



**AZAD GOVERNMENT OF
THE STATE OF JAMMU AND KASHMIR**

COMPOSITE SCHEDULE OF RATES

Updated for 1st Quarter (July – Sept.) 2020-21

DISTRICT MUZAFFARABAD

PLANNING AND DEVELOPMENT DEPARTMENT, KASHMIR PLAN HOUSE.

BLOCK NO. 11, NEW CIVIL SECRETARIAT, Go.AJK MUZAFFARABAD.



PREFACE

The Planning & Development Department, Government of AJ&K felt the need to have a Composite Schedule of Rates (CSR) for AJ&K. The Composite Schedule of Rates was required to introduce a common basis for value engineering in accordance with the geophysical conditions and available resources of AJ&K. National Engineering Services Pakistan (Pvt.) Limited (NESPAK), being the largest Consultant firm and having a rich experience of various projects in AJ&K was engaged to carry out the assignment. It was agreed that due to urgency of implementing a CSR for ongoing development works in AJ&K, NESPAK has submitted CSR in three stages i.e: Pre-Interim, Interim and Final. Pre-Interim CSR was submitted in March, 2008 and after receiving feedback from all the stakeholders Interim CSR was submitted and its enforcement was approved by the AJK Cabinet in its meeting held on August 19, 2009. Additional items of work have been added upon the recommendations of various Departments. The rates used for the preparation of this Composite Schedule of Rates have been updated to the prevailing prices of construction materials, machinery and labour for the month of January 2016 in all ten districts of AJ&K on semi-annual basis.

The CSR-2009 (updated) has been computerized in such a manner that links exist between the basic data file, comprising rates of construction materials, labor and rental of machinery. Furthermore those calculation carried out in files of detailed analysis (Volume-II, A & B) and resulted to modify the files of Composite Schedule of Rates (Volume-I). Any revision initiated in the “basic data” file would correspondingly revise the relevant item rate.

The Schedule consists of two Volumes; namely Composite Schedule and Detailed Analysis for each district of AJ&K. Each page of the CSR bears identification details with respect to its edition, volume and district.

Minor adjustment in the market rates have been made using best professional judgment and using data from our survey of various districts of AJ&K and other cities of Pakistan. The Rate Analysis Section constituted by the Government of AJ&K is deputed to monitor and resolve difficulties that may arise in the application of the rates contained in this schedule to cope with regional imbalances at a given time.

All cost estimates for administrative approval and detailed estimates for technical sanction shall be prepared on the basis of rates provided in the Schedule. This Schedule will form bench mark for inviting tenders for which specific item of works included in the estimate shall be identified for quotation above or below the rates.

The rates for items other than those given in this Schedule shall be treated as non-scheduled items. The analysis of rates for such items shall be prepared by the concerned Executive Engineer and approved by the competent authority (Superintending Engineer) before the work undertaken, keeping in view the provisions of the delegations of the financial powers. Copies of the approved rate analysis shall be forwarded to Rate Analysis Section P&DD for reference and review where-ever found necessary and then incorporation in next updation, if justified. This Schedule of Rates supersedes all previous documents and shall become effective from the date of issuance.



TABLE OF CONTENTS

0. CONSTRUCTION MATERIAL SOURCES STUDY
1. CARRIAGE
2. LOADING, UN-LOADING AND STACKING
3. EARTH WORK
4. DISMANTLING (Demolishing)
5. PLAIN AND REINFORCED CONCRETE
6. PRESTRESSED CONCRETE
7. PILE FOUNDATION CONCRETE
8. DAMP PROOF COURSE AND WATER PROOFING
9. CEMENT CONCRETE BLOCK MASONRY
10. BRIDGES
11. BRICK WORK
12. STONE MASONRY
13. ROOFING
14. FLOORING
15. FINISHING
16. WOOD WORK



TABLE OF CONTENTS

17. PAINTING AND VARNISHING
18. LINING OF CANALS
19. PROTECTION AND DIVERSION WORKS
20. OUTLETS
21. ROAD AND ROAD STRUCTURES
22. SHEET PILING
23. PLUMBING, SANITARY INSTALLATIONS AND GAS
FITTINGS
24. SURFACE DRAINAGE
25. SEWERAGE
26. SINKING OF WELLS
27. TUBEWELL AND WATER SUPPLY
28. IRON, STEEL AND ALUMINUM WORKS
29. HORTICULTURE
30. ELECTRICAL INSTALLATIONS



GENERAL CONDITIONS

1. The work contained in this Schedule of Rates shall be carried out in accordance with the specifications given briefly for each item and the applicable provisions of the West Pakistan Schedule of Rates Committee Specifications as adopted by the Government of AJ&K duly amended from time to time
2. The rates entered against all items in the Schedule of Rates are those referred to in contract as the basic rates which cover the cost of all materials, transportation to site of work, labour, equipment, tools, plants, supervision charges, all Government levies, imports, octroi charges, overheads, profits and incidental cost thereto required for the satisfactory completion of the work. Charges for testing the Public Health engineering and Electrical works are also included in this schedule.
3. Unless otherwise stipulated, measurements for payment for the work done shall conform to the specification for the execution of works West Pakistan Standing Rates Committee adopted by the Government of AJ&K.
4. For certain items of the work floor-wise rates have been entered in this schedule. For this purpose, the rates for the basement shall be applied to all works below the foundation up to the top of roof of basement. Rates for the ground floor include the cost of all works from the top of the basement roof up to the top of ground floor and so on. Parapet, water tank and stair wall etc. shall be considered as part of the floor above which these are constructed.
5. If a discrepancy is found between various documents, the order of precedence given below shall govern to determine the scope of the contracted work forming part of the contract based on this schedule:
 - Schedule of Quantities
 - West Pakistan Standing Rates Committee Specifications as adopted by the Government of AJ&K.
 - Special condition of the agreement
 - Conditions of contract
 - Drawings
6. The unit rates of plant, materials and labor given in this schedule are indicative and shall not form bases for a claim by the contractor for the works let out on percentage above or below the composite schedule of items.
7. Nominal conversion figures from System International to System Imperial have been given as complete switch over has not yet been achieved.
 - i. Cost of Manpower not charged to the items directly such as Contractor's Head Office, Project Office, Security, Laboratory, Survey, Account, Store and Administration staff.
 - ii. Expenses on Laboratory, Camp, Workshop, Office and allied equipments and fixtures.
 - iii. Small equipment, tools and attachments.
 - iv. Advance tax deductible at source.



