PAKISTAN RAILWAYS

COMPOSITE SCHEDULE OF RATES

(RAWALPINDI DIVISION)

2016

PAKISTAN RAILWAYS HEADQUARTER OFFICE
LAHORE – PAKISTAN

PREFACE

After independence in 1947, the first Schedule of Rates for the Civil Engineering Department was issued by the then Railway Administration in 1954, under the title “Revised Schedule of Rates (RSR) 1954”. This document continued to be used up to year 1967.

During the years 1964 to 1967, the Standing Rates Committee constituted by the then Government of West Pakistan compiled and issued, a set of specifications including “Specifications for Materials of Construction” and “Specifications for Execution of Works”, along with “Composite Schedule of Rates” (based on these specifications), for adoption by all engineering departments in the province including Railways, which was under the Provincial Government at that time and was also a member of this Committee. The then Railway Administration adopted the above mentioned Specifications and the Composite Schedule of Rates in 1967.

Although Pakistan Railways became a Federal Government Department after 1971, but it continued to use the above mentioned publications up to 1990 when it issued its own “Pakistan Railways Composite Schedule of Rates-1990”, which was up-dated in 2003. This Schedule of Rates however continued to be based on the above referred Specifications, adopted by Railway Administration in 1967.

The Railway Administration decided in year 2010 to revise/update the above referred specification books, because in the first instance these documents had been prepared in 1964-1967, to meet the requirements of all the engineering departments of the province of West Pakistan including Buildings, Highways, Irrigation, WAPDA, Public Health and Agricultural Engineering, in addition to Railways and secondly these specifications had become more than four decades old.

The Railway Administration also decided at that stage to revise/update the Composite Schedule of Rates 2003, based on the above referred revised/updated specifications and also to prepare the Analysis of above mentioned revised/updated Composite Schedule of Rates, using appropriate computer software. Both the above stated assignments were awarded to ILF Pakistan (Private) Limited Lahore, a local consultancy firm.

Composite Schedule of Rates-2003 has now been revised / updated as ‘Composite Schedule of Rates-2016’ along with the preparation of the ‘Analysis of Composite Schedule of Rates-2016’, making maximum use of the appropriate computer software. The procedure adopted by the consultants for the development of requisite software and its utilization for the desired revision/updating of the Composite Schedule of Rates has been briefly described in it’s in the next section.

While compiling the revised/updated Composite Schedule of Rates-2016 and the Analysis of Composite Schedule of Rates-2016, the items of work included in each chapter of the Schedule of Rates-2003, were rearranged under appropriate sub-heads, to facilitate their referencing. The Table of Contents has also been expanded for this purpose.

The above mentioned revised/updated Composite Schedule of Rates and the Analysis of these Rates are being published, as under, separately for each railway division;

i) Pakistan Railways Composite Schedule of Rates-2016

ii) Analysis of Pakistan Railways Composite Schedule of Rates-2016 (in 2 volumes)

The existing specification books have also been revised/updated as “Specifications for Railway Infrastructure Works’ Volume-1 Structural Works-2016 and “Specifications for Railway Infrastructure Works’ Volume-II Roads and Road Works, Water Supply and Sewerage Works-2016. Since all the items of works included in different chapters of the Composite Schedule of Rates-2016 carry reference to relevant sections/sub-sections of the above referred Specification of Works, these books shall be issued separately as supplementary books for Composite Schedule of Rates-2016.

The Composite Schedule of Rates -2016 and Analysis of Composite Schedule of Rates -2016 has been issued with the approval of the Additional General Manager/Infrastructure. These shall come into effect from the date of their issue and thereafter their use shall be obligatory for the execution of all civil engineering works on Pakistan Railways.

In case the operation of a non-schedule item is considered unavoidable by any Chief Engineer/Project Director/ Managing Director/ Divisional Superintendent for the execution of a particular civil engineering work under his control, he will submit the detailed particulars of such item(s) along with the rate analysis and necessary justification, for the approval of Additional General Manager/Infrastructure, through Chief Engineer/Open Line. The sanction if and when accorded shall be notified by Chief Engineer/Open Line in the form a correction slip to the aforesaid documents.

I, on behalf of the Railway Administration wish to express my thanks to all those who have contributed to the compilation of the above mentioned documents, particularly ILF Pakistan (Private) Limited, Lahore, the Consultants for this assignment.

Any suggestions to improve these publications would be welcome.

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INTRODUCTION

1.1 BRIEF BACKGROUND

Schedule of Rates is prepared by various engineering departments to provide a realistic reference base for the preparation of cost estimates and evaluation of bids/tenders/ variation orders/claims/bill of quantities etc for their various projects. It also provides a legal frame work for the execution of engineering works on contractual basis. Pakistan Railways Composite Schedule of Rates (CSR) in its present form was first compiled in year 1990 and revised in year 2003. It is being revised / updated now by using appropriate computer software.

