 193.2 tonne					
			Weight of fresh aggregate in the mix = 193.2 x 0.96 = 185.47 tonne					
			Taking average density of 1.5 tonnes/cum, total volume of aggregate = 123.65 cum.					
			Size wise requirement of fresh aggregates					
			37.5 - 25 mm @ 23 per cent	cum	28.440	383.71	10912.71	M-049
			25 - 10 mm @ 15 per cent	cum	18.550	518.82	9624.11	M-046
			10- 5 mm @ 20 per cent	cum	24.730	434.15	10736.53	M-040
			Below 5 mm @ 40 per cent	cum	49.460	101.67	5028.60	M-030
			Filler (cement) @ 2 per cent = 5.52tonnes of 276 tonne	tonne	5.520	4922.00	27169.44	M-081
			d) Overhead charges @ 0.1 on (a+b+c)				62554.72	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				68810.19	
			Cost for 120 cum of DBM = a+b+c+d+e				756912.14	
			Rate per cum = (a+b+c+d+e)/120				6307.60	
						say	**6308.00**	
		Note	Although the total rolling time is only 4 hours as per norms, all the three rollers have to be available at site for 3 hours each to match with the output of re-cycling plant. To cater for their idling time, these have been multiplied with a factor of 0.65.					
5.17	**518**		**Fog Spray**					
			Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			Bitumen emulsion pressure distributor @ 1750 sqm per hour	tonne	6.000	1531.00	9186.00	P&M-004
			c) Material					
			Bitumen emulsion @ 0.75 kg per sqm	tonne	7.880	37883.00	298518.04	M-077
			d) Overhead charges @ 0.1 on (a+b+c)				31452.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				34597.68	
			Cost for 10500 sqm = a+b+c+d+e				380574.48	
			Rate per sqm = (a+b+c+d+e)/10500				36.25	
						say	**36.00**	
			1.In case it is decided by the engineer to blind the fog spray, the following may be added					
			a) Labour					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor for precoating of grit	day	4.000	247.00	988.00	L-13
			b) Material					
			Crushed stone grit 3 mm size @ 3.75 kg per sqm	cum	26.250	101.67	2668.84	M-024
			Bitumen emulsion for precoating grit @ 2 per cent of grit, 39.38 x 0.02	tonne	0.790	37883.00	29927.57	M-077
			c) Overhead charges @ 0.1 on (a+b)				3362.62	
			d) Contractor's profit @ 0.1 on (a+b+c)				3698.88	
			Cost for 10500 sqm = a+b+c+d				40687.66	
			Rate per sqm = (a+b+c+d)/10500				3.88	
						say	**3.90**	
5.18	**519**		**Bituminous Cold Mix (Including Gravel Emulsion)**					
			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 = 205 cum (450 tonne)					
		Case (i)	**Using bitumen emulsion and 9.5 mm or 13.2 mm size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Bitumen Emulsion 8 per cent	By weight of total mix				
			Filler2 per cent					
			Total aggregates 90 per cent					
			Proportion of aggregates					
			19 mm to 9.5 mm 25 per cent					
			9.5 mm to 6 mm 29 per cent					
			6 mm to 0.075 mm 36 per cent					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor	day	16.000	247.00	3952.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes of appropriate capacity but not less than 75 tonnes/hour.	hour	6.000	1720.00	10320.00	P&M-077
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Paver finisher	hour	6.000	3502.00	21012.00	P&M-034
			Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			Bitumen emulsion @ 8 per cent	tonne	36.000	37883.00	1363788.00	M-077
			Filler (lime) @ 2 per cent	tonne	9.000	3389.30	30503.70	M-188
			Aggregates size 19 to 9.5 mm - 450 x 0.25 x 1/1.5	cum	75.000	549.26	41194.50	M-045
			Aggregates size 9.5 to 6 mm - 450 x 0.29 x 1/1.5	cum	87.000	434.15	37771.05	M-040
			Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	101.67	10980.36	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				156306.36	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				171937.00	
			Cost for 205 cum = a+b+c+d+e				1891306.96	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e)/205				9225.89	
						say	**9226.00**	
			(Applicable to cases I to IV)					
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		**Case (ii)**	**Using bitumen emulsion and 19 mm or 26.5 mm nominal size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Bitumen Emulsion 8 per cent					
			Filler 2 per cent					
			Total aggregates 90 per cent					
			Proportion of aggregates					
			37.5 mm to 19 mm25 per cent					
			19 mm to 6 mm 30 per cent					
			6 mm to 0.075 mm 35 per cent					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor	day	16.000	247.00	3952.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	1720.00	10320.00	P&M-077
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Paver finisher	hour	6.000	3502.00	21012.00	P&M-034
			Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel tandom roller 6-8 tonnes	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			Bitumen emulsion @ 8 per cent	tonne	36.000	37883.00	1363788.00	M-077
			Filler (lime)@ 2 per cent	tonne	9.000	3389.30	30503.70	M-188
			Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	383.71	28778.25	M-048
			Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	433.34	39000.60	M-047
			Aggregates size 6 to 0.075 mm - 450 x 0.35 x 1/1.5	cum	105.000	101.67	10675.35	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				155157.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				170672.91	
			Cost for 205 cum = a+b+c+d+e				1877401.99	
			Rate per cum = (a+b+c+d+e)/205				9158.06	
						say	**9158.00**	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		Case (iii)	**Using cutback bitumen and 9.5 mm or 13.2 mm nominal size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Cutback bitumen 5 per cent					
			Filler (lime) 2 per cent					
			Total aggregates 93 per cent					
			Proportion of aggregates					
			19 mm to 9.5 mm26 per cent					
			9.5 mm to 6 mm31 per cent					
			6 mm to 0.075 mm 36 per cent					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor	day	16.000	247.00	3952.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes 60-90 tonne per hour producing average output of 75 tonnes per hour	hour	6.000	1720.00	10320.00	P&M-077
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Paver finisher	hour	6.000	3502.00	21012.00	P&M-034
			Pneumatic tyred roller 12-15 tonnes	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			Cutback bitumen @ 5 per cent	tonne	22.500	32160.00	723600.00	M-076
			Filler (lime)@ 2 per cent	tonne	9.000	3389.30	30503.70	M-188
			Aggregates size 19 to 9.5 mm - 450 x 0.26 x 1/1.5	cum	78.000	549.26	42842.28	M-045
			Aggregates size 9.5 to 6 mm - 450 x 0..31 x 1/1.5	cum	93.000	434.15	40375.95	M-040
			Aggregates size 6 to 0.075 mm - 450 x 0.36 x 1/1.5	cum	108.000	101.67	10980.36	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				92712.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				101984.11	
			Cost for 205 cum = a+b+c+d+e				1121825.22	
			Rate per cum = (a+b+c+d+e)/205				5472.32	
						say	**5472.00**	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.18		Case (iv)	**Using cutback bitumen and 19 mm or 26.5 mm nominal size aggregate**					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Cutback bitumen 5 per cent					

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Filler2 per cent					
			Total aggregates 93 per cent					
			Proportion of aggregates					
			37.5 mm to 19 mm25 per cent					
			19 mm to 6 mm 30 per cent					
			6 mm to 0.075 mm 38 per cent					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor	day	16.000	247.00	3952.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Drum mix plant for cold mixes 60-90 tonne per hour producing output of 75 tonnes per hour	hour	6.000	1720.00	10320.00	P&M-077
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Paver finisher	hour	6.000	3502.00	21012.00	P&M-034
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel tandem roller 6-8 tonnes	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			Cutback bitumen on @ 5 per cent	tonne	22.500	32160.00	723600.00	M-076
			Filler (lime) @ 2 per cent	tonne	9.000	3389.30	30503.70	M-188
			Aggregates size 37.5 to 19 mm - 450 x 0.25 x 1/1.5	cum	75.000	383.71	28778.25	M-048
			Aggregates size 19 to 6 mm - 450 x 0.3 x 1/1.5	cum	90.000	433.34	39000.60	M-047
			Aggregates size 6 to 0.075 mm - 450 x0.38 x 1/1.5	cum	114.000	101.67	11590.38	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				91229.89	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				100352.88	
			Cost for 205 cum = a+b+c+d+e				1103881.69	
			Rate per cum = (a+b+c+d+e)/205				5384.79	
						say	**5385.00**	
		Note	1.Density of aggregates has been assumed 1.5 gms/cc					
			2. Tack coat where provided will be measured and paid separately.					
			*3. Though the rollers are required only for 3.5 hours each as per norms of output, but these are required to be available at site for 6 hours as the drum mix plant and the paver would take 6 hours for mixing and paving. To cater for the idle period, their usage rates have been multiplied by a factor of 0.65					
5.19	**520**		**Sand Asphalt Base Course**					
			Providing, laying and rolling sand-asphalt base course composed of sand, mineral filler and bituminous binder on a prepared sub-grade or sub-base to the lines, levels, grades and cross sections as per the drawings including mixing in a plant of suitable type and capacity, transporting, laying, compacting and finishing.					
			Unit = cum					
			Taking output = 205 cum (450 tonne)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor	day	16.000	247.00	3952.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Hot Mix Plant of appropriate capacity but not less than 75 tonnes/hour	hour	6.000	33249.00	199494.00	P&M-023
			Electric generator set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Paver finisher	hour	6.000	3502.00	21012.00	P&M-034
			smooth wheeled roller 8-10 tonnes for initial break down rolling.	hour	6.00x0.65	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling.	hour	6.00x0.65	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandom rollers.	hour	6.00x0.65	1634.00	6372.60	P&M-045
			c) Material					
			Composition of mix (450 tonne) is assumed to be as under:-					
			Density 2.20 tonne per cum					
			Weight450 tonne					
			Bitumen5 per cent					
			Filler2 per cent					
			Sand of size 4.75 to 0.075 mm 93 per cent					
			Bitumen@ 5 per cent	tonne	22.500	32160.00	723600.00	M-074
			Filler (lime)@ 2 per cent	tonne	9.000	3389.30	30503.70	M-188
			Sand of size 4.75 to 0.075 mm - 450 x 0.93 x 1/1.5	cum	288.620	110.69	31947.35	M-004
			d) Overhead charges @ 0.1 on (a+b+c)				106440.61	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				117084.68	
			Cost for 205 cum = a+b+c+d+e				1287931.43	
			Rate per cum = (a+b+c+d+e)/205				6282.59	
						say	**6283.00**	
		Note	1. Tack coat will be measured and paid separately					
			2. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of this roller, their usage rates has been multiplied by a factor of 0.65					
5.20	**521**		**Modified Binder**					
			Supply of modified binder produced by mixing bitumen with modifier such as natural rubber or crumb rubber or any other polymer found compatible with bitumen and which allows properties given in clause 521.3 and IRC:SP: 53 blending of modifier with bitumen to be done either at the refinery or at central unit with all facilities by proper industrial process, is essential.					
			Unit = tonne					
			The use of modified binder is expected to result in an extended service life of bituminous pavements subject to heavy traffic loads in extreme climatic conditions, thus justifying the entire cost of adding modifiers/fibres. Other advantages include lower temperature susceptibility, higher resistance to aging, higher fatigue life, higher resistance to cracking and better adhesion between aggregates and binder.					
			Detailed information and inductive dose level on the use of polymer modified binder is available in IRC : SP-53 / 2002. A number of proprietary products are now available in the market. For such proprietary products, test reports and cost effectiveness should be the basis for their selection in road works.					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			The modifier, in the required quantity shall be blended at the refinery or at central unit with all facilities by proper industrial process, is essential. If supplied in drums it shall be agitated in melted condition with suitable device for achieving homogeneity.					
			Proposals to use glass fibre, polypropylene fibres or any other similar material in a bituminous mixture should be substantiated, complete with all details including test results, manufacturer's recommendations for addition or means of incorporating the fibres, homogeneously, without segregation, into the mixture.					
			Before agreeing to the use of a fibre, it should have been proved to be satisfactory in use under circumstances, similar to the work, elsewhere or it would have under gone appropriate performance trials. Documented evidence of use and trials of the fibre, in any country having conditions similar to Indian will be acceptable.					
			where information on use of trials is inadequate or lacking, trials may be required to be under taken before agreeing to the use of the fibre.					
		Note	1. The modified binder is usually manufactured by specialised firms as a proprietary product. The rate for this product is required to be ascertained from the market.					
			2.The specifications for various item of road works using polymer/rubber modified bitumens are same as those for penetration grade bitumen except those for any special conditions which the manufacturer may indicate.					
			3.The other controls during mixing, laying shall be same as specified in IRC - 14, 29, 94 and 95 for open graded premix carpet, bituminous concrete, DBM and SDBC respectively.					
			4.The temperature of mixing and rolling will be slightly higher than conventional bituminous mixes as indicated in Table 8 of IRC: SP: 53 - 2002.					
5.21	**522**		**Crack Prevention Courses**					
		Case (i)	**Stress absorbing membrane (SAM) crack width less than 6 mm**					
			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 clause 521, 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					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Hydraulic Chip spreader	hour	6.000	3762.00	22572.00	P&M-025
			Smooth wheeled road roller 8-10 tonne	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Modified binder	tonne	9.450	34300.00	324135.00	M-078
			Crushed stone aggregates 5.6 mm size	cum	105.000	312.49	32811.45	M-050
			d) Overhead charges @ 0.1 on (a+b+c)				40095.91	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44105.50	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 10500 sqm = a+b+c+d+e				485160.50	
			Rate per sqm = (a+b+c+d+e)/10500				46.21	
						say	**46.00**	
5.21		**Case (ii)**	**Stress absorbing membrane (SAM) with crack width 6 mm to 9 mm**					
			Providing and laying of a stress absorbing membrane over a cracked road surface, with crack width 6 to 9 mm after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 11 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm capacity	hour	6.000	457.00	2742.00	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Hydraulic Chip spreader	hour	6.000	3762.00	22572.00	P&M-025
			Smooth wheeled road roller 8-10 tonne	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Modified binder	tonne	11.550	34300.00	396165.00	M-078
			Crushed stone chipping 11.2 mm size	cum	105.000	520.42	54644.10	M-051
			d) Overhead charges @ 0.1 on (a+b+c)				49482.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				54430.39	
			Cost for 10500 sqm = a+b+c+d+e				598734.31	
			Rate per sqm = (a+b+c+d+e)/10500				57.02	
						say	**57.00**	
5.21		**Case (iii)**	**Stress absorbing membrane (SAM) crack width above 9 mm and cracked area above 50 per cent**					
			Providing and laying a single coat of a stress absorbing membrane over a cracked road surface, with crack width above 9 mm and cracked area above 50 per cent after cleaning with a mechanical broom, using modified binder complying with clause 521, sprayed at the rate of 15 kg per 10 sqm and spreading 11.2 mm crushed stone aggregates @ 0.12 cum per 10 sqm, sweeping the surface for uniform spread of aggregates and surface finished to conform to clause 902					
			Unit = sqm					
			Taking output = 10500 sqm					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	6.000	551.00	3306.00	P&M-031
			Air compressor 250 cfm capacity	hour	6.000	457.00	2742.00	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Hydraulic Chip spreader	hour	6.000	3762.00	22572.00	P&M-025
			Smooth wheeled road roller 8-10 tonne	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Modified binder	tonne	15.750	34300.00	540225.00	M-078

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Crushed stone aggregates 11.2 mm size	cum	126.000	520.42	65572.92	M-051
			d) Overhead charges @ 0.1 on (a+b+c)				65043.66	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				71548.02	
			Cost for 10500 sqm = a+b+c+d+e				787028.24	
			Rate per sqm = (a+b+c+d+e)/10500				74.96	
						say	**75.00**	
		Note	In case 2nd coat is also required to be provided, material provided for the 2nd coat shall be as per table 500-47.					
5.21		**Case(iv)**	**Case - IV : Bitumen impregnated geotextile**					
			Providing and laying a bitumen impregnated geotextile layer after cleaning the road surface, geotextile conforming to requirements of clause 703.3, laid over a tack coat with 1.05 kg per sqm of paving grade bitumen 80 - 100 penetration and constructed to the requirement of clause 703.4.5					
			Unit = sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.560	261.00	146.16	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	2.800	551.00	1542.80	P&M-031
			Air compressor 250 cfm capacity	hour	2.800	457.00	1279.60	P&M-001
			Bitumen pressure distributor @ 1750 sqm per hour	tonne	2.000	1531.00	3062.00	P&M-004
			Pneumatic roller	hour	2.000	1777.00	3554.00	P&M-037
			c) Material					
			Paving grade bitumen of 80 - 100 penetration @ 1.05 kg per sqm	tonne	3.680	31360.00	115404.80	M-075
			Geotextile including 10 per cent for overlaps	sqm	3850.000	77.10	296835.00	M-108
			d) Overhead charges @ 0.1 on (a+b+c)				42541.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				46795.58	
			Cost for 3500 sqm = a+b+c+d+e				514751.38	
			Rate per sqm = (a+b+c+d+e)/3500				147.07	
						say	**147.00**	
		NOTE	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 500 m, of 7 m wide carriagway. This can be conveniently overlaid by a bitumenious course in a day.					
5.22	**519.3**		**Recipe Cold Mix**					
			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 519.3					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
		Case(i)	**75 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Pneumatic tyred roller12-15 tonnes.	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller6-8 tonnes.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 45 litres per tonne	tonne	20.250	37883.00	767130.75	M-077
			Crushed stone aggregates 40 mm nominal size	cum	297.000	345.22	102530.34	M-055
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				95675.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				105242.71	
			Cost for 205 sqm = a+b+c+d+e				1157669.82	
			Rate per sqm = (a+b+c+d+e)/205				5647.17	
						say	**5647.00**	
		Note	**(Case I to III)**					
			1. These mixes are considered suitable for minor repair work and temporary road surface improvement.					
			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.					
			3. Tack coat, where provided, will be measured and paid separately.					
			*4.Both the rollers have to be available at site to match with the output of batch mixing plant and paver finisher. A multiplying factor of 0.65 has been adopted to cater for the idling period of road rollers.					
5.22		**Case(ii)**	**40 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 70 litres per tonne	tonne	31.500	37883.00	1193314.50	M-077
			Crushed stone aggregates 14 mm nominal size	cum	287.000	549.26	157637.62	M-052
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				143804.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				158184.72	
			Cost for 205 sqm = a+b+c+d+e				1740031.97	

BASES AND SURFACE COURSES (BITUMINOUS)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per sqm = (a+b+c+d+e)/205				8487.96	
						say	**8488.00**	
5.22		**Case(iii)**	**25 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher hydrostatic with sensor control @ 75 cum per hour	hour	6.000	3502.00	21012.00	P&M-034
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				397.35	
			Pneumatic tyred roller	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 85 litres per tonne	tonne	38.250	37883.00	1449024.75	M-077
			Crushed stone aggregates 6 mm nominal size	cum	270.000	312.49	84372.30	M-050
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				162048.79	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				178253.67	
			Cost for 205 sqm = a+b+c+d+e				1960790.33	
			Rate per sqm = (a+b+c+d+e)/205				9564.83	
						say	**9565.00**	

CHAPTER–5A

BASES AND SURFACE (BITUMINOUS) (WITH MECHANICAL PAVER)

CHAPTER - 5A

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Item No.	Description	Unit	Rate (₹)
5.3A	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with mechanical control paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.)		
(i)	**for Grading I (40 mm nominal size)**	cum	5331.00
(ii)	**for Grading II (19 mm nominal size)**	cum	5308.00
5.6A	**Dense Graded Bituminous Macadam** (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with mechanical 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. 507 complete in all respects.)		
(i)	**for Grading I (40 mm nominal size)**	cum	6377.00
(ii)	**for Grading II (19 mm nominal size)**	cum	6446.00
5.7A	**Semi - Dense Bituminous Concrete** (Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with mechanical control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.)		
(i)	**for Grading I (13 mm nominal size)**	cum	6664.00
(ii)	**for Grading II (10 mm nominal size)**	cum	7063.00
5.8A	**Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with mechanical control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects.)		
(i)	**for Grading-I (13 mm nominal size)**	cum	7290.00
(ii)	**for Grading-II (10 mm nominal size)**	cum	7262.00
5.10A	**Open - Graded Premix Surfacing** (Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.)		
(i)	**Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour**	sqm	109.00
(ii)	**Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**	sqm	125.00
5.11A	**Close Graded Premix Surfacing/Mixed Seal Surfacing** (Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-a) or 13.2 mm to 0.09 mm (Type-b) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.)		
	i) For Type A	sqm	128.00
	i) For Type B	sqm	120.00
5.12A	**Seal Coat** (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)	**Case - I : Type A**	sqm	48.00
(ii)	**Case - II : Type B** (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.)	sqm	43.00
5.22A	**Recipe Cold Mix** (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 519.3.)		
(i)	**75 mm thickness**	cum	5572.00
(ii)	**40 mm thickness**	cum	8413.00
(iii)	**25 mm thickness**	cum	9490.00

CHAPTER - 5A
BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
5.3A	504		**Bituminous Macadam**					
			Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with mechanical control paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction.					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP 100-120 TPH @ 75 tonne per hour actual output	hour	6.000	39484.00	236904.00	P&M-022
			Mechanical broom hydraulic @ 1250 sqm per hour	hour	2.200	551.00	1212.20	P&M-031
			Air compressor 250 cfm	hour	2.200	457.00	1005.40	P&M-001
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	**450 x L**	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			i) Bitumen @ 3.3 per cent of mix	tonne	14.850	32160.00	477576.00	M-074
			weight of mix = 205 x 2.2 = 450 tonne					
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 14.85 tonnes					
			Weight of aggregate = 450 -14.85 = 435.15 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 290.1 cum					
			***Grading I (40 mm nominal size)**					
			37.5 - 25 mm 15 per cent	cum	43.510	383.71	16695.22	M-049
			25 - 10 mm 45 per cent	cum	130.550	518.82	67731.95	M-046
			10 - 5 mm 25 per cent	cum	72.530	434.15	31488.90	M-040
			5 mm and below 15 per cent	cum	43.510	101.67	4423.66	M-030
			or					
			Grading II (19 mm nominal size)					
			25 - 10 mm 40 per cent	cum	116.040	518.82	60203.87	M-046

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			10 - 5 mm 40 per cent	cum	116.040	434.15	50378.77	M-040
			5 mm and below 20 per cent	cum	58.020	101.67	5898.89	M-030
			* Any one of the alternative may be adopted as per approved design.					
		(i)	**For Grading I (40 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				90321.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				99353.59	
			Cost for 205 cum = a+b+c+d+e				1092889.45	
			Rate per cum = (a+b+c+d+e)/205 (For Grading I)				5331.17	
						say	**5331.00**	
		(ii)	**For Grading II (19 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				89935.62	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				98929.18	
			Cost for 205 cum = a+b+c+d+e				1088221.03	
			Rate per cum = (a+b+c+d+e)/205 (For Grading II)				5308.40	
						say	**5308.00**	
		Note	1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					
5.6A	**507**		**Dense Graded Bituminous Macadam**					
			Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with mechanical 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. 507 complete in all respects.					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	**450 x L**	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			i) Bitumen @ 4.25 per cent of weight of mix	tonne	19.130	32160.00	615220.80	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 19.13 tonnes					
			Weight of aggregate = 450 -19.13 = 430.87 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 287.25 cum					
			***Grading - I (40 mm nominal Size)**					
			37.5 - 25 mm 22 per cent	cum	63.190	383.71	24246.63	M-049
			25 - 10 mm 13 per cent	cum	37.340	518.82	19372.74	M-046
			10 -4.75 mm 19 per cent	cum	54.580	434.15	23695.91	M-040
			4.75 mm and below 44 per cent	cum	126.390	101.67	12850.07	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading - II (19 mm nominal Size)					
			25 - 10 mm 30 per cent	cum	86.160	518.82	44701.53	M-046
			10 - 5 mm 28 per cent	cum	80.430	434.15	34918.68	M-040
			5 mm and below 40 per cent	cum	114.900	101.67	11681.88	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			* Any one of the alternative may be adopted as per approved design.					
		(i)	**For Grading I (40 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				102768.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				113045.13	
			Cost for 195 cum = a+b+c+d+e				1243496.44	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				6376.90	
						say	**6377.00**	
		(ii)	**For Grading II (19 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				103881.98	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				114270.17	
			Cost for 195 cum = a+b+c+d+e				1256971.90	
			Rate per cum = (a+b+c+d+e)/195 (For Grading II)				6446.01	
						say	**6446.00**	

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
		Note	1. Although the roller are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2. Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					
			5. The individual density for each size of aggregates to be used for construction I.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. 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 per cent by weight of dry aggregates.					
5.7A	**508**		**Semi-Dense Bituminous Concrete**					
			Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with mechanical control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.					
			Unit = cum					
			Taking output = 195 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.30	P&M-044

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Vibratory roller 8 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			***Grading I (13 mm nominal Size)**					
			i) Bitumen @ 4.5 per cent of weight of mix	tonne	20.250	32160.00	651240.00	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 20.25 tonnes					
			Weight of aggregate = 450-20.25 = 429.75 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 286.5 cum					
			13.2 - 10 mm 20 per cent	cum	57.300	549.26	31472.60	M-044
			10 - 5 mm 38 per cent	cum	108.870	434.15	47265.91	M-040
			5 mm and below 40 per cent	cum	114.600	101.67	11651.38	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading II (10 mm nominal Size)					
			i) Bitumen @ 5 per cent of weight of mix	tonne	22.500	32160.00	723600.00	M-074
			weight of mix = 450 tonnes					
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					
			9.5 - 4.75 mm @ 57 per cent	cum	162.450	434.15	70527.67	M-040
			4.75 and below @ 41 per cent	cum	116.850	101.67	11880.14	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			*Any one of the alternative may be adopted as per approved design.					
		(i)	**for Grading I (13 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				107392.67	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				118131.94	
			Cost for 195 cum = a+b+c+d+e				1299451.36	
			Rate per cum = (a+b+c+d+e)/195 (For Grading I)				6663.85	
						say	**6664.00**	
5.7A		**(ii)**	**for Grading II (10 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				113830.47	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				125213.51	
			Cost for 195 cum = a+b+c+d+e				1377348.64	
			Rate per cum = (a+b+c+d+e)/195 (For Grading II)				7063.33	
						say	**7063.00**	
		Note	1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. In case SDBC is laid over freshly laid tack coat, provision of broom and 2 mazdoor shall be deleted as the same has been included in the cost of tack coat.					
			5. The quantity of Bitumen to be adjusted as per job mix formula.					
5.8A	**509**		**Bituminous Concrete**					
			Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic pavefinisher with mechanical control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 509 complete in all respects.					
			Unit = cum					
			Taking output = 191 cum (450 tonnes)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch mix HMP @ 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Smooth wheeled roller 8-10 tonnes for initial break down rolling	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Vibratory roller 8 tonnes for intermediate rolling	hour	6.00x0.65*	2029.00	7913.10	P&M-059
			Finish rolling with 6-8 tonnes smooth wheeled tandem roller	hour	6.00x0.65*	1634.00	6372.60	P&M-045
			c) Material					
			i) Bitumen @ 5 per cent of weight of mix	tonne	22.500	32160.00	723600.00	M-074
			ii) Aggregate					
			Total weight of mix = 450 tonnes					
			Weight of bitumen = 22.5 tonnes					
			Weight of aggregate = 450 -22.50 = 427.50 tonnes					
			Taking density of aggregate = 1.5 ton/cum					
			Volume of aggregate = 285 cum					
			*** Grading I (9 mm nominal Size)**					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			20 - 10 mm 35 per cent	cum	99.750	549.26	54788.69	M-045
			10 - 5 mm 23 per cent	cum	65.550	434.15	28458.53	M-040
			5 mm and below 40 per cent	cum	114.000	101.67	11590.38	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			or					
			Grading II (13 mm nominal Size)					
			13.2 - 10 mm 30 per cent	cum	85.500	549.26	46961.73	M-044
			10 - 5 mm 25 per cent	cum	71.250	434.15	30933.19	M-040
			5 mm and below 43 per cent	cum	122.550	101.67	12459.66	M-030
			Filler @ 2 per cent of weight of aggregates.	tonne	8.620	3389.30	29215.77	M-188
			*Any one of the alternative may be adopted as per approved design.					
		(i)	**for Grading I (13 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				115073.45	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				126580.79	
			Cost for 191 cum = a+b+c+d+e				1392388.69	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-I)				7289.99	
						say	**7290.00**	
5.8A		(ii)	**for Grading II (10 mm nominal size)**					
			d) Overhead charges @ 0.1 on (a+b+c)				114625.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				126087.66	
			Cost for 191 cum = a+b+c+d+e				1386964.23	
			Rate per cum = (a+b+c+d+e)/191 (For Grading-II)				7261.59	
						say	**7262.00**	
		Note	1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. To cater for the idle period of these rollers, their usage rates have been multiplied by a factor of 0.65.					
			2.Quantity of Bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			3. Labour for traffic control, watch and ward and other miscellaneous duties at site including sundries have been included in administrative overheads of the contractor.					
			4. 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.					
			5. The individual density for each size of aggregates to be used for construction i.e. 37.5-25 mm, 25-10 mm etc. should be found in the laboratory and accordingly the quantities should be ammended for use in field. The average density of 1.5 tonne/cum is only a reference density in this Data Book.					
			6. 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 per cent by weight of dry aggregates.					
5.10A	**511**		**Open - Graded Premix Surfacing**					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Providing, laying and rolling of open - graded premix surfacing of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or cut-back or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
		(i)	**Case - I: Mechanical method using Penetration grade Bitumen and HMP of appropriate capacity not less than 75 tonnes/hour .**					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			i) Batch type HMP 75 tonne per hour	hour	6.000	39484.00	236904.00	P&M-022
			ii) Electric Generator Set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			v) Paver finisher hydrostatic with mechanical attachment	hour	6.000	1388.00	8328.00	P&M-035
			iv) Smooth wheeled/tandom roller 8-10 tonnes weight	hour	6.000	1634.00	9804.00	P&M-045
			c) Material					
			Bitumen @ 14.60 kg per 10 sqm	tonne	14.970	32160.00	481435.20	M-074
			Crushed stone chipping,13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	276.750	520.42	144026.24	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				92103.05	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				101313.36	
			Cost for 10250 sqm = a+b+c+d+e				1114446.94	
			Rate per sqm = (a+b+c+d+e)/10250				108.73	
						say	**109.00**	
		Note	If a premix sand seal coat of 'B' type is proposed, the same is required to be provided over the open graded premix carpet immediately on the same day. As the same HMP and other machines will be used for laying of premix sand seal coat, out of 6 effective working hours, 4.00 hours may be utilised for laying of premix carpet and balance 2.00 hours for the seal coat. The rate for the premix sand seal coat under clause 513 (case II) has been worked out accordingly by utilising the HMP for 2.00 hours for the purpose of seal coat. In case type 'A' seal coat is proposed, HMP can be worked for six hours for the premix carpet as type 'A' seal coat does not require the use of HMP.					
5.10A		**(ii)**	**Case - II: Open-Graded Premix Surfacing using cationic Bitumen Emulsion**					
			Unit = sqm					
			Taking output = 900 sqm (24.3 cum)					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.800	261.00	208.80	L-12
			Mazdoor	day	18.000	247.00	4446.00	L-13
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			b) Machinery					
			Concrete mixer 0.4/0.28 cum capacity	hour	6.000	84.00	504.00	P&M-009
			Smooth wheeled steel roller 8-10 tonne	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Cationic Bitumen Emulsion @ 21.50 kg per 10 sqm	tonne	1.940	35980.00	69801.20	M-073
			Crushed stone aggregates 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	24.300	520.42	12646.21	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				9289.42	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				10218.36	
			Cost for 900 sqm = a+b+c+d+e				112401.99	
			Rate per sqm = (a+b+c+d+e)/900				124.89	
						say	**125.00**	
5.11A	**512**		**Close Graded Premix Surfacing/Mixed Seal Surfacing**					
		Case I	Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.					
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-A) or 13.2 mm to 0.09 mm (Type-B) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			i) HMP of appropicate capacity - 75 t per hour	hour	6.000	39484.00	236904.00	P&M-022
			ii) Electric Generator Set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			iv) Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			v) Paver finisher hydrostatic with mechanical attachment	hour	6.000	1388.00	8328.00	P&M-035
			iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Type - A					
			* Bitumen @ 22 kg per 10 sqm	tonne	22.500	32160.00	723600.00	M-074

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Stone crushed aggregates 11.2 mm to 0.09 @ 0.27 cum per 10 sqm	cum	276.750	248.50	68772.38	M-041
			or					
			Type - B					
			Bitumen @ 19 kg per 10 sqm	tonne	19.480	32160.00	626476.80	M-074
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	374.53	103651.18	M-042
			d) Overhead charges @ 0.1 on (a+b+c)				108279.95	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				119107.94	
			Cost for 10250 sqm = a+b+c+d+e				1310187.35	
			Rate per sqm = (a+b+c+d+e)/10250				127.82	
			For Type 'A'			**say**	**128.00**	
			For Type 'B'			**say**	**120.00**	
			* Any one of the alternative may be adopted					
5.12A	**513**		**Seal Coat**					
			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					
			Unit = sqm					
			Taking output = 10250 sqm (92.25 cum)					
		(i)	**Case - I : Type A**					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Machinery					
			Hydraulic self propelled chip spreader	hour	6.000	3762.00	22572.00	P&M-025
			Tipper 5.5 cum capacity	hour	6.000	1015.00	6090.00	P&M-048
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Bitumen pressure distributor @ 1750 sqm per hour	hour	6.000	1531.00	9186.00	P&M-004
			Smooth wheeled roller 8 -10 tonne weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Bitumen @ 9.80 kg per 10 sqm	tonne	10.050	32160.00	323208.00	M-074
			Crushed stone chipping of 6.7 mm size defined as 100 per cent passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.09 cum per 10 sqm	cum	92.250	312.49	28827.20	M-050
			d) Overhead charges @ 0.1 on (a+b+c)				40431.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				44474.74	
			Cost for 10250 sqm = a+b+c+d+e				489222.17	
			Rate per sqm = (a+b+c+d+e)/10250				47.73	
						say	**48.00**	
		Note	Since seal coat is provided immediately over the bituminous layers, mechanical broom for clearing has not been catered.					
5.12A		**(ii)**	**Case - II : Type B**					
			Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.					
			Unit = sqm					
			Taking output = 7858 sqm (47.16 cum)					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Machinery					
			HMP of 75 tonnes/hour.	hour	2.000	39484.00	78968.00	P&M-022
			Electric Generator Set 250 KVA	hour	2.000	3700.00	7400.00	P&M-081
			Front end loader 1 cum bucket capacity	hour	2.000	1371.00	2742.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	**104 x 'L'**	8.83	918.32	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**91.83**	
			Paver finisher hydrostatic with mechanical attachment	hour	2.000	1388.00	2776.00	P&M-035
			Smooth wheeled 8-10 tonnes capacity	hour	2.000	777.00	1554.00	P&M-044
			c) Material					
			Bitumen @ 6.80 kg per 10 sqm	tonne	5.340	32160.00	171734.40	M-074
			Crushed stone chipping of 6.7 mm size defined as passing 11.2 mm sieve and retained on 2.36 mm sieve applied @ 0.06 cum per 10 sqm	cum	47.160	312.49	14737.03	M-050
			d) Overhead charges @ 0.1 on (a+b+c)				28195.13	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31014.65	
			Cost for 7858 sqm = a+b+c+d+e				341161.12	
			Rate per sqm = (a+b+c+d+e)/7858				43.42	
						say	**43.00**	
		Note	Since seal coat is required to be provided over the premix carpet on the same day, out of the 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours for the seal coat. Hence 2.00 hours have been considered for this case. This may be linked to rate analysis worked out under clause 511.					
5.22A	**519.3**		**Recipe Cold Mix**					
			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 519.3					
			Unit = cum					
			Taking output = 205 cum (450 tonnes)					
		Case (I)	**75 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker 6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 45 litres per tonne	tonne	20.250	37883.00	767130.75	M-077
			Crushed stone aggregates 40 mm nominal size	cum	297.000	345.22	102530.34	M-055
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				94406.79	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				103847.47	
			Cost for 205 sqm = a+b+c+d+e				1142322.18	
			Rate per sqm = (a+b+c+d+e)/205				5572.30	
						say	**5572.00**	
		Note	**(Case I to III)**					
			1. These mixes are considered suitable for minor repair work and temporary road surface improvement.					
			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.					
			3. Tack coat, where provided, will be measured and paid separately.					
			*4.Both the rollers have to be available at site to match with the output of batch mixing plant and paver finisher. A multiplying factor of 0.65 has been adopted to cater for the idling period of road rollers.					
5.22A		**Case (II)**	**40 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Pneumatic tyred roller 12-15 tonnes.	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller 6-8 tonnes.	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker 6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					

BASES AND SURFACE COURSES (BITUMINOUS) (With Mechanical Paver)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost(₹)	Remarks/ Input ref.
			Bitumen emulsion @ 70 litres per tonne	tonne	31.500	37883.00	1193314.50	M-077
			Crushed stone aggregates 14 mm nominal size	cum	287.000	549.26	157637.62	M-052
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				142535.90	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				156789.48	
			Cost for 205 sqm = a+b+c+d+e				1724684.33	
			Rate per sqm = (a+b+c+d+e)/205				8413.09	
						say	**8413.00**	
5.22A		**Case (III)**	**25 mm thickness**					
			a) Labour					
			Mate	day	1.000	261.00	261.00	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			Mazdoor skilled	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			Batch type cold mixing plant 100-120 TPH capacity producing an average output of 75 tonne per hour	hour	6.000	3540.00	21240.00	P&M-064
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher hydrostatic with mechanical control @ 75 cum per hour	hour	6.000	1388.00	8328.00	P&M-035
			Tipper 10 tonne capacity	tonne.km	450 x L	8.83	3973.50	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			Pneumatic tyred roller	hour	6.00x0.65*	1777.00	6930.30	P&M-037
			Smooth wheeled steel roller	hour	6.00x0.65*	777.00	3030.30	P&M-044
			Water tanker 6 KL capacity	hour	1.000	174.00	174.00	P&M-060
			c) Material					
			Bitumen emulsion @ 85 litres per tonne	tonne	38.250	37883.00	1449024.75	M-077
			Crushed stone aggregates 6 mm nominal size	cum	270.000	312.49	84372.30	M-050
			Cost of water	KL	6.000	243.23	1459.38	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				160780.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				176858.43	
			Cost for 205 sqm = a+b+c+d+e				1945442.69	
			Rate per sqm = (a+b+c+d+e)/205				9489.96	
						say	**9490.00**	

CHAPTER–5B

BASES AND SURFACE COURSE (BITUMINOUS)

(WITH MECHANICAL PAVER AND 40-60 TPH, HMP)

CHAPTER - 5B
BASES AND SURFACE COURSES (BITUMINOUS)
(With Mechancal Paver and 40-60 TPH , HMP)

	The Analysis of Chapter-5B is As per the Analysis given in MORD (Ministry of Rural Development).All Table and Clause are Referred to MORD SPECIFICATION Book.		
Item No.	**Description**	**Unit**	**Rate (₹)**
5.3B	**BITUMINOUS MACADAM**		
	Providing and laying bituminous macadam with HMP using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification Clause 504.		
	(I) BITUMEN (S-90)/(80/100 grade)	cum	5753.00
	(II) BITUMEN (S-65)/(60/70 grade)	cum	5823.00
5.9B	**20 mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder**		
	Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.		
(I)	**BITUMEN (S-90)/(80/100 grade)**	sqm	128.00
(II)	**BITUMEN (S-65)/(60/70 grade)**	sqm	129.00
5.11B	**Mix Seal Surfacing**		
	Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509.		
TYPE-A	**(I) BITUMEN (S-90)/ (80/100 grade)**	sqm	147.00
	(II) BITUMEN (S-65)/(60/70 grade)	sqm	149.00
TYPE-B	**(I) BITUMEN (S-90)/(80/100 grade)**	sqm	140.00
	(II) BITUMEN (S-65)/(60/70 grade)	sqm	142.00
5.12B	**Seal Coat** (Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type B seal coats.)		
	Case - II : Type B (Providing and laying of premix sand seal coat with HMP of appropriate capacity not less than 75 tonnes/ hours using crushed stone chipping 6.7 mm size and penetration bitumen of suitable grade.)		
	(I) BITUMEN (S-90) /(80/100 grade)	sqm	41.10
	(II) BITUMEN (S-65)/(60/70 grade)	sqm	42.00

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
5.3B	**504**		**Bituminous Macadam**					
			Providing and laying bituminous macadam with HMP using crushed aggregates of grading as per Table 500.4 premixed with bituminous binder, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification Clause 504.					
			Unit = cum					
		(I)	**BITUMEN (80/100grade)**					
			Taking output = 102.5 cum (225 t)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			Batch mix HMP 40-60 THP @ 40 t per hour actual output	hour	6.00	23182.00	139092.00	P&M-024
			Hydraulic broom @ 1250 sqm per hour	hour	1.10	551.00	606.10	P&M-031
			Air compressor 210 cfm	hour	1.10	457.00	502.70	P&M-001
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Generator 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 cum, 10 t capacity	hour	6.00	1015.00	6090.00	P&M-048
			Three wheel 80-100 kN static roller for intial break down rolling, final and finishing rolling	hour	12*0.65	777.00	6060.60	P&M-044
			Vibratory roller 80-100 kN for intermediate rolling	hour	6*0.65	2029.00	7913.10	P&M-059
			c) Material					
			i) Bitumen @ 3.3 per cent of mix (Weight of mix = 102.5 x 2.2 = 225 t)	t	7.425	31360.00	232848.00	M-075
			ii) Aggregate					
			Total weight of mix = 225 t					
			Weight of bitumen = 7.425 t					
			Weight of aggregate = 225 – 7.425 = 217.575 t					
			Taking density of aggregate = 1.5 t/cum					
			Volume of aggregate = 145.05 cum					
			(19 mm nominal size)					
			25 -10 mm - 40 per cent	cum	58.02	518.82	30101.94	M-046
			10– 5 mm - 40 per cent	cum	58.02	434.15	25189.38	M-040
			5 mm and below - 20 per cent	cum	29.01	101.67	2949.45	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				**48731.00**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**53604.10**	
			Cost of 102.5 cum = a+b+c+d+e				589645.1	
			Rate per cum = a+b+c+d+e/102.5				**5752.63**	
						say	5753.00	
		(II)	**BITUMEN(60/70grade)**					
			Taking output = 102.5 cum (225 t)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor(unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			Batch mix HMP 40-60 THP @ 40 t per hour actual output	hour	6.00	23182.00	139092.00	P&M-024
			Hydraulic broom @ 1250 sqm per hour	hour	1.10	551.00	606.10	P&M-031
			Air compressor 210 cfm	hour	1.10	457.00	502.70	P&M-001
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Generator 125 KVA	hour	6.00	2643.00	15858.00	P&M-018

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 cum, 10 t capacity	hour	6.00	1015.00	6090.00	P&M-048
			Three wheel 80-100 kN static roller for intial break down rolling, final and finishing rolling	hour	12*0.65	777.00	6060.60	P&M-044
			Vibratory roller 80-100 kN for intermediate rolling	hour	6*0.65	2029.00	7913.10	P&M-059
			c) Material					
			i) Bitumen @ 3.3 per cent of mix (Weight of mix = 102.5 x 2.2 = 225 t)	t	7.425	32160.00	238788.00	M-074
			ii) Aggregate					
			Total weight of mix = 225 t					
			Weight of bitumen =7.425 t					
			Weight of aggregate = 225 – 7.425 = 217.575 t					
			Taking density of aggregate = 1.5 t/cum					
			Volume of aggregate = 145.05 cum					
			(19mm nominal size)					
			25-10mm -40%	cum	58.02	518.82	30101.94	M-046
			10-5mm -40%	cum	58.02	434.15	25189.38	M-040
			5mm and below -20%	cum	29.01	101.67	2949.45	M-030
			d) Overhead charges @ 0.1 on (a+b+c)				**49325.00**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**54257.50**	
			Cost of 102.5 cum = a+b+c+d+e				596832.48	
			Rate per cum = a+b+c+d+e/102.5				**5822.76**	
						say	5823.00	
		Note:	*Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 225 t considered in these analysis. To cater for the idle period of these rollers, their usage rates may be multiplied by a factor of 0.65.*					
			Quantity of bitumen has been taken for analysis purpose. The actual quantity will depend upon job mix formula.					
			Labour for traffic control, watch and ward and other miscellaneous duties at site, including sundries have been included in administrative overheads of the contractor.					
			In case BM is laid over freshly laid tack coat, provision of Hydraulic broom and 2 mazdoor for the same shall be detected as the same has been included in the cost of tack coat.					
			Analysis is based on 1000 m lead of mixed material. Cost of additional cartage may be added as per site requirements.					
5.9B	**508**		**20 mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder**					
			Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.					

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Case - II By Mechanical Means					
		(I)	**Bitumen (S-90)/(80/100grade)**					
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP 30/40 t per hour	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.64	1015.00	3694.60	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-90) @ 14.60 kg per 10 sqm	t	5.84	31360.00	183142.40	M-075
			Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	520.42	56205.36	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				**42275.31**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**46502.84**	
			Cost of 4000 sqm = a+b+c+d+e				511531.23	
			Rate per sqm = (a+b+c+d+e)/4000				**127.88**	
						say	128.00	
		(II)	**Bitumen (S-65)/(60/70grade)**					
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP 30/40 t per hour	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.64	1015.00	3694.60	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-65) @ 14.60 kg per 10 sqm	t	5.84	32160.00	187814.40	M-074
			Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	520.42	56205.36	M-043
			d) Overhead charges @ 0.1 on (a+b+c)				**42742.51**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**47016.76**	
			Cost of 4000 sqm = a+b+c+d+e				517184.35	
			Rate per sqm = (a+b+c+d+e)/4000				**129.30**	
						say	129.00	
5.11B	**509**		**Mix Seal Surfacing**					
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509					
			Case - II By Mechanical Means					
			Type A					
		(I)	**Bitumen (S-90)/(80/100grade)**					

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP of appropriate capacity	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.60	1015.00	3654.00	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-90) @ 22 kg per 10 sqm	t	8.80	31360.00	275968.00	M-075
			Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	248.50	26838.00	M-041
			d) Overhead charges @ 0.1 on (a+b+c)				**48617.07**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**53478.78**	
			Cost of 4000 sqm = a+b+c+d+e				588266.57	
			Rate per sqm = (a+b+c+d+e)/4000				**147.07**	
						say	147.00	
		(II)	**Bitumen (S-65)/(60/70grade)**					
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP of appropriate capacity	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.60	1015.00	3654.00	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-65) @ 22 kg per 10 sqm	t	8.80	32160.00	283008.00	M-074
			Stone crushed aggregates 11.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	248.50	26838.00	M-041
			d) Overhead charges @ 0.1 on (a+b+c)				**49321.07**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**54253.18**	
			Cost of 4000 sqm = a+b+c+d+e				596784.97	
			Rate per sqm = (a+b+c+d+e)/4000				**149.20**	
						say	149.00	
			Type B					
		(I)	**Bitumen (S-90)/(80/100grade)**					
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP of appropriate capacity	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.60	1015.00	3654.00	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-90) @ 19 kg per 10 sqm	t	7.60	31360.00	238336.00	M-075
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	374.53	40449.24	M-042
			d) Overhead charges @ 0.1 on (a+b+c)				**46215.00**	

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**50836.50**	
			Cost of 4000 sqm = a+b+c+d+e				559201.45	
			Rate per sqm = (a+b+c+d+e)/4000				**139.80**	
						say	140.00	
		(II)	**Bitumen (S-65)/(60/70grade)**					
			Unit = sqm					
			Taking output = 4000 sqm (80 cum)					
			a) Labour					
			Mate	day	0.52	261.00	135.72	L-12
			Mazdoor (Unskilled)	day	10.00	247.00	2470.00	L-13
			Mazdoor (Skilled)	day	3.00	313.00	939.00	L-15
			b) Machinery					
			HMP of appropriate capacity	hour	6.00	23182.00	139092.00	P&M-024
			Electric generator set 125 KVA	hour	6.00	2643.00	15858.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	6.00	1371.00	8226.00	P&M-017
			Tipper 5.5 10 t capacity	hour	3.60	1015.00	3654.00	P&M-048
			Paver finisher	hour	6.00	1388.00	8328.00	P&M-035
			Three wheel 80-100 kN static roller	hour	6.00	777.00	4662.00	P&M-044
			c) Material					
			Bitumen (S-65) @ 19 kg per 10 sqm	t	7.60	32160.00	244416.00	M-074
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	374.53	40449.24	M-042
			d) Overhead charges @ 0.1 on (a+b+c)				**46823.00**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**51505.30**	
			Cost of 4000 sqm = a+b+c+d+e				566558.25	
			Rate per sqm = (a+b+c+d+e)/4000				**141.64**	
						say	142.00	
5.12B	**510**		**Seal Coat**					
			Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type B and as per Technical Specification Clause 510					
	510		**Case - II : Type B**					
		(I)	**Bitumen (S-90)/(80/100grade)**					
			Unit = sqm					
			Taking output = 5000 sqm (30 cum)					
			a) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mazdoor (Unskilled)	day	4.00	247.00	988.00	L-13
			b) Machinery					
			HMP of 30/40 t per hour	hour	2.00	23182.00	46364.00	P&M-024
			Electric generator set 125 KVA	hour	2.00	2643.00	5286.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	2.00	1371.00	2742.00	P&M-017
			Tipper 5.5 10 t capacity	hour	1.36	1015.00	1380.40	P&M-048
			Paver finisher	hour	2.00	1388.00	2776.00	P&M-035
			Three wheel 80-100 kN static roller	hour	2.00	777.00	1554.00	P&M-044
			c) Material					
			Bitumen (S-90) @ 6.80 kg per 10 sqm	t	3.40	31360.00	106624.00	M-075
			Crushed sand defined as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	30.00	67.66	2029.80	M-006
			d) Overhead charges @ 0.1 on (a+b+c)				16978.60	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18676.46	
			Cost of 5000 sqm = a+b+c+d+e				205441.01	
			Rate per sqm = (a+b+c+d+e)/5000				41.09	
						say	41.10	
		(II)	**Bitumen (S-65)/(60/70grade)**					
			Unit = sqm					
			Taking output = 5000 sqm (30 cum)					
			a) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mazdoor (Unskilled)	day	4.00	247.00	988.00	L-13
			b) Machinery					

BASES AND SURFACES COURSES (BITUMINOUS) (With Mechanical Paver and 40-60 TPH, HMP)

Sr. No.	Ref. of MoRD Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			HMP of 30/40 t per hour	hour	2.00	23182.00	46364.00	P&M-024
			Electric generator set 125 KVA	hour	2.00	2643.00	5286.00	P&M-018
			Front end loader 1 cum bucket capacity	hour	2.00	1371.00	2742.00	P&M-017
			Tipper 5.5 10 t capacity	hour	1.36	1015.00	1380.40	P&M-048
			Paver finisher	hour	2.00	1388.00	2776.00	P&M-035
			Three wheel 80-100 kN static roller	hour	2.00	777.00	1554.00	P&M-044
			c) Material					
			Bitumen (S-65) @ 6.80 kg per 10 sqm	t	3.40	32160.00	109344.00	M-074
			Crushed sand defined as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	30.00	67.66	2029.80	M-006
			d) Overhead charges @ 0.1 on (a+b+c)				**17250.60**	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				**18975.66**	
			Cost of 5000 sqm = a+b+c+d+e				208732.21	
			Rate per sqm = (a+b+c+d+e)/5000				41.75	
						say	42.00	
		Note:	*Since seal coat is required to be provided over the premix carpet on the same day, out of the 6 working hours of the HMP, 4.00 hours are proposed to be utilised for the premix carpet and the balance 2.00 hours have been considered for this case.*					

CHAPTER–6

CEMENT CONCRETE PAVEMENT

Chapter – 6

Cement Concrete Pavement

Preamble:

1. High capacity batch mix plants of 75 cum/hour (effective output) has 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. Super plasticizer admixture has been provided to improve workability with reduced water cement ratio.
4. Cement 43 grade has been catered for the cement concrete pavement i.e., for pavement quality concrete to get higher strength. However, for dry lean concrete, cement of 33 grade may be preferred.
5. While a slip form paver has been catered for the top layer of concrete pavement, a mechanical paver has been provided for dry lean and rolled cement concrete.
6. The letter 'L' 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 the work site.
7. Materials provided in the rate analysis are for estimating purpose. Exact quantity of materials will be determined from the job mix formula.
8. **Fibre Reinforced Concrete for Pavements**

   Fibre reinforcement concrete is a recent development in the field of cement concrete pavements. In industrialized countries, it has been in use for nearly 20 years now for cement concrete pavements and overlays. In India, it is still on an experimental stage. IRC have already published a code, IRC:SP:46-1997 for "Steel Fibre Reinforced Concrete for Pavements" which specifies a fibre content of 0.75 to 1.5 per cent and brings out the design aspects, material to be used, mix design and construction procedure.

   Some firms have developed Polypropylene fibres to be used in place of steel fibres. These fibres reduce permeability in concrete and prevent shrinkage cracks, which eliminate chances of corrosion of steel.

   The organizations concerned with the construction of cement concrete pavements and overlays on roads and airfield who have experimented on fibre reinforcement should give a feed back to the Ministry of Road Transport and Highways so that this item can be included in the Specifications laid down by the Ministry and eventually included in the Standard Data Book for Analysis of Rates.

9. Ultra- Thin White Topping

Some of the firms in developed countries, in the recent past have come-up with a innovative idea of laying 50 to 100 mm thick overlay of high strength fibre reinforced cement concrete over a distressed asphalt pavement. They claim to have achieved 2 to 3 times layer durability than asphalt overlays. There is a need to gather more details of the work and include in the specifications in case found suitable to conditions in our country.

CHAPTER - 6

CEMENT CONCRETE PAVEMENTS

Item No.	Description	Unit	Rate (₹)
6.1	**Dry Lean Cement Concrete Sub- base** (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	1774.00
6.2	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 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	4461.00
6.3	**Rolled Cement Concrete Base** (Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.)	cum	2073.00
6.4	**Transition section between rigid and flexible pavement** (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.)		-
6.5	**Construction of Base/Sub-base of pavement with lean concrete - fly ash.** (Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC: 74-1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC: 74-1979 and as per approved plans.)	cum	1557.00
6.6	**Cement - Fly ash concrete pavement.** (Construction of reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement, 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% and sand by 10%, 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	4128.00

CHAPTER - 6
CEMENT CONCRETE PAVEMENTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
6.1	**601**		**Dry Lean Cement Concrete Sub- base**					
			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.					
			Unit = cum					
			Taking output = 450 cum (990 tonne)					
			a) Labour					
			Mate	day	1.120	261.00	292.32	L-12
			Mazdoor skilled	day	6.000	313.00	1878.00	L-15
			Mazdoor	day	22.000	247.00	5434.00	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	3185.00	19110.00	P&M-068
			Electric generator 100 KVA	hour	6.000	1927.00	11562.00	P&M-080
			Paver with electronic sensor	hour	6.000	3502.00	21012.00	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	2029.00	16232.00	P&M-059
			Water tanker 6 KL capacity	hour	8.000	174.00	1392.00	P&M-060
			Tipper	tonne.km	990 x L	8.8300	8741.70	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				874.17	
			c) Material					
			Crushed stone coarse aggregate of 25 mm and 12.5 mm nominal sizes graded as per table 600-1 @ 0.90 cum/cum of concrete conforming to clause 602.2.4.	cum	405.000	490.00	198450.00	M-052 and M-054
			Coarse Sand as per IS: 383 @ 0.45 cum/cum of concrete	cum	203.000	110.69	22470.07	M-004
			Cement @ 150 kg/cum of concrete	tonne	67.500	4922.00	332235.00	M-081
			Cost of water	KL	48.000	243.23	11675.04	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				65958.43	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				72554.27	
			Cost for 450 cum = a+b+c+d+e				798097.00	
			Rate per cum = (a+b+c+d+e)/450				1773.55	
						say	**1774.00**	
		Note	Quantity provided for aggregate is for estimating purpose. Exact quantity shall be as per mix design.					
6.2	**602**		**Cement Concrete Pavement**					
			Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 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					
			Unit = cum					
			Taking output = 1050 cum (2415 tonne)					
			a) Labour					
			Mate	day	2.000	261.00	522.00	L-12
			Mazdoor skilled	day	15.000	313.00	4695.00	L-15
			Mazdoor	day	35.000	247.00	8645.00	L-13

CEMENT CONCRETE PAVEMENTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Road Sweeper @ 1250 sqm per hour	hour	2.800	551.00	1542.80	P&M-031
			Front end loader 1 cum bucket capacity	hour	18.000	1371.00	24678.00	P&M-017
			Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	7434.00	44604.00	P&M-067
			Electric generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Slip form paver with electronic sensor	hour	6.000	1395.00	8370.00	P&M-006
			Water tanker6 KL capacity	hour	36.000	174.00	6264.00	P&M-060
			Transit truck agitator 5 cum capacity.	tonne.km	2415xL	6.59	15914.85	Lead =1 km & P&M-050
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1591.49	
			Concrete joint cutting machine .	hour	12.000	332.00	3984.00	P&M-083
			Texturing machine .	hour	12.000	112.00	1344.00	P&M-088
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.4. .	cum	945.000	490.00	463050.00	M-052 and M-054
			Sand as per IS: 383 and conforming to clause 602.2.4 @ 0.45 cum/cum of concrete	cum	473.000	110.69	52356.37	M-004
			Cement 43 grade @ 400 kg/cum of concrete	tonne	414.000	4922.00	2037708.00	M-081
			32 mm mild steel dowel bars of grade S 240	tonne	9.450	43939.00	415223.55	M-126
			16 mm deformed steel tie bars of grade S 415	tonne	1.170	43682.50	51108.53	M-082
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	14.35	52736.25	M-164
			Pre moulded Joint filler, 25 mm thick for expansion joint.	sqm	16.330	900.90	14711.70	M-141
			Joint sealant	kg	875.000	23.06	20177.50	M-120
			Sealant primer	kg	116.670	11.43	1333.54	M-097
			Plastic sheath,1.25 mm thick for dowel bars	sqm	46.670	14.25	665.05	M-138
			Curing compound	liter	1850.000	115.31	213323.50	M-090
			Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	152.14	314929.80	M-180
			Cost of water	KL	216.000	243.23	52537.68	M-189
			Add 1 per cent 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.				36898.61	
			d) Overhead charges @ 0.1 on (a+b+c)				387111.52	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				425822.67	
			Cost for 1050cum = a+b+c+d+e				4684049.40	
			Rate per cum = (a+b+c+d+e)/1050				4461.00	
						say	**4461.00**	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
6.3	**603**		**Rolled Cement Concrete Base**					
			Construction of rolled cement concrete base course with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm with minimum, aggregate cement ratio15:1 and minimum cement content of 200 kg/cum, aggregate gradation to be as per table 600-4 after blending, mixing in batching plant at optimum moisture content, transporting to site, laying with a paver with electronic sensor, compacting with 8-10 tonnes smooth wheeled vibratory roller to achieve, the designed flexural strength, finishing and curing.					
			Unit = cum					
			Taking output = 450 cum (990 tonne)					
			a) Labour					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	1.200	261.00	313.20	L-12
			Mazdoor skilled	day	7.000	313.00	2191.00	L-15
			Mazdoor	day	23.000	247.00	5681.00	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	3185.00	19110.00	P&M-068
			Electric generator 100 KVA	hour	6.000	1927.00	11562.00	P&M-080
			Paver with electronic sensor @ 75 cum/hr.	hour	6.000	3502.00	21012.00	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	2029.00	16232.00	P&M-059
			Water tanker with 5 km lead 6 KL capacity	hour	8.000	174.00	1392.00	P&M-060
			Tipper	tonne.km	990xL	8.83	8741.70	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				874.17	
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.3.	cum	405.000	490.00	198450.00	M-052 and M-054
			Sand as per IS: 383 and conforming to clause 602.2.3 @ 0.45 cum/cum of concrete	cum	203.000	110.69	22470.07	M-004
			Cement @ 200 kg/cum of concrete	tonne	90.000	4922.00	442980.00	M-081
			Cost of water	KL	48.000	243.23	11675.04	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				77091.02	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				84800.12	
			Cost for 450cum = a+b+c+d+e				932801.32	
			Rate per cum = (a+b+c+d+e)/450				2072.89	
						say	**2073.00**	
		Note	The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
6.4	**New**		**Transition Section between Rigid and Flexible Pavement**					
			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.					
6.5	**Suggestive**		**Construction of Base/Sub-Base of Pavement with Lean Concrete - Flyash.**					
			Construction of Base/sub-base using cement, sand, fly ash and coarse aggregates proportioned as per table 4 of IRC: 74/1979 and with water content ratio, slump and compressive strength as defined in the said table, mix prepared in a batching and mixing plant and compacted with a vibratory roller 8-10 tonnes capacity within the time limit laid down vide clause 7.6.3 of IRC: 74-1979, construction joints properly formed at the end of day's work, cured for 14 days, all as specified in IRC: 74-1979 and as per approved plans.					
			Unit = cum					
			Taking output = 450 cum (990 tonne)					
			a) Labour					

CEMENT CONCRETE PAVEMENTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	1.120	261.00	292.32	L-12
			Mazdoor skilled	day	6.000	313.00	1878.00	L-15
			Mazdoor	day	22.000	247.00	5434.00	L-13
			b) Machinery					
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Cement concrete batch mix plant @ 75 cum per hour	hour	6.000	3185.00	19110.00	P&M-068
			Electric generator 100 KVA	hour	6.000	1927.00	11562.00	P&M-080
			Paver finisher with electronic sensor	hour	6.000	3502.00	21012.00	P&M-034
			Vibratory roller 8-10 t capacity	hour	8.000	2029.00	16232.00	P&M-059
			Water tanker6 KL capacity	hour	8.000	174.00	1392.00	P&M-060
			Tipper 10 T Capacity	tonne.km	990 x L	8.83	8741.70	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				874.17	
			c) Material					
			Crushed stone coarse aggregate of 40 mm nominal size @ 0.90 cum/cum of concrete conforming to table 2 of IRC: 74-1979.	cum	405.000	345.22	139814.10	M-055
			Coarse Sand as per IS: 383 - 1970	cum	110.960	110.69	12282.16	M-004
			Cement @ 150 kg/cum of concrete	tonne	67.500	4922.00	332235.00	M-081
			Fly ash conforming to IS: 3812 (Part II)	cum	91.540	0.00	0.00	M-011
			(Total fine aggregates = 450 x 0.45 = 202.50 cum To be divided in ratio of 2 sand : 1.65 flyash. Refer table 4 of IRC: 74-1979).					
			d) Overhead charges @ 0.1 on (a+b+c)				57908.55	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				63699.40	
			Cost for 450cum = a+b+c+d+e				700693.40	
			Rate per cum = (a+b+c+d+e)/450				1557.10	
						say	**1557.00**	
		Note	1.Depending upon approved designs, crushed stone aggregates of nominal size 20mm can also be used as per gradation given in table 2 of IRC: 74-1979.					
			2.The ratio of specific gravities of fly ash and sand has been assumed to be 0.827.					
			3.The quantities of materials given in the analyses are for estimating purposes. Actual quantities shall be as per job mix formula.					
			4.Construction procedure as laid down in clause, of IRC: 74-1979 shall be followed.					
6.6	**Suggestive**		**Cement - Flyash Concrete Pavement.**					
			Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement, 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 per cent and sand by 10 per cent, 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					
			Unit = cum					
			Taking output = 1050 cum (2415 tonne)					
			a) Labour					
			Mate	day	2.000	261.00	522.00	L-12
			Mazdoor skilled	day	15.000	313.00	4695.00	L-15
			Mazdoor	day	35.000	247.00	8645.00	L-13
			b) Machinery					
			Road Sweeper @ 1250 sqm per hour	hour	2.800	551.00	1542.80	P&M-031

CEMENT CONCRETE PAVEMENTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Front end loader 1 cum bucket capacity	hour	18.000	1371.00	24678.00	P&M-017
			Cement concrete batch mix plant @ 175 cum per hour (effective output)	hour	6.000	7434.00	44604.00	P&M-067
			Electric generator 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			Slip form paver with electronic sensor	hour	6.000	1395.00	8370.00	P&M-006
			Water tanker6 KL capacity	hour	36.000	174.00	6264.00	P&M-060
			Transit truck agitator 5 cum capacity.	tonne.km	2415xL	6.59	15914.85	P&M-050 Lead= 1 km
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				1591.49	
			Concrete joint cutting machine .	hour	12.000	332.00	3984.00	P&M-083
			Texturing machine .	hour	12.000	112.00	1344.00	P&M-088
			c) Material					
			Crushed stone coarse aggregates of 25mm and 12.5mm nominal size @ 0.90 cum/cum of concrete conforming to clause 602.2.4.	cum	945.000	490.00	463050.00	M-052 and M-054
			Sand as per IS: 383 and conforming to clause 602.2.4	cum	425.000	110.69	47043.25	M-004
			Cement 43 grade	tonne	357.000	4922.00	1757154.00	M-081
			Fly ash conforming to IS: 3812-1966 (Part-I)	tonne	109.000	0.00	0.00	M-011
			32 mm mild steel dowel bars of grade S 240	tonne	9.450	43939.00	415223.55	M-126
			16 mm deformed steel tie bars of grade S 415	tonne	1.170	43682.50	51108.53	M-082
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3675.000	14.35	52736.25	M-164
			Pre moulded Joint filler, 25 mm thick for expansion joint	sqm	16.330	900.90	14711.70	M-141
			Joint sealant	kg	875.000	23.06	20177.50	M-120
			Sealant primer	kg	116.670	11.43	1333.54	M-097
			Plastic sheath,1.25 mm thick for dowel bars	sqm	46.670	14.25	665.05	M-138
			Curing compound	liter	1850.000	115.31	213323.50	M-090
			Super plastisizer admixture IS marked as per 9103-1999 @ 0.5 per cent by weight of cement	kg	2070.000	152.14	314929.80	M-180
			Cost of water	KL	216.000	243.23	52537.68	M-189
			Add 1 per cent 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.				34039.94	
			d) Overhead charges @ 0.1 on (a+b+c)				358238.94	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				394062.84	
			Cost for 1050cum = a+b+c+d+e				4334691.19	
			Rate per cum = (a+b+c+d+e)/1050				4128.28	
						say	**4128.00**	
		Note	1.The quantities for cement, coarse aggregate and fine aggregates are for estimating only .The exact quantities will be as per mix design.					
			2.IRC: 68-1976 may be referred for guidelines on the design of cement-fly ash concrete for rigid pavement construction.					
			***Calculation of cement, sand and fly ash.**					
			Cement @ 400 kg/cum = 1050 x 400 = 420 tonnes. 15 per cent of cement to be replaced by fly ash = 63 tonnes. Balance cement = 357 tonnes. Quantity of fly ash = 63 x specific gravity of fly ash /specific gravity of cement = 63 x 2.25/3.15 = 45 tonnes.					
			Sand @ 0.45 cum / cum of concrete = 1050 x 0.45 = 472.50 x 1.6 = 756 tonnes.10 per cent to be replaced by flyash. Balance sand = 756 x 0.9 = 680.4 tonnes = 680.4 / 1.6 = 425 cum. Quantity of flyash = (756-680.4) x specific gravity of fly ash/specific gravity of sand = 76.4 x 2.25 / 2.687 = 63.97 tonnes (say 64 tonnes)					
			Fly ash Total fly ash = 45 + 64 = 109 tonnes.					