ABBREVIATIONS USED

| SYSTEM IMPERIAL | | SYSTEM INTERNATIONAL | |
|------------------------|--------|------------------------------|-------------------|
| Running foot | R.ft. | Millimeter | mm |
| Square foot | Sq.ft. | Centimeter | cm |
| Cubic foot | Cu.ft. | Running Meter | RM |
| Pound | Lb | Square Meter | Sq.m |
| Ounce | Oz | Cubic Meter | Cu.m. |
| Pounds per Square inch | Psi | Kilogram | Kg. |
| Gross | Grs | Newton per millimeter square | N/mm ² |
| Maund | Mnd | Hundred | Hund |
| Dozen | Dz | | |



CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY BY |
|------------------------------|------------|-------------|
| <u>LENGTH</u> | | |
| Inch | Millimeter | 25.40 |
| Millimeter | Inch | 0.0394 |
| Foot | Meter | 0.3048 |
| Meter | Foot | 3.2808 |
| Yard | Meter | 0.9144 |
| Meter | Kilometer | 1.6093 |
| Kilometer | Mile | 0.6214 |
| Canal Mile (500 feet) | Kilometer | 1.524 |
| Kilometer | Canal Mile | 0.6562 |
| Girah | Millimeter | 57.15 |
| Mile International | | |
| Nautical (6076.12 feet) | Meter | 1852.00 |
| Mile UK nautical (6080 feet) | Meter | 1853.18 |
| <u>MASS WEIGHT</u> | | |
| Pound | Kilogram | 0.4536 |
| Kilogram | Pound | 0.2046 |
| Ounce | Gram | 28.3495 |
| Gram | Ounce | 0.0353 |
| Quintal | Kilogram | 100.00 |
| Grain | Milligram | 64.7989 |
| Hundred Weight | Kilogram | 50.8023 |
| Tonne | Kilogram | 1000.00 |
| Ton | Kilogram | 1016.047 |
| <u>MASS WEIGHT</u> | | |
| Ton | Tonne | 1.0160 |
| Tonne | Ton | 0.9842 |
| Seer | Kilogram | 0.9331 |
| Maund | Kilogram | 37.324 |
| Tola | Gram | 11.664 |
| Short Ton (2000 lbs) | Tonne | 0.9072 |



CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY BY |
|-------------------|-------------------|-------------|
| AREA | | |
| Square Inch | Square Millimeter | 645.16 |
| Square millimeter | Square inch | 0.0015 |
| Square Foot | Square Meter | 0.0929 |
| Square meter | Square foot | 10.7639 |
| Square Yard | Square meter | 0.8361 |
| Square meter | Square Yard | 1.1960 |
| Acre | Square meter | 4046.8564 |
| Acre | Hectare | 0.4047 |
| Hectare | Acre | 2.4787 |
| Hectare | Square meter | 10000 |
| Square mile | Square kilometer | 2.5899 |
| Square Kilometer | Square mile | 0.3861 |
| Square mile | Hectare | 258.999 |
| Hectare | Square mile | 0.00386 |

CAPACITY, VOLUME AND MODULES OF SECTION

| | | |
|-------------------|-------------------|---------|
| Pint (UK) | Liter | 0.5683 |
| Gallon (imperial) | Liter | 4.5461 |
| Cubic foot | Liter | 28.3168 |
| Cubic meter | Liter | 1000 |
| Liter | Cubic foot | 0.0353 |
| Cubic inch | Millimeter | 16.3871 |
| Fluid ounce | Millimeter | 28.413 |
| Liter | Gallon (imperial) | 0.2199 |
| Cubic Inch | Cubic millimeter | 16387.1 |
| Cubic foot | Cubic meter | 0.0283 |
| Cubic meter | Cubic foot | 35.3147 |
| Cubic Yard | Cubic meter | 0.7645 |
| Cubic meter | Cubic yard | 1.3080 |
| Acre foot | Hectare meter | 0.1233 |



CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY BY |
|------------|------|-------------|
|------------|------|-------------|

VLOCITY AND SPEED

| | | |
|--------------------|--------------------|--------|
| Foot per second | Meter per second | 0.3048 |
| Foot per minute | Meter per second | 0.0051 |
| Foot per second | Kilometer per hour | 1.0973 |
| Kilometer per hour | Foot per second | 0.9113 |
| Mile per hour | Meter per second | 0.4470 |
| Kilometer per hour | Mile per hour | 0.6214 |
| Mile per hour | Kilometer per hour | 1.6093 |

FORCE

| | | |
|----------------|-------------|--------|
| Kilogram force | Newton | 0.8066 |
| Pound force | Newton | 4.4482 |
| Ton force | Kilo Newton | 9.9640 |
| Newton | Pound force | 0.2248 |
| Kilo Newton | Ton force | 0.1004 |

FORCE PER UNITE LENGTH

| | | |
|----------------------|------------------|---------|
| Pound force per foot | Newton per meter | 14.5939 |
|----------------------|------------------|---------|

PRESSURE, STRESS AND MODULES OF ELASTICITY (1Pa=1N/m²)

| | | |
|-----------------------------|-----------------------------|---------|
| Pound per Square foot | Pascals | 47.8803 |
| Pound force per square inch | Kilo Pascals | 6.8948 |
| Ton force per square inch | Kilo Pascals | 107.252 |
| Kilo Pascals | Pound force per square foot | 20.8354 |
| Ton force per square inch | Mega pascals | 15.4443 |
| Mega Pascals | Pound force per square inch | 145.038 |

MASS PER UNIT LENGTH

| | | |
|--------------------|--------------------|--------|
| Pound per foot | Kilogram per meter | 1.4882 |
| Kilogram per meter | Pound per foot | 0.6720 |
| Ton per mile | Ton per kilometer | 0.6313 |



CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY BY |
|------------|------|-------------|
|------------|------|-------------|

MASS PER UNIT AREA

| | | |
|---------------------------|-------------------------------|---------|
| Ton per Square mile | Kilogram per square kilometer | 392.298 |
| Pound per square foot | Kilogram per square meter | 4.8824 |
| Kilogram per square meter | Pound per square foot | 0.2048 |

MASS PER UNIT VOLUME

| | | |
|--------------------------|--------------------------|---------|
| Pound per Cubic foot | Kilogram per Cubic meter | 16.0185 |
| Pound per Cubic foot | Grams per liter | 16.0185 |
| Kilogram per Cubic meter | Pound per cubic foot | 0.06243 |
| Grams per Liter | Pound per cubic foot | 0.06243 |

VOLUME RATE OF FLOW

| | | |
|-------------------------------|----------------------------------|---------|
| Cubic foot per second (cusec) | Cubic meter per second (cusec) | 0.02832 |
| Cubic foot per second (cusec) | Liter per second | 28.3168 |
| Gallon per minute | Liter per second | 0.0757 |
| Cubic foot per thousand acres | Liter per hectare | 0.0670 |
| Cubic foot per thousand acres | Cubic meter per square kilometer | 0.0070 |

FUEL CONSUMPTION

| | | |
|-----------------|---------------------|-------|
| Gallon per mile | Liter per kilometer | 2.825 |
| Mile per Gallon | Kilometer per liter | 0.354 |

MOVEMENT OF FORCE TORQUE

| | | |
|------------------|------------------|--------|
| Pound force foot | Newton meter | 1.3558 |
| Pound force inch | Newton meter | 0.1130 |
| Ton force foot | Kilonewton meter | 3.0370 |
| Ton force inch | Kilonewton meter | 0.2531 |



CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY BY |
|------------|------|-------------|
|------------|------|-------------|

SECOND MOMENT OF AREA

| | | |
|-------------------|-------------------------|--------|
| Inch ⁴ | Millimeter ⁴ | 416231 |
|-------------------|-------------------------|--------|

PLANE ANGLE

| | | |
|--------|--------|--------|
| Degree | Radian | 0.0174 |
|--------|--------|--------|

WORK, ENERGY, POWER (1J =1Ws)

| | | |
|------------------|------------------------------|---------|
| Kilowatt hour | Kilo joule | 3600 |
| Foot pound force | Joule | 1.3558 |
| Horse Power | Kilowatt | 0.7457 |
| Horse power | Kilogram force meter per sec | 76.0402 |