1.2 RATES FOR CONSTRUCTION LABOUR/MATERIALS AND PLANT/MACHINARY

The rates of construction labour, construction materials and rental of plant/machinery adopted for the revision/updating of Pakistan Railways Composite Schedule of Rates-2003 have been based on the data collected from the sources described in the following sub-paragraphs.

1.2.1 Cost Data Issued by Pakistan Institute of Cost and Contracts (PICC) Lahore

Pakistan Institute of Cost and Contracts (PICC) Lahore was established in 2009, as a subsidiary of Pakistan Engineering Council (PEC) to function independently for the preparation and updating of web based cost of all construction inputs and to deal with the matters related to engineering contracts.

Through an amendment in Pakistan Engineering Council Act, 1975, PEC was also mandated, among other functions, to prepare, maintain and update the construction cost data for all construction related inputs. PICC accordingly prepared the Construction Cost Data for all the districts of Pakistan including AJ&K, which was being regularly updated and posted on its website very month. This website was unfortunately closed suddenly in September 2013, but is expected to be re-activated soon.

Accordingly, the above referred last published PICC Cost Data for the month of August 2013 was mostly used for the revision/updating of the CSR-2003. This Cost Data was however, updated in August 2015 through fresh market survey, wherever considered necessary. .

The cooperation extended by PICC/PEC in the above context is gratefully acknowledged.

1.2.2 Cost Data Issued by Finance Department Government of Punjab Lahore

The next preference was accorded to the cost data issued quarterly by Finance Department, Government of Punjab on their web-site This data comprises the estimat-

ed/projected rates of construction labour and construction materials for the prevalent quarter. As these rates are confined only to the districts of Punjab, they did not provide a uniform reference base across the country, and were generally used only in the cases where PICC cost data was not available.

The use of this data is also gratefully acknowledged.

1.2.3 Cost Data Published by Statistics Division Government of Pakistan, Islamabad

Similar cost data in respect of few selected categories of construction labour and construction materials for certain selected cities of Pakistan is also compiled by Statistics Division, Government of Pakistan and issued every month on their website- This data being of very limited nature in respect of construction industry was generally not used.

1.2.4 Cost Data collected through Market Surveys & other Sources

The cost data not available on the above referred web sites was mostly collected through market surveys and from other available sources.

1.3 DATA FILES OF RATES OF CONSTRUCTION LABOUR/MATERIAL & RENTAL OF PLANT/MACHINARY

Data files were prepared in Microsoft Excel software for each railway division, entering under allocated code numbers, the rates of applicable categories of construction labour, construction materials and rental of plant/machinery, based on the data collected under Para 1.2 above, for the civil district in which the office of relevant Divisional Superintendant was located.

1.4 SOFTWARE DEVELOPED IN MICROSOFT EXCEL FOR PREPARATION OF SCHEDULE OF RATES AND ITS ANALYSIS

A software was developed in Microsoft Excel, which picked up the rates of construction labor, construction materials and rental for plant/machinery from the corresponding data files of the respective railway divisions, referred to in para 1.3 above, while the quantities of these inputs had already been calculated for each item of work and their values entered in the relevant Microsoft Excel files of analysis of rates of the respective chapter of Composite Schedule of Rates (CSR)-2016 for the relevant division.

Following the procedure adopted during the preparation of Pakistan Railways Composite Schedule of Rates 1990, the labour cost calculated in the relevant Microsoft Excel file of analysis of rates was increased by 10% on account of “sundries” to cover charges on small T&P items used by the relevant labour. Another 10% was then added each on calculated costs of construction labour, construction materials and rental charges of plant/machinery, to cover contractor’s profit and his overheads.

The above mentioned Microsoft Excel file for analysis of rates provided the output in the form of calculated unit rates (labour and composite) for the respective items of work and entered it in relevant file of Composite Schedule of Rates (CSR)-2016 through the linkages provided amongst the above mentioned three Microsoft Excel files.

These linkages ensure automatic revision of relevant rates in the Composite Schedule of Rates of a division, whenever a change is affected in any data file containing rates of construction labour or construction materials or rental of plant and machinery on that division.

The subject soft ware can also ensure that any change in the above mentioned data file shall be affected only by an authorized person.

