AZAD GOVERNMENT OF

THE STATE OF JAMMU AND KASHMIR

COMPOSITE SCHEDULE OF RATES

Updated for 1st Semi-annual (July - Dec) 2017-18

DISTRICT BHIMBER

PLANNING AND DEVELOPMENT DEPARTMENT, KASHMIR PLAN HOUSE.

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

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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 submited 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.

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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 confirm 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, Stone 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.

ABBRIVATIONS 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
LENGTH		
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
MASS WEIGHT		
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
MASS WEIGHT		
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/m$^{2)}$		
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 MOMEMT 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	25000	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	1/6th of its weight (average weight of ten bricks shall not less than 5.5lb (2.5kg)
Second Class	1500	1/4th 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		Potashium		Sulpher
			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	3.28x Lift in Meter+2	36
3.5		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	216
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	CONCRETE COARSE AGGREGATES	ROAD AGGREGATE												FINE AGGREGATES				
		†Tentative Limits									AASHTO	TRL		ASTM LIMITS	BS			
		Heavy Traffic Roads†			Medium Traffic Roads†			Light Traffic Roads†							Mortar and Plaster			
	ASTM C-33 SPECIFICATION LIMITS	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	Fine Aggregate for 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	35	30	35		30	35					
Materials Passing (No.200 sieve) (% by wt.)	3													3				
Shale (% by wt.)	1																	
Clay Lumps and Friable Particles (% by wt.)	2													3				
Other Deleterious Substances (% by wt.)	1																	
Impact Value (max.)		23	23	30	27	27	30	30	27	30		25						
Crushing Value (max.)		23	23	30	27	30	30	30	27	30		25						
10% Fine Value kN (min.) Dry		130	130	100	115	100	100	100	115	100	150		110					
10% Fine Value kN (min.) Soaked		80	65	50	65	65	50	50	65	50								
Flakiness (max.)												45	35					
Sand Grading														ASTM C-33	BS-1200	BS-112	BS-1199	BS-1198
Fineness Modulus														ASTM C-33				
Mortar Bar Expansion % (max.) at 14 days (ASTM 1260)	0.1													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 SERRA

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 Kawait 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

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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 lossened 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° Dips > 50° 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.

A. Excavation permits stress relief, pore water pressure (pwp) decreases.
B. Pwp rises to regain equilibrium (drained state); strength and stability therefore decrease.
C. Slope ultimately drains (or is artificially drained) to new lower water table; reduced pwp then increases stability.
D. 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/γ

Awais Ahmed
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Chief Rate Analysis Section
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Excavation and strength properties of rocks

Grade	Material /rock type and name	UCS (unconfined compressive strength) MPa	Density dry t/m3	Field Properties of Rocks	Work type
I	Coal	2-100	1.4	Crumble under blolws break with hammer and hand.	Pick work/ Jumper work
	Gypsum	20-30	2.2	Dent by finger nail white in col	Jumper work
	Salt	5-20	2.1	show cubical cleavage ductile deformation in stress	Jumper work
	Clay (Cretoceous)	1-4	1.8	Mold by fingers, break by hammer if compacted	Pick work
II	Musdtone (Carboniferous)	10-50	2.3	Break by hammer crumble under pick blows. Break by hand.	Jumper work/ Pick work
	Shale (Carboniferous)	05-30	2.3		Pick work/ Jumper work
	Chalk (Cretoceous)	05-30	1.8		Jumper work
III	Limestone (Carboniferous)	50-150	2.6	moderately strong rock,	Jumper work/
	Dolomite	50-150	2.5	break by hammer lime stone.	Blasting work
IV	Gneiss	50-200	2.7	Strong rock break by hammer	Jumper work/
	Marble	60-200	2.6	moderately strong rock, break by hammer	
	Schist	20-100	2.7		
	Slate	20-250	2.7	Ripping needs to break.	Blasting work
V	Sandstone (Graywacke)	100-200	2.6	Blasting generally required to	Blasting work/ Chiseling
	Conglomerate	variable	variable	Ripping and blasting required	Jumper work/
	weathered sandstone	5-40	1.9	if cemented conglomerate.	Blasting work
VI	Granite	50-350	2.7	Blasting, Chisling and ripping required to break, very strong to strong rocks. Mostly rocks are igneous and metamorphic	Blasting work/ Chiseling
	Basalt	100-350	2.9		
	Quartzite	100-350	2.7		Blasting work