*For exact values, please consult Standard Hand Books



1. Concrete Compressive Strength (Test Table)

| Nominal Mix | Minimum cube strength required (in psi) | | | |
|-------------|---|---------|------------|---------|
| | Laboratory Tests | | Work Tests | |
| | 7 days | 28 days | 7 days | 28 days |
| 1:1:2 | 4000 | 6000 | 3000 | 4500 |
| 1:1½:3 | 3350 | 5000 | 2500 | 3750 |
| 1:2:4 | 2700 | 4000 | 2000 | 3000 |
| 1:3:6 | --- | 2500 | --- | 2000 |
| 1:4:8 | --- | 2000 | --- | 1500 |

Ref. AJK Technical & General Specifications Chapter No.05 (Plan & reinforced concrete) Page No.5-10

2. Bricks Compressive Strength (Test Table)

| Designation | Average Compressive strength (lbs/Sq.inch) | Max. Water Absorption |
|--------------|--|--|
| | | % by weight |
| First Class | 2000 | 1/6 th of its weight (average weight of ten bricks shall not less than 5.5lb (2.5kg)) |
| Second Class | 1500 | 1/4 th of its weight |
| Third Class | 1000 | ----- |
| Fourth Class | 725 | ----- |

Ref. AJK Technical & General Specifications Chapter No.11 (Brick Work) Page No.11-2

3. Uniaxial Compressive Strength of Stones (Test Table)

| Type of Stone | Weight (lbs/cft) Average | Maximum Water Absorption Percentage by weight | Minimum Compressive Strength kg./sq.cm. |
|---------------------------|--------------------------|---|---|
| Granite | 165 | 0.5 | 1000 |
| Basalt | 225 | 0.5 | 400 |
| Lime Stone (Slab & Tiles) | 160 | 0.15 | 200 |
| Sand Stone (Slab & Tiles) | 140 | 2.5 | 300 |
| Marble | 170 | 0.4 | 500 |
| Quartzite | 225 | 0.4 | 800 |
| Laterite (Block) | | 12 | 35 |

Ref. AJK Technical & General Specifications Chapter No.12 (Stone Masonry) Page No.12-1



Properties of Steel

A. Dimension Properties:-

| Bar Designation | Weight (K.G/Foot) | Diameter | Tolerance on Mass |
|-----------------|-------------------|----------|-------------------|
| 3 | 0.170 | 0.375 | ±12 |
| 4 | 0.303 | 0.500 | |
| 5 | 0.477 | 0.625 | |
| 6 | 0.680 | 0.750 | ±9 |
| 7 | 0.930 | 0.875 | |
| 8 | 1.213 | 1.000 | ±6.5 |
| 9 | 1.530 | 1.128 | ±6.5 |
| 10 | 1.960 | 1.270 | ±6.5 |
| 11 | 2.415 | 1.410 | ±4.5 |
| 14 | 3.477 | 1.693 | ±4.5 |
| 18 | 6.182 | 2.257 | ±4.5 |

B. Physical Properties (ASTM A-615/ A 615M)

| Grade | Yield | | Ultimate Tensile Strength | | Elongation Min. %age |
|-------|-------|--------|---------------------------|----------|----------------------|
| | MPa | Psi | MPa | Psi | |
| 40 | 280 | 40,000 | 420 | 60,000 | 12 |
| 60 | 420 | 60,000 | 620 | 90,000 | 9 |
| 75 | 520 | 74,500 | 700 | 1,00,000 | 6 |

C. Chemical Properties

| Grade | Min | Chemical Composition % age | | | | | |
|-----------|-------|----------------------------|-----|-----|-----------|------|---------|
| | | Carbon | Si | | Potassium | | Sulphur |
| | | | I | II | I | II | |
| Fe Mn 74C | 70-77 | 7.0 | 2.0 | 3.0 | 0.25 | 0.38 | 0.03 |
| Fe Mn 68C | 65-72 | 7.0 | 2.5 | 4.5 | 0.25 | 0.40 | 0.03 |



Conversion Table of Lift to Lead

In the case of earthwork measurement where extra lead is to be paid for lift the method will be as follows:
The lift will be measured from the centre of gravity of the excavated earth to that of placed earth. This will constitute the mean lift for the section.

When earth has to be carried over a spoil bank and dumped beyond it the mean lift would be the difference in level between the centre of gravity of the excavated earth and the top of the spoil bank omitting the dowel.

The equivalent leads for various means lifts are given below:

| Lift in Meters | Conversion Factors | Equivalent Horizontal lead in Meters |
|----------------|-----------------------|--------------------------------------|
| 0.5 | 8 | 4 |
| 1.0 | | 8 |
| 1.5 | 10 | 15 |
| 2.0 | | 20 |
| 2.5 | | 25 |
| 3.0 | | 36 |
| 3.5 | 3.28x Lift in Meter+2 | 47 |
| 4.0 | | 60 |
| 4.5 | | 75 |
| 5.0 | | 92 |
| 5.5 | | 110 |
| 6.0 | | 130 |
| 6.5 | | 152 |
| 7.0 | | 175 |
| 7.5 | | 200 |
| 8.0 | | 27 |
| 8.5 | 230 | |
| 9.0 | 243 | |
| 9.5 | 257 | |
| 10.0 | 270 | |

Note:

These conservation factors also incorporate allowance for extra lead due to cross lead with a view to ensuring a uniform system. The equivalent lead will be added to the horizontal lead to get the total lead to be paid. The exact site or R.D.s between which extra lead is to be given must be recorded in the first column of detailed measurement in the Measurement Book.

REF. Rates Directorate Coordination and Monitoring Division
 (Water) WAPDA House Lahore,
 Section-II Earthwork Excavation and Embankment Page 2-8 WCSR

SWG to Millimeter & Inches Conversion Chart

| Sr.No. | SWG | mm | Inches |
|--------|--------|-------|--------|
| 1. | 8 SWG | 4.064 | 0.160 |
| 2. | 10 SWG | 3.251 | 0.128 |
| 3. | 12 SWG | 2.642 | 0.104 |
| 4. | 14 SWG | 2.032 | 0.080 |
| 5. | 16 SWG | 1.626 | 0.064 |
| 6. | 18 SWG | 1.219 | 0.048 |
| 7. | 20 SWG | 0.914 | 0.036 |
| 8. | 22 SWG | 0.711 | 0.028 |
| 9. | 24 SWG | 0.559 | 0.022 |
| 10. | 26 SWG | 0.457 | 0.018 |
| 11. | 28 SWG | 0.376 | 0.015 |
| 12. | 30 SWG | 0.315 | 0.012 |