1.5 ALLOCATION OF CODE NUMBERS TO ENTRIES IN DATA FILES

1.5.1 Code Numbers for Construction Man-power/Labour for Structural Works

Separate code numbers have been allocated to each category of man-power/labour of the contractor from X100-00-00 onward. The digit X represents the letter allocated to a particular division as stated below:

P for Peshawar Division

R for Rawalpindi Division

L for Lahore/Mughalpura Division

M for Multan Division

S for Sukkur Division

K for Karachi Division, and

Q for Quetta Division

These code numbers include only the manpower directly charged to the items of work. The man-power cost of the senior supervisors, administration & other non- productive work of support staff of a contractor is covered under his over-head charges.

1.5.2 Code Numbers for Construction Materials for Structural Works

Separate code numbers have been allocated to different construction materials from X200-00-00 onwards. The digit X represents the digit allocated to a particular division as described under para 1.5.1 above

1.5.3 Approved Sources of Important Construction Materials for Different Divisions

The rates of the construction materials like crushed stone and sand etc. included in the data files of the relevant divisions are inclusive of the charges for their transportation from their respective sources to the site of work, unless stated otherwise in the Composite Schedule of Rates -2016 and its Analysis.

The most appropriate source(s) of such materials have been considered for each division from the point of view of quality and economy. These sources will be approved and notified separately by Chief Engineer/Open Line for every division.

1.5.4 Code Numbers for Rental of Plant & Machinery for Structural Works

Small T & P items shall be charged under overheads of the contractors and only major T&P items have been allocated code number from 300-00-00 onwards.

The hiring charges of plant/machinery have been taken as same for each railway division, and as such its code number does not carry the digit x, representing the name of the respective railway division.

1.6 CONVERSION FACTORS

The basic document i.e. the Analysis of the Composite Schedule of Rates-2016 has been prepared in Microsoft Excel software in FPS units while its resultant output in the form of labour and composite rates has been entered in the corresponding book" Pakistan Railways Composite Schedule of Rates (CSR)-2016" in FPS as well as in SI (metric) units. The conversion factors used for this purpose are tabulated below:

To convert		Into		Multiply by
Length				
Inch	(in)	Millimetre	(mm)	25.400
Millimetre	(mm)	Inch	(in)	0.039
Inch	(in)	Centimetre	(cm)	2.540
Centimetre	(cm)	Inch	(in)	0.394
Foot	(ft)	Metre	(m)	0.305
Metre	(m)	Foot	(ft)	3.281
Mile	(mi)	Kilometre	(km)	1.609
Kilometre	(km)	Mile	(mi)	0.621
Area				
Square inch	(in^2)	Square centimetre	(cm^2)	6.452
Square centimetre	(cm^2)	Square inch	(in^2)	0.155
Square foot	(ft^2)	Square metre	(m^2)	0.093
Square metre	(m^2)	Square foot	(ft)	10.765
Square yard	(yd^2)	Square metre	(m^2)	0.836
Square metre	(m^2)	Square yard	(yd^2)	1.196

To convert	Into	Multiply by
Square metre (m^2)	Hectare (ha)	0,0001
Hectare	Square metre	10,000
Hectare (ha)	Acre (acr)	2.475
Acre (acr)	Hectare (ha)	0.404
Volume/Capacity		
Cubic inch (in^3)	Cubic centimetre (cm^3)	16.387
Cubic centimetre (cm^3)	Cubic inch (in^3)	0.061
Cubic feet (ft^3)	Cubic metre (m^3)	0.028
Cubic metre (m^3)	Cubic feet (cft)	35.320
Cubic yard (yd^3)	Cubic metre (m^3)	0.765
Cubic metre (m^3)	Cubic yard (yd^3)	1.307
Gallon (imperial) (gal)	Litre (lit)	4.546
Litre (l)	Gallon (imperial) (gal)	0.220
Mass/Weight		
Ounce (oz)	Gram (gm)	28.328
Gram (gm)	Ounce (oz)	0.035
Pound (lb)	Kilogram (kg	0.454
Kilogram (kg)	Pound (lb)	2.204
Tonne (t)	Kilogram (kg)	1000
Kilogram (kg)	Tonne (mt)	0.001
Long ton (T)	Tonne (mt)	1.016
Tonne (mt)	Long ton (T)	0.984
Maund (Md)	Kilogram (kg)	37.324
Force/Stress/ Pressure		
Kilogram (force) (kgf)	Newton (N)	9.806
Pound (force) (lbf)	Newton (N)	4.448
Mega Pascal (MPa)	Newton/mm2 (N/mm^2)	1.000
Mega Pascal (MPa)	Pounds/inch2 (PSI)	145.038
Kilogram/cm2 (kg/cm^2)	Newton/mm2 (N/mm^2)	0.0981

1.7 MATERIALS REQUIRED FOR COMMON CONSTRUCTION ACTIVITIES

The estimated quantities of building materials required for common construction activities are generally taken as under:

1.7.1 Brick masonry (100 cft)

a. No. of Bricks (9''x4 ½"x3") = 1350 No.

b. cement sand mortar (dry) = 30 cft.