CHAPTER–7

GEOSYNTHETICS AND REINFORCED EARTH

Chapter – 7

Geosynthetic and Reinforced Earth

Preamble:

1. The specifications for geosynthetics which includes geotextiles, geogrids, geonets, geomembranes and geocomposites 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.
3. Care shall be taken to ensure that the geotextile or core material is not exposed to dry light for more than a cumulative total of 50 hours.
4. Bitumen overlay shall follow on the same day where paving fabric is laid.
5. The size of mesh opening for gabions and mattresses laid with geogirds and geonets shall be between 35 mm and 100 mm.
6. The size of the boulders shall be at least 100 mm or double the size of the aperture whichever is larger.
7. The boulders shall be laid in crates as per the methodology given in Clause 2503.3.
8. The usual size of gabions in aprons is 1m x 5 m with a height of 600 mm and baffles at 1 m centers.

CHAPTER - 7

GEOSYNTHETICS AND REINFORCED EARTH

Item No.	Description	Unit	Rate (₹)
7.1	**Sub- Surface Drain with Geotextiles** (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 planar geocomposite structure, joints wrapped with geotextile to prevent ingress of soil, all as per clause 702 and approved drawings including excavation and backfilling.)	metre	#VALUE!
7.2	**Narrow Filter Sub- Surface Drain** (Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling.)	metre	406.00
7.3	**Laying Paving Fabric Beneath a Pavement Overlay** (Providing and laying paving fabric with physical requirements as per table 704-2 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	#VALUE!
7.4	**Laying Boulder Apron in Crates of Synthetic Geogrids** (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 704.2, 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 704.3. 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 704 and laid as per clause 2503.3 and approved design.)	cum	#VALUE!
7.5	**Reinforced Earth Structures Retaining Wall** (Reinforced earth structures retaining walls have four main components as under: a) Excavation for foundation, foundation concrete and cement concrete grooved seating in the foundation for facing elements (facia material). b) Facia material and its placement. c) Assembling, joining with facing elements and laying of the reinforcing elements. d) Earthfill with granular material which is to be retained by the wall.)		
(i)	**Assembling, joining and laying of reinforcing elements.**		
A	**With reinforcing element of steel / Aluminium strips / polymeric strips.**		
Type 1	**1. Galvanised carbon steel strips**	metre	#VALUE!
Type 2	**2. Copper Strips**	metre	#VALUE!
Type 3	**3. Aluminium Strips**	metre	#VALUE!
Type 4	**4. Stainless steel strips**	metre	#VALUE!
Type 5	**5. Glass reinforced polymer/fibre reinforced polymer/polymeric strips**	metre	#VALUE!
B	**With reinforcing elements of synthetic geogrids**	sqm	#VALUE!
(ii)	**Facing elements of RCC**	sqm	999.00

CHAPTER - 7

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
7.1	702		**Sub-Surface Drain with Geotextiles**					
			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					
			Unit = Running metre					
			Taking output = one metre					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor skilled	day	0.250	313.00	78.25	L-15
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Material					
			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	98.62	98.62	M-107
			Geomembrane	sqm	1.000	input	#VALUE!	M-106
			Geotextile	sqm	2.000	77.10	154.20	M-108
			Add 2 per cent cost of material for miscellaneous items like synthetic cord				#VALUE!	
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Rate per metre = a+b+c+d				#VALUE!	
						say	**#VALUE!**	
		Note	Surplus excavated material to be used at site. Hence seprate cost for disposal not added.					
7.2	702.4		**Narrow Filter Sub-Surface Drain**					
			Construction of a narrow filter sub- surface drain consisting of porous or perforated pipe laid in narrow trench surrounded by a geotextile filter fabric, with a minimum of 450 mm overlap of fabric and installed as per clause 702.3 and 309.3.5 including excavation and backfilling					
			Unit = Running metre length					
			Taking output = one metre					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor skilled	day	0.250	313.00	78.25	L-15
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Material					
			Perforated geosynthetic pipe 150 mm dia	metre	1.000	24.84	24.84	M-134
			Geotextile filter fabric	sqm	1.250	77.10	96.38	M-109
			Add 2 per cent cost of material for miscellaneous item like synthetic cord				2.42	
			c) Overhead charges @ 0.1 on (a+b)				33.58	
			d) Contractor's profit @ 0.1 on (a+b+c)				36.94	
			Rate per metre = a+b+c+d				406.35	
						say	**406.00**	
		Note	Surplus excavated material to be used at site. Hence Separate cost for disposal not added.					
7.3	703		**Laying Paving Fabric Beneath a Pavement Overlay**					
			Providing and laying paving fabric with physical requirements as per table 704-2 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					

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = sqm					
			Taking output = 2800 sqm					
			a) Labour					
			Mate	day	0.800	261.00	208.80	L-12
			Mazdoor	day	20.000	247.00	4940.00	L-13
			b) Machinery					
			Road sweeper 1250 sqm per hour	hour	2.240	551.00	1234.24	P&M-031
			Pneumatic roller 14 tonnes 2000 sqm per hour	hour	1.400	1777.00	2487.80	P&M-037
			Bitumen pressure distributor 1750 sqm per hour	hour	1.680	1531.00	2572.08	P&M-004
			c) Material					
			Paving Fabric	sqm	2940.000	input	#VALUE!	M-133
			Paving Bitumen 80-100	tonne	2.800	31360.00	87808.00	M-075
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 2800 sqm = a+b+c+d+e				#VALUE!	
			Rate per sqm =(a+b+c+d+e)/2800				#VALUE!	
						say	**#VALUE!**	
7.4	**704**		**Laying Boulder Apron in Crates of Synthetic Geogrids**					
			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 704.2, 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 704.3. 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 704 and laid as per clause 2503.3 and approved design.					
			Unit = cum					
			Taking output = 3.00 cum					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Mazdoor skilled	day	0.500	313.00	156.50	L-15
			Mazdoor	day	1.500	247.00	370.50	L-13
			b) Material					
			Geo grids	sqm	21.000	input	#VALUE!	M-105
			Connectors/ Staples	each	50.000	input	#VALUE!	M-085
			Polymer braids	metre	20.000	input	#VALUE!	M-140
			Stones with minimum size of 200 mm	cum	3.450	206.33	711.84	M-003
			Stones spall for filling voids	cum	0.450	206.33	92.85	M-008
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 3 cum = a+b+c+d				#VALUE!	
			Rate per cum = (a+b+c+d)/ 3				#VALUE!	
						say	**#VALUE!**	
7.5	**3100**		**Reinforced Earth Structures**					
			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 (facia material).					
			b) Facia material and its placement.					
			c) Assembling, joining with facing elements and laying of the reinforcing elements.					

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Earth fill with granular material which is to be retained by the wall.					
			Each component is analysed separately as under:					
			considering Average height of wall = 8 m.					
7.5	**3102**	**(i)**	**Assembling, joining and laying of reinforcing elements.**					
		A	**With reinforcing element of steel / Aluminium strips / polymeric strips.**					
			Unit = Running Metre					
			Taking Output = 450 m					
			a) Labour					
			Mate	day	0.360	261.00	93.96	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			Mazdoor skilled	day	3.000	313.00	939.00	L-15
			b) Material					
			@ Reinforcement strips 60 mm wide 5 mm thick as per clause 3102.					
			1.Galvanised carbon steel strips	metre	450*1.1	input	#VALUE!	M-154
			or					
			2.Copper Strips	metre	450*1.1	input	#VALUE!	M-153
			or					
			3.Aluminium Strips	metre	450*1.1	input	#VALUE!	M-157
			or					
			4.Stainless steel strips	metre	450*1.1	input	#VALUE!	M-156
			or					
			5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips	metre	450*1.1	input	#VALUE!	M-155
			@ Any one of the above alternative may be adopted as per approved design.					
			Add 10 per cent of the cost of reinforcing strip towards accessories like tie-strips, nuts and bolts and loops/lugs for joining reinforcing elements with the facia pannels, overlaps, heat bonding or extension.					
		Type 1	**1.Galvanised carbon steel strips**					
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 450 m = a+b+c+d				#VALUE!	
			Rate per metre =(a+b+c+d)/450				#VALUE!	
						say	**#VALUE!**	
		Type 2	**2.Copper Strips**					
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 450 m = a+b+c+d				#VALUE!	
			Rate per metre =(a+b+c+d)/450				#VALUE!	
						say	**#VALUE!**	
		Type 3	**3.Aluminium Strips**					
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 450 m = a+b+c+d				#VALUE!	
			Rate per metre =(a+b+c+d)/450				#VALUE!	
						say	**#VALUE!**	
		Type 4	**4.Stainless steel strips**					
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 450 m = a+b+c+d				#VALUE!	

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per metre =(a+b+c+d)/450				#VALUE!	
						say	**#VALUE!**	
		Type 5	**5.Glass reinforced polymer/fibre reinforced polymer/polymeric strips**					
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 450 m = a+b+c+d				#VALUE!	
			Rate per metre =(a+b+c+d)/450				#VALUE!	
						say	**#VALUE!**	
7.5(i)		**B**	**With reinforcing elements of synthetic geogrids**					
			Unit = sqm					
			Taking output = 300 sqm					
			a) Labour					
			Mate	day	0.360	261.00	93.96	L-12
			Mazdoor	day	6.000	247.00	1482.00	L-13
			Mazdoor skilled	day	3.000	313.00	939.00	L-15
			b) Material					
			Synthetic Geogrids as per clause 3102.8 and approved design and specifications.	sqm	300.000	input	#VALUE!	M-181
			Add 10 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 facia pannels, overlaps and other protective elements for synthetic geogrids.				#VALUE!	
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of 300 sqm of Synthetic geogrids = a+b+c+d				#VALUE!	
			Rate per sqm = (a+b+c+d)/ 300				#VALUE!	
						say	**#VALUE!**	
7.5	**3104**	**(ii)**	**Facing elements of RCC**					
			Unit = sqm					
			Taking output = 75 sqm					
			a) Labour					
			Mate	day	0.180	261.00	46.98	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Mazdoor skilled	day	1.500	313.00	469.50	L-15
			b) Machinery					
			Light crane with lifting capacity upto 3 tonne	hour	6.000	510.00	3060.00	P&M-013
			c) Material					
			Pre-cast RCC M-35 facing elements of size as per design and 18 cm thick for 75 sqm. (Refer Item **12.8 (H)**)	cu.m	13.500	3184.00	42984.00	Item 12.8 (H) Case I
			HYSD steel @ 5 kg / sqm (Refer Item 12.6)	tonnes	0.380	66747.00	25363.86	Item 13.6
			Add 2 per cent of cost of facia pannels, for all necessary temporary form work, scaffolding and provision of loops/lugs for lifting of pannels and joining the reinforcing elements.				1366.96	
			d) Overhead charges @ 0.1 on (a+b)				431.75	
			e) Contractor's profit @ 0.1 on (a+b+d)				474.92	
			Cost for 75 sqm = a+b+c+d+e				74938.97	
			Rate per sqm = (a+b+c+d+e)/ 75				999.19	
						say	**999.00**	
		Note	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.					

GEOSYNTHETICS AND REINFORCED EARTH

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 15.					
			4. Excavation for foundation including foundation concrete and groove in the foundation for seating of bottom most facia 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 12 & 13 in bridge section.					
			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 3105.5 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.					
			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) Excavation for foundation including backfilling.					
			(ii) Foundation concrete as per approved design.					
			(iii) Cost of facial pannels and their erection .					
			(iv) Cost of reinforcing elements including their fixing and joining with the facial pannels.					
			(v) Drainage arrangement including filter media as per approved design and drawings.					
			13. The compacted earth filling to be retained shall form part of embankment.					

CHAPTER–8

TRAFFIC SINGS, MARKING AND OTHER ROAD APPURTENANCES

Chapter – 8

Traffic signs, Markings and other Road Appurtenances

Preamble:

1. Rate analysis for fencing has been done for two different heights, i.e. 1.20 m and 1.80m. 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 x 25 mm
    c) Welded steel wire fabric with mesh size of 75 x 50 mm
3. Kerbstone 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 analysed 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 beams of size 311 x 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 x 75 x 5 mm with a spacer of channel section 150 x 75 x 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 support is provided for size upto 0.9 sqm.
9. The traffic signs proposed are of retro- reflectorised 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 analysis for rigid, semi-rigid and flexible crash barriers has 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 analysis for traffic impact attenuators at abutments and piers has 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 like coastal areas.

18. Ducts for Utility Services along and across the Expressway/Highway:

The running metre cost of duct along the road including inspection chambers (where applicable) or across the road will depend upon the approved design. The various item 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 metre 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.

CHAPTER - 8

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	Description	Unit	Rate (₹)
8.1	**Cast-in-Situ Cement Concrete M20 kerb** (Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408.)		
A	**Using Concrete Mixer**	metre	188.00
B	**Using Concrete Batching and Mixing Plant**	metre	201.00
8.2	**Cast in Situ Cement Concrete M 20 Kerb with Channel** (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 M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408.)		
A	**Using Concrete Mixer**	metre	329.00
B	**Using Concrete Batching and Mixing Plant**	metre	353.00
8.3	**Printing new letter and figures of any shade** (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.)	cm height per letter	0.80
(ii)	**English and Roman**	cm height per letter	0.48
8.4	**Retro- reflectorised Traffic signs** (Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.)		
(i)	**90 cm equilateral triangle**	each	4887.00
(ii)	**60 cm equilateral triangle**	each	3035.00
(iii)	**60 cm circular**	each	4247.00
(iv)	**80 mm x 60 mm rectangular**	each	6127.00
(v)	**60 cm x 45 cm rectangular**	each	4123.00
(vi)	**60 cm x 60 cm square**	each	4982.00
(vii)	**90 cm high octagon**	each	7959.00
8.5	**Direction and Place Identification signs upto 0.9 sqm size board.** (Providing and erecting direction and place identification retro-reflectorised sign asper IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing.)	sqm	11442.00
8.6	**Direction and Place Identification signs with size more than 0.9 sqm size board.** (Providing and erecting direction and place identification retro- reflectorised sign asper IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.)	sqm	11753.00
8.7	**Overhead Signs** (Providing and erecting overhead signs with a corrosion resistant 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.)		
A	**Truss and Vertical Support**	tonne	53541.00
B	**Aluminium alloy plate for over head sign**	tonne	10154.00
8.8	**Painting Two Coats on New Concrete Surfaces** (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	sqm	67.00
8.9	**Painting on Steel Surfaces** (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	58.00
8.10	**Painting on Wood Surfaces** (Providing and applying two coats of ready mix paint of approved brand on wood surface after through cleaning of surface to give an even shade)	sqm	65.00

Item No.	Description	Unit	Rate (₹)
8.11	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work** (Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control.)		
(i)	**Over 10 cm in width**	sqm	108.00
(ii)	**Up to 10 cm in width**	sqm	94.00
8.12	**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work** (Painting lines, dashes, arrows etc on roads in two coats on old work with ready mixed road marking paint confirming 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	74.00
(ii)	**Up to 10 cm in width**	sqm	79.00
8.13	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** (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	740.00
8.14	**Kilo Metre Stone** (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)**	each	2991.00
(ii)	**Ordinary Kilometer stone (Precast)**	each	1732.00
(iii)	**Hectometer stone (Precast)**	each	537.00
8.15	**Road Delineators** (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 stripes, 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	1001.00
8.16	**Boundary pillar** (Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting.)	each	437.00
8.17	**G.I. Barbed wire Fencing 1.2 metre high** (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 807.)	metre	230.00
8.18	**G.I. Barbed wire Fencing 1.8 metre high** (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 807.)	metre	378.00
8.19	**Fencing with welded steel wire Fabric 75 mm x 50 mm (Suggestive)** (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.)	metre	507.00
8.20	**Tubular Steel Railing on Medium Weight steel channel (ISMC series) 100 mm x 50 mm** (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.)	metre	1628.00
8.21	**Tubular Steel Railing on Precast RCC posts, 1.2 m high above ground level** (Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 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.)	metre	1217.00
8.22	**Reinforced Cement Concrete Crash Barrier** (Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified.)		
(i)	**M 20 grade concrete**	metre	2891.00

Item No.	Description	Unit	Rate (₹)
8.23	**Metal Beam Crash Barrier**		
A	**Type - A, "W" : Metal Beam Crash Barrier** (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 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 150 x 75 x 5 mm, 330 mm long complete as per clause 810.)	metre	2474.00
B	**Type - B, "THRIE" : Metal Beam Crash Barrier** (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 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 150 x 75 x 5 mm, 546 mm long complete as per clause 810.)	metre	3176.00
8.24	**Road Traffic Signals electrically operated** (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.)		-
8.25	**Flexible Crash Barrier, Wire Rope Safety Barrier** (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 gradecementconcretefoundation2400 x 450 x 900 mm (depth), strengthened by a strut of RS joist 100 x 75 mm, 2 m long at 450 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.)	metre	1807.00
8.26	**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 envoirenment 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 mtr 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.)	metre	2945.00
C	**Anti - Glare Screen with Rectangular Vane of MS sheet** (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 450 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 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.)	metre	762.00
8.27	**Street Lighting** (Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 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!
(ii)	**For fixing in Footpath**	each	#VALUE!
8.28	**Lighting on Bridges** (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!
8.29	**Cable Duct Across the Road** (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**	metre	#VALUE!
(ii)	**Double Row for two utility services**	metre	#VALUE!
(iii)	**Triple Row for three utility services**	metre	#VALUE!

Item No.	Description	Unit	Rate (₹)
8.3	**Highway Patrolling and Traffic Aid Post** (It is proposed to locate one Traffic Aid Post every 50-60 km of the highway.)		-
8.31	**Items related to under pass/ subway/ overhead bridge/ overhead foot bridge** (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.)		-
8.32	**Traffic Control System and Communication system** (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 approved design and drawing.)		-
8.33	**Gantry Mounted Variable Message Sign board** (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.)		
(i)	**Gantry Support System**	tonne	51125.00
(ii)	**Message Display** (Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.)		-
8.34	**Traffic Impact Attenuators at Abutments and Piers**		
A	**With Scrap Tyres** (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	837.00
B	**Using Plastic/Steel Barrel, Filled with Sand** (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 with20 mm steel wire rope as per approved design and drawings.)	sqm	550.00
C	**With HI - DRO cell Sandwich (Patented)** ((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!
8.35	**Road Markers/Road Stud with Lense Reflector** (Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4: 1973.)	each	217.00
8.36	**Traffic Cone** (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!
8.37	**Roadside Amenities**		
A	**Rest Areas** (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	**Parking areas and Bus Laybyes for Trucks, Buses and Light vehicles** (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	**Lawn** (Providing a lawn planted with grass and its maintenance.)		-
8.38	**Rumble Strips** (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	**Policeman Umbrella** (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	-

Item No.	Description	Unit	Rate (₹)
8.40	**High Mast Pole Lighting at Interchanges and Flyovers** (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 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 alongwith 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	**Toll Plaza** (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:-)		-
8.42	**Safety Devices and signs in Construction Zones** (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:55-2001.)		-
8.43	**Portable Barricade in Construction Zone** (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 deg., 'A' frame painted with 2 coats of yellow paint, complete as per IRC: SP : 55-2001.)	each	2495.00
8.44	**Permanent Type Barricade in Construction Zone**		
A	**With Steel Components** (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 deg., complete as per IRC:SP:55-2001.)	each	3917.00
B	**With Wooden Components** (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 striups, 150 mm in width at an angle of 45 deg., complete as per IRC:SP:55-2001.)	each	9963.00
C	**With NORMAL Bricks** (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	16222.00
	With FLY ASH Bricks (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	13846.00
8.45	**Drum Delineator in Construction Zone** (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:55-2001.)	each	444.00
8.46	**Flagman** (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	402.00

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
8.1	408		**Cast-in-Situ Cement Concrete M20 Kerb**					
			Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408					
			Unit = Running metre					
			Taking output = 360 metre					
		A.	**Using Concrete Mixer**					
			Cement Concrete					
			Cement concrete of grade M20 = 12.60 cum					
			Cement concrete of grade M10 for base = 11.61 cum					
			Total Concrete = **24.21 cu.m**					
			a) Labour					
			Mate	day	0.720	261.00	187.92	L-12
			Mason	day	2.000	330.00	660.00	L-11
			Mazdoor	day	16.000	247.00	3952.00	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	443.00	2658.00	P&M-029
			Concrete mixer 0.48/0.28 cum capacity	hour	12.000	84.00	1008.00	P&M-009
			Water tanker6 KL capacity	hour	5.000	174.00	870.00	P&M-060
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	456.33	9943.43	M-053
			Coarse sand 30 per cent	cum	10.900	110.69	1206.52	M-005
			Cement 11 per cent	tonne	5.700	4922.00	28055.40	M-081
			Cost of water	KL	30.000	243.23	7296.90	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				5583.82	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6142.20	
			Cost for 360 meter = a+b+c+d+e				67564.19	
			Rate per metre = (a+b+c+d+e)/360				187.68	
						say	**188.00**	
		B	**Using Concrete Batching and Mixing Plant**					
			Cement Concrete					
			Cement concrete of grade M20 = 12.60 cum					
			Cement concrete of grade M10 for base = 11.61 cum					
			Total Concrete = **24.21 cu.m**					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Kerb casting machine @ 60 metres/hour	hour	6.000	443.00	2658.00	P&M-029
			Concrete batching and mixing plant @ 15 cum/hr.	hour	1.600	1859.00	2974.40	P&M-003
			Water tanker6 KL capacity	hour	5.000	174.00	870.00	P&M-060
			Tipper 5.5 cum capacity	hour	6.000	1015.00	6090.00	P&M-048
			c) Material					
			Crushed stone aggregate 20 mm nominal size 59 per cent	cum	21.790	456.33	9943.43	M-053
			Coarse sand 30 per cent	cum	10.900	110.69	1206.52	M-004
			Cement 11 per cent	tonne	5.700	4922.00	28055.40	M-081
			Cost of water	KL	30.000	243.23	7296.90	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				5995.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6594.50	
			Cost for 360 meter = a+b+c+d+e				72539.47	
			Rate per metre = (a+b+c+d+e)/360				201.50	
						say	**201.00**	
8.2	408		**Cast in Situ Cement Concrete M 20 Kerb with Channel**					
			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 M10 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 408					
		A	**Using Concrete Mixer**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = **40.66 cum**					
			a) Labour					
			Mate	day	0.720	261.00	187.92	L-12
			Mason	day	2.000	330.00	660.00	L-11
			Mazdoor	day	16.000	247.00	3952.00	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	443.00	2658.00	P&M-029
			Concrete mixer 0.48/0.28	hour	16.000	84.00	1344.00	P&M-009
			Water tanker6 KL capacity	hour	6.000	174.00	1044.00	P&M-060
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	456.33	16697.11	M-053
			Coarse sand 30 per cent	cum	18.300	110.69	2025.63	M-005
			Cement 10 per cent	tonne	9.010	4922.00	44347.22	M-081
			Cost of water	KL	36.000	243.23	8756.28	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				8167.22	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8983.94	
			Cost for 300 metre = a+b+c+d+e				98823.32	
			Rate per metre = (a+b+c+d+e)/300				329.41	
						say	**329.00**	
8.2		**B**	**Using Concrete Batching and Mixing Plant**					
			Unit = Running metre					
			Taking output = 300 metre length					
			Cement Concrete					
			Cement concrete of grade M20= 17.48 cum					
			Cement concrete of grade M10 for base = 23.18 cum					
			Total Concrete = **40.66 cum**					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Kerb casting machine @ 50 metres/hour for laying kerb and channel	hour	6.000	443.00	2658.00	P&M-029
			Concrete batching and mixing plant @ 15 cum/hr.	hour	2.700	1859.00	5019.30	P&M-003
			Water tanker6 KL capacity	hour	6.000	174.00	1044.00	P&M-060
			Tipper of 5.5 cum capacity	hour	6.000	1015.00	6090.00	P&M-048
			c) Material					
			Crushed stone aggregate 20 mm nominal size 60 per cent	cum	36.590	456.33	16697.11	M-053
			Coarse sand 30 per cent	cum	18.300	110.69	2025.63	M-004
			Cement 10 per cent	tonne	9.010	4922.00	44347.22	M-081
			Cost of water	KL	36.000	243.23	8756.28	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				8749.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9624.21	
			Cost for 300 meter = a+b+c+d+e				105866.36	
			Rate per metre = (a+b+c+d+e)/300				352.89	
						say	**353.00**	
8.3	**801**		**Printing New Letter and Figures of any Shade**					
			Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade					

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		(i)	**Hindi** (Matras commas and the like not to be measured and paid for Half letter shall be counted as half)					
			Details for 100 letters of 16 cm height i.e. 1600 cm					
			Unit = per cm height per letter					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Painter	day	2.000	312.00	624.00	L-18
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Material					
			Paint	Litre	0.700	214.82	150.37	M-131
			c) Overhead charges @ 0.1 on (a+b)				105.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				115.80	
			Cost for 1600 cm = a+b+c+d				1273.76	
			Rate per cm height per letter = (a+b+c+ d)/1600				0.80	
						say	**0.80**	
8.3		**(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					
			a) Labour					
			Mate	day	0.070	261.00	18.27	L-12
			Painter Ist class	day	1.250	312.00	390.00	L-18
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Material					
			Paint	Litre	0.500	214.82	107.41	M-131
			c) Overhead charges @ 0.1 on (a+b)				63.92	
			d) Contractor's profit @ 0.1 on (a+b+c)				70.31	
			Cost for 1600 cm = a+b+c+d				773.41	
			Rate per cm height per letter = (a+b+c +d)/1600				0.48	
						say	**0.48**	
8.4	**801**		**Retro-Reflectorised Traffic Signs**					
			Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = Each					
			Taking output = one traffic sign					
			i) Excavation for foundation	cum	0.216	249.00	53.78	Item No. 3.13 A
			ii) Cement concrete M15 grade	cum	0.120	3683.00	441.96	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	58.20	25.03	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			Mild steel angle iron 75 x 75 x 6 mm	kg	19.000	40.170	763.230	M-179 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable					
			Add 2 per cent of cost of angle iron towards cost of drilling holes, nuts, bolts etc.				15.26	
		(i)	90 cm equilateral triangle	sqm	0.350	7886.03	2760.11	M-061
			or					
		(ii)	60 cm equilateral triangle	sqm	0.156	7886.03	1230.22	M-061
			or					
		(iii)	60 cm circular	sqm	0.283	7886.03	2231.75	M-061

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			or					
		(iv)	80 mm x 60 mm rectangular	sqm	0.480	7886.03	3785.29	M-061
			or					
		(v)	60 cm x 45 cm rectangular	sqm	0.270	7886.03	2129.23	M-061
			or					
		(vi)	60 cm x 60 cm square	sqm	0.360	7886.03	2838.97	M-061
			or					
		(vii)	90 cm high octagon	sqm	0.672	7886.03	5299.41	M-061
			c) Machinery					
			Tractor-trolley	hour	0.010	518.00	5.18	P&M-053
		(i)	**90 cm equilateral triangle**					
			d) Overhead charges @ 0.1 on (a+b+c)				360.81	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				396.90	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4886.62	
						say	**4887.00**	
		(ii)	**60 cm equilateral triangle**					
			d) Overhead charges @ 0.1 on (a+b+c)				207.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				228.61	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				3035.45	
						say	**3035.00**	
		(iii)	**60 cm circular**					
			d) Overhead charges @ 0.1 on (a+b+c)				307.98	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				338.78	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4247.30	
						say	**4247.00**	
		(iv)	**80 mm x 60 mm rectangular**					
			d) Overhead charges @ 0.1 on (a+b+c)				463.33	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				509.67	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				6127.09	
						say	**6127.00**	
		(v)	**60 cm x 45 cm rectangular**					
			d) Overhead charges @ 0.1 on (a+b+c)				297.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				327.50	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4123.25	
						say	**4123.00**	
		(vi)	**60 cm x 60 cm square**					
			d) Overhead charges @ 0.1 on (a+b+c)				368.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				405.57	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				4982.04	
						say	**4982.00**	
		(vii)	**90 cm high octagon**					
			d) Overhead charges @ 0.1 on (a+b+c)				614.74	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				676.22	
			Rate per traffic sign = (i+ii+iii+a+b+c+d+e)				7959.18	
						say	**7959.00**	
		Note	1.Any one area of aluminium sheeting given at (i) to (vii) may be adopted as per site requirement and in accordance with IRC : 67					
			2.Rate for excavation, cement concrete M-15 and painting may be taken from respective chapters					
			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.					
8.5	**801**		**Direction and Place Identification Signs upto 0.9 sqm Size Board.**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = sqm					
			Taking output = 0.9 sqm					
			i) Excavation for foundation	cum	0.216	249.00	53.78	Item No. 3.13 A
			ii) Cement concrete M15 grade	cum	0.120	3683.00	441.96	Item 12.8 (A)
			iii) Painting angle iron post two coats	sqm	0.430	58.20	25.03	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.200	247.00	49.40	L-13
			b) Material					
			Mild steel angle iron 75 mm x 75 mm x 6 mm,2.85 metres long	kg	19.000	40.170	763.23	M-179 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size 0.9 sqm	sqm	0.900	7886.03	7097.43	M-061
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				157.21	
			c) Machinery					
			Tractor-trolley	hour	0.020	518.00	10.36	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				808.02	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				888.83	
			Cost for 0.9 sqm =I+ii+ii+ a+b+c+d+e				10297.86	
			Rate per sqm (for sign having area upto 0.9 sqm) = (I+ii+iii+a+b+c+d+e)/0.90				11442.06	
						say	**11442.00**	
		Note	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-15 and painting may be taken from respective chapters					
8.6	**801**		**Direction and Place Identification Signs with size more than 0.9 sqm size Board.**					
			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 with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing					
			Unit = sqm					
			Taking output = 1.50 sqm					
			i) Excavation for foundation	cum	0.430	249.00	107.07	Item No. 3.13 A
			ii) Cement concrete M15 grade	cum	0.240	3683.00	883.92	Item 12.8 (A)
			iii) Painting angle iron post 2 coats	sqm	0.860	58.20	50.05	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.300	247.00	74.10	L-13
			b) Material					
			Mild steel angle iron 75 mm x 75 mm x 6 mm, 2.85 metres long, 2 nos	kg	38.000	40.170	1526.46	M-179 /1000
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting	sqm	1.500	7886.03	11829.05	M-061

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Add 2 per cent of cost of materials for drilling holes, nuts, bolts, fabrication etc.				267.11	
			c) Machinery					
			Tractor-trolley	hour	0.020	518.00	10.36	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				1370.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1508.07	
			Cost for 1.5 sqm =I+ii+iii+ a+b+c+d+e				17629.76	
			Rate per sqm (for sign having area more than 0.9 sqm) = (i+ii+iii+a+b+c+d+e)/1.50				11753.17	
						say	**11753.00**	
		Note	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-15 and painting may be taken from respective chapters					
8.7	**802**		**Overhead Signs**					
			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					
		A	**Truss and Vertical Support**					
			Unit = tonne					
			Taking output = 1 tonne					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Blacksmith	day	2.000	330.00	660.00	L-02a
			Mazdoor including for handling & fixing at site.	day	4.000	247.00	988.00	L-13
			b) Material					
			Aluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	33263.33	34926.50	M-060
			Add 1 per cent on cost of material for nuts, bolts and drilling and welding consumables				349.26	
			Add 15 per cent on cost of material for fabrication of trusses as per approved design				5291.36	
			c) Machinery					
			Crane 3 tonne capacity	hour	3.000	510.00	1530.00	P&M-013
			Truck	hour	0.500	882.00	441.00	P&M-057
			d) Overhead charges @ 0.1 on (a+b+c)				4424.88	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4867.36	
			Rate per tonne = (a+b+c+d+e)				53541.01	
						say	**53541.00**	
8.7		**B**	**Aluminium Alloy Plate for Over Head Sign**					
			Unit = sqm					
			Taking output = 1 sqm					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Blacksmith	day	0.100	330.00	33.00	L-02a
			Mazdoor	day	0.150	247.00	37.05	L-13
			b) Material					
			Aluminium alloy plate,2 mm thick, fixed with high intensity grade sheeting vide clause 801.3	sqm	1.000	8315.84	8315.84	M-059
			Miscellaneous					
			Add 1 per cent of cost of labour for lifting arrangement, like ladders, pulleys, ropes etc				0.75	
			c) Overhead charges @ 0.1 on (a+b)				839.19	
			d) Contractor's profit @ 0.1 on (a+b+c)				923.10	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per sqm = (a+b+c+d)				10154.15	
						say	**10154.00**	
		Note	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.					
8.8	**803**		**Painting Two Coats on New Concrete Surfaces**					
			Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces					
			Unit = sqm					
			Taking output = 40 sqm					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Painter	day	2.000	312.00	624.00	L-18
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Material					
			Paint conforming to requirement of clause 803.3.	Litre	6.000	214.82	1288.92	M-132
			Add for scaffolding @ 1 percent of labour cost where required				9.02	
			c) Overhead charges @ 0.1 on (a+b)				220.03	
			d) Contractor's profit @ 0.1 on (a+b+c)				242.03	
			Cost for 40 sqm = a+b+c+d				2662.32	
			Rate per sqm = (a+b+c+d)/40				66.56	
						say	**67.00**	
8.9	**803**		**Painting on Steel Surfaces**					
			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					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Painter	day	0.450	312.00	140.40	L-18
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			Paint ready mixed approved brand.	Litre	1.250	214.82	268.53	M-131
			Add @ 1 per cent on cost of material for scaffolding				2.69	
			c) Overhead charges @ 0.1 on (a+b)				48.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				52.93	
			Cost for 10 sqm = a+b+c+d				582.24	
			Rate per sqm= (a+b+c+d)/10				58.22	
						say	**58.00**	
8.10	**803**		**Painting on Wood Surfaces**					
			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					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Painter	day	0.500	312.00	156.00	L-18
			Mazdoor	day	0.200	247.00	49.40	L-13
			b) Material					
			Paint ready mixed of approved brand.	Litre	1.500	214.82	322.23	M-131
			Add @ 1 per cent on cost of material for scaffolding				3.22	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.1 on (a+b)				53.87	
			d) Contractor's profit @ 0.1 on (a+b+c)				59.26	
			Cost for 10 sqm = a+b+c+d				651.81	
			Rate per sqm = (a+b+c+d)/10				65.18	
						say	**65.00**	
8.11	**803**		**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on New Work**					
			Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control					
		(i)	**Over 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.090	261.00	23.49	L-12
			Painter	day	0.550	312.00	171.60	L-18
			Mazdoor	day	1.550	247.00	382.85	L-13
			b) Material					
			Road marking Paint as per IS :164	Litre	1.480	214.82	317.93	M-132
			c) Overhead charges @ 0.1 on (a+b)				89.59	
			d) Contractor's profit @ 0.1 on (a+b+c)				98.55	
			Cost for 10 sqm = a+b+c+d				1084.01	
			Rate per sqm= (a+b+c+d)/10				108.40	
						say	**108.00**	
8.11		**(ii)**	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	261.00	18.27	L-12
			Painter	day	0.350	312.00	109.20	L-18
			Mazdoor	day	1.350	247.00	333.45	L-13
			b) Material					
			Road marking paint	Litre	1.480	214.82	317.93	M-132
			c) Overhead charges @ 0.1 on (a+b)				77.89	
			d) Contractor's profit @ 0.1 on (a+b+c)				85.67	
			Cost for 10 sqm = a+b+c+d				942.41	
			Rate per sqm = (a+b+c+d)/10				94.24	
						say	**94.00**	
8.12	**803**		**Painting Lines, Dashes, Arrows etc on Roads in Two Coats on Old Work**					
			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**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Painter Ist class	day	0.300	312.00	93.60	L-18
			Mazdoor	day	1.250	247.00	308.75	L-13
			b) Material					
			Road marking paint	Litre	0.900	214.82	193.34	M-132
			c) Overhead charges @ 0.1 on (a+b)				61.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				67.25	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 10 sqm = a+b+c+d				739.73	
			Rate per sqm = (a+b+c+d)/10				73.97	
						say	**74.00**	
8.12		**(ii)**	**Up to 10 cm in width**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.070	261.00	18.27	L-12
			Painter Ist class	day	0.350	312.00	109.20	L-18
			Mazdoor	day	1.350	247.00	333.45	L-13
			b) Material					
			Road marking Paint	Litre	0.900	214.82	193.34	M-132
			c) Overhead charges @ 0.1 on (a+b)				65.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				71.97	
			Cost for 10 sqm= a+b+c+d				791.65	
			Rate per sqm = (a+b+c+d)/10				79.17	
						say	**79.00**	
8.13	**803**		**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface**					
			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.					
			Unit = sqm					
			Taking output = 640 sqm					
			a) Labour					
			Mate	day	0.500	261.00	130.50	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Road marking machine @ 80 sqm per hour	hour	8.000	134.00	1072.00	P&M-043
			Tractor-trolley	hour	8.000	518.00	4144.00	P&M-053
			c) Material					
			Hot applied thermoplastic compound	Litre	2000.000	186.78	373560.00	M-118
			Reflectorising glass beads	kg	200.000	60.95	12190.00	M-152
			d) Overhead charges @ 0.1 on (a+b+c)				39159.05	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				43074.96	
			Cost for 640 sqm = a+b+c+d+e				473824.51	
			Rate per sqm = a+b+c+d+e)/640				740.35	
						say	**740.00**	
		Note	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.					
8.14	**804**		**Kilometre Stone**					
			Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc					
		(i)	**5th kilometre stone (precast)**					
			Unit = Nos.					
			Taking output = 6 Nos.					
			a) M-15 grade of concrete	cum	2.350	3683.00	8655.05	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	22.080	66.747	1473.77	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.680	249.00	418.32	Item No. 3.13 A

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Painting two coats on concrete surface	sqm	9.850	66.70	657.00	Item 8.8
			e) Lettering on km post (average 30 letters of 10 cm height each)	per cm per letter	1800.000	0.48	864.00	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.260	261.00	67.86	L-12
			Mason	day	0.600	330.00	198.00	L-11
			Mazdoor including loading/unloading	day	6.000	247.00	1482.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	518.00	3108.00	P&M-053
			h) Overhead charges @ 0.1 on (f+g)				485.59	
			i) Contractor's profit @ 0.1 on (f+g+h)				534.14	
			Cost for 6 Nos. 5th km stone = a+b+c+ d+e +f+g+h +i				17943.73	
			Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/ 6				2990.62	
						say	**2991.00**	
8.14		**(ii)**	**Ordinary kilometer stone (precast)**					
			Unit = Nos.					
			Taking output = 14 Nos.					
			a) M-15 grade of concrete	cum	3.770	3683.00	13884.91	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	26.320	66.747	1756.78	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	2.770	249.00	689.73	Item No. 3.13 A
			d) Painting two coats on concrete surface	sqm	11.410	66.70	761.05	Item 8.8
			e) Lettering on km post (average 12 letters of 10 cm height each)	per cm per letter	1680.000	0.48	806.40	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.320	261.00	83.52	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	7.000	247.00	1729.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	518.00	3108.00	P&M-053
			h) Overhead charges @ 0.1 on (f+g)				525.05	
			i) Contractor's profit @ 0.1 on (f+g+h)				577.56	
			Cost for 14 Nos. ordinary km stone = (a+b+ c+d+e+f+g+h+i)				24252.00	
			Rate for each ordinary km stone = (a+b+ c+d+e+f+g+h+j) /14				1732.29	
						say	**1732.00**	
8.14		**(iii)**	**Hectometer stone (precast)**					
			Unit = Nos.					
			Taking output = 33 Nos.					
			a) M-15 grade of concrete	cum	1.580	3683.00	5819.14	Item 12.8 (A)
			b) Steel reinforcement @ 5 kg per sqm	kg	66.000	66.747	4405.30	Item 13.6 /1000
			c) Excavation in soil for foundation	cum	1.390	249.00	346.11	Item No. 3.13 A
			d) Painting two coats on concrete surface	sqm	6.270	66.70	418.21	Item 8.8
			e) Lettering on km post (average 1 letter of 10 cm height each)	per cm per letter	330.000	0.48	158.40	Item 8.3
			Transportation and fixing					
			f) Labour					
			Mate	day	0.340	261.00	88.74	L-12
			Mason	day	1.500	330.00	495.00	L-11
			Mazdoor	day	7.000	247.00	1729.00	L-13
			g) Machinery					
			Tractor-trolley	hour	6.000	518.00	3108.00	P&M-053
			h) Overhead charges @ 0.1 on (f+g)				542.07	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			i) Contractor's profit @ 0.1 on (f+g+h)				596.28	
			Cost for 33 Nos. Hectometer stone = (a+b+c+d+e+f+ g+h+i)				17706.26	
			Rate for each Hectometer stone = (a+b +c +d+e+f+ g+h+i) / 33				536.55	
						say	**537.00**	
		Note	The rate for excavation, cement concrete, steel reinforcement, painting and lettering may be taken from respective chapters.					
8.15	**805**		**Road Delineators**					
			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.					
			Unit = Each					
			Taking output= 30 Nos.					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor for fixing	day	1.000	247.00	247.00	L-13
			b) Material					
			Cost of approved type of delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	30.000	744.17	22325.10	M-091
			Add 10 per cent cost of material for installation				2232.51	
			c) Overhead charges @ 0.1 on (a+b)				2481.51	
			d) Contractor's profit @ 0.1 on (a+b+c)				2729.66	
			Cost for 30 Nos. delineators = (a+b+ c+d)				30026.21	
			Rate per delineators = (a+b+c+d) /30				1000.87	
						say	**1001.00**	
		Note	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.					
8.16	**806**		**Boundary pillar**					
			Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting					
			Unit = Each					
			Taking output = 57 Nos.					
			a) M-15 grade of the boundary stone	cum	1.250	3683.00	4603.75	Item 12.8 (A)
			b) Steel reinforcement	kg	79.800	66.747	5326.41	Item 13.6 /1000
			c) Excavation in soil	cum	10.720	249.00	2669.28	Item No. 3.13 A
			d) Lettering, each 10 cm high	per letter per cm high	2280.000	0.48	1094.40	Item 8.3
			Transportation and fixing					
			e) Labour					
			Mate	day	0.570	261.00	148.77	L-12
			Mazdoor	day	14.250	247.00	3519.75	L-13
			f) Machinery					
			Tractor-trolley	hour	6.000	518.00	3108.00	P&M-053
			g) Material					
			Stone spall	cum	11.970	206.33	2469.77	M-008
			h) Overhead charges @ 0.1 on (e+f+g)				924.63	
			i) Contractor's profit @ 0.1 on (e+f+g+h)				1017.09	
			Cost for 57 Nos. boundary pillar = (a+b +c+d +e+ f+g+h+i)				24881.85	
			Rate for each boundary pillar = (a+b+c+d+e+ f+g+h+i)/57				436.52	
						say	**437.00**	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	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.					
8.17	807		**G.I Barbed Wire Fencing 1.2 Metre High**					
			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 807					
			Unit = per running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.090	261.00	23.49	L-12
			Blacksmith	day	0.250	330.00	82.50	L-02a
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Material					
			Barbed wire 335 metres length @ 9.38 kg per 100 metres	kg	31.420	52.81	1659.29	M-063
			MS angle iron 40 mm x 40mm x 6 mm, 23 metres in length @ 3.5 kg per metre	kg	80.500	40.170	3233.69	M-179 /1000
			Add for GI staple binding wire, drilling holes etc. @ 2 per cent of the cost of material				97.86	
			c) Painting					
			Applying two coats of painting on exposed surface of angle iron posts (Rate as per item no. 8.9)	sqm	2.110	58.20	122.80	Item 8.9
			d) Overhead charges @ 0.1 on (a+b)				559.08	
			e) Contractor's profit @ 0.1 on (a+b+d)				614.99	
			Cost for 30 metres fencing = a+b+c+d+e				6887.70	
			Rate per metre = (a+b+c+d+e)/30				229.59	
						say	**230.00**	
		Note	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.					
8.18	807		**G.I Barbed Wire Fencing 1.8 Metre High**					
			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 807					
			Unit = per running metre					
			Taking output = 30 metres					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Blacksmith	day	0.400	330.00	132.00	L-02a
			Mazdoor	day	2.500	247.00	617.50	L-13
			b) Material					
			Barbed wire 428 metres length @ 9.38 kg per 100 metres	kg	40.150	52.81	2120.32	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	40.170	6105.84	M-179 /1000
			Add for GI staple, binding wire, drilling holes etc. @ 2 per cent of the cost of material				164.52	
			c) Painting					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Applying two coats of painting on exposed surface of angle iron posts	sqm	3.960	58.20	230.47	Item 8.9
			d) Overhead charges @ 0.1 on (a+b)				917.15	
			e) Contractor's profit @ 0.1 on (a+b+d)				1008.87	
			Cost for 30 metres fencing = a+b+c+d+e				11327.99	
			Rate per metre fencing = (a+b+c +d+e)/30				377.60	
						say	**378.00**	
		Note	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	**Suggest ive**		**Fencing With Welded Steel Wire Fabric 75 mm x 50 mm**					
			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.					
			Unit = Running metre					
			Taking output = 30 m					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Welder	day	1.000	370.00	370.00	L-02b
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Material					
			i) Angle iron for posts 50 x 50 x 6 mm	kg	106.000	40.170	4258.02	M-179 /1000
			ii) Runner flat 50 x 5 mm	kg	26.000	40.170	1044.42	M-179 /1000
			iii) Welded steel wire fabric 75x50 mm mesh @ 4 kg/sqm,4 x 30 x 1.2 + 5 per cent wastage	kg	151.000	37.47	5657.97	M-191
			OR					
			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			
			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				274.01	
			c) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	8.000	58.20	465.60	Item 8.9
			e) Overhead charges @ 0.1 on (a+b+c)				1218.15	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				1339.97	
			Cost for 30 metre = a+b+c+d+e+f				15205.26	
			Rate per metre = (a+b+c+d+e+f)/30				506.84	
						say	**507.00**	
		Note	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					
8.20	**808**		**Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm**					
			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					
			Unit = Running metre					
			Taking output = 10metres					
			i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.296	249.00	322.70	Item No. 3.13 A

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			ii) Foundation concrete M-15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	3683.00	2386.58	Item 12.8 (A)
			iii) Painting of pipe	sqm	4.710	58.20	274.12	Item 8.9
			iv) Painting of channel section 6 nos,1.8 metres each 0.2 x 1.8 x 6 = 2.16	sqm	2.160	58.20	125.71	Item 8.9
			a) Labour (For fixing at site)					
			Mate	day	0.010	261.00	2.61	L-12
			Mazdoor	day	0.250	247.00	61.75	L-13
			Plumber	day	0.010	312.00	3.12	L-02c
			b) Material					
			Steel pipe 50 mm external dia as per IS:1239	metre	30.000	206.18	6185.40	M-175
			Medium weight steel channel (ISMC series) 100 mm x 50 mm,10.8 metres length @ 9.2 kg per metre	kg	99.360	40.170	3991.29	M-179 /1000
			Add for drilling holes @ 2 per cent of cost of channels				79.83	
			c) Machinery					
			Tractor-trolley	hour	0.040	518.00	20.72	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c+i+ii+iii+iv)				1345.38	
			e) Contractor's profit @ 0.1 on (a+b+c+d+i+ii+iii+iv)				1479.92	
			Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				16279.15	
			Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				1627.91	
						say	**1628.00**	
8.21	**808**		**Tubular Steel Railing on Precast RCC Posts, 1.2 m High Above Ground Level**					
			Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M20 grade RCC vertical posts1.8 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					
			Unit = Running metre					
			Taking output = 10metres					
			i) Excavation for foundation (6 Nos)6 x 0.6 x 0.6 x 0.6	cum	1.296	249.00	322.70	Item No. 3.13 A
			ii) Foundation concrete M - 15 grade PCC 6 x 0.6 x 0.6 x 0.3	cum	0.648	3683.00	2386.58	Item 12.8 (A)
			iii) RCC M - 20 for pre cast posts 6 nos of 1.8 metres each	cum	0.320	4484.00	1434.88	Item 14.1(A)
			iv) Painting of pipe	sqm	4.710	58.20	274.12	Item 8.9
			a) Labour					
			Mate	day	0.014	261.00	3.65	L-12
			Mazdoor	day	0.350	247.00	86.45	L-13
			Plumber	day	0.010	312.00	3.12	L-02c
			b) Material					
			Steel pipe 50 mm dia as per IS:1239	metre	30.000	206.18	6185.40	M-175
			c) Machinery					
			Tractor-trolley	hour	0.250	518.00	129.50	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				640.81	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				704.89	
			Cost for 10 metre =i+ii+iii+iv+ a+b+c+d+e				12172.12	
			Rate per metre = (i+ii+iii+iv+a+b+c+d+e)/10				1217.21	
						say	**1217.00**	
8.22	**809**		**Reinforced Cement Concrete Crash Barrier**					
			Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified					
			Unit = Linear metre					
			Taking output = 10 m					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		(i)	**a) M 20 grade concrete**					
			M 20 grade concrete	cum	3.000	4484.00	13452.00	Item 14.1(A)
			b) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			c) Material					
			HYSD steel reinforcement including dowel bars	tonne	0.280	43682.50	12231.10	M-082
			Pre-moulded asphalt filler board	sqm	0.320	900.90	288.29	M-144
			d) Overhead charges @ 0.1 on (b+c)				1277.68	
			e) Contractor's profit @ 0.1 on (b+c+d)				1405.45	
			Cost for 10 metre = a+b+c+d+e				28911.96	
			Rate per metre = (a+b+c+d+e)/10				2891.20	
						say	**2891.00**	
		Note	i) Excavation and backfilling are incidental to work and not to be measured separately.					
			ii) Rate for RCC M 20 may be taken from chapter on super structure.					
8.23	**810**		**Metal Beam Crash Barrier**					
	A		**Type - A, "W" : Metal Beam Crash Barrier**					
			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 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 150 x 75 x 5 mm, 330 mm long complete as per clause 810					
			Unit = Running metre					
			Taking output = 4.5 metre length					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Blacksmith	day	0.500	330.00	165.00	L-02a
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "W" beam section railing,4.5 m in length	kg	41.210	40.170	1655.41	M-179 /1000
			Channel post 150 x 75 x 5 mm,1.8 m long,3 Nos @ 16.4 kg per metre	kg	88.560	40.170	3557.46	M-179 /1000
			Spacer 150 x 75 x 5 mm channel 0.33 m long,3 Nos @ 16.4 kg per metre	kg	16.240	40.170	652.36	M-179 /1000
			Nuts and bolts	kg	20.000	55.53	1110.60	M-130
			Add 25 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				1743.96	
			d) Overhead charges @ 0.1 on (a+b+c)				919.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1011.92	
			Cost for 4.5 metre = a+b+c+d+e				11131.08	
			Rate per metre = (a+b+c+d+e)/4.5				2473.57	
						say	**2474.00**	
8.23		**B**	**Type - B, "THRIE" : Metal Beam Crash Barrier**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 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 150 x 75 x 5 mm, 546 mm long complete as per clause 810					
			Unit = Running metre					
			Taking output = 4.5 metre length					
			a) Labour					
			Mate	day	0.060	261.00	15.66	L-12
			Blacksmith	day	0.500	330.00	165.00	L-02a
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			c) Material					
			Corrugated sheet,3 mm thick, "Thrie" beam section railing,4.5 m in length	kg	72.940	43.29	3157.57	M-088
			Channel post 150 x 75 x 5 mm, 2 m long,3 Nos @ 16.4 kg per metre	kg	98.400	40.170	3952.73	M-179 /1000
			Spacer 150 x 75 x 5 mm channel 0.546 m long,3 Nos	kg	26.860	40.170	1078.97	M-179 /1000
			Nuts and bolts	kg	30.000	55.53	1665.90	M-130
			Add 15 per cent of the cost of material for fabrication, nuts, bolts and washers etc.)				1478.28	
			d) Overhead charges @ 0.1 on (a+b+c)				1181.29	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1299.42	
			Cost for 4.5 metre = a+b+c+d+e				14293.61	
			Rate per metre= (a+b+c+d+e)/4.5				3176.36	
						say	**3176.00**	
		Note	In the case of median crash barrier, 'W' metal beam or 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.					
8.24	**811**		**Road Traffic Signals electrically operated**					
		Note	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.					
8.25	**Suggest ive**		**Flexible Crash Barrier, Wire Rope Safety Barrier**					
			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 45^0 C 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.					
			Unit = Running metre					
			Taking output = 15 metre					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Blacksmith	day	1.000	330.00	330.00	L-02a
			b) Material					
			i) RS Joist 100 x 75 mm - 16.5 m @ 11.5 kg per metre	kg	190.000	40.170	7632.30	M-179 /1000
			ii) Struts - 2 Nos. for terminal posts,2 m long each 2 x 2 x 11.50	kg	46.000	40.170	1847.82	M-179 /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	40.170	7568.03	M-179 /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	39.89	2592.85	M-177
			Add 5 per cent of cost of material for drilling, gripping, fixing, fabrication and welding consumables				982.05	
			c) Painting					
			Applying 2 coats of painting on exposed surface	sqm	16.500	58.20	960.30	Item 8.9
			d) Machinery					
			Tractor-trolley	hour	0.250	518.00	129.50	P&M-053
			e) Overhead charges @ 0.1 on (a+b+d)				2160.79	
			f) Contractor's profit @ 0.1 on (a+b+d+e)				2376.87	
			Cost for 15 m = a+b+c+d+e+f				27105.82	
			Rate per m = (a+b+c+d+e+f)/15				1807.05	
						say	**1807.00**	
		Note	The items of excavations and cement concrete works will be measured and included separately as per the approved designs and drawings.					
8.26	**Suggest ive**		**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 envoirenment 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 vanes**					
			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	261.00	1.04	L-12
			Mazdoor	day	0.100	247.00	24.70	L-13
			b) Material					
			i) 25 mm steel pipe	metre	16.000	115.21	1843.36	M-174
			ii) MS sheet for 600 x 300 x 3 mm rectangular vane, one number @ 24kg/sqm	kg	4.320	40.170	173.53	M-179 /1000
			iii) MS sheet for 250 mm dia circular vane 3 mm thick,4 numbers @ 24 kg/sqm	kg	4.800	40.170	192.82	M-179 /1000
			Add 5 per cent cost of material for fabrication, welding, bending, nuts, bolts etc				110.49	
			c) Painting					
			Applying 2 coats of painting on exposed surface	sqm	1.830	58.20	106.51	Item 8.9
			d) Overhead charges @ 0.1 on (a+b)				234.59	
			e) Contractor's profit @ 0.1 on (a+b+d)				258.05	
			Rate per metre = a+b+c+d+e				2945.09	
						say	**2945.00**	
		Note	The items of excavation and cement concrete as per approved design to be measured and paid separately					
8.26		**C**	**Anti-glare screen with rectangular vane of MS sheet**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 45^0 C 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					
			Unit = Running metre					
			Taking output = 1.50 metre					
			a) Labour					
			Mate	day	0.004	261.00	1.04	L-12
			Mazdoor	day	0.100	247.00	24.70	L-13
			b) Material					
			i) Angle iron post,50 x 50 x 6 mm, length 2.35 m	kg	10.580	40.170	425.00	M-179 /1000
			ii) MS sheet 3 mm thick @ 24 kg/sqm	kg	9.000	40.170	361.53	M-179 /1000
			Add 5 percent of cost of material for fabrication,nuts,bolts etc				39.33	
			c) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			d) Painting					
			Applying 2 coats of painting	sqm	0.850	58.20	49.47	Item 8.9
			e) Overhead charges @ 0.1 on (a+b+c)				90.34	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				99.37	
			Cost for 1.5 m = a+b+c+d+e+f				1142.58	
			Rate per metre = (a+b+c+d+e+f)/1.50				761.72	
						say	**762.00**	
		Note	The items of excavation and cement concrete as per approved design to be measured and paid separately. Rate of painting has been analaysed separately in this chapter.					
8.27	**Suggest ive**		**Street Lighting**					
			Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 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.					
			Unit = Each					
			Taking output = one light					
			a) Labour					
			Mate	day	0.030	261.00	7.83	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			Electrician	day	0.250	312.00	78.00	L-02d
			b) Material					
			i) Steel circular hollow pole of standard specification for street lighting to mount light at 9 m height above road level	each	1.000	input	#VALUE!	M-171
			ii) Sodium vapour lamp	each	1.000	input	#VALUE!	M-168
			Add 5 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				#VALUE!	
			c) Painting					
			For Fixing in Median					
			Providing two coats of alluminium paint over steel circular hollow pipe with overhang on both sides	sqm	5.750	58.20	334.65	Item 8.9
			For fixing in Footpath					
			Providing two coats of alluminium paint over steel circular hollow pipe with overhang on one side	sqm	4.630	58.20	269.47	Item 8.9
		(i)	**For Fixing in Median**					
			d) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+d)				#VALUE!	
			Rate per light for fixing in Median= a+b+c+d+e				#VALUE!	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	#VALUE!	
		(ii)	**For fixing in Footpath**					
			Rate per light for Fixing in Footpath = a+b+c+d+e				#VALUE!	
						say	#VALUE!	
		Note	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.					
8.28	Suggestive		**Lighting on Bridges**					
			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					
			Unit = Each					
			Taking output = one light					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.400	247.00	98.80	L-13
			Electrician	day	0.200	312.00	62.40	L-02d
			b) Material					
			i) Steel circular hollow pole of standard specification for street lighting to mount light at 5 m above deck level	each	1.000	input	#VALUE!	M-170
			ii) Sodium vapour lamp 70 watt	each	1.000	input	#VALUE!	M-168
			Add 1 per cent of cost of material for holder, electric cable, insulation, ladder, scaffolding etc				#VALUE!	
			c) Painting					
			Providing two coats of alluminium paint over steel circular hollow pipe	sqm	2.760	58.20	160.63	Item 8.9
			d) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+d)				#VALUE!	
			Rate per light = a+b+c+d+e				#VALUE!	
						say	#VALUE!	
		Note	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.					
8.29	Suggestive		**Cable Duct Across the Road**					
			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.					
		Case(i)	**Single row for one utility service**					
			Unit = Running metre					
			Taking output = 20metres					
			a) Random Rubble masonry/Brick masonry in cement mortar 1:6 for head wall both side	cum	2.360	2358.00	5564.88	Item 12.7 (Addl.B)
			b) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			Mazdoor skilled	day	0.250	313.00	78.25	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	20.000	489.97	9799.40	M-151

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 20 m)	cum	7.200	82.52	594.14	M-009
			Collar for joints 300 mm dia	each	9.000	input	#VALUE!	M-083
			Cement mortar 1:2 for joints	cum	0.020	3644.00	72.88	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	0.500	518.00	259.00	P&M-053
			e) Overhead charges @ 0.1 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
			Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
						say	**#VALUE!**	
8.29		**Case(ii)**	**Double row for two utility services**					
			Unit = Running metre					
			Taking output = 20metres					
			a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	3.370	2358.00	7946.46	Item 12.7 (Addl.B)
			b) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			Mazdoor skilled	day	0.250	313.00	78.25	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	40.000	489.97	19598.80	M-151
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 40 m)	cum	14.400	82.52	1188.29	M-009
			Collar for joints 300 mm dia	each	18.000	input	#VALUE!	M-083
			Cement mortar 1:2 for joints	cum	0.040	3644.00	145.76	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	1.000	518.00	518.00	P&M-053
			e) Overhead charges @ 0.1 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
			Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
						say	**#VALUE!**	
8.29		**Case(iii)**	**Triple rRow for three utility services**					
			Unit = Running metre					
			Taking output = 20metres					
			a) Random Rubble brick/Brick masonry in cement mortar 1:6 for head wall both sides.	cum	4.380	2358.00	10328.04	Item 12.7 (Addl.B)
			b) Labour					
			Mate	day	0.160	261.00	41.76	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Mazdoor skilled	day	1.000	313.00	313.00	L-15
			c) Material					
			Reinforced Cement Concrete pipe 300 mm dia	metre	60.000	489.97	29398.20	M-151
			Granular soil with PI less than 6 for bedding and sides of pipe (0.6 x 0.6 x 60 m)	cum	21.600	82.52	1782.43	M-009
			Collar for joints 300 mm dia	each	27.000	input	#VALUE!	M-083
			Cement mortar 1:2 for joints	cum	0.060	3644.00	218.64	Item 12.6 (B)
			d) Machinery					
			Tractor-trolley	hour	1.500	518.00	777.00	P&M-053
			e) Overhead charges @ 0.1 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 20 metre = a+b+c+d+e+f				#VALUE!	
			Rate per metre = (a+b+c+d+e+f)/20				#VALUE!	
						say	**#VALUE!**	
		Note	1.Inspection chamber at both ends is the responsibility of the agency who is laying the duct. Hence not included.					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			2.The rates for stone masonry / brick masonry and cement mortar to be adopted from respective clauses.					
8.30	Suggestive		**Highway Patrolling and Traffic Aid Post**					
			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		**Items Related to Underpass/ Subway/ Overhead Bridge/ Overhead Foot Bridge**					
			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					
8.32	Suggestive		**Traffic Control System and Communication System**					
			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		**Gantry Mounted Variable Message Sign Board**					
			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					
		(i)	**Gantry Support System**					
			Unit = tonne					
			Taking output=1 tonne					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			Blacksmith	day	1.000	330.00	330.00	L-02a
			b) Material					
			Alluminium alloy/galvanised steel including 5 per cent wastage	tonne	1.050	33263.33	34926.50	M-060
			Add 15 per cent of cost of material for fabrication and erection.				5238.97	
			Add 1 per cent of cost of material for nuts, bolts and welding				349.26	
			c) Machinery					
			Truck 10 tonne	hour	1.000	882.00	882.00	P&M-057
			d) Overhead charges @ 0.1 on (a+b+c)				4225.21	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4647.73	
			Rate per tonne = a+b+c+d+e				51124.99	
						say	**51125.00**	
8.33		(ii)	**Message Display**					
			Message display board 6 sqm electronically operated with complete electronic fitments for flashing the pre-determined messages.					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			This is a specilised commercial product and the lumpsum rate including erection at site is required to be as certained 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 certained from the market at (ii) above					
8.34	**Suggest ive**		**Traffic Impact Attenuators at Abutments and Piers**					
		A	**With Scrap Tyres**					
			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.					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	1.500	247.00	370.50	L-13
			Blacksmith	day	0.250	330.00	82.50	L-02a
			b) Material					
			Scrap tyres of size 900 x 20	each	80.000	72.07	5765.60	M-161
			20 mm steel wire rope	kg	150.000	39.89	5983.50	M-176
			Add 1 per cent of cost of wire rope for clamps etc.				59.84	
			c) Machinery					
			Tractor-trolley	hour	3.000	518.00	1554.00	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				1383.68	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1522.05	
			Cost for 20 sqm = a+b+c+d+e				16742.55	
			Rate per sqm = (a+b+c+d+e)/20				837.13	
						say	**837.00**	
8.34		**B**	**Using Plastic/Steel Barrel, Filled with Sand**					
			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					
			Unit = sqm					
			Taking output = 20sqm					
			a) Labour					
			Mate	day	0.130	261.00	33.93	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Blacksmith	day	0.250	330.00	82.50	L-02a
			b) Material					
			Plastic barrels	each	50.000			
			or					
			Steel barrels	each	50.000	114.15	5707.50	M-172
			Sand	cum	8.000	110.69	885.52	M-004
			20 mm steel wire rope	kg	15.000	39.89	598.35	M-176
			Add 1 per cent of cost of wire rope for clamps etc.				5.98	
			c) Machinery					
			Tractor-trolley	hour	2.000	518.00	1036.00	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				909.08	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				999.99	
			Cost for 20 sqm = a+b+c+d+e				10999.85	
			Rate per sqm = (a+b+c+d+e)/20				549.99	
						say	**550.00**	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
8.34		C	**With HI - DRO cell Sandwich (Patented)**					
			(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					
			Unit = sqm					
			Taking output = 10sqm					
			a) Labour					
			Mate	day	0.100	261.00	26.10	L-12
			Mazdoor	day	2.500	247.00	617.50	L-13
			b) Material					
			Plastic tubes 50 cm dia,1.2 m high	each	40.000	input	#VALUE!	M-139
			Cost of water	KL	12.000	243.23	2918.76	M-189
			20 mm steel wire rope	kg	100.000	39.89	3989.00	M-176
			Add 1 per cent of cost of wire rope for clamps etc.				39.89	
			c) Machinery					
			Tractor-trolley	hour	2.000	518.00	1036.00	P&M-053
			Water tanker6 KL capacity	hour	2.000	174.00	348.00	P&M-060
			d) Overhead charges @ 0.1 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 10 sqm = a+b+c+d+e				#VALUE!	
			Rate per sqm = (a+b+c+d+e)/10				#VALUE!	
						say	**#VALUE!**	
8.35	Suggest ive		**Road Markers/Road Stud with micro prismatic Lens Reflector**					
			Providing and fixing of road stud 100x 100 mm, die-cast moulded from ASA (Acrylic strene acrylonitrite)High impact poly styrene or ABS body resistent to minimum support a load of 13635 Kg and Fitted with micro prismatic lence Reflecter installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per MORTH Letter NO. RW/NH/33023/10/97-DO-III dt. 11-06 97					
			Unit = Nos					
			Taking output = 50Nos					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Material					
			ASA (Acrylic strene acrylonitrite)High impact poly styrene or ABS body resistent .100X100mm t fitted with lense reflector	each	50.000	158.56	7928.00	M-062
			Add 10 per cent of cost of material for fixing and installation				792.80	
			c) Overhead charges @ 0.1 on (a+b)				897.82	
			d) Contractor's profit @ 0.1 on (a+b+c)				987.61	
			Cost for 50 studs = a+b+c+d				10863.67	
			Rate per studs = (a+b+c+d)/50				217.27	
						say	**217.00**	
8.36	Suggest ive		**Traffic Cone**					
			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					
			Unit = Running metre					
			Taking output = 68 Nos.					