SOURCE Foundations of Engineering Geological 2/ed. By TONY WALTAAM, Civil Engineering Department, Nattingham 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 sedimentory rock. Fracture in stronger rocks occurs along the fault zone. In this case hard rock may be excavted by J/W, rather than B/W, see Fig. 2. Annex - A
2. Accurate confirmation is the job of Geologist/ Material Engineer after inspectiong of the site.

Awais Ahmed
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Rate Analysis Section
P&D Department AJ&K

Engr. Altaf Ahmed
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23/01/2012

"Annex - A"

Stable Cutting Slopes in Rocks

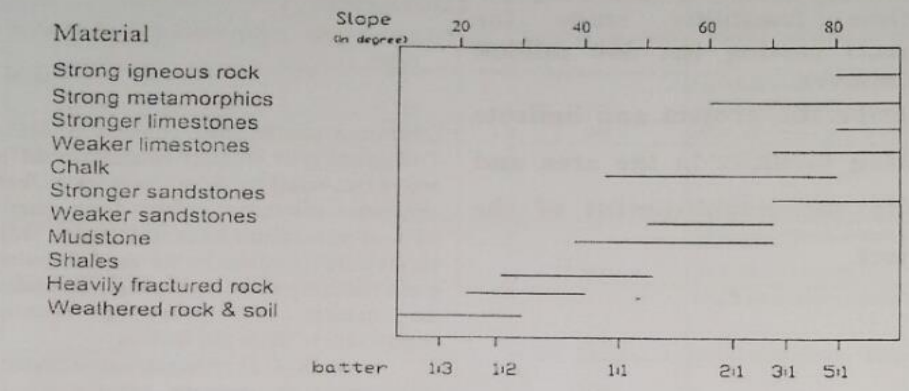

Fig. 1: Parameters for stable cutting slopes in rocks & soil.