1.7.2 Brick flooring, bricks laid flat (100 sft.)

a. No. of Bricks (9''x4 ½"x3") = 350 No.

b. cement sand mortar (dry) = 08 cft.

1.7.3 Brick flooring, bricks laid on edge (100 sft.)

a. No. of Bricks (9''x4 ½"x3") = 500 No.

b. cement sand mortar (dry) = 12 cft.

1.7.4 Stone masonry, random rubble-coursed (100 cft.)

a. Stone = 125 cft.

b. cement sand mortar (dry) = 42 cft.

1.7.5 Stone masonry, ashlar block/ashlar fine (100 cft.)

a. Stone = 200 cft.

b. cement sand mortar (dry) = 24 cft.

1.7.6 Cement Sand Plaster ½" (12 mm) thick (100 sft.)

a. cement sand mortar (dry) = 06 cft.

1.7.7 Cement sand pointing for brickwork (100 sft.)

a. cement sand mortar (dry) = 02 cft.

1.7.8 Cement concrete 1:2:4 (100 cft.)

a. Cement = 22 cft (17.6 bags).

b. Sand = 44 cft.

c. Coarse Aggregate = 88 cft.

1.7.9 Bitumen 10/20 grade for coating on DPC or Roof (100 sft.)

a. One coat = 19 lbs.

b. Two coats = 34 lbs.

1.8 DATA FILES FOR RATES OF CONSTRUCTION LABOUR, MATERIALS & RENTAL OF PLANT/MACHINERY

The rates of construction labour, construction materials and rental of plant/machinery used in the compilation of the Composite Schedule of Rates-2016 for each railway division have been included in the two volumes of "Analysis of Composite Schedule of Rates-2016" for the respective railway divisions

1.9 SPECIFICATIONS FOR THE EXECUTION OF ITEMS OF WORKS INCLUDED IN THE COMPOSITE SCHEDULE OF RATES

The existing specification books have also been revised/updated as "Specifications for Railway Infrastructure Works' Volume-1 Structural Works-2016 and "Specifications for Railway Infrastructure Works' Volume-II Roads and Road Works, Water Supply and Sewerage Works-2016.

All the items of works included in different chapters of this Composite Schedule of Rates-2016 carry reference to relevant sections/sub-sections of the above referred books of "Specification for Railway Infrastructure Works". These books are as such also being issued separately as complementary books of Composite Schedule of Rates-2016.

TABLE OF CONTENTS			PAGE
	PREFACE		i
	INTRODUCTION		iii
1.	**DISMANTLING WORKS**		**1**
	1.1	Dismantling of Stone Work	1
	1.2	Dismantling of Brick Work	2
	1.3	Dismantling of Concrete	2
	1.4	Dismantling of Roofing / Ceiling	3
	1.5	Dismantling of Flooring	4
	1.6	Dismantling of Wood Work	5
	1.7	Dismantling of Iron Work	6
	1.8	Dismantling of Pipe Work	6
	1.9	Dismantling of Miscellaneous Items	7
2.	**CARRIAGE OF MATERIALS**		**8**
	2.1	Carriage of Building Materials (General)	9
	2.2	Carriage of Bricks/Brick Tiles	10
	2.3	Carriage of Cement Bags	11
	2.4	Carriage of Bitumen, Tar & Lubricants	12
	2.5	Hiring of Truck/Tractor Trolley	13
3.	**LOADING, UNLOADING & STACKING**		**14**
	3.1	Loading/Unloading – Construction Materials	14
	3.2	Loading/Unloading – POL Items	15
	3.3	Loading/Unloading – Rail Track Materials	15
	3.4	Loading/Unloading – Earth	17
	3.5	Removing & Stacking of Materials	17
4.	**EARTHWORKS**		**19**
	4.1	Site Clearance	19
	4.2	Excavation-General	20
	4.3	Excavation for Foundations/Trenches	22
	4.4	Filling earth under floors / behind retaining Structures	25
	4.5	Embankment with Excavated/Barrow Material	26
	4.6	Dressing of Earthwork	27

CHAPTER 1

DISMANTLING WORKS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 2-Dismantling Works of "Specification for Railway Infrastructure Works, Volume I, (2016)".

(2) Rates for all "Dismantlling Works" include the lowering/removal of surplus debris, unused released material and by-products and stacking them within 100 ft (30 m).