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Material					
			Traffic cones with 150 mm reflective sleeve	each	68.000	input	#VALUE!	M-186
			c) Machinery					
			Tractor-trolley	hour	0.100	518.00	51.80	P&M-053
			d) Overhead charges @ 0.1 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 68 Nos. = a+b+c+d+e				#VALUE!	
			Rate per metre = (a+b+c+d+e)/68				#VALUE!	
						say	**#VALUE!**	
8.37	**Suggestive**		**Roadside Amenities**					
		A	**Rest areas**					
			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	**Parking areas and bus laybyes for trucks, buses and light vehicles**					
			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	**Lawn**					
			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**		**Rumble Strips**					
			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.					
			Unit = sqm					
			Taking output = 100 sqm (including gaps)					
			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**		**Policeman Umbrella**					
			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					
			Unit = each					
			Taking output = one number					
			Earthwork (Quantities of these items to be calculated as per approved design and cost added as per rates of these items given in chapter 3 and 13)	cum				
			Cement Concrete	cum				
			brick masonry or	cum				
			stone masonry	cum				
			Painting	sqm	2.500			
			a) Labour					
			Mate	day	0.090			
			Mazdoor	day	1.000			

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Blacksmith	day	1.000			
			Welder	day	0.250			
			b) Material					
			Steel pipe 100 mm dia	metre	3.500			
			Steel pipe 25 mm dia	metre	10.000			
			CGI sheets	kg	8.000			
			Add 25 per cent of cost of material for fabrication					
			Add 2 per cent of cost of material for welding consumables, J-hooks, washers etc.					
			c) Machinery					
			Tractor-trolley	hour	0.500			
			d) Overheads @ per cent on (a+b+c)					
			e) Contractors Profit@ per cent on (a+b+c+d)					
			Rate per policeman umbrella = a+b+c+d+e					
8.40	**suggestive**		**High Mast Pole Lighting at Interchanges and Flyovers**					
			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					
			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			**Toll Plaza**					
			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, intercomes, 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					

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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					
8.42			**Safety Devices and Signs in Construction Zones**					
			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:55-2001					
			Unit = each					
			Taking output = one sign post					
			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					
			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:55-2001 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	**suggesti ve**		**Portable Barricade in Construction Zone**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 45^0 C, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one steel portable barricade					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.250	247.00	61.75	L-13
			Painter	day	0.500	312.00	156.00	L-18
			Welder	day	0.250	370.00	92.50	L-02b
			b) Material					
			Angle iron 45 x 45 x 5 mm	kg	25.000	40.170	1004.25	M-179 /1000
			MS sheet 300 mm wide,2.5 m long and 2.6 mm thick	kg	15.000	40.170	602.55	M-179 /1000
			Paint	litre	0.500	214.82	107.41	M-131
			Add 2 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				32.14	
			c) Overhead charges @ 0.1 on (a+b)				206.18	
			d) Contractor's profit @ 0.1 on (a+b+c)				226.80	
			Rate per barricade = a+b+c+d				2494.80	
						say	**2495.00**	
8.44	**suggesti ve**		**Permanent Type Barricade in Construction Zone**					
		A	**With steel components**					
			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 45^0 C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	0.300	247.00	74.10	L-13
			Painter	day	0.600	312.00	187.20	L-18
			Welder	day	0.300	370.00	111.00	L-02b
			b) Material					
			Angle iron 50 x 50 x 5 mm,2 m long,2 Nos.	kg	15.000	40.170	602.55	M-179 /1000
			MS sheet of 12 SWG,3 Nos of 200 mm width and 4 m length	kg	50.000	40.170	2008.50	M-179 /1000
			Paint	litre	1.000	214.82	214.82	M-131
			Add 1 per cent of cost of steel for welding consumables, nuts & bolts and drilling holes				26.11	
			c) Overhead charges @ 0.1 on (a+b)				323.73	
			d) Contractor's profit @ 0.1 on (a+b+c)				356.11	
			Rate per barricade = a+b+c+d				3917.17	
						say	**3917.00**	
8.44		**B**	**With wooden components**					
			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 45^0 C, complete as per IRC:SP:55-2001					
			Unit = each					
			Taking output = one barricade					
			a) Labour					

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.050	261.00	13.05	L-12
			Mazdoor	day	0.300	247.00	74.10	L-13
			Painter	day	0.600	312.00	187.20	L-18
			Carpenter	day	0.600	330.00	198.00	L-04
			b) Material					
			Timber	cum	0.180	42694.18	7684.95	M-185
			Add 1 per cent of cost of timber for nuts & bolts, nails, etc.				76.85	
			c) Overhead charges @ 0.1 on (a+b)				823.42	
			d) Contractor's profit @ 0.1 on (a+b+c)				905.76	
			Rate per barricade = a+b+c+d				9963.32	
						say	**9963.00**	
8.44		**C**	**With bricks**					
			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					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Painter	day	1.000	312.00	312.00	L-18
			Mason	day	2.000	330.00	660.00	L-11
			b) Material					
			Brick	each	1800.000	6.247	11244.60	M-079
			Cement	kg	22.000	4.922	108.28	M-081 /1000
			Sand	cum	0.090	110.69	9.96	M-005
			Paint	litre	1.250	214.82	268.53	M-131
			c) Overhead charges @ 0.1 on (a+b)				1340.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				1474.77	
			Rate per barricade = a+b+c+d				16222.48	
			With Normal Bricks			**say**	**16222.00**	
8.44		**C**	**With FLY ASH Bricks**				**13846.00**	Sub_Analysis
8.45	**suggesti ve**		**Drum Delineator in Construction Zone**					
			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:55-2001					
			Unit = each					
			Taking output = one drum delineator					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.250	247.00	61.75	L-13
			Painter	day	0.250	312.00	78.00	L-18
			b) Material					
			Steel drum 300 mm dia 1.2 m high/empty bitumen drum	each	1.000	114.15	114.15	M-172
			Paint	litre	0.500	214.82	107.41	M-131
			c) Overhead charges @ 0.1 on (a+b)				36.65	
			d) Contractor's profit @ 0.1 on (a+b+c)				40.32	
			Rate per drum delineator = a+b+c+d				443.50	
						say	**444.00**	
8.46	**suggesti ve**		**Flagman**					

TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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					
			Unit = each					
			Taking output = one flagman					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Material					
			Flag of red color cloth 600 x 600 mm	each	1.000	48.65	48.65	M-099
			Wooden staff for fastening of flag 25 mm dia, one m long	each	1.000	26.52	26.52	M-196
			c) Overhead charges @ 0.1 on (a+b)				33.26	
			d) Contractor's profit @ 0.1 on (a+b+c)				36.59	
			Rate per flagman = a+b+c+d				402.46	
						say	**402.00**	

CHAPTER–9

PIPE CULVERTS

Chapter – 9

Pipe Culverts

Preamble:

1. Pipe culverts of size 1000 mm and 1200 mm dia in single row and double row which are generally used on roads, have been included. Only laying of 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.
2. In case of RCC culverts, rates for various items of work involved such as excavation backfilling, masonry, cement concrete etc. have been provided under respective clauses in the chapters on foundation, sub-structures, super-structures and river training and protection works in bridge section of this book.
3. Any river training and protection work like stone pitching, apron, rivetment, curtain wall etc. may be provided under the respective clauses included in Chapter 16 of bridge section.
4. The choice between first class bedding and cement cradle bedding will depend on particular situations and the approved design.
5. The jointing of pipes is proposed by collar joints.
6. Back filling up to 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.
7. Head walls and other ancillary works shall be costed under respective clauses.
8. The height of filling above the top of pipe shall not be less than 600 mm.

CHAPTER - 9

PIPE CULVERTS

Item No.	Description	Unit	Rate (₹)
9.1	**PCC 1:3:6 in Foundation** (Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	cum	2788.00
9.2	**Laying Reinforced Cement Concrete Pipe NP4/prestrssed concrete pipe on first class bedding in single row .** (Laying Reinforced cement concrete pipe NP4/prestrssed 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.)		
A	**1000 mm dia**	metre	3414.00
B	**1200 mm dia**	metre	4859.00
9.3	**Laying Reinforced Cement Concrete Pipe NP 4 /prestrssed concrete pipe on first class bedding in double row .** (Laying Reinforced cement concrete pipe NP4 /prestrssed 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 .)		
A	**1000 mm dia**	metre	6856.00
B	**1200 mm dia**	metre	9748.00

CHAPTER - 9
PIPE CULVERTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
9.1	408		**PCC 1:3:6 in Foundation**					
			Plain cement concrete 1:3:6 mix with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.640	261.00	167.04	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	15.000	247.00	3705.00	L-13
			b) Material					
			40mm Aggregate at site	cum	13.800	345.22	4764.04	M-055
			Sand at site	cum	6.900	110.69	763.76	M-005
			Cement at site	tonne	3.300	4922.00	16242.60	M-081
			Cost of water	KL	18.000	243.23	4378.14	M-189
			c) Machinery					
			Concrete mixer0.4/ 0.28 cum	hour	6.000	84.00	504.00	P&M-009
			Generator set 33 KVA	hour	6.000	531.00	3186.00	P&M-079
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			d) Overhead charges @ 0.1 on (a+b+c)				3456.26	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3801.88	
			Cost for 15 cum = a+b+c+d+e				41820.72	
			Rate per cum = (a+b+c+d+e)/15				2788.05	
						say	**2788.00**	
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
9.2	2900		**Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Single Row .**					
			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 .					
			Unit = metre					
			Taking output = 12.5 metres (5 pipes of 2.5 m length each)					
		A	**1000 mm dia**					
			a) Labour					
			Mate	day	0.180	261.00	46.98	L-12
			Mason	day	0.500	330.00	165.00	L-11
			Mazdoor	day	4.000	247.00	988.00	L-13
			b) Material					
			Sand at site	cum	0.070	110.69	7.75	M-005
			Cement at site	tonne	0.050	4922.00	246.10	M-081
			RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	12.500	2675.47	33443.38	M-149
			Granular material passing 5.6 mm sieve for bedding	cum	4.500	82.52	371.34	M-009
			c) Overhead charges @ 0.1 on (a+b)				3526.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				3879.54	
			Cost for 12.5 metres = a+b+c+d				42674.94	
			Rate per metre = (a+b+c+d)/12.5				3413.99	
						say	**3414.00**	
		Note	1. In case of cement craddle 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					
9.2		**B**	**1200 mm dia**					

PIPE CULVERTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.280	261.00	73.08	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	6.000	247.00	1482.00	L-13
			b) Material					
			Sand at site	cum	0.090	110.69	9.96	M-005
			Cement at site	tonne	0.070	4922.00	344.54	M-081
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	12.500	3803.69	47546.13	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	5.000	82.52	412.60	M-009
			c) Overhead charges @ 0.1 on (a+b)				5019.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				5521.81	
			Cost for 12.5 metres = a+b+c+d				60739.95	
			Rate per metre= (a+b+c+d)/12.5				4859.20	
						say	**4859.00**	
		Note	1. In case of cement craddle 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					
9.3	**2900**		**Laying Reinforced Cement Concrete Pipe NP4 / Prestressed Concrete Pipe on First Class Bedding in Double Row .**					
			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 .					
			Unit = metre					
			Taking output = 12.5 metres (10 pipes of 2.5 m length each in two rows.)					
		A	**1000 mm dia**					
			a) Labour					
			Mate	day	0.360	261.00	93.96	L-12
			Mason	day	1.000	330.00	330.00	L-11
			Mazdoor	day	8.000	247.00	1976.00	L-13
			b) Material					
			Sand at site	cum	0.140	110.69	15.50	M-005
			Cement at site	tonne	0.100	4922.00	492.20	M-081
			RCC pipe NP-4/prestressed concrete pipe including collar at site	metre	25.000	2675.47	66886.75	M-149
			Granular material passing 5.6 mm sieve for bedding	cum	12.500	82.52	1031.50	M-009
			c) Overhead charges @ 0.1 on (a+b)				7082.59	
			d) Contractor's profit @ 0.1 on (a+b+c)				7790.85	
			Cost for 12.5 metres = a+b+c+d				85699.35	
			Rate per metre = (a+b+c+d)/12.5				6855.95	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			**say**	**6856.00**	
			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					
9.3		**B**	**1200 mm dia**					
			a) Labour					

PIPE CULVERTS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.560	261.00	146.16	L-12
			Mason	day	2.000	330.00	660.00	L-11
			Mazdoor	day	12.000	247.00	2964.00	L-13
			b) Material					
			Sand at site	cum	0.180	110.69	19.92	M-005
			Cement at site	tonne	0.140	4922.00	689.08	M-081
			RCC pipe NP-4 /prestressed concrete pipe including collar at site	metre	25.000	3803.69	95092.25	M-150
			Granular material passing 5-6 mm sieve for class bedding	cum	13.750	82.52	1134.65	M-009
			c) Overhead charges @ 0.1 on (a+b)				10070.61	
			d) Contractor's profit @ 0.1 on (a+b+c)				11077.67	
			Cost for 12.5 metres = a+b+c+d				121854.34	
			Rate per metre= (a+b+c+d)/12.5				9748.35	
		Note	1. In case of cement craddle bedding, quantity of PCC M15 is to be calculated as per design and priced separately and added .			**say**	**9748.00**	
			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					

CHAPTER–10

MAINTENANCE OF ROADS

Chapter – 10

Maintenance of Roads

Preamble:

1. In the case of rain cuts, it has been assumed that some material cut by rain, approximately 25 per cent, will be available at site which can be retrieved and re-used and the balance 75 per cent is required to be provided as fresh material.
2. For making up earthen shoulder, 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 road, 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 tipper 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 items like slurry seal, fog spray, crack prevention courses, surface dressing for maintenance works have already been included in Chapter-5 and are not being repeated in this chapter.
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 lighting, railing, dividers, separators and under passes for pedestrians has been given in the "Report of the Committee on Norms for Maintenance of 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-16.

CHAPTER - 10
MAINTENANCE OF ROADS

Item No.	Description	Unit	Rate (₹)
10.1	**Restoration of Rain Cuts** (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	124.00
10.2	**Maintenance of Earthen Shoulder (filling with fresh soil)** (Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.)	sqm	85.00
10.3	**Maintenance of Earth Shoulder (stripping excess soil)** (Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor.)	sqm	29.00
10.4	**Filling Pot- holes and Patch Repairs with open - graded Premix surfacing, 20mm.** (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 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2.)	sqm	122.00
10.5	**Filling Pot- holes and Patch Repairs with - Bituminous concrete, 40mm. (**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.)		
(i)	**for grading I Material**	sqm	294.00
(ii)	**for grading II Material**	sqm	293.00
10.6	**Crack Filling** (Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.)	metre	3.70
10.7	**Dusting** (Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.)	sqm	0.37
10.8 A	**Fog Seal** (ref item 5.17)	sqm	36.20
B	**Crack Prevention courses.** (ref item 5.21)		
(i)	**Stress Absorbing Membrane (SAM) crack width less than 6 mm**	sqm	46.20
(ii)	**Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm**	sqm	57.00
(iii)	**Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 %**	sqm	75.00
(iv)	**Bitumen Impregnated Geotextile**	sqm	147.00
C	**Slurry Seal** (ref item 5.15)		
(i)	**5 mm thickness**	sqm	60.50
(ii)	**3 mm thickness**	sqm	42.30
(iii)	**1.5 mm thickness**	sqm	26.40
D	**Surface Dressing for maintance works.** (ref item 5.9)		
(i)	**19 mm nominal chipping size**	sqm	63.20
(ii)	**13 mm nominal size chipping**	sqm	54.80
10.9	**Repair of joint Grooves with Epoxy Mortar** Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete.)	metre	646.00
10.1	**Repair of old Joints Sealant** (Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material.)	metre	22.10
10.11	**Hill Side Drain Clearance** (Removal of earth from the choked hill side drain and disposing it on the valley side manually.)	metre	32.40
10.12	**Land Slide Clearance in soil** (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	110.00
10.13	**Land slide Clearance in Hard Rock Requiring Blasting** (Clearing of land slide in hard rock requiring blasting for 50% of the boulders and disposal of the same on the valley side.)	cum	303.00
10.14	**Snow Clearance on Roads with Dozer** (Snow clearance from road surface by a bull- dozer 165 Hp and disposing it on the valley side.)	cum	7.70
10.15	**Snow Clearance on Roads with Snow Blowers** (Snow clearance from road surface by a snow blower and disposing on the valley side.)	cum	#VALUE!

CHAPTER - 10
MAINTENANCE OF ROADS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
10.1	**3002**		**Restoration of Rain Cuts**					
			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					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Excavator1.0 cum bucket capacity @ 60 cum per hour	hour	0.130	1858.00	241.54	P&M-026
			Tipper (L is average lead in km for borrow earth)	tonne.km	12 x L	3.29	39.48	Lead =1 km & P&M-058
			Add 10 per cent of cost of carriage towards loading and unloading charges.				3.95	
			Plate compactor	hour	0.500	443.00	221.50	P&M-086
			c) Overhead charges @ 0.1 on (a+b)				102.13	
			d) Contractor's profit @ 0.1 on (a+b+c)				112.35	
			Cost for 10 cum = a+b+c+d				1235.83	
			Rate per cum = (a+b+c+d)/10				123.58	
						say	**124.00**	
		Note	Only 75 per cent 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 the rain cuts					
10.2	**3003**		**Maintenance of Earthen Shoulder (filling with fresh soil)**					
			Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.					
			Unit = sqm					
			Taking output = 100 sqm					
			Assuming average thickness of filling to be 150 mm					
			Quantity of fresh material = 15 cum					
			a) Labour					
			Mate	day	0.180	261.00	46.98	L-12
			Mazdoor	day	4.500	247.00	1111.50	L-13
			b) Machinery					
			Excavator1.0 cum bucket capacity @ 60 cum per hour	hour	0.250	1858.00	464.50	P&M-026
			Tipper (L is average lead in km for borrow earth)	tonne.km	24xL	3.29	78.96	Lead =1 km & P&M-058
			Add 10 per cent of cost of transportation to cover cost of loading and unloading				7.90	
			Plate compactor @ 25 sqm per hour	hour	12.000	443.00	5316.00	P&M-086
			c) Overhead charges @ 0.1 on (a+b)				702.58	
			d) Contractor's profit @ 0.1 on (a+b+c)				772.84	
			Cost for 100 sqm = a+b+c+d				8501.26	
			Rate per sqm = (a+b+c+d)100				85.01	
						say	**85.00**	
10.3	**3003**		**Maintenance of Earth Shoulder (stripping excess soil)**					
			Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor					
			Unit = sqm					
			Taking output = 100 sqm					
			Assuming average depth of stripping as 75 mm					
			Quantity of earth cutting involved = 7.5 cum					
			a) Labour					
			Mate	day	0.100	261.00	26.10	L-12
			Mazdoor	day	2.500	247.00	617.50	L-13

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Plate compactor @ 25 sqm per hour	hour	4.000	443.00	1772.00	P&M-086
			c) Overhead charges @ 0.1 on (a+b)				241.56	
			d) Contractor's profit @ 0.1 on (a+b+c)				265.72	
			Cost for 100 sqm = a+b+c+d				2922.88	
			Rate per sqm on = (a+b+c+d)100				29.23	
						say	**29.00**	
		Note	The earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal.					
10.4	**3004.2**		**Filling Pot-holes and Patch Repairs with open-Graded Premix surfacing, 20mm.**					
			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 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2					
			Unit = Sqm					
			Taking out put = 10250 sqm (205 cum)(405 tonne)					
			a) Labour					
			Mate	Day	3.760	261.00	981.36	L-12
			Mazdoor	Day	90.000	247.00	22230.00	L-13
			Mazdoor skilled	Day	4.000	313.00	1252.00	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			HMP 100-110 TPH Capacity	hour	6.000	39484.00	236904.00	P&M-022
			Tipper 10 tonnes capacity	hour	45.000	1015.00	45675.00	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	12.000	777.00	9324.00	P&M-044
			c) Material					
			Crushed stone aggregates nominal size 13.2mm @ 0.18 cum per 10 sqm	cum	184.500	549.26	101338.47	M-052
			Crushed stone aggregates nominal size 11.2mm @ 0.09 cum/10 sqm	cum	92.250	520.42	48008.75	M-051
			Bitumen 80/100 @ 14.6 kg per 10 sqm	tonne	14.970	31360.00	469459.20	M-075
			Bitumen emulsion for tack coat including vertical sides of pot hole.	tonne	2.460	37883.00	93192.18	M-077
			d) Overhead charges @ 0.1 on (a+b+c)				103110.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				113421.77	
			Cost for 10250 sqm = a+b+c+d+e				1247639.42	
			Rate per sqm = (a+b+c+d+e)/10250				121.72	
						say	**122.00**	
10.5	**3004.2**		**Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm.**					
			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					
			Unit = Sqm					
			Taking out put = 4900 sqm (196 cum)(450 Tonnes)					
			a) Labour					
			Mate	Day	2.920	261.00	762.12	L-12
			Mazdoor	Day	70.000	247.00	17290.00	L-13
			Mazdoor skilled	Day	3.000	313.00	939.00	L-15
			b) Machinery					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Air compressor 250 cfm	hour	6.000	457.00	2742.00	P&M-001
			HMP 100-110 TPH Capacity	hour	6.000	39484.00	236904.00	P&M-022
			Tipper 10 tonnes capacity	hour	45.000	1015.00	45675.00	P&M-048
			Smooth wheeled roller 8-10 tonnes	hour	12.000	777.00	9324.00	P&M-044
			c) Material					
			I) Bitumen	tonne	22.500	31360.00	705600.00	M-075
			ii) Bitumen emulsion for tack coat .	tonne	1.180	37883.00	44701.94	M-077
			iii) Aggregates					
			Grading I - 19mm (Nominal size)					
			20-10mm 35 per cent	cum	99.750	549.26	54788.69	M-045
			10-5 mm 23 per cent	cum	65.550	434.15	28458.53	M-025,M-040
			5mm and below 40 per cent	cum	114.000	101.67	11590.38	M-030
			Filler 2 per cent by weight of aggregate	tonne	8.620	3389.30	29215.77	M-188
			Add 5 per cent for wastage				1460.79	
			or					
			Grading-II 13mm (Nominal size)					
			13.2-10 mm 30 per cent	cum	85.500	549.26	46961.73	M-044
			10-5 mm 25 per cent	cum	71.250	434.15	30933.19	M-025
			5 mm and Below 43 per cent	cum	122.550	101.67	12459.66	M-030
			Filler 2 per cent	tonne	8.620	3389.30	29215.77	M-188
			Add 5 per cent for wastage				1460.79	
			Any one of the above alternatives of aggregate i.e. 19mm or 13mm nominal size may be adopted as per approved design.					
10.5		**(i)**	**for grading I Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				118945.22	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				130839.74	
			Cost for 4900 cum = a+b+c+d+e				1439237.18	
			Rate per cum = (a+b+c+d+e)/4900				293.72	
						say	**294.00**	
10.5		**(ii)**	**for grading II Material**					
			d) Overhead charges @ 0.1 on (a+b+c)				118496.92	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				130346.61	
			Cost for 4900 cum = a+b+c+d+e				1433812.72	
			Rate per cum = (a+b+c+d+e)/4900				292.61	
						say	**293.00**	
		Note	For detailed working of quantities of aggregates, refer item 5.8 of chapter 5					
10.6	**3004.3.3**		**Crack Filling**					
			Filling of crack using slow - curing bitumen emulsion and applying crusher dust in case crack are wider than 3mm.					
			Unit = Running Meter					
			Taking out put = 500m					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Material					
			Slow-curing bitumen emulsion	Kg	33.000	37.88	1250.14	M-077/1000
			Stone crusher dust	cum	0.020	89.38	1.79	M-021
			c) Overhead charges @ 0.1 on (a+b)				150.94	
			d) Contractor's profit @ 0.1 on (a+b+c)				166.03	
			Cost for 500sqm = a+b+c+d				1826.33	

MAINTENANCE OF ROADS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per meter = (a+b+c+d+e)/500				3.65	
						say	**3.70**	
10.7	**3004.4**		**Dusting**					
			Applying crusher dust to areas of road where bleeding of excess bitumen has occurred.					
			Unit = Sqm					
			Taking output = 3500 sqm					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Material					
			Stone crusher dust finer than 3mm with not more than 10 per cent passing 0.075 sieve.	cum	6.250	89.38	558.63	M-021
			c) Overhead charges @ 0.1 on (a+b)				107.35	
			d) Contractor's profit @ 0.1 on (a+b+c)				118.09	
			Cost for 3500sqm = a+b+c+d				1298.94	
			Rate per meter = (a+b+c+d)/3500				0.37	
						say	**0.37**	
10.8	**(A) 3004.3.2**		**Fog Seal**	sqm			36.20	Item 5.17
	(B) 3004.3.4		**Crack Prevention courses.**					
		(i)	Stress Absorbing Membrane (SAM) crack width less than 6 mm	sqm			46.20	Item 5.21 Case-I
		(ii)	Stress Absorbing Membrane (SAM) with crack width 6 mm to 9 mm	sqm			57.00	Item 5.21 Case-II
		(iii)	Stress Absorbing Membrane (SAM) crack width above 9 mm and cracked area above 50 per cent	sqm			75.00	Item 5.21 Case-III
		(iv)	Bitumen Impregnated Geotextile	sqm			147.00	Item 5.21 Case-IV
10.8	**(C) 3004.5**		**Slurry Seal**					
		(i)	5 mm thickness	sqm			60.50	Item 5.15 Case-I
		(ii)	3 mm thickness	sqm			42.30	Item 5.15 Case-II
		(iii)	1.5 mm thickness	sqm			26.40	Item 5.15 Case-III
10.8	**(D) 3004.6**		**Surface Dressing for maintenance works.**					
		(i)	19 mm nominal chipping size	sqm			63.20	Item 5.9 Case-I
		(ii)	13 mm nominal size chipping	sqm			54.80	Item 5.9 Case-II
			The above mentioned items have already been included in chapter 5.					
10.9	**3005.1**		**Repair of Joint Grooves with Epoxy Mortar**					
			Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			Chiseller	day	0.500	309.00	154.50	L-05
			b) Material					
			Epoxy primer	kg	2.500	11.43	28.58	M-097

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Epoxy compound with accessories for preparing epoxy mortar	kg	10.000	500.07	5000.70	M-095
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	457.00	22.85	P&M-001
			d) Overhead charges @ 0.1 on (a+b+c)				534.06	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				587.46	
			Cost for 10 metres = a+b+c+d+e				6462.08	
			Rate per metre = (a+b+c+d+e)/10				646.21	
						say	**646.00**	
10.10	**3005.2**		**Repair of old Joints Sealant**					
			Removal of existing sealant and re sealing of contraction, longitudinal or expansion joints in concrete pavement with fresh sealant material					
			Unit = running metre					
			Taking output = 10 metres					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Material					
			Primer	kg	0.250	11.84	2.96	M-146
			Sealant	kg	1.000	23.06	23.06	M-120
			c) Machinery					
			Air compressor 250 cfm for cleaning	hour	0.050	457.00	22.85	P&M-001
			d) Overhead charges @ 0.1 on (a+b+c)				18.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				20.11	
			Cost for 10 metres = a+b+c+d+e				221.20	
			Rate per metre = (a+b+c+d+e)/10				22.12	
						say	**22.10**	
10.11	**3000**		**Hill Side Drain Clearance**					
			Removal of earth from the choked hill side drain and disposing it on the valley side manually					
			Unit = running metre					
			Taking output = 10 metres					
			Assuming muck causing choking of drain to be 0.2 cum per metre, quantity of earth to be removed for 10 metres = 2 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Overhead charges @ 0.1 on (a+b)				26.79	
			c) Contractor's profit @ 0.1 on (a+b)				29.47	
			Cost for 10 metres = a+b+c				324.13	
			Rate per metre = (a+b+c)/10				32.41	
						say	**32.40**	
10.12	**3000**		**Land Slide Clearance in soil**					
			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					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Dozer 80 HP @ 60 cum per hour	hour	1.670	5313.00	8872.71	P&M-014
			c) Overhead charges @ 0.1 on (a+b)				913.02	
			d) Contractor's profit @ 0.1 on (a+b+c)				1004.32	
			Cost for 100 cum = a+b+c+d				11047.48	
			Rate per cum = (a+b+c+d)/100				110.47	
						say	**110.00**	
		Note	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**		**Landslide Clearance in Hard Rock Requiring Blasting**					
			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.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.090	261.00	23.49	L-12
			Mazdoor	day	1.500	247.00	370.50	L-13
			Driller	day	0.750	295.00	221.25	L-06
			Blaster	day	0.070	408.00	28.56	L-03
			b) Machinery					
			Dozer D 80 A-12,180 HP @ 60 cum per hour	hour	1.670	5313.00	8872.71	P&M-014
			Air compressor 250 cfm with two jack hammer	hour	2.500	457.00	1142.50	P&M-001
			c) Materials					
			Gelatine 80 per cent @ 35 kg per 100 cum	kg	17.500	799.42	13989.85	M-104
			Electric Detonators @ 1 Detonator for 2 Gelatine sticks of 125 gms each	each	70.000	5.63	393.91	M-094 /100
			c) Overhead charges @ 0.1 on (a+b)				2504.28	
			d) Contractor's profit @ 0.1 on (a+b+c)				2754.70	
			Cost for 100 cum = a+b+c+d+e				30301.75	
			Rate per cum = (a+b+c+d+e)/100				303.02	
						say	**303.00**	
		Note	Credit for the rock if found acceptable as construction material shall be afforded					
10.14	**3000**		**Snow Clearance on Roads with Dozer**					
			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					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Dozer D 80 A-12,180 HP @ 850 cum per hour	hour	5.880	5313.00	31240.44	P&M-014
			c) Overhead charges @ 0.1 on (a+b)				3175.53	
			d) Contractor's profit @ 0.1 on (a+b+c)				3493.09	
			Cost for 5000 cum = a+b+c+d				38423.94	
			Rate per cum = (a+b+c+d)/5000				7.68	
						say	**7.70**	

MAINTENANCE OF ROADS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		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					
10.15	**3000**		**Snow Clearance on Roads with Snow Blowers**					
			Snow clearance from road surface by a snow blower and disposing on the valley side.					
			Unit = cum					
			Taking output = 3600 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Snow blower equipment 140 HP @ 600 cum per hour	hour	6.000	input	#VALUE!	P&M-087
			c) Overhead charges @ 0.1 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 3600 cum (a+b+c+d)				#VALUE!	
			Rate per cum = (a+b+c+d)/3600				#VALUE!	
						say	**#VALUE!**	

PART - B
HORTICULTURE

CHAPTER–11

HORTICULTURE

Chapter – 11

Horticulture

Preamble:

1. The items of turfing with sods and seeding and mulching have been included in the chapter of earth work.
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

   Selection 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.
7. As grass and plantation need more care, one mate has been provided for every 10 mazdoors in case of horticulture.

CHAPTER - 11

HORTICULTURE

Item No.	Description	Unit	Rate (₹)
11.1	**Spreading of Sludge Farm Yard Manure or/and good Earth** (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	20.80
11.2	**Grassing with ' Doobs' Grass** (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.)		
(i)	**In rows 15 cm apart in either direction**	sqm	11.90
(ii)	**In rows 7.5 cm apart in either direction**	sqm	19.20
11.3	**Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod** (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	13.50
11.4	**Maintenance of Lawns or Turfing of Slopes** (Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc.)	sqm	334.00
11.5	**Turfing Lawns with Fine Grassing including Ploughing, Dressing** (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	20.90
11.6	**Maintenance of Lawns with Fine Grassing for the First Year**	sqm	256.00
11.7	**a) Planting Permanent Hedges including Digging of Trenches** (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.)	metre	365.00
(b)	**Maintenance of Hedge for one year**	metre	243.00
11.8	**a) Planting Flowering Plants and Shrubs in Central Verge**	km	95602.00
(b)	**Maintenance of Flowering Plants and Shrubs in Central Verge for one Year**	km	203698.00
11.9	**Planting of Trees and their Maintenance for one Year** (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 mannure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year.)	each	1071.00
11.10	**Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil** (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	19.20
11.11	**Supply at Site Well Decayed Farm Yard Manure** (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	883.00
11.12	**Supply at Site of Work/ Store - Deoiled Neem Cake** (Supply at site of work/ store- deoiled neem cake duly packed in used gunny bags.)	quintal	VALUE
11.13	**Supplying Sludge** (Supplying sludge duly stacked at site/ store.)	cum	VALUE
11.14	**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** (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.) **With Normal bricks**	each	1983.00
11.14	**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** (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.) **With FLY ASH bricks**	each	1680.00
11.15	**Edging with 2nd class Bricks, laid dry lengthwise (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) With Normal bricks**	metre	41.30
11.15	**Edging with 2nd class Bricks, laid dry lengthwise (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) With FLY ASH bricks**	metre	34.70

Item No.	Description	Unit	Rate (₹)
11.16	**Making Tree Guard 53 cm dia and 1.3 m high as per design from empty bitumen drum** (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	451.00
11.17	**Making Tree Guard 53 cm dia and 2 metres high as per design from empty bitumen drums** (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	896.00
11.18	**Wrought Iron and Mild Steel Welded Work (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	6962.00
11.19	**Tree Guard with MS Iron** (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 tree guard	1718.00
11.20	**Tree Guard with MS Angle Iron and Steel Wire** (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 wire3 mm dia welded and fabricated as per design in two halves bolted together.)	each tree guard	2304.00
11.21	**Compensatory Afforestation** (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	138253.00

CHAPTER-11

HORTICULTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
11.1	307		**Spreading of Sludge Farm Yard Manure or/and good Earth**					
			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)					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Overhead charges @ 0.1 on (a)				25.74	
			c) Contractor's profit @ 0.1 on (a+b)				28.32	
			Cost for 15 cum= a+b+c				311.50	
			Rate per cum = (a+b+c)/15				20.77	
						say	**20.80**	
11.2	307		**Grassing with ' Doobs' Grass**					
			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					
			Unit = sqm					
			Taking output = 100 sqm					
		(i)	**In rows 15 cm apart in either direction**					
			a) Labour					
			Mate	day	0.170	261.00	44.37	L-12
			Mazdoor for grassing	day	0.750	247.00	185.25	L-13
			Mazdoor for maintenance for 30 days	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	174.00	87.00	P&M-060
			c) Material					
			Doob grass	kg	100.000	4.20	420.00	M-112
			d) Overhead charges @ 0.1 on (a+b+c)				98.36	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				108.20	
			Cost for 100 sqm = a+b+c+d+e				1190.18	
			Rate per sqm= (a+b+c+d+e)/100				11.90	
						say	**11.90**	
11.2		(ii)	**In rows 7.5 cm apart in either direction**					
			a) Labour					
			Mate	day	0.220	261.00	57.42	L-12
			Mazdoor for grassing.	day	1.250	247.00	308.75	L-13
			for maintenance for 30 days	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Water tanker 6 KL capacity	hour	0.750	174.00	130.50	P&M-060

HORTICULTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Material					
			Doob grass	kg	200.000	4.20	840.00	M-112
			d) Overhead charges @ 0.1 on (a+b+c)				158.37	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				174.20	
			Cost for 100 sqm = a+b+c+d+e				1916.24	
			Rate per sqm = (a+b+c+d+e)/100				19.16	
						say	**19.20**	
		Note	In the case of horticulture one mate has been provided for every 10 mazdoors as maintenance of grass and plants require more care.					
11.3	**307**		**Making Lawns including Ploughing and Dragging with 'Swagha' Breaking of Clod**					
			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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.150	261.00	39.15	L-12
			Mazdoor for preparation of ground	day	0.500	247.00	123.50	L-13
			Mali for fetching doobs grass roots and grassing at 15 cm apart	day	1.000	309.00	309.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	174.00	87.00	P&M-060
			Tractor with filler	hour	0.010	518.00	5.18	P&M-053
			c) Material					
			Supply of farm yard manure at site of work	cum	0.180	729.73	131.35	M-167
			Fine grass	kg	100.000	4.20	420.00	M-113
			d) Overhead charges @ 0.1 on (a+b+c)				111.52	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				122.67	
			Cost for 100 sqm = a+b+c+d+e				1349.37	
			Rate per sqm = (a+b+c+d+e)/100				13.49	
						say	**13.50**	
11.4	**307**		**Maintenance of Lawns or Turfing of Slopes**					
			Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mali	day	10.000	309.00	3090.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	15.000	174.00	2610.00	P&M-060
			c) Material					
			Cost of water	KL	90.000	243.23	21890.70	M-189

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Overhead charges @ 0.1 on (a+b+c)				2759.07	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3034.98	
			Cost for 100 sqm = a+b+c+d+e				33384.75	
			Rate per sqm = (a+b+c+d+e)/100				333.85	
						say	**334.00**	
11.5	**307**		**Turfing Lawns with Fine Grassing including Ploughing, Dressing**					
			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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.250	261.00	65.25	L-12
			Mazdoor for preparation of ground	day	1.000	247.00	247.00	L-13
			Mali for fetching doobs grass roots hedges and grassing at 10 cm apart	day	1.500	309.00	463.50	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	174.00	87.00	P&M-060
			Tractor with tiller	hour	0.010	518.00	5.18	P&M-053
			c) Material					
			Supply of farm yard manure at site of work @ 0.6 cum per 100 sqm	cum	0.600	729.73	437.84	M-167
			Fine grass	kg	100.000	4.20	420.00	M-113
			d) Overhead charges @ 0.1 on (a+b+c)				172.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				189.83	
			Cost for 100 sqm = a+b+c+d+e				2088.18	
			Rate per sqm = (a+b+c+d+e)/100				20.88	
						say	**20.90**	
11.6	**307**		**Maintenance of Lawns with Fine Grassing for the First Year**					
			Maintenance of lawns with fine grassing for the first year including watering etc					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mali	day	10.000	309.00	3090.00	L-09
			b) Machinery					
			Water tanker6 KL capacity	hour	20.000	174.00	3480.00	P&M-060
			c) Material					
			Cost of water	KL	60.000	243.23	14593.80	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				2116.38	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2328.02	
			Cost for 100 sqm = a+b+c+d+e				25608.20	
			Rate per sqm = (a+b+c+d+e)/100				256.08	
						say	**256.00**	

HORTICULTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
11.7	307		**Planting and Maintaining of Permanent Hedges**					
		(a)	**Planting permanent hedges including digging of trenches**					
			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					
			Unit = Running metre					
			Taking output = 100metre					
			a) Labour					
			Mate	day	1.400	261.00	365.40	L-12
			Mazdoor for digging of trench 60 cm wide and 45 cm deep	day	10.000	247.00	2470.00	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	247.00	988.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	174.00	87.00	P&M-060
			c) Material					
			Cost of hedge plants 2 rows at 30 cm apart	each	2x340	32.44	22059.20	M-116
			Supply of farm yard manure at site of work	cum	4.670	729.73	3407.84	M-167
			Pesticide	kg	0.250	73.26	18.32	M-136
			Cost of water	KL	3.000	243.23	729.69	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				3012.54	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3313.80	
			Cost for 100 metres = a+b+c+d+e				36451.79	
			Rate per metre = a+b+c+d+e)/100				364.52	
						say	**365.00**	
		(b)	**Maintenance of hedge for one year**					
			Unit = Running metre					
			Taking output = 100 m					
			a) Labour					
			Mate	day	3.000	261.00	783.00	L-12
			Mazdoor	day	30.000	247.00	7410.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	5.000	174.00	870.00	P&M-060
			c) Material					
			Manure sludge/Farm yard manure	cum	2.000	729.73	1459.46	M-167
			Pesticide	kg	0.500	73.26	36.63	M-136
			Cost of water	KL	30.000	243.23	7296.90	M-189
			Cost of hedge plants @ 10 per cent casualty	each	68.000	32.44	2205.92	M-116
			d) Overhead charges @ 0.1 on (a+b+c)				2006.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2206.81	
			Cost for 100 metres = a+b+c+d+e				24274.91	
			Rate per metre = a+b+c+d+e)/100				242.75	
						say	**243.00**	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
11.8	307		**Planting and Maintaining of Flowering Plants and Shrubs**					
		(a)	**Planting flowering plants and shrubs in central verge**					
			Unit = Running metres 200 plants and 800 shrubs in two rows in one km length of road where width of verge is 3m and above.					
			Taking output = 1000 metres					
			a) Labour					
			Mate	day	1.200	261.00	313.20	L-12
			Mazdoor	day	12.000	247.00	2964.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	6.000	174.00	1044.00	P&M-060
			c) Material					
			Plants	each	200.000	32.44	6488.00	M-100
			Shrubs	each	800.000	16.21	12968.00	M-166
			Manure sludge/Farm yard manure	cum	63.640	729.73	46440.02	M-167
			Pesticide	kg	0.500	73.26	36.63	M-136
			Cost of water	KL	36.000	243.23	8756.28	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				7901.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8691.11	
			Rate per Km = (a+b+c+d+e)				95602.25	
						say	**95602.00**	
11.8		(b)	**Maintenance of flowering plants and shrubs in central verge for one year**					
			Unit = km					
			Taking output = one km					
			a) Labour					
			Mate	day	36.000	261.00	9396.00	L-12
			Mazdoor	day	365.000	247.00	90155.00	L-13
			b) Machinery					
			Water tanker 6 KL capacity	hour	90.000	174.00	15660.00	P&M-060
			c) Material					
			Manure Sludge / farm yard manure at site	cum	10.000	729.73	7297.30	M-167
			Cost of water	KL	180.000	243.23	43781.40	M-189
			Replacement of casualties @ 10 per cent					
			Plants	each	20.000	32.44	648.80	M-100
			Shrubs	each	80.000	16.21	1296.80	M-166
			Pesticides	kg	1.500	73.26	109.89	M-136
			d) Overhead charges @ 0.1 on (a+b+c)				16834.52	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18517.97	
			Rate per Km for one year = (a+b+c+d+e)				203697.68	
						say	**203698.00**	
11.9	307		**Planting of Trees and their Maintenance for one Year**					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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					
			Unit = Each					
			Taking output = 10 trees					
			a) Labour					
			Mate	day	1.700	261.00	443.70	L-12
			Mazdoor for planting	day	2.000	247.00	494.00	L-13
			Mazdoor for maintenance for one year	day	15.000	247.00	3705.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	2.000	174.00	348.00	P&M-060
			c) Material					
			Sapling 2 m high 25 mm dia	each	10.000	21.63	216.30	M-160
			Farm yard manure	cum	0.940	729.73	685.95	M-167
			Pesticide	kg	0.500	73.26	36.63	M-136
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				884.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				973.32	
			Cost for 10 trees = a+b+c+d+e				10706.49	
			Rate per trees = (a+b+c+d+e)/10				1070.65	
						say	**1071.00**	
11.10	**308**		**Renovation Lawns including, Weeding, Forking the Ground, Top Dressing with Forked Soil**					
			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					
			Unit = sqm					
			Taking output = 100 sqm					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Water tanker6 KL capacity	hour	0.500	174.00	87.00	P&M-060
			c) Material					
			Cost of water	KL	3.000	243.23	729.69	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				158.90	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				174.79	
			Cost for 100 sqm = a+b+c+d+e				1922.70	
			Rate per sqm = (a+b+c+d+e) / 100				19.23	
						say	**19.20**	
11.11	**308.2**		**Supply at Site Well Decayed Farm Yard Manure**					
			Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = cum					
			Taking output = one cum					
			a) Material					
			a) Cost of well decayed farm yard manure duly screened, loading, carriage, unloading and stacking at site	cum	1.000	729.73	729.73	M-167
			b) Overhead charges @ 0.1 on (a)				72.97	
			c) Contractor's profit @ 0.1 on (a+b)				80.27	
			Rate per cum = (a+b+c)				882.97	
							883.00	
11.12	**308.20**		**Supply at Site of Work/ Store-Deoiled Neem Cake**					
			Supply at site of work/ store-deoiled neem cake duly packed in used gunny bags					
			Unit = quintal					
			Taking output = one quintal					
			a) Cost, carriage, loading, unloading and stacking in store/site	quintal	1.000			
			b) Overheads @ per cent on (a)					
			c) Contractor's profit @ per cent on (a+b)					
			Rate per quintal = a+b+c				**VALUE**	
11.13	**308.2**		**Supplying Sludge**					
			Supplying sludge duly stacked at site/ store					
			Unit = cum					
			Taking output = one cum					
			a) Cost of sludge including carriage, loading, unloading and stacking at site	cum	1.000			
			b) Overheads @ per cent on (a)					
			c) Contractor's profit @ per cent on (a+b)					
			Rate per cum = a+b+c				**VALUE**	
11.14		**New**	**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**					
			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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mason	day	0.250	330.00	82.50	L-11
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			Brick 2nd class including carriage	each	230.000	6.247	1436.81	M-079
			Cement mortar 1:6	cum	0.025	1798.00	44.95	Item 12.6 (D)

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.1 on (a+b)				163.91	
			d) Contractor's profit @ 0.1 on (a+b+c)				180.30	
			Rate per tree Guard = a+b+c+d				1983.26	
			With Normal bricks			**say**	**1983.00**	
11.14			**With FLY ASH Bricks**				**1680.00**	***Sub_Analysis***
11.15		**New**	**Edging with 2nd Class Bricks, Laid Dry Lengthwise**					
			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					
			Unit = Metre					
			Taking output= 10 metres					
			a) Labour					
			Mate	day	0.002	261.00	0.52	L-12
			Mason	day	0.050	330.00	16.50	L-11
			Mazdoor	day	0.050	247.00	12.35	L-13
			b) Material					
			Brick 2nd class including carriage	each	50.000	6.247	312.35	M-079
			c) Overhead charges @ 0.1 on (a+b)				34.17	
			d) Contractor's profit @ 0.1 on (a+b+c)				37.59	
			Cost for 10 metre = a+b+c+d				413.48	
			Rate per metre = (a+b+c+d)/10				41.35	
			With Normal bricks			**say**	**41.30**	
11.15			**With FLY ASH Bricks**				**34.70**	***Sub_Analysis***
11.16		**New**	**Making Tree Guard 53 cm dia and 1.3 m High as per Design from Empty Bitumen Drums**					
			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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Blacksmith	day	0.150	330.00	49.50	L-02a
			Mazdoor	day	0.070	247.00	17.29	L-13
			b) Material					
			Empty bitumen drum	each	1.000	114.15	114.15	M-172
			MS sheet 50 x 0.5 mm	kg	0.650	40.170	26.11	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	22.000	7.30	160.60	M-158
			c) Overhead charges @ 0.1 on (a+b)				37.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				41.02	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate for each tree guard = a+b+c+d				451.17	
						say	**451.00**	
11.17		**New**	**Making Tree Guard 53 cm dia and 2 Metre High as per Design from Empty Bitumen Drums**					
			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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate		0.040	261.00	10.44	L-12
			Blacksmith	day	0.200	330.00	66.00	L-02a
			Mazdoor		0.200	247.00	49.40	L-13
			b) Material					
			Empty bitumen drum	each	1.500	114.15	171.23	M-172
			MS sheet50 x 0.5 mm	kg	0.650	40.170	26.11	M-179 /1000
			Rivets 6 mm dia and 10 mm in length	each	50.000	7.30	365.00	M-158
			MSplate30 x 3 mm	kg	1.300	40.170	52.22	M-179 /1000
			c) Overhead charges @ 0.1 on (a+b)				74.04	
			d) Contractor's profit @ 0.1 on (a+b+c)				81.44	
			Rate for each tree guard = a+b+c+d				895.88	
						say	**896.00**	
11.18		**New**	**Wrought Iron and Mild Steel Welded Work**					
			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					
			Unit = quintal					
			Taking output = one quintal					
			a) Labour					
			Mate	day	0.450	261.00	117.45	L-12
			Blacksmith/ welder for cutting to design and shape and jointing	day	2.000	330.00	660.00	L-02a
			Mazdoor for fixing and helper for Blacksmith/welder	day	2.500	247.00	617.50	L-13
			b) Material					
			Angle, tees, channels etc	quintal	1.050	4017.00	4217.85	M-179 /10
			Deduct the cost of scrap	quintal	0.050	-1339.00	(66.95)	M-179/10/3
			Add 5 per cent of cost of material for welding rods and other welding accessories				207.55	
			c) Overhead charges @ 0.1 on (a+b)				575.34	
			d) Contractor's profit @ 0.1 on (a+b+c)				632.87	
			Rate per quintal = a+b+c+d				6961.61	
						say	**6962.00**	

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
11.19		**New**	**Tree Guard with MS Iron**					
			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.					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Blacksmith	day	0.250	330.00	82.50	L-02a
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			MS iron 25 x 6 mm	kg	19.200	40.170	771.26	M-179 /1000
			MS iron 25 x 3 mm	kg	9.600	40.170	385.63	M-179 /1000
			Add 5 per cent of cost of material for riveting, bolting and welding accessories					
			c) Machinery					
			Tractor-trolley	hour	0.040	518.00	20.72	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.770	58.20	103.01	Item 8.9
			e) Overhead charges @ 0.1 on (a+b+c)				133.49	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				146.84	
			Rate per tree guard =a+b+c+d+e+f				1718.26	
						say	**1718.00**	
		Note	1 The items of excavation and concreting to be measured and paid separately as per design .					
			2 . Rate of painting may be adopted from the chapter as Traffic signs.					
11.20		**New**	**Tree Guard with MS Angle Iron and Steel Wire**					
			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 wire3 mm dia welded and fabricated as per design in two halves bolted together					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Blacksmith	day	0.250	330.00	82.50	L-02a
			Welder	day	0.250	370.00	92.50	L-02b
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			MS angle 30 x 30 x 3 mm	kg	13.500	40.170	542.30	M-179 /1000
			MS iron 25 x 3 mm	kg	18.000	40.170	723.06	M-179 /1000
			Steel wire 3 mm dia	kg	6.000	36.98	221.88	M-192

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Add 5 per cent of cost of material for riveting, bolting and welding accessories				74.36	
			c) Machinery					
			Tractor-trolley	hour	0.040	518.00	20.72	P&M-053
			d) Painting					
			Painting two coats including priming	sqm	1.500	58.20	87.30	Item 8.9
			e) Overhead charges @ 0.1 on (a+b+c)				183.21	
			f) Contractor's profit @ 0.1 on (a+b+c+e)				201.53	
			Rate per tree guard = a+b+c+d+e+f				2304.16	
						say	**2304.00**	
11.21		**New**	**Compensatory Afforestation**					
			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					
			Unit = Hectare					
			Taking output = one hectare					
			a) Labour					
			i) Planting					
			Mate	day	2.500	261.00	652.50	L-12
			Mazdoor	day	25.000	247.00	6175.00	L-13
			ii) For Maintenance for one year					
			Mate	day	5.000	261.00	1305.00	L-12
			Mazdoor	day	50.000	247.00	12350.00	L-13
			b) Machinery					
			Dozer 80 HP @ 1000 sqm/hour	hour	10.000	3150.00	31500.00	P&M-015
			Water tanker6 KL capacity (for planting)	hour	3.000	174.00	522.00	P&M-060
			Water tanker6 KL capacity (for maintenance)	hour	25.000	174.00	4350.00	P&M-060
			c) Material					
			Sapling 1 to 1.5 m high 2 cm dia stem	each	290.000	17.30	5018.16	M-160 x 0.8
			Add 10 per cent of sapling	each	29.000	17.30	501.82	M-160 x 0.8
			Decayed farm yard/sludge manure (planting)	cum	60.900	729.73	44440.56	M-167
			Decayed farm yard/sludge manure (maintenance)	cum	4.000	729.73	2918.92	M-167
			Pesticides for planting	kg	0.500	73.26	36.63	M-136
			Pesticides for maintenance	kg	1.500	73.26	109.89	M-136
			Cost of water	KL	18.000	243.23	4378.14	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				11425.86	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12568.45	
			Rate per hectare = a+b+c+d+e				138252.92	
						say	**138253.00**	
		Note	Cost of fencing to be provided as per size of plot and approved design, measured and paid separately					

PART - C
BRIDGE WORKS

C. Bridge Works

Basic Approach for the preparation of Standard Data Book

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

Description of items

The description of items is given briefly and linked with the relevant clause of the Ministry's Specifications for Road and Bridge Works, which may be referred for detailed description, provisions and interpretation.

Overhead Charges

The overhead charges include the following elements:

1. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
2. Office furniture, equipment and communications.
3. Expenditure on
    a) Corporate office of contractor
    b) Site supervision
    c) Documentation and "as built" drawings
4. Mobilisation / de-mobilisation of resources
5. Labour camps with minimum amenities and transportation to work sites
6. Light vehicles for site supervision including administrative and managerial requirements
7. Laboratory equipment and quality control including field and laboratory testing
8. Minor T&P and survey instruments and setting out work, including verification of line, dimensions, trial pits and bore holes, where required
9. Watch and ward
10. Traffic management during construction
11. Expenditure on safeguarding environment
12. Sundries
13. Financing Expenditure
14. Sales/Turn over tax
15. Work Insurance/compensation.

For the purpose of calculation of overhead charges, the bridge projects may be are categorized into three basic types depending upon width of carriageway, length of the bridge and the present cost.

Category 1 : Major Bridges including State of Art Bridges and Minor Bridges 25%

Category 2 : Minor Bridges included in the Road Package 20%

Category 3 : Rehabilitation of Bridges 30%

For the bridge having more than two lanes, equivalent length and cost can be adjusted accordingly.

Contractor's Profit

Contractor's profit has been taken uniformly as 10 percent, over the cost of items including overhead charges.

Basic Inputs

In the Standard Data book only basic inputs for material, labour and machinery/equipments are given. The rates for material and labour are to be obtained from local authorities for the area where the project is located.

Plant and Equipment

The usage/hire charges of machinery/equipment have been worked out based upon present cost of equipments, repairs, POL and operational charges as indicated in Chapter-17. These charges are applicable for base year 2001-2002. For subsequent years, these are required to be escalated depending upon the market situation.

In the analysis of rates, for any items of work, capacity of equipment with corresponding output has been indicated which is most common in use for estimation purpose. Seeing the volume of job, different capacity equipment with corresponding output as indicated in Chapter-17 can be provided for preparing the estimate.

Materials

The rates of material should include basic cost at crushing units, cost of carriage including loading and unloading and stacking of material at site of work and shall be determined through market enquiries.

Labour

For labour, the general classification is mazdoor for unskilled labour and mason/fitter/blacksmith etc. for skilled labour.

One mate has been provided for 25 labourers

Carriage of Materials

The unit for vehicle for carriage has been taken as under.

a) In hours where lead is defined including time required for loading and un-loading.

b) In tonne km where lead is variable. The loading and unloading for such cases are to be have been provided separately.

General

Bridge bearing and expansion joints are readymade items commercially produced by specialized firms and in certain cases using imported technology and parts. The rates of these items are obtained directly from different manufacturers approved by Ministry and shall be adopted after comparison.

Normal method of curing has been covered in the schedule. Analysis for steam curing has been included in the analysis of pre-cast concrete PSC beams.

The testing of materials and finished items of work is covered under overhead charges.

Traffic arrangements during construction are covered under overhead charges. Provision of a temporary division, where required shall be governed by Clause 112.3.

In the items for well foundation, provision for nominal island/temporary protection, deep islands/cofferdams with wooden ballies and sheet piles has been made.

For innovative type of structures like cable stayed bridges, suspension bridges, arch bridges, bow string girder bridges, erected by innovative techniques where erection stage is as important as the construction of bridge components in terms of input of machinery, manpower and materials, special analysis is called for.

For some of the items, certain size/specifications have been assumed. If size/specifications other than the same are adopted, corresponding modifications may be made in the inputs of analysis.

The item does not cover all components of bridge projects for all situations. There may be specialized items for specific cases, which need to be analysed keeping in view the basic approach.

Guide Bund

The items for the guide bund are excavation, embankment and protection works. The rates for these items may be taken from the respective chapters.

In case bridge construction works are to be done on wide and deep water channels in major rivers or in sea creeks etc., provision of floating barrages etc. for taking the construction materials and equipments inside water shall also be made separately.

Analysis for sinking of wells cover diameters from 6 m to 12 and Twin D Type of size 12 m x 6 m. For other shapes like rectangular or any other size, the rates of sinking may be worked out on pro-rata basis.

The lift for casting of concrete in well steining may be 2 to 2.5 m restricting the free fall of concrete to 1.5 m and concreting layer to 450 mm.

The Standard Data Book is for Department use only. It can not be produced in Court of Law as reference/authority and this is a privilege document.

CHAPTER–12

FOUNDATION

Chapter – 12

Foundation

Preamble:

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. The rock foundations are required to be prepared which has been analysed.
4. In case of rocks, excavation has been considered up to a depth of 3 m only.
5. Embedment of foundation in soft and hard rocks has been provided as required by the specifications.
6. Dewatering has been provided in excavation for foundation. In case dewatering is not required for a particular site condition, the same may be omitted.
7. Mixing of cement concrete has been considered both by using concrete mixer and batching plant. The rate can be adopted depending upon availability of equipment and as approved by the Engineer.
8. Concrete batching plant is generally placed within one km of the bridge site. In case of longer lead, transportation cost may be worked out based on tonne km.
9. The coarse and fine aggregate for cement concrete shall be as per IS:383.
10. Description of items has been given very briefly. Relevant clauses of MoRT&H Specifications may be referred for detailed specification.
11. The rate analysis for well foundation has been included for diameter varying from 6 m to 12 m. Well for twin D type has also been included.
12. Pneumatic sinking is a specialised job. All safety precaution as per IS:4138 are required to be taken. Medical supervision for such works is considered very essential. Depth of pneumatic sinking has been restricted to 30 m below normal water level.
13. Rate analysis for various type of piles like bored cast-in-situ, driven precast RCC pile and driven steel piles of H section have been included. If the steel casing in case of driven pile is required to be retained, the same is required to be priced separately.
14. Pile driving rigs including vibratory hammers are assumed to be self contained with power unit and necessary accessories required for driving.

15. The quantity of concrete which is required to be stripped off up to a minimum height of 600 mm above the designed top level of the pile has been taken into account in the rate analysis.
16. The amount indicated for testing of piles is for the base year 2001-2002. For subsequent years, these are required to be escalated depending upon market situation.
17. The leveling course below the pile cap is proposed with M 15 grade concrete.
18. Steel reinforcement for cement concrete works are required to be provided separately. The rate for the same has been analysed.
19. Appendix-4 of IRC: 78-2000 may be referred regarding precautions to be taken during sinking of wells.
20. In case of blasting during sinking of wells the inner face of the curb is required to be protected with the steel plates of thickness not less than 10 mm up to top level of well curb. For height above top of curb, the thickness of steel plate may be reduced to 6 mm. This extra height of steel lining should be limited to 3 m.
21. The concrete mix used in bottom plug shall have minimum cement content of 330 kg/cum and a slump of about 150 mm to permit easy flow of concrete through tremie to fill-up all cavities.
22. Necessary safety precautions shall be taken for excavation on open foundations for which guidance may be taken from IS: 3764.
23. A leveling course of 100 mm thickness in M 10 (1:3:6) shall be provided before laying open foundations.
24. In the case of open foundation, dewatering shall not be permitted from the time of placing of concrete up to 24 hours after placement.
25. In case of open foundations in rock, the trenches around the footing shall be filled-up with concrete of M 15 grade up to a level of 0.6 m for hard rock and 1.5 m for soft rock above the foundation level. The portion above this may be filled by boulders grouted with cement.
26. When there are two or more compartments in a well, the lower edge of the cutting edge of the middle stems of such wells shall be kept about 300 mm above that of outer stems to prevent rocking.
27. The well curb shall be in RCC of mix not leaner than M 25 grade with minimum steel reinforcement of 72 kg/cum excluding bond rods.
28. The top of the bottom plug shall be at least 300 mm above top of curb.
29. No dewatering shall be carried out within 7 days of casting of bottom plug.
30. In case of cement concrete piles, the minimum grade of concrete shall be M 35 with minimum cement content of 400 kg/cum.
31. The top of the pile shall project 50 mm into the pile cap and reinforcement of pile shall be fully anchored in pile cap.

32. The minimum thickness of pile cap should be at least 0.6 m or 1.5 times the diameter of the pile whichever is more.

33. Guidance for piles is to be obtained from IS: 2911.

34. Concrete in driven cast-in-situ piles shall be cast up to a minimum height of 600 mm above the designed top level of pipe, which shall be stripped off to obtain sound concrete either before final set or after 3 days.