Table 4.1
Criteria Used for Evaluating the Material Sources

| PHYSICAL ENGINEERING PARAMETERS | ROAD AGGREGATE | | | | | | | | | | | | FINE AGGREGATES | | | | | | | | |
|--|--------------------------------|----------------|--------------------------|----------------------|----------------|--------------------------|-----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|-------------------|------------------|------------------|---------------------|----------------|--------------|--------------------|-------------------|--|
| | CONCRETE COARSE AGGREGATES | | | ROAD AGGREGATE | | | | | | | | | FINE AGGREGATES | | | | | | | | |
| | ASTM C-33 SPECIFICATION LIMITS | | | Heavy Traffic Roadst | | | Medium Traffic Roadst | | | Light Traffic Roadst | | | AASHTO | | TRL | | ASTM LIMITS | | BS | | |
| | Tentative Limits | | | Heavy Traffic Roadst | | | Medium Traffic Roadst | | | Light Traffic Roadst | | | AASHTO | | TRL | | ASTM LIMITS | | BS | | |
| | All Unbound | Wearing Course | Bituminous Base/Sub-base | All Unbound | Wearing Course | Bituminous Base/Sub-base | All Unbound | Wearing Course | Bituminous Base/Sub-base | All Unbound | Wearing Course | Bituminous Base/Sub-base | All type of roads | Bituminous Mixes | Unbound Pavement | Concrete and Mortar | Masonry Mortar | Floor Screed | External Rendering | Gypsum Plastering | |
| Specific Gravity (not less than) | 2.5 | | | | | | | | | | | | | | | | | | | | |
| Water Absorption (not more than, %) | 1 | | | | | | | | | | | | | | | | | | | | |
| Sodium Sulfate Soundness (max. %) | 12 | | | | | | | | | | | | | 12 | | | | | | | |
| Los Angeles Abrasion Value (max. %) | 50 | 25 | 25 | 35 | 30 | 30 | 35 | 30 | 35 | 30 | 35 | 35 | | 30 | 35 | | | | | | |
| Materials Passing (No.200 sieve) (% by wt.) | 3 | | | | | | | | | | | | | | | | | | | | |
| Shale (% by wt.) | 1 | | | | | | | | | | | | | | | 3 | | | | | |
| Clay Lumps and Friable Particles (% by wt.) | 2 | | | | | | | | | | | | | | | 3 | | | | | |
| Other Deleterious Substances (% by wt.) | 1 | | | | | | | | | | | | | | | | | | | | |
| Impact Value (max.) | | 23 | 23 | 30 | 27 | 30 | 30 | 27 | 30 | 30 | 30 | 30 | | 25 | | | | | | | |
| Crushing Value (max.) | | 23 | 23 | 30 | 27 | 30 | 30 | 27 | 30 | 30 | 30 | 30 | | 25 | | | | | | | |
| 10% Fine Value kN (min.) Dry | | 130 | 130 | 100 | 115 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 150 | | 110 | | | | | | |
| 10% Fine Value kN (min.) Soaked | | 80 | 85 | 50 | 65 | 65 | 50 | 65 | 65 | 50 | 50 | 50 | | | | | | | | | |
| Flakiness (max.) | | | | | | | | | | | | | | 45 | 35 | | | | | | |
| Sand Grading | | | | | | | | | | | | | | | | | | | | | |
| Fineness Modulus | | | | | | | | | | | | | | | | | | | | | |
| Mortar Bar Expansion % (max.) at 14 days (ASTM 1260) | 0.1 | | | | | | | | | | | | | | | | | | | | |
| Bitumen Adhesion (Not less than) | | | | | | | | | | | | | 95 | 75 | | | | | | | |



AZAD GOVERNMENT OF THE STATE OF JAMMU AND KASHMIR
PLANNING & DEVELOPMENT DEPARTMENT MUZAFFARABAD.
(Rate Analysis Section - M & E Wing)

No. P&DD/CSR & RA/ 24 - 68 /2012 Dated: January 23, 2012

- 1 The Secretary Works/ Communication
- 2 The Secretary Physical Planning & Housing
- 3 The Secretary Agriculture/ Animal Husbandry
- 4 The Secretary Tourism/ Information/ Wildlife/ Fisheries
- 5 The Secretary Local Government & Rural Development
- 6 The Secretary Electricity/ Hydro Electric Board/ Private Power Cell
- 7 The Secretary Education (Colleges)
- 8 The Secretary Education (Schools)
- 9 The Secretary Sports/ Culture/ Youth/ Transport
- 10 The Secretary SIERRA

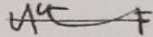
Govt. of AJ&K, Muzaffarabad

Subject: Proposed change in Specifications of AJK-ICSR-2009 (Serial No. 3-12 & 3-13) for the item "Earth work" in Excavation of soil, hard strata and hard rocks.

Sir,

I am directed to refer the circular/letter No. /P&DD/Admin/7778-7830/209 dated September 15, 2009 and to submit that the earth work specifications for excavation in soil, hard strata and hard rocks have been completed, which are now uploaded on P&DD website www.pndajk.gov.pk. The said specifications can be easily downloaded for calculation of earth work item involved in all development projects.

For further query/ information and valuable comments (within two weeks) please feel free to contact this office.


(Engr. Altaf Ahmad)
Chief Rate Analysis Section.

Copy to:

1. PS to the Additional Chief Secretary (Dev.)
2. PS to the Secretary Planning & Development Department
3. PA to the Director General (M&E), P&DD
4. The Chief Engineer PWD (Buildings/ PHE), South
5. The Chief Engineer PWD (Buildings/ PHE), North
6. The Chief Engineer PWD (Highways), South
7. The Chief Engineer PWD (Highways), North
8. The Chief Engineer Sudai Kawaii Development Fund
9. The Director General CDO
10. The Director General, water resources/ Irrigation, Agri. Deptt.

Govt. of AJ&K, Muzaffarabad

Continue Page No. 2



Excavation & Grading of Rocks.

A. EXCAVATION METHODS FOR ROCK

Methods relates to rock strength and fracture density.

- **Direct excavation:** possible in fractured rock and in all soils; using face shovel, backhoe, clam shell grab or dragline.
- **Ripping:** needed to break up slightly stronger rock, using tractor-mounted ripper, or breaking with boom-mounted hydraulic pick (pecker).
- **Blasting:** generally required in stronger, less fractured rock. Rock is loosened in the ground by undercharged blasting in some quarries; on urban sites can be broken by hand-held pneumatic drill or by pecker. Massive rock of moderate or high strength needs to be fractured normally by blasting; where blasting is unacceptable, breaking by pecker or hydraulic breaker is very slow. "Annex - A Fig. 2" shows the excavation type and ranges with respect to UCS and Fracture spacing.

B. CUT SLOPES IN ROCK

Sound rock can be cut to vertical faces; normally raked back by 10° and benched at 10 m intervals to improve safety.

Inclined fractures are main hazard, notably dipping $30-70^\circ$ Dips $> 50^\circ$ normally required cutting face back to clean bedding or fracture.

Shale beds may weather and undercut slopes in strong sandstone or limestone.

Hillside excavations may undercut unstable weathered rock, old landslides or soliflucted head.

Annex - "A" Fig. 1 shows the ranges of stable cutting slopes in rocks and soil.

C. CUT SLOPES IN CLAY

Drainage changes stability over time where face is cut into clay with initial water table near the surface.

- Excavation permits stress relief, pore water pressure (pwp) decreases.
- Pwp rises to regain equilibrium (drained state); strength and stability therefore decrease.
- Slope ultimately drains (or is artificially drained) to new lower water table; reduced pwp then increases stability.
- Premature failure occurs where stability is due to temporary pore water suction; failure may be in minutes or hours so faces are battered back for longer safety. Clay, Unweathered, may cut to 65° slopes to 8 m high where small slips can be tolerated. Stiff glacial till may stand close to vertical for some months at less than critical height, so retaining walls can be built in front. Weep horizons on sand layers cause instability. Lateral stress relief in slopes cut in over-consolidated clay may cause outward movement. Settlement adjacent to stable cut slope may be 1-2% of excavation depth.

| Material | Cohesion | Critical height, H | |
|------------|----------|--------------------|----------|
| | | Un-fissured | Fissured |
| Soft Clay | 25 KPa | 5 m | 3 m |
| Firm Clay | 50 KPa | 10 m | 6 m |
| Stiff tile | 12 KPa | 24 m | 15 m |

Values for typical fissure depth = $z = 1.5 c/\gamma$

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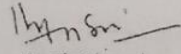