(3) The rates for dismantling roofs or upper storey floors, include the dismantling of all materials, except roof supports such as beams and trusses.

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
1.1	**Dismantling of Stone Work**				**2.3 & 2.4**	
1.1.1	Dismantling dry stone masonry.	**100 cft** (m^3)	**494** 174			
1.1.2	Dismantling stone masonry in mud mortar.	**100 cft** (m^3)	**726** 256			
1.1.3	Dismantling stone masonry in lime or cement mortar.	**100 cft** (m^3)	**1742** 615			Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38 ft, 38.1 to 50 ft and above, and for 2nd, 3rd and subsequent floors of 12 ft height respectively on item 1.1.3
1.1.4	Dismantling pitching stone:-					
	(a) Dry stone or spawl pitching	**100 cft** (m^3)	**871** 308			
	(b) Stone or spawl pitching (mud grouted)	**100 cft** (m^3)	**1104** 390			
1.1.5	Dismantling stone pitching or spawl and apron in silted condition.	**100 cft** (m^3)	**1452** 513			
1.1.6	Dismantling stone pitching, cement or lime grouted.	**100 cft** (m^3)	**2323** 821			
1.1.7	Dismantling stone in crates:-					

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) In wooden crates	**100 cft** (m^3)	**1162** 410			
(b) In wire crates	**100 cft** (m^3)	**1452** 513			
1.1.8 Dismantling Dhajji walling.	**100 cft** (m^3)	**581** 205			
1.2 Dismantling of Brick Work				**2.3 & 2.4**	
1.2.1 Dismantling brick work in mud mortar.	**100 cft** (m^3)	**1016** 359			Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38 ft, 38.1 to 50 ft and above, and for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.2.1 to 1.2.3.
1.2.2 Dismantling brick work in lime or cement mortar.	**100 cft** (m^3)	**2468** 872			
1.2.3 Dismantling cement block masonry in cement mortar.	**100 cft** (m^3)	**2178** 769			
1.3 Dismantling of Concrete				**2.3 & 2.4**	Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38 ft, 38.1 to 50 ft and above, and for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.3.1,1.3.2 & 1.3.3.
1.3.1 Dismantling lime concrete.	**100 cft** (m^3)	**1597** 564			
1.3.2 Dismantling Plain Cement Concrete:-					
(a) Cement concrete with brick or stone aggregate (1:5:10)	**100 cft** (m^3)	**1742** 615			
(b) Cement concrete plain 1:4:8	**100 cft** (m^3)	**3194** 1128			
(c) Cement concrete plain 1:3:6	**100 cft** (m^3)	**5227** 1846			
(d) Cement concrete plain 1:2:4	**100 cft** (m^3)	**6389** 2257			

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(e) Cement concrete with iron filling	**100 cft** (m^3)	**6970** 2462			
	(f) Cement concrete with rail grillage, separating rails from concrete and clearing the same.	**100 cft** (m^3)	**6970** 2462			
1.3.3	Dismantling reinforced cement concrete and separating reinforcement from concrete.	**100 cft** (m^3)	**8131** 2872			
1.4	**Dismantling of Roofing/Ceiling**				**2.3 & 2.4**	
1.4.1	Dismantling tile roofing upto 14ft height.	**100 sft**	**726**			(i) Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38 ft, 38.1 to 50 ft and above, and for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.4.1,1.4.2 1.4.4
1.4.2	Dismantling asbestos sheets and ridge coping up to 14 ft height.	**100 sft** (m^2)	**532** 57.3			
1.4.3	Dismantling wooden roofs & ceilings:-					
	(a) Dismantling wooden roof of wooden planks and battens, upto any height.	**100 sft** (m^2)	**426** 45.9			
	(b) Extra for dismantling wooden ceiling above 26' height and in difficult position, including lifting with care and using special scaffolding along live electric wires and with machines underneath.	**100 sft** (m^2)	**847** 91			
1.4.4	Dismantling jack arch roofing complete with mud and mud plaster, including removal of joists.	**100 sft** (m^2)	**1162** 125			
1.4.5	Dismantling reinforced brick roof complete with mud and mud plaster, including separating reinforcement up to any height.	**100 sft** (m^2)	**1162** 125			
1.4.6	Stripping slates or tiles from the truss roofing at any height.	**100 sft** (m^2)	**726** 78.2			
1.4.7	Stripping corrugated G.I. sheet from truss roofing at any height.	**100 sft** (m^2)	**697** 75.0			