CHAPTER - 12

FOUNDATION

Item No.	Description	Unit	Rate (₹)
12.1	**Excavation for Structures** (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**		
A	**Manual Means**		
(i)	**Upto 3 m depth**	cum	124.00
(ii)	**3 m to 6 m depth**	cum	159.00
(iii)	**Above 6 m depth**	cum	212.00
B	**Mechanical Means**		
(i)	**Depth upto 3 m**	cum	76.00
(ii)	**Depth 3 m to 6 m**	cum	86.00
(iii)	**Depth above 6m**	cum	105.00
II	**Ordinary rock (not requiring blasting)**		
A	**Manual Means**		
(i)	**Depth upto 3 m**	cum	177.00
B	**Mechanical Means**	cum	97.00
III	**Hard rock (requiring blasting)**		
A	**Manual Means**	cum	777.00
IV	**Hard rock (blasting prohibited)**		
A	**Mechanical Means**	cum	554.00
V	**Marshy soil**		
(i)	**upto 3 m depth**		
A	**Manual means**	cum	544.00
B	**Mechanical Means**	cum	177.00
VI	**Back Filling in Marshy Foundation Pits**	cum	414.00
12.2	**Filling Annular Space Around Footing in Rock** (Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per items 13.4.)		
12.3	**Sand Filling in Foundation Trenches as per Drawing & Technical Specification**	cum	217.00
12.4	**PCC 1:3:6 in Foundation** (Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.)	cum	3209.00
12.5	**Brick masonry work in cement mortar in foundation complete excluding pointing and plastering, as per drawing and technical specifications**		
	With Normal Bricks		
(i)	**Rate for Brick Work in C. M. 1:2 in foundation**	cum	6438.00
(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**	cum	6179.00
(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**	cum	6003.00
(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**	cum	5829.00
	With FLY ASH Bricks		
(i)	**Rate for Brick Work in C. M. 1:2 in foundation**	cum	5688.00
(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**	cum	5429.00
(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**	cum	5253.00
(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**	cum	5079.00
12.6 A	**Cement mortar 1:3 (1cement :3 sand)**	cum	2859.00
B	**Cement mortar 1:2 (1cement :2 sand)**	cum	3644.00
C	**Cement mortar 1:4 (1cement :4 sand)**	cum	2326.00
D	**Cement mortar 1:6 (1cement :6 sand)**	cum	1798.00
12.7	**Stone masonry work in cement mortar 1:3 in foundation complete as drawing and Technical Specification**		
(a)	**Square Rubble Coursed rubble masonry(first sort)**	cum	2910.00

Item No.	Description	Unit	Rate (₹)
(b)	Random Rubble Masonry	cum	2810.00
12.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications		
A	PCC Grade M15	cum	3683.00
B	PCC Grade M20	cum	3930.00
C	RCC Grade M20		
Case I	Using concrete mixer	cum	4028.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	3930.00
D	PCC Grade M25		
Case I	Using concrete Mixer	cum	4309.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4215.00
E	RCC Grade M25		
Case I	Using concrete Mixer	cum	4411.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4313.00
F	PCC Grade M30		
Case I	Using Concrete Mixer	cum	4341.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4242.00
G	RCC Grade M30		
Case I	Using Concrete Mixer	cum	4424.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4327.00
H	RCC Grade M35		
Case I	Using Concrete Mixer	cum	4509.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4413.00
12.9	Providing and constructing temporary island 16 m diameter for construction of well foundation for 8m dia. Well.		
A	Assuming depth of water 1.0 m and height of island to be 1.25m excluding Royalty	each	45825.00
B	Assuming depth of water 4.0 m and height of island 4.5 m excluding Royalty	each	259796.00
C	Providing and constructing one span service road to reach island location from one pier location to another pier location excluding Royalty	metre	3181.00
12.10	Providing and laying cutting edge of mild steel weighing 40 kg per metre for well foundation complete as per drawing and technical specification.	tonne	79387.00
12.11	Plain/Reinforced cement concrete, in well foundation complete as per drawing and technical specification		
A			
(i)	RCC M20 Grade		
Case I	Using concrete mixer	cum	4646.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4534.00
(ii)	RCC M25 Grade		
Case I	Using concrete mixer	cum	5102.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5394.00
(iii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	5254.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5565.00
B	Well steining		
(I)	PCC M15 Grade	cum	3896.00
(ii)	PCC M20 Grade	cum	4158.00
(iii)	RCC M20 Grade		
Case I	Using concrete mixer	cum	4259.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4156.00
(iv)	PCC M25 Grade		
Case I	Using concrete mixer	cum	4569.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4468.00

Item No.	Description	Unit	Rate (₹)
(v)	RCC M25 Grade		
Case I	Using concrete mixer	cum	4677.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4944.00
(vi)	PCC M30 Grade		
Case I	Using concrete mixer	cum	4613.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4509.00
(vii)	RCC M30 Grade		
Case I	Using concrete mixer	cum	4701.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4600.00
(viii)	RCC M35 Grade		
Case I	Using concrete mixer	cum	4816.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5102.00
(ix)	RCC M40 Grade		5168.00
C	Bottom Plug		
(i)	PCC Grade M20		
Case I	Using Concrete Mixer	cum	4690.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4367.00
(ii)	PCC Grade M25		
Case I	Using Concrete Mixer	cum	4942.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4617.00
(iii)	PCC Grade M30		
Case I	Using Concrete Mixer	cum	4985.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4662.00
(iv)	PCC Grade M35		
Case I	Using Concrete Mixer	cum	5084.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4759.00
D	Intermediate plug		
(I)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	4496.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4192.00
(ii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	4737.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4430.00
(iii)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	4777.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4473.00
E	Top plug		
(i)	Grade M15 PCC		
Case I	Using Concrete Mixer	cum	3542.00
(ii)	Grade M20 PCC		
Case I	Using Concrete Mixer	cum	3780.00
(iii)	Grade M25 PCC		
Case I	Using Concrete Mixer	cum	4154.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4062.00
(iv)	Grade M30 PCC		
Case I	Using Concrete Mixer	cum	4194.00
Case II	Using Batching Plant, Transit Mixer and Crane/concrete pump	cum	4099.00
F	Well cap		
(i)	RCC Grade M20		
Case I	Using concrete Mixer	cum	3985.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump	cum	3886.00

Item No.	Description	Unit	Rate (₹)
(ii)	**RCC Grade M25**		
Case I	**Using concrete Mixer**	cum	4411.00
Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**	cum	4315.00
(iii)	**RCC Grade M30**		
Case I	**Using Concrete Mixer**	cum	4424.00
Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**	cum	4327.00
(iv)	**RCC Grade M35**		
Case I	**Using Concrete Mixer**	cum	4509.00
Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**	cum	4413.00
(v)	**RCC M40 Grade**	cum	4874.00
12.12	**Sinking of 6 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth below bed level upto 3.0 M**	metre	6707.00
(ii)	**Beyond 3m upto 10m depth**	metre	9765.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	12896.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	24187.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	29024.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	57465.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	68957.00
B	**Clayey soil (6m dia. Well)**		
(i)	**Depth below bed level upto 3.0 M**	metre	9785.00
(ii)	**Beyond 3m upto 10m depth**	metre	22249.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	29383.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	30852.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	55116.00
b	**Add 5% of cost for dewatering of the cost, if required**	metre	72340.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	68895.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	130947.00
b	**Add 5% of cost for dewatering, if required**	metre	164994.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	157137.00
C	**Soft rock (6m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	25908.00
D	**Hard rock (6m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	32345.00
12.13	**Sinking of 7 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		

Item No.	Description	Unit	Rate (₹)
(i)	**Depth below bed level upto 3.0 M**	metre	10456.00
(ii)	**Beyond 3m upto 10m depth**	metre	14205.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	18761.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	35191.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour) .**	metre	42229.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	83609.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	100331.00
B	**Clayey soil (7m dia. Well)**		
(I)	**Depth below bed level upto 3.0 M**	metre	14205.00
(ii)	**Beyond 3m upto 10m depth**	metre	23303.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	30775.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	32314.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	57724.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	75763.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	72155.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	137145.00
b	**Add 5% of cost for dewatering, if required**	metre	172803.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**		164574.00
C	**Soft rock (7m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	24372.00
D	**Hard rock (7m dia well)**		
(i)	**Depth upto 3 m**	metre	38280.00
12.14	**Sinking of 8 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth below bed level upto 3.0 M**	metre	12824.00
(ii)	**Beyond 3m upto 10m depth**	metre	15896.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	20993.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	39377.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	47252.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	93553.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	112264.00
B	**Clayey soil (8m dia. Well)**		

Item No.	Description	Unit	Rate (₹)
(i)	**Depth upto 3.0 M**	metre	17375.00
(ii)	**Beyond 3m upto 10m depth**	metre	24051.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	31765.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	33353.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	59583.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	78203.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	74479.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	141563.00
b	**Add 5% of cost for dewatering, if required**	metre	178370.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	169876.00
C	**Soft rock (8m dia well)**		
(i)	**Depth in soft rock strata upto 3m**	metre	26809.00
D	**Hard rock (8m dia well)**		
(i)	**Depth in hard rock strata upto 3 m**	metre	38761.00
12.15	**Sinking of 9 m external diameter well (** other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth below bed level upto 3.0 M**	metre	12916.00
(ii)	**Beyond 3m upto 10m depth**	metre	17462.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	23062.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	43259.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	51911.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	102777.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	123332.00
B	**Clayey soil (9m dia. Well)**		
(i)	**Depth below bed level upto 3.0 M**	metre	18269.00
(ii)	**Beyond 3m upto 10m depth**	metre	25952.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	34275.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	35989.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	64291.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	84382.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	80364.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	152748.00

Item No.	Description	Unit	Rate (₹)
b	**Add 5% of cost for dewatering, if required**	metre	192463.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	183298.00
C	**Soft rock (9m dia well)**		
(i)	**Depth upto 3m**	metre	33929.00
D	**Hard rock (9m dia well)**		
(i)	**Depth of hard rock strata upto 3 m**	metre	45669.00
12.16	**Sinking of 10 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth below bed level upto 3.0 m**	metre	15771.00
(ii)	**Beyond 3m upto 10m depth**	metre	18363.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	24251.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	45489.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	54587.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	108075.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	129690.00
B	**Clayey soil (10m dia. Well)**		
(i)	**Depth below bed level upto 3.0 m**	metre	19689.00
ii)	**Beyond 3m upto 10m depth**	metre	25319.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	33437.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	35109.00
(iv)	**Beyond 20 m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	62717.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	82317.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	78397.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	149008.00
b	**Add 5% of cost for dewatering, if required**	metre	187750.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**		178810.00
C	**Soft rock (10m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	34652.00
D	**Hard rock (10m dia well)**		
(i)	**Depth of hard rock strata upto 3 m**	metre	53723.00
12.17	**Sinking of 11 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth from bed level upto 3.0 m**	metre	36934.00
(ii)	**Beyond 3m upto 10m depth**	metre	27238.00
(iii)	**Beyond 10m upto 20m**		

a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	35973.00
(iv)	**Beyond 20 m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	67475.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour**	metre	80971.00
(v)	**Beyond 30 m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	160312.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	192374.00
B	**Clayey soil (11 m dia. Well)**		
(i)	**Depth from bed level upto 3.0 m**	metre	32799.00
(ii)	**Beyond 3 m upto 10 m depth**	metre	51936.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	68591.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	72021.00
(iv)	**Beyond 20 m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	128659.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	168864.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	160823.00
(v)	**Beyond 30 m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	305674.00
b	**Add 5% of cost for dewatering, if required**	metre	385149.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	366809.00
C	**Soft rock (11m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	77601.00
D	**Hard rock (11m dia well)**		
(i)	**Depth of hard rock upto 3 m**	metre	121082.00
12.18	**Sinking of 12 m external diameter well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**I) Depth below bed level upto 3.0m**	metre	75303.00
(ii)	**Beyond 3m upto 10m depth**	metre	83396.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	110139.00
(iv)	**Beyond 20m upto 30m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	206592.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	247910.00
(v)	**Beyond 30m upto 40m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	490835.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	589002.00
B	**Clayey soil (12 m dia. Well)**		
(i)	**Depth below bed level upto 3.0 m**	metre	81039.00
(ii)	**Beyond 3m upto 10m depth**	metre	131821.00
(iii)	**Beyond 10 m upto 20 m**		

Item No.	Description	Unit	Rate (₹)
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	174094.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	182799.00
(iv)	**Beyond 20 m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	326555.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	428604.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	408194.00
(v)	**Beyond 30 m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	775848.00
b	**Add 5% of cost for dewatering, if required**	metre	977569.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	931018.00
C	**Soft rock (12m dia well)**		
(i)	**Depth of soft rock strata upto 3m**	metre	183721.00
D	**Hard rock (12m dia well)**		
(i)	**Depth of hard rock strata upto 3 m**	metre	282535.00
12.19	**Sinking of Twin D Type well** (other than pneumatic method of sinking) **through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**		
A	**Sandy soil**		
(i)	**Depth from bed level upto 3.0m**	metre	17133.00
(ii)	**Beyond 3m upto 10m depth**	metre	18415.00
(iii)	**Beyond 10m upto 20m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	24321.00
(iv)	**Beyond 20m upto 30m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	45618.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour .**	metre	54742.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	108379.00
b	**Add 20% of cost for Kentledge including supports, loading arrangement, and Labour etc.**	metre	130055.00
B	**Clayey soil (Twin D Type Well)**		
(i)	**Depth below bed level upto 3.0m**	metre	19854.00
(ii)	**Beyond 3m upto 10m depth**	metre	28142.00
(iii)	**Beyond 10 m upto 20 m**		
a	**Add 5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	37166.00
b	**Add for dewatering @ 5% of cost, if required.**	metre	39024.00
(iv)	**Beyond 20m upto 30 m**		
a	**Add 7.5% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	69714.00
b	**Add 5% of cost for dewatering on the cost, if required**	metre	91500.00
c	**Add 25% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	87143.00
(v)	**Beyond 30m upto 40 m**		
a	**Add 10% for every additional meter depth of sinking over the rate of sinking for the previous meter**	metre	165634.00
b	**Add 5% of cost for dewatering, if required**	metre	208698.00
c	**Add 20% of cost for Kentledge including supports, loading arrangement and Labour).**	metre	198760.00
C	**Soft rock (Twin D Type well)**		

Item No.	Description	Unit	Rate (₹)
(i)	**Depth of soft rock strata upto 3m**	metre	40884.00
D	**Hard rock (Twin D Type well)**		
(i)	**Depth of hard rock strata upto 3 m**	metre	56936.00
12.20	**Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plate forms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause1207.6 of MoRTH Specifications.**	cum	#VALUE!
12.21	**Sand filling in wells complete as per drawing and technical specifications**	cum	217.00
12.22	**Providing steel liner 10 mm thick for curbs and 6mm thick for steining of wells including fabricating and setting out as per detailed drawing**	tonne	72080.00
12.23	**Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m.** (Pile diameter-750 mm)		
	A) With using Concrete Mixer	metre	6799.00
	B) With using Batching Plant	metre	6656.00
12.24	**Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m.** (Pile diameter-1000 mm)		
	A) With using Concrete Mixer	metre	10899.00
	B) With using Batching Plant	metre	10644.00
12.25	**Bored cast-in-situ M35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m.** (Pile diameter-1200 mm)		
	A) With using Concrete Mixer	metre	13495.00
	B) With using Batching Plant	metre	13128.00
12.26	**Driven cast-in-place vertical M35 grade R.C.C. pile excluding reinforcement complete as per drawing and & Technical Specification** (Pile diameter - 750 mm)		
	A) With using Concrete Mixer	metre	4327.00
	B) With using Batching Plant	metre	4184.00
12.27	**Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Pile diameter - 1000 mm)		
	A) With using Concrete Mixer	metre	6792.00
	B) With using Batching Plant	metre	6537.00
12.28	**Driven cast-in-place vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Pile diameter - 1200 mm)		
	A) With using Concrete Mixer	metre	9939.00
	B) With using Batching Plant	metre	9572.00
12.29	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Pile Diameter=500 mm)	metre	#VALUE!
12.30	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Pile Diameter=750 mm)	metre	#VALUE!
12.31	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Pile Diameter=1000 mm)	metre	#VALUE!
12.32	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Size of pile - 300 mm x 300 mm)	metre	#VALUE!
12.33	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Size of pile - 500 mm x 500 mm)	metre	#VALUE!
12.34	**Driven precast vertical M35 grade R.C.C. piles excluding reinforcement complete as per drawing and & Technical Specification** (Size of pile - 750 mm x 750 mm)	metre	#VALUE!
12.35	**Driven vertical steel piles complete as per drawing and & Technical Specification** (Section of the pile - H Section steel column 400 x 250 mm (ISHB Series))	metre	#VALUE!
12.36	**Driven vertical steel piles complete as per drawing and & Technical Specification** (Section of the pile - H Section steel column 450 x 250 mm (ISHB Series))	metre	#VALUE!
12.37	**Pile load test on single vertical pile in accordance with IS:2911(Part-IV)**	tonne	VALUE

Summary of Rate Analysis

Item No.	Description	Unit	Rate (₹)
12.38	Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification		
A	RCC Grade M20		
(i)	Using Concrete Mixer	cum	4005.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	3934.00
B	RCC Grade M25		
(i)	Using concrete mixer.	cum	4413.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4393.00
C	RCC Grade M30		
(i)	Using concrete mixer.	cum	4465.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4394.00
D	RCC Grade M35		
(i)	Using concrete mixer.	cum	4573.00
(ii)	Using Batching Plant, Transit Mixer and Concrete Pump	cum	4553.00
12.39	Levelling course for Pile cap	cum	3274.00
12.40	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications	tonne	66599.00
12.41	Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification	tonne	67263.00

CHAPTER - 12

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.1	304		**Excavation for Structures**					
			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					
			Taking output = 10 cum					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			a) Labour					
			Mate	day	0.14	261.00	36.54	L-12
			Mazdoor	day	3.50	247.00	864.50	L-13
			b) Overhead charges @ 0.25 on (a)				225.26	
			c) Contractor's profit @ 0.1 on (a+b)				112.63	
			Cost for 10 cum = a+b+c				1238.93	
			Rate per cum = (a+b+c)/10				123.89	
						say	**124.00**	
		Note	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 12.1 excluding marshy soil.					
			3.The cost of shoring and shuttering, where needed, may be added @ 1 per cent on cost of excavation for open foundation.					
12.1 (I) A		(ii)	**Depth 3 m to 6 m**					
			a) Labour					
			Mate/Supervisor	day	0.18	261.00	46.98	L-12
			Mazdoor	day	4.50	247.00	1111.50	L-13
			b) Overhead charges @ 0.25 on (a)				289.62	
			c) Contractor's profit @ 0.1 on (a+b)				144.81	
			Cost for 10 cum = a+b+c				1592.91	
			Rate per cum = (a+b+c)/10				159.29	
						say	**159.00**	
		Note	Cost of dewatering may be added where required upto 15 per cent of labour cost. Assessment for dewatering shall be done as per actual ground conditions.					
12.1 (I) A		(iii)	**Depth above 6 m**					
			a) Labour					
			Mate/Supervisor	day	0.24	261.00	62.64	L-12
			Mazdoor	day	6.00	247.00	1482.00	L-13
			b) Overhead charges @ 0.25 on (a)				386.16	
			c) Contractor's profit @ 0.1 on (a+b)				193.08	
			Cost for 10 cum = a+b+c				2123.88	
			Rate per cum = (a+b+c)/10				212.39	
						say	**212.00**	
		Note	1. Cost of dewatering may be added where required upto 20 per cent of labour cost. Assessment for dewatering shall be made as per site conditions..					
12.1 (I)		B	**Mechanical Means**					
		(i)	**Depth upto 3 m**					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.32	261.00	83.52	L-12
			Mazdoor	day	8.00	247.00	1976.00	L-13

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				3301.88	
			d) Contractor's profit @ 0.1 on (a+b+c)				1650.94	
			Cost for 240 cum = a+b+c+d				18160.34	
			Rate per cum = (a+b+c+d)/240				75.67	
						say	**76.00**	
		Note	Cost of dewatering upto 5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		**(ii)**	**Depth 3 m to 6 m**					
			Unit = cum					
			Taking output = 210 cum					
			a) Labour					
			Mate	day	0.32	261.00	83.52	L-12
			Mazdoor	day	8.00	247.00	1976.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				3301.88	
			d) Contractor's profit @ 0.1 on (a+b+c)				1650.94	
			Cost for 210 cum = a+b+c+d				18160.34	
			Rate per cum = (a+b+c+d)/210				86.48	
						say	**86.00**	
		Note	Cost of dewatering upto 7.5 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions..					
12.1 (I) B		**(iii)**	**Depth above 6m**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.40	261.00	104.40	L-12
			Mazdoor	day	10.00	247.00	2470.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				3430.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				1715.30	
			Cost for 180 cum = a+b+c+d				18868.30	
			Rate per cum = (a+b+c+d)/180				104.82	
						say	**105.00**	
		Note	1. Cost of dewatering upto 10 per cent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2.Labour provided for excavation by mechanical means includes that required for trimming of bottom and side slopes.					
12.1		**II**	**Ordinary Rock (not requiring blasting)**					
		A	**Manual Means**					
		(i)	**Depth upto 3 m**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.20	261.00	52.20	L-12
			Mazdoor	day	5.00	247.00	1235.00	L-13
			b) Overhead charges @ 0.25 on (a)				321.80	
			c) Contractor's profit @ 0.1 on (a+b)				160.90	
			Cost for 10 cum = a+b+c				1769.90	
			Rate per cum = (a+b+c)/10				176.99	

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	**177.00**	
		Note	Cost of dewatering upto 10 per cent of labour cost may be added, where required. Assessment for dewatering shall be made as per site conditions.					
12.1(II)		**B**	**Mechanical Means**					
			Unit = cum					
			Taking output = 180 cum					
			a) Labour					
			Mate	day	0.24	261.00	62.64	L-12
			Mazdoor	day	6.00	247.00	1482.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity	hour	6.00	1858.00	11148.00	P&M-026
			c) Overhead charges @ 0.25 on (a+b)				3173.16	
			d) Contractor's profit @ 0.1 on (a+b+c)				1586.58	
			Cost for 180 cum = a+b+c+d				17452.38	
			Rate per cum = (a+b+c+d)/180				96.96	
						say	**97.00**	
		Note	1.Cost of dewatering upto 10 per cent of (a+b), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2.In case of rock, foundation beyond 3 m is not dug and hence not included.					
12.1		**III**	**Hard Rock (requiring blasting)**					
		A	**Manual Means**					
			Unit = cum					
			Taking output = 10 cum					
			a) Labour					
			Mate	day	0.35	261.00	91.35	L-12
			Driller	day	0.50	295.00	147.50	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	8.00	247.00	1976.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 jack hammer for drilling.	hour	1.00	457.00	457.00	P&M-001
			c) Material					
			Blasting Material	kg	3.50	799.42	2797.97	M-104
			Detonator electric	each	14.00	5.63	78.78	M-094/100
			d) Overhead charges @ 0.25 on (a+b+c)				1412.65	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				706.33	
			Cost for 10 cum = a+b+c+d+e				7769.58	
			Rate per cum = (a+b+c+d+e)/10				776.96	
						say	**777.00**	
		Note	Cost of dewatering @ 10 percent of (a+b) may be added, where required. Assessment for dewatering shall be made as per site conditions.					
12.1		**IV**	**Hard Rock (blasting prohibited)**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Mechanical Means**					
			a) Labour					
			Mate	day	0.20	261.00	52.20	L-12
			Mazdoor	day	5.00	247.00	1235.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with 2 leads of pneumatic breaker	hour	6.00	457.00	2742.00	P&M-001

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.25 on (a+b)				1007.30	
			d) Contractor's profit @ 0.1 on (a+b+c)				503.65	
			Cost for 10 cum = a+b+c+d				5540.15	
			Rate per cum = (a+b+c+d)/10				554.02	
						say	**554.00**	
		Note	1. Cost of dewatering upto10 per cent of (a+b), may be added, where required. Assessment for dewatering shall be made as per site conditions.					
			2.In case of rock, foundation beyond3 m is not dug and hence not included.					
12.1		**V**	**Marshy Soil**					
			Unit = cum					
			Taking output = 10 cum					
			Depth upto 3 m					
		A	**Manual means**					
			a) Labour					
			Mate/Supervisor	day	0.40	261.00	104.40	L-12
			Mazdoor	day	10.00	247.00	2470.00	L-13
			b) Machinery					
			Tractor-trolley for removal.	hour	2.67	518.00	1383.06	P&M-053
			c) Overhead charges @ 0.25 on (a+b)				989.37	
			d) Contractor's profit @ 0.1 on (a+b+c)				494.68	
			Cost for 10 cum = a+b+c+d				5441.51	
			Rate per cum = (a+b+c+d)/ 10				544.15	
						say	**544.00**	
		Note	1. Cost of dewatering @ 30 per cent of (a), may be added, where required Assessment for dewatering shall be made as per site conditions.					
			2. Shoring & strutting 15 per cent of (a), where required may be added					
			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 item12.1-IA (ii) to (iii) for ordinary soil					
12.1 (V)		**B**	**Mechanical Means**					
			a) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	2.00	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 1.0 cum bucket capacity @ 60 cum per hour	hour	0.17	1858.00	315.86	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	0.45	1015.00	456.75	P&M-048
			c) Overhead charges @ 0.25 on (a+b)				321.87	
			d) Contractor's profit @ 0.1 on (a+b+c)				160.94	
			Cost for 10 cum = a+b+c+d				1770.30	
			Rate per cum = (a+b+c+d)/10				177.03	
						say	**177.00**	
		Note	1. Cost of dewatering @ 20 percent of (a+b) may be added, where required					
			2. Shoring & strutting @ 10 percent of (a+b), where required may be added					
			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 12.1-IB (ii) to (iii) for ordinary soil					
		VI	**Back Filling in Marshy Foundation Pits**					
			Unit : Cum					

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking Output : 6 cum					
			a) Labour					
			Mate	day	0.12	261.00	31.32	L-12
			Mazdoor for dressing sides, bottom and backfilling	day	3.00	247.00	741.00	L-13
			b) Machinery					
			Tractor-trolley for transportation	hour	2.00	518.00	1036.00	P&M-053
			c) Overhead charges @ 0.25 on (a+b)				452.08	
			d) Contractor's profit @ 0.1 on (a+b+c)				226.04	
			Cost for 6 cum = a+b+c+d				2486.44	
			Rate per cum = (a+b+c+d)/6				414.41	
						say	**414.00**	
12.2	**304**		**Filling Annular Space Around Footing in Rock**					
			Unit = cum					
			Taking out put = 1 cum					
			Lean cement concrete 1:3:6 nominal mix. Rate may be taken as per item 12.4.				**VALUE**	
12.3	**304**		**Sand Filling in Foundation Trenches as per Drawing & Technical Specification**					
			Unit = cum					
			Taking output = 1 cum					
			a) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor	day	0.30	247.00	74.10	L-13
			b) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	67.66	81.19	M-006
			c) Overhead charges @ 0.25 on (a+b)				39.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				19.74	
			Rate per cum = a+b+c+d				217.12	
						say	**217.00**	
12.4	**2100**		**PCC 1:3:6 in Foundation**					
			Plain cement concrete 1:3:6 nominal mix in foundation with crushed stone aggregate 40 mm nominal size mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days.					
			Unit = cum					
			Taking output = 15 cum					
			a) Labour					
			Mate	day	0.64	261.00	167.04	L-12
			Mason	day	1.00	330.00	330.00	L-11
			Mazdoor	day	15.00	247.00	3705.00	L-13
			b) Material					
			40 mm Aggregate	cum	13.50	345.22	4660.47	M-055
			coarse Sand	cum	6.75	110.69	747.16	M-005
			cement	tonne	3.45	4922.00	16980.90	M-081
			Cost of water	KL	18.00	243.23	4378.14	M-189
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Water tanker 6 KL capacity	hour	2.00	174.00	348.00	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				8751.68	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4375.84	
			Cost for 15 cum = a+b+c+d+e				48134.22	
			Rate per cum = (a+b+c+d+e)/15				3208.95	
						say	**3209.00**	

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	Vibrator is a part of minor T & P which is already included in overhead charges of the contractor.					
12.5	1300		**Brick Masonry Work in Cement Mortar 1:3 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	6.247	15617.50	M-079
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	2859.00	3430.80	Item 12.6 (A)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				5617.40	
			d) Contractor's profit @ 0.1 on (a+b+c)				2808.70	
			Cost for 5 cum = a+b+c+d				30895.67	
			Rate per cum (a+b+c+d)/5				6179.13	
			With Normal Bricks			**say**	**6179.00**	
		(i)	**Rate for Brick Work in C. M. 1:2 in foundation**				**6438.00**	***Sub_Analysis***
		(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**				**6179.00**	
		(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**				**6003.00**	***Sub_Analysis***
		(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**				**5829.00**	***Sub_Analysis***
12.5			**With FLY ASH Bricks**					
		(i)	**Rate for Brick Work in C. M. 1:2 in foundation**				**5688.00**	***Sub_Analysis***
		(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**				**5429.00**	***Sub_Analysis***
		(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**				**5253.00**	***Sub_Analysis***
		(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**				**5079.00**	***Sub_Analysis***
12.6	Sub-analysis	(A)	**Cement Mortar 1:3 (1 cement : 3 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.51	4922.00	2510.22	M-081
			Sand	cum	1.05	110.69	116.22	M-005
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.90	247.00	222.30	L-13
			Total Material and Labour = (a+b)			**say**	**2859.00**	
	Sub-analysis (Addl.)	(B)	**Cement Mortar1:2 (1cement :2 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.672	4922.00	3307.58	M-081
			Sand	cum	0.933	110.69	103.31	M-005
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	0.90	247.00	222.30	L-13
			Total Material and Labour = (a+b)			**say**	**3644.00**	
	Sub-analysis (Addl.)	**(C)**	**Cement Mortar1:4 (1cement :4 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.40	4922.00	1968.80	M-081
			Sand	cum	1.12	110.69	123.97	M-005
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.90	247.00	222.30	L-13
			Total Material and Labour = (a+b)			**say**	**2326.00**	
	Sub-analysis (Addl.)	**(D)**	**Cement Mortar1:6 (1cement :6 sand)**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Materials					
			Cement	tonne	0.288	4922.00	1417.54	M-081
			Sand	cum	1.337	110.69	148.01	M-005
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.90	247.00	222.30	L-13
			Total Material and Labour = (a+b)			**say**	**1798.00**	
12.7	**1400**		**Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications.**					
			Unit = cum					
			Taking output = 5 cum					
	1405.4	**(A)**	**Square Rubble Coursed Rubble Masonry (first sort)**					
			a) Material					
			Stone	cum	5.50	191.13	1051.22	M-169
			Through and bond stone	each	35.00	10.61	371.35	M-182
			(35no.x0.24mx0.24mx0.39m = 0.79 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.50	2859.00	4288.50	Item 12.6 (A)
			b) Labour					
			Mate	day	0.66	261.00	172.26	L-12
			Mason	day	7.50	330.00	2475.00	L-11
			Mazdoor	day	9.00	247.00	2223.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				2645.33	
			d) Contractor's profit @ 0.1 on (a+b+c)				1322.67	
			Cost for 5 cum = a+b+c+d				14549.32	
			Rate per cum (a+b+c+d)/5				2909.86	
						say	**2910.00**	
	1405.3	**(B)**	**Random Rubble Masonry**					
			(coursed/uncoursed)					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Stone	cum	5.50	191.14	1051.27	M-148
			Through and bond stone	each	35.00	10.61	371.35	M-182
			(35nos.x0.24mx0.24mx0.39m = 0.79 cu.m)					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.55	2859.00	4431.45	Item 12.6 (A)
			b) Labour					
			Mate	day	0.62	261.00	161.82	L-12
			Mason	day	6.00	330.00	1980.00	L-11
			Mazdoor	day	9.00	247.00	2223.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				2554.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				1277.36	
			Cost for 5 cum = a+b+c+d				14050.97	
			Rate per cum (a+b+c+d)/5				2810.19	
						say	**2810.00**	
		Note	The labour already considered in cement mortar has been taken into account while proposing labour for masonry works.					
12.8	**1500, 1700 & 2100**		**Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.**					
		A	**PCC Grade M15**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.13	4922.00	20327.86	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	8.10	345.22	2796.28	M-055
			20 mm Aggregate	cum	4.05	456.33	1848.14	M-053
			10 mm Aggregate	cum	1.35	520.42	702.57	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 63 KVA	hour	6.00	1008.00	6048.00	P&M-019
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2576.00**			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				1545.34	
			e) Overhead charges @ 0.25 on (a+b+c+d)				10044.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5022.35	
			Cost for 15 cum = a+b+c+d+e+f				55245.85	
			Rate per cum = (a+b+c+d+e+f)/15				3683.06	
						say	**3683.00**	
		Note	Needle Vibrator is an item of minor T & P which is already included in overhead charges. Hence not added in rate analysis of cement concrete works.					
12.8		**B**	**PCC Grade M20**					
			Unit : cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.16	4922.00	25397.52	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			b) Labour					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2749.00**			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				1649.11	
			e) Overhead charges @ 0.25 on (a+b+c+d)				10719.19	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5359.59	
			Cost for 15 cum = a+b+c+d+e+f				58955.53	
			Rate per cum = (a+b+c+d+e+f)/15				3930.37	
						say	**3930.00**	
12.8		**C**	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.21	4922.00	25643.62	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2817.00**			
			d) Formwork @ 4 per cent on (a+b+c)				1689.87	
			e) Overhead charges @ 0.25 on (a+b+c+d)				10984.16	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5492.08	
			Cost for 15 cum = a+b+c+d+e+f				60412.89	
			Rate per cum = (a+b+c+d+e+f)/15				4027.53	
						say	**4028.00**	
12.8 C		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	41.66	4922.00	205050.52	M-081
			Coarse Sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 km, L-lead in km	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2748.00**			
			d) Formwork @ 4 per cent on cost of concrete i.e. cost of material, labour and machinery				13190.21	
			e) Overhead charges @ 0.25 on (a+b+c+d)				85736.39	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				42868.20	
			Cost for 120 cum = a+b+c+d+e+f				471550.15	
			Rate per cum = (a+b+c+d+e+f)/120				3929.58	
						say	**3930.00**	
12.8		**D**	**PCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	4922.00	29482.78	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3021.00**			
			d) Formwork @ 3.75 per cent of (a+b+c)				1699.23	
			e) Overhead charges @ 0.25 on (a+b+c+d)				11753.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5876.52	
			Cost for 15 cum = a+b+c+d+e+f				64641.69	
			Rate per cum = (a+b+c+d+e+f)/15				4309.45	
						say	**4309.00**	
12.8 D		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	47.95	4922.00	236009.90	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			40 mm Aggregate	cum	43.20	345.22	14913.50	M-055
			20 mm Aggregate	cum	43.20	456.33	19713.46	M-053
			10 mm Aggregate	cum	21.60	520.42	11241.07	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2955.00**			
			d) Formwork @ 3.75 per cent of cost of concrete i.e. cost of material, labour and machinery				13294.89	
			e) Overhead charges @ 0.25 on (a+b+c+d)				91956.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				45978.17	
			cost of 120 cum = a+b+c+d+e+f				505759.82	
			Rate per cum = (a+b+c+d+e+f)/120				4214.67	
						say	**4215.00**	
12.8		**E**	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.05	4922.00	29778.10	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3093.00**			
			d) Formwork @ 3.75 per cent of a+b+c.				1739.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				12030.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6015.07	
			cost of 15 cum = a+b+c+d+e+f				66165.76	
			Rate per cum (a+b+c+d+e+f)/15				4411.05	
						say	**4411.00**	
12.8 E		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Unit: cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.38	4922.00	238126.36	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Loader 1 cum capacity 1 cum	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3024.00**			
			d) Formwork @ 3.75 per cent on cost of concrete i.e. cost of material, labour and machinery				13606.17	
			e) Overhead charges @ 0.25 on (a+b+c+d)				94109.34	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				47054.67	
			cost of 120 cum = a+b+c+d+e+f				517601.37	
			Rate per cum (a+b+c+d+e+f)/120				4313.34	
						say	**4313.00**	
12.8		**F**	**PCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.08	4922.00	29925.76	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3051.00**			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				1601.46	
			e) Overhead charges @ 0.25 on (a+b+c+d)				11839.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				5919.67	
			cost of 15 cum = a+b+c+d+e+f				65116.34	
			Rate per cum (a+b+c+d+e+f)/15				4341.09	
						say	**4341.00**	
12.8 F		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit : cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	48.60	4922.00	239209.20	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			40 mm Aggregate	cum	43.20	345.22	14913.50	M-055
			20 mm Aggregate	cum	43.20	456.33	19713.46	M-053
			10 mm Aggregate	cum	21.60	520.42	11241.07	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**2982.00**			
			d) Formwork @ 3.50 per cent of cost of concrete i.e. cost of material, labour and machinery				12520.54	
			e) Overhead charges @ 0.25 on (a+b+c+d)				92562.57	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				46281.28	
			cost of 120 cum = a+b+c+d+e+f				509094.12	
			Rate per cum (a+b+c+d+e+f)/120				4242.45	
						say	**4242.00**	
12.8		**G**	**RCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	4922.00	30024.20	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3109.00**			
			d) Formwork @ 3.5 per cent on cost of concrete i.e. cost of material, labour and machinery				1631.96	
			e) Overhead charges @ 0.25 on (a+b+c+d)				12064.83	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6032.41	
			cost of 15 cum = a+b+c+d+e+f				66356.56	
			Rate per cum = (a+b+c+d+e+f)/15				4423.77	
						say	**4424.00**	
12.8 G		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.80	4922.00	240193.60	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3041.00**			
			d) Formwork @ 3.5 per cent of cost of concrete i.e. cost of material, labour and machinery				12771.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				94417.47	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				47208.73	
			cost of 120 cum = a+b+c+d+e+f				519296.08	
			Rate per cum (a+b+c+d+e+f)/120				4327.47	
						say	**4327.00**	
12.8		**H**	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	4922.00	31156.26	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3184.00**			
			d) Formwork @ 3 per cent on a+b+c				1432.78	
			e) Overhead charges @ 0.25 on (a+b+c+d)				12298.05	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6149.03	
			cost of 15 cum = a+b+c+d+e+f				67639.28	
			Rate per cum = (a+b+c+d+e+f)/15				4509.29	
						say	**4509.00**	
12.8 H		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit ; cum					
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	50.64	4922.00	249250.08	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3117.00**			
			d) Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				11218.65	
			e) Overhead charges @ 0.25 on (a+b+c+d)				96293.39	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				48146.69	
			cost of 120 cum = a+b+c+d+e+f				529613.64	
			Rate per cum = (a+b+c+d+e+f)/120				4413.45	
						say	**4413.00**	
		Note:	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			WELL FOUNDATION					
12.9	**1200**		**Providing and Constructing Temporary Island 16 m diameter for Construction of Well Foundation for 8m dia. Well.**					
		A	**Assuming depth of water 1.0 m and height of island to be 1.25 m excluding Royalty.**					
			Unit = 1 No					
			Taking output = 1 No.					
			a) Material					
			Earth (compacted)	cum	251.20	1.71	429.55	M-092
			Sand bags	each	750.00	5.52	4140.00	M-159
			b) Labour					
			Mate	day	0.40	261.00	104.40	L-12
			Mazdoor for filling sand bags, stitching and placing	day	15.00	247.00	3705.00	L-13
			c) Machinery					
			Crane with grab 1 cum capacity	hour	20.00	1217.00	24340.00	P&M-012
			Consumables @ 2.5 per cent of (c) above				608.50	
			d) Overhead charges @ 0.25 on (a+b+c)				8331.86	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4165.93	
			Rate per No. (a+b+c+d+e)				45825.25	
						say	**45825.00**	
		Note	It is assumed that earth will be available within the working space of crane with grab bucket.					
12.9		**B**	**Assuming depth of water 4.0 m and height of island 4.5 m excluding Royalty.**					
			Unit = 1No					
			Taking output = 1 No					
			a) Material					
			Earth (compacted)	cum	904.32	1.71	1546.39	M-092
			Sand bags	each	6000.00	5.52	33120.00	M-159
			Wooden ballies 8" Dia and 9 m long	each	95.00	513.12	48746.40	M-194
			Wooden ballies 2" Dia for bracing	metre	190.00	21.21	4029.90	M-193
			b) Labour					
			Mate	day	5.60	261.00	1461.60	L-12
			Mazdoor for piling 8" dia ballies for piling 8" dia ballies	day	18.00	247.00	4446.00	L-13
			Mazdoor for bracing with 2" dia ballies	day	12.00	247.00	2964.00	L-13
			Mazdoor for filling sand bags, stitching and placing	day	110.00	247.00	27170.00	L-13
			c) Machinery					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Crane with grab 1 cum capacity	hour	50.00	1217.00	60850.00	P&M-012
			Consumables and other arrangements for piling ballies @ 2.5 per cent of (a+b+c).				4608.36	
			d) Overhead charges @ 0.25 on (a+b+c)				47235.66	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				23617.83	
			Rate per No. (a+b+c+d+e)				259796.14	
						say	**259796.00**	
		Note	For other well diameters rate can be worked out on the basis of cross-sectional area of well. The diameter of the island shall be in the conformity with clause 1203.2 of MoRTH specifications.					
12.9	**C**		**Providing and constructing one span service road to reach island location from one pier location to another pier location excluding Royalty.**					
			Assuming span length 30 m, width of service road 10m and depth of water 1m					
			Unit = 1 meter					
			Taking output = 30 metre					
			a) Material					
			Earth	cum	450.00	1.71	769.50	M-092
			Sand bags	each	300.00	5.52	1656.00	M-159
			b) Labour					
			Mate	day	0.24	261.00	62.64	L-12
			Mazdoor for filling sand bags, stitching and placing	day	6.00	247.00	1482.00	L-13
			c) Machinery					
			Front end Loader 1 cum capacity	hour	27.00	1371.00	37017.00	P&M-017
			Tipper 5.5 cum capacity	hour	28.00	1015.00	28420.00	P&M-048
			d) Overhead charges @ 0.25 on (a+b+c)				17351.79	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				8675.89	
			Cost for 30 m (a+b+c+d+e)				95434.82	
			Rate per m (a+b+c+d+e)/30				3181.16	
						say	**3181.00**	
12.10	**1200 & 1900**		**Providing and Laying Cutting Edge of Mild Steel weighing 40 kg per metre for Well Foundation complete as per Drawing and Technical Specification.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			Structural steel in plates, angles, etc including 5 per cent wastage	tonne	1.05	40170.00	42178.50	M-179
			Nuts & bolts	Kg	20.00	55.53	1110.60	M-130
			b) Labour					
			(for cutting, bending, making holes, joining, welding and erecting in position)					
			Mate	day	1.32	261.00	344.52	L-12
			Fitter	day	5.50	336.00	1848.00	L-08
			Blacksmith	day	5.50	330.00	1815.00	L-02a
			Welder	day	5.50	370.00	2035.00	L-02b
			Mazdoor	day	16.50	247.00	4075.50	L-13
			Electrodes, cutting gas and other consumables @ 10 per cent of cost of (a) above				4328.91	
			c) Overhead charges @ 0.25 on (a+b)				14434.01	
			d) Contractor's profit @ 0.1 on (a+b+c)				7217.00	
			Rate per MT (a+b+c+d)				79387.04	
						say	**79387.00**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.11	**1200, 1500 & 1700**		**Plain/Reinforced Cement Concrete, in Well Foundation complete as per Drawing and Technical Specification.**					
			Unit = 1 cum					
			Taking output = 1 cum					
		A	**Well curb**					
		(i)	**RCC M20 Grade**					
			Same as for 12.8 (C) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2816.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				563.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				844.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				422.40	
			Rate perm (a+b+c+d+e+f)				4646.40	
						say	**4646.00**	
12.11 A (i)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2748.00	Item 12.8 (C)
			d) formwork @ 20 per cent of the cost of concrete				549.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				824.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				412.20	
			Rate perm (a+b+c+d+e+f)				4534.20	
						say	**4534.00**	
12.11 A		**(ii)**	**RCC M25 Grade**					
			Same as for 12.8 (E) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 3.75 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3092.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				618.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				927.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				463.80	
			Rate perm (a+b+c+d+e+f)				5101.80	
						say	**5102.00**	
12.11 A (ii)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3269.00	Item 12.8 (E)
			d) formwork @ 20 per cent of the cost of concrete				653.80	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				980.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				490.35	
			Rate perm (a+b+c+d+e+f)				5393.85	
						say	**5394.00**	
12.11 A		**(iii)**	**RCC M35 Grade**					
			Same as for 12.8 (H) except for formwork which shall be@ 20 per cent of the cost of concrete instead of 3.0 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3184.00	Item 12.8 (H) Case I
			d) formwork @ 20 per cent of the cost of concrete				636.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				955.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				477.60	
			Rate perm (a+b+c+d+e+f)				5253.60	
						say	**5254.00**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.11 A (iii)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3373.00	Item 12.8 (H)
			d) formwork @ 20 per cent of the cost of concrete				674.60	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				1011.90	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				505.95	
			Rate perm (a+b+c+d+e+f)				5565.45	
						say	**5565.00**	
		Note.	If curb concrete is carried out within steel liner, cost of formwork shall be excluded.					
12.11		B	**Well steining**					
		(I)	**PCC M15 Grade**					
			Same as for 12.8 (A) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2576.00	Item 12.8 (A)
			d) formwork @ 10 per cent of the cost of concrete				257.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				708.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				354.20	
			Rate perm (a+b+c+d+e+f)				3896.20	
						say	**3896.00**	
12.11 B		(ii)	**PCC M20 Grade**					
			Same as for 12.8 (B) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2749.00	Item 12.8 (B) PCC
			d) formwork @ 10 per cent of the cost of concrete				274.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				755.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				377.99	
			Rate perm (a+b+c+d+e+f)				4157.86	
						say	**4158.00**	
12.11 B		(iii)	**RCC M20 Grade**					
			Same as for 12.8 (C) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2816.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				281.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				774.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				387.20	
			Rate perm (a+b+c+d+e+f)				4259.20	
						say	**4259.00**	
12.11 B (iii)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2748.00	Item 12.8 (C)
			d) formwork @ 10 per cent of the cost of concrete				274.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				755.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				377.85	
			Rate perm (a+b+c+d+e+f)				4156.35	
						say	**4156.00**	
12.11 B		(iv)	**PCC M25 Grade**					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Same as for 12.8 (D) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 4 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3021.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				302.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				830.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				415.39	
			Rate perm (a+b+c+d+e+f)				4569.26	
						say	**4569.00**	
12.11 B (iv)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2954.00	Item 12.8 (D)
			d) formwork @ 10 per cent of the cost of concrete				295.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				812.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				406.18	
			Rate perm (a+b+c+d+e+f)				4467.93	
						say	**4468.00**	
'12.11 B		**(v)**	**RCC M25 Grade**					
			Same as for 12.8 (E) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3092.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				309.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				850.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				425.15	
			Rate perm (a+b+c+d+e+f)				4676.65	
						say	**4677.00**	
12.11 B (v)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3269.00	Item 12.8 (E)
			d) formwork @ 10 per cent of the cost of concrete				326.90	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				898.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				449.49	
			Rate perm (a+b+c+d+e+f)				4944.36	
						say	**4944.00**	
'12.11 B		**(vi)**	**PCC M30 Grade**					
			Same as for 12.8 (F) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3050.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				305.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				838.75	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				419.38	
			Rate perm (a+b+c+d+e+f)				4613.13	
						say	**4613.00**	
12.11 B (vi)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2981.00	Item 12.8 (F)
			d) formwork @ 10 per cent of the cost of concrete				298.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				819.78	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				409.89	
			Rate perm (a+b+c+d+e+f)				4508.76	
						say	**4509.00**	
'12.11 B		**(vii)**	**RCC M30 Grade**					
			Same as for 12.8 (G) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3.5 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3108.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				310.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				854.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				427.35	
			Rate perm (a+b+c+d+e+f)				4700.85	
						say	**4701.00**	
12.11 B (vii)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3041.00	Item 12.8 (G)
			d) formwork @ 10 per cent of the cost of concrete				304.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				836.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				418.14	
			Rate perm (a+b+c+d+e+f)				4599.51	
						say	**4600.00**	
'12.11 B		**(viii)**	**RCC M35 Grade**					
			Same as for 12.8 (H) except for formwork which shall be @ 10 per cent of the cost of concrete instead of 3 per cent.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3184.00	Item 12.8 (H) Case I
			d) formwork @ 10 per cent of the cost of concrete				318.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				875.60	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				437.80	
			Rate perm (a+b+c+d+e+f)				4815.80	
						say	**4816.00**	
12.11 B (viii)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3373.00	Item 12.8 (H)
			d) formwork @ 10 per cent of the cost of concrete				337.30	DIR used item
			e) Overhead charges @ 0.25 on (a+b+c+d)				927.58	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				463.79	
			Rate perm (a+b+c+d+e+f)				5101.66	
						say	**5102.00**	
'12.11 B		**(ix)**	**RCC M40 Grade**					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.60	4922.00	253975.20	M-081
			Coarse Sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	kg	206.00	152.14	31340.84	M-180
			b) Labour					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300xL	6.59	1977.00	Lead= 1 , P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3417.00**			
			d) Formwork @ 10 per cent on cost of concrete i.e. cost of material, labour and machinery				41002.09	
			e) Overhead charges @ 0.25 on (a+b+c+d)				112755.74	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				56377.87	
			cost of 120 cum = a+b+c+d+e+f				620156.56	
			Rate per cum = (a+b+c+d+e+f)/120				5167.97	
						say	**5168.00**	
12.11 C		**C**	**Bottom Plug**					
			Concrete to be placed using tremie pipe					
			Note: 10% extra cement to be added where under water concreting is involved					
		(i)	**PCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.55	4922.00	27317.10	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			Admixture	Kg	18.60	152.14	2829.80	M-180
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Light Crane 3 tonnes capacity for handling tremie pipe	hour	6.00	510.00	3060.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3270.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2114.87	
			d) Overhead charges @ 0.25 on (a+b+c)				12790.58	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6395.29	
			cost of 15 cum = a+b+c+d+e				70348.22	
			Rate per cum = (a+b+c+d+e)/15				4689.88	
						say	**4690.00**	
12.11 C (i)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit ; cum					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking Output = 120 cum					
			a) Material					
			Cement	tonne	44.40	4922.00	218536.80	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	Kg	148.80	152.14	22638.43	M-180
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3050.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				15243.53	
			d) Overhead charges @ 0.25 on (a+b+c)				95283.51	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				47641.75	
			cost of 120 cum = a+b+c+d+e				524059.28	
			Rate per cum = (a+b+c+d+e)/120				4367.16	
						say	**4367.00**	
12.11 C		**(ii)**	**PCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	4922.00	29482.78	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			Admixture	Kg	21.60	152.14	3286.22	M-180
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	510.00	3060.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3445.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2245.98	
			d) Overhead charges @ 0.25 on (a+b+c)				13478.89	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6739.44	
			cost of 15 cum = a+b+c+d+e				74133.87	
			Rate per cum = (a+b+c+d+e)/15				4942.26	
						say	**4942.00**	
12.11 C (ii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.88	4922.00	235665.36	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	Kg	172.80	152.14	26289.79	M-180
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3223.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				16282.52	
			d) Overhead charges @ 0.25 on (a+b+c)				100738.24	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				50369.12	
			cost of 120 cum = a+b+c+d+e				554060.29	
			Rate per cum = (a+b+c+d+e)/120				4617.17	
						say	**4617.00**	
'12.11 C		**(iii)**	**PCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.08	4922.00	29925.76	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			Admixture	Kg	21.60	152.14	3286.22	M-180
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	510.00	3060.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3475.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2268.13	
			d) Overhead charges @ 0.25 on (a+b+c)				13595.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6797.58	
			cost of 15 cum = a+b+c+d+e				74773.43	
			Rate per cum = (a+b+c+d+e)/15				4984.90	
						say	**4985.00**	
12.11 C (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.64	4922.00	239406.08	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	Kg	172.80	152.14	26289.79	M-180
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3254.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				16469.56	
			d) Overhead charges @ 0.25 on (a+b+c)				101720.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				50860.09	
			cost of 120 cum = a+b+c+d+e				559460.96	
			Rate per cum = (a+b+c+d+e)/120				4662.17	
						say	**4662.00**	
12.11 C		**(iv)**	**PCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.29	4922.00	30959.38	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm Aggregate	cum	5.40	345.22	1864.19	M-055
			20 mm Aggregate	cum	5.40	456.33	2464.18	M-053
			10 mm Aggregate	cum	2.70	520.42	1405.13	M-051
			Admixture	Kg	21.60	152.14	3286.22	M-180
			b) Labour					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Light Crane of 3 tonnes capacity for handling tremie pipe	hour	6.00	510.00	3060.00	P&M-013
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3544.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				2319.81	
			d) Overhead charges @ 0.25 on (a+b+c)				13866.49	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6933.25	
			cost of 15 cum = a+b+c+d+e				76265.71	
			Rate per cum = (a+b+c+d+e)/15				5084.38	
						say	**5084.00**	
12.11 C (iv)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.28	4922.00	247478.16	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	Kg	172.80	152.14	26289.79	M-180
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity, lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)		**3321.00**			
			Add 5 per cent of cost of material and labour towards cost of forming sump, protective bunds, chiselling and making arrangements for under water concreting with tremie pipe.				16873.16	
			d) Overhead charges @ 0.25 on (a+b+c)				103839.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				51919.55	
			cost of 120 cum = a+b+c+d+e				571115.02	
			Rate per cum = (a+b+c+d+e)/120				4759.29	
						say	**4759.00**	
12.11		**D**	**Intermediate plug**					
		(i)	**Grade M20 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3270.00	Item 12.11 (C) i

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Overhead charges @ 0.25 on (a+b+c)				817.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				408.75	
			Rate per cum = (a+b+c+d+e)				4496.25	
						say	**4496.00**	
12.11 D (i)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3049.00	Item 12.11 (C) i
			d) Overhead charges @ 0.25 on (a+b+c)				762.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				381.13	
			Rate per cum = (a+b+c+d+e)				4192.38	
						say	**4192.00**	
12.11 D		**(ii)**	**Grade M25 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3445.00	Item 12.11 (C) ii
			d) Overhead charges @ 0.25 on (a+b+c)				861.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				430.63	
			Rate per cum = (a+b+c+d+e)				4736.88	
						say	**4737.00**	
12.11 D (ii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3222.00	Item 12.11 (C) ii
			d) Overhead charges @ 0.25 on (a+b+c)				805.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				402.75	
			Rate per cum = (a+b+c+d+e)				4430.25	
						say	**4430.00**	
12.11 D		**(iii)**	**Grade M30 PCC**					
			Same as in bottom plug concrete, excluding cost of forming sump, protective bunds, chiseling etc.					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3474.00	Item 12.11 (C) iii
			d) Overhead charges @ 0.25 on (a+b+c)				868.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				434.25	
			Rate per cum = (a+b+c+d+e)				4776.75	
						say	**4777.00**	
12.11 D (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3253.00	Item 12.11 (C) iii
			d) Overhead charges @ 0.25 on (a+b+c)				813.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				406.63	
			Rate per cum = (a+b+c+d+e)				4472.88	
						say	**4473.00**	
12.11		**E**	**Top plug**					
		(i)	**Grade M15 PCC**					
			Same as Item 12.8(a) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2576.00	Item 12.8 (A)
			d) Overhead charges @ 0.25 on (a+b+c)				644.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				322.00	
			Rate per cum = (a+b+c+d+e)				3542.00	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	**3542.00**	
12.11 E		**(ii)**	**Grade M20 PCC**					
			Same as Item 12.8(b) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2749.00	Item 12.8 (B) PCC
			d) Overhead charges @ 0.25 on (a+b+c)				687.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				343.63	
			Rate per cum = (a+b+c+d+e)				3779.88	
						say	**3780.00**	
12.11 E		**(iii)**	**Grade M25 PCC**					
			Same as Item 12.8 (d) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3021.00	Item 12.8 (D)
			d) Overhead charges @ 0.25 on (a+b+c)				755.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				377.63	
			Rate per cum = (a+b+c+d+e)				4153.88	
						say	**4154.00**	
12.11 E (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2954.00	Item 12.8 (D)
			d) Overhead charges @ 0.25 on (a+b+c)				738.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				369.25	
			Rate per cum = (a+b+c+d+e)				4061.75	
						say	**4062.00**	
12.11 E		**(iv)**	**Grade M30 PCC**					
			Same as Item 12.8(f) excluding formwork					
		Case I	**Using Concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				3050.00	Item 12.8 (F)
			d) Overhead charges @ 0.25 on (a+b+c)				762.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				381.25	
			Rate per cum = (a+b+c+d+e)				4193.75	
						say	**4194.00**	
12.11 E (iv)		**Case II**	**Using Batching Plant, Transit Mixer and Crane/concrete pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c)				2981.00	Item 12.8 (F)
			d) Overhead charges @ 0.25 on (a+b+c)				745.25	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				372.63	
			Rate per cum = (a+b+c+d+e)				4098.88	
						say	**4099.00**	
12.11		**F**	**Well cap**					
		(i)	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.12	4922.00	25200.64	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Form Work @ 4 per cent of a+b+c				1672.15	
			d) Overhead charges @ 0.25 on (a+b+c)				10868.99	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5434.49	
			cost of 15 cum = a+b+c+d+e				59779.43	
			Rate per cum = (a+b+c+d+e)/15				3985.30	
						say	**3985.00**	
12.11 F (i)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	4922.00	201408.24	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader (capacity 1 cum)	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Formwork @ 4 per cent of (a+b+c)				13044.52	
			d) Overhead charges @ 0.25 on (a+b+c)				84789.40	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				42394.70	
			cost of 120 cum = a+b+c+d+e				466341.69	
			Rate per cum = (a+b+c+d+e)/120				3886.18	
						say	**3886.00**	
12.11 F		**(ii)**	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.05	4922.00	29778.10	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Form Work @ 3.75 per cent of a+b+c				1739.30	
			d) Overhead charges @ 0.25 on (a+b+c)				12030.14	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6015.07	
			cost of 15 cum = a+b+c+d+e				66165.76	
			Rate per cum = (a+b+c+d+e)/15				4411.05	
						say	**4411.00**	
12.11 F (ii)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.40	4922.00	238224.80	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader (capacity 1 cum)	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Formwork @ 3.75 per cent of (a+b+c)				13609.86	
			d) Overhead charges @ 0.25 on (a+b+c)				94134.87	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				47067.44	
			cost of 120 cum = a+b+c+d+e				517741.80	
			Rate per cum = (a+b+c+d+e)/120				4314.51	
						say	**4315.00**	
12.11 F		**(iii)**	**RCC Grade M30**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	4922.00	30024.20	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Formwork @ 3.5 per cent of (a+b+c)				1631.96	
			d) Overhead charges @ 0.25 on (a+b+c)				12064.83	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6032.41	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			cost of 15 cum = a+b+c+d+e				66356.56	
			Rate per cum = (a+b+c+d+e)/15				4423.77	
						say	**4424.00**	
12.11 F (iii)		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	4922.00	240144.38	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader (capacity 1 cum)	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Formwork @ 3.5 per cent of (a+b+c)				12769.72	
			d) Overhead charges @ 0.25 on (a+b+c)				94404.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				47202.37	
			cost of 120 cum = a+b+c+d+e				519226.03	
			Rate per cum = (a+b+c+d+e)/120				4326.88	
						say	**4327.00**	
12.11 F		**(iv)**	**RCC Grade M35**					
		Case I	**Using Concrete Mixer**					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	4922.00	31156.26	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Formwork @ 3 per cent of (a+b+c)				1432.78	
			d) Overhead charges @ 0.25 on (a+b+c)				12298.05	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6149.03	
			cost of 15 cum = a+b+c+d+e				67639.28	
			Rate per cum = (a+b+c+d+e)/15				4509.29	
						say	**4509.00**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.11 F (iv)		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	50.64	4922.00	249250.08	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader (capacity 1 cum)	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Formwork @ 3 per cent of (a+b+c)				11218.65	
			d) Overhead charges @ 0.25 on (a+b+c)				96293.39	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				48146.69	
			cost of 120 cum = a+b+c+d+e				529613.64	
			Rate per cum = (a+b+c+d+e)/120				4413.45	
						say	**4413.00**	
		Note	Where ever concrete is carried out using batching plant, transit mixer, concrete pump, Admixtures @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
'12.11 F		(v)	**RCC M40 Grade**					
			Using Batching Plant, Transit Mixer and Concrete Pump					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	52.20	4922.00	256928.40	M-081
			Coarse Sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture	kg	206.00	152.14	31340.84	M-180
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader 1 cum capacity	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer 4 cum capacity for lead upto 1 km.	hour	15.00	1327.00	19905.00	P&M-049
			Transit Mixer 4 cum capacity for lead beyond 1 km.	tonne.km	300.L	6.59	1977.00	P&M-050 Lead= 1 km
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Formwork @ 3 per cent on cost of concrete i.e. cost of material, labour and machinery				12389.22	
			d) Overhead charges @ 0.25 on (a+b+c)				106340.82	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				53170.41	
			cost of 120 cum = a+b+c+d+e				584874.52	
			Rate per cum = (a+b+c+d+e)/120				4873.95	
						say	**4874.00**	
12.12	**Section 1200**		**Sinking of 6 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 6 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.50 m per hour.					
			a) Labour					
			Mate	day	0.12	261.00	31.32	L-12
			Sinker (skilled)	day	1.00	313.00	313.00	L-15
			Sinking helper (semi-skilled)	day	2.00	257.00	514.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	2.00	1827.00	3654.00	P&M-075
			Consumables in sinking @10 per cent of (b)				365.40	
			c) Overhead charges @ 0.25 on (a+b)				1219.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				609.72	
			Rate per metre = (a+b+c+d)				6706.87	
						say	**6707.00**	
12.12 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	261.00	39.15	L-12
			Sinker	day	1.25	313.00	391.25	L-15
			Sinking helper (semi-skilled)	day	2.50	257.00	642.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1827.00	5481.00	P&M-075
			Consumables in sinking @10 per cent of (b)				548.10	
			c) Overhead charges @ 0.25 on (a+b)				1775.50	
			d) Contractor's profit @ 0.1 on (a+b+c)				887.75	
			Rate per metre = (a+b+c+d)				9765.25	
						say	**9765.00**	
12.12 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	10253.00			
			12th m	5%	10766.00			
			13th m	5%	11304.00			
			14th m	5%	11869.00			
			15th m	5%	12462.00			
			16th m	5%	13085.00			
			17th m	5%	13739.00			
			18th m	5%	14426.00			

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			19th m	5%	15147.00			
			20th m	5%	15904.00			
			Total Cost from 10m upto 20m		128955.00			
			Avg Rate per metre		**12896.00**			
12.12 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	17097.00	20516.00		
			22nd m	7.5%	18379.00	22055.00		
			23rd m	7.5%	19757.00	23708.00		
			24th m	7.5%	21239.00	25487.00		
			25th m	7.5%	22832.00	27398.00		
			26th m	7.5%	24544.00	29453.00		
			27th m	7.5%	26385.00	31662.00		
			28th m	7.5%	28364.00	34037.00		
			29th m	7.5%	30491.00	36589.00		
			30th m	7.5%	32778.00	39334.00		
			Total Cost from 20m upto 30m		241866.00	290239.00		
			Avg Rate per metre		**24187.00**	**29024.00**		
12.12 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	36056.00	43267.00		
			32nd	10%	39662.00	47594.00		
			33rd m	10%	43628.00	52354.00		
			34th m	10%	47991.00	57589.00		
			35th m	10%	52790.00	63348.00		
			36th m	10%	58069.00	69683.00		
			37th m	10%	63876.00	76651.00		
			38th m	10%	70264.00	84317.00		
			39th m	10%	77290.00	92748.00		
			40th m	10%	85019.00	102023.00		
			Total Cost from 30m upto 40m		574645.00	689574.00		
			Avg Rate per metre		**57465.00**	**68957.00**		
12.12		**B**	**Clayey Soil (6m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.33 m per hour.					
			a) Labour					
			Mate	day	0.15	261.00	39.15	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	2.25	257.00	578.25	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories	hour	3.00	1827.00	5481.00	P&M-075
			Consumables in sinking @ 10 per cent of (b)				548.10	
			c) Overhead charges @ 0.25 on (a+b)				1779.00	
			d) Contractor's profit @ 0.1 on (a+b+c)				889.50	
			Rate per metre = (a+b+c+d)				9784.50	

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	**9785.00**	
12.12 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.30	261.00	78.30	L-12
			Sinker	day	3.00	313.00	939.00	L-15
			Sinking helper (semi-skilled)	day	4.50	257.00	1156.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	2.00	886.00	1772.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1273.40	
			c) Overhead charges @ 0.25 on (a+b)				4045.30	
			d) Contractor's profit @ 0.1 on (a+b+c)				2022.65	
			Rate per metre = (a+b+c+d)				22249.15	
						say	**22249.00**	
12.12 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	23361.00	24529.00		
			12th m	5%	24529.00	25755.00		
			13th m	5%	25755.00	27043.00		
			14th m	5%	27043.00	28395.00		
			15th m	5%	28395.00	29815.00		
			16th m	5%	29815.00	31306.00		
			17th m	5%	31306.00	32871.00		
			18th m	5%	32871.00	34515.00		
			19th m	5%	34515.00	36241.00		
			20th m	5%	36241.00	38053.00		
			Total Cost from 10m upto 20m		293831.00	308523.00		
			Avg Rate per metre		**29383.00**	**30852.00**		
12.12 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering of the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	38959.00	48699.00	51134.00	
			22nd m	7.5%	41881.00	52351.00	54969.00	
			23rd m	7.5%	45022.00	56278.00	59092.00	
			24th m	7.5%	48399.00	60499.00	63524.00	
			25th m	7.5%	52029.00	65036.00	68288.00	
			26th m	7.5%	55931.00	69914.00	73410.00	
			27th m	7.5%	60126.00	75158.00	78916.00	
			28th m	7.5%	64635.00	80794.00	84834.00	
			29th m	7.5%	69483.00	86854.00	91197.00	
			30th m	7.5%	74694.00	93368.00	98036.00	
			Total Cost from 20m upto 30m		551159.00	688951.00	723400.00	
			Avg Rate per metre		**55116.00**	**68895.00**	**72340.00**	
12.12 B		**(v)**	**Beyond 30m upto 40 m**					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	82163.00	98596.00	103526.00	
			32nd	10%	90379.00	108455.00	113878.00	
			33rd m	10%	99417.00	119300.00	125265.00	
			34th m	10%	109359.00	131231.00	137793.00	
			35th m	10%	120295.00	144354.00	151572.00	
			36th m	10%	132325.00	158790.00	166730.00	
			37th m	10%	145558.00	174670.00	183404.00	
			38th m	10%	160114.00	192137.00	201744.00	
			39th m	10%	176125.00	211350.00	221918.00	
			40th m	10%	193738.00	232486.00	244110.00	
			Total Cost from 30m upto 40m		1309473.00	1571369.00	1649940.00	
			Avg Rate per metre		**130947.00**	**157137.00**	**164994.00**	
12.12		**C**	**Soft Rock (6m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in Soft rock strata up to 3m					
			Rate of sinking = 0.25 m per hour.					
			a) Labour					
			Mate	day	0.92	261.00	240.12	L-12
			Sinker (skilled)	day	3.00	313.00	939.00	L-15
			Sinking helper (semi-skilled)	day	20.00	257.00	5140.00	L-14
			Diver	day	0.50	352.00	176.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1827.00	7308.00	P&M-075
			Air compressor with pneumatic breakers	hour	3.50	886.00	3101.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1040.90	
			Add for dewatering @ of 5 per cent of (a+b), if required				897.25	
			c) Overhead charges @ 0.25 on (a+b)				4710.57	
			d) Contractor's profit @ 0.1 on (a+b+c)				2355.28	
			Rate per metre = (a+b+c+d)				25908.12	
						say	**25908.00**	
12.12		**D**	**Hard Rock (6m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking = 0.17 m per hour.					
			a) Material					
			Gelatine 80 per cent	Kg	4.00	799.42	3197.68	M-104
			Electric Detonators	each	18.00	5.63	101.29	M-094/100
			b) Labour					
			Mate	day	1.56	261.00	407.16	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	12.00	247.00	2964.00	L-13
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			c) Machinery					

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	886.00	1772.00	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				902.46	
			Consumables in sinking @ 10 per cent of cost of (c).				1273.40	
			d) Overhead charges @ 0.25 on (a+b+c)				5881.00	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2940.50	
			Rate per metre = (a+b+c+d+e)				32345.49	
						say	**32345.00**	
12.13	**Section 1200**		**Sinking of 7 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 7 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.30 m per hour.					
			a) Labour					
			Mate	day	0.15	261.00	39.15	L-12
			Sinker (skilled)	day	1.25	313.00	391.25	L-15
			Sinking helper (semi-skilled)	day	2.50	257.00	642.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	3.25	1827.00	5937.75	P&M-075
			Consumables in sinking @10 per cent of (b)				593.78	
			c) Overhead charges @ 0.25 on (a+b)				1901.11	
			d) Contractor's profit @ 0.1 on (a+b+c)				950.55	
			Rate per metre = (a+b+c+d)				10456.08	
						say	**10456.00**	
12.13 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.18	261.00	46.98	L-12
			Sinker	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.00	257.00	771.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1827.00	8221.50	P&M-075
			Consumables in sinking @10 per cent of (b)				822.15	
			c) Overhead charges @ 0.25 on (a+b)				2582.78	
			d) Contractor's profit @ 0.1 on (a+b+c)				1291.39	
			Rate per metre = (a+b+c+d)				14205.30	
						say	**14205.00**	
12.13 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	14916.00			
			12th m	5%	15662.00			
			13th m	5%	16445.00			
			14th m	5%	17267.00			
			15th m	5%	18130.00			