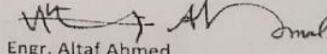
| Excavation and strength properties of rocks | | | | | |
|---|------------------------------|---|------------------------------|---|-------------------------------|
| Grade | Material /rock type and name | UCS (unconfined compressive strength) MPa | Density dry t/m ³ | Field Properties of Rocks | Work type |
| I | Coal | 2-100 | 1.4 | Crumble under blows break with hammer and hand. | Pick work/ Jumper work |
| | Gypsum | 20-30 | 2.2 | Dent by finger nail white in color | Jumper work |
| | Salt | | | show cubical cleavage ductile | Jumper work |
| | Clay (Cretaceous) | 5-20 | 2.1 | deformation in stress | |
| II | Mudstone (Carboniferous) | 1-4 | 1.8 | Mold by fingers, break by hammer if compacted | Pick work |
| | Shale (Carboniferous) | 10-50 | 2.3 | Break by hammer crumble | Jumper work/ Pick work |
| | Chalk (Cretaceous) | 05-30 | 2.3 | under pick blows. Break by hand. | Pick work/ Jumper work |
| | Limestone (Carboniferous) | 05-30 | 1.8 | moderately strong rock, | Jumper work/ Blasting work |
| III | Dolomite | 50-150 | 2.6 | break by hammer lime stone. | Blasting work |
| | Gneiss | 50-200 | 2.7 | Strong rock break by hammer | Jumper work/ Blasting work |
| | Marble | 50-200 | 2.6 | moderately strong rock, | |
| | Schist | 20-100 | 2.7 | break by hammer | |
| IV | Slate | 20-250 | 2.7 | Ripping needs to break. | Blasting work |
| | Sandstone (Graywacke) | 100-200 | 2.6 | Blasting generally required to | Blasting work/ Chiseling |
| | Conglomerate | variable | variable | Ripping and blasting required | Jumper work/ Blasting work |
| V | weathered sandstone | 5-40 | 1.9 | if cemented conglomerate. | Blasting work |
| | Granite | 50-350 | 2.7 | Blasting, Chisling and ripping | Blasting work/ Chiseling |
| | Basalt | 100-350 | 2.9 | required to break, very strong | Blasting work |
| VI | Quartzite | 100-350 | 2.7 | to strong rocks. Mostly rocks are igneous and metamorphic | Blasting work |

SOURCE Foundations of Engineering Geological 2/ed. By TONY WALTAAM, Civil Engineering Department, Nottingham Trent University, UK.

NOTES:

1. Selection of P/W, J/W, B/W and C/W depends upon the cementing material and matrix of the rock specially in the sedimentary rock. Fracture in stronger rocks occurs along the fault zone. In this case hard rock may be excavated by J/W, rather than B/W, see Fig. 2. Annex - A
2. Accurate confirmation is the job of Geologist/ Material Engineer after inspection of the site.


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"Annex - A"

Stable Cutting Slopes in Rocks

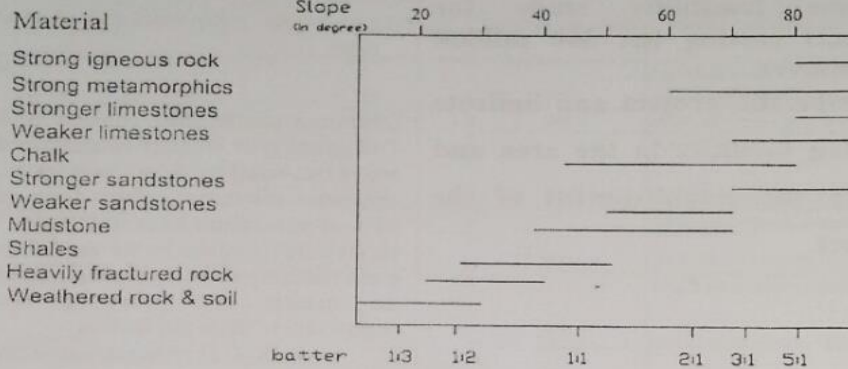


Fig. 1: Parameters for stable cutting slopes in rocks & soil.

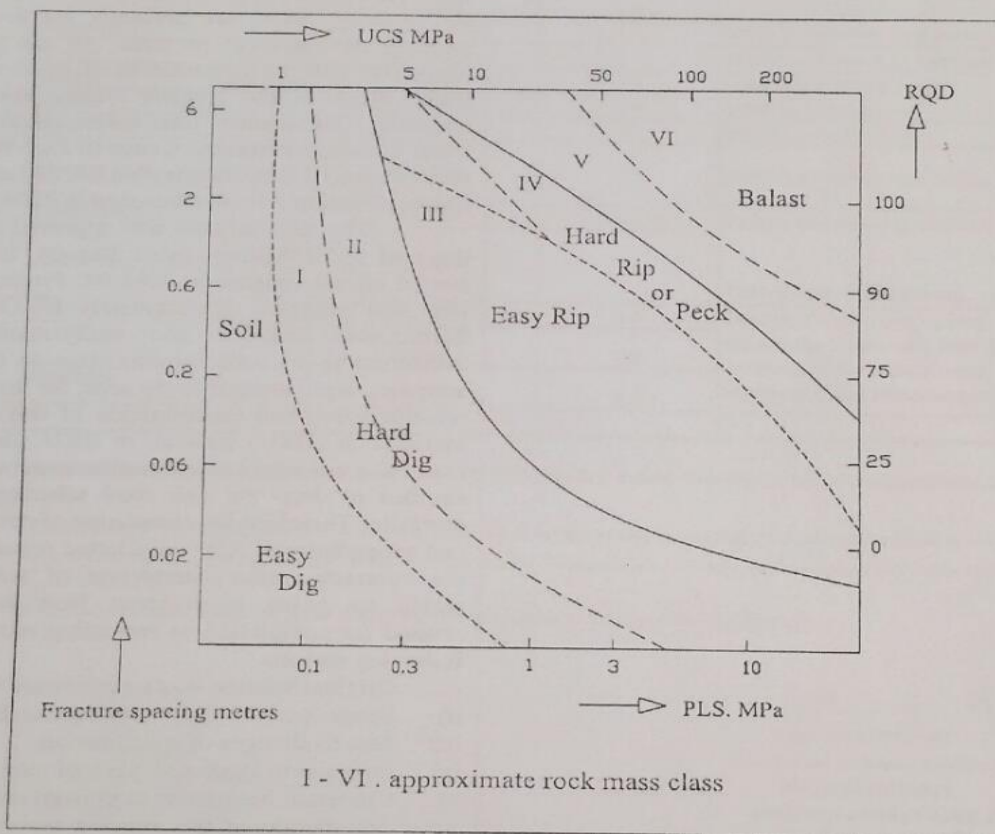


Fig. 2: Diagram shows ranges of different material with respect to UCS fracture spacing.

SOURCE
 Foundations of Engineering Geological 2/ed. By TONY WALTAAM, Civil Engineering Department, Natingham Trent University, UK.