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
1.4.8	Stripping corrugated G.I. sheet from other than truss roofing at any height.	**100 sft** (m^2)	**348** 37.5			
1.4.9	Extra for dismantling corrugated G.I. sheet roof above 26 ft (8 m) and in difficult position including lifting with special scaffolding along live electric wires with machine underneath.	**100 sft** (m^2)	**1113** 119.8			
1.4.10	Dismantling slates or tile roofing including battens, purlins and planking at any height.	**100 sft** (m^2)	**1162** 125			
1.4.11	Dismantling precast roofs of any height consisting of;					
	(a) Precast prestressed concerete girders & slabs	**100 sft** (m^2)	**1162** 125			
	(b) Prestressed concerete double Tee planks	**100 sft** (m^2)	**581** 62.5			
1.4.12	Dismantling and removing north light glasses upto any height.	**100 sft** (m^2)	**290** 31.3			
1.4.13	Dismantling false ceiling of any type upto any height.					
	(a) With wooden framework	**100 sft** (m^2)	**968** 104.2			
	(b) With Aluminium framework	**100 sft** (m^2)	**378** 40.6			
1.5	**Dismantling of Flooring**				**2.3 & 2.4**	Add extra 13%, 32% and 51% on labour rates only for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.5.1, 1.5.2 and 1.5.4 to 1.5.6
1.5.1	Dismantling brick flooring without concrete foundation.	**100 sft** (m^2)	**494** 53.1			
1.5.2	Dismantling planks or wooden block flooring etc.	**100 sft** (m^2)	**726** 78.2			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
1.5.3	Dismantling interlocking paver flooring including removing of sand but excluding dismantling of base concrete.	**100 sft** (m^2)	**581** 62.5			
1.5.4	Dismantling mosaic, marble and all kinds of tile flooring (except glazed tiles), excluding base concrete.	**100 sft** (m^2)	**581** 62.5			
1.5.5	Dismantling mosaic, marble and all kinds of tile skirting complete (excluding glazed tiles).	**100 sft** (m^2)	**726** 78.2			
1.5.6	Dismantling glazed tiles,flooring.	**100 sft** (m^2)	**968** 104			
1.6	**Dismantling of Wood Work**				**2.3 & 2.4**	
1.6.1	Removing wooden doors and windows:-					Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38ft, and 38.1 to 50ft and above amd for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.6.1 to 1.6.7
	(a) Removing wooden door with chowkat	**100 sft** (m^2)	**1337** 143.9			
	(b) Removing wooden window and sky lights with chowkat	**100 sft** (m^2)	**968** 104.2			
	(c) Removing iron grill in openings and wall	**100 sft** (m^2)	**968** 104.2			
1.6.2	Removing ventilators and wooden sunshades etc.	**each**	**102**			
1.6.3	Dismantling wooden beams upto 12' in length	**each**	**145**			
1.6.4	Dismantling wooden beams from 12.1' to 23' length	**each**	**290**			
1.6.5	Dismantling wooden partition jaffry work etc.	**100 sft** (m^2)	**304** 32.8			
1.6.6	Dismantling wooden trusses	**100 kg**	**661**			
1.6.7	Dismantling wooden almirah work in any position and floor.	**100 sft** (m^2)	**304** 32.8			Measurements shall be for surface area of front of Almirah.

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
1.7 Dismantling of Iron Work				**2.3 & 2.4**	
1.7.1 Dismantling iron work or trusses, sheds, water tanks, etc. including cutting of rivets, upto any height.	**100 kg**	**903**			
1.7.2 Dismantling rolled steel beams or rails etc.upto any height					
(a) Heavy work	**100 kg**	**581**			
(b) Light work	**100 kg**	**381**			
1.7.3 Dismantling water column on broad gauge (B.G) sections.	**each**	**6098**			
1.7.4 Dismantling all types of wire fencing, including rolling wire into bundles and	**100 sft** (m^2)	**116.2** 12.5			
1.7.5 Dismantling steel grating of any size in any position and any floor including stacking within 100 ft (30 m).	**100 kg**	**929**			
1.8 Dismantling of Pipe Works					
1.8.1 Disjointing R.C.C. pipes inside the trench and dismantling and removing the pipe with fittings from the trench and stacking them outside:-					(i) The rate does not include cost of excavation & refilling of trench, or the demolition of any masonry or brick work for item 1.8.1 to 1.8.3
(a) 4" to 12" diameter	**Rft** (m)	**19.4** 63.5			
(b) 13" to 24" diameter	**Rft** (m)	**31.0** 101.6			
(c) 25" to 36" diameter	**Rft** (m)	**43.6** 143			(ii) Dismantling of sockets, tees, elbows, bends, crosses, unions and plugs etc., is included in the rates for item 1.8.1 to 1.8.3
(d) Above 36" diameter	**Rft** (m)	**62.0** 203			
1.8.2 Dismantling and stacking within one chain GI, CI, AC and plastic pipes with fittings in any position and any hieght excluding digging and refilling of trenches:-					
(a) Upto 4" dia	**Rft** (m)	**10.6** 34.9			
(b) From 4.1" to 9" dia	**Rft** (m)	**16.0** 52.4			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(c) From 9.1" dia to 12" dia	**Rft** (m)	**21.3** 69.9			
1.8.3	Dismantling sluice valves upto 12" bore.	**each per inch bore** each per cm bore	**21.5** 8.5			
1.9	**Dismantling of Miscellaneous Items**				**2.3 & 2.4**	Add extra 13%, 32% and 51% on labour rates only for heights from 14.1 to 26 ft, 26.1 to 38 ft, 38.1 to 50 ft and above, and for 2nd, 3rd and subsequent floors of 12 ft height respectively on items 1.9.3 & 1.9.5
1.9.1	Dismantling and removing road metalling.	**100 cft** (m^3)	**1162** 410			
1.9.2	Dismantling and removing road pavement etc including screening and stacking of by-products upto one chain lead.	**100 cft** (m^3)	**1510** 533			
1.9.3	Removing cement sand plaster from walls.	**100 sft** (m^2)	**194** 20.8			
1.9.4	Cleaning mortar of old bricks to be used in brick masonry.	**1000 bricks**	**1016**			
1.9.5	Removing of white/colour wash.	**100 sft** (m^2)	**116** 12.5			