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			16th m	5%	19037.00			
			17th m	5%	19989.00			
			18th m	5%	20988.00			
			19th m	5%	22037.00			
			20th m	5%	23139.00			
			Total Cost from 10m upto 20m		187610.00			
			Avg Rate per metre		**18761.00**			
12.13 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	24874.00	29849.00		
			22nd m	7.5%	26740.00	32088.00		
			23rd m	7.5%	28746.00	34495.00		
			24th m	7.5%	30902.00	37082.00		
			25th m	7.5%	33220.00	39864.00		
			26th m	7.5%	35712.00	42854.00		
			27th m	7.5%	38390.00	46068.00		
			28th m	7.5%	41269.00	49523.00		
			29th m	7.5%	44364.00	53237.00		
			30th m	7.5%	47691.00	57229.00		
			Total Cost from 20m upto 30m		351908.00	422289.00		
			Avg Rate per metre		**35191.00**	**42229.00**		
12.13 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	52460.00	62952.00		
			32nd	10%	57706.00	69247.00		
			33rd m	10%	63477.00	76172.00		
			34th m	10%	69825.00	83790.00		
			35th m	10%	76808.00	92170.00		
			36th m	10%	84489.00	101387.00		
			37th m	10%	92938.00	111526.00		
			38th m	10%	102232.00	122678.00		
			39th m	10%	112455.00	134946.00		
			40th m	10%	123701.00	148441.00		
			Total Cost from 30m upto 40m		836091.00	1003309.00		
			Avg Rate per metre		**83609.00**	**100331.00**		
12.13		**B**	**Clayey Soil (7m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 cum					
		(I)	**Depth below bed level upto 3.0 M**					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.18	261.00	46.98	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.00	257.00	771.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1827.00	8221.50	P&M-075
			Consumables in sinking @ 10 per cent of (b)				822.15	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Overhead charges @ 0.25 on (a+b)				2582.78	
			e) Contractor's profit @ 0.1 on (a+b+c)				1291.39	
			Rate per metre = (a+b+c+d)				14205.30	
						say	**14205.00**	
12.13 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking = 0.17 m per hour.					
			a) Labour					
			Mate	day	0.26	261.00	67.86	L-12
			Sinker	day	2.00	313.00	626.00	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.25	886.00	2879.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1384.15	
			c) Overhead charges @ 0.25 on (a+b)				4236.88	
			d) Contractor's profit @ 0.1 on (a+b+c)				2118.44	
			Rate per metre = (a+b+c+d)				23302.83	
						say	**23303.00**	
12.13 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	24468.00	25691.00		
			12th m	5%	25691.00	26976.00		
			13th m	5%	26976.00	28325.00		
			14th m	5%	28325.00	29741.00		
			15th m	5%	29741.00	31228.00		
			16th m	5%	31228.00	32789.00		
			17th m	5%	32789.00	34428.00		
			18th m	5%	34428.00	36149.00		
			19th m	5%	36149.00	37956.00		
			20th m	5%	37956.00	39854.00		
			Total Cost from 10m upto 20m		307751.00	323137.00		
			Avg Rate per metre		**30775.00**	**32314.00**		
12.13 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	40803.00	51004.00	53554.00	
			22nd	7.5%	43863.00	54829.00	57570.00	
			23rd m	7.5%	47153.00	58941.00	61888.00	
			24th m	7.5%	50689.00	63361.00	66529.00	
			25th m	7.5%	54491.00	68114.00	71520.00	
			26th m	7.5%	58578.00	73223.00	76884.00	
			27th m	7.5%	62971.00	78714.00	82650.00	
			28th m	7.5%	67694.00	84618.00	88849.00	
			29th m	7.5%	72771.00	90964.00	95512.00	
			30th m	7.5%	78229.00	97786.00	102675.00	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Total Cost from 20m upto 30m		577242.00	721554.00	757631.00	
			Avg Rate per metre		**57724.00**	**72155.00**	**75763.00**	
12.13 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	86052.00	103262.00	108425.00	
			32nd	10%	94657.00	113588.00	119267.00	
			33rd m	10%	104123.00	124948.00	131195.00	
			34th m	10%	114535.00	137442.00	144314.00	
			35th m	10%	125989.00	151187.00	158746.00	
			36th m	10%	138588.00	166306.00	174621.00	
			37th m	10%	152447.00	182936.00	192083.00	
			38th m	10%	167692.00	201230.00	211292.00	
			39th m	10%	184461.00	221353.00	232421.00	
			40th m	10%	202907.00	243488.00	255662.00	
			Total Cost from 30m upto 40m		1371451.00	1645740.00	1728026.00	
			Avg Rate per metre		**137145.00**	**164574.00**	**172803.00**	
12.13		**C**	**Soft Rock (7m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking = 0.22 m per hour.					
			a) Labour					
			Mate	day	0.58	261.00	151.38	L-12
			Sinker (skilled)	day	4.00	313.00	1252.00	L-15
			Sinking helper (semi-skilled)	day	10.00	257.00	2570.00	L-14
			Diver	day	0.75	352.00	264.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.50	1827.00	8221.50	P&M-075
			Air compressor with pneumatic breakers	hour	3.75	886.00	3322.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1154.40	
			Add for dewatering @ of 5 per cent of (a+b), if required				789.07	
			c) Overhead charges @ 0.25 on (a+b)				4431.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				2215.61	
			Rate per metre = (a+b+c+d)				24371.67	
						say	**24372.00**	
12.13		**D**	**Hard Rock (7m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in Hard rock strata up to 3 m					
			Rate of sinking = 0.17 m per hour.					
			a) Material					
			Gelatine 80 per cent	Kg	7.00	799.42	5595.94	M-104
			Electric Detonators	each	30.00	5.63	168.82	M-094/100
			b) Labour					
			Mate	day	1.60	261.00	417.60	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	18.00	247.00	4446.00	L-13

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			Diver	day	0.50	352.00	176.00	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	886.00	1772.00	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				985.88	
			Consumables in sinking @ 10 per cent of cost of (c).				1371.99	
			d) Overhead charges @ 0.25 on (a+b+c)				6960.06	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3480.03	
			Rate per metre = (a+b+c+d+e)				38280.31	
						say	**38280.00**	
12.14	**Section 1200**		**Sinking of 8 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 8 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.25 m/hour					
			a) Labour					
			Mate	day	0.18	261.00	46.98	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.00	257.00	771.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1827.00	7308.00	P&M-075
			Consumables in sinking @10 per cent of (b)				730.80	
			c) Overhead charges @ 0.25 on (a+b)				2331.57	
			d) Contractor's profit @ 0.1 on (a+b+c)				1165.79	
			Rate per metre = (a+b+c+d)				12823.64	
						say	**12824.00**	
12.14 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.25	261.00	65.25	L-12
			Sinker	day	1.75	313.00	547.75	L-15
			Sinking helper (semi-skilled)	day	3.50	257.00	899.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1827.00	9135.00	P&M-075
			Consumables in sinking @10 per cent of (b)				913.50	
			c) Overhead charges @ 0.25 on (a+b)				2890.25	
			d) Contractor's profit @ 0.1 on (a+b+c)				1445.13	
			Rate per metre = (a+b+c+d)				15896.38	
						say	**15896.00**	
12.14 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	16691.00			
			12th m	5%	17526.00			

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			13th m	5%	18402.00			
			14th m	5%	19322.00			
			15th m	5%	20288.00			
			16th m	5%	21302.00			
			17th m	5%	22367.00			
			18th m	5%	23485.00			
			19th m	5%	24659.00			
			20th m	5%	25892.00			
			Total Cost from 10m upto 20m		209934.00			
			Avg Rate per metre		**20993.00**			
12.14 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	27834.00	33401.00		
			22nd m	7.5%	29922.00	35906.00		
			23rd m	7.5%	32166.00	38599.00		
			24th m	7.5%	34578.00	41494.00		
			25th m	7.5%	37171.00	44605.00		
			26th m	7.5%	39959.00	47951.00		
			27th m	7.5%	42956.00	51547.00		
			28th m	7.5%	46178.00	55414.00		
			29th m	7.5%	49641.00	59569.00		
			30th m	7.5%	53364.00	64037.00		
			Total Cost from 20m upto 30m		393769.00	472523.00		
			Avg Rate per metre		**39377.00**	**47252.00**		
12.14 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	58700.00	70440.00		
			32nd	10%	64570.00	77484.00		
			33rd m	10%	71027.00	85232.00		
			34th m	10%	78130.00	93756.00		
			35th m	10%	85943.00	103132.00		
			36th m	10%	94537.00	113444.00		
			37th m	10%	103991.00	124789.00		
			38th m	10%	114390.00	137268.00		
			39th m	10%	125829.00	150995.00		
			40th m	10%	138412.00	166094.00		
			Total Cost from 30m upto 40m		935529.00	1122635.00		
			Avg Rate per metre		**93553.00**	**112264.00**		
12.14		**B**	**Clayey Soil (8m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 meter					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.22	261.00	57.42	L-12
			Sinker (skilled)	day	2.00	313.00	626.00	L-15
			Sinking helper (semi-skilled)	hour	3.50	257.00	899.50	L-14
			b) Machinery					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.		5.50	1827.00	10048.50	P&M-075
			Consumables in sinking @ 10 per cent of (b)				1004.85	
			c) Overhead charges @ 0.25 on (a+b)				3159.07	
			d) Contractor's profit @ 0.1 on (a+b+c)				1579.53	
			Rate per metre = (a+b+c+d)				17374.87	
						say	**17375.00**	
12.14 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.32	261.00	83.52	L-12
			Sinker	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	4.50	257.00	1156.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.50	886.00	3101.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1406.30	
			c) Overhead charges @ 0.25 on (a+b)				4372.96	
			d) Contractor's profit @ 0.1 on (a+b+c)				2186.48	
			Rate per metre = (a+b+c+d)				24051.25	
						say	**24051.00**	
12.14 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	25254.00	26517.00		
			12th m	5%	26517.00	27843.00		
			13th m	5%	27843.00	29235.00		
			14th m	5%	29235.00	30697.00		
			15th m	5%	30697.00	32232.00		
			16th m	5%	32232.00	33844.00		
			17th m	5%	33844.00	35536.00		
			18th m	5%	35536.00	37313.00		
			19th m	5%	37313.00	39179.00		
			20th m	5%	39179.00	41138.00		
			Total Cost from 10m upto 20m		317650.00	333534.00		
			Avg Rate per metre		**31765.00**	**33353.00**		
12.14 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	42117.00	52646.00	55278.00	
			22nd	7.5%	45276.00	56595.00	59425.00	
			23rd m	7.5%	48672.00	60840.00	63882.00	
			24th m	7.5%	52322.00	65403.00	68673.00	
			25th m	7.5%	56246.00	70308.00	73823.00	
			26th m	7.5%	60464.00	75580.00	79359.00	
			27th m	7.5%	64999.00	81249.00	85311.00	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			28th m	7.5%	69874.00	87343.00	91710.00	
			29th m	7.5%	75115.00	93894.00	98589.00	
			30th m	7.5%	80749.00	100936.00	105983.00	
			Total Cost from 20m upto 30m		595834.00	744794.00	782033.00	
			Avg Rate per metre		**59583.00**	**74479.00**	**78203.00**	
12.14 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	88824.00	106589.00	111918.00	
			32nd	10%	97706.00	117247.00	123109.00	
			33rd m	10%	107477.00	128972.00	135421.00	
			34th m	10%	118225.00	141870.00	148964.00	
			35th m	10%	130048.00	156058.00	163861.00	
			36th m	10%	143053.00	171664.00	180247.00	
			37th m	10%	157358.00	188830.00	198272.00	
			38th m	10%	173094.00	207713.00	218099.00	
			39th m	10%	190403.00	228484.00	239908.00	
			40th m	10%	209443.00	251332.00	263899.00	
			Total Cost from 30m upto 40m		1415631.00	1698759.00	1783698.00	
			Avg Rate per metre		**141563.00**	**169876.00**	**178370.00**	
12.14		**C**	**Soft Rock (8m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.20 m/hour					
			a) Labour					
			Mate	day	0.68	261.00	177.48	L-12
			Sinker (skilled)	day	4.00	313.00	1252.00	L-15
			Sinking helper (semi-skilled)	day	12.00	257.00	3084.00	L-14
			Diver	day	1.00	352.00	352.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1827.00	9135.00	P&M-075
			Air compressor with pneumatic breakers	hour	3.75	886.00	3322.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1245.75	
			Add for dewatering @ of 5 per cent of (a+b), if required				928.44	
			c) Overhead charges @ 0.25 on (a+b)				4874.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				2437.15	
			Rate per metre = (a+b+c+d)				26808.60	
						say	**26809.00**	
12.14		**D**	**Hard Rock (8m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.17 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	8.00	799.42	6395.36	M-104
			Electric Detonators	each	32.00	5.63	180.07	M-094/100
			b) Labour					
			Mate	day	1.09	261.00	284.49	L-12

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	20.00	247.00	4940.00	L-13
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.00	886.00	1772.00	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				995.12	
			Consumables in sinking @ 10 per cent of cost of (b).				716.85	
			d) Overhead charges @ 0.25 on (a+b+c)				7047.47	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3523.74	
			Rate per metre = (a+b+c+d+e)				38761.11	
						say	**38761.00**	
12.15	**Section 1200**		**Sinking of 9 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Diameter of well - 9 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.25 m/hour					
			a) Labour					
			Mate	day	0.19	261.00	49.59	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.25	257.00	835.25	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1827.00	7308.00	P&M-075
			Consumables in sinking @10 per cent of (b)				730.80	
			c) Overhead charges @ 0.25 on (a+b)				2348.29	
			d) Contractor's profit @ 0.1 on (a+b+c)				1174.14	
			Rate per metre = (a+b+c+d)				12915.57	
						say	**12916.00**	
12.15 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.27	261.00	70.47	L-12
			Sinker	day	1.75	313.00	547.75	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1827.00	10048.50	P&M-075
			Consumables in sinking @10 per cent of (b)				1004.85	
			c) Overhead charges @ 0.25 on (a+b)				3174.89	
			d) Contractor's profit @ 0.1 on (a+b+c)				1587.45	
			Rate per metre = (a+b+c+d)				17461.91	
						say	**17462.00**	
12.15 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			11th m	5%	18335.00			
			12th m	5%	19252.00			
			13th m	5%	20215.00			
			14th m	5%	21226.00			
			15th m	5%	22287.00			
			16th m	5%	23401.00			
			17th m	5%	24571.00			
			18th m	5%	25800.00			
			19th m	5%	27090.00			
			20th m	5%	28445.00			
			Total Cost from 10m upto 20m		230622.00			
			Avg Rate per metre		**23062.00**			
12.15 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	30578.38	36694.00		
			22nd m	7.5%	32872.00	39446.00		
			23rd m	7.5%	35337.00	42404.00		
			24th m	7.5%	37987.00	45584.00		
			25th m	7.5%	40836.00	49003.00		
			26th m	7.5%	43899.00	52679.00		
			27th m	7.5%	47191.00	56629.00		
			28th m	7.5%	50730.00	60876.00		
			29th m	7.5%	54535.00	65442.00		
			30th m	7.5%	58625.00	70350.00		
			Total Cost from 20m upto 30m		432590.38	519107.00		
			Avg Rate per metre		**43259.00**	**51911.00**		
12.15 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	64487.50	77385.00		
			32nd	10%	70936.00	85123.00		
			33rd m	10%	78030.00	93636.00		
			34th m	10%	85833.00	103000.00		
			35th m	10%	94416.00	113299.00		
			36th m	10%	103858.00	124630.00		
			37th m	10%	114244.00	137093.00		
			38th m	10%	125668.00	150802.00		
			39th m	10%	138235.00	165882.00		
			40th m	10%	152059.00	182471.00		
			Total Cost from 30m upto 40m		1027766.50	1233321.00		
			Avg Rate per metre		**102777.00**	**123332.00**		
12.15		**B**	**Clayey Soil (9m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 1 cum					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.24	261.00	62.64	L-12
			Sinker (skilled)	day	2.25	313.00	704.25	L-15

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Sinking helper (semi-skilled)	day	3.75	257.00	963.75	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1827.00	10505.25	P&M-075
			Consumables in sinking @ 10 per cent of (b)				1050.53	
			c) Overhead charges @ 0.25 on (a+b)				3321.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				1660.80	
			Rate per metre = (a+b+c+d)				18268.82	
						say	**18269.00**	
12.15 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.34	261.00	88.74	L-12
			Sinker	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	5.00	257.00	1285.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1827.00	11875.50	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	3.75	886.00	3322.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1519.80	
			c) Overhead charges @ 0.25 on (a+b)				4718.51	
			d) Contractor's profit @ 0.1 on (a+b+c)				2359.26	
			Rate per metre = (a+b+c+d)				25951.81	
						say	**25952.00**	
12.15 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if		
			11th m	5%	27250.00	28613.00		
			12th m	5%	28613.00	30044.00		
			13th m	5%	30044.00	31546.00		
			14th m	5%	31546.00	33123.00		
			15th m	5%	33123.00	34779.00		
			16th m	5%	34779.00	36518.00		
			17th m	5%	36518.00	38344.00		
			18th m	5%	38344.00	40261.00		
			19th m	5%	40261.00	42274.00		
			20th m	5%	42274.00	44388.00		
			Total Cost from 10m upto 20m		342752.00	359890.00		
			Avg Rate per metre		**34275.00**	**35989.00**		
12.15 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	45445.00	56806.00	59646.00	
			22nd	7.5%	48853.00	61066.00	64119.00	
			23rd m	7.5%	52517.00	65646.00	68928.00	
			24th m	7.5%	56456.00	70570.00	74099.00	
			25th m	7.5%	60690.00	75863.00	79656.00	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			26th m	7.5%	65242.00	81553.00	85631.00	
			27th m	7.5%	70135.00	87669.00	92052.00	
			28th m	7.5%	75395.00	94244.00	98956.00	
			29th m	7.5%	81050.00	101313.00	106379.00	
			30th m	7.5%	87129.00	108911.00	114357.00	
			Total Cost from 20m upto 30m		642912.00	803641.00	843823.00	
			Avg Rate per metre		**64291.00**	**80364.00**	**84382.00**	
12.15 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	95842.00	115010.00	120761.00	
			32nd	10%	105426.00	126511.00	132837.00	
			33rd m	10%	115969.00	139163.00	146121.00	
			34th m	10%	127566.00	153079.00	160733.00	
			35th m	10%	140323.00	168388.00	176807.00	
			36th m	10%	154355.00	185226.00	194487.00	
			37th m	10%	169791.00	203749.00	213936.00	
			38th m	10%	186770.00	224124.00	235330.00	
			39th m	10%	205447.00	246536.00	258863.00	
			40th m	10%	225992.00	271190.00	284750.00	
			Total Cost from 30m upto 40m		1527481.00	1832976.00	1924625.00	
			Avg Rate per metre		**152748.00**	**183298.00**	**192463.00**	
12.15		**C**	**Soft Rock (9m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata up to 3m					
			Rate of sinking 0.15 m / hour					
			a) Labour					
			Mate	day	0.76	261.00	198.36	L-12
			Sinker (skilled)	day	4.00	313.00	1252.00	L-15
			Sinking helper (semi-skilled)	day	14.00	257.00	3598.00	L-14
			Diver	day	1.20	352.00	422.40	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1827.00	11875.50	P&M-075
			Air compressor with pneumatic breakers	hour	4.00	886.00	3544.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1541.95	
			Add for dewatering @ of 10 per cent of (a+b), if required				2243.22	
			c) Overhead charges @ 0.25 on (a+b)				6168.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				3084.43	
			Rate per metre = (a+b+c+d)				33928.72	
						say	**33929.00**	
12.15		**D**	**Hard Rock (9m dia well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.15 m / hour					
			a) Material					
			Gelatine 80 per cent	Kg	10.00	799.42	7994.20	M-104
			Electric Detonators	each	40.00	5.63	225.09	M-094/100

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Labour					
			Mate	day	1.17	261.00	305.37	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	22.00	247.00	5434.00	L-13
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			Diver	day	1.00	352.00	352.00	L-07
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1827.00	12789.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer for drilling.	hour	2.50	886.00	2215.00	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				1151.97	
			Consumables in sinking @ 10 per cent of cost of (b).				803.54	
			d) Overhead charges @ 0.25 on (a+b+c)				8303.54	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4151.77	
			Rate per metre = (a+b+c+d+e)				45669.48	
						say	**45669.00**	
12.16	**1200**		**Sinking of 10 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter					
			Taking output = 1 m					
			Diameter of well - 10 m.					
		A	**Sandy Soil**					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.20 m / hour					
			a) Labour					
			Mate	day	0.20	261.00	52.20	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.50	257.00	899.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1827.00	9135.00	P&M-075
			Consumables in sinking @10 per cent of (b)				913.50	
			c) Overhead charges @ 0.25 on (a+b)				2867.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				1433.71	
			Rate per metre = (a+b+c+d)				15770.84	
						say	**15771.00**	
12.16 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.17 m / hour					
			a) Labour					
			Mate	day	0.31	261.00	80.91	L-12
			Sinker	day	2.00	313.00	626.00	L-15
			Sinking helper (semi-skilled)	day	4.25	257.00	1092.25	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.75	1827.00	10505.25	P&M-075
			Consumables in sinking @10 per cent of (b)				1050.53	
			c) Overhead charges @ 0.25 on (a+b)				3338.73	
			d) Contractor's profit @ 0.1 on (a+b+c)				1669.37	
			Rate per metre = (a+b+c+d)				18363.04	
						say	**18363.00**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.16 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	19281.00			
			12th m	5%	20245.00			
			13th m	5%	21257.00			
			14th m	5%	22320.00			
			15th m	5%	23436.00			
			16th m	5%	24608.00			
			17th m	5%	25838.00			
			18th m	5%	27130.00			
			19th m	5%	28487.00			
			20th m	5%	29911.00			
			Total Cost from 10m upto 20m		242513.00			
			Avg Rate per metre		**24251.00**			
12.16 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b) Including 20% for Kentledge		
			21st m	7.5%	32154.00	38585.00		
			22nd m	7.5%	34566.00	41479.00		
			23rd m	7.5%	37158.00	44590.00		
			24th m	7.5%	39945.00	47934.00		
			25th m	7.5%	42941.00	51529.00		
			26th m	7.5%	46162.00	55394.00		
			27th m	7.5%	49624.00	59549.00		
			28th m	7.5%	53346.00	64015.00		
			29th m	7.5%	57347.00	68816.00		
			30th m	7.5%	61648.00	73978.00		
			Total Cost from 20m upto 30m		454891.00	545869.00		
			Avg Rate per metre		**45489.00**	**54587.00**		
12.16 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	67813.00	81376.00		
			32nd	10%	74594.00	89513.00		
			33rd m	10%	82053.00	98464.00		
			34th m	10%	90258.00	108310.00		
			35th m	10%	99284.00	119141.00		
			36th m	10%	109212.00	131054.00		
			37th m	10%	120133.00	144160.00		
			38th m	10%	132146.00	158575.00		
			39th m	10%	145361.00	174433.00		
			40th m	10%	159897.00	191876.00		
			Total Cost from 30m upto 40m		1080751.00	1296902.00		
			Avg Rate per metre		**108075.00**	**129690.00**		
12.16		**B**	**Clayey Soil (10m dia. Well)**					
			Unit = Running Meter					
			Taking output = 1 cum					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking 0.18m/hour.					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Labour					
			Mate	day	0.25	261.00	65.25	L-12
			Sinker (skilled)	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	5.50	257.00	1413.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Consumables in sinking @ 10 per cent of (b)				1096.20	
			c) Overhead charges @ 0.25 on (a+b)				3579.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				1789.93	
			Rate per metre = (a+b+c+d)				19689.24	
						say	**19689.00**	
12.16 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking 0.15m/hour.					
			a) Labour					
			Mate	day	0.40	261.00	104.40	L-12
			Sinker	day	3.00	313.00	939.00	L-15
			Sinking helper (semi-skilled)	day	5.50	257.00	1413.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.00	886.00	3544.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1450.60	
			c) Overhead charges @ 0.25 on (a+b)				4603.38	
			d) Contractor's profit @ 0.1 on (a+b+c)				2301.69	
			Rate per metre = (a+b+c+d)				25318.56	
						say	**25319.00**	
12.16 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b) Including for dewatering @ 5% of cost, if required		
			11th m	5%	26584.00	27913.00		
			12th m	5%	27913.00	29309.00		
			13th m	5%	29309.00	30774.00		
			14th m	5%	30774.00	32313.00		
			15th m	5%	32313.00	33929.00		
			16th m	5%	33929.00	35625.00		
			17th m	5%	35625.00	37406.00		
			18th m	5%	37406.00	39276.00		
			19th m	5%	39276.00	41240.00		
			20th m	5%	41240.00	43302.00		
			Total Cost from 10m upto 20m		334369.00	351087.00		
			Avg Rate per metre		**33437.00**	**35109.00**		
12.16 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 25% for Kentledge	(b) Including 5% for dewatering, if required	
			21st m	7.5%	44333.00	55416.00	58187.00	
			22nd	7.5%	47658.00	59573.00	62552.00	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			23rd m	7.5%	51232.00	64040.00	67242.00	
			24th m	7.5%	55074.00	68843.00	72285.00	
			25th m	7.5%	59205.00	74006.00	77706.00	
			26th m	7.5%	63645.00	79556.00	83534.00	
			27th m	7.5%	68418.00	85523.00	89799.00	
			28th m	7.5%	73549.00	91936.00	96533.00	
			29th m	7.5%	79065.00	98831.00	103773.00	
			30th m	7.5%	84995.00	106244.00	111556.00	
			Total Cost from 20m upto 30m		627174.00	783968.00	823167.00	
			Avg Rate per metre		**62717.00**	**78397.00**	**82317.00**	
12.16 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b) Including 5% for dewatering, if required	
			31st m	10%	93495.00	112194.00	117804.00	
			32nd	10%	102845.00	123414.00	129585.00	
			33rd m	10%	113130.00	135756.00	142543.80	
			34th m	10%	124443.00	149332.00	156798.60	
			35th m	10%	136887.00	164264.00	172477.20	
			36th m	10%	150576.00	180691.00	189725.55	
			37th m	10%	165634.00	198761.00	208699.05	
			38th m	10%	182197.00	218636.00	229567.80	
			39th m	10%	200417.00	240500.00	252525.00	
			40th m	10%	220459.00	264551.00	277778.55	
			Total Cost from 30m upto 40m		1490083.00	1788099.00	1877504.55	
			Avg Rate per metre		**149008.00**	**178810.00**	**187750.00**	
12.16		**C**	**Soft Rock (10m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking 0.14m/hour.					
			a) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Sinker (skilled)	day	4.00	313.00	1252.00	L-15
			Sinking helper (semi-skilled)	day	16.00	257.00	4112.00	L-14
			Diver	day	1.40	352.00	492.80	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	7.00	1827.00	12789.00	P&M-075
			Air compressor with pneumatic breakers	hour	4.25	886.00	3765.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1655.45	
			Add for dewatering @ 5 per cent of cost, if required				910.50	
			c) Overhead charges @ 0.25 on (a+b)				6300.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				3150.21	
			Rate per metre = (a+b+c+d)				34652.35	
						say	**34652.00**	
12.16		**D**	**Hard Rock (10m dia well)**					
			Unit = Running Meter.					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking 0.12 m/ hour.					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Material					
			Gelatine 80 per cent	Kg	11.00	799.42	8793.62	M-104
			Electric Detonators	each.	44.00	5.63	247.60	M-094/100
			b) Labour					
			Mate	day	1.27	261.00	331.47	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	24.00	247.00	5928.00	L-13
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.50	1827.00	15529.50	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	886.00	2658.00	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				909.38	
			Consumables in sinking @ 10 per cent of cost of (b+c).				2730.03	
			d) Overhead charges @ 0.25 on (a+b+c)				9767.90	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4883.95	
			Rate per metre = (a+b+c+d+e)				53723.45	
						say	**53723.00**	
12.17	**1200**		**Sinking of 11 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter					
			Taking output = 0.50 m					
			Diameter of well - 11 m.					
		A	**Sandy Soil**					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.21	261.00	54.81	L-12
			Sinker (skilled)	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	3.30	257.00	848.10	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Consumables in sinking @10 per cent of (b)				1096.20	
			c) Overhead charges @ 0.25 on (a+b)				3357.65	
			d) Contractor's profit @ 0.1 on (a+b+c)				1678.83	
			Cost for 0.5 m = a+b+c				18467.09	
			Rate per metre = (a+b+c) / 0.50				36934.18	
						say	**36934.00**	
12.17 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.13 m/hour					
			a) Labour					
			Mate	day	0.32	261.00	83.52	L-12
			Sinker	day	2.00	313.00	626.00	L-15
			Sinking helper (semi-skilled)	day	4.50	257.00	1156.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	4.00	1827.00	7308.00	P&M-075
			Consumables in sinking @10 per cent of (b)				730.80	

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.25 on (a+b+c)				2476.21	
			d) Contractor's profit @ 0.1 on (a+b+c+d)				1238.10	
			Cost for 0.5m = a+b+c+d				13619.13	
			Rate per metre = (a+b+c+d)/0.50				27238.26	
						say	**27238.00**	
12.17 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	28600.00			
			12th m	5%	30030.00			
			13th m	5%	31532.00			
			14th m	5%	33109.00			
			15th m	5%	34764.00			
			16th m	5%	36502.00			
			17th m	5%	38327.00			
			18th m	5%	40243.00			
			19th m	5%	42255.00			
			20th m	5%	44368.00			
			Total Cost from 10m upto 20m		359730.00			
			Avg Rate per metre		**35973.00**			
12.17 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	47696.00	57235.00		
			22nd m	7.5%	51273.00	61528.00		
			23rd m	7.5%	55118.00	66142.00		
			24th m	7.5%	59252.00	71102.00		
			25th m	7.5%	63696.00	76435.00		
			26th m	7.5%	68473.00	82168.00		
			27th m	7.5%	73608.00	88330.00		
			28th m	7.5%	79129.00	94955.00		
			29th m	7.5%	85064.00	102077.00		
			30th m	7.5%	91444.00	109733.00		
			Total Cost from 20m upto 30m		674753.00	809705.00		
			Avg Rate per metre		**67475.00**	**80971.00**		
12.17 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b) Including 20% for Kentledge		
			31st m	10%	100588.00	120706.00		
			32nd	10%	110647.00	132776.00		
			33rd m	10%	121712.00	146054.00		
			34th m	10%	133883.00	160660.00		
			35th m	10%	147271.00	176725.00		
			36th m	10%	161998.00	194398.00		
			37th m	10%	178198.00	213838.00		
			38th m	10%	196018.00	235222.00		
			39th m	10%	215620.00	258744.00		
			40th m	10%	237182.00	284618.00		
			Total Cost from 30m upto 40m		1603117.00	1923741.00		
			Avg Rate per metre		**160312.00**	**192374.00**		

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.17		B	**Clayey Soil (11 m dia. Well)**					
			Unit = Running Meter					
			Taking output = 0.50 meter					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.10 m/hour					
			a) Labour					
			Mate	day	0.26	261.00	67.86	L-12
			Sinker (skilled)	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.00	1827.00	9135.00	P&M-075
			Consumables in sinking @ 10 per cent of (b)				913.50	
			c) Overhead charges @ 0.25 on (a+b)				2981.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				1490.86	
			Cost for 0.5m = a+b+c+d				16399.43	
			Rate per metre = (a+b+c+d)/0.50				32798.87	
						say	**32799.00**	
12.17 B		(ii)	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.08 m/hour					
			a) Labour					
			Mate	day	0.43	261.00	112.23	L-12
			Sinker	day	3.50	313.00	1095.50	L-15
			Sinking helper (semi-skilled)	day	5.75	257.00	1477.75	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay	hour	4.25	886.00	3765.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1472.75	
			c) Overhead charges @ 0.25 on (a+b)				4721.43	
			d) Contractor's profit @ 0.1 on (a+b+c)				2360.72	
			Cost for 0.5m = a+b+c+d				25967.88	
			Rate per metre = (a+b+c+d)/0.50				51935.76	
						say	**51936.00**	
12.17 B		(iii)	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	54533.00	57260.00		
			12th m	5%	57260.00	60123.00		
			13th m	5%	60123.00	63129.00		
			14th m	5%	63129.00	66285.00		
			15th m	5%	66285.00	69599.00		
			16th m	5%	69599.00	73079.00		
			17th m	5%	73079.00	76733.00		
			18th m	5%	76733.00	80570.00		
			19th m	5%	80570.00	84599.00		
			20th m	5%	84599.00	88829.00		
			Total Cost from 10m upto 20m		685910.00	720206.00		
			Avg Rate per metre		**68591.00**	**72021.00**		
12.17 B		(iv)	**Beyond 20m upto 30 m**					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	90944.00	113680.00	119364.00	
			22nd	7.5%	97765.00	122206.00	128316.00	
			23rd m	7.5%	105097.00	131371.00	137940.00	
			24th m	7.5%	112979.00	141224.00	148285.00	
			25th m	7.5%	121452.00	151815.00	159406.00	
			26th m	7.5%	130561.00	163201.00	171361.00	
			27th m	7.5%	140353.00	175441.00	184213.00	
			28th m	7.5%	150879.00	188599.00	198029.00	
			29th m	7.5%	162195.00	202744.00	212881.00	
			30th m	7.5%	174360.00	217950.00	228848.00	
			Total Cost from 20m upto 30m		1286585.00	1608231.00	1688643.00	
			Avg Rate per metre		**128659.00**	**160823.00**	**168864.00**	
12.17 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	191796.00	230155.00	241663.00	
			32nd	10%	210976.00	253171.00	265830.00	
			33rd m	10%	232074.00	278489.00	292413.00	
			34th m	10%	255281.00	306337.00	321654.00	
			35th m	10%	280809.00	336971.00	353820.00	
			36th m	10%	308890.00	370668.00	389201.00	
			37th m	10%	339779.00	407735.00	428122.00	
			38th m	10%	373757.00	448508.00	470933.00	
			39th m	10%	411133.00	493360.00	518028.00	
			40th m	10%	452246.00	542695.00	569830.00	
			Total Cost from 30m upto 40m		3056741	3668089	3851494	
			Avg Rate per metre		**305674.00**	**366809.00**	**385149.00**	
12.17		**C**	**Soft Rock (11m dia well)**					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.06 m/hour					
			a) Labour					
			Mate	day	0.95	261.00	247.95	L-12
			Sinker (skilled)	day	4.25	313.00	1330.25	L-15
			Sinking helper (semi-skilled)	day	18.00	257.00	4626.00	L-14
			Diver	day	1.50	352.00	528.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.00	1827.00	14616.00	P&M-075
			Air compressor with pneumatic breakers	hour	4.50	886.00	3987.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1860.30	
			Add for dewatering @ 5 per cent of cost of (b), if required				1023.17	
			c) Overhead charges @ 0.25 on (a+b)				7054.67	

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				3527.33	
			Cost for 0.5m = a+b+c+d				38800.66	
			Rate per metre = (a+b+c+d)/0.50				77601.33	
						say	**77601.00**	
12.17		**D**	**Hard Rock (11m dia well)**					
			Unit = Running Meter.					
			Taking output = 0.50 m					
			Depth in hard rock upto 3 m					
			Rate of sinking @ 0.05 m/hour					
			a) Material					
			Gelatine 80 per cent	Kg	12.00	799.42	9593.04	M-104
			Electric Detonators	each.	48.00	5.63	270.11	M-094/100
			b) Labour					
			Mate	day	1.35	261.00	352.35	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	26.00	247.00	6422.00	L-13
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1827.00	18270.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.50	886.00	3101.00	P&M-063
			Dewatering @ 5 per cent of cost (c), if required.				1068.55	
			Consumables in sinking @ 10 per cent of cost of (b+c).				3008.94	
			d) Overhead charges @ 0.25 on (a+b+c)				11007.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5503.75	
			Cost for 0.5m = a+b+c+d+e				60541.23	
			Rate per metre = (a+b+c+d+e)/0.50				121082.46	
						say	**121082.00**	
12.18	**1200**		**Sinking of 12 m external diameter well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Diameter of well - 12 m.					
		A	**Sandy Soil**					
		(i)	**I) Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.05 m/hour					
			a) Labour					
			Mate	day	0.22	261.00	57.42	L-12
			Sinker (skilled)	day	1.75	313.00	547.75	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.00	1827.00	10962.00	P&M-075
			Consumables in sinking @10 per cent of (b)				1096.20	
			c) Overhead charges @ 0.25 on (a+b)				3422.84	
			d) Contractor's profit @ 0.1 on (a+b+c)				1711.42	
			Cost for 0.25m = a+b+c+d				18825.63	
			Rate per metre = (a+b+c+d)/0.25				75302.54	
						say	**75303.00**	

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.18 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.038 m/hour					
			a) Labour					
			Mate	day	0.37	261.00	96.57	L-12
			Sinker	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	4.75	257.00	1220.75	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.50	1827.00	11875.50	P&M-075
			Consumables in sinking @10 per cent of (b)				1187.55	
			c) Overhead charges @ 0.25 on (a+b)				3790.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				1895.36	
			Cost for 0.25m = a+b+c+d				20848.95	
			Rate per metre = (a+b+c+d)/0.25				83395.79	
						say	**83396.00**	
12.18 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	87566.00			
			12th m	5%	91944.00			
			13th m	5%	96541.00			
			14th m	5%	101368.00			
			15th m	5%	106436.00			
			16th m	5%	111758.00			
			17th m	5%	117346.00			
			18th m	5%	123213.00			
			19th m	5%	129374.00			
			20th m	5%	135843.00			
			Total Cost from 10m upto 20m		1101389.00			
			Avg Rate per metre		**110139.00**			
12.18 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	146031.00	175237.00		
			22nd m	7.5%	156983.00	188380.00		
			23rd m	7.5%	168757.00	202508.00		
			24th m	7.5%	181414.00	217697.00		
			25th m	7.5%	195020.00	234024.00		
			26th m	7.5%	209647.00	251576.00		
			27th m	7.5%	225371.00	270445.00		
			28th m	7.5%	242274.00	290729.00		
			29th m	7.5%	260445.00	312534.00		
			30th m	7.5%	279978.00	335974.00		
			Total Cost from 20m upto 30m		2065920.00	2479104.00		
			Avg Rate per metre		**206592.00**	**247910.00**		
12.18 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	307976.00	369571.00		
			32nd	10%	338774.00	406529.00		

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			33rd m	10%	372651.00	447181.00		
			34th m	10%	409916.00	491899.00		
			35th m	10%	450908.00	541090.00		
			36th m	10%	495999.00	595199.00		
			37th m	10%	545599.00	654719.00		
			38th m	10%	600159.00	720191.00		
			39th m	10%	660175.00	792210.00		
			40th m	10%	726193.00	871432.00		
			Total Cost from 30m upto 40m		4908350	5890021		
			Avg Rate per metre		**490835.00**	**589002.00**		
12.18		**B**	**Clayey Soil (12 m dia. Well)**					
			Unit = Running Meter.					
			Taking output = 0.25 meter.					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.04 m/hour					
			a) Labour					
			Mate	day	0.30	261.00	78.30	L-12
			Sinker (skilled)	day	3.00	313.00	939.00	L-15
			Sinking helper (semi-skilled)	day	4.50	257.00	1156.50	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1827.00	11418.75	P&M-075
			Consumables in sinking @ 10 per cent of (b)				1141.88	
			c) Overhead charges @ 0.25 on (a+b)				3683.61	
			d) Contractor's profit @ 0.1 on (a+b+c)				1841.80	
			Cost for 0.25m = a+b+c+d				20259.83	
			Rate per metre = (a+b+c+d)/0.25				81039.34	
						say	**81039.00**	
12.18 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.03 m/hour					
			a) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Sinker	day	3.75	313.00	1173.75	L-15
			Sinking helper (semi-skilled)	day	6.00	257.00	1542.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1827.00	15218.91	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	886.00	3987.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1920.59	
			c) Overhead charges @ 0.25 on (a+b)				5991.88	
			d) Contractor's profit @ 0.1 on (a+b+c)				2995.94	
			Cost for 0.25m = a+b+c+d				32955.36	
			Rate per metre = (a+b+c+d)/0.25				131821.42	
						say	**131821.00**	
12.18 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	138412.00	145333.00		
			12th m	5%	145333.00	152600.00		
			13th m	5%	152600.00	160230.00		
			14th m	5%	160230.00	168242.00		

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	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			15th m	5%	168242.00	176654.00		
			16th m	5%	176654.00	185487.00		
			17th m	5%	185487.00	194761.00		
			18th m	5%	194761.00	204499.00		
			19th m	5%	204499.00	214724.00		
			20th m	5%	214724.00	225460.00		
			Total Cost from 10m upto 20m		1740942.00	1827990.00		
			Avg Rate per metre		**174094.00**	**182799.00**		
12.18 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	230828.00	288535.00	302962.00	
			22nd	7.5%	248140.00	310175.00	325684.00	
			23rd m	7.5%	266751.00	333439.00	350111.00	
			24th m	7.5%	286757.00	358446.00	376368.00	
			25th m	7.5%	308264.00	385330.00	404597.00	
			26th m	7.5%	331384.00	414230.00	434942.00	
			27th m	7.5%	356238.00	445298.00	467563.00	
			28th m	7.5%	382956.00	478695.00	502630.00	
			29th m	7.5%	411678.00	514598.00	540328.00	
			30th m	7.5%	442554.00	553193.00	580853.00	
			Total Cost from 20m upto 30m		3265550	4081939	4286038	
			Avg Rate per metre		**326555.00**	**408194.00**	**428604.00**	
12.18 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	486809.00	584171.00	613380.00	
			32nd	10%	535490.00	642588.00	674717.00	
			33rd m	10%	589039.00	706847.00	742189.00	
			34th m	10%	647943.00	777532.00	816409.00	
			35th m	10%	712737.00	855284.00	898048.00	
			36th m	10%	784011.00	940813.00	987854.00	
			37th m	10%	862412.00	1034894.00	1086639.00	
			38th m	10%	948653.00	1138384.00	1195303.00	
			39th m	10%	1043518.00	1252222.00	1314833.00	
			40th m	10%	1147870.00	1377444.00	1446316.00	
			Total Cost from 30m upto 40m		7758482	9310179	9775688	
			Avg Rate per metre		**775848.00**	**931018.00**	**977569.00**	
12.18		**C**	**Soft Rock (12m dia well)**					
			Unit = Running Meter					
			Taking output = 0.25 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.025 m/hour					
			a) Labour					
			Mate	day	1.06	261.00	276.66	L-12
			Sinker (skilled)	day	4.50	313.00	1408.50	L-15

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Sinking helper (semi-skilled)	day	20.00	257.00	5140.00	L-14
			Diver	day	1.75	352.00	616.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1827.00	18270.00	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.75	886.00	4208.50	P&M-063
			Consumables in sinking @ 10 per cent of (b)				2247.85	
			Add for dewatering @ 5 per cent, if required				1236.32	
			c) Overhead charges @ 0.25 on (a+b)				8350.96	
			d) Contractor's profit @ 0.1 on (a+b+c)				4175.48	
			Cost for 0.25m = a+b+c+d				45930.26	
			Rate per metre = (a+b+c+d)/0.25				183721.05	
						say	**183721.00**	
12.18		**D**	**Hard Rock (12m dia well)**					
			Unit = Running Meter					
			Taking output = 0.25 m					
		(i)	**Depth in hard rock strata upto 3 m**					
			Rate of sinking @ 0.020 m/hour					
			a) Material					
			Gelatine80 per cent	Kg	14.00	799.42	11191.88	M-104
			Electric detonator	each.	56.00	5.63	315.13	M-094/100
			b) Labour					
			Mate	day	1.44	261.00	375.84	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	28.00	247.00	6916.00	L-13
			Mazdoor (Skilled)	day	4.50	313.00	1408.50	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	12.50	1827.00	22837.50	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	4.00	886.00	3544.00	P&M-063
			Dewatering @ 5 per cent, if required.				1319.08	
			Consumables in sinking @ 10 per cent of (c).				2770.06	
			d) Overhead charges @ 0.25 on (a+b+c)				12842.50	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6421.25	
			Cost for 0.25m = a+b+c+d+e				70633.72	
			Rate per metre = (a+b+c+d+e)/0.25				282534.90	
						say	**282535.00**	
12.19	**1200**		**Sinking of Twin D Type well (other than pneumatic method of sinking) through all types of strata namely sandy soil, clayey soil and rock as shown against each case, complete as per drawing and technical specifications. Depth of sinking is reckoned from bed level.**					
			Unit = Running Meter					
			Taking output = 1 m					
			Dimensions of well.					
			Overall length = 12 m					
			Overall width = 6 m					
		A	**Sandy Soil**					
		(i)	**Depth from bed level upto 3.0 M**					
			Rate of sinking @ 0.18 m/hour					
			a) Labour					
			Mate	day	0.20	261.00	52.20	L-12

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Sinker (skilled)	day	1.25	313.00	391.25	L-15
			Sinking helper (semi-skilled)	day	3.75	257.00	963.75	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.50	1827.00	10048.50	P&M-075
			Consumables in sinking @10 per cent of (b)				1004.85	
			c) Overhead charges @ 0.25 on (a+b)				3115.14	
			d) Contractor's profit @ 0.1 on (a+b+c)				1557.57	
			Rate per metre = (a+b+c+d)				17133.26	
						say	**17133.00**	
12.19 A		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.17 m/hour					
			a) Labour					
			Mate	day	0.30	261.00	78.30	L-12
			Sinker	day	1.50	313.00	469.50	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	5.88	1827.00	10742.76	P&M-075
			Consumables in sinking @10 per cent of (b)				1074.28	
			c) Overhead charges @ 0.25 on (a+b)				3348.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				1674.10	
			Rate per metre = (a+b+c+d)				18415.15	
						say	**18415.00**	
12.19 A		**(iii)**	**Beyond 10m upto 20m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
			11th m	5%	19336.00			
			12th m	5%	20303.00			
			13th m	5%	21318.00			
			14th m	5%	22384.00			
			15th m	5%	23503.00			
			16th m	5%	24678.00			
			17th m	5%	25912.00			
			18th m	5%	27208.00			
			19th m	5%	28568.00			
			20th m	5%	29996.00			
			Total Cost from 10m upto 20m		243206.00			
			Avg Rate per metre		**24321.00**			
12.19 A		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour.		(a)	(b)Including 20% for Kentledge		
			21st m	7.5%	32246.00	38695.00		
			22nd m	7.5%	34664.00	41597.00		
			23rd m	7.5%	37264.00	44717.00		
			24th m	7.5%	40059.00	48071.00		
			25th m	7.5%	43063.00	51676.00		
			26th m	7.5%	46293.00	55552.00		
			27th m	7.5%	49765.00	59718.00		
			28th m	7.5%	53497.00	64196.00		
			29th m	7.5%	57509.00	69011.00		
			30th m	7.5%	61822.00	74186.00		
			Total Cost from 20m upto 30m		456182.00	547419.00		

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Avg Rate per metre		**45618.00**	**54742.00**		
12.19 A		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 20 per cent of cost for Kentledge including supports, loading arrangement, and Labour etc.		(a)	(b)Including 20% for Kentledge		
			31st m	10%	68004.00	81605.00		
			32nd	10%	74804.00	89765.00		
			33rd m	10%	82284.00	98741.00		
			34th m	10%	90512.00	108614.00		
			35th m	10%	99563.00	119476.00		
			36th m	10%	109519.00	131423.00		
			37th m	10%	120471.00	144565.00		
			38th m	10%	132518.00	159022.00		
			39th m	10%	145770.00	174924.00		
			40th m	10%	160347.00	192416.00		
			Total Cost from 30m upto 40m		1083792.00	1300551.00		
			Avg Rate per metre		**108379.00**	**130055.00**		
12.19		**B**	**Clayey Soil (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 meter					
		(i)	**Depth below bed level upto 3.0 M**					
			Rate of sinking @ 0.16 m/hour					
			a) Labour					
			Mate	day	0.26	261.00	67.86	L-12
			Sinker (skilled)	day	2.50	313.00	782.50	L-15
			Sinking helper (semi-skilled)	day	4.00	257.00	1028.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.25	1827.00	11418.75	P&M-075
			Consumables in sinking @ 10 per cent of (b)				1141.88	
			c) Overhead charges @ 0.25 on (a+b)				3609.75	
			d) Contractor's profit @ 0.1 on (a+b+c)				1804.87	
			Rate per metre = (a+b+c+d)				19853.60	
						say	**19854.00**	
12.19 B		**(ii)**	**Beyond 3m upto 10m depth**					
			Rate of sinking @ 0.15 m/hour					
			a) Labour					
			Mate	day	0.45	261.00	117.45	L-12
			Sinker	day	3.25	313.00	1017.25	L-15
			Sinking helper (semi-skilled)	day	6.00	257.00	1542.00	L-14
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	6.67	1827.00	12186.09	P&M-075
			Air compressor with pneumatic chisel attachment for cutting hard clay.	hour	4.50	886.00	3987.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				1617.31	
			c) Overhead charges @ 0.25 on (a+b)				5116.77	
			d) Contractor's profit @ 0.1 on (a+b+c)				2558.39	
			Rate per metre = (a+b+c+d)				28142.26	
						say	**28142.00**	
12.19 B		**(iii)**	**Beyond 10 m upto 20 m**					
		a	Add 5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		b	Add for dewatering @ 5 per cent of cost, if required.		(a)	(b)Including for dewatering @ 5% of cost, if		
			11th m	5%	29549.00	31026.00		
			12th m	5%	31026.00	32577.00		
			13th m	5%	32577.00	34206.00		
			14th m	5%	34206.00	35916.00		
			15th m	5%	35916.00	37712.00		
			16th m	5%	37712.00	39598.00		
			17th m	5%	39598.00	41578.00		
			18th m	5%	41578.00	43657.00		
			19th m	5%	43657.00	45840.00		
			20th m	5%	45840.00	48132.00		
			Total Cost from 10m upto 20m		371659.00	390242.00		
			Avg Rate per metre		**37166.00**	**39024.00**		
12.19 B		**(iv)**	**Beyond 20m upto 30 m**					
		a	Add 7.5 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering on the cost, if required					
		c	Add 25 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c)Including 25% for Kentledge	(b)Including 5% for dewatering, if required	
			21st m	7.5%	49278.00	61598.00	64678.00	
			22nd	7.5%	52974.00	66218.00	69529.00	
			23rd m	7.5%	56947.00	71184.00	74743.00	
			24th m	7.5%	61218.00	76523.00	80349.00	
			25th m	7.5%	65809.00	82261.00	86374.00	
			26th m	7.5%	70745.00	88431.00	92853.00	
			27th m	7.5%	76051.00	95064.00	99817.00	
			28th m	7.5%	81755.00	102194.00	107304.00	
			29th m	7.5%	87887.00	109859.00	115352.00	
			30th m	7.5%	94479.00	118099.00	124004.00	
			Total Cost from 20m upto 30m		697143.00	871431.00	915003.00	
			Avg Rate per metre		**69714.00**	**87143.00**	**91500.00**	
12.19 B		**(v)**	**Beyond 30m upto 40 m**					
		a	Add 10 per cent for every additional meter depth of sinking over the rate of sinking for the previous meter					
		b	Add 5 per cent of cost for dewatering, if required					
		c	Add 20 per cent of cost for Kentledge including supports, loading arrangement and Labour).		(a)	(c) Including 20% for Kentledge	(b)Including 5% for dewatering, if required	
			31st m	10%	103927.00	124712.00	130948.00	
			32nd	10%	114320.00	137184.00	144043.00	
			33rd m	10%	125752.00	150902.00	158447.00	
			34th m	10%	138327.00	165992.00	174292.00	
			35th m	10%	152160.00	182592.00	191722.00	
			36th m	10%	167376.00	200851.00	210894.00	
			37th m	10%	184114.00	220937.00	231984.00	
			38th m	10%	202525.00	243030.00	255182.00	
			39th m	10%	222778.00	267334.00	280701.00	
			40th m	10%	245056.00	294067.00	308770.00	
			Total Cost from 30m upto 40m		1656335.00	1987601.00	2086983.00	
			Avg Rate per metre		**165634.00**	**198760.00**	**208698.00**	
12.19		**C**	**Soft Rock (Twin D Type Well)**					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in soft rock strata upto 3m					
			Rate of sinking @ 0.12 m/hour					
			a) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Sinker (skilled)	day	4.50	313.00	1408.50	L-15
			Sinking helper (semi-skilled)	day	15.00	257.00	3855.00	L-14
			Diver	day	1.50	352.00	528.00	L-07
			b) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	8.33	1827.00	15218.91	P&M-075
			Air compressor with pneumatic breakers	hour	6.00	886.00	5316.00	P&M-063
			Consumables in sinking @ 10 per cent of (b)				2053.49	
			Add for dewatering @ 5 per cent, if required				1129.42	
			c) Overhead charges @ 0.25 on (a+b)				7433.45	
			d) Contractor's profit @ 0.1 on (a+b+c)				3716.72	
			Rate per metre = (a+b+c+d)				40883.95	
						say	**40884.00**	
12.19		**D**	**Hard Rock (Twin D Type Well)**					
			Unit = Running Meter					
			Taking output = 1 m					
			Depth in hard rock strata upto 3 m					
			Rate of sinking @ 0.10 m/hour					
			a) Material					
			Geletine80 per cent	Kg	10.00	799.42	7994.20	M-104
			Electric detonators	each.	40.00	5.63	225.09	M-094/100
			b) Labour					
			Mate	day	1.34	261.00	349.74	L-12
			Driller	day	2.00	295.00	590.00	L-06
			Blaster	day	0.25	408.00	102.00	L-03
			Mazdoor	day	25.00	247.00	6175.00	L-13
			Mazdoor (Skilled)	day	4.25	313.00	1330.25	L-15
			c) Machinery					
			Hire & running charges of crane with grab bucket of 0.75 cum capacity and accessories.	hour	10.00	1827.00	18270.00	P&M-075
			Hire & running charges of compressor with pneumatic breaker/Jack hammer or drill	hour	3.00	886.00	2658.00	P&M-063
			Dewatering @ 5 per cent of cost of (b+c), if required.				1473.75	
			Consumables in sinking @ 10 per cent of (c).				2240.17	
			d) Overhead charges @ 0.25 on (a+b+c)				10352.05	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5176.03	
			Rate per metre = (a+b+c+d+e)				56936.28	
						say	**56936.00**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.20	1200		**Pneumatic sinking of wells with equipment of approved design, drawing and specifications worked by competent and trained personnel and comprising of compression and decompression chambers, reducers, two air locks separately for men and plant & materials, arrangement for supply of fresh air to working chambers, check valves, exhaust valves, shafts made from steel plates of riveted construction not less than 6 mm thick to withstand an air pressure of 0.50 MPa, controlled blasting of hard rock where required, staircases and 1 m wide landing plateforms with railing, arrangement for compression and decompression, electric lighting of 50 V maximum, proper rooms for rest and medical examinations and compliance with safety precautions as per IS:4138, all as per clause1207.6 of MoRTH Specifications.**					
			Unit - 1 cum					
			Taking output = 5 cum					
			a) Material					
			M35 grade RCC corbel provided for supporting of equipment (Dimensions as per ground conditions). Rate may be adopted vide Item 12.8 (H)	Cum	8.00	4777.00	38216.00	Item 12.8 (H)
			HYSD bar reinforcement in corbel	tonne	0.48	43682.50	20967.60	M-082
			Blasting material					
			Gelatine 80 per cent	Kg	1.50	799.42	1199.13	M-104
			Electric detonators	each	6.00	5.63	33.76	M-094/100
			b) Labour					
			Medical Officer	day	0.50	918.00	459.00	L-16
			Para medical personnel	day	1.00	452.00	452.00	L-19
			Mate	day	1.86	261.00	485.46	L-12
			Driller	day	1.00	295.00	295.00	L-06
			Blaster	day	0.50	408.00	204.00	L-03
			Mazdoor (for cutting, blasting, cleaning, removal of Material etc.)	day	30.00	247.00	7410.00	L-13
			Mazdoor (Skilled) (for fixation and removal of adopter for air lock, carrying out mechanical and electrical operations and repairs and other skilled jobs.)	day	10.00	313.00	3130.00	L-15
			Diver	day	4.00	352.00	1408.00	L-07
			c) Machinery					
			(i) Induction, deinduction and erection of plant and equipment including all components and accessories for pneumatic method of well sinking.	hour	6.00	input	#VALUE!	P&M-082
			Induction and deinduction	L.S			100000.00	
			Erection at site and commissioning	L.S			150000.00	
			Usage of plant and equipment for pneumatic method of well sinking	hour	6.00	5954.00	35724.00	P&M-038
			Air compressor 250 cfm, 2 nos.	hour	2 x 6	457.00	5484.00	P&M-001
			Hire and running charges of crane of 15 tonne capacity	hour	6.00	1217.00	7302.00	P&M-072
			Motorised barge of 20 tonne capacity	hour	6.00	222.00	1332.00	P&M-066
			Boat to carry atleast 20 persons	hour	6.00	222.00	1332.00	P&M-066
			Electric generating set 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Tipper 10 tonne capacity	hour	6.00	1015.00	6090.00	P&M-048
			d) Overhead charges @ 0.25 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 5 cum = a+b+c+d+e (see notes below)				**#VALUE!**	
			Rate per cum = (a+b+c+d+e)/5				**#VALUE!**	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	1.The cost of induction, deinduction and erection of equipment shall be divided by the total quantity of pneumatic sinking for all the wells of a particular bridge to arrive at the per cum rate on account of this item.					
			2.Cost of pneumatic sinking per cum of individual wells will be added to the cost indicated at (1) above to arrive at the final rate of pneumatic sinking per cum.					
			3.The cost of induction and deinduction will depend upon the distance involved for shifting of equipment which may be assessed in individual cases as per actual ground conditions at the time of making of cost estimates.					
			4.In case pneumatic sinking is involved on a dry bed, the provision of barge and boat may be omitted.					
			5.The necessity and dimensions of the corbel will be as per actual ground conditions.					
			6.Small equipments like welding sets, pumps, vibrators, pneumatic tools, portable lamps, fire extinguishers, hose pipes etc., have not been included as the same are covered as items of minor T&P under overhead charges.					
			7.Depth of sinking shall be restricted to 30 m.					
12.21	**1207**		**Sand Filling in Wells complete as per Drawing and Technical Specifications.**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Sand (assuming 20 per cent voids)	cum	1.20	67.66	81.19	M-006
			b) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor	day	0.30	247.00	74.10	L-13
			c) Overhead charges @ 0.25 on (a+b)				39.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				19.74	
			Rate per cum (a+b+c+d)				217.12	
						say	**217.00**	
12.22	**1200 & 1900**		**Providing Steel Liner 10 mm thick for Curbs and 6 mm thick for Steining of Wells including Fabricating and Setting out as per Detailed Drawing.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			i) Structural steel including 5 per cent wastage	tonne	1.05	40170.00	42178.50	M-179
			b) Labour					
			Mate	day	1.24	261.00	323.64	L-12
			Fitter	day	6.00	336.00	2016.00	L-08
			Blacksmith	day	5.00	295.00	1475.00	L-01
			Welder	day	5.00	370.00	1850.00	L-02b
			Mazdoor	day	10.00	247.00	2470.00	L-13
			Electrodes, cutting gas and other consumables @ 5 per cent on cost a (a) above.				2108.93	
			c) Overhead charges @ 0.25 on (a+b)				13105.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				6552.76	
			Rate for per MT (a+b+c+d)				72080.34	
						say	**72080.00**	
12.23	**1100 & 1700**		**Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.**					
			Pile diameter-750 mm					
			Unit = meter					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking output = 15 m					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	6.62	5084.00	33656.08	Item 12.11 (C) iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	6.62	4759.00	31504.58	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	7802.00	46812.00	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	510.00	255.00	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.30	1371.00	411.30	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.30	1015.00	304.50	P&M-048
			Bentonite	kg	300.00	3.40	1020.00	M-071
			c) Labour					
			Mate/Supervisor	day	0.14	261.00	36.54	L-12
			Mazdoor	day	3.50	247.00	864.50	L-13
			d) Overhead charges @ 0.25 on (b+c)				12425.96	
			e) Contractor's profit @ 0.1 on (b+c+d)				6212.98	
			Cost for 15 m = a+b+c+d+d+e				99847.36	
			Rate per metre (a+b+c+d+e)/15				6656.49	
						say	**6656.00**	
			A) Rate with using Concrete Mixer				**6799.00**	
			B) Rate with using Batching Plant				**6656.00**	
12.24	**1100,1600 & 1700**		**Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.**					
			Pile diameter-1000 mm					
			Unit = meter					
			Taking output = 10 m					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	7.85	5084.00	39909.40	Item 12.11 (C) iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	7.85	4759.00	37358.15	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	7802.00	46812.00	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	510.00	255.00	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.40	1371.00	548.40	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.40	1015.00	406.00	P&M-048
			Bentonite	kg	350.00	3.40	1190.00	M-071
			c) Labour					
			Mate/Supervisor	day	0.16	261.00	41.76	L-12

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	4.00	247.00	988.00	L-13
			d) Overhead charges @ 0.25 on (b+c)				12560.29	
			e) Contractor's profit @ 0.1 on (b+c+d)				6280.15	
			Cost for 10 m = a+b+c+d+d+e				106439.75	
			Rate per metre (a+b+c+d+e)/10				10643.97	
						say	**10644.00**	
			A) Rate with using Concrete Mixer				**10899.00**	
			B) Rate with using Batching Plant				**10644.00**	
12.25	**1100 & 1700**		**Bored cast-in-situ M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and Technical Specifications and removal of excavated earth with all lifts and lead upto 1000 m.**					
			Pile diameter-1200 mm					
			Unit = meter					
			Taking output = 9 m					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	10.17	5084.00	51704.28	Item 12.11 (C) iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	10.17	4759.00	48399.03	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			Concrete to be cast with a tremie pipe 200mm dia.					
			b) Machinery(for boring and construction)					
			Hire and running charges of hydraulic piling rig with power unit and complete accessories including shifting from one bore location to another.	hour	6.00	7802.00	46812.00	P&M-036
			Hire and running charges of light crane for lowering reinforcement cage	hour	0.50	510.00	255.00	P&M-013
			Hire and running charges of Bentonite pump	hour	6.00	Rate included in piling rig		
			Loader I cum bucket capacity.	hour	0.50	1371.00	685.50	P&M-017
			Tipper 5.5 cum capacity for disposal of muck from pile bore hole	hour	0.50	1015.00	507.50	P&M-048
			Bentonite	kg	385.00	3.40	1309.00	M-071
			c) Labour					
			Mate/Supervisor	day	0.18	261.00	46.98	L-12
			Mazdoor	day	4.50	247.00	1111.50	L-13
			d) Overhead charges @ 0.25 on (b+c)				12681.87	
			e) Contractor's profit @ 0.1 on (b+c+d)				6340.94	
			Cost for 9 m = a+b+c+d+d+e				118149.32	
			Rate per metre (a+b+c+d+e)/9				13127.70	
						say	**13128.00**	
			A) Rate with using Concrete Mixer				**13495.00**	
			B) Rate with using Batching Plant				**13128.00**	
12.26	**1100 & 1700**		**Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile diameter - 750 mm					
			Unit = Running meter					
			Taking output = 40 metre					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	17.66	5084.00	89783.44	Item 12.11 (C) iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	17.66	4759.00	84043.94	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	41.50	6640.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	56.17	3931.90	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	36.58	1829.00	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories..	hour	6.00	7802.00	46812.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	1217.00	608.50	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.12	261.00	31.32	L-12
			Mazdoor	day	3.00	247.00	741.00	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				15148.43	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				7574.22	
			Cost for 40 m = a+b+c+d+e				167360.31	
			Rate per metre (a+b+c+d+e)/40				4184.01	
						say	**4184.00**	
			A) Rate with using Concrete Mixer				**4327.00**	
			B) Rate with using Batching Plant				**4184.00**	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.27	**1100 & 1700**		**Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile diameter - 1000 mm					
			Unit = Running meter					
			Taking output = 30 metre					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	23.55	5084.00	119728.20	Item 12.11 (C) iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	23.55	4759.00	112074.45	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	41.50	6640.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	56.17	3931.90	M-124
			iii) Steel helmet and cushion block on top of casing head during driving	Kg	50.00	36.58	1829.00	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	7802.00	46812.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	1217.00	608.50	P&M-070
			Hire and running charges for light crane for lowering reinforcement cage.	hour	0.50	510.00	255.00	P&M-013
			d) Labour					
			Mate/Supervisor	day	0.16	261.00	41.76	L-12