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SECTION – 0

Recommended Construction Material Sources located in ten Districts & Around AJ&K

| S.No | Name of Source | Rock Name | Location of Deposit | Estimated Reserve | Remarks | District |
|------|---------------------------------|----------------|-----------------------------|------------------------------|---|-----------------------------|
| 1. | Khurshidabad Limestone | limestone | Khurshidabad Village | 15.0 million M ³ | All type of concrete work | Kahuta |
| 2. | Khurshidabad Dolorite | Dolorite | Khurshidabad Village | 4.0 million M ³ | | |
| 3. | Palangi Nullah Gravel | Gravel | Palangi | L/S | Only for marginal use concrete (2000psi strength) with OPC | Bagh |
| 4. | Tangari Battar River Gravel | | Battar | Under prospection | | |
| 5. | Malal Bagla sandstone | Sandstone | Malal Bagla | 6.0 million M ³ | | |
| 6. | Dana Sandstone | | Dana | 8.0 million M ³ | | |
| 7. | Chamankot sandstone | | Chaman Kot | 12.0 million M ³ | | |
| 8. | Bess Bagla sandstone | | Bess Bagla | 12.0 million M ³ | | |
| 9. | Dhulli Sandstone | | Sandstone | 6.0 million M ³ | | |
| 10. | Shujaabad sandstone | | Shujaabad | 10.0 million M ³ | | |
| 11. | Patraita Sandstone | | Patriata | 3.0 million M ³ | | |
| 12. | Lassdanna Sandstone | | Lassdanna | 20.0 million M ³ | | |
| 13. | Yadgar limestone | Limestone | Yadgar | 25.50 million M ³ | All type of concrete work With Project Specific studies | |
| 14. | | | Batmang | | | |
| 15. | | | Hill Seri Dara | Under prospection | | |
| 16. | | | Zahid Chowk Pirchinasi road | Under prospection | | |
| 17. | Noseri Dolorite | Dolorite | Noseri Chelhana | 7.0 million M ³ | Only for marginal use concrete (upto 2000psi strength) with OPC | Muzaffarabad/ Hatian |
| 18. | Lamnian Dolerite | Dolorite | Lamnian | | | |
| 19. | Eran Sandstone | Sandstone | Near Kohala | Under prospection | | |
| 20. | Chattar Kalas sandstone gravels | Gravel | Agar Naullah Chattar Kalas | Under prospection | | |
| 21. | Komikot sandstone | Sandstone | Komikot | Under prospection | | |
| 22. | Niazpura Dolomitic Limestone | Limestone | Niazpura | 5.0 M ³ | All type of concrete work With Project Specific studies | |
| 23. | Lamnian Meta Basalt | Igneous Bodies | Lamnian | 7.0 M ³ | All type of Concrete work Except High Strength Concrete (upto 2000psi And Asphalt Layer | |



| | | | | | | |
|-----|--------------------------------|----------------|---|------------------------------|--|------------------------------|
| 24. | Goi Dandli | Dolomite | Kotli Goi Dandli road | Abundant deposit | All type of concrete work with project specific study except Pre-stress concrete | Kotli |
| 25. | Kamroti Dolomite | | Kotli Nakial road | 30.0 million M ³ | | |
| 26. | Poonch river gravel | Gravel | Distributed along Rive terraces | L/S | Only for marginal use concrete (upto 2000 psi strength) with OPC | |
| 27. | Poonch terraces | | --do-- | L/S | | |
| 28. | Khorban Nullah gravel | | --do-- | L/S | | |
| 29. | Khari Sharief | Gravel | Khari Sharif | Under prospection | Only for marginal use concrete (upto 2000 psi strength) with OPC | Mirpur |
| 30. | Mangla jatli road | | Mangla | Under prospection | | |
| 31. | Jeri Kas | | Jeri Kas | Under prospection | | |
| 32. | Skater | | Skater Naullah | Under prospection | | |
| 33. | Kanali Kas | | Kanali Kas | Under prospection | | |
| 34. | Kot Sarsawa | | Kot Sarsawa | Under prospection | | |
| 35. | Hari Kas | | Hari Kas | Under prospection | | |
| 36. | Panjari Nullah | Gravel | Panjari | Under prospection | Only for marginal use concrete (upto 2000 psi strength) with OPC | Bhimber |
| 37. | Dandhar Nullah | | Dandar | Under prospection | | |
| 38. | Chaprian | | Chaprian | Under prospection | | |
| 39. | Bakot Nathia-Gali | limestone | Bakot | 30.0 million M ³ | All type of concrete work With Project Specific studies | Abbotatabad |
| 40. | Bakot Kas | | | | | |
| 41. | Noseri Dolorite | Dolorite | Neelum Valley Road along Noseri - Marble | 1.5 million M ³ | marginal use with OPC | Neelum / Muzaffarabad |
| 42. | Noseri volcanics | Metabasalt | | 9.03 million M ³ | | |
| 43. | Islampur-Jura Granite | Granite | Sandoq-Islampura | Under prospection | Stone Masonry | |
| 44. | Neelum Granite Keran | Granite | Danjar - Keran | Under prospection | | |
| 45. | Dudhnial Arenaceous Carbonates | Metacarbonates | MT Bazar Dudhnial | 1.656 million M ³ | Bitumen, plain Concrete but not for pre-stress concrete | |
| 46. | Malik Seri Dolorite Kharigam | Dolorite | Between Khawaja Seri and Kharigam along Neelum Valley | 13.5 million M ³ | | |
| 47. | Kel Dolorite dykes | Dolorite | Kelser - Kel Road | Under prospection | All type of concrete work With Project Specific studies | |
| 48. | Changan Meta Dolorite | Dolorite | Changan - Dudhnial Road | 1.776 million M ³ | | |



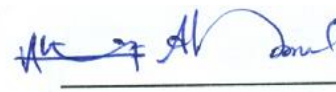
| | | | | | | |
|-----|---|-----------------------------------|------------------------------------|-------------------------------------|--|---------------|
| 49. | Dhokran Gneiss Kel | Granitic Gneiss | Kel-Dhokran Road | Under prospection | Stone Masonry | |
| 50. | Arja - Dalkot Section | Sandstone | Near Arja | Under prospection | Only for marginal use concrete (upto 2000psi strength) with OPC | Poonch |
| 51. | Gio Nullah Rawalakot | | | Under prospection | | |
| 52. | Khaigalla-Hajira outcrop | | Near Hajira | Under prospection | | |
| 53. | Hajira Abbaspur road out crop | | Hijira Abbaspur road out crop | Under prospection | | |
| 54. | Hajira Nar outcrop | | | Under prospection | | |
| 55. | Ban Ni Bhek Toli Pir Road | | Along Toli Pir road | Under prospection | | |
| 56. | Jhandala Sandstone | | Arja Tain Road Jhandal Locality | Under prospection | | |
| 57. | Pappay Nar | | Sandstone | Along Tararkhal to Palandri Road | | |
| 58. | Tarar Khal | | | Under prospection | | |
| 59. | Nar near Tarar khal Bazar along Hajira road | Along Tararkhal to Hajira Road | | Under prospection | | |
| 60. | Azad Pattan (Madan) | Azad Pattan - Kalri road | | Under prospection | | |


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 Geologist/Material Engineer


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SECTION – 1

CARRIAGE

1. CARRIAGE OF MATERIALS INCLUDE LOADING, UNLOADING AND STACKING AT SITE.
2. THE RATES ARE APPLICABLE TO CARRIAGE OF MATERIAL ON PACCA ROAD ONLY.
FOR KACHA ROADS AN ALLOWANCE OF 25% EXTRA SHALL BE ALLOWED FOR 2ND SUBSEQUENT DISTANCE COVERED IN KM.(MILES) RATES.
RATES UP TO 1ST MILE (1ST KM.) IS HOWEVER COMMON TO BOTH KACH AND PACCA ROADS.
3. FOR HILLY AREAS 25% ABOVE THE RATES IN THE PLAIN AREAS BE ALLOWED FOR TOTAL DISTANCE COVERED IN KM.(MILES).
4. THE TERM “KM.” WHENEVER USED IS TO MEAN STATUE KILOMETER.
5. THE RATES FOR CARRIAGE BY BOAT OR STREAMER SHALL BE THE SAME AS BY ANY OTHER MECHANICAL MEANS ON LAND.