CHAPTER 2

CARRIAGE OF MATERIALS

Notes:

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 3 Carriage of Materials of "Technical Specifications for Railway Infrastructure Works, Volume I, (2016)"

(2) Carriage of material for distance less than one mile shall be normally done by cart & beyond one mile carriage shall invariably be done by truck/tractor trolleys.

(3) For carriage of material upto 1200 ft (330 m), the relevant carriage rates per chain shall be paid. In case carriage exceeds 1200 ft (360 m), the relevant carriage rates for first 1/4 mile (1st 400 m) and subsequent 1/4 miles (400 m) shall be paid, up to one mile.

(4) The rates for carriage of materials other than those included in this chapter may be calculated on the basis of their equivalence to 100 cft of volume or 5 tons of weight of the respective items included in this chapter.

(5) The rates included in this chapter are applicable to carriage of material on pacca roads only. For Kacha roads an allowance of 25% extra shall be allowed for 2nd mile (2nd 1.6 km) and subsequent miles (1.6 km) rates. Rate upto 1st mile (1.6 km) is however common to both kacha and pacca roads.

(6) For hilly areas 25% above the rates in the plain areas shall be allowed for total distance covered.

(7) In case of articles longer than 15 ft (4.6 m) carried in trucks/tractor trolleys, the following rates shall be allowed.

(i) 15.1 ft to 25 ft (4.6 to 7.5 m): Rate to be paid will be 1.5 times of the rate given in this chapter.

(ii) Above 25 ft (7.5 m): Rate to be paid will be 2 times of the rate given in this chapter.

The length measured shall not be the actual length, but the length of the form of consignment as actually received for carriage.

(8) The term **'mile (kilometer)'** whenever used is to mean statute mile (kilometer).

(9) The rates for carriage of materials include their loading & unloading and their stacking as directed.

(10) The rates for carriage by boat or steamer shall be the same as by any other mechanical means on land.

(11) The term "**chain**" whenever used is to mean 100 linear feet (30 m).