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	4.00	247.00	988.00	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				15276.54	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				7638.27	
			Cost for 30 m = a+b+c+d+e				196095.42	
			Rate per metre (a+b+c+d+e)/30				6536.51	
						say	**6537.00**	
			A) Rate with using Concrete Mixer				**6792.00**	
			B) Rate with using Batching Plant				**6537.00**	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.28	**1100 & 1700**		**Driven cast-in-place vertical M35 grade R.C.C. Pile excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile diameter - 1200 mm					
			Unit = Running meter					
			Taking output = 20 metre					
			a) Materials					
	added	**Case I**	PCC Grade M35 (with using Concrete Mixer)	cum	22.61	5084.00	114949.24	12.11 © iv case-I
		Case II	PCC Grade M35 (With using Batching Plant)	cum	22.61	4759.00	107600.99	Item 12.11 (C) iv case II
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(C) (IV)					
			b) Materials Pile shoes					
			i) C.I. shoes for the pile	Kg	160.00	41.50	6640.00	M-080
			ii) M.S. clamps for shoe @ 35 Kg per pile of 15 m	Kg	70.00	56.17	3931.90	M-124
			iii) Steel helmet on top of casing head during driving	Kg	50.00	36.58	1829.00	M-173
			c) Machinery					
			Hire and running charges of piling rig Including double acting pile driving hammer complete with power unit and accessories.	hour	6.00	7802.00	46812.00	P&M-085
			Hiring and running charges for light crane 5 tonnes lifting capacity for lowering reinforcement and handling steel casing.	hour	0.50	1217.00	608.50	P&M-070
			d) Labour					
			Mate/Supervisor	day	0.18	261.00	46.98	L-12
			Mazdoor	day	4.50	247.00	1111.50	L-13
			e) Overhead charges @ 0.25 on (b+c+d)				15244.97	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				7622.49	
			Cost for 20 m = a+b+c+d+e+f				191448.33	
			Rate per metre (a+b+c+d+e+f)/20				9572.42	
						say	**9572.00**	
			A) Rate with using Concrete Mixer				**9939.00**	
			B) Rate with using Batching Plant				**9572.00**	
		Note	1.The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			2.In case steel lining is included in the design for driven cast-in-situ pile and is planned to be retained, the same may be included in the rate analysis. In case the temporary steel casing used during casting is planned to be removed, an additional cost @ 0.50 per cent of cost of concrete may be provided to cover its usage.					
12.29	**1100 & 1700**		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 500 mm					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			RCC Grade M35	cum	11.78	4413.00	51985.14	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I Shoes	Kg	240.00	41.50	9960.00	M-080
			b) M.S. shoes	Kg	105.00	21.48	2255.40	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	36.58	1097.40	M-173
			c) Machinery					
			Crane20 t capacity	hour	6.00	1217.00	7302.00	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			d) Labour					
			Mate/Supervisor	day	0.12	261.00	31.32	L-12
			Mazdoor	day	3.00	247.00	741.00	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 60 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.30	**1100 & 1700**		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 750 mm					
			Unit = Running Meter					
			Taking output = 50 m					
			a) Materials					
			RCC Grade M35	cum	22.08	4413.00	97439.04	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes	Kg	160.00	41.50	6640.00	M-080
			b) M.S. shoes	Kg	70.00	21.48	1503.60	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	40.00	36.58	1463.20	M-173
			c) Machinery					
			Crane 40 T capacity	hour	6.00	1827.00	10962.00	P&M-074
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Labour					
			Mate/Supervisor	day	0.16	261.00	41.76	L-12
			Mazdoor	day	4.00	247.00	988.00	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 50 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.31	**1100 & 1700**		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Pile Diameter = 1000 mm					
			Unit = Running Meter					
			a) Materials					
			RCC Grade M35	cum	31.40	4413.00	138568.20	Item 12.11 (F) iv
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)					
			b) Material Pile shoes					
			a) C.I. shoes for the pile	Kg	160.00	41.50	6640.00	M-080
			b) M.S. shoes @ 35 Kg per pile of 15 m	Kg	70.00	21.48	1503.60	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	50.00	36.58	1829.00	M-173
			c) Machinery					
			Crane 80 t capacity.	hour	6.00	1827.00	10962.00	P&M-011
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			d) Labour					
			Mate/Supervisor	day	0.20	261.00	52.20	L-12
			Mazdoor	day	5.00	247.00	1235.00	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 40 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.32	**1100&1700**		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Size of pile - 300 mm x 300 mm					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	5.40	4413.00	23830.20	Item 12.11 (F) iv

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Material Pile shoes					
			a) C I shoes	kg	240.00	41.50	9960.00	M-080
			b) M. S shoes	kg	105.00	21.48	2255.40	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	36.58	1097.40	M-173
			c) Machinery					
			Crane 10 tonne capacity	hour	6.00	1217.00	7302.00	P&M-071
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			d) Labour					
			Mate/Supervisor	day	0.12	261.00	31.32	L-12
			Mazdoor	day	3.00	247.00	741.00	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 60 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/60				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.33	**1100 &1700**		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Size of pile - 500 mm x 500 mm					
			Unit = Running Meter					
			Taking output = 50 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 12.11(F) (IV)	cum	12.50	4413.00	55162.50	Item 12.11 (F) iv
			b) Material Pile shoes					
			a) C I shoes	kg	160.00	41.50	6640.00	M-080
			b) M. S shoes	kg	70.00	21.48	1503.60	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	36.58	1097.40	M-173
			c) Machinery					
			Crane 20 tonne capacity	hour	6.00	1217.00	7302.00	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			d) Labour					
			Mate/Supervisor	day	0.16	261.00	41.76	L-12
			Mazdoor	day	4.00	247.00	988.00	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 50 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/50				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
12.34	1100 &1700		**Driven precast vertical M35 grade R.C.C. Piles excluding Reinforcement complete as per Drawing and & Technical Specification**					
			Size of pile - 750 mm x 750 mm					
			Unit = Running Meter					
			Taking output = 40 m					
			a) Materials					
			RCC Grade M-35					
			Rate for concrete may be adopted same as for bottom plug vide item no. 13.11(F) (IV)	cum	22.50	4413.00	99292.50	Item 12.11 (F) iv
			b) Material					
			Pile shoes					
			a) C I shoes	kg	160.00	41.50	6640.00	M-080
			b) M. S shoes	kg	70.00	21.48	1503.60	M-125
			c) Steel helmet and cushion block on top of pile head during driving.	Kg	30.00	36.58	1097.40	M-173
			c) Machinery					
			Crane 20 tonne capacity	hour	6.00	1217.00	7302.00	P&M-073
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			d) Labour					
			Mate/Supervisor	day	0.18	261.00	46.98	L-12
			Mazdoor	day	4.50	247.00	1111.50	L-13
			Add 1 per cent of (a+b+c) for carriage of piles from casting yard to work site and stacking, and other imponderables during installation.				#VALUE!	
			e) Overhead charges @ 0.25 on (b+c+d)				#VALUE!	
			f) Contractor's profit @ 0.1 on (b+c+d+e)				#VALUE!	
			Cost for 40 m = a+b+c+d+e+f				#VALUE!	
			Rate per metre (a+b+c+d+e+f)/40				#VALUE!	
						say	**#VALUE!**	
		Note	The quantity of concrete required to be removed above the designed top level of concrete, if any, will be provided for in the rate analysis.					
12.35	1100, 1900		**Driven Vertical Steel Piles complete as per Drawing and & Technical Specification**					
			Section of the pile - H Section steel column 400 x 250 mm (ISHB Series)					
			Unit = Running Meter					
			Taking output = 70 m					
			a) Materials					
			Structural steel including 5 per cent wastage @ 82.20 kg/m	tonnes	6.04	40170.00	242626.80	M-179
			b) Machinery					
			Crane 10 T capacity	hour	6.00	1217.00	7302.00	P&M-071
			Vibrating Pile driving hammer complete with power unit and other accessories.	hour	6.00	input	#VALUE!	P&M-092
			c) Labour					
			Mate/Supervisor	day	0.12	261.00	31.32	L-12
			Mazdoor	day	3.00	247.00	741.00	L-13
			Add 0.5 per cent of (a+b+c) for providing steel helmet on top of pile head during driving, stacking of piles at site, providing anti-corrosion treatment and other imponderables during installation.				#VALUE!	
			d) Overhead charges @ 0.25 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 70 m = a+b+c+d+e				#VALUE!	
			Rate per metre (a+b+c+d+e)/70				#VALUE!	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	#VALUE!	
12.36	1100 &1900		**Driven Vertical Steel Piles complete as per Drawing and & Technical Specification**					
			Section of the pile - H Section steel column 450 x 250 mm (ISHB Series)					
			Unit = Running Meter					
			Taking output = 60 m					
			a) Materials					
			Structural steel including 5 per cent wastage @92.50 kg/m	tonnes	5.83	40170.00	234191.10	M-179
			b) Machinery					
			Crane 10 T capacity	hour	6.00	1217.00	7302.00	P&M-071
			Vibrating Pile driving hammer complete with power unit and accessories.	hour	6.00	input	#VALUE!	P&M-092
			c) Labour					
			Mate/Supervisor	day	0.14	261.00	36.54	L-12
			Mazdoor	day	3.50	247.00	864.50	L-13
			Add 0.5 per cent of (a+b+c) for providing steel helmet and cushion block on top of pile head during driving, stacking of piles at site, providing anti-corrosive treatment and other imponderables during installation.				#VALUE!	
			d) Overhead charges @ 0.25 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 60 m = a+b+c+d+e				#VALUE!	
			Rate per metre (a+b+c+d+e)/60				#VALUE!	
						say	#VALUE!	
12.37	1100		**Pile Load Test on single Vertical Pile in accordance with IS:2911(Part-IV)**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Initial and routine load test	tonne	1.00	300.00		
			b) Lateral load test	tonne	1.00	5000.00		
		Note	Although, this item is incidental to work and is not required to be included in BOQ of contract, the same is required to be added in the estimate to assess cost of work.				VALUE	
12.38	1100, 1500 &1700		**Cement Concrete for Reinforced Concrete in Pile Cap complete as per Drawing and Technical Specification**					
		A	**RCC Grade M20**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	5.12	4922.00	25200.64	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	295.00	442.50	L-10
			Mazdoor for concreting	day	20.00	247.00	4940.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	531.00	3186.00	P&M-079

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1680.35	
			d) Overhead charges @ 0.25 on (a+b+c)				10922.27	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5461.14	
			Cost for 15 cum = a+b+c+d+e				60072.50	
			Rate per metre (a+b+c+d+e)/15				4004.83	
						say	**4005.00**	
12.38A		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.12	4922.00	25200.64	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-004
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mason	day	0.38	295.00	112.10	L-10
			Mazdoor for concreting	day	2.50	247.00	617.50	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2860.00	2145.00	P&M-002
			Generator 100 KVA	hour	0.75	1927.00	1445.25	P&M-080
			Loader (capacity 1 cum)	hour	0.75	1371.00	1028.25	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1327.00	2654.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	6.59	247.13	Lead =1 km & P&M-050
			Concrete Pump	hour	0.75	365.00	273.75	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1650.64	
			d) Overhead charges @ 0.25 on (a+b+c)				10729.18	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5364.59	
			Cost for 15 cum = a+b+c+d+e				59010.49	
			Rate per metre (a+b+c+d+e)/15				3934.03	
						say	**3934.00**	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**B**	**RCC Grade M25**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	5.99	4922.00	29482.78	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	295.00	442.50	L-10
			Mazdoor for concreting	day	20.00	247.00	4940.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	531.00	3186.00	P&M-079

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1851.64	
			d) Overhead charges @ 0.25 on (a+b+c)				12035.63	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6017.81	
			Cost for 15 cum = a+b+c+d+e				66195.96	
			Rate per metre (a+b+c+d+e)/15				4413.06	
						say	**4413.00**	
12.38B		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	5.99	4922.00	29482.78	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-004
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mason	day	0.38	295.00	112.10	L-10
			Mazdoor for concreting	day	2.50	247.00	617.50	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2860.00	2145.00	P&M-002
			Generator 125 KVA	hour	0.75	2643.00	1982.25	P&M-018
			Loader (capacity 1 cum)	hour	0.75	1371.00	1028.25	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1327.00	2654.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	6.59	247.13	Lead =1 km & P&M-050
			Concrete Pump	hour	0.75	365.00	273.75	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1843.41	
			d) Overhead charges @ 0.25 on (a+b+c)				11982.16	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5991.08	
			Cost for 15 cum = a+b+c+d+e				65901.86	
			Rate per metre (a+b+c+d+e)/15				4393.46	
						say	**4393.00**	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**C**	**RCC Grade M30**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.10	4922.00	30024.20	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	295.00	442.50	L-10
			Mazdoor for concreting	day	20.00	247.00	4940.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	531.00	3186.00	P&M-079

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1873.29	
			d) Overhead charges @ 0.25 on (a+b+c)				12176.40	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6088.20	
			Cost for 15 cum = a+b+c+d+e				66970.19	
			Rate per metre (a+b+c+d+e)/15				4464.68	
						say	**4465.00**	
12.38C		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.10	4922.00	30024.20	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-004
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mason	day	0.38	295.00	112.10	L-10
			Mazdoor for concreting	day	2.50	247.00	617.50	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2860.00	2145.00	P&M-002
			Generator 100 KVA	hour	0.75	1927.00	1445.25	P&M-080
			Loader (capacity 1 cum)	hour	0.75	1371.00	1028.25	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1327.00	2654.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	6.59	247.13	Lead =1 km & P&M-050
			Concrete Pump	hour	0.75	365.00	273.75	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1843.59	
			d) Overhead charges @ 0.25 on (a+b+c)				11983.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				5991.65	
			Cost for 15 cum = a+b+c+d+e				65908.18	
			Rate per metre (a+b+c+d+e)/15				4393.88	
						say	**4394.00**	
		Note	The value of a, b and c may be taken as applicable i.e. either using concrete mixer or batching plant.					
12.38		**D**	**RCC Grade M35**					
			Unit = cum					
			Taking output = 15 cum					
		(i)	**Using Concrete Mixer**					
			a) Material					
			Cement	tonne	6.33	4922.00	31156.26	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	295.00	442.50	L-10
			Mazdoor	day	20.00	247.00	4940.00	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator (capacity 33 KVA)	hour	6.00	531.00	3186.00	P&M-079

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1918.57	
			d) Overhead charges @ 0.25 on (a+b+c)				12470.73	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6235.37	
			Cost for 15 cum = a+b+c+d+e				68589.03	
			Rate per metre (a+b+c+d+e)/15				4572.60	
						say	**4573.00**	
'12.38D		**(ii)**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			a) Material					
			Cement	tonne	6.33	4922.00	31156.26	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-004
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.16	261.00	41.76	L-12
			Mason	day	0.38	295.00	112.10	L-10
			Mazdoor for concreting	day	2.50	247.00	617.50	L-13
			Mazdoor for breaking pile head, bending bars, cleaning etc.	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	0.75	2860.00	2145.00	P&M-002
			Generator 125 KVA	hour	0.75	2643.00	1982.25	P&M-018
			Loader (capacity 1 cum)	hour	0.75	1371.00	1028.25	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Lead upto 1 Km	hour	2.00	1327.00	2654.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	37.5L	6.59	247.13	Lead =1 km & P&M-050
			Concrete Pump	hour	0.75	365.00	273.75	P&M-007
			Formwork @ 4 per cent on cost of concrete i.e. cost of a) Material, b) Labour and c) Machinery				1910.35	
			d) Overhead charges @ 0.25 on (a+b+c)				12417.26	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				6208.63	
			Cost for 15 cum = a+b+c+d+e				68294.93	
			Rate per metre (a+b+c+d+e)/15				4553.00	
						say	**4553.00**	
12.39	**1100&1700**		**Levelling Course for Pile cap**					
			Providing and laying of PCC M15 levelling course 100mm thick below the pile cap.					
			Unit = cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	4.13	4922.00	20327.86	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			40 mm aggregate	cum	8.10	345.22	2796.28	M-055
			20 mm Aggregate	cum	4.05	456.33	1848.14	M-053
			10 mm Aggregate	cum	1.35	520.42	702.57	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	295.00	442.50	L-10
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			d) Overhead charges @ 0.25 on (a+b+c)				8929.74	

FOUNDATION

	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4464.87	
			Cost for 15 cum = a+b+c+d+e				49113.57	
			Rate per metre (a+b+c+d+e)/15				3274.24	
						say	**3274.00**	
12.40	**1600**		**Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			HYSD bars including5 per cent overlaps and wastage	tonne	1.05	43682.50	45866.63	M-082
			Binding wire	Kg	6.00	53.72	322.32	M-072
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.40	261.00	104.40	L-12
			Blacksmith	day	2.00	330.00	660.00	L-02a
			Mazdoor	day	6.00	247.00	1482.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				12108.84	
			d) Contractor's profit @ 0.1 on (a+b+c)				6054.42	
			Rate per MT (a+b+c+d)				66598.60	
						say	**66599.00**	
12.41	**1600**		**Supplying, fitting and placing un-coated Mild steel reinforcement complete in foundation as per drawing and technical specification**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					
			MS bars including 5 per cent overlaps and wastage	tonne	1.05	43939.00	46135.95	M-126
			Binding wire	Kg	6.00	53.72	322.32	M-072
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.43	261.00	112.23	L-12
			Blacksmith	day	2.25	330.00	742.50	L-02a
			Mazdoor	day	6.50	247.00	1605.50	L-13
			c) Overhead charges @ 0.25 on (a+b)				12229.63	
			d) Contractor's profit @ 0.1 on (a+b+c)				6114.81	
			Rate for per MT (a+b+c+d)				67262.94	
						say	**67263.00**	

CHAPTER–13

SUB-STRUCTURE

Chapter – 13

Sub structure

Preamble:

1. Although, Substructures are generally constructed in cement concrete, the rate analysis for brick and stone masonry in CM 1:3 have also been included which can be adopted if permitted by design.
2. The cost of formwork will vary with the height of the substructure. Provision has accordingly been made.
3. As the higher grade of concrete is costlier, the provision made for formwork on percentage basis has been suitably adjusted to make it comparable with other grades.
4. Bridge bearing, being commercial items produced by specialized firms with imported technology and parts, the rates for the same are required to be ascertained from the market for the approved design and technical specifications.
5. Filter media and backfilling behind abutments are required to be provided as per guidelines given in IRC: 78-2000.
6. Weep holes shall be provided as per Clause 2706 of MoRT&H Specifications.
7. In case of roller-cum-rocker bearings, only full circular rollers are to be provided.
8. All bearings shall be set truly level so as to have full and even seating.
9. For elastomeric bearing pads, the concrete surface shall be levelled such that the variation is not more than 1.5 mm from a straight edge placed in any direction across the area.
10. The bearing should be procured only from those manufacturers who have been pre-qualified by the Ministry of Road Transport and Highways.
11. The bottoms of girders resting on the bearing shall be plane and truly horizontal.
12. For spans in grade, the bearing shall be placed horizontal by using sole plates for suitably designed RCC pedestals.

CHAPTER -13

SUB - STRUCTURE

Item No.	Description	Unit	Rate (₹)
13.1	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications: With Normal Bricks	cum	6189.00
	Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and technical specifications: With FLY ASH Bricks	cum	5402.00
13.2	Pointing with cement mortar (1:3) on brick work in substructure as per Technical specifications	10 sqm	529.00
13.3	Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical specifications	10 sqm	977.00
13.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications		
A	Random Rubble Masonry	cum	2783.00
B	Coursed rubble masonry (first sort)	cum	2944.00
C	Ashlar masonry (first sort)	cum	3934.00
13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications		
A	PCC Grade M15		
(p)	Height upto 5m	cum	3896.00
B	PCC Grade M20		
(p)	Height upto 5m	cum	4158.00
C	PCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4569.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4468.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4735.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4630.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	4943.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4833.00
D	PCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4613.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4509.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4781.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4673.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	4991.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4878.00
E	RCC Grade M20		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4259.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4156.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4414.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4307.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	4608.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4496.00

Item No.	Description	Unit	Rate (₹)
F	RCC Grade M25		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4677.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4944.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4830.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5106.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	5059.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5349.00
G	RCC Grade M30		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4701.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4600.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4833.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4729.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	5021.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	4913.00
H	RCC Grade M35		
(p)	Height upto 5m		
Case I	Using concrete Mixer	cum	4816.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5102.00
(q)	Height 5m to 10m		
Case I	Using concrete Mixer	cum	4921.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5213.00
(r)	Height above 10m		
Case I	Using concrete Mixer	cum	5078.00
Case II	With Batching Plant, Transit Mixer and Concrete Pump	cum	5380.00
13.6	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications	tonne	66747.00
13.7	Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and technical specification	tonne	66529.00
13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical specifications	each	119.00
13.9	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification		
A	Granular material	cum	537.00
B	(i) Sandy material - Fine Sand	cum	513.00
	(ii) Sandy material - Coarse Sand	cum	584.00
13.10	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification.	cum	893.00
13.11	Supplying, fitting and fixing in position true to line and level cast steel rocker bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	417.00
13.12	Supplying, fitting and fixing in position true to line and level forged steel roller bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.	tonne capacity	247.00

Item No.	Description	Unit	Rate (₹)
13.13	**Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.**	tonne capacity	#VALUE!
13.14	**Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.**	cubic centimetre	1.00
13.15	**Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.**	tonne capacity	521.00
13.16	**Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, completre assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete asper drawing and approved technical specifications.**	tonne capacity	187.00

CHAPTER - 13

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
13.1	**1300 & 2200**		**Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Bricks Ist class	each	500.00	6.247	3123.50	M-079
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	0.24	2859.00	686.16	Item 12.6 (A)
			b) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mason	day	0.80	330.00	264.00	L-11
			Mazdoor	day	0.80	247.00	197.60	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				214.35	
			c) Overhead charges @ 0.25 on (a+b)				1125.32	
			d) Contractor's profit @ 0.1 on (a+b+c)				562.66	
			Rate per cum (a+b+c+d)				6189.24	
			With Normal Bricks			**say**	**6189.00**	
			With FLY ASH Bricks				**5402.00**	***Sub_Analysis***
13.2	**1300 & 2200**		**Pointing with cement mortar (1:3) on brick work in substructure as per Technical Specifications**					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			a) Material					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.03	2859.00	85.77	Item 12.6 (A)
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mason	day	0.50	330.00	165.00	L-11
			Mazdoor	day	0.50	247.00	123.50	L-13
			c) Overhead charges @ 0.25 on (a+b)				96.18	
			d) Contractor's profit @ 0.1 on (a+b+c)				48.09	
			Rate per 10 sqm (a+b+c+d)				528.98	
						say	**529.00**	
	Note		Scaffolding is already included in item 13.1					
13.3	**1300 & 2200**		**Plastering with cement mortar (1:3) on brick work in sub-structure as per Technical Specifications**					
			Unit = 10 sqm					
			Taking output = 10 sqm					
			a) Material					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.144	2859.00	411.70	Item 12.6 (A)
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mason	day	0.50	330.00	165.00	L-11
			Mazdoor	day	0.50	247.00	123.50	L-13
			c) Overhead charges @ 0.25 on (a+b)				177.66	
			d) Contractor's profit @ 0.1 on (a+b+c)				88.83	
			Rate per 10 sqm (a+b+c+d)				977.12	
						say	**977.00**	
	Note		1.Scaffolding is already included in item no. 13.1					
			2.The number of masons and Mazdoors already catered in the cement mortar have been taken into account while providing these categories in brick masonry, pointing and plastering.					
13.4	**1400 & 2200**		**Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications**					
		A	**Random Rubble Masonry**					
			(coursed/uncoursed)					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Stone	cum	1.00	191.14	191.14	M-148
			Through and bond stone	No	7.00	10.61	74.27	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	2859.00	943.47	Item 12.6 (A)
			b) Labour					
			Mate	day	0.10	261.00	26.10	L-12
			Mason	day	1.20	330.00	396.00	L-11
			Mazdoor	day	1.20	247.00	296.40	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				96.37	
			c) Overhead charges @ 0.25 on (a+b)				505.94	
			d) Contractor's profit @ 0.1 on (a+b+c)				252.97	
			Rate per cum (a+b+c+d)				2782.65	
						say	**2783.00**	
13.4		**B**	**Coursed rubble masonry (first sort)**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.10	191.14	210.25	M-148
			Through and bond stone	each	7.00	10.61	74.27	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.30	2859.00	857.70	Item 12.6 (A)
			b) Labour					
			Mate	day	0.12	261.00	31.32	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	1.50	247.00	370.50	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				101.95	
			c) Overhead charges @ 0.25 on (a+b)				535.25	
			d) Contractor's profit @ 0.1 on (a+b+c)				267.62	
			Rate per cum (a+b+c+d)				2943.87	
						say	**2944.00**	
13.4		**C**	**Ashlar masonry (first sort)**					
			Plain ashlar					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.11	191.13	212.15	M-169
			Through and bond stone	each	7.00	10.61	74.27	M-182
			(7no.x0.24mx0.24mx0.39m = 0.16 cu.m)					
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.33	2859.00	943.47	Item 12.6 (A)
			b) Labour for masonry work					
			Mate	day	0.20	261.00	52.20	L-12
			Mason	day	2.50	330.00	825.00	L-11
			Mazdoor	day	2.50	247.00	617.50	L-13
			Add for scaffolding @ 5 per cent of cost of a) Material and b) Labour				136.23	
			c) Overhead charges @ 0.25 on (a+b)				715.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				357.60	
			Rate per cum (a+b+c+d)				3933.63	
						say	**3934.00**	
	Note		The labour already considered in the cement mortar have been taken into account while providing these categories in the stone masonry works.					
13.5	**1500, 1700 & 2200**		**Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications**					
			Unit = cum					
			Taking output = 1 cum					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		A	**PCC Grade M15**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (A) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (A)				2576.00	Item 12.8 (A)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		257.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				708.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				354.20	
			Rate per cum (a+b+c+d+e+f)				3896.20	
						say	**3896.00**	
13.5		B	**PCC Grade M20**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (B) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (B)				2749.00	Item 12.8 (B) PCC
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		274.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				755.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				377.99	
			Rate per cum (a+b+c+d+e+f)				4157.86	
						say	**4158.00**	
13.5		C	**PCC Grade M25**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (D) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3021.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		302.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				830.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				415.39	
			Rate per cum (a+b+c+d+e+f)				4569.26	
						say	**4569.00**	
13.5 C (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				2954.00	Item 12.8 (D)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		295.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				812.35	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				406.18	
			Rate per cum (a+b+c+d+e+f)				4467.93	
						say	**4468.00**	
13.5 C		(q)	**Height 5m to 10m**					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Same as Item 12.8 (D) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.75 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3021.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		362.52	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		60.42	
			e) Overhead charges @ 0.25 on (a+b+c+d)				860.99	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				430.49	
			Rate per cum (a+b+c+d+e+f)				4735.42	
						say	**4735.00**	
13.5 C (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				2954.00	Item 12.8 (D)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		354.48	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		59.08	
			e) Overhead charges @ 0.25 on (a+b+c+d)				841.89	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				420.95	
			Rate per cum (a+b+c+d+e+f)				4630.40	
						say	**4630.00**	
13.5 C		**(r)**	**Height above 10m**					
			Same as Item 12.8 (D) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.75 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case I				3021.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		453.15	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		120.84	
			e) Overhead charges @ 0.25 on (a+b+c+d)				898.75	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				449.37	
			Rate per cum (a+b+c+d+e+f)				4943.11	
						say	**4943.00**	
13.5 C (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (D) Case II				2954.00	Item 12.8 (D)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		443.10	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		118.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				878.82	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				439.41	
			Rate per cum (a+b+c+d+e+f)				4833.48	
						say	**4833.00**	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
13.5		D	**PCC Grade M30**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (F) upto 5 m height with the only change that the provision of form work shall be 10 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3050.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		305.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				838.75	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				419.38	
			Rate per cum (a+b+c+d+e+f)				4613.13	
						say	**4613.00**	
13.5 D (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				2981.00	Item 12.8 (F)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		298.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				819.78	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				409.89	
			Rate per cum (a+b+c+d+e+f)				4508.76	
						say	**4509.00**	
13.5 D		(q)	**Height 5m to 10m**					
			Same as Item 12.8 (F) with the following changes: (i) Add 2 per cent of cost of material, Labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 12 per cent instead of 3.50 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3050.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		366.00	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		61.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				869.25	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				434.63	
			Rate per cum (a+b+c+d+e+f)				4780.88	
						say	**4781.00**	
13.5 D (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				2981.00	Item 12.8 (F)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		357.72	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		59.62	
			e) Overhead charges @ 0.25 on (a+b+c+d)				849.59	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				424.79	
			Rate per cum (a+b+c+d+e+f)				4672.72	
						say	**4673.00**	
13.5 D		(r)	**Height above 10m**					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Same as Item 12.8 (F) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 3.50 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case I				3050.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		457.50	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		122.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				907.38	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				453.69	
			Rate per cum (a+b+c+d+e+f)				4990.56	
						say	**4991.00**	
13.5 D (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (F) Case II				2981.00	Item 12.8 (F)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		447.15	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		119.24	
			e) Overhead charges @ 0.25 on (a+b+c+d)				886.85	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				443.42	
			Rate per cum (a+b+c+d+e+f)				4877.66	
						say	**4878.00**	
13.5		**E**	**RCC Grade M20**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (C) upto 5 m height, except for formwork which shall be 10 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				2816.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		281.60	
			e) Overhead charges @ 0.25 on (a+b+c+d)				774.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				387.20	
			Rate per cum (a+b+c+d+e+f)				4259.20	
						say	**4259.00**	
13.5 E (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				2748.00	Item 12.8 (C)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		274.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				755.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				377.85	
			Rate per cum (a+b+c+d+e+f)				4156.35	
						say	**4156.00**	
13.5 E		**(q)**	**Height 5m to 10m**					
			For height, upto 10m, add 2 per cent of cost as above excluding formwork. For cost of formwork add 12 per cent of cost of material, labour and machinery instead of 4 per cent .					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				2816.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		337.92	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		56.32	
			e) Overhead charges @ 0.25 on (a+b+c+d)				802.56	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				401.28	
			Rate per cum (a+b+c+d+e+f)				4414.08	
						say	**4414.00**	
13.5 E (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				2748.00	Item 12.8 (C)
			d) formwork					
			Add 12 per cent of cost of material, labour and machinery (a+b+c) for Formwork		12.00		329.76	
			Add 2 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		2.00		54.96	
			e) Overhead charges @ 0.25 on (a+b+c+d)				783.18	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				391.59	
			Rate per cum (a+b+c+d+e+f)				4307.49	
						say	**4307.00**	
13.5 E		**(r)**	**Height above 10m**					
			Same as Item 12.8 (C) with the following changes: (i) Add 4 per cent of cost of material, labour and machinery excluding form work to cater for extra lift. (ii) The provision of form work shall be 15 per cent instead of 4 per cent of cost of material, labour and machinery.					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case I				2816.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		422.40	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		112.64	
			e) Overhead charges @ 0.25 on (a+b+c+d)				837.76	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				418.88	
			Rate per cum (a+b+c+d+e+f)				4607.68	
						say	**4608.00**	
13.5 E (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (C) Case II				2748.00	Item 12.8 (C)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		412.20	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		109.92	
			e) Overhead charges @ 0.25 on (a+b+c+d)				817.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				408.77	
			Rate per cum (a+b+c+d+e+f)				4496.42	
						say	**4496.00**	
13.5		**F**	**RCC Grade M25**					
		(p)	**Height upto 5m**					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Same as Item 12.8 (E) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.75 per cent .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3092.00	Item 12.8 (E)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		309.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				850.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				425.15	
			Rate per cum (a+b+c+d+e+f)				4676.65	
						say	**4677.00**	
13.5 F (p)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3269.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		326.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				898.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				449.49	
			Rate per cum (a+b+c+d+e+f)				4944.36	
						say	**4944.00**	
13.5 F		**(q)**	**Height 5m to 10m**					
			For height, upto 10m, add 1.8 per cent of cost as above excluding formwork. For cost of formwork add 11.8 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3092.00	Item 12.8 (E)
			d) formwork					
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		364.86	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		55.66	
			e) Overhead charges @ 0.25 on (a+b+c+d)				878.13	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				439.06	
			Rate per cum (a+b+c+d+e+f)				4829.70	
						say	**4830.00**	
13.5 F (q)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3269.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 11.8 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.80		385.74	
			Add 1.8 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.80		58.84	
			e) Overhead charges @ 0.25 on (a+b+c+d)				928.40	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				464.20	
			Rate per cum (a+b+c+d+e+f)				5106.18	
						say	**5106.00**	
13.5 F		**(r)**	**Height above 10m**					
			For height, above 10m, add 4 per cent of cost as above excluding formwork. For cost of formwork add 15 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case I				3092.00	Item 12.8 (E)
			d) formwork					
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		463.80	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		123.68	
			e) Overhead charges @ 0.25 on (a+b+c+d)				919.87	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				459.94	
			Rate per cum (a+b+c+d+e+f)				5059.29	
						say	**5059.00**	
13.5 F (r)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (E) Case II				3269.00	Item 12.8 (E)
			d) formwork					DIR used item
			Add 15 per cent of cost of material, labour and machinery (a+b+c) for Formwork		15.00		490.35	
			Add 4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		4.00		130.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				972.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				486.26	
			Rate per cum (a+b+c+d+e+f)				5348.90	
						say	**5349.00**	
13.5		**G**	**RCC Grade M30**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (G) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3.5 per cent .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3108.00	Item 12.8 (G)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		310.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				854.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				427.35	
			Rate per cum (a+b+c+d+e+f)				4700.85	
						say	**4701.00**	
13.5 G (p)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3041.00	Item 12.8 (G)
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		304.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				836.28	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				418.14	
			Rate per cum (a+b+c+d+e+f)				4599.51	
						say	**4600.00**	
13.5 G		**(q)**	**Height 5m to 10m**					
			For height, upto 10m, add 1.6 per cent of cost as above excluding formwork. For cost of formwork add 11.5 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3108.00	Item 12.8 (G)
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		357.42	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		49.73	
			e) Overhead charges @ 0.25 on (a+b+c+d)				878.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				439.39	
			Rate per cum (a+b+c+d+e+f)				4833.33	
						say	**4833.00**	
13.5 G (q)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3041.00	Item 12.8 (G)
			d) formwork					
			Add 11.5 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.50		349.72	
			Add 1.6 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.60		48.66	
			e) Overhead charges @ 0.25 on (a+b+c+d)				859.84	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				429.92	
			Rate per cum (a+b+c+d+e+f)				4729.14	
						say	**4729.00**	
13.5 G		**(r)**	**Height above 10m**					
			For height, above 10m, add 3.5 per cent of cost as above excluding formwork. For cost of formwork add 14 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case I				3108.00	Item 12.8 (G)
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		435.12	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		108.78	
			e) Overhead charges @ 0.25 on (a+b+c+d)				912.98	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				456.49	
			Rate per cum (a+b+c+d+e+f)				5021.36	
						say	**5021.00**	
13.5 G (r)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (G) Case II				3041.00	Item 12.8 (G)
			d) formwork					
			Add 14 per cent of cost of material, labour and machinery (a+b+c) for Formwork		14.00		425.74	
			Add 3.5 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.50		106.44	
			e) Overhead charges @ 0.25 on (a+b+c+d)				893.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				446.65	
			Rate per cum (a+b+c+d+e+f)				4913.12	
						say	**4913.00**	
13.5		**H**	**RCC Grade M35**					
		(p)	**Height upto 5m**					
			Same as Item 12.8 (H) upto 5m height, excluding formwork. For cost of formwork, add 10 per cent of cost of material, labour and machinery instead of 3 per cent .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3184.00	Item 12.8 (H) Case I
			d) formwork					
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		318.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				875.60	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				437.80	
			Rate per cum (a+b+c+d+e+f)				4815.80	
						say	**4816.00**	
13.5 H (p)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3373.00	Item 12.8 (H)
			d) formwork					DIR used item
			Add 10 per cent of cost of material, labour and machinery (a+b+c) for Formwork		10.00		337.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				927.58	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				463.79	
			Rate per cum (a+b+c+d+e+f)				5101.66	
						say	**5102.00**	
13.5 H		**(q)**	**Height 5m to 10m**					
			For height, upto 10m, add 1.4 per cent of cost as above excluding formwork. For cost of formwork add 11 per cent of cost of material, labour and machinery .					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3184.00	Item 12.8 (H) Case I
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		350.24	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		44.58	
			e) Overhead charges @ 0.25 on (a+b+c+d)				894.70	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				447.35	
			Rate per cum (a+b+c+d+e+f)				4920.87	
						say	**4921.00**	
13.5 H (q)		**Case II**	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3373.00	Item 12.8 (H)
			d) formwork					
			Add 11 per cent of cost of material, labour and machinery (a+b+c) for Formwork		11.00		371.03	
			Add 1.4 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		1.40		47.22	
			e) Overhead charges @ 0.25 on (a+b+c+d)				947.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				473.91	
			Rate per cum (a+b+c+d+e+f)				5212.97	
						say	**5213.00**	
13.5 H		**(r)**	**Height above 10m**					
			For height, above 10m, add 3 per cent of cost as above excluding formwork. For cost of formwork add 13 per cent of cost of material, labour and machinery					
		Case I	**Using concrete Mixer**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case I				3184.00	Item 12.8 (H) Case I
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		413.92	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		95.52	
			e) Overhead charges @ 0.25 on (a+b+c+d)				923.36	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				461.68	
			Rate per cum (a+b+c+d+e+f)				5078.48	
						say	**5078.00**	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
13.5 H (r)		Case II	**With Batching Plant, Transit Mixer and Concrete Pump**					
			Per Cum Basic Cost of Labour, Material & Machinery (a+b+c) of Item 12.8 (H) Case II				3373.00	Item 12.8 (H)
			d) formwork					
			Add 13 per cent of cost of material, labour and machinery (a+b+c) for Formwork		13.00		438.49	
			Add 3 per cent of cost of material, Labour and machinery excluding formwork to cater for extra lift		3.00		101.19	
			e) Overhead charges @ 0.25 on (a+b+c+d)				978.17	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				489.09	
			Rate per cum (a+b+c+d+e+f)				5379.94	
						say	**5380.00**	
	Note		The basic components of this analysis are the same as those of items 13.8 (A to H). The only changes are as under:					
			a) Ramps/Stairs: Extra expenditure on structures which are more than 5 m high @ 2 per cent of cost for height upto 10 m and 4 per cent for heights above 10 m will be involved for approaching the work spot by providing higher ramp/stair case for use by the working parties.					
			b) The above mentioned percentages have been suitably modified for different categories as cost for various categories varies, whereas effort for access for same height will be similar. As the cost of richer concrete is comparatively more, the percentage to be added has been reduced to maintain the same cost for extra efforts.					
13.6	Section 1600 & 2200		**Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications**					
			Output: MT					
			Taking output = 1 MT					
			a) Material					
			HYSD bars including 5 per cent overlaps and wastage	tonne	1.05	43682.50	45866.63	M-082
			Binding wire	kg	6.00	53.72	322.32	M-072
			b) Labour for cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.34	261.00	88.74	L-12
			Blacksmith	day	2.00	330.00	660.00	L-02a
			Mazdoor	day	6.50	247.00	1605.50	L-13
			c) Overhead charges @ 0.25 on (a+b)				12135.80	
			d) Contractor's profit @ 0.1 on (a+b+c)				6067.90	
			Rate for per MT (a+b+c+d)				66746.88	
						say	**66747.00**	
13.7	1600 & 2200		**Supplying, fitting and placing Mild steel reinforcement complete in sub-structure as per drawing and Technical Specification**					
			Unit = MT					
			Taking output = 1 MT					
			a) Material					
			MS bars including 5 per cent overlaps and wastage	tonne	1.05	43939.00	46135.95	M-126
			Binding wire	kg	6.00	53.72	322.32	M-072
			b) Labour for straightening, cutting, bending, shifting to site, tying and placing in position					
			Mate	day	0.28	261.00	73.08	L-12
			Blacksmith	day	1.50	330.00	495.00	L-02a
			Mazdoor	day	5.50	247.00	1358.50	L-13
			c) Overhead charges @ 0.25 on (a+b)				12096.21	
			d) Contractor's profit @ 0.1 on (a+b+c)				6048.11	
			Rate for per MT (a+b+c+d)				66529.17	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	**66529.00**	
13.8	**2706 & 2200**		**Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications**					
			Unit = Nos.					
			Taking output = 30 Nos.					
			a) Material					
			AC pipe 100 mm dia. (including wastage @ 5 per cent)	metre	31.50	39.91	1257.17	M-056
			Average length of weep hole is taken as one metre for the purpose of estimating.					
			MS clamp	each.	30.00	31.03	930.90	M-123
			collar for AC pipe (average) taking 10% of above pipe rate	each.	10.00	3.99	39.91	M-056/10
			Cement mortar 1:3 (Rate as in Item 12.6)	cum	0.05	2859.00	142.95	Item 12.6 (A)
			b) Labour					
			Mate	day	0.03	261.00	7.83	L-12
			Mason	day	0.50	330.00	165.00	L-11
			Mazdoor	day	0.25	247.00	61.75	L-13
			c) Overhead charges @ 0.25 on (a+b)				651.38	
			d) Contractor's profit @ 0.1 on (a+b+c)				325.69	
			Cost for 30 m = a+b+c+d				3582.57	
			Rate per No. (a+b+c+d)/30				119.42	
						say	**119.00**	
	Note		1. In case of stone masonry, the size of the weep hole shall be 150 mm x 80 mm or circular with 150 mm diameter.					
			2. For structure in stone masonry, the weep holes shall be deemed to be included in the item of stone masonry work and shall not be paid separately.					
13.9	**710.1.4.of IRC:78 & 2200**		**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification**					
			Unit = cum					
			Taking output = 10 cum					
		A	**Granular material**					
			a) Labour					
			Mate	day	0.28	261.00	73.08	L-12
			Mazdoor	day	7.00	247.00	1729.00	L-13
			b) Material					
			Granular material	cum	12.00	82.52	990.24	M-009
			c) Machinery					
			Plate compactor/power rammer	hour	2.50	443.00	1107.50	P&M-086
			Water Tanker	hour	0.05	174.00	8.70	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				977.13	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				488.57	
			Cost for 10 cum of granular backfill = a+b+c+d+e				5374.22	
			Rate per cum = (a+b+c+d+e)/10				537.42	
						say	**537.00**	
13.9		**B**	**Sandy material**					
			a) Labour					
			Mate	day	0.28	261.00	73.08	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.00	247.00	1729.00	L-13
			b) Material					
			Sand (Fine)	cum	12.00	67.66	811.92	M-006
			c) Machinery					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Plate compactor/power rammer	hour	2.50	443.00	1107.50	P&M-086
			Water Tanker	hour	0.06	174.00	10.44	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				932.99	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				466.49	
			Cost for 10 cum of sandy backfill = a+b+c+d+e				5131.42	
			Rate per cum = (a+b+c+d+e)/10				513.14	
			Sandy material - Fine Sand			**say**	**513.00**	
			Sandy material - Coarse Sand				**584.00**	Sub_Analysis
13.10	**710.1.4.of IRC:78 and 2200**		**Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.**					
			Unit = cum					
			Taking output = 10 cum.					
			a) Labour					
			Mate	day	0.32	261.00	83.52	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.00	247.00	1729.00	L-13
			Mazdoor (Skilled)	day	1.00	313.00	313.00	L-15
			b) Material					
			Filter media of stone aggregate conforming to clause 2504.2.2. of MoRTH specifications.	cum	12.00	363.19	4358.28	M-012
			c) Machinery					
			Water Tanker of 6 KL capacity	hour	0.06	174.00	10.44	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				1623.56	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				811.78	
			cost for 10 cum of Fiter Media = a+b+c+d+e				8929.58	
			Rate per cum = (a+b+c+d+e)/10				892.96	
						say	**893.00**	
13.11	**2000, 1000 & 2200**		**Supplying, fitting and fixing in position true to line and level cast steel rocker bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one tonne capacity					
			Considering a 250 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			Mazdoor	day	1.00	247.00	247.00	L-13
			b) Material					
			Cast steel rocker bearing assembly of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	74589.42	74589.42	M-065
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				745.89	
			c) Overhead charges @ 0.25 on (a+b)				18938.62	
			d) Contractor's profit @ 0.1 on (a+b+c)				9469.31	
			cost for 250 tonnes capacity bearing = a+b+c+d				104162.40	
			Rate per tonne capacity = (a+b+c+d)/250				416.65	
						say	**417.00**	

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
13.12	2000 , 1000 & 2200		**Supplying, fitting and fixing in position true to line and level forged steel roller bearing conforming to IRC: 83(Pt.-1) section IX and clause 2003 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one tonne capacity					
			Considering a 250 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			Forged steel roller bearing of 250 tonne design load capacity duly painted complete with all its components as per drawing and specifications	each.	1.00	44082.73	44082.73	M-067
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts, lifting arrangements, grease and other consumables.				440.83	
			c) Overhead charges @ 0.25 on (a+b)				11235.68	
			d) Contractor's profit @ 0.1 on (a+b+c)				5617.84	
			cost for 250 tonnes capacity bearing = a+b+c+d				61796.24	
			Rate per tonne capacity = (a+b+c+d)/250				247.18	
						say	**247.00**	
13.13	2000 & 2200		**Supplying, fitting and fixing in position true to line and level sliding plate bearing with PTFE surface sliding on stainless steel complete including all accessories as per drawing and Technical Specifications and BS: 5400, section 9.1 & 9.2 (for PTFE) and clause 2004 of MoRTH Specifications.**					
			Unit: one tonne capacity					
			Considering a 80 tonne capacity bearing for this analysis					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			PTFE sliding plate bearing assembly of 80 tonnes design load capacity duly painted complete with all its components as per drawing and Technical Specifications	each.	1.00	input	#VALUE!	M-069
			Add 1 per cent for foundation anchorage bolts and consumables.				#VALUE!	
			c) Overhead charges @ 0.25 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			cost for 80 tonnes capacity bearing = a+b+c+d				#VALUE!	
			Rate per tonne capacity = (a+b+c+d)/80				#VALUE!	
						say	**#VALUE!**	
13.14	2000 & 2200		**Supplying, fitting and fixing in position true to line and level elastomeric bearing conforming to IRC: 83 (Part-II) section IX and clause 2005 of MoRTH specifications complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one cubic centimetre					
			Considering an elastomeric bearing of size 500 x 400 x 96 mm for this analysis.					
			Overall volume - 19200 cu.cm					
			Volume of 6 nos. 488 x 388 x 4 mm size reinforcing steel plates = 4545 cu.cm.					
			Hence volume of elastometer = 14655 cu.cm.					
			a) Labour					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			Elastomeric bearing assembly consisting of 7 layers of elastomer bonded to 6 nos. internal reinforcing steel laminates by the process of vulcanisation, complete with all components as per drawing and Technical Specifications.	cum	19200.00	0.57	10944.00	M-066
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				109.44	
			c) Overhead charges @ 0.25 on (a+b)				2868.15	
			d) Contractor's profit @ 0.1 on (a+b+c)				1434.08	
			cost for 19200cc of elastomeric bearing = a+b+c+d				15774.83	
			Rate per cc of elastomeric bearing = (a+b+c+d)/19200				0.82	
						say	**1.00**	
13.15	**2000 & 2200**		**Supplying, fitting and fixing in position true to line and level sliding plate bearing with stainless steel plate sliding on stainless steel plate with mild steel matrix complete including all accessories as per drawing and Technical Specifications.**					
			Unit: one tonne capacity					
			Considering the sliding bearing of 80 tonnes design capacity for this analysis.					
			a) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.75	247.00	185.25	L-13
			Mazdoor (Skilled)	day	0.35	313.00	109.55	L-15
			b) Material					
			Supply of sliding plate bearing of 80 tonne design capacity complete as per drawings and Technical Specifications.	each.	1.00	29685.34	29685.34	M-070
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				296.85	
			c) Overhead charges @ 0.25 on (a+b)				7571.86	
			d) Contractor's profit @ 0.1 on (a+b+c)				3785.93	
			cost for 80 tonnes of capacity bearing = a+b+c+d				41645.22	
			Rate per tonne Capacity =(a+b+c+d) / 80				520.57	
						say	**521.00**	
13.16	**2000 & 2200**		**Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications.**					
			Unit: one tonne capacity			387.20		
			Considering a Pot bearing assembly of 250 tonne capacity for this analysis.					
			a) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor	day	1.50	247.00	370.50	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					

SUB - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			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 as per clause 2006 and complete as per drawings and Technical Specifications.	MT	250.00	132.47	33117.50	M-068
			Add 1 per cent of cost of bearing assembly for foundation anchorage bolts and consumables.				331.18	
			c) Overhead charges @ 0.25 on (a+b)				8499.14	
			d) Contractor's profit @ 0.1 on (a+b+c)				4249.57	
			cost for 250 tonnes capacity bearing = a+b+c+d				46745.26	
			Rate per tonne capacity = (a+b+c+d)/250				186.98	
						say	**187.00**	

CHAPTER–14

SUPER-STRUCTURE

Chapter – 14

Superstructure

Preamble:

1. The rate for the wearing coat has been analysed as under:

   a) Cement concrete wearing coat

   b) Asphaltic concrete wearing coat

   c) Bitumen mastic wearing coat

   The item may be selected as per approved design. In case the thickness of wearing coat is different from that analysed, the rate for the desired thickness may be worked out on pro-rata basis.

2. The rate analysis has been done both for RCC Railing and M.S. Railing, which can be adopted as per approved design.

3. The length of drainage spout has been provided in such a way that it is connected to the drainage system on the ground in case of flyovers and there is no splashing of water on the structure in case of bridges.

4. The rate for anti-corrosive treatment is required to be ascertained from firms specialised in this work. In this connection Circular No. RW/NH-34041/44/91-S&R dated 21.3.2000 of Ministry of Road Transport and Highways may be referred for further details.

5. Expansion joints involving movements exceeding 40 mm are specialised readymade items commercially produced by reputed firms with imported technology and parts. The rates for such joints are required to be ascertained from the firms pre-qualified by the Ministry.

6. The rate analysis for pre-cast and pre-tensioned girders has also been included.

7. The rate analysis for prestressed cement concrete of M 60 grade has also been included which can be adopted for bridges with innovative design/construction.

8. MoRT&H letter No. RW/NH-34059/1/96 S&R dated 30.11.2000 and subsequent corrigendum dated 25.1.2001 may be referred for detailed specifications and provisions for various types of expansion joints.

9. Supply of new type of expansion joint may be obtained on the basis of competitive bidding from amongst the suppliers pre-qualified by the Ministry of Road Transport and Highways. Further, a warranty of 10 years of trouble free performance may be insisted from the suppliers.

10. For bridges having wide deck/span length of more than 120 m or/and involving complex movements/rotations in different directions/planes, provision of special type of modular expansion joints such as swivel joists joints are required for which firms specialized in this field may be consulted. Such cases will require prior approval of Ministry.

CHAPTER - 14

SUPER - STRUCTURE

Item No.	Description	Unit	Rate (₹)
14.1	**Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification**		
A	**RCC Grade M20**		
Case I	**Using Concrete Mixer**		
(i)	**For solid slab super-structure, 20-30% of (a+b+c)**		
(p)	**Height upto 5m**	cum	4598.00
(q)	**Height 5m to 10m**	cum	4790.00
(r)	**Height above 10m**	cum	4982.00
(ii)	**For T-beam & slab, 25-35% of (a+b+c)**		
(p)	**Height upto 5m**	cum	4790.00
(q)	**Height 5m to 10m**	cum	4982.00
(r)	**Height above 10m**	cum	5173.00
Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	**For solid slab super-structure, 20-30% of (a+b+c)**		
(p)	**Height upto 5m**	cum	4484.00
(q)	**Height 5m to 10m**	cum	4671.00
(r)	**Height above 10m**	cum	4858.00
(ii)	**For T-beam & slab, 25-35% of (a+b+c)**		
(p)	**Height upto 5m**	cum	4671.00
(q)	**Height 5m to 10m**	cum	4858.00
(r)	**Height above 10m**	cum	5045.00
B	**RCC Grade M25**		
Case I	**Using Concrete Mixer**		
(i)	**For solid slab super-structure, 20-30% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5069.00
(q)	**Height 5m to 10m**	cum	5281.00
(r)	**Height above 10m**	cum	5492.00
(ii)	**For T-beam & slab, 25-35% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5281.00
(q)	**Height 5m to 10m**	cum	5492.00
(r)	**Height above 10m**	cum	5703.00
Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**		
(i)	**For solid slab super-structure, 20-30% of (a+b+c)**		
(p)	**Height upto 5m**	cum	4960.00
(q)	**Height 5m to 10m**	cum	5167.00
(r)	**Height above 10m**	cum	5373.00
(ii)	**For T-beam & slab, 25-35% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5167.00
(q)	**Height 5m to 10m**	cum	5373.00
(r)	**Height above 10m**	cum	5580.00
C	**RCC Grade M 30**		
Case I	**Using Concrete Mixer**		
(i)	**For solid slab super-structure, 20-30% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5157.00
(q)	**Height 5m to 10m**	cum	5372.00
(r)	**Height above 10m**	cum	5587.00
(ii)	**For T-beam & slab, 25-35% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5372.00

Item No.	Description	Unit	Rate (₹)
(q)	Height 5m to 10m	cum	5587.00
(r)	Height above 10m	cum	5802.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump.		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	5021.00
(q)	Height 5m to 10m	cum	5230.00
(r)	Height above 10m	cum	5440.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	5230.00
(q)	Height 5m to 10m	cum	5440.00
(r)	Height above 10m	cum	5649.00
D	RCC/PSC Grade M35		
Case 1	Using concrete mixer.		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	5194.00
(q)	Height 5m to 10m	cum	5414.00
(r)	Height above 10m	cum	5634.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	5414.00
(q)	Height 5m to 10m	cum	5634.00
(r)	Height above 10m	cum	5854.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	6074.00
(q)	Height 5m to 10m	cum	6514.00
(r)	Height above 10m	cum	6954.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	5060.00
(q)	Height 5m to 10m	cum	5274.00
(r)	Height above 10m	cum	5488.00
(ii)	For T-beam & slab, 23-33% of (a+b+c)		
(p)	Height upto 5m	cum	5274.00
(q)	Height 5m to 10m	cum	5488.00
(r)	Height above 10m	cum	5703.00
(iii)	For box girder and balanced cantilever, 38-58% of cost of concrete.		
(p)	Height upto 5m	cum	5917.00
(q)	Height 5m to 10m	cum	6346.00
(r)	Height above 10m	cum	6775.00
E	PSC Grade M-40		
Case 1	Using concrete mixer.		
(i)	For solid slab super-structure, 20-30% of (a+b+c)		
(p)	Height upto 5m	cum	5826.00
(q)	Height 5m to 10m	cum	6068.00
(r)	Height above 10m	cum	6311.00
(ii)	For T-beam & slab, 25-35% of (a+b+c)		
(p)	Height upto 5m	cum	6068.00
(q)	Height 5m to 10m	cum	6311.00
(r)	Height above 10m	cum	6554.00
Case II	Using Batching Plant, Transit Mixer and Concrete Pump		
(i)	For solid slab super-structure, 18-28% of (a+b+c)		
(p)	Height upto 5m	cum	5554.00

Item No.	Description	Unit	Rate (₹)
(q)	**Height 5m to 10m**	cum	5789.00
(r)	**Height above 10m**	cum	6025.00
(ii)	**For T-beam & slab, 23-33% of (a+b+c)**		
(p)	**Height upto 5m**	cum	5789.00
(q)	**Height 5m to 10m**	cum	6025.00
(r)	**Height above 10m**	cum	6260.00
(iii)	**For box girder and balanced cantilever, 38-58% of cost of concrete.**		
(p)	**Height upto 5m**	cum	6495.00
(q)	**Height 5m to 10m**	cum	6966.00
(r)	**Height above 10m**	cum	7437.00
F	**PSC Grade M-45**		
(i)	**For solid slab/voided slab super-structure, 16-26% of cost of concrete (a+b+c)**		
(p)	**Height upto 5m**	cum	5769.00
(q)	**Height 5m to 10m**	cum	6017.00
(r)	**Height above 10m**	cum	6266.00
(ii)	**For I-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31% of cost of concrete.**		
(p)	**Height upto 5m**	cum	6017.00
(q)	**Height 5m to 10m**	cum	6266.00
(r)	**Height above 10m**	cum	6514.00
(iii)	**For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56% of cost of concrete.**		
(p)	**Height upto 5m**	cum	6763.00
(q)	**Height 5m to 10m**	cum	7260.00
(r)	**Height above 10m**	cum	7758.00
G	**PSC Grade M-50**		
(i)	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete**		
(p)	**Height upto 5m**	cum	6970.00
(q)	**Height 5m to 10m**	cum	7486.00
(r)	**Height above 10m**	cum	8003.00
H	**PSC Grade M- 55**		
(i)	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55% of cost of concrete**		
(p)	**Height upto 5m**	cum	7372.00
(q)	**Height 5m to 10m**	cum	7918.00
(r)	**Height above 10m**	cum	8464.00
14.2	**a) Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications**	tonne	67894.00
14.3	**High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications**	tonne	121265.00
14.4	**Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications**	cum	9327.00
14.5	**Mastic Asphalt** (Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.)	sqm	273.00
14.6	**Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**	metre	1678.00

Item No.	Description	Unit	Rate (₹)
14.7	**Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**	metre	1623.00
14.8	**Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification**	metre	2843.00
14.9	**Drainage Spouts complete as per drawing and Technical specification**	each	841.00
14.10	**PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification**	cum	3542.00
14.11	**Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification**	cum	7660.00
14.12	**Providing anti-corrosive treatment to HYSD reinforcement with Fusion Bonded Epoxy Coating (FBEC)** (To be taken as per the prevailing market rates.)	tonne	0.00
14.13	**Precast - pretensioned Girders** (Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications.)	cum	#VALUE!
14.14	**Providing and fixing Helical pipes in voided concrete slabs**	metre	#VALUE!
14.15	**Crash Barriers** (The rate analysis for rigid crash barrier in reinforced cement concrete, semi-rigid crash barrier with metal beam and flexible crash barrier with wire ropes have been made and included in chapter-8 on Traffic and Transportation.)	metre	VALUE
14.16	**Painting on concrete surface** (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 Sq.m.)	metre	97.00
14.17	**Burried Joint** (Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised wieldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.)	metre	933.00
14.18	**Filler joint**		
(i)	**Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.**	metre	4350.00
(ii)	**Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.**	metre	330.00
(iii)	**Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.**	metre	381.00
(iv)	**Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6% bitumen by weight.**	metre	22.20
14.19	**Asphaltic Plug joint** (Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of wieldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.)	metre	964.00
14.20	**Elastomeric Slab Steel Expansion Joint** (Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.)	metre	35952.00
14.21	**Compression Seal Joint** (Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.)	metre	#VALUE!
14.22	**Strip Seal Expansion Joint** (Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	11180.00
14.23	**Modular Strip / Box Seal Joint** (Providing and laying of a modular strip Box steel expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	37728.00

Item No.	Description	Unit	Rate (₹)
14.24	**Modular Strip / Box Seal Joint** (Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.)	metre	#VALUE!