SECTION – 2

LOADING, UN-LOADING AND STACKING

1. THE RATE FOR LOADING INTO AND UN-LOADING FROM TROLLIES & BOATS WILL BE THE SAME AS FOR MOBILE TRUCKS.



SECTION – 3

EARTH WORK

1. THE SOIL CLASSIFICATION (HARD, VERY HARD, WET AND SLUSH) WILL BE APPROVED BY THE SUPERINTENDING ENGINEER.
2. IN CASE OF EMBANKMENT FILL, THE MODE OF MEASUREMENT WILL BE INDICATED IN THE TENDER.
3. IN CASE BANK MEASUREMENT IS NECESSARY, FOLLOWING ALLOWANCES SHOULD BE PROVIDED FOR:
 - a) DEDUCTION FOR SHRINKAGE FROM THE BANK MEASUREMENT WHEN THE EARTHWORK IS DONE BY MANUAL LABOUR = 10%.
 - b) DEDUCTION FOR SETTLEMENT FROM THE BANK MEASUREMENTS WHEN THE EARTH-WORK IS DONE BY DIFFERENT TYPE OF MACHINERY WILL BE AS UNDER:
 - i. TRACTOR 6%
 - ii. BULLDOZERS 4%
 - iii. SCRAPERS 3%Where the above equipment is deployed in fleet the minimum factor specified will be applied.
4. NO DEDUCTION WILL BE MADE FOR RAMMED/ COMPACTED FILL.



SECTION-4

DISMANTLING (DEMOLISHING)

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL AND BY PRODUCTS.
2. THE RATES FOR DISMANTLING ROOFS OR UPPER STORY FLOOR INCLUDE THE DISMANTLING OF ALL MATEHIALS, EXCEPT ROOF SUPPORTS SUCH AS BEAM AND TRUSSES.
3. ADD EXTRA 20% AND 25% FOR 2ND & 3RD AND 30% FOR 4TH & SUBSEQUENT FLOORS RESPECTIVELY.



SECTION-5

PLAIN AND REINFORCED CONCRETE

1. RATES FOR ITEM 5-2 TO 5-4 ARE FOR UNFORMED CONCRETE
2. RATES FOR OTHER ITEMS ARE FOR MACHINE MIXED FORMED CONCRETE IN CASE EXIGENCY OF THE WORK SO WARRANTS, HAND MIXING MAY BE DONE WITH ADDITION OF 10% EXTRA CEMENT AT NO EXTRA COST.
3. THE CEMENT CONCRETE MAY EITHER BE PLAIN OR REINFORCED AND SHALL BE PAYABLE AT THE RATES SPECIFIED AGAINST RESPECTIVE ITEMS. THE STEEL REINFORCEMENT SHALL HOWEVER BE PAYABLE SEPARATELY UNDER APPLICABLE ITEMS 5-44 OF THE SCHEDULE.
4. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSEK MATERIAL, BY PRODUCTS AND SITE CLEARANCE.



SECTION-6

PRESTRESSED CONCRETE

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRAI, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. THE PRESTRESSED CONCRETE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH SPECIFICATIONS LAID DOWN BY FREYSSINET OR SIMILAR SYSTEM.



SECTION-7

PILE FOUNDATION CONCRETE

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. RATES FOR DRILLING FOR DIFFERENT SIZES OF PILE SHALL BE THE SAME AS FOR TUBEWELL GIVEN IN SECTION – 27.



SECTION-8

DAMP PROOF COURSE AND WATER PROOFING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL BY PRODUCTS AND SITE CLEARANCE.



SECTION-9

CEMENT CONCRETE BLOCK MASONRY

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL BY PRODUCTS AND SITE CLEARANCE.
2. NO PAYMENT SHALL BE MADE FOR FORMING CAVITIES IN BLOCK AND NO DEDUCTION TO BE MADE FOR HOLLOWNESS IN BLOCKS.
3. SKIN THICKNESS OF HOLLOW BLOCKS SHALL BE 1" (25 mm) FOR BLOCK SIZE 300 x 100 x 200, 300 x 150 x 200, 225 x 100 x 150 AND 300 x 100 x 200.
4. SKIN THICKNESS OF HOLLOW BLOCKS SHALL BE 1.5" (38 mm) FOR BLOCK SIZE 300 x 200 x 200, 300 x 300 x 200, 225 x 200 x 150 AND 225 x 300 x 150.
5. CONCRETE BLOCK SHOULD MEET THE REQUIREMENT OF 2000 PSI CRUSHING STRENGTH.



SECTION-10

Bridges

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY- PRODUCTS AND SITE CLEARANCE.
2. IF CONCRETE MIXER OR HIGH FREQUENCY VIBRATOR, ETC. SUPPLIED BY THE GOVERNMENT, ALL CHARGES INCLUDING DEPRECIATING WILL BE RECOVERED FROM THE CONTRACTOR.
3. SUBSEQUENT CARRIAGE OF CRUSH STONE AGGREGATE WILL BE PAID ACCORDING TO THE WHOLE DISTANCE TO THE SITE OF WORK, SHALL BE CALCULATED ON THE BASIS OF RATE OF THE ACTUAL MEAN OF TRANSPORT USED IN CARRIAGE. IT SHALL BE PAYABLE FROM THE NEAREST APPROVED QUARRY.



SECTION-11

BRICK WORK

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. THE RATE APPLIES TO ALL SIZES OF BRICKS.
3. IN 2ND OR 3RD CLASS BRICKS ARE USED INSTEAD OF FIRST CLASS, THE DIFFERENCE IN RATE OF BRICKS IS DEDUCTED.
4. NO DEDUCTION IN MEASUREMENTS SHALL BE MADE FOR OPENING HAVING SUPERFICIAL AREA NOT EXCEEDING ONE SQUARE FOOT (0.35 SQUARE METERS).



SECTION-12

STONE MASONRY

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.



SECTION-13

ROOFING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. ADD EXTRA 5% AND 10% SECOND, THIRD, 15% FOR FOURTH AND SUBSEQUENT FLOOR RESPECTIVELY.



SECTION-14

FLOORING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.



SECTION-15

FINISHING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.



SECTION-16

WOOD WORK

1. NO EXTRA RATE IS TO BE PAID FOR SAWING.
2. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.



SECTION-17

PAINTING AND VARNISHING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. RATES INCLUDE CHARGES FOR SCAFFOLDING AND OTHER ARRANGEMENTS AT ANY HEIGHT AND IN ANY FLOOR.
3. RATES FOR PAINTING SASHES, FANLIGHT, FULLY GLAZED OR FULLY GAUGED DOORS AND WINDOWS SHALL BE 60% OF RESPECTIVE ITEMS.



SECTION-18

LINING OF CANALS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. RATES ALSO INCLUDE CURING FOR SPECIFIED PERIOD WHEREVER NECESSARY.
3. NOMINAL DIMENSIONS OF TILE OR BRICK SHALL BE TAKEN FOR THE PURPOSE OF MEASUREMENT AND PAYMENT.
4. JOINTS TREATMENT WILL BE PAID FOR RESPECTIVE ITEMS IN SECTION – 5 “CONCRETE”



SECTION-19

PROTECTION AND DIVERSION WORKS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL BY PRODUCTS AND SITE CLEARANCE.
2. THE COMPOSITE RATES OF THE ITEMS IN WHICH STONE, BOULDER, SHINGLE ETC. AND USED DO NOT CONTAIN THE CARRIAGES OF THESE MATERIALS WHICH WILL BE PAID SEPARATELY WHICHEVER MEANS OF TRANSPORT IS ADOPTED. THE SUPPLY AND CARRIAGE TO SITE OF WORK OF ALL OTHER MATERIAL, REQUIRED IN ITEM IS INCLUDED IN THE COMPOSITE RATE.
3. THE CARRIAGE OF STONE OR SPAWL WILL BE PAID ON THE BASIS OF ACTUAL STACK MEASUREMENT (WITHOUT ANY REDUCTION FACTOR) OF THE STONE, BOULDERS, SHINGLE OR SPAWL CARRIED.
4. THE STONE, BOULDERS OR SPAWL IS WHERE ISSUED FORM STOCK AND THE CONTRACTOR IS PAID FOR CARRIAGE AND /OR LABOUR ONLY OR WHERE SUCH STONE PRODUCT IS SUPPLIED, CARRIED OR HANDLED BY THE CONTRACTOR IN WHICH NO LAYING IS REQUIRED, THE ACTUAL STACK MEASUREMENT (WITHOUT ANY REDUCTION FACTOR) SHALL FORM THE BASIS OF PAYMENT OF SUPPLY OR CARRIAGE OF THE STONE, BOULDER OR SPAWL ETC. THE QUANTITY OF FINISHED AND COMPLETED ITEM OF WORK SHALL FORM THE BASIS OF THE LAYING.
5. IN CASE OF THE ITEMS IN WHICH THE RATES INCLUDE CARRIAGE OF STAKES, BUSHING, PILCHI, SARKANDA OR FRASH ETC. WITHIN ONE KM.
 - a) THE COST OF THE CARRIAGE WITHIN ONE KM. SHALL NOT BE DEDUCTED FROM THE CARRIAGE CHARGES TO FOLLOW THEREAFTER FROM THE POINT OF SUPPLY.
 - b) IF THE SITE OF WOK HAPPENS TO BE WITHIN ONE KM. OF THE SOURCE OF SUPPLY, THE MATERIAL WILL BE COLLECTED AND MEASURED AT SITE OF WORK AND NO EXTRA CARRIAGE WOULD BE ADMISSIBLE IN SUCH CASES.
 - c) WHERE THE SITE OF THE WORK IS SITUATED AT MORE THAN ONE KM. DISTANCE FROM THE SOURCE OF SUPPLY, THE POINT OF SUPPLY WILL BE FIXED CAREFULLY BY THE ENGINEER-IN-CHARGE IN SUCH A WAY THAT THE CARRIAGE CHARGES WOULD BE ARRIVED AT THE MOST ECONOMICALLY.EXTRA CHARGES WILL BE ADMISSIBLE FROM THE PLACE OF STARTING POINT. THE DEMARCATION OF THE PLACE OF SUPPLY SHALL BE PRE-DETERMINED BEFORE CALLING THE TENDERS.
6. IN CASE OF STONE PITCHING WORK, NO VOIDS DEDUCTION WILL BE MADE WHILE MEASURING THE FINISHED WORK.



SECTION-20

OUTLETS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. THE ITEMS OF WORK INVOLVED IN CONSTRUCTION OF OUTLETS SUCH AS EARTHWORK, CONCRETE AND BRICK WORK SHALL BE PAID FOR UNDER RESPECTIVE ITEMS OF THE RELEVANT SECTION.
3. THE MANUFACTURE, SUPPLY AND DELIVERY TO SITE OF A.P.M. AND/OR O.F. OUTLETS IRON BLOCKS SHALL BE THE RESPONSIBILITY OF THE DEPARTMENT.



SECTION-21

ROAD AND ROAD STRUCTURES

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. THE RATES INCLUDE PROVISION AND MAINTENANCE OF FIELD TEST LABOUATORY STAFF, COST OF MATERIAL FOR TESTING ETC.
3. PAYMENTS FOR ITEMS OF ROADS AND ROAD STRUCTURE SHALL BE MADE FROM THIS SECTION.
4. BITUMEN FULFILLING THE INTERNATIONAL STANDARDS LIKE :
 - (i). ASTM-D-946 and AASHTO-M-20 (Penetration)
 - (ii). ASTM-D-3381 and AASHTO-M-226 (Viscosity)
 - (iii). ASTM-D-6373 and AASHTO-M-320 (Graded Binder)
5. SHOULD BE USED AFTER BATCHWISE TESTING AT SITE, AS PER DIRECTIONS OF ENGINEER INCHARGE.



SECTION-22

SHEET PILING

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.



SECTION-23

PLUMBING, SANITARY INSTALLATIO & GAS FITTINGS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.
2. THE RATES INCLUDE CUTTING AND MAKING GOOD OF THE SURFACE OF WALLS, ROOFS, AND FLOORS ETC. WHER NECESSARY.
3. ADD 10% EXTRA FOR FIXING SPECIALS IN REPAIR WORK FOR ITEM 23-46.



SECTION-24

SURFACE DRAINAGE

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.
2. CEMENT PLASTER WHERE APPLIED SHALL BE MEASURED FOR PAYMENT SEPERATELY.



SECTION-25

SEWERAGE

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.
2. EXCAVATION AND BACKFILLING FOR FOUNDATION AND TRENCHES SHALL BE PAID FOR SEPARATELY.
3. DEPTH OF CHAMBER SHALL BE MEASURED VERTICALLY FROM TOP OF COST IRON COVER TO TOP SURFACE OF FLOORING.
4. IF SPECIFICATIONS OF MANHOLES AS MENTIONED IN ITEM NO. 25-4 TO 25-8 ARE NOT MET THEN PAYMENT SHALL BE MADE FOR DIFFERENT ITEMS FROM OTHER SECTIONS OF THIS SCHEDULE.



SECTION-26

SINKING OF WELLS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.
2. WELL CURBS TO BE LAID AT SPRING LEVEL OR AS DEEP AS POSSIBLE.
3. THE OUTER DIMENSIONS OF THE CURB SHALL FORM BASIS OF PAYMENT.



SECTION-27

TUBEWELL AND WATER SUPPLY

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.
2. THE CAST IRON PIPES AND FITTINGS SHALL COMPLY WITH B.S. 78 FOR SPIGOT AND SOCKET, CAST IRON VERTICALS PIPES AND B.S. 2035 FOR FLANGED PIPES.
3. P.V.C. PIPES AND FITTINGS SHALL COMPLY WITH B.S. 3505.
4. ASBESTOS CEMENT PIPES AND FITTINGS SHALL COMPLY WITH B.S. 486
5. GALVANIZED IRON PIPES AND FITTINGS SHALL COMPLY WITH B.S. 1387-1967



SECTION-28

IRON STEEL & ALUMINIUM WORK

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.



SECTION-29

HORTICULTURE

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS.



SECTION-30

ELECTRICAL INSTALLATIONS

1. RATES FOR ALL FINISHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSED MATERIAL, BY PRODUCTS AND SITE CLEARANCE.



BASIC DATA

THE BASIC RATES OF CONSTRUCTION MATERIALS, LABOUR AND HIRE CHARGES OF PLANT & EQUIPMENT HAVE BEEN LINKED WITH FILES IN DETAILED ANALYSIS (Volume-1). ANY REVISION INITIATED IN THE “BASIC DATA” FILE CORRESPONDINGLY REVISE THE RELEVANT ITEM RATE. THESE RATES HAVE BEEN OBTAINED AFTER EXTENSIVE MARKET SURVEY.