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
2.1 Carriage of Building Materials (General)				**3.2 & 3.3**	
2.1.1 Carriage of 100 cft (2.83 m^3) of all materials like stone aggregate, spawl, kankar, brick bats, lime (unslaked), surkhi, sand etc. or 200 cft (5.66 m^3) of timber, by truck or by any other means owned by the contractor.					
(a) 1st Chain (1st 30 m)	**chain** (m)	**136** 4.47			This rate will be paid for lead upto 1200 ft (360m) lead beyond 1200ft shall be paid as per items (d) & onwanrd (for 1st and subsequent 1/4 mile /miles).
(b) 2nd Chain (2nd 30 m)	**chain** (m)	**23.9** 0.78			
(c) 3rd to 12th Chain (60 m -360 m)	**chain** (m)	**14.3** 0.47			
(d) 1st 1/4 mile (400 m)	**1/4 mile** (100 m)	**376** 94.0			
(e) 2nd and subsequent 1/4 mile (400 m) upto 1 mile (1.6 km)	**1/4 mile** (100 m)	**31.7** 7.93			
(f) 2nd mile (1.6 - 3.2 km)	**mile** (km)	**110.3** 68.9			
(g) 3rd mile (3.21 - 4.8 km)	**mile** (km)	**97.8** 61.1			
(h) 4th mile (4.81 - 6.4 km)	**mile** (km)	**88.1** 55.1			
(i) 5th mile (6.41 - 8.0 km)	**mile** (km)	**80.6** 50.4			
(j) 6th mile (8.01 - 9.6 km)	**mile** (km)	**74.5** 46.6			
(k) 7th mile and subsequent mile (9.61 km & beyond)	**mile** (km)	**46.0** 28.7			
2.1.2 Carriage of 1 ton of all material like, rails, fastenings, points and crossing, girders, pipe, sheets, M.S. bars, etc. by truck or any other means owned by the contractor:-					The word "Pipe" covers G.I., C.I., R.C.C., P.C.C., PPRC/PVC pipe etc.
(a) 1st Chain (1st 30 m)	**chain** (m)	**27.3** 0.89			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) 2nd Chain (2nd 30 m)	**chain** (m)	**4.8** 0.16			
(c) 3rd to 12th Chain (60 m - 360 m)	**chain** (m)	**2.86** 0.09			
(d)1st 1/4 mile (400 m)	**1/4 mile** (100 m)	**75.2** 18.8			
(e) 2nd and subsequent 1/4 mile (400 m) upto 1 mile (1.6 km)	**1/4 mile** (100 m)	**6.35** 1.59			
(f) 2nd mile (1.61 - 3.2 km)	**mile** (km)	**22.1** 13.8			
(g) 3rd mile (3.21 - 4.8 km)	**mile** (km)	**19.6** 12.2			
(h) 4th mile (4.81 - 6.4 km)	**mile** (km)	**17.6** 11.0			
(i) 5th mile (6.41 - 8.0 km)	**mile** (km)	**16.1** 10.1			
(j) 6th mile (8.01 - 9.6 km)	**mile** (km)	**14.9** 9.3			
(k) 7th mile and subsequent mile (9.61 km & beyond)	**mile** (km)	**9.2** 5.7			
2.2 Carriage of Bricks/Brick Tiles				**3.2 & 3.3**	
2.2.1 Carriage of 1000 bricks, 9" x 4-1/2" x 3" (Nominal Size) or 1000 brick tiles 12" x 6" x 2":-					
(a) 1st Chain (1st 30 m)	**chain** (m)	**85.2** 2.80			
(b) 2nd Chain (2nd 30 m)	**chain** (m)	**14.9** 0.49			
(c) 3rd to 12th Chain (60 m -360 m)	**chain** (m)	**8.95** 0.29			
(d) 1st 1/4 mile (400 m)	**1/4 mile** (100 m)	**104** 25.9			
(e) 2nd and subsequent 1/4 mile (400 m) upto 1 mile (1.6 km)	**1/4 mile** (100 m)	**11.6** 0.12			
(f) 2nd mile (1.61-3.2 km)	**mile** (km)	**42.1** 26.3			
(g) 3rd mile (3.21-4.8 km)	**mile** (km)	**38.7** 24.2			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(h) 4th mile (4.81-6.4 km)	**mile** (km)	**260** 163			
(i) 5th mile (6.41-8.0 km)	**mile** (km)	**50** 31			
(j) 6th mile (8.01-9.6 km)	**mile** (km)	**46.6** 29.1			
(k) 7th mile and subsequent mile (9.61 km & beyond)	**mile** (km)	**28.7** 18.0			
2.2.2 Carriage of 1000 Nos. brick tiles, 9"x 4-1/2" x 1-1/2":					
(a) 1st Chain (1st 30 m)	**chain** (m)	**42.6** 1.40			
(b) 2nd Chain (2nd 30 m)	**chain** (m)	**7.46** 0.24			
(c) 3rd to 12 th Chain (60 m -360 m)	**chain** (m)	**4.47** 0.15			
(d) 1st 1/4 mile (400 m)	**1/4 mile** (100 m)	**81.5** 20.4			
(e) 2nd and sbsequent 1/4 mile (400 m) upto 1 mile (1.6km)	**1/4 mile** (100 m)	**7.67** 1.92			
(f) 2nd mile (1.61 - 3.2 km)	**mile** (km)	**27.1** 16.9			
(g) 3rd mile (3.21 - 4.8 km)	**mile** (km)	**24.4** 15.3			
(h) 4th mile (4.81 - 6.4 km)	**mile** (km)	**22.4** 14.0			
(i) 5th mile (6.41 - 8.0 km)	**mile** (km)	**20.7** 13.0			
(j) 6th mile (8.01 - 9.6 km)	**mile** (km)	**19.4** 12.1			
(k) 7th mile and subsequent mile (9.61 km & beyond