CHAPTER - 14

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
14.1	1500 &1600 1700		**Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification**					
		A	**RCC Grade M20**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.12	4922.00	25200.64	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**41804.00**			
			For formwork and staging add the following:					
14.1A Case I		(i)	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		8360.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				12541.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6270.60	
			Cost for 15 cum = a+b+c+d+e+f				68976.60	
			Rate per cum = (a+b+c+d+e+f)/15				4598.44	
						say	**4598.00**	
14.1A Case I (i)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		10451.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				13063.75	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6531.88	
			Cost for 15 cum = a+b+c+d+e+f				71850.63	
			Rate per cum = (a+b+c+d+e+f)/15				4790.04	
						say	**4790.00**	
14.1A Case I (i)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		12541.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				13586.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6793.15	
			Cost for 15 cum = a+b+c+d+e+f				74724.65	
			Rate per cum = (a+b+c+d+e+f)/15				4981.64	
						say	**4982.00**	
14.1A Case I		(ii)	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		10451.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				13063.75	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6531.88	
			Cost for 15 cum = a+b+c+d+e+f				71850.63	
			Rate per cum = (a+b+c+d+e+f)/15				4790.04	
						say	**4790.00**	
14.1A Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		12541.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				13586.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6793.15	
			Cost for 15 cum = a+b+c+d+e+f				74724.65	
			Rate per cum = (a+b+c+d+e+f)/15				4981.64	
						say	**4982.00**	
14.1A Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				41804.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		14631.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14108.85	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7054.43	
			Cost for 15 cum = a+b+c+d+e+f				77598.68	
			Rate per cum = (a+b+c+d+e+f)/15				5173.25	
						say	**5173.00**	
14.1A		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	40.92	4922.00	201408.24	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**326114.00**			
			For formwork and staging add the following:					
14.1A Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		65222.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				97834.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				48917.10	
			Cost for 120 cum = a+b+c+d+e+f				538088.10	
			Rate per cum = (a+b+c+d+e+f)/120				4484.07	
						say	**4484.00**	
14.1A Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		81528.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				101910.63	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				50955.31	
			Cost for 120 cum = a+b+c+d+e+f				560508.44	
			Rate per cum = (a+b+c+d+e+f)/120				4670.90	
						say	**4671.00**	
14.1A Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		97834.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				105987.05	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				52993.53	
			Cost for 120 cum = a+b+c+d+e+f				582928.78	
			Rate per cum = (a+b+c+d+e+f)/120				4857.74	
						say	**4858.00**	
14.1A Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		81528.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				101910.63	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				50955.31	
			Cost for 120 cum = a+b+c+d+e+f				560508.44	
			Rate per cum = (a+b+c+d+e+f)/120				4670.90	
						say	**4671.00**	
14.1A Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		97834.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				105987.05	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				52993.53	
			Cost for 120 cum = a+b+c+d+e+f				582928.78	
			Rate per cum = (a+b+c+d+e+f)/120				4857.74	
						say	**4858.00**	
14.1A Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				326114.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		114139.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				110063.48	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55031.74	
			Cost for 120 cum = a+b+c+d+e+f				605349.11	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/120				5044.58	
						say	**5045.00**	
14.1		**B**	**RCC Grade M25**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	5.99	4922.00	29482.78	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.86	261.00	224.46	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**46086.00**			
			For formwork and staging add the following:					
14.1B Case I		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		9217.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				13825.80	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				6912.90	
			Cost for 15 cum = a+b+c+d+e+f				76041.90	
			Rate per cum = (a+b+c+d+e+f)/15				5069.46	
						say	**5069.00**	
14.1B Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		11521.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14401.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7200.94	
			Cost for 15 cum = a+b+c+d+e+f				79210.31	
			Rate per cum = (a+b+c+d+e+f)/15				5280.69	
						say	**5281.00**	
14.1B Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		13825.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14977.95	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7488.98	
			Cost for 15 cum = a+b+c+d+e+f				82378.73	
			Rate per cum = (a+b+c+d+e+f)/15				5491.92	
						say	**5492.00**	
14.1B Case I		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		11521.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14401.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7200.94	
			Cost for 15 cum = a+b+c+d+e+f				79210.31	
			Rate per cum = (a+b+c+d+e+f)/15				5280.69	
						say	**5281.00**	
14.1B Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		13825.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14977.95	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7488.98	
			Cost for 15 cum = a+b+c+d+e+f				82378.73	
			Rate per cum = (a+b+c+d+e+f)/15				5491.92	
						say	**5492.00**	
14.1B Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46086.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		16130.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15554.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7777.01	
			Cost for 15 cum = a+b+c+d+e+f				85547.14	
			Rate per cum = (a+b+c+d+e+f)/15				5703.14	
						say	**5703.00**	
14.1B		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	47.95	4922.00	236009.90	M-081
			Coarse sand	cum	54.20	110.69	5999.40	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.84	261.00	219.24	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	18.00	247.00	4446.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**360737.00**			
			For formwork and staging add the following:					
14.1B Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		72147.40	
			e) Overhead charges @ 0.25 on (a+b+c+d)				108221.10	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				54110.55	
			Cost for 120 cum = a+b+c+d+e+f				595216.05	
			Rate per cum = (a+b+c+d+e+f)/120				4960.13	
						say	**4960.00**	
14.1B Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		90184.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				112730.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				56365.16	
			Cost for 120 cum = a+b+c+d+e+f				620016.72	
			Rate per cum = (a+b+c+d+e+f)/120				5166.81	
						say	**5167.00**	
14.1B Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		108221.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				117239.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				58619.76	
			Cost for 120 cum = a+b+c+d+e+f				644817.39	
			Rate per cum = (a+b+c+d+e+f)/120				5373.48	
						say	**5373.00**	
14.1B Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		90184.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				112730.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				56365.16	
			Cost for 120 cum = a+b+c+d+e+f				620016.72	
			Rate per cum = (a+b+c+d+e+f)/120				5166.81	
						say	**5167.00**	
14.1B Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		108221.10	
			e) Overhead charges @ 0.25 on (a+b+c+d)				117239.53	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				58619.76	
			Cost for 120 cum = a+b+c+d+e+f				644817.39	
			Rate per cum = (a+b+c+d+e+f)/120				5373.48	
						say	**5373.00**	
14.1B Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				360737.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		126257.95	
			e) Overhead charges @ 0.25 on (a+b+c+d)				121748.74	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				60874.37	
			Cost for 120 cum = a+b+c+d+e+f				669618.06	
			Rate per cum = (a+b+c+d+e+f)/120				5580.15	
						say	**5580.00**	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
14.1		C	**RCC Grade M 30**					
		Case I	**Using Concrete Mixer**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.10	4922.00	30024.20	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	21.00	247.00	5187.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**46885.00**			
			For formwork and staging add the following:					
14.1C Case I		(i)	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		9377.00	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14065.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7032.75	
			Cost for 15 cum = a+b+c+d+e+f				77360.25	
			Rate per cum = (a+b+c+d+e+f)/15				5157.35	
						say	**5157.00**	
14.1C Case I (i)		(q)	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		11721.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14651.56	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7325.78	
			Cost for 15 cum = a+b+c+d+e+f				80583.59	
			Rate per cum = (a+b+c+d+e+f)/15				5372.24	
						say	**5372.00**	
14.1C Case I (i)		(r)	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		14065.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15237.63	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7618.81	
			Cost for 15 cum = a+b+c+d+e+f				83806.94	
			Rate per cum = (a+b+c+d+e+f)/15				5587.13	
						say	**5587.00**	
14.1C Case I		(ii)	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		11721.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14651.56	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7325.78	
			Cost for 15 cum = a+b+c+d+e+f				80583.59	
			Rate per cum = (a+b+c+d+e+f)/15				5372.24	
						say	**5372.00**	
14.1C Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		14065.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15237.63	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7618.81	
			Cost for 15 cum = a+b+c+d+e+f				83806.94	
			Rate per cum = (a+b+c+d+e+f)/15				5587.13	
						say	**5587.00**	
14.1C Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				46885.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		16409.75	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15823.69	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7911.84	
			Cost for 15 cum = a+b+c+d+e+f				87030.28	
			Rate per cum = (a+b+c+d+e+f)/15				5802.02	
						say	**5802.00**	
14.1C		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump.**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	48.79	4922.00	240144.38	M-081
			Coarse sand	cum	54.60	110.69	6043.67	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	19.00	247.00	4693.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**365174.00**			
			For formwork and staging add the following:					
14.1C Case II		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		73034.80	
			e) Overhead charges @ 0.25 on (a+b+c+d)				109552.20	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				54776.10	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 120 cum = a+b+c+d+e+f				602537.10	
			Rate per cum = (a+b+c+d+e+f)/120				5021.14	
						say	**5021.00**	
14.1C Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		91293.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				114116.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57058.44	
			Cost for 120 cum = a+b+c+d+e+f				627642.81	
			Rate per cum = (a+b+c+d+e+f)/120				5230.36	
						say	**5230.00**	
14.1C Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		109552.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				118681.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59340.78	
			Cost for 120 cum = a+b+c+d+e+f				652748.53	
			Rate per cum = (a+b+c+d+e+f)/120				5439.57	
						say	**5440.00**	
14.1C Case II		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		91293.50	
			e) Overhead charges @ 0.25 on (a+b+c+d)				114116.88	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57058.44	
			Cost for 120 cum = a+b+c+d+e+f				627642.81	
			Rate per cum = (a+b+c+d+e+f)/120				5230.36	
						say	**5230.00**	
14.1C Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		109552.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				118681.55	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59340.78	
			Cost for 120 cum = a+b+c+d+e+f				652748.53	
			Rate per cum = (a+b+c+d+e+f)/120				5439.57	
						say	**5440.00**	
14.1C Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				365174.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		127810.90	
			e) Overhead charges @ 0.25 on (a+b+c+d)				123246.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				61623.11	
			Cost for 120 cum = a+b+c+d+e+f				677854.24	
			Rate per cum = (a+b+c+d+e+f)/120				5648.79	
						say	**5649.00**	
14.1		**D**	**RCC/PSC Grade M35**					
		Case I	**Using Concrete Mixer.**					
			Unit = 1 cum					

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.33	4922.00	31156.26	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			b) Labour					
			Mate	day	0.90	261.00	234.90	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	21.00	247.00	5187.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**48017.00**			
			For formwork and staging add the following:					
14.1D Case I		**(i)**	**For solid slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		8643.06	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14165.02	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7082.51	
			Cost for 15 cum = a+b+c+d+e+f				77907.58	
			Rate per cum = (a+b+c+d+e+f)/15				5193.84	
						say	**5194.00**	
14.1D Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		11043.91	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14765.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7382.61	
			Cost for 15 cum = a+b+c+d+e+f				81208.75	
			Rate per cum = (a+b+c+d+e+f)/15				5413.92	
						say	**5414.00**	
14.1D Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		13444.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15365.44	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7682.72	
			Cost for 15 cum = a+b+c+d+e+f				84509.92	
			Rate per cum = (a+b+c+d+e+f)/15				5633.99	
						say	**5634.00**	
14.1D Case I		**(ii)**	**For T-beam & slab, 23-33 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		11043.91	
			e) Overhead charges @ 0.25 on (a+b+c+d)				14765.23	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7382.61	
			Cost for 15 cum = a+b+c+d+e+f				81208.75	
			Rate per cum = (a+b+c+d+e+f)/15				5413.92	
						say	**5414.00**	

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
14.1D Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		13444.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15365.44	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7682.72	
			Cost for 15 cum = a+b+c+d+e+f				84509.92	
			Rate per cum = (a+b+c+d+e+f)/15				5633.99	
						say	**5634.00**	
14.1D Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		15845.61	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15965.65	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7982.83	
			Cost for 15 cum = a+b+c+d+e+f				87811.09	
			Rate per cum = (a+b+c+d+e+f)/15				5854.07	
						say	**5854.00**	
14.1D Case I		**(iii)**	**For box girder and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		18246.46	
			e) Overhead charges @ 0.25 on (a+b+c+d)				16565.87	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8282.93	
			Cost for 15 cum = a+b+c+d+e+f				91112.26	
			Rate per cum = (a+b+c+d+e+f)/15				6074.15	
						say	**6074.00**	
14.1D Case I (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		23048.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				17766.29	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8883.15	
			Cost for 15 cum = a+b+c+d+e+f				97714.60	
			Rate per cum = (a+b+c+d+e+f)/15				6514.31	
						say	**6514.00**	
14.1D Case I (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				48017.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		27849.86	
			e) Overhead charges @ 0.25 on (a+b+c+d)				18966.72	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				9483.36	
			Cost for 15 cum = a+b+c+d+e+f				104316.93	
			Rate per cum = (a+b+c+d+e+f)/15				6954.46	
						say	**6954.00**	
		Case II	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Material					
			Cement	tonne	50.64	4922.00	249250.08	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			b) Labour					
			Mate	day	0.88	261.00	229.68	L-12
			Mason	day	3.00	330.00	990.00	L-11
			Mazdoor	day	19.00	247.00	4693.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**374213.00**			
			For formwork and staging add the following:					
14.1D Case II		**(i)**	**For solid slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		67358.34	
			e) Overhead charges @ 0.25 on (a+b+c+d)				110392.84	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				55196.42	
			Cost for 120 cum = a+b+c+d+e+f				607160.59	
			Rate per cum = (a+b+c+d+e+f)/120				5059.67	
						say	**5060.00**	
14.1D Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		86068.99	
			e) Overhead charges @ 0.25 on (a+b+c+d)				115070.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57535.25	
			Cost for 120 cum = a+b+c+d+e+f				632887.74	
			Rate per cum = (a+b+c+d+e+f)/120				5274.06	
						say	**5274.00**	
14.1D Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		104779.64	
			e) Overhead charges @ 0.25 on (a+b+c+d)				119748.16	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59874.08	
			Cost for 120 cum = a+b+c+d+e+f				658614.88	
			Rate per cum = (a+b+c+d+e+f)/120				5488.46	
						say	**5488.00**	
14.1D Case II		**(ii)**	**For T-beam & slab, 23-33 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		86068.99	
			e) Overhead charges @ 0.25 on (a+b+c+d)				115070.50	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				57535.25	
			Cost for 120 cum = a+b+c+d+e+f				632887.74	
			Rate per cum = (a+b+c+d+e+f)/120				5274.06	
						say	**5274.00**	
14.1D Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		104779.64	
			e) Overhead charges @ 0.25 on (a+b+c+d)				119748.16	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				59874.08	
			Cost for 120 cum = a+b+c+d+e+f				658614.88	
			Rate per cum = (a+b+c+d+e+f)/120				5488.46	
						say	**5488.00**	
14.1D Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		123490.29	
			e) Overhead charges @ 0.25 on (a+b+c+d)				124425.82	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				62212.91	
			Cost for 120 cum = a+b+c+d+e+f				684342.02	
			Rate per cum = (a+b+c+d+e+f)/120				5702.85	
						say	**5703.00**	
14.1D Case II		**(iii)**	**For box girder and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		142200.94	
			e) Overhead charges @ 0.25 on (a+b+c+d)				129103.49	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				64551.74	
			Cost for 120 cum = a+b+c+d+e+f				710069.17	
			Rate per cum = (a+b+c+d+e+f)/120				5917.24	
						say	**5917.00**	
14.1D Case II (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		179622.24	
			e) Overhead charges @ 0.25 on (a+b+c+d)				138458.81	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				69229.41	
			Cost for 120 cum = a+b+c+d+e+f				761523.46	
			Rate per cum = (a+b+c+d+e+f)/120				6346.03	
						say	**6346.00**	
14.1D Case II (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				374213.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		217043.54	
			e) Overhead charges @ 0.25 on (a+b+c+d)				147814.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				73907.07	
			Cost for 120 cum = a+b+c+d+e+f				812977.74	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/120				6774.81	
						say	**6775.00**	
14.1		**E**	**PSC Grade M-40**					
		Case 1	**Using concrete mixer.**					
			Unit = 1 cum					
			Taking output = 15 cum					
			a) Material					
			Cement	tonne	6.45	4922.00	31746.90	M-081
			Coarse sand	cum	6.75	110.69	747.16	M-005
			20 mm Aggregate	cum	8.10	456.33	3696.27	M-053
			10 mm Aggregate	cum	5.40	520.42	2810.27	M-051
			Admixture @ 0.4 per cent of cement	kg	25.80	152.14	3925.21	M-180
			b) Labour					
			Mate	day	0.96	261.00	250.56	L-12
			Mason	day	2.00	330.00	660.00	L-11
			Mazdoor	day	22.00	247.00	5434.00	L-13
			c) Machinery					
			Concrete mixer (cap. 0.40/0.28 cum)	hour	6.00	84.00	504.00	P&M-009
			Generator 33 KVA	hour	6.00	531.00	3186.00	P&M-079
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum		**52961.00**			
			For formwork and staging add the following:					
14.1E Case I		**(i)**	**For solid slab super-structure, 20-30 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 20 per cent of (a+b+c)		20.00		10592.20	
			e) Overhead charges @ 0.25 on (a+b+c+d)				15888.30	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				7944.15	
			Cost for 15 cum = a+b+c+d+e+f				87385.65	
			Rate per cum = (a+b+c+d+e+f)/15				5825.71	
						say	**5826.00**	
14.1E Case I (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		13240.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				16550.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8275.16	
			Cost for 15 cum = a+b+c+d+e+f				91026.72	
			Rate per cum = (a+b+c+d+e+f)/15				6068.45	
						say	**6068.00**	
14.1E Case I (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		15888.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				17212.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8606.16	
			Cost for 15 cum = a+b+c+d+e+f				94667.79	
			Rate per cum = (a+b+c+d+e+f)/15				6311.19	
						say	**6311.00**	
14.1E Case I		**(ii)**	**For T-beam & slab, 25-35 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 25 per cent of (a+b+c)		25.00		13240.25	
			e) Overhead charges @ 0.25 on (a+b+c+d)				16550.31	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8275.16	
			Cost for 15 cum = a+b+c+d+e+f				91026.72	
			Rate per cum = (a+b+c+d+e+f)/15				6068.45	
						say	**6068.00**	
14.1E Case I (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 30 per cent of (a+b+c)		30.00		15888.30	
			e) Overhead charges @ 0.25 on (a+b+c+d)				17212.33	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8606.16	
			Cost for 15 cum = a+b+c+d+e+f				94667.79	
			Rate per cum = (a+b+c+d+e+f)/15				6311.19	
						say	**6311.00**	
14.1E Case I (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 15 cum				52961.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		18536.35	
			e) Overhead charges @ 0.25 on (a+b+c+d)				17874.34	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				8937.17	
			Cost for 15 cum = a+b+c+d+e+f				98308.86	
			Rate per cum = (a+b+c+d+e+f)/15				6553.92	
						say	**6554.00**	
14.1E		**Case II**	**Using Batching Plant, Transit Mixer and Concrete Pump**					
			Unit = cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	51.60	4922.00	253975.20	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture @ 0.4 per cent of cement	kg	206.40	152.14	31401.70	M-180
			b) Labour					
			Mate	day	0.94	261.00	245.34	L-12
			Mason	day	3.50	330.00	1155.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**410767.00**			
			For formwork and staging add the following:					
14.1E Case II		**(i)**	**For solid/voided slab super-structure, 18-28 per cent of (a+b+c)**					
		(p)	**Height upto 5m**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 18 per cent of (a+b+c)		18.00		73938.06	
			e) Overhead charges @ 0.25 on (a+b+c+d)				121176.27	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				60588.13	
			Cost for 15 cum = a+b+c+d+e+f				666469.46	
			Rate per cum = (a+b+c+d+e+f)/120				5553.91	
						say	**5554.00**	
14.1E Case II (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		94476.41	
			e) Overhead charges @ 0.25 on (a+b+c+d)				126310.85	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				63155.43	
			Cost for 120 cum = a+b+c+d+e+f				694709.69	
			Rate per cum = (a+b+c+d+e+f)/120				5789.25	
						say	**5789.00**	
14.1E Case II (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		115014.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				131445.44	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				65722.72	
			Cost for 120 cum = a+b+c+d+e+f				722949.92	
			Rate per cum = (a+b+c+d+e+f)/120				6024.58	
						say	**6025.00**	
14.1E Case II		**(ii)**	**For T-beam & slab incldluing launching of precast girders by launching truss upto 40 m, 23-33 per cent of cost of conc.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 23 per cent of (a+b+c)		23.00		94476.41	
			e) Overhead charges @ 0.25 on (a+b+c+d)				126310.85	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				63155.43	
			Cost for 120 cum = a+b+c+d+e+f				694709.69	
			Rate per cum = (a+b+c+d+e+f)/120				5789.25	
						say	**5789.00**	
14.1E Case II (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 28 per cent of (a+b+c)		28.00		115014.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				131445.44	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				65722.72	
			Cost for 120 cum = a+b+c+d+e+f				722949.92	
			Rate per cum = (a+b+c+d+e+f)/120				6024.58	
						say	**6025.00**	
14.1E Case II (ii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 33 per cent of (a+b+c)		33.00		135553.11	
			e) Overhead charges @ 0.25 on (a+b+c+d)				136580.03	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				68290.01	
			Cost for 120 cum = a+b+c+d+e+f				751190.15	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per cum = (a+b+c+d+e+f)/120				6259.92	
						say	**6260.00**	
14.1E Case II		**(iii)**	**For cast-in-situ box girder, segment construction and balanced cantilever, 38-58 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 38 per cent of (a+b+c)		38.00		156091.46	
			e) Overhead charges @ 0.25 on (a+b+c+d)				141714.62	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				70857.31	
			Cost for 120 cum = a+b+c+d+e+f				779430.38	
			Rate per cum = (a+b+c+d+e+f)/120				6495.25	
						say	**6495.00**	
14.1E Case II (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 48 per cent of (a+b+c)		48.00		197168.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				151983.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				75991.90	
			Cost for 120 cum = a+b+c+d+e+f				835910.85	
			Rate per cum = (a+b+c+d+e+f)/120				6965.92	
						say	**6966.00**	
14.1E Case II (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				410767.00	
			d) Formwork and staging 58 per cent of (a+b+c)		58.00		238244.86	
			e) Overhead charges @ 0.25 on (a+b+c+d)				162252.97	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				81126.48	
			Cost for 120 cum = a+b+c+d+e+f				892391.31	
			Rate per cum = (a+b+c+d+e+f)/120				7436.59	
						say	**7437.00**	
14.1F		**F**	**PSC Grade M-45**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	55.80	4922.00	274647.60	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture @ 0.4 per cent of cement	kg	223.20	152.14	33957.65	M-180
			b) Labour					
			Mate	day	0.94	261.00	245.34	L-12
			Mason	day	3.50	330.00	1155.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**433996.00**			
			For formwork and staging add the following:					
14.1F		**(i)**	**For solid slab/voided slab super-structure, 16-26 per cent of cost of concrete (a+b+c)**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 16 per cent of (a+b+c)		16.00		69439.36	
			e) Overhead charges @ 0.25 on (a+b+c+d)				125858.84	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				62929.42	
			Cost for 120 cum = a+b+c+d+e+f				692223.62	
			Rate per cum = (a+b+c+d+e+f)/120				5768.53	
						say	**5769.00**	
14.1F (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 21 per cent of (a+b+c)		21.00		91139.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				131283.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				65641.90	
			Cost for 120 cum = a+b+c+d+e+f				722060.85	
			Rate per cum = (a+b+c+d+e+f)/120				6017.17	
						say	**6017.00**	
14.1F (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 26 per cent of (a+b+c)		26.00		112838.96	
			e) Overhead charges @ 0.25 on (a+b+c+d)				136708.74	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				68354.37	
			Cost for 120 cum = a+b+c+d+e+f				751898.07	
			Rate per cum = (a+b+c+d+e+f)/120				6265.82	
						say	**6266.00**	
14.1F		**(ii)**	**For T-beam & slab including launching of precast girders by launching truss upto 40 m span, 21-31 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 21 per cent of (a+b+c)		21.00		91139.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				131283.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				65641.90	
			Cost for 120 cum = a+b+c+d+e+f				722060.85	
			Rate per cum = (a+b+c+d+e+f)/120				6017.17	
						say	**6017.00**	
14.1F (ii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 26 per cent of (a+b+c)		26.00		112838.96	
			e) Overhead charges @ 0.25 on (a+b+c+d)				136708.74	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				68354.37	
			Cost for 120 cum = a+b+c+d+e+f				751898.07	
			Rate per cum = (a+b+c+d+e+f)/120				6265.82	
						say	**6266.00**	
14.1F (ii)		**(r)**	**Height above 10m**					

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 31 per cent of (a+b+c)		31.00		134538.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				142133.69	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				71066.85	
			Cost for 120 cum = a+b+c+d+e+f				781735.30	
			Rate per cum = (a+b+c+d+e+f)/120				6514.46	
						say	**6514.00**	
14.1F		**(iii)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 36-56 per cent of cost of concrete.**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 36 per cent of (a+b+c)		36.00		156238.56	
			e) Overhead charges @ 0.25 on (a+b+c+d)				147558.64	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				73779.32	
			Cost for 120 cum = a+b+c+d+e+f				811572.52	
			Rate per cum = (a+b+c+d+e+f)/120				6763.10	
						say	**6763.00**	
14.1F (iii)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 46 per cent of (a+b+c)		46.00		199638.16	
			e) Overhead charges @ 0.25 on (a+b+c+d)				158408.54	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				79204.27	
			Cost for 120 cum = a+b+c+d+e+f				871246.97	
			Rate per cum = (a+b+c+d+e+f)/120				7260.39	
						say	**7260.00**	
14.1F (iii)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				433996.00	
			d) Formwork and staging 56 per cent of (a+b+c)		56.00		243037.76	
			e) Overhead charges @ 0.25 on (a+b+c+d)				169258.44	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				84629.22	
			Cost for 120 cum = a+b+c+d+e+f				930921.42	
			Rate per cum = (a+b+c+d+e+f)/120				7757.68	
						say	**7758.00**	
14.1		**G**	**PSC Grade M-50**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	58.80	4922.00	289413.60	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture @ 0.4 per cent of cement	kg	235.20	152.14	35783.33	M-180
			b) Labour					
			Mate	day	0.94	261.00	245.34	L-12
			Mason	day	3.50	330.00	1155.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**450587.00**			
			For formwork and staging add the following:					
14.1G		**(i)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				450587.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		157705.45	
			e) Overhead charges @ 0.25 on (a+b+c+d)				152073.11	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				76036.56	
			Cost for 120 cum = a+b+c+d+e+f				836402.12	
			Rate per cum = (a+b+c+d+e+f)/120				6970.02	
						say	**6970.00**	
14.1G (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				450587.00	
			d) Formwork and staging 45 per cent of (a+b+c)		45.00		202764.15	
			e) Overhead charges @ 0.25 on (a+b+c+d)				163337.79	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				81668.89	
			Cost for 120 cum = a+b+c+d+e+f				898357.83	
			Rate per cum = (a+b+c+d+e+f)/120				7486.32	
						say	**7486.00**	
14.1G (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				450587.00	
			d) Formwork and staging 55 per cent of (a+b+c)		55.00		247822.85	
			e) Overhead charges @ 0.25 on (a+b+c+d)				174602.46	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				87301.23	
			Cost for 120 cum = a+b+c+d+e+f				960313.54	
			Rate per cum = (a+b+c+d+e+f)/120				8002.61	
						say	**8003.00**	
14.1		**H**	**PSC Grade M- 55**					
			Unit = 1 cum					
			Taking output = 120 cum					
			a) Material					
			Cement	tonne	63.50	4922.00	312547.00	M-081
			Coarse sand	cum	54.00	110.69	5977.26	M-004
			20 mm Aggregate	cum	64.80	456.33	29570.18	M-053
			10 mm Aggregate	cum	43.20	520.42	22482.14	M-051
			Admixture @ 0.4 per cent of cement	kg	254.00	152.14	38643.56	M-180
			b) Labour					
			Mate	day	0.94	261.00	245.34	L-12
			Mason	day	3.50	330.00	1155.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Batching Plant @ 20 cum/hour	hour	6.00	2860.00	17160.00	P&M-002
			Generator 100 KVA	hour	6.00	1927.00	11562.00	P&M-080
			Loader	hour	6.00	1371.00	8226.00	P&M-017

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Transit Mixer (capacity 4.0 cu.m)					
			Transit Mixer 4 cum capacity lead upto1 Km	hour	15.00	1327.00	19905.00	P&M-049
			Lead beyond 1 Km, L - lead in Kilometer	tonne.km	300L	6.59	1977.00	Lead =1 km & P&M-050
			Concrete Pump	hour	6.00	365.00	2190.00	P&M-007
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum		**476581.00**			
			For formwork and staging add the following:					
14.1H		**(i)**	**For cast-in-situ box girder, segmental construction and balanced cantilever, 35-55 per cent of cost of concrete**					
		(p)	**Height upto 5m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				476581.00	
			d) Formwork and staging 35 per cent of (a+b+c)		35.00		166803.35	
			e) Overhead charges @ 0.25 on (a+b+c+d)				160846.09	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				80423.04	
			Cost for 120 cum = a+b+c+d+e+f				884653.48	
			Rate per cum = (a+b+c+d+e+f)/120				7372.11	
						say	**7372.00**	
14.1H (i)		**(q)**	**Height 5m to 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				476581.00	
			d) Formwork and staging 45 per cent of (a+b+c)		45.00		214461.45	
			e) Overhead charges @ 0.25 on (a+b+c+d)				172760.61	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				86380.31	
			Cost for 120 cum = a+b+c+d+e+f				950183.37	
			Rate per cum = (a+b+c+d+e+f)/120				7918.19	
						say	**7918.00**	
14.1H (i)		**(r)**	**Height above 10m**					
			Basic Cost of Labour, Material & Machinery (a+b+c) for 120 cum				476581.00	
			d) Formwork and staging 55 per cent of (a+b+c)		55.00		262119.55	
			e) Overhead charges @ 0.25 on (a+b+c+d)				184675.14	
			f) Contractor's profit @ 0.1 on (a+b+c+d+e)				92337.57	
			Cost for 120 cum = a+b+c+d+e+f				1015713.26	
			Rate per cum = (a+b+c+d+e+f)/120				8464.28	
						say	**8464.00**	
		Note	1.Where ever concrete is carried out using batching plant, transit mixer, concrete pump, admixers conforming IS: 9103 @ 0.4 per cent of weight of cement may be added for achieving desired slump of concrete.					
			2. Cement provided for various components of the super structure is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly, the provision for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design.					
			3. The items like needle and surface vibrators are part of minor T & P which is already covered under the overhead charges. As such these items have not been added separately in the rate analysis.					
14.2	**1600**		**Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications**					
			Unit = 1 MT					
			Taking output = 1 MT					
			a) Material					

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			HYSD bars including 5 per cent for laps and wastage	tonne	1.05	43682.50	45866.63	M-082
			Binding wire	Kg	8.00	53.72	429.76	M-072
			b) Labour for cutting, bending, tying and placing in position					
			Mate	day	0.44	261.00	114.84	L-12
			Blacksmith	day	3.00	330.00	990.00	L-02a
			Mazdoor	day	8.00	247.00	1976.00	L-13
			Basic Cost of Labour & Material (a+b)		**49378.00**			
			c) Overhead charges @ 0.25 on (a+b)				12344.31	
			d) Contractor's profit @ 0.1 on (a+b+c)				6172.15	
			Rate per MT = a+b+c+d				67893.68	
						say	**67894.00**	
14.3	**1800**		**High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications**					
			Unit = 1 MT					
			Taking output = 0.377 MT					
			Details of cost for 12T13 strand 40 m long cable (weight = 0.377 MT)					
			a) Material					
			H.T. Strand @ 9.42 kg/m including 2 per cent for wastage and extra length for jacking	tonne	0.385	64458.30	24816.45	M-119
			Sheathing duct ID 66 mm along with 5 per cent extra length 40 x 1.05 = 42 m.	metre	42.00	79.29	3330.18	M-165
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	2.00	43.24	86.48	M-187
			Cement for grouting including 3 per cent wastage @ 3.00 kg/m = 3 x 1.03 x 40 = 123.60 kg (say, = 125 kg)	tonne	0.125	4922.00	615.25	M-081
			Add 0.50 per cent cost of material for Spacers, Insulation tape and miscellaneous items				144.24	
			b) Labour					
			i) For making and fixing cables, anchorages					
			Mate	day	0.16	261.00	41.76	L-12
			Blacksmith	day	1.00	330.00	330.00	L-02a
			Mazdoor	day	3.00	247.00	741.00	L-13
			ii) For prestressing					
			Mate/Supervisor	day	0.05	261.00	13.05	L-12
			Prestressing operator / Fitter	day	0.25	336.00	84.00	L-08
			Mazdoor	day	1.00	247.00	247.00	L-13
			iii) For grouting					
			Mate/Supervisor	day	0.05	261.00	13.05	L-12
			Mason	day	0.25	330.00	82.50	L-11
			Mazdoor	day	1.00	247.00	247.00	L-13
			c) Machinery					
			Stressing jack with pump	hour	2.50	184.00	460.00	P&M-040
			Grouting pump with agitator	hour	1.00	138.24	138.24	M-111
			Generator 33 KVA.	hour	3.50	531.00	1858.50	P&M-079
			d) Overhead charges @ 0.25 on (a+b+c)				8312.17	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4156.09	
			Cost for 0.377 MT (a+b+c+d+e)				45716.96	
			Rate per MT = (a+b+c+d+e)/0.377				121265.14	
						say	**121265.00**	
		Note	Cost of HT steel has been taken for delivery at site. Hence carriage has not been considered.					

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
14.4	**2702**		**Providing and laying Cement concrete wearing coat M-30 grade including reinforcement complete as per drawing and Technical Specifications**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Cement concrete M30 Grade Refer relevant item of concrete in Item 14.1 excluding formwork	cum	1.00	3043.00	3043.00	Item 14.1(C) case II
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.075	49377.00	3703.28	Item 14.2 A
			b) Labour					DIR used item
			Mazdoor for cleaning deck slab concrete surface.	day	0.15	247.00	37.05	L-13
			c) Overhead charges @ 0.25 on (a+b)				1695.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				847.92	
			Rate per cum (a+b+c+d)				9327.07	
						say	**9327.00**	
14.5	**515 & 2702**		**Mastic Asphalt**					
			Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.					
			Unit = sqm					
			Taking output = 72.46 sqm (2 tonnes)(0.869 cum) assuming a density of 2.3 tonnes/cum.					
			a) Labour					
			Mate	day	0.49	261.00	127.89	L-12
			Mazdoor	day	11.00	247.00	2717.00	L-13
			Mazdoor (Skilled)	day	1.25	313.00	391.25	L-15
			b) Machinery					
			Mechanical broom @ 1250 sqm per hour	hour	0.06	551.00	33.06	P&M-031
			Air compressor 250 cfm	hour	0.06	457.00	27.42	P&M-001
			Mastic cooker 1 tonne capacity	hour	6.00	88.00	528.00	P&M-030
			Bitumen boiler 1500 litres capacity	hour	6.00	283.00	1698.00	P&M-005
			Tractor for towing and positioning of mastic cooker and bitumen boiler	hour	1.00	518.00	518.00	P&M-053
			c) Material					
			Base mastic (without coarse aggregates) = 60 per cent					
			Coarse aggregate(3.35mm to 9.5 mm size) = 40 per cent .					
			Proportion of material required for mastic asphalt with coarse aggregates (based on mix design done by CRRI for a specific case)					
			i) Bitumen (30/40 grade) @ 10.2 per cent by weight of mix. 2 x 10.2/100 = 0.204	tonne	0.204	33187.50	6770.25	M-197
			ii) Crusher stone dust @ 31.9 per cent by weight of mix = 2 x 31.9/100 = 0.638 tonnes = 0.638/1.625 = 0.39	cum	0.39	89.38	34.86	M-021
			iii) Lime stone dust filler with calcium carbonate content not less than 80 per cent by weight @ 17.92 per cent by weight of mix = 2 x 17.92/100 = 0.36	tonne	0.36	3389.30	1220.15	M-188

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			iv) Coarse aggregates 9.5 mm to 3.35 mm size @ 40 per cent by weight of mix = 2 x 40/100 = 0.8 MT = 0.8/1.456 = 0.55	cum	0.55	520.42	286.23	M-051
			v) Pre-coated stone chips of 9.5 mm nominal size for skid resistance = 72.46x0.005/10 = 0.036	cum	0.036	495.97	17.85	M-142
			vi) Bitumen for coating of chips @ 2 per cent by weight = 0.036 x 1.456 x 2/100 = 0.001048MT = 1.05kg	kg	1.05	33.19	34.85	M-197/1000
			d) Overhead charges @ 0.25 on (a+b+c)				3601.20	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1800.60	
			Cost for 72.46 sqm = a+b+c+d+e				19806.61	
			Rate per sqm = (a+b+c+d+e)/72.46				273.35	
						say	**273.00**	
		Note	**1.**The rates for 6 mm or any other thickness 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 CRRI for a specific case and is meant for estimating purposes only. Actual design is required to be done for each case.					
			5.The quantity of bitumen works out 17 per cent of the mastic asphalt blocks without aggregates and falls within the standards laid down by MoRTH Specifications.					
14.6	**2703, 1500, 1600 & 1700**		**Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	3043.00	12451.96	Item 14.1(C) case II
			No. of vertical posts = (12 + 2)2 = 28 Nos., External area of vertical post 0.25x0.275 = 0.069sqm, Concrete in Vertical posts = 0.069 x 28 = 1.932 cum, Hand rail in 3 tiers = 3 x 24 = 72 m, External area = 0.170 x 0.175 = 0.03 sqm, Concrete in hand rails = 0.03 x 72 = 2.16 cum, Total Concrete = 1.932 + 2.16 = 4.092 cum. (Refer MoRTH SD / 202).					DIR used item
			Add 5 per cent of above cost for form work for casting in casting yard.				622.60	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	49377.00	42711.11	Item 14.2 A
			Refer MoRTH SD / 202.					DIR used item
			Add 5 per cent of (a) for handling and fixing of precast panels in position				2789.28	
			b) Overhead charges @ 0.25 on (a)				14643.74	
			c) Contractor's profit @ 0.1 on (a+b)				7321.87	
			Rate for 48 m (a+b+c)				80540.54	
			Rate per metre (a+b+c)/48				1677.93	
						say	**1678.00**	
		Note	1.Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			2.48 m length is the total linear length adding both sides of 24 m span.					
14.7	**2703, 1500, 1600 & 1700**		**Construction of RCC railing of M30 Grade in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.**					
			Unit = 1 RM					
			Taking output = 2 x 24 m span = 48 m.					
			a) Material					
			i) M30 Grade Reinforced Cement Concrete	cum	4.092	3043.00	12451.96	Item 14.1(C) case II
			No. of vertical posts = (12 + 2)2 = 28 Nos., External area of vertical post 0.25x0.275 = 0.069sqm, Concrete in vehicle posts = 0.069 x 28 = 1.932 cum, Hand rail in 3 tiers = 3 x 24 = 72 m, External area = 0.170 x 0.175 = 0.03 sqm, Concrete in hand rails = 0.03 x 72 = 2.16 cum, Total Concrete = 1.932 + 2.16 = 4.092 cum. (Refer MoRTH SD / 202).					
			Add 12 per cent of above cost for form work.				1494.23	
			ii) HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.865	49377.00	42711.11	Item 14.2 A
			refer MoRTH SD / 202.					
			b) Overhead charges @ 0.25 on (a)				14164.32	
			c) Contractor's profit @ 0.1 on (a+b)				7082.16	
			Rate for 48 m (a+b+c)				77903.78	
			Rate per metre (a+b+c)/48				1623.00	
						say	**1623.00**	
		Note	**1.** Quantities of material have been adopted from standard plans of MoRTH vide drawing no. SD/202.					
			2. 48 m length is the total linear length adding both sides of 24 m span.					
14.8	**2703.2 & 1900**		**Providing, fitting and fixing mild steel railing complete as per drawing and Technical Specification**					
			Unit = 1 RM					
			Taking output = 2 x 50 m span = 100 m					
			a) Material:					
			1) ISMC 100 = 2.806 x 1.05 = 2.946 MT	tonne	2.946	40170.00	118340.82	M-179
			2) MS Flat = 0.964 x 1.05 = 1.012 MT	tonne	1.012	40170.00	40652.04	M-179
			3) MS bars = 0.17 x 1.05 = 0.180 MT	tonne	0.18	40170.00	7230.60	M-179
			4) MS bolts, nuts and washers	tonne	0.15	55530.00	8329.50	M-130*1000
			Add @ 5 per cent of cost of material for painting one shop coat with red oxide primer and three coats of synthetic enamel paint and consumables to safeguard against weathering and corrosion.				8727.65	
			Add for cost of concrete for fixing vertical posts in the performed recess @ 1 per cent of cost of material.				1745.53	
			Add for electricity charges, welding and drilling equipment, electrodes and other consumables @ 1 per cent of cost of material.				1745.53	
			b) Labour					
			Mate	day	2.80	261.00	730.80	L-12
			Mazdoor (Skilled)	day	30.00	313.00	9390.00	L-15
			Mazdoor	day	40.00	247.00	9880.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				51693.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				25846.56	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 100 m steel railing = a+b+c+d				284312.14	
			Rate per metre (a+b+c+d)/100				2843.12	
						say	**2843.00**	
14.9	**2705**		**Drainage Spouts complete as per drawing and Technical specification**					
			Unit = 1 No.					
			Taking output = 1 No.					
			a) Material					
			Corrosion resistant Structural steel including 5 per cent wastage	Kg	4.00	39.28	157.12	M-087/1000
			GI pipe 100mm dia	metre	6.00	39.91	239.46	M-056
			GI bolt 10 mm Dia	each	6.00	14.36	86.16	M-110
			Galvanised MS flat clamp	each	2.00	13.85	27.70	M-101
			b) Labour					
			For fabrication					
			Mate	day	0.02	261.00	5.22	L-12
			Skilled (Blacksmith, welder etc.)	day	0.02	330.00	6.60	L-02a
			Mazdoor	day	0.02	247.00	4.94	L-13
			For fixing in position					
			Mate	day	0.01	261.00	2.61	L-12
			Mason	day	0.01	330.00	3.30	L-11
			Mazdoor	day	0.20	247.00	49.40	L-13
			Add @ 5 per cent of cost of material and labour for electrodes, cutting gas, sealant, anti-corrosive bituminous paint, mild steel grating etc.				29.13	
			c) Overhead charges @ 0.25 on (a+b)				152.91	
			d) Contractor's profit @ 0.1 on (a+b+c)				76.45	
			Rate per No. (a+b+c+d)				841.00	
						say	**841.00**	
		Note	**1.** In case of viaducts in urban areas, the drainage spouts should be connected with suitably located pipelines to discharge the surface run-off to drains provided at ground level.					
			2. In case of bridges, sufficient length of G.I Pipe shall be provided to ensure that there is no splashing of water from the drainage spout on the structure.					
14.10	**2700**		**PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Concrete, Rate as per item No. 12.8 (A) excluding formworks	cum	1.00	2576.00	2576.00	Item 12.8 (A)
			b) Overhead charges @ 0.25 on (a)				644.00	
			c) Contractor's profit @ 0.1 on (a+b)				322.00	
			Rate per cum (a+b+c)				3542.00	
			Rate per cum			**say**	**3542.00**	
14.11	**1500,1600,1700 & 2704**		**Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification**					
			Unit = 1 cum					
			Taking output = 1 cum					
			a) Material					
			Cement concreteM30 Grade Refer relevant item of concrete in item 12.8(G)by using batching plant, excluding formwork i.e. per cum basic cost (a+b+c) (Excluding OH & CP)	cum	1.00	3041.00	3041.00	Item 12.8 (G)

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			(Refer relevant item of concrete in item No. 13.8 (G) except that form work may be added at the rate of 2 per cent of cost against 3.5 per cent provided in the foundation concrete.				60.82	
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.05	49377.00	2468.85	Item 14.2 A
			b) Overhead charges @ 0.25 on (a)				1392.67	
			c) Contractor's profit @ 0.1 on(a+b)				696.33	
			Rate per cum (a+b+c)				7659.67	
						say	**7660.00**	
		Note	The grade of reinforced cement concrete may be adopted as M30 for severe conditions and M25 for moderate conditions.					
14.12	**1600**		**Providing anti-corrosive treatment to HYSD reinforcement with Fusion Bonded Epoxy Coating (FBEC)**					
			Unit = 1 MT					
			Taking output = 1 MT					
			To be taken as per the prevailing market rates.					
		Note	Contractors generally do not have expertise for this item . The job is therefore, got done from specialised firms who have the expertise in the field of construction chemicals. The prevailing rate in the market is required to be ascertained from the market and added in the cost estimate. Detailed guidelines in this regard have been issued by MoRTH vide their circular no. RW/NH-34041/44/91-S&R dated 21.3.2000.					
14.13	**1800 & 2300**		**Precast - pretensioned Girders**					
			Providing, precasting, transportation and placing in position precast pretensioned concrete girders as per drawing and technical specifications					
			Unit = 1 cum					
			Taking output = 1 cum					
			Grade of concrete - M40					
			a) Material					
			Cement	tonne	0.47	4922.00	2313.34	M-081
			Coarse sand	cum	0.45	110.69	49.81	M-004
			20 mm Aggregate	cum	0.54	456.33	246.42	M-053
			10 mm Aggregate	cum	0.36	520.42	187.35	M-051
			Admixture @ 0.4 per cent of cement	Kg	1.88	152.14	286.02	M-180
			HYSD steel .	tonne	0.10	43682.50	4368.25	M-082
			HT strand with 5 per cent as wastage and extra length for anchoring	tonne	0.06	64458.30	3867.50	M-119
			LDO for steam curing	Litre	37.00	input	#VALUE!	M-122
			Add consumables such as binding wire, foam, packing tape, shuttering oil, HDPE pipe for unbonding of strand, bolt & nuts etc @ 1 per cent of material cost				#VALUE!	
			b) Labour					
			(i) Cutting, bending, making reinforcement cage, placing in position, binding etc. complete					
			Taking quantity of steel 100 Kg/cum of concrete including laps and wastage					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor (Skilled)	day	0.35	313.00	109.55	L-15
			Mazdoor	day	1.40	247.00	345.80	L-13
			(ii) Cable cutting and threading in position including binding by insulation tape with HDPE pipes etc., prestessing and cutting of extra length of HT strand after de-stressing.					
			Taking quantity of HT strand 60 Kg/cum					

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate	day	0.02	261.00	5.22	L-12
			Mazdoor (Skilled)	day	0.14	313.00	43.82	L-15
			Mazdoor	day	0.50	247.00	123.50	L-13
			(iii) Erection and dismantling of shuttering					
			Taking shuttering area 10 sqm/cum of concrete					
			Mate	day	0.12	261.00	31.32	L-12
			Mazdoor (Skilled)	day	1.00	313.00	313.00	L-15
			Mazdoor	day	2.00	247.00	494.00	L-13
			(iv) Concreting by Batching plant and stationary concrete pump					
			Mate	day	0.03	261.00	7.83	L-12
			Mazdoor (Skilled)	day	0.05	313.00	15.65	L-15
			Mazdoor	day	0.60	247.00	148.20	L-13
			(v) Steam curing and manual curing					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor	day	0.35	247.00	86.45	L-13
			(vi) Handling of precast girder, stacking in stockyard and again loading in trailor					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor	day	0.25	247.00	61.75	L-13
			(vii) Placement of girders in position over pier caps including placement of sand jacks, channel, levelling etc.					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor (Skilled)	day	0.06	313.00	18.78	L-15
			Mazdoor	day	0.24	247.00	59.28	L-13
			c) Machinery					
			i) At casting yard					
			Generator 100 KVA	hour	0.05	1927.00	96.35	P&M-080
			Batching Plant @ 20 cum/hour	hour	0.05	2860.00	143.00	P&M-002
			Transit Mixer 4 cum capacity	hour	0.10	1327.00	132.70	P&M-049
			Concrete Pump stationary	hour	0.05	365.00	18.25	P&M-007
			Crane 35 tonne capacity	hour	0.10	1217.00	121.70	P&M-012
			Trailor 30 tonne capacity	hour	0.10	3540.00	354.00	P&M-089
			Loader	hour	0.05	1371.00	68.55	P&M-017
			ii) For transportation and placement at site					
			Crane 35 tonne capacity	hour	0.15	1217.00	182.55	P&M-012
			Trailer 30 tonne capacity for transporting to site.	tonne.km	2.5xL	3.29	8.23	Lead =1 km & P&M-090
			(L - Lead in Kilometer)					
			Trailor 30 tonne capacity during placement.	hour	0.15	3540.00	531.00	P&M-089
			Cost of formwork, steam curing arrangement, pretensioning arrangement etc @ 5 per cent of cost material, labour and machinery				#VALUE!	
			d) Overhead charges @ 0.25 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Rate per cum = (a+b+c+d+e)				#VALUE!	
						say	**#VALUE!**	
14.14	**1700 & 1800**		**Providing and fixing Helical pipes in voided concrete slabs**					
			Unit = 1 RM					
			Taking output = 1 RM					
			a) Material					
			Helical pipes 600mm diameter	metre	1.00	input	#VALUE!	M-117
			Tie rods 20mm diameter	each	1.00	input	#VALUE!	M-183

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Consumables for sealing joints etc.@ 5 per cent of cost of material				#VALUE!	
			b) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Fitter	day	0.05	336.00	16.80	L-08
			Mazdoor	day	0.20	247.00	49.40	L-13
			c) Overhead charges @ 0.25 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Rate per cum (a+b+c+d)				#VALUE!	
						say	**#VALUE!**	
14.15	**800**		**Crash Barriers**					
			The rate analysis for rigid crash barrier in reinforced cement concrete, semi-rigid crash barrier with metal beam and flexible crash barrier with wire ropes have been made and included in chapter-8 on Traffic and Transportation.	**Per m**			**VALUE**	
14.16	**800**		**Painting on concrete surface**					
			Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 sqm.					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Painter	day	0.25	312.00	78.00	L-18
			Mazdoor (Skilled)	day	0.25	313.00	78.25	L-15
			b) Material					
			Water based paint of approved quality for cement concrete surface	Litres	5.00	109.33	546.65	M-190
			c) Overhead charges @ 0.25 on (a+b)				176.38	
			d) Contractor's profit @ 0.1 on (a+b+c)				88.19	
			Cost for 10 sqm (a+b+c+d)				970.08	
			Rate per sqm (a+b+c+d)/10				97.01	
						say	**97.00**	
14.17	**2604**		**Burried Joint**					
			Providing and laying a burried expansion joint, expansion gap being 20 mm, covered with 12 mm thick, 200 mm wide galvanised weldable structural steel plate as per IS: 2062, placed symmetrical to centre line of the joint, resting freely over the top surface of the deck concrete, welding of 8 mm dia. 100 mm long galvanised nails spaced 300 mm c/c along the centre line of the plate, all as specified in clause 2604.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.02	261.00	5.22	L-12
			Mazdoor	day	0.40	247.00	98.80	L-13
			Mazdoor (Skilled)	day	0.20	313.00	62.60	L-15
			b) Material					
			Galvanised M.S plate 200 mm wide,12 mm thick @ 94.20 kg/sqm including 5 per cent wastage	kg	237.50	33.26	7900.04	M-060/1000
			Add 1 per cent of cost of steel plate cutting, welding consumables and galvanised nails.				79.00	
			c) Overhead charges @ 0.25 on (a+b)				2036.42	
			d) Contractor's profit @ 0.1 on (a+b+c)				1018.21	

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cost for 12 m = (a+b+c+d)				11200.28	
			Rate per m = (a+b+c+d)/12				933.36	
						say	**933.00**	
		Note	Guidelines laid down vide the MoRTH circular No. RW/NH-34059/1/96-S&R dated 30.11.2000 and subsequent corrigendum dated 25.01.2001 may be reffered for expansion joints.					
14.18	**2605**		**Filler joint**					
		(i)	**Providing & fixing 2 mm thick corrugated copper plate in expansion joint complete as per drawing & Technical Specification.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Cutting, bending, carrying & fixing etc.					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.50	247.00	123.50	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			Copper plate - 12m long x 250 mm wide	kg	55.00	684.89	37668.95	M-086
			Area = 12 x 0.25 = 3 sqm					
			Weight = 3 x 0.002 x 8900 = 53.4 kg					
			Wastage @ 2.5 per cent = 1.33 kg/54.73 kg say = 55 kg.					
			c) Overhead charges @ 0.25 on (a+b)				9489.85	
			d) Contractor's profit @ 0.1 on (a+b+c)				4744.92	
			Cost for 12 m = (a+b+c+d)				52194.16	
			Rate per m = (a+b+c+d)/12				4349.51	
						say	**4350.00**	
14.18		**(ii)**	**Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			For carrying, placing & fixing.					
			Mate	day	0.008	261.00	2.09	L-12
			Mazdoor	day	0.10	247.00	24.70	L-13
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			b) Material					
			20 mm thick compressible fibre board 12 m long x 25 cm deep.	sqm	3.00	939.47	2818.41	M-084
			Area = 12 x 0.25 = 3 sqm					
			c) Overhead charges @ 0.25 on (a+b)				719.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				359.56	
			Cost for 12 m = (a+b+c+d)				3955.18	
			Rate per m = (a+b+c+d)/12				329.60	
						say	**330.00**	
14.18		**(iii)**	**Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.**					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.01	261.00	2.61	L-12

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	0.20	247.00	49.40	L-13
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			b) Material					
			Premoulded joint filler 12 m long,20 mm thick and 300 mm deep.	sqm	3.60	900.90	3243.24	M-141
			c) Overhead charges @ 0.25 on (a+b)				831.64	
			d) Contractor's profit @ 0.1 on (a+b+c)				415.82	
			Cost for 12 m = (a+b+c+d)				4574.01	
			Rate per m = (a+b+c+d)/12				381.17	
						say	**381.00**	
14.18		**(iv)**	**Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight**					
			Unit = Running meter					
			Taking output = 12 m					
			12m long x 100 mm wide x 10mm deep recess					
			a) Labour					
			Mate	day	0.02	261.00	5.22	L-12
			Mazdoor	day	0.50	247.00	123.50	L-13
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			b) Material					
			Sand	cum	0.012	110.69	1.33	M-005
			Volume 12 x 0.1 x 0.01 = 0.012 cum					
			Weight 0.012 x 1400 = 16.8kg					
			Bitumen	cum	0.001	32160.00	32.16	M-074
			16.8 x 0.06 = 1 kg					
			c) Overhead charges @ 0.25 on (a+b)				48.38	
			d) Contractor's profit @ 0.1 on (a+b+c)				24.19	
			Cost for 12 m = (a+b+c+d)				266.07	
			Rate per m = (a+b+c+d)/12				22.17	
						say	**22.20**	
		Note	For arriving at the final rate of filler joints per m					
			length and per cm depth of joint filling compound,					
			the rates at Sl. No. i), ii), iii) & iv) shall be added					
14.19	**2600**		**Asphaltic Plug joint**					
			Providing and laying of asphaltic plug joint to provide for horizontal movement of 25 mm and vertical movement of 2 mm, depth of joint varying from 75 mm to 100 mm, width varying from 500 mm to 750 mm (in traffic direction), covered with a closure plate of 200mm x 6mm of weldable structural steel conforming to IS: 2062, asphaltic plug to consist of polymer modified bitumen binder, carefully selected single size aggregate of 12.5 mm nominal size and a heat resistant foam caulking/backer rod, all as per approved drawings and specifications.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.052	261.00	13.57	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.30	313.00	93.90	L-15
			b) Material					
			Crushed stone aggregate 12.5 mm nominal size	cum	0.75	549.26	411.95	M-052
			Polymer modified bitumen	kg	77.50	34.30	2658.25	M-078/ 1000

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Galvanised structural steel plate 200 mm wide,6 mm thick, 12 m long (2.4 sqm) @ 47.10 kg/sqm including 5 per cent wastage	kg	113.00	39.25	4435.25	M-103
			Add 1 per cent for welding and foam caulking/backer rod and other incidentals.				78.60	
			c) Machinery					
			Mastic cooker 1 tonne capacity	hour	1.00	88.00	88.00	P&M-030
			Smooth 3-wheeled steel roller 8-10 capacity	hour	0.50	777.00	388.50	P&M-044
			d) Overhead charges @ 0.25 on (a+b+c)				2103.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1051.88	
			Cost for 12 m asphalt plug joint = (a+b+c+d+e)				11570.65	
			Rate per m = (a+b+c+d+e)/12				964.22	
						say	**964.00**	
		Note	The nominal size of aggregates shall be 12.5 mm for depth of joint upto 75 mm and 20 mm for joints of depth more than 75 mm.					
14.20	**2606**		**Elastomeric Slab Steel Expansion Joint**					
			Providing and laying of an elastomeric slab steel expansion joint, catering to right or skew (less than 20 deg., moderately curved with maximum horizontal movement upto 50 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and clause 2606 of MoRTH specifications for road & bridge works.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			Supply of 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), complete as per approved drawings and standard specification conforming to clause 2606 of MoRT&H Specification	metre	12.00	24868.88	298426.56	M-093
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals.				14921.33	
			c) Overhead charges @ 0.25 on (a+b)				78441.76	
			d) Contractor's profit @ 0.1 on (a+b+c)				39220.88	
			Cost for 12 m = (a+b+c+d)				431429.69	
			Rate per m = (a+b+c+d)/12				35952.47	
						say	**35952.00**	
14.21	**2600**		**Compression Seal Joint**					
			Providing and laying of compression seal joint consisting of steel armoured nosing at two edges of the joint gap suitably anchored to the deck concrete and a preformed chloroprene elastomer or closed cell foam joint sealer compressed and fixed into the joint gap with special adhesive binder to cater for a horizontal movement upto 40 mm and vertical movement of 3 mm.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.036	261.00	9.40	L-12

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	0.60	247.00	148.20	L-13
			Mazdoor (Skilled)	day	0.30	313.00	93.90	L-15
			b) Material					
			1. Galvanised angle sections 100mm x 100mm of 12mm thickness weldable structural steel as per IS: 2062, 2 nos. of 12 m length each @ 17.7 kg/m and 5 per cent wastage.	kg	446.00	39.25	17505.50	M-103
			Add 5 per cent of cost of above for structural steel for anchorage, welding and other incidentals (a+b).				887.85	
			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	12.00	input	#VALUE!	M-143
			Add 1 per cent of cost of sealing element for lubricant-cum-adhesive and other consumables.				#VALUE!	
			c) Overhead charges @ 0.25 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 12 m = (a+b+c+d)				#VALUE!	
			Rate per m = (a+b+c+d)/12				#VALUE!	
						say	**#VALUE!**	
		Note	**1.** The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
14.22	**2607**		**Strip Seal Expansion Joint**					
			Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.05	261.00	13.05	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.25	313.00	78.25	L-15
			b) Material					
			Supply of complete assembly of strip seal expansion joint comprising of edge beams, anchorage, strip seal element and complete accessories as per approved specifications and drawings.	metre	12.00	7715.33	92583.96	M-178
			Add 5 per cent of cost of material for anchorage reinforcement, welding and other incidentals (a+b)				4646.11	
			c) Overhead charges @ 0.25 on (a+b)				24392.09	
			d) Contractor's profit @ 0.1 on (a+b+c)				12196.05	
			Cost for 12 m = (a+b+c+d)				134156.51	
			Rate per m = (a+b+c+d)/12				11179.71	
						say	**11180.00**	
		Note	**1.** The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
14.23	**2600**		**Modular Strip / Box Seal Joint**					

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Providing and laying of a modular strip Box seal expansion joint including anchorage catering to a horizontal movement beyond 70 mm and upto 140mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.056	261.00	14.62	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			Mazdoor (Skilled)	day	0.40	313.00	125.20	L-15
			b) Material					
			Supply of a modular strip/box seal joint 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	12.00	27406.49	328877.88	M-127
			c) Overhead charges @ 0.25 on (a+b)				82316.17	
			d) Contractor's profit @ 0.1 on (a+b+c)				41158.09	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				452738.96	
			Rate per m = (a+b+c+d)/12				37728.25	
						say	**37728.00**	
		Note	**1.** The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					
14.24	**2600**		**Modular Strip / Box Seal Joint**					
			Providing and laying of a modular strip box seal expansion joint catering to a horizontal movement beyond 140mm and upto 210mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation.					
			Unit = Running meter					
			Taking output = 12 m					
			a) Labour					
			Mate	day	0.07	261.00	18.27	L-12
			Mazdoor	day	1.25	247.00	308.75	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Material					
			Supply of a modular 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	12.00	input	#VALUE!	M-128
			c) Overhead charges @ 0.25 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 12 m Modular strip/box seal joint = (a+b+c+d)				#VALUE!	
			Rate per m = (a+b+c+d)/12				#VALUE!	
						say	**#VALUE!**	

SUPER - STRUCTURE

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	**1.** The installation shall be done by the manufacturer or his authorised representative to the satisfaction of the Engineer.					
			2. The concreting for joining the expansion joint assembly with the deck has not been included in this analysis as the same is catered in the quantities of RCC deck.					
			3. The anchoring bars of the expansion joint assembly shall be welded to the main reinforcement of the deck.					

CHAPTER–15

RIVER TRAINING AND PROTECTION WORKS

Chapter – 15

River Training and Protection Works

Preamble:

1. Three types of aprons on riverbed as under have been catered.
    a) Boulder apron laid dry
    b) Boulder apron laid in wire crates
    c) Apron laid in cement concrete blocks on M 15
2. A toe wall for toe protection of pitching can be either in dry rubble masonry (uncoursed) or in nominal mix cement concrete M 15. Depending upon the design, the rates may be adopted under respective clauses.
3. Flooring has been proposed in dry rubble stone, rubble stone laid in C M 1:3 and with cement concrete block M 15.
4. Curtain walls proposed are of following two types:
    a) Course rubble stone masonry (1^{st} sort) in C M 1:3.
    b) Cement concrete M 15 grade.
5. The rate analysis for gabion structures comprising of stone boulders laid in wire crates have been included. Such structures are suited as retaining structures and for erosion control in river training works especially for situations where some settlement of foundation is anticipated. These structures can adjust in minor settlements, being flexible structures, without losing their functional requirement.

CHAPTER - 15

RIVER TRAINING AND PROTECTION WORKS

Item No.	Description	Unit	Rate (₹)
15.1	**Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.**		
A	**Boulder laid dry without wire crates.**	cum	768.00
15.2	**Boulder apron laid in wire crates** (Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10% extra for laps and joints laid with stone boulders weighing not less than 40 kg each.)	cum	1132.00
15.3	**Cement concrete blocks (size 0.5 x 0.5 x 0.5 m)** (Providing and laying of apron with cement concrete blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000.)	cum	3757.00
15.4	**Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications**		
A	**Stone/Boulder**	cum	768.00
B	**Cement Concrete blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15**	cum	3757.00
15.5	**Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification**	cum	1064.00
15.6	**Geotextile Filter** (Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching.)	sqm	#VALUE!
15.7	**Toe protection** (A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concrete block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.)		-
15.8	**Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concrete bedding.**		
A	**Rubble stone laid in cement mortar 1:3**	cum	3271.00
B	**Cement Concrete blocks Grade M15**	cum	4947.00
15.9	**Dry rubble Flooring**	cum	1120.00
15.10	**Curtain wall complete as per drawing and Technical specification**		
A	**Stone masonry in cement mortar (1:3)**	cum	2910.00
B	**Cement concrete Grade M15**	cum	3683.00
15.11	**Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.**	cum	820.00
15.12	**Gabian Structure for Retaining Earth** (Providing and construction of a gabain structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.)	cum	1152.00
15.13	**Gabian Structure for Erosion Control, River Training Works and Protection works** (Providing and constructing gabain structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS: 280 and galvanizing coating conforming to IS: 4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.)	cum	1906.00

CHAPTER - 15

RIVER TRAINING AND PROTECTION WORKS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
15.1	**2503**		**Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.**					
		A	**Boulder Laid Dry Without Wire Crates**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.00	206.33	206.33	M-003
			Stone Spalls	cum	0.20	206.33	41.27	M-008
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mason	day	0.35	330.00	115.50	L-11
			Mazdoor *	day	0.75	247.00	185.25	L-13
			c) Overhead charges @ 0.25 on (a+b)				139.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				69.85	
			Rate per cum = (a+b+c+d)				768.33	
						say	**768.00**	
		*	Including excavation for trimming for preparation of bed.					
		Note	Nominal excavation required for preparation of bed has been taken into account while making provision for labour.					
15.2	**2503**		**Boulder Apron Laid in Wire Crates**					
			Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10 per cent extra for laps and joints laid with stone boulders weighing not less than 40 kg each.					
			Unit = cum					
			Taking output = 3 mx1.5mx1.25m = 5.63 cum					
			a) Material					
			4mm GI wire crates woven in mesh size of 100 mm x 100 mm.	sqm	22.00	90.20	1984.40	M-102
			Stone	cum	5.63	206.33	1161.64	M-003
			Stone Spalls	cum	1.13	206.33	233.15	M-008
			b) Labour					
			Mate	day	0.18	261.00	46.98	L-12
			Mazdoor (Skilled)	day	1.50	313.00	469.50	L-15
			Mazdoor	day	*3.00	247.00	741.0	L-13
			c) Overhead charges @ 0.25 on (a+b)				1159.2	
			d) Contractor's profit @ 0.1 on (a+b+c)				579.58	
			Cost for 5.63 cum = a+b+c+d				6375.42	
			Rate per cum = (a+b+c+d)/5.63				1132.40	
						say	**1132.00**	
		*	Including excavation for trimming for preparation of bed.					
		Note	Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					
15.3	**2503**		**Cement Concrete Blocks (size 0.5 x 0.5 x 0.5 m)**					
			Providing and laying of apron with cement concrete blocks of size 0.5x0.5x0.5 m cast in-situ and made with nominal mix of M-15 grade cement concrete with a minimum cement content of 250 kg/cum as per IRC: 21-2000.					
			Unit = cum					
			Taking out put = 1 cum					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	3683.00	3683.00	Item 12.8 (A)
			Add 2 per cent of cost to account for excavation for preparation of bed, nominal surface reinforcement and filling of granular material in recesses between blocks.				73.66	
			Rate per cum				3756.66	
						say	**3757.00**	

RIVER TRAINING AND PROTECTION WORKS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
15.4	2504		**Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications**					
		A	**Stone/Boulder**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone weighing not less than 40kg	cum	1.00	206.33	206.33	M-003
			Stone spalls of minimum 25 mm size	cum	0.20	206.33	41.27	M-008
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mason	day	0.35	330.00	115.50	L-11
			Mazdoor	day	0.75	247.00	185.25	L-13
			c) Overhead charges @ 0.25 on (a+b)				139.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				69.85	
			Rate per cum = (a+b+c+d)				768.33	
						say	**768.00**	
15.4		B	**Cement Concrete Blocks of size 0.3x0.3 x0.3 m cast in cement concrete of Grade M15**					
			Unit = cum					
			Taking output = 1 cum					
			Concrete Grade M15 Rate as per item No. 12.8 (A)	cum	1.00	3683.00	3683.00	Item 12.8 (A)
			Add 2 per cent of cost to account for nominal surface reinforcement and filling of granular material in recesses between blocks.				73.66	
			Rate per cum				3756.66	
						say	**3757.00**	
15.5	2504		**Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Graded stone aggregate of required size	cum	1.20	363.19	435.83	M-012
			b) Labour					
			Mate	day	0.05	261.00	13.05	L-12
			Mazdoor (Skilled)	day	0.25	313.00	78.25	L-15
			Mazdoor *	day	1.00	247.00	247.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				193.53	
			d) Contractor's profit @ 0.1 on (a+b+c)				96.77	
			Rate per cum = (a+b+c+d)				1064.43	
						say	**1064.00**	
			Includes Mazdoor required for trimming of slope to proper profile and preparation of bed.					
15.6	700 & 2504		**Geotextile Filter**					
			Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching.					
			Unit = sqm					
			Taking output = 10 sqm.					
			a) Labour					
			Mate	day	0.02	261.00	5.22	L-12
			Mazdoor	day	0.30	247.00	74.10	L-13
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			b) Material					
			Permeable synthetic geotextile including 5 per cent for overlap and wastage	sqm	11.00	input	#VALUE!	M-181
			c) Overhead charges @ 0.25 on (a+b)				#VALUE!	

RIVER TRAINING AND PROTECTION WORKS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 10 sqm = a+b+c+d				#VALUE!	
			Rate per sqm = (a+b+c+d)/10				#VALUE!	
						say	**#VALUE!**	
15.7	**2504.4**		**Toe protection**					
			A toe wall for toe protection can either be in dry rubble masonry in case of dry rubble pitching or pitching with stones in wire crates or it can be in PCC M15 nominal mix if cement concert block have been used for pitching . Rates for toe wall can be adopted from respective clauses depending upon approved design. The rate for excavation for foundation, dry rubble masonry and PCC M15 have been analysed and given in respective chapters.					
15.8	**2505**		**Providing and laying Flooring complete as per drawing and Technical specifications laid over cement concert bedding.**					
		A	**Rubble stone laid in cement mortar 1:3**					
			Unit = cum					
			Taking output = 1 cum					
			a) Cement mortor 1:3 (Rate as in Item 12.6 sub-analysis) excluding OH & CP	cum	0.33	2859.00	943.47	Item 12.6 (A)
			b) Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) excluding OH & CP . Quantity shall be adopted as per design (Assume Rubble stone Flooring thickness 300 mm and cement concrete bedding thickness 100 mm)	cum	0.33	2576.00	850.08	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				17.94	
			c) Material					
			Stone	cum	1.00	206.33	206.33	M-003
			Stone Spalls	cum	0.20	206.33	41.27	M-008
			d) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mason	day	0.50	330.00	165.00	L-11
			Mazdoor (for laying stones, filling of quarry spalls)	day	1.50	247.00	370.50	L-13
			e) Overhead charges @ 0.25 on (a+c+d)				436.86	
			f) Contractor's profit @ 0.1 on (a+c+d+e)				218.43	
			Rate per cum = (a+b+c+d+e+f)				3270.75	
						say	**3271.00**	
		*	Includes cement mortar for laying and filling of joints.					
15.8		**B**	**Cement Concrete blocks Grade M15**					
			Concrete Grade M15 block. (Rate as per item No. 12.8 (A) including OH & CP.	cum	1.00	3683.00	3683.00	Item 12.8 (A)
			Add for cement concrete bedding (M15 Nominal mix) vide Item 12.8 (A) including OH & CP. Quantity shall be adopted as per design (Assume Cement Concrete blocks thickness 300mm and cement concrete bedding thickness 100mm)	cum	0.33	3683.00	1215.39	Item 12.8 (A)
			Add 1 per cent of cost to account for excavation for preparation of bed.				48.98	
			Rate per cum				4947.37	
						say	**4947.00**	
15.9	**2506**		**Dry Rubble Flooring**					
			Construction of dry rubble flooring at cross drainage works for relatively less important works.					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Stone	cum	1.00	206.33	206.33	M-003
			Stone Spalls	cum	0.20	206.33	41.27	M-008
			b) Labour					
			Mate	day	0.10	261.00	26.10	L-12

RIVER TRAINING AND PROTECTION WORKS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mason	day	0.50	330.00	165.00	L-11
			mazdoor	day	1.50	247.00	370.50	L-13
			Add 1 per cent of (b) for trimming and preparation of base.				5.62	
			c) Overhead charges @ 0.25 on (a+b)				203.70	
			d) Contractor's profit @ 0.1 on (a+b+c)				101.85	
			Rate per cum = (a+b+c+d)				1120.37	
						say	**1120.00**	
15.10	**2507.2**		**Curtain wall complete as per drawing and Technical specification**					
		A	**Stone masonry in cement mortar (1:3)**					
			Coursed rubble masonry (1st sort)	cum	1.00	2909.90	2909.90	Item 12.7 (A)
			Rate same as per item No. 12.7 (A) including OH & CP					
			Rate per cum			**say**	**2910.00**	
			or					
15.10		**B**	**Cement concrete Grade M15**					
			Concrete Grade M15 Rate as per item No. 12.8 (A) including OH & CP	cum	1.00	3683.00	3683.00	Item 12.8 (A)
			Rate per cum			**say**	**3683.00**	
		Note	Other items like excavation for foundation, filling behind wall, filter media, weep holes etc. shall be added separately as per approved design.					
15.11	**2507.2**		**Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.**					
			Unit = cum					
			Taking Output = 1 cum					
			a) Material					
			Stone	cum	1.00	206.33	206.33	M-003
			Stone Spalls	cum	0.20	206.33	41.27	M-008
			b) Labour					
			Mate	day	0.05	261.00	13.05	L-12
			Mason	day	0.25	330.00	82.50	L-11
			Mazdoor	day	1.00	247.00	247.00	L-13
			Add 1 per cent of cost of (a+b) for trimming and preparation of bed.				5.90	
			c) Overhead charges @ 0.25 on (a+b)				149.01	
			d) Contractor's profit @ 0.1 on (a+b+c)				74.51	
			Rate per cum = (a+b+c+d)				819.57	
						say	**820.00**	
15.12	**2503.3**		**Gabian Structure for Retaining Earth**					
			Providing and construction of a gabian structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire					
			Unit = cum					
			Taking output = 7 x 3 x 0.6 = 12.60 cum					
			a) Labour					
			Mate	day	0.28	261.00	73.08	L-12
			Mazdoor	day	5.00	247.00	1235.00	L-13
			Mazdoor (Skilled)	day	2.00	313.00	626.00	L-15
			b) Material					
			Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size.	sqm	61.00	90.20	5502.20	M-102

RIVER TRAINING AND PROTECTION WORKS

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Stone boulders with least dimension of 200 mm	cum	12.60	206.33	2599.76	M-003
			Stone spalls of minimum size 25 mm	cum	2.52	206.33	519.95	M-008
			c) Overhead charges @ 0.25 on (a+b)				2639.00	
			d) Contractor's profit @ 0.1 on (a+b+c)				1319.50	
			Cost for 12.60 cum (a+b+c+d)				14514.49	
			Rate per cum (a+b+c+d)/12.60				1151.94	
						say	**1152.00**	
		Note	Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					
15.13	**2503.3**		**Gabian Structure for Erosion Control, River Training Works and Protection works**					
			Providing and constructing gabian structures for erosion control, river training works and protection works with wire crates of size 2 m x 1 m x 0.3 m each divided into 1m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be securely tied with 4 mm galvanised steel wire.					
			Unit = cum					
			Taking output = 2 x 1 x 0.3 x 10 Nos. = 6.00 cum					
			a) Labour					
			Mate	day	0.14	261.00	36.54	L-12
			Mazdoor	day	2.50	247.00	617.50	L-13
			Mazdoor (Skilled)	day	1.00	313.00	313.00	L-15
			b) Material					
			Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size to cover 6.00 cum.	sqm	65.00	90.20	5863.00	M-102
			Stone boulders with least dimension of 200 mm	cum	6.00	206.33	1237.98	M-003
			Stone spalls of minimum size 25 mm	cum	1.20	206.33	247.60	M-008
			c) Overhead charges @ 0.25 on (a+b)				2078.90	
			d) Contractor's profit @ 0.1 on (a+b+c)				1039.45	
			Cost for 6.00 cum (a+b+c+d)				11433.97	
			Rate per cum (a+b+c+d)/6.00				1905.66	
						say	**1906.00**	
		Note	Readymade woven wire crate rolls have been considered in the rate analysis. In case readymade rolls are not available, GI wire 4mm dia. @ 32 kg per 10 sqm may be provided. In that case 2 per cent of the cost of GI wire may be added for weaving the wire crates.					