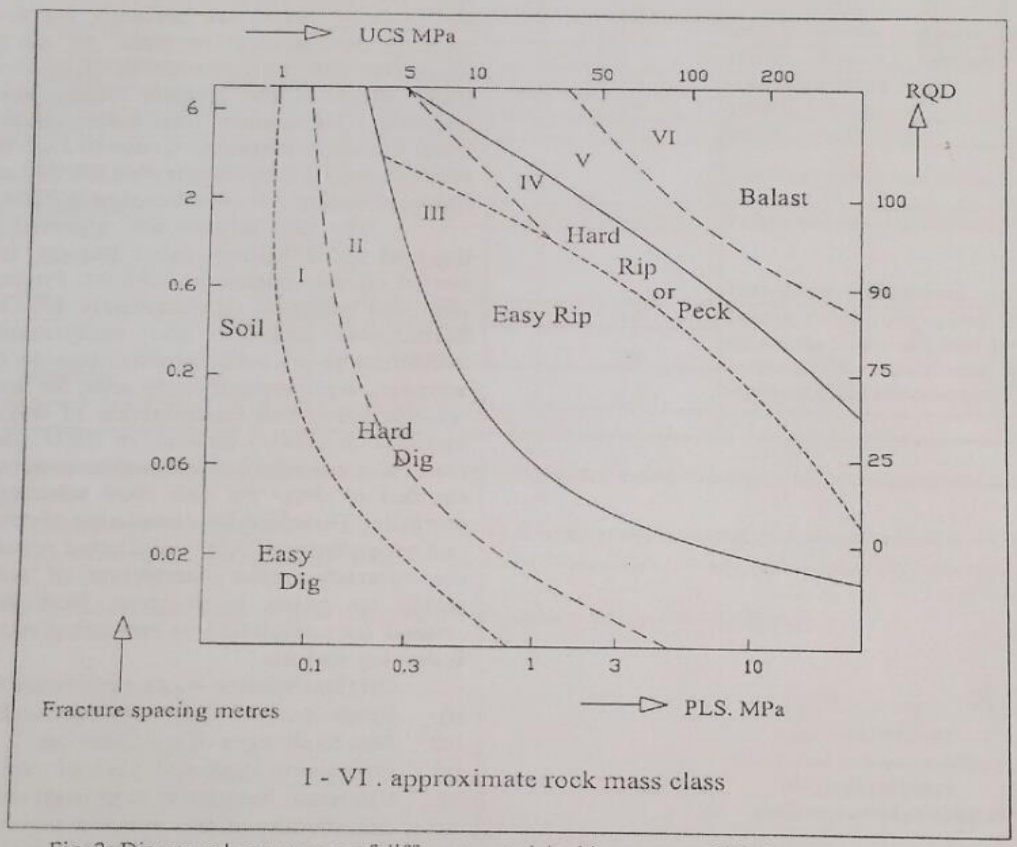

Fig. 2: Diagram shows ranges of different material with respect to UCS fracture spacing.

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

Engr. Ishfaq Bashir
Research Officer

Awais Ahmed
Geologist

Engr. Altaf Ahmed
Chief R.A. Section P&DD

23/01/2012

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	
4.	Tangari Battar River Gravel		Battar	Under prospection		
5.	Malal Bagla sandstone	Sandstone	Malal Bagla	6.0 million M^3		**Bagh**
6.	DanaSandstone		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.	Shujahabad 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	**Muzaffarabad/ Hattian**
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		
18.	Lamnian Dolerite	Dolorite	Lamnian			
19.	Eran Sandstone	Sandstone	Near Kohala	Under prospection	Only for marginal use concrete (upto 2000psi strength) with OPC	
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					**Abbottabad**
41.	Noseri Dolorite	Dolorite	Neelum Valley Road along Noseri - Marble	1.5 million M^3		**Neelum / Muzaffarabad**
42.	Noseri volcanics	Metabasalt		9.03 million M^3	marginal use with OPC	
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	Under prospection		**Sudhnuti**
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		

18/8/2016

(Naveed Azad)
Geologist/Material Engineer

18/8/2016

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18/8/2

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Chief Rate Analysis-P&DD

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 CLASSIFACTION (HARD, VERY HARD, WET AND SLUSH) WILL BE APPROVED BY THE SUPERINTENDING ENGINEER.

2. IN CASE OF EMBANKMENT FILL, THE MODE OF MEASUREMETN WILL BE INDICATED IN THE TENDER.

3. IN CASE BANK MEASUREMENT IS NECESSARY, FOLLOWING ALLOWANCES SHOULD BE PROVIDED FOR:
   a) DEDUCATION FOR SHRINKAGE FROM THE BANK MEASUREMENT WHEN THE EARTWORK IS DONE BY MANUAL LABOUR = 10%.
   b) DEDUCATION FOR SETTLEMENT FROM THE BANK MEASUREMENTS WHEN THE EARTH-WORK IS DONE BY DIFFERENT TYPE OF MACHIANARY WILL BE AS UNDR:
      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 DEDUCATION WILL BE MADE FOR RAMMED/ COMPACTED FILL.

SECTON-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 2^{ND} & 3^{RD} AND 30% FOR 4^{TH} & 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 FINSHED WORKS INCLUDE THE REMOVAL OF SURPLUS DEBRIS, UNUSEK MATERIAL, BY PRODUCTS AND SITE CLEARANCE.

SECTION-6

PRESTRESSED CONCRETE

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

2. THE PRESTRESSED CONCERETE 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 SUPLLIED, 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 FINSHED 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 SPECIFACATIONS OF MANHOLES AS MENTIONES IN ITEM NO. 25-4 TO 25-8 ARE NOT MET THAN 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 RELEVENT ITEM RATE. THESE RATES HAVE BEEN OBTAIND AFTER EXTENSIVE MARKET SURVEY.