PART - D
REPAIR & REHABILITATION

CHAPTER–16

REPAIR & REHABILITATION

Chapter – 16

Repair and Rehabilitation

Preamble:

1. Removal of cement concrete wearing coat and asphaltic wearing coat has been proposed with pneumatic breakers.
2. The rate for external prestressing has been analysed for three different spans of 25, 50 and 100 m.
3. Sealing of cracks has been proposed with cement grout, cement mortar (1:1) grout and epoxy grout by injecting with grout pump through nipples.
4. Bonding of new concrete with old concrete is proposed with epoxy resin.
5. The repair and replacement of following structures has been included:
    a) Bridge bearings
    b) Expansion Joints
    c) Concrete Railing
    d) Mild steel railing
    e) Crash barrier

CHAPTER - 16
REPAIR AND REHABILITATION

Item No.	Description	Unit	Rate (₹)
16.1	**Removal of existing cement concrete wearing coat including its disposal complete as per Technical specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000 m** (Thickness 75 mm).	sqm	140.00
16.2	**Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concrete laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000 m.**	sqm	106.00
16.3	**Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical specification.**	sqm	964.00
16.4	**Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy.**	each	#VALUE!
16.5	**Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical specification.**		
A	**Cement Grout**	kg	139.00
B	**Cement mortar (1:1) Grouting**	kg	134.00
16.6	**Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.**	sqm	#VALUE!
16.7	**Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.**	kg	920.00
16.8	**Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification.**	sqm	668.00
16.9	**Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1, sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.**	sqm	#VALUE!
16.10	**Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete**	sqm	#VALUE!
16.11	**Eproxy bonding of new concrete to old concrete**	sqm	757.00
16.12	**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification**	tonne	317199.00
16.13	**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification**	tonne	303754.00
16.14	**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical specification**	tonne	294798.00
16.15	**Replacement of bearings complete as per Technical specification**	each	#VALUE!
16.16	**Rectification of bearings as per Technical specifications**	each	#VALUE!
16.17	**Replacement of Expansion Joints complete as per drawings**	metre	2342.00
16.18	**Replacement of damaged concrete railing.**	metre	258.00
16.19	**Replacement of crash barrier.**	metre	442.00
16.20	**Replacement of damaged mild steel railing**	metre	221.00
16.21	**Repair of crash barrier** (Repair of concrete crash barrier with cement concrete of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concrete after erection of proper form work.)	metre	193.00
16.22	**Repair of RCC Railing** (Carrying out repair of RCC M30 railing to bring it to the original shape.)	metre	152.00
16.23	**Repair of steel Railing** (Repair of steel railing to bring it to the original shape.)	metre	260.00

CHAPTER - 16

REPAIR AND REHABILITATION

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
16.1	2809		**Removal of existing cement concrete wearing coat including its disposal complete as per Technical Specification without causing any detrimental effect to any part of the bridge structure and removal of dismantled material with all lifts and lead upto 1000 m**					
			Unit = Sq m (Thickness 75 mm)					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker/jack hammer along with accessories.	hour	1.00	457.00	457.00	P&M-001
			Tractor-trolley.	hour	0.50	518.00	259.00	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				293.60	
			d) Contractor's profit @ 0.1 on (a+b+c)				127.23	
			Cost for 10 sqm = (a+b+c+d)				1399.48	
			Rate per sqm = (a+b+c+d)/10				139.95	
						say	**140.00**	
16.2	2809		**Removal of existing asphaltic wearing coat comprising of 50 mm thick asphaltic concert laid over 12 mm thick mastic asphalt including disposal with all lift and lead upto 1000 m.**					
			Unit = Sq m					
			Taking output = 10 sqm					
			a) Labour					
			Mate	day	0.03	261.00	7.83	L-12
			Mazdoor	day	0.75	247.00	185.25	L-13
			b) Machinery					
			Air Compressor 250 cfm with pneumatic breaker.	hour	0.75	457.00	342.75	P&M-001
			Tractor-trolley.	hour	0.40	518.00	207.20	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				222.91	
			d) Contractor's profit @ 0.1 on (a+b+c)				96.59	
			Cost for 10 sqm = (a+b+c+d)				1062.53	
			Rate per sqm = (a+b+c+d)/10				106.25	
						say	**106.00**	
16.3	2807		**Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification**					
			Unit = Sq m					
			Taking output = 1 sqm					
			Assuming thickness 25 mm					
			a) Material					
			Cement	kg	16.00	4.922	78.75	M-081/1000
			Graded sand	cum	0.04	110.69	4.43	M-005
			Wire mesh 50mm x 50mm size of 3mm wire	kg	2.00	36.98	73.96	M-192
			Epoxy	kg	0.67	500.07	335.05	M-095
			Accelerator compound for guniting @ 4 per cent of weight of cement	kg	0.64	152.14	97.37	M-180
			Add 2 per cent of cost of material for miscellaneous consumables like nozzles, wire brush, cotton waste etc.				11.79	
			b) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Mason	day	0.04	330.00	13.20	L-11
			Mazdoor	day	0.14	247.00	34.58	L-13
			c) Machinery					
			Compressor with guniting equipment along with accessories	hour	0.10	222.00	22.20	P&M-076
			d) Overhead charges @ 0.3 on (a+b+c)				202.18	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				87.61	
			Rate per sqm = (a+b+c+d+e)				963.73	
						say	**964.00**	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
16.4	**2800**		**Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical Specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy**					
			Unit = Number					
			Taking output = 1 No.					
			a) Material					
			Nipples	each	1.00	input	#VALUE!	M-129
			Cement, fixing compound and consumables @ 15 per cent of cost of nipple				#VALUE!	
			b) Labour					
			Mate	day	0.01	261.00	2.61	L-12
			Mazdoor (Skilled) labour for drilling	day	0.08	313.00	25.04	L-15
			Mazdoor (Skilled) labour for fixing nipple and sealing inlets	day	0.08	313.00	25.04	L-15
			Mazdoor for cutting and removing of nipples	day	0.04	247.00	9.88	L-13
			Add 10 per cent of labour cost for drilling holes etc				6.26	
			c) Overhead charges @ 0.3 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Rate per No. = (a+b+c+d)				#VALUE!	
						say	**#VALUE!**	
16.5	**2806**		**Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical Specification.**					
		A	**Cement Grout**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Cement including 10 per cent wastage	kg	1.10	4.92	5.41	M-081/1000
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				1.08	
			b) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			Mazdoor	day	0.10	247.00	24.70	L-13
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.10	138.24	13.82	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				29.16	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12.64	
			Rate per kg = (a+b+c+d+e)				139.00	
						say	**139.00**	
		B	**Cement Mortar (1:1) Grouting**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Cement including 10 per cent wastage	kg	0.55	4.92	2.71	M-081/1000
			Sand including 10 per cent wastage	kg	0.55	0.07	0.04	M-005/1500
			Admixtures (anti shrinkage compound) @ 20 per cent of cost of cement				0.54	
			b) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			Mazdoor	day	0.10	247.00	24.70	L-13
			c) Machinery					
			Grout pump with agitator and accessories	hour	0.10	138.24	13.82	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				28.20	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			e) Contractor's profit @ 0.1 on (a+b+c+d)				12.22	
			Rate per kg = (a+b+c+d+e)				134.41	
						say	**134.00**	
16.6	**2800**		**Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer and as approved by the Engineer.**					
			Unit = sqm					
			Taking output = 10 sqm for an average thickness of 25mm.					
			a) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mazdoor (Skilled)	day	0.75	313.00	234.75	L-15
			Mazdoor	day	0.75	247.00	185.25	L-13
			b) Material					
			Pre-packed polymer concrete based on epoxy system complete with curing compound, intiator and promoter including 5 per cent wastage.	kg	315.00	input	#VALUE!	M-145
			c) Machinery					
			Grout pump with agitator and accessories	hour	2.00	138.24	276.48	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 10 sqm = a+b+c+d+e				#VALUE!	
			Rate per sqm = (a+b+c+d+e)/10				#VALUE!	
						say	**#VALUE!**	
		Note	This item is a proprietory item available in market as pre-packed polymer concrete and is required to be applied as per instructions of the manufacturer.					
16.7	**2803**		**Sealing of crack / porous concrete with Epoxy Grout by injection through nipples complete as per clause 2803.1.**					
			Unit = kg					
			Taking output = 1 kg					
			a) Material					
			Epoxy including 10 per cent wastage	kg	1.10	500.07	550.08	M-095
			b) Labour					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor (Skilled)	day	0.10	313.00	31.30	L-15
			Mazdoor	day	0.10	247.00	24.70	L-13
			c) Machinery					
			Epoxy Injection gun	hour	0.10	165.00	16.50	P&M-078
			d) Overhead charges @ 0.3 on (a+b+c)				193.04	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				83.65	
			Rate per kg = (a+b+c+d+e)				920.14	
						say	**920.00**	
16.8	**2804**		**Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical Specification**					
			Unit = sqm					
			Taking output = 10 sqm					
			Assume average 10mm thickness of epoxy mortar					
			a) Material					
			Epoxy resin-hardener mix for prime coat	kg	2.50	607.22	1518.05	M-098
			Epoxy mortar	kg	2.20	691.89	1522.16	M-096
			Epoxy resin -hardener mix for seal coat.	kg	2.00	607.22	1214.44	M-098

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Add 3 per cent cost of material for other consumables like acetone etc and to cover wastage.				127.64	
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			Mazdoor	day	0.50	247.00	123.50	L-13
			c) Overhead charges @ 0.3 on (a+b)				1401.82	
			d) Contractor's profit @ 0.1 on (a+b+c)				607.45	
			Cost for 10 sqm = a+b+c+d				6682.00	
			Rate per sqm = (a+b+c+d)/10				668.20	
						say	**668.00**	
16.9	**2807**		**Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6.**					
			unit: sqm					
			Taking output = 10 sqm, 40 mm average thickness.					
			a) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	0.50	247.00	123.50	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			b) Machinery					
			Air compressor 250 cfm	hour	1.00	457.00	457.00	P&M-001
			Shotcreteing equipment	hour	1.00	222.00	222.00	P&M-076
			water tanker 6 KL capacity	hour	0.02	174.00	3.48	P&M-060
			c) Material					
			Cement	kg	120.00	4.922	590.64	M-081/1000
			Sand	cum	0.15	110.69	16.60	M-005
			Coarse aggregate of size 4.75mm	cum	0.15	101.67	15.25	M-024
			Quick setting compound	kg	2.50	input	#VALUE!	M-147
			Water	KL	0.10	243.23	24.32	M-189
			d) Overhead charges @ 0.3 on (a+b+c)				#VALUE!	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				#VALUE!	
			Cost for 10 sqm = a+b+c+d+e				#VALUE!	
			Rate per sqm = (a+b+c+d+e)/10				#VALUE!	
						say	**#VALUE!**	
16.10	**2800**		**Applying pre-packed cement based polymer mortar of strength 45 Mpa at 28 days for replacement of spalled concrete**					
			Unit = sqm					
			Taking output = 10 sqm					
			Assumed thickness - 10 mm					
			a) Material					
			Acrylic polymer bonding coat	Litre	1.40	input	#VALUE!	M-057
			pre-packed cement based polymer mortar of strength 45 Mpa at 28 days	kg	12.00	input	#VALUE!	M-145
			Add 3 per cent of (a) above for wastage.				#VALUE!	
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	0.50	247.00	123.50	L-13
			c) Overhead charges @ 0.3 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost for 10 sqm = a+b+c+d				#VALUE!	
			Rate per sqm = (a+b+c+d)/10				#VALUE!	
						say	**#VALUE!**	
16.11	**2805**		**Eproxy bonding of new concrete to old concrete**					
			Unit = sqm					
			Taking output = 10 sqm					
			a) Material					
			Epoxy resin with pot life not less than 60-90 minutes and satisfying testing as per clause 2803.9	kg	8.00	607.22	4857.76	M-098
			Add 3 per cent of (a) above for wastage.				145.73	
			b) Labour					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			Mazdoor	day	0.50	247.00	123.50	L-13
			c) Overhead charges @ 0.3 on (a+b)				1588.18	
			d) Contractor's profit @ 0.1 on (a+b+c)				688.21	
			Cost for 10 sqm = a+b+c+d				7570.32	
			Rate per sqm = (a+b+c+d)/10				757.03	
						say	**757.00**	
16.12	**2810**		**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical Specification**					
			Span assumed: 25 m					
			No. of cables: 4 no.					
			No. of anchorages : 8 no.					
			Unit = MT					
			Taking output = 1 MT					
			Assume 12.7mm dia. Strand in 12T13 system. Weight-9.42 kg/m of cable.					
			a) Material					
			HTS strand including 5 per cent wastage and extra length for jacking	tonne	1.05	64458.30	67681.22	M-119
			HDPE pipes 75mm dia including 5 per cent wastage	metre	112.00	190.27	21310.24	M-114
			Cement for grouting	kg	400.00	4.922	1968.80	M-081/1000
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	8.00	43.24	345.92	M-187
			Epoxy	kg	6.00	500.07	3000.42	M-095
			MS plates for deviator (where deviator blocks are not provided)	tonne	2.10	40170.00	84357.00	M-179
			Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				35732.72	
			b) Labour					
			i) For making holes in the structure .					
			Mate	day	0.24	261.00	62.64	L-12
			Mazdoor (Semi-skilled)	day	3.00	257.00	771.00	L-14
			Mazdoor	day	3.00	247.00	741.00	L-13
			ii) For making and fixing anchorages for cables and placement of cables .					
			Mate	day	0.44	261.00	114.84	L-12
			Blacksmith	day	3.00	330.00	990.00	L-02a
			Mazdoor	day	8.00	247.00	1976.00	L-13
			iii) For prestressing					

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mate/Supervisor	day	0.13	261.00	33.93	L-12
			Fitter	day	0.70	336.00	235.20	L-08
			Mazdoor	day	2.65	247.00	654.55	L-13
			iv) For grouting					
			Mate/Supervisor	day	0.13	261.00	33.93	L-12
			Mason	day	0.70	330.00	231.00	L-11
			Mazdoor	day	2.65	247.00	654.55	L-13
			c) Machinery					
			Stressing jack with pump	hour	4.00	184.00	736.00	P&M-040
			Grouting pump with agitator	hour	1.35	138.24	186.62	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				66545.27	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				28836.29	
			Rate per MT = (a+b+c+d+e)				317199.14	
						say	**317199.00**	
16.13	**2810**		**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical Specification**					
			Span assumed: 50 m					
			No. of cables: 4 no.					
			No. of anchorages : 8 no.					
			Unit = MT					
			Taking output = 3.10 MT					
			Assume 12.7mm dia. Strand in 19T13 system. Weight-14.73 kg/m of cable.					
			a) Material					
			HTS strand including 5 per cent wastage and extra length for jacking	tonne	3.10	64458.30	199820.73	M-119
			HDPE pipes 90mm dia including 5 per cent wastage	metre	224.00	190.27	42620.48	M-115
			Cement for grouting	tonne	1.01	4922.00	4971.22	M-081
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	8.00	43.24	345.92	M-187
			Epoxy	kg	10.00	500.07	5000.70	M-095
			MS plates for deviator (where deviator blocks are not provided)	tonne	7.00	40170.00	281190.00	M-179
			Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				106789.81	
			b) Labour					
			i) For making holes in the structure .					
			Mate	day	0.08	261.00	20.88	L-12
			Mazdoor Semi-skilled)	day	8.00	257.00	2056.00	L-14
			Mazdoor	day	8.00	247.00	1976.00	L-13
			ii) For making and fixing anchorages for cables and placement of cables .					
			Mate	day	1.28	261.00	334.08	L-12
			Blacksmith	day	7.00	330.00	2310.00	L-02a
			Mazdoor	day	25.00	247.00	6175.00	L-13
			iii) For prestressing					
			Mate/Supervisor	day	0.20	261.00	52.20	L-12
			Fitter	day	1.00	336.00	336.00	L-08
			Mazdoor	day	4.00	247.00	988.00	L-13
			iv) For grouting					
			Mate/Supervisor	day	0.26	261.00	67.86	L-12
			Mason	day	1.50	330.00	495.00	L-11
			Mazdoor	day	5.00	247.00	1235.00	L-13

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Machinery					
			Stressing jack with pump	hour	7.00	184.00	1288.00	P&M-040
			Grouting pump with agitator	hour	3.00	138.24	414.72	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				197546.28	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				85603.39	
			Cost for 3.10 MT = a+b+c+d+e				941637.27	
			Rate per MT = (a+b+c+d+e)/3.10				303753.96	
						say	**303754.00**	
16.14	**2810**		**Providing external prestressing with high tensile steel wires/strands including drilling for passage of prestessing steel, all accessories for stressing and stressing operation and grouting complete as per drawing and Technical Specification**					
			Span assumed: 100 m					
			No. of cables: 6 no.					
			No. of anchorages : 12 no.					
			Unit = MT					
			Taking output = 9.28 MT					
			Assume 12.7mm dia. Strand in 19T13 system. Weight-14.73 kg/m of cable.					
			a) Material					
			HTS strand including 5 per cent wastage and extra length for jacking	tonne	9.28	64458.30	598173.02	M-119
			HDPE pipes 90 mm dia including 5 per cent wastage	metre	672.00	190.27	127861.44	M-115
			Cement for grouting	tonne	3.04	4922.00	14962.88	M-081
			Tube anchorage set complete with bearing plate, permanent wedges etc	each	12.00	43.24	518.88	M-187
			Epoxy	kg	14.00	500.07	7000.98	M-095
			MS plates for deviator (where deviator blocks are not provided)	tonne	20.00	40170.00	803400.00	M-179
			Add 20 per cent cost of material for other materials like lead sheet, sleeves, deviator fixtures etc.				310383.44	
			b) Labour					
			i) For making holes in the structure .					
			Mate	day	1.72	261.00	448.92	L-12
			Mazdoor Semi-skilled)	day	18.00	257.00	4626.00	L-14
			Mazdoor	day	25.00	247.00	6175.00	L-13
			ii) For making and fixing anchorages for cables and placement of cables .					
			Mate	day	4.00	261.00	1044.00	L-12
			Blacksmith	day	20.00	330.00	6600.00	L-02a
			Mazdoor	day	80.00	247.00	19760.00	L-13
			iii) For prestressing					
			Mate/Supervisor	day	0.30	261.00	78.30	L-12
			Fitter	day	1.50	336.00	504.00	L-08
			Mazdoor	day	6.00	247.00	1482.00	L-13
			iv) For grouting					
			Mate/Supervisor	day	1.00	261.00	261.00	L-12
			Mason	day	5.00	330.00	1650.00	L-11
			Mazdoor	day	20.00	247.00	4940.00	L-13
			c) Machinery					
			Stressing jack with pump	hour	10.00	184.00	1840.00	P&M-040
			Grouting pump with agitator	hour	10.00	138.24	1382.40	M-111
			d) Overhead charges @ 0.3 on (a+b+c)				573927.68	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				248701.99	
			Cost for 9.28 MT = a+b+c+d+e				2735721.94	

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Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Rate per MT = (a+b+c+d+e)/9.28				294797.62	
						say	**294798.00**	
16.15	**2808**		**Replacement of Bearings complete as per Technical Specification**					
			Unit = No					
			Taking output = 3 No.					
			Lifting of superstructure span by jacking up from below i.e. by placing the jacks on pier/abutment caps for span length of 30m.					
			a) Lifting of span					
			i) Hire charges for jack of 40 tonne lifting capacity.	each	3.00	1217.00	3651.00	P&M-084
			Mate	day	0.64	261.00	167.04	L-12
			Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			Mazdoor	day	12.00	247.00	2964.00	L-13
			v) Wooden packing	cum	0.15	input	#VALUE!	M-195
			b) Replacement of bearing					
			Cost of bearing.	each	3.00	74589.42	223768.26	M-065
			c) Overhead charges @ 0.3 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of repair of 3 bearings = a+b+c+d				#VALUE!	
			Rate of repair per bearing = (a+b+c+d)/3				#VALUE!	
						say	**#VALUE!**	
	Note		The work entails replacement of all the bearings on one side of the span.					
16.16	**2808**		**Rectification of Bearings as per Technical Specifications**					
			Unit = 1 No					
			Taking output = 3 No.					
			a) Lifting of superstructure span by jacking up from below i.e. by placing the jacks on pier/abutment caps for span length of 30m.					
			i) Hire charges for jack of 40 tonne lifting capacity.	each	3.00	1217.00	3651.00	P&M-084
			ii) Mate	day	0.64	261.00	167.04	L-12
			iii) Mazdoor (Skilled)	day	4.00	313.00	1252.00	L-15
			iv) Mazdoor	day	12.00	247.00	2964.00	L-13
			v) Wooden packing	cum	0.15	input	#VALUE!	M-195
			b) Cost of parts to be replaced for 3 bearings.	each	3.00	input	#VALUE!	M-064
			c) Overhead charges @ 0.3 on (a+b)				#VALUE!	
			d) Contractor's profit @ 0.1 on (a+b+c)				#VALUE!	
			Cost of repair of 3 bearings = a+b+c+d				#VALUE!	
			Rate of repair per bearing = (a+b+c+d)/3				#VALUE!	
						say	**#VALUE!**	
		Note	The rectification of 3 bearings included in this analysis are on the same side of the span.					
16.17			**Replacement of Expansion Joints complete as per drawings**					
			Unit -1 RM					
			Taking output = 12 RM					
			a) Material					
			Epoxy for bonding new concrete to old concrete @ 0.8 kg/sqm	kg	9.60	500.07	4800.67	M-095
			M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i)	cum	3.60	3652.00	13147.20	Item 14.1(C) case II
			b) Labour					
			Removal of old expansion joint including breaking of concrete, cutting of lugs and shifting of broken material etc.					
			Mate	day	0.26	261.00	67.86	L-12

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Mazdoor	day	6.00	247.00	1482.00	L-13
			Mazdoor (Skilled)	day	0.50	313.00	156.50	L-15
			c) Overhead charges @ 0.3 on (a+b)				5896.27	
			d) Contractor's profit @ 0.1 on (a+b+c)				2555.05	
			Cost for replacement of 12 RM = a+b+c+d				28105.55	
			Rate per RM = (a+b+c+d)/12				2342.13	
						say	**2342.00**	
		Note	The rate for the installation of new expansion joints may be taken from the chapter on superstructure. Broken concrete will have to be replaced which has been included in this analysis.					
16.18			**Replacement of Damaged Concrete Railing.**					
			Unit = RM					
			Taking output = 10 RM					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					
			Mate	day	0.20	261.00	52.20	L-12
			Mazdoor	day	5.00	247.00	1235.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.00	518.00	518.00	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				541.56	
			d) Contractor's profit @ 0.1 on (a+b+c)				234.68	
			Cost for 10 m = a+b+c+d				2581.44	
			Rate per metre = (a+b+c+d)/10				258.14	
						say	**258.00**	
		Note	The rate for the provision of new railing may be adopted from the chapter on superstructure.					
16.19			**Replacement of Crash Barrier.**					
			Unit = RM					
			Taking output = 10 M					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					
			Mate	day	0.40	261.00	104.40	L-12
			Mazdoor	day	10.00	247.00	2470.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.00	518.00	518.00	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				927.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				402.01	
			Cost for 10 m = a+b+c+d				4422.13	
			Rate per metre = (a+b+c+d)/10				442.21	
						say	**442.00**	
		Note	The rate for the construction of new crash barrier may be adopted from chapter 8 on Traffic and Transportation.					
16.20			**Replacement of Damaged Mild Steel Railing**					
			Unit = RM					
			Taking output = 10 M					
			a) Labour					
			Labour for dismantling old railing and disposal of dismantled material.					
			Mate	day	0.16	261.00	41.76	L-12
			Mazdoor	day	4.00	247.00	988.00	L-13
			b) Machinery					
			Tractor-trolley for disposal of dismantled material	hour	1.00	518.00	518.00	P&M-053
			c) Overhead charges @ 0.3 on (a+b)				464.33	

REPAIR AND REHABILITATION

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			d) Contractor's profit @ 0.1 on (a+b+c)				201.21	
			Cost for 10 m = a+b+c+d				2213.30	
			Rate per metre = (a+b+c+d)/10				221.33	
						say	**221.00**	
16.21			**Repair of Crash Barrier**					
			Repair of concrete crash barrier with cement concert of M-30 grade by cutting and trimming the damaged portion to a regular shape, cleaning the area to be repaired thoroughly, applying cement concert after erection of proper form work.					
			Unit = Running meter.					
			Taking output = 10 M.					
			It is assumed that damage is to the extent of 10 per cent of the volume of concrete .This will require 0.30 cum of concrete.					
			a) Manpower*					
			Mate	day	0.04	261.00	10.44	L-12
			Mazdoor	day	1.00	247.00	247.00	L-13
		*	For dismantling and trimming the surface to a regular shape and removal of damaged material.					
			b) Material					
			M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i)	cum	0.30	3652.00	1095.60	Item 14.1(C) case II
			This may be priced based on the rate given the chapter of superstructure.					DIR used item
			c) Overhead charges @ 0.3 on (a+b)				405.91	
			d) Contractor's profit @ 0.1 on (a+b+c)				175.90	
			Cost for 10 m = a+b+c+d				1934.85	
			Rate per m = (a+b+c+d)/10				193.48	
						say	**193.00**	
16.22			**Repair of RCC Railing**					
			Carrying out repair of RCC M30 railing to bring it to the original shape.					
			Unit = Running meter.					
			Taking output = 10 M.					
			It is assumed that damage is to the extent of 10 per cent .					
			a) Material					
			M-30 grade cement concrete excluding OH & CP (Rate as per items 14.1 C (i)	cum	0.10	3652.00	365.20	Item 14.1(C) case II
			HYSD bar reinforcement Rate as per item No 14.2(Excluding OH & CP)	tonne	0.013	49377.00	641.90	Item 14.2 A
			b) Labour*					DIR used item
			Mate	day	0.016	261.00	4.18	L-12
			mazdoor	day	0.20	247.00	49.40	L-13
		*	For dismantling and trimming the surface to a regular shape and removal of damaged material.					
			c) Overhead charges @ 0.3 on (a+b)				318.20	
			d) Contractor's profit @ 0.1 on (a+b+c)				137.89	
			Cost for 10 m = a+b+c+d				1516.77	
			Rate per m = (a+b+c+d)/10				151.68	
						say	**152.00**	
16.23			**Repair of Steel Railing**					
			Repair of steel railing to bring it to the original shape					
			It is assumed that the damage to the steel railing is to the extent of 10 per cent .					
			Unit = Running meter.					
			Taking output = 10 M.					

REPAIR AND REHABILITATION

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			a) Material					
			Mild steel ISMC series	kg	29.00	40.170	1164.93	M-179/1000
			Flat iron	kg	10.00	40.170	401.70	M-179/1000
			MS Bolt and nuts	kg	1.00	55.53	55.53	M-130
			Add 5 per cent of cost of material for painting.				81.11	
			b) Labour					
			Mate	day	0.016	261.00	4.18	L-12
			Mazdoor (Skilled)	day	0.20	313.00	62.60	L-15
			Mazdoor	day	0.20	247.00	49.40	L-13
			c) Overhead charges @ 0.3 on (a+b)				545.83	
			d) Contractor's profit @ 0.1 on (a+b+c)				236.53	
			Cost of repair for10m = a+b+c+d				2601.80	
			Cost of meter = (a+b+c+d)/10				260.18	
						say	**260.00**	

ANNEXURE
SUB-ANALYSIS B

SUB-ANALYSIS_B

Item No.	Description	Unit	Rate (₹)
3.1	**Excavation in Soil by Manual Means.**		
SUB ANA - B (1)	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.**(Excluding the cost of watering, rolling & compaction.)**	cum	206.00
SUB ANA - B (2)	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. **(Including the cost of watering, rolling, and compaction.)**	cum	231.00
3.2	**Excavation in Ordinary Rock by Manual Means**		
SUB ANA - 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. **(Excluding the cost of watering , rolling & compaction.)**	cum	271.00
SUB ANA - 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. **(Including the cost of watering , rolling & compaction- from immediate vicinity)**	cum	296.00
3.6	**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres**		
SUB ANA - B	Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity 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 **(Including the cost of watering, rolling & compaction.)**	cum	119.00
3.7	**Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal upto 1000 metres**		
SUB ANA - B	Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections. **(Including the cost of watering, rolling & compaction.)**	cum	140.00
3.10	**Excavation in Marshy Soil**		
SUB ANA - B	Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections. **(Including the cost of watering, rolling & compaction.)**	cum	128.00
3.16	**Construction of Embankment with Material obtained from Borrowpits**		
SUB ANA - B	Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.	cum	219.00
3.17	**Construction of Embankment with Material Deposited from Roadway Cutting**		
SUB ANA - 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	159.00
3.18	**Construction of Subgrade and Earthen Shoulders**		
SUB ANA -B	Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2	cum	257.00
3.19	**Compacting Original Ground (Rolling with Smooth Wheeled Roller)**		

Item No.	Description	Unit	Rate (₹)
SUB ANA - B	Case-I : Compacting original ground supporting sub-grade	cum	74.50
SUB ANA - B	Case- II: Compacting original ground supporting embankment	cum	37.70
5.11	**Close Graded Premix Surfacing/Mixed Seal Surfacing**		
Sub - Analysis for Type 'B"	Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour. Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-A) or 13.2 mm to 0.09 mm (**Type-B**) aggregates.....	cum	122.00
4.9	**Water Bound Macadam**		
SUB ANA - 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 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 compacting to the required density. **By Manual Means**: **With Smooth 3 wheeled Steel Roller**		
4.9A (i)	**Grading-I : Using Screening Crushable type such as Moorum or Gravel**	cum	849.00
4.9A (i)	**Grading-I : Using Screening Type-A (13.2mm agg.)**	cum	950.00
4.9A (ii)	**Grading-II : Using Screening Crushable type such as Moorum or Gravel**	cum	895.00
4.9A (ii)	**Grading-II : Using Screening Type-A (13.2mm agg.)**	cum	947.00
4.9A (ii)	**Grading-II : Using Screening Type-B (11.2mm agg.)**	cum	947.00
4.9A (iii)	**Grading-III : Using Screening Crushable type such as Moorum or Gravel**	cum	940.00
4.9A (iii)	**Grading-III : Using Screening Type-B (11.2mm agg.)**	cum	992.00
SUB ANA - 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 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 compacting to the required density. **By Mechanical Means**: **With Smooth 3 wheeled Steel Roller**		
4.9B (i)	**Grading-I : Using Screening Crushable type such as Moorum or Gravel**	cum	711.00
4.9B (i)	**Grading-I : Using Screening Type-A (13.2mm agg.)**	cum	813.00
4.9B (ii)	**Grading-II : Using Screening Crushable type such as Moorum or Gravel**	cum	757.00
4.9B (ii)	**Grading-II : Using Screening Type-A (13.2mm agg.)**	cum	810.00
4.9B (ii)	**Grading-II : Using Screening Type-B (11.2mm agg.)**	cum	809.20
4.9B (iii)	**Grading-III : Using Screening Crushable type such as Moorum or Gravel**	cum	802.00
4.9B (iii)	**Grading-III : Using Screening Type-B (11.2mm agg.)**	cum	854.00
4.10	**Crushed Cement Concrete Sub-base / Base**		
SUB ANA -B	Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L 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: **With Smooth 3 wheeled Steel Roller**	cum	294.00
4.12	**Wet Mix Macadam**		
SUB ANA -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: **With Smooth 3 wheeled Steel Roller**	cum	896.00
12.5	**Brick Masonry Work in Cement Mortar 1:2 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**	cum	6438.00
12.5	**Brick Masonry Work in Cement Mortar 1:4 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**	cum	6003.00
12.5	**Brick Masonry Work in Cement Mortar 1:6 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**	cum	5829.00

Summary of Rate Analysis

Item No.	Description	Unit	Rate (₹)
3.2	**Rolling, watering and compaction with smooth Wheeled Roller**	cum	31.50
13.9	**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification: Sandy material - Coarse Sand**	cum	584.00
8.44	**Permanent Type Barricade in Construction Zone : C : With FLY ASH Bricks**	each	13846.00
11.14	**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: With FLY ASH Bricks**	each	1680.00
11.15	**Edging with 2nd Class Bricks, Laid Dry Lengthwise: With FLY ASH Bricks**	metre	34.70
12.5	**Brick masonry work in cement mortar in foundation complete excluding pointing and plastering, as per drawing and technical specifications: With FLY ASH Bricks**		
(i)	**Rate for Brick Work in C. M. 1:2 in foundation**	cum	5688.00
(ii)	**Rate for Brick Work in C. M. 1:3 in foundation**	cum	5429.00
(iii)	**Rate for Brick Work in C. M. 1:4 in foundation**	cum	5253.00
(iv)	**Rate for Brick Work in C. M. 1:6 in foundation**	cum	5079.00
13.1	**Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications : With FLY ASH Bricks**	cum	5402.00



SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
3.1	301		**Excavation in Soil by Manual Means**					
SUB ANA -B (1)			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. (Excluding the cost of watering , rolling & compaction.)					
		Note	**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.**					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	1.800	261.00	469.80	L-12
			Mazdoor	day	45.000	247.00	11115.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	**882.00**	8820.00	P&M-057
			c) Overhead charges @ 0.1 on (a+b)				2040.48	
			d) Contractor's profit @ 0.1 on (a+b+c)				2244.53	
			Cost of 120 cum = a+b+c+d				24689.81	
			Rate per cum = (a+b+c+d)/120				205.75	
			Rate per cum			**say**	**206.00**	
3.1	301		**Excavation in Soil by Manual Means**					
SUB ANA -B (2)			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.(Including the cost of watering, rolling, and compaction.)					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	1.800	261.00	469.80	L-12
			Mazdoor	day	45.000	247.00	11115.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	882.00	8820.00	P&M-057
			Smooth wheel roller @ 70 cum per hour	hour	1.500	777.00	1165.50	P&M-044
			Water Tanker @ 6.0 KL capicity	hour	0.800	174.00	139.20	P&M-060
			c) Materials					
			Cost of water	KL	4.800	243.23	1167.50	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				2287.70	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2516.47	
			Cost of 120 cum = a+b+c+d+e				27681.17	
			Rate per cum = (a+b+c+d+e)/120				230.68	
			Rate per cum			**say**	**231.00**	
3.2	301		**Excavation in Ordinary Rock by Manual Means**					
SUB ANA -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. (Excluding the cost of watering , rolling & compaction.)					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	2.800	261.00	730.80	L-12
			Mazdoor	day	70.000	247.00	17290.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	**882.00**	8820.00	P&M-057

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			c) Overhead charges @ 0.1 on (a+b)				2684.08	
			d) Contractor's profit @ 0.1 on (a+b+c)				2952.49	
			Cost for 120 cum = a+b+c+d				32477.37	
			Rate per cum = (a+b+c+d)/120				270.64	
			Rate per cum				270.64	
						say	**271.00**	
		Note	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 ommitted.					
3.2	**301**		**Excavation in Ordinary Rock by Manual Means**					
SUB ANA -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. (including of the cost of watering, rolling & compaction - from immediate vicinity)					
			Unit = cum					
			Taking output = 120 cum					
			a) Labour					
			Mate	day	2.800	261.00	730.80	L-12
			Mazdoor	day	70.000	247.00	17290.00	L-13
			b) Machinery					
			Truck 5.5 cum capacity	hour	10.000	882.00	8820.00	P&M-057
			Smooth wheel roller @ 70 cum per hour	hour	1.500	777.00	1165.50	P&M-044
			Water Tanker @ 6.0 KL capicity	hour	0.800	174.00	139.20	P&M-060
			c) Materials					
			Cost of water	KL	4.800	243.23	1167.50	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				2931.30	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3224.43	
			Cost for 120 cum = a+b+c+d+e				35468.73	
			Rate per cum = (a+b+c+d+e)/120				295.57	
			Rate per cum				295.57	
						say	**296.00**	
3.6	**301**		**Excavation in Soil using Hydraulic Excavator CK 90 and Tippers with Disposal upto 1000 metres**					
SUB ANA -B			Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity 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 (including of the cost of watering, rolling & compaction.)					
			Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	16.000	1015.00	16240.00	P&M-048
			Smooth wheel roller @ 70 cum per hour	hour	4.500	777.00	3496.50	P&M-044
			Water Tanker @ 6.0 KL capicity	hour	2.400	174.00	417.60	P&M-060
			c) Materials					
			Cost of water	KL	14.400	243.23	3502.51	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				3531.95	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3885.14	
			Cost for 360 cum = a+b+c+d+e				42736.59	
			Rate per cum = (a+b+c+d+e)/360				118.71	
			Rate per cum				118.71	
						say	**119.00**	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
3.7	**301**		**Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal upto 1000 metres**					
SUB ANA -B			Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site within all lifts and lead upto 1000 m, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections. (including of the cost of watering, rolling & compaction.)					
			Unit = cum					
			Taking output = 240 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic Excavator 0.90 cum bucket capacity @ 36 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	11.000	1015.00	11165.00	P&M-048
			Smooth wheel roller @ 70 cum per hour	hour	3.000	777.00	2331.00	P&M-044
			Water Tanker @ 6.0 KL capicity	hour	1.600	174.00	278.40	P&M-060
			c) Materials					
			Cost of water	KL	9.600	243.23	2335.01	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				2777.23	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3054.95	
			Cost for 240 cum = a+b+c+d+e				33604.47	
			Rate per cum = (a+b+c+d+e)/240				140.02	
			Rate per cum				140.02	
						say	**140.00**	
3.10	**301**		**Excavation in Marshy Soil**					
SUB ANA -B			Excavation for roadway in marshy soil with hydraulic excavator 0.9 cum bucket capacity including cutting and loading in tippers and disposal with in all lifts and lead upto 1000 metres, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections. (including of the cost of watering, rolling & compaction.)					
			Unit = cum					
			Taking output = 300 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Hydraulic excavator 0.90 cum bucket capacity @ 50 cum per hour	hour	6.000	1858.00	11148.00	P&M-026
			Tipper 5.5 cum capacity, 4 trips per hour.	hour	13.640	1015.00	13844.60	P&M-048
			Smooth wheel roller @ 70 cum per hour	hour	3.750	777.00	2913.75	P&M-044
			Water Tanker @ 6.0 KL capicity	hour	2.000	174.00	348.00	P&M-060
			c) Materials					
			Cost of water	KL	12.000	243.23	2918.76	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				3168.80	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				3485.68	
			Cost for 300 cum = a+b+c+d+e				38342.47	
			Rate per cum = (a+b+c+d+e)/300				127.81	
			Rate per cum				127.81	
						say	**128.00**	
3.16	**305**		**Construction of Embankment with Material obtained from Borrowpits**					
SUB ANA -B			Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.					

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Hydraulic Excavator 1 cum bucket capacity @ 60 cum per hour	hour	1.670	1858.00	3102.86	P&M-026
			Tipper 10 tonne capacity	tonne.km	**160 x L**	8.83	**1412.80**	P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**141.28**	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2715.00	2715.00	P&M-032
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Smooth wheel roller 8-10 tonnes @ 70 cum per hour	hour	1.430	777.00	1111.11	P&M-044
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			Compensation & Royalty for earth taken from private land	cum	100.000	1.71	171.00	M-092
			d) Overhead charges @ 0.1 on (a+b+c)				1810.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1991.17	
			Cost for 100 cum = a+b+c+d+e				21902.83	
			Rate per cum = (a+b+c+d+e)/100				219.03	
						say	**219.00**	
		Note	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**		**Construction of Embankment with Material Deposited from Roadway Cutting**					
SUB ANA -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.					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.020	261.00	5.22	L-12
			Mazdoor	day	0.500	247.00	123.50	L-13
			b) Machinery					
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 100 cum per hour	hour	1.000	2715.00	2715.00	P&M-032
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Smooth wheel roller 8-10 tonnes @ 56 cum per hour	hour	1.430	777.00	1111.11	P&M-044
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				1314.49	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1445.93	
			Rate for 100 cum = a+b+c+d+e				15905.27	
			Rate per cum = (a+b+c+d+e)/100				159.05	
						say	**159.00**	
		Note	In case the earth cutting is done by dozer and pushed for filling in the embankment, the input of dozer in the cost of embankment shall be deleted as the same is already provided in the cost of excavation. However, if the earth is dumped by tippers from roadway cutting, the input of dozer for spreading is required to be provided.					

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
3.18	**305**		**Construction of Subgrade and Earthen Shoulders**					
SUB ANA -B			Construction of sub-grade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2					
			Unit = cum					
			Taking output = 100 cum					
			a) Labour					
			Mate	day	0.040	261.00	10.44	L-12
			Mazdoor	day	1.000	247.00	247.00	L-13
			b) Machinery					
			Hydraulic excavator1 cum bucket capacity @ 60 cum per hour	hour	1.670	1858.00	3102.86	P&M-026
			Tipper 10 tonne capacity	tonne.km	**175xL**	8.83	**1545.25**	P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**154.53**	
			Dozer 80 HP for spreading @ 200 cum per hour	hour	0.500	5313.00	2656.50	P&M-014
			Motor grader for grading @ 50 cum per hour	hour	2.000	2715.00	5430.00	P&M-032
			Water tanker with 6 km lead	hour	4.000	174.00	696.00	P&M-060
			Smooth wheel roller 8-10 tonnes @ 56 cum per hour	hour	1.790	777.00	1390.83	P&M-044
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			Compensation & Royalty for earth taken from private land	cum	100.000	1.71	**171.00**	M-092
			d) Overhead charges @ 0.1 on (a+b+c)				2124.19	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2336.61	
			Cost for 100 cum = a+b+c+d+e				25702.73	
			Rate per cum = (a+b+c+d+e)/100				257.03	
						say	**257.00**	
3.19	**305.3.4**		**Compacting Original Ground**					
		Case-I	**Compacting original ground supporting sub-grade**					
SUB ANA -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.					
			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	9.000	558.00	5022.00	P&M-055
			Motor grader for grading	hour	6.000	2715.00	16290.00	P&M-032
			Water tanker 6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Smooth wheel roller 8-10 tonnes @ 56 cum per hour	hour	10.710	777.00	8321.67	P&M-044
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				3693.95	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				4063.35	
			Cost for 600 cum = a+b+c+d+e				44696.81	
			Rate per cum = (a+b+c+d+e)/600				74.49	
						say	**74.50**	
3.19		**Case-II**	**Compacting original ground supporting embankment**					
SUB ANA -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.					
			Unit = cum					

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.080	261.00	20.88	L-12
			Mazdoor	day	2.000	247.00	494.00	L-13
			b) Machinery					
			Tractor with ripper attachment	hour	6.000	558.00	3348.00	P&M-055
			Smooth wheel roller 8-10 tonnes @ 56 cum per hour	hour	10.710	777.00	8321.67	P&M-044
			Water tanker6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				1871.81	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				2058.99	
			Cost for 600 cum = (a+b+c+d+e)				22648.86	
			Rate per sqm = (a+b+c+d+e)/600				37.75	
						say	**37.70**	
5.11	**512**		**Close Graded Premix Surfacing/Mixed Seal Surfacing**					
			Mechanical means using HMP of appropriate capacity not less than 75 tonnes/hour.					
	Sub - Analysis for Type 'B"	**Case I**	Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.09 mm (Type-A) or 13.2 mm to 0.09 mm (Type-B) aggregates using penetration grade bitumen to the required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a Smooth wheeled roller 8-10 tonne capacity, and finishing to required level and grade.					
			Unit = sqm					
			Taking output = 10250 sqm (205 cum)					
			a) Labour					
			Mate	day	0.840	261.00	219.24	L-12
			Mazdoor working with HMP, road sweeper, paver and roller	day	16.000	247.00	3952.00	L-13
			Skilled mazdoor for checking line & levels	day	5.000	313.00	1565.00	L-15
			b) Machinery					
			i) HMP of appropriate capacity - 75 t per hour	hour	6.000	39484.00	236904.00	P&M-022
			ii) Electric Generator Set 250 KVA	hour	6.000	3700.00	22200.00	P&M-081
			iii) Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			iv) Tipper 10 tonne capacity	tonne.km	**450 x L**	8.83	**3973.50**	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**397.35**	
			v) Paver finisher hydrostatic with sensor attachment	hour	6.000	3502.00	21012.00	P&M-034
			iv) Smooth wheeled 8-10 tonnes weight	hour	6.000	777.00	4662.00	P&M-044
			c) Material					
			Type - B					
			Bitumen @ 19 kg per 10 sqm	tonne	19.480	32160.00	626476.80	M-074
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	276.750	374.53	103651.18	M-042
			d) Overhead charges @ 0.1 on (a+b+c)				103323.91	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				113656.30	
			Cost for 10250 sqm = a+b+c+d+e				1250219.27	
			Rate per sqm = (a+b+c+d+e)/10250				121.97	
			For Type 'B'			**say**	**122.00**	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
4.9	404		**Water Bound Macadam**					
SUB ANA -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 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 compacting to the required density.					
			By Manual Means					
		A	Unit = cum					
			Taking output = 360 cum					
			a) Labour					
			Mate	day	10.080	261.00	2630.88	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	250.000	247.00	61750.00	L-13
			b) Machinery					
			Smooth 3 wheeled steel roller @ 30cum/hour	hour	12.000	777.00	9324.00	P&M-044
			Water tanker 6 KL capacity	hour	24.000	174.00	4176.00	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9A			**Grading-I**					
		(i)	**Aggregate**					
			Grading-I 90 mm to 45 mm@ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	299.84	130610.30	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	374.53	36404.32	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	77.21	8338.68	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (i)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				25248.10	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				27772.91	
			Cost for 360 cum = a+b+c+d+e				305501.99	
			Rate per cum = (a+b+c+d+e)/360				848.62	
						say	**849.00**	
			OR					
4.9A (i)			**Using Screening Type-A (13.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				28277.03	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				31104.73	
			Cost for 360 cum = a+b+c+d+e				342152.02	
			Rate per cum = (a+b+c+d+e)/360				950.42	
						say	**950.00**	
4.9A			**Grading-II**					
		(ii)	**Aggregate**					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	331.67	144475.45	M-038
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	374.53	21572.93	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			OR					

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (ii)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				26616.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				29277.61	
			Cost for 360 cum = a+b+c+d+e				322053.67	
			Rate per cum = (a+b+c+d+e)/360				894.59	
						say	**895.00**	
			OR					
4.9A (ii)			**Using Screening Type-A (13.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				28180.40	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				30998.44	
			Cost for 360 cum = a+b+c+d+e				340982.87	
			Rate per cum = (a+b+c+d+e)/360				947.17	
						say	**947.00**	
4.9A (ii)			**Using Screening Type-B (11.2mm agg.)**					
		(c)	**d) Overhead charges @ 0.1 on (a+b+c)**				28170.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				30987.17	
			Cost for 360 cum = a+b+c+d+e				340858.82	
			Rate per cum = (a+b+c+d+e)/360				946.83	
						say	**947.00**	
4.9A			**Grading-III**					
		(iii)	**Aggregate**					
			Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	362.57	157935.49	M-036
			Stone Screening					
			Type B 11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9A (iii)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				27962.01	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				30758.21	
			Cost for 360 cum = a+b+c+d+e				338340.32	
			Rate per cum = (a+b+c+d+e)/360				939.83	
						say	**940.00**	
			OR					
4.9A (iii)			**Using Screening Type-B (11.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				29516.15	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				32467.77	
			Cost for 360 cum = a+b+c+d+e				357145.46	
			Rate per cum = (a+b+c+d+e)/360				992.07	
						say	**992.00**	
			(Anyone of the aggregate grading, screening and binding material may be used as per design)					
4.9			**By Mechanical Means:**					
SUB ANA -B		**B**	Unit = cum					

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Taking output = 360 cum					
			a) Labour					
			Mate	day	0.680	261.00	177.48	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	15.000	247.00	3705.00	L-13
			b) Machinery					
			Motor grader 110 HP @ 50cum/hr. for spreading	hour	7.200	2715.00	19548.00	P&M-032
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000	777.00	9324.00	P&M-044
			Water tanker 6 KL capacity	hour	24.000	174.00	4176.00	P&M-060
			c) Material (Refer table 400 - 7, 8 & 9)					
4.9B			**Grading - I**					
		(i)	**Aggregate**					
			Grading-I 90 mm to 45 mm @ 1.21cum per 10 sqm for compacted thickness of 100 mm	cum	435.600	299.84	130610.30	M-039
			Stone Screening					
			Type A 13.2 mm for **grading-I** @ 0.27 cum per 10 sqm	cum	97.200	374.53	36404.32	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading-I** @ 0.30 cum per 10 sqm	cum	108.000	77.21	8338.68	M-007
			Binding material					
			Binding Material @ 0.08cum per 10 sqm for grading I material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (i)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				21153.06	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				23268.36	
			Cost for 360 cum = a+b+c+d+e				255952.01	
			Rate per cum = (a+b+c+d+e)/360				710.98	
						say	**711.00**	
			OR					
4.9B (i)			**Using Screening Type-A (13.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				24181.99	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26600.19	
			Cost for 360 cum = a+b+c+d+e				292602.04	
			Rate per cum = (a+b+c+d+e)/360				812.78	
						say	**813.00**	
4.9B			**Grading - II**					
		(ii)	**Aggregate**					
			Grading-II 63 mm to 45 mm /Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	331.67	144475.45	M-038
			Stone Screening					
			Type A 13.2 mm for grading-II @ 0.12 cum per 10 sqm	cum	57.600	374.53	21572.93	M-042
			OR					
			Crushable type such as Moorum or Gravel for **grading II &III** @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			OR					
			Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (ii)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				22520.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				24773.06	
			Cost for 360 cum = a+b+c+d+e				272503.68	
			Rate per cum = (a+b+c+d+e)/360				756.95	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	757.00	
			OR					
4.9B (ii)			**Using Screening Type-A (13.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				24085.36	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26493.90	
			Cost for 360 cum = a+b+c+d+e				291432.89	
			Rate per cum = (a+b+c+d+e)/360				809.54	
						say	810.00	
4.9B (ii)			**Using Screening Type-B (11.2mm agg.)**					
		(c)	**d) Overhead charges @ 0.1 on (a+b+c)**				24075.11	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26482.62	
			Cost for 360 cum = a+b+c+d+e				291308.83	
			Rate per cum = (a+b+c+d+e)/360				809.19	
						say	809.20	
4.9B			**Grading - III**					
		(iii)	**Aggregate**					
			Grading-III 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.600	362.57	157935.49	M-036
			Stone Screening					
			Type B11.2 mm for grading-III @ 0.18 cum per 10 sqm	cum	86.400	248.50	21470.40	M-041
			OR					
			Crushable type such as Moorum or Gravel for grading II &III @ 0.22 cum per 10 sqm	cum	105.590	77.21	8152.60	M-007
			Binding material					
			Binding Material @ 0.06cum per 10 sqm for grading II material	cum	28.800	77.21	2223.65	M-007
			Cost of water	KL	144.000	243.23	35025.12	M-189
4.9B (iii)			**Using Screening Crushable type such as Moorum or Gravel**					
		(a)	**d) Overhead charges @ 0.1 on (a+b+c)**				23866.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				26253.67	
			Cost for 360 cum = a+b+c+d+e				288790.33	
			Rate per cum = (a+b+c+d+e)/360				802.20	
						say	802.00	
			OR					
4.9B (iii)			**Using Screening Type-B (11.2mm agg.)**					
		(b)	**d) Overhead charges @ 0.1 on (a+b+c)**				25421.11	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				27963.23	
			Cost for 360 cum = a+b+c+d+e				307595.48	
			Rate per cum = (a+b+c+d+e)/360				854.43	
						say	854.00	
4.10	405		**Crushed Cement Concrete Sub-base / Base**					
SUB ANA -B			Breaking and crushing of material obtained by breaking damaged cement concrete slabs to size range not exceeding 75 mm as specified in table 400.7 transporting the aggregates obtained from breaking of cement concrete slabs at a lead of L 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.					
			Unit = cum					
			Taking output =360 cum					
			a) Labour					
			Mate	day	4.160	261.00	1085.76	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor for crushing broken cement concrete pavement/slabs into aggregate	day	102.000	247.00	25194.00	L-13

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			b) Machinery					
			Motor Grader,110 HP @ 50 cum/hr.	hour	6.000	2715.00	16290.00	P&M-032
			Smooth 3 wheeled steel roller @ 30cum/hr.	hour	12.000	777.00	9324.00	P&M-044
			Front end loader 1 cum bucket capacity	hour	6.000	1371.00	8226.00	P&M-017
			Tipper 10 tonne capacity	tonne.km	**720 x L**	8.83	**6357.60**	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**635.76**	
			Water tanker 6 KL capacity with 5 km lead @ 1 trip per hour	hour	12.000	174.00	2088.00	P&M-060
			c) Material					
			Material available from dismantled concrete slab after crushing / breaking and only carriage is required to be provided.					
			Cost of water	KL	72.000	243.23	17512.56	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				8733.97	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				9607.36	
			Cost for 360 cum = a+b+c+d+e				105681.01	
			Rate per cum = (a+b+c+d+e)/360				293.56	
			With Smooth 3 wheeled Steel Roller			**say**	**294.00**	
		Note	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 L 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.					
4.12	**406**		**Wet Mix Macadam**					
SUB ANA -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.					
			Unit = cum					
			Taking output = 225 cum (495 tonnes)					
			a) Labour					
			Mate	day	0.480	261.00	125.28	L-12
			Mazdoor skilled	day	2.000	313.00	626.00	L-15
			Mazdoor	day	10.000	247.00	2470.00	L-13
			b) Machinery					
			Wet mix plant of 75 tonne hourly capacity	hour	6.600	2803.00	18499.80	P&M-094
			Electric generator 125 KVA	hour	6.000	2643.00	15858.00	P&M-018
			Front end loader 1 cum capacity	hour	6.000	1371.00	8226.00	P&M-017
			Paver finisher	hour	6.000	1388.00	8328.00	P&M-035
			Smooth 3 wheeled steel roller @ 8-10 tonnes.	hour	12.000	777.00	9324.00	P&M-044
			Water tanker 6 KL capacity	hour	3.000	174.00	522.00	P&M-060
			Tipper	tonne.km	**495 x L**	8.83	**4370.85**	Lead =1 km & P&M-047
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				**437.09**	
			c) Material (Table 400-11)					
			45 mm to 22.4 mm @ 30 per cent	cum	89.100	383.71	34188.56	M-034
			22.4 mm to 2.36 mm @ 40 per cent	cum	118.800	433.34	51480.79	M-031
			2.36 mm to 75 micron @ 30 per cent	cum	89.100	86.98	7749.92	M-022
			Cost of water	KL	18.000	243.23	4378.14	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				16658.44	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				18324.29	
			Cost for 225 cum = a+b+c+d+e				201567.16	
			Rate per cum = (a+b+c+d+e)/225				895.85	
			With Smooth 3 wheeled Steel Roller			**say**	**896.00**	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
		Note	1. Though vibratory roller is required only for 3 hours as per norms, the same is required to be available at site for 6 hours to match with other machines. The usage rates of vibratory roller may be multiplied with a factor of 0.65.					
			2. As three wheeled smooth steel rollers are commonly in use, the same has been provided as an alternative which can be used if the thickness of individual layer does not exceed 100 mm.					
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:2 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**					
SUB ANA -B			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	6.247	15617.50	M-079
			Cement mortar 1:2 (Rate as in Item 12.6 B sub-analysis)	cum	1.20	3644.00	4372.80	Item 12.6 (B)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				5852.90	
			d) Contractor's profit @ 0.1 on (a+b+c)				2926.45	
			Cost for 5 cum = a+b+c+d				32190.92	
			Rate per cum (a+b+c+d)/5				6438.18	
						say	**6438.00**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:4 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**					
SUB ANA -B			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	6.247	15617.50	M-079
			Cement mortar 1:4 (Rate as in Item 12.6 C sub-analysis)	cum	1.20	2326.00	2791.20	Item 12.6 (C)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				5457.50	
			d) Contractor's profit @ 0.1 on (a+b+c)				2728.75	
			Cost for 5 cum = a+b+c+d				30016.22	
			Rate per cum (a+b+c+d)/5				6003.24	
						say	**6003.00**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:6 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications.**					
SUB ANA -B			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	6.247	15617.50	M-079
			Cement mortar 1:6 (Rate as in Item 12.6 D sub-analysis)	cum	1.20	1798.00	2157.60	Item 12.6 (D)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				5299.10	
			d) Contractor's profit @ 0.1 on (a+b+c)				2649.55	
			Cost for 5 cum = a+b+c+d				29145.02	
			Rate per cum (a+b+c+d)/5				5829.00	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
						say	**5829.00**	
3.19	**305.3.4**		**Rolling, watering and compaction with Smooth Wheeled Roller**					
SUB ANA -B			Unit = cum					
			Taking output = 600 cum					
			a) Labour					
			Mate	day	0.120	261.00	31.32	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			b) Machinery					
			Water tanker 6 KL capacity	hour	4.000	174.00	696.00	P&M-060
			Smooth wheel roller 8-10 tonnes @ 56 cum per hour	hour	10.710	777.00	8321.67	P&M-044
			c) Material					
			Cost of water	KL	24.000	243.23	5837.52	M-189
			d) Overhead charges @ 0.1 on (a+b+c)				1562.75	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				1719.03	
			Cost for 600 cum = a+b+c+d+e				18909.29	
			Rate per cum = (a+b+c+d+e)/600				31.52	
						say	**31.50**	
13.9	**710.1.4. of IRC:78 & 2200**		**Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification**					
			Unit = cum					
			Taking output = 10 cum					
		B	**Sandy material**					
			a) Labour					
			Mate	day	0.28	261.00	73.08	L-12
			Mazdoor for filling, watering, ramming etc.	day	7.00	247.00	1729.00	L-13
			b) Material					
			Sand (Coarse)	cum	12.00	110.69	1328.28	M-004
			c) Machinery					
			Plate compactor/power rammer	hour	2.50	443.00	1107.50	P&M-086
			Water Tanker	hour	0.06	174.00	10.44	P&M-060
			d) Overhead charges @ 0.25 on (a+b+c)				1062.08	
			e) Contractor's profit @ 0.1 on (a+b+c+d)				531.04	
			Cost for 10 cum of sandy backfill = a+b+c+d+e				5841.41	
			Rate per cum = (a+b+c+d+e)/10				584.14	
						say	**584.00**	
8.44	**suggestiv e**		**Permanent Type Barricade in Construction Zone**					
		C	**With FLY ASH Bricks**					
			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					
			Unit = each					
			Taking output = one barricade					
			a) Labour					
			Mate	day	0.240	261.00	62.64	L-12
			Mazdoor	day	3.000	247.00	741.00	L-13
			Painter	day	1.000	312.00	312.00	L-18
			Mason	day	2.000	330.00	660.00	L-11
			b) Material					
			Brick	each	1800.000	5.156	9280.80	M-198
			Cement	kg	22.000	4.922	108.28	M-081 /1000
			Sand	cum	0.090	110.69	9.96	M-005
			Paint	litre	1.250	214.82	268.53	M-131
			c) Overhead charges @ 0.1 on (a+b)				1144.32	
			d) Contractor's profit @ 0.1 on (a+b+c)				1258.75	
			Rate per barricade = a+b+c+d				13846.29	
						say	**13846.00**	

SUB-ANALYSIS_B

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
11.14		**New**	**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: With FLY ASH Bricks**					
			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					
			Unit = Each					
			Taking output = one tree guard					
			a) Labour					
			Mate	day	0.050	261.00	13.05	L-12
			Mason	day	0.250	330.00	82.50	L-11
			Mazdoor	day	0.250	247.00	61.75	L-13
			b) Material					
			Brick 2nd class including carriage	each	230.000	5.156	1185.88	M-198
			Cement mortar 1:6	cum	0.025	1798.00	44.95	Item 12.6 (D)
			c) Overhead charges @ 0.1 on (a+b)				138.81	
			d) Contractor's profit @ 0.1 on (a+b+c)				152.69	
			Rate per tree Guard = a+b+c+d				1679.64	
						say	**1680.00**	
11.15		**New**	**Edging with 2nd Class Bricks, Laid Dry Lengthwise: With FLY ASH Bricks**					
			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					
			Unit = Metre					
			Taking output= 10 metres					
			a) Labour					
			Mate	day	0.002	261.00	0.52	L-12
			Mason	day	0.050	330.00	16.50	L-11
			Mazdoor	day	0.050	247.00	12.35	L-13
			b) Material					
			Brick 2nd class including carriage	each	50.000	5.156	257.80	M-198
			c) Overhead charges @ 0.1 on (a+b)				28.72	
			d) Contractor's profit @ 0.1 on (a+b+c)				31.59	
			Cost for 10 metre = a+b+c+d				347.48	
			Rate per metre = (a+b+c+d)/10				34.75	
						say	**34.70**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:2 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications: With FLY ASH Bricks**					
SUB ANA -C			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	5.156	12890.00	M-198
			Cement mortar 1:2 (Rate as in Item 12.6 B sub-analysis)	cum	1.20	3644.00	4372.80	Item 12.6 (B)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				5171.02	
			d) Contractor's profit @ 0.1 on (a+b+c)				2585.51	
			Cost for 5 cum = a+b+c+d				28440.61	
			Rate per cum (a+b+c+d)/5				5688.12	
						say	**5688.00**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:3 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications: With FLY ASH Bricks**					
			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	5.156	12890.00	M-198

Sr. No.	Ref. to MoRTH Spec.		Description	Unit	Quantity	Rate (₹)	Cost (₹)	Remarks/ Input ref.
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	1.20	2859.00	3430.80	Item 12.6 (A)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				4935.52	
			d) Contractor's profit @ 0.1 on (a+b+c)				2467.76	
			Cost for 5 cum = a+b+c+d				27145.36	
			Rate per cum (a+b+c+d)/5				5429.07	
						say	**5429.00**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:4 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications : With FLY ASH Bricks**					
SUB ANA -C			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	5.156	12890.00	M-198
			Cement mortar 1:4 (Rate as in Item 12.6 C sub-analysis)	cum	1.20	2326.00	2791.20	Item 12.6 (C)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				4775.62	
			d) Contractor's profit @ 0.1 on (a+b+c)				2387.81	
			Cost for 5 cum = a+b+c+d				26265.91	
			Rate per cum (a+b+c+d)/5				5253.18	
						say	**5253.00**	
12.5	**1300**		**Brick Masonry Work in Cement Mortar 1:6 in Foundation complete excluding Pointing and Plastering, as per Drawing and Technical Specifications: With FLY ASH Bricks**					
SUB ANA -C			Unit = cum					
			Taking output = 5 cum					
			a) Material					
			Bricks Ist class	each	2500.00	5.156	12890.00	M-198
			Cement mortar 1:6 (Rate as in Item 12.6 D sub-analysis)	cum	1.20	1798.00	2157.60	Item 12.6 (D)
			b) Labour					
			Mate	day	0.48	261.00	125.28	L-12
			Mason	day	4.00	330.00	1320.00	L-11
			Mazdoor	day	8.00	247.00	1976.00	L-13
			c) Overhead charges @ 0.25 on (a+b)				4617.22	
			d) Contractor's profit @ 0.1 on (a+b+c)				2308.61	
			Cost for 5 cum = a+b+c+d				25394.71	
			Rate per cum (a+b+c+d)/5				5078.94	
						say	**5079.00**	
13.1	**1300 & 2200**		**Brick masonry work in 1:3 in sub-structure complete excluding pointing and plastering, as per drawing and Technical Specifications : With FLY ASH Bricks**					
			Unit = cum					
			Taking output = 1 cum					
			a) Material					
			Bricks Ist class	each	500.00	5.156	2578.00	M-198
			Cement mortar 1:3 (Rate as in Item 12.6 A sub-analysis)	cum	0.24	2859.00	686.16	Item 12.6 (A)
			b) Labour					
			Mate	day	0.06	261.00	15.66	L-12
			Mason	day	0.80	330.00	264.00	L-11
			Mazdoor	day	0.80	247.00	197.60	L-13
			Add for scaffolding @ 5 per cent of cost of material and labour				187.07	
			c) Overhead charges @ 0.25 on (a+b)				982.12	
			d) Contractor's profit @ 0.1 on (a+b+c)				491.06	
			Rate per cum (a+b+c+d)				5401.68	
						say	**5402.00**	



Parts of Ganga Path from Digha to Didarganj in Patna



Kishori Enterprises, Patna # 9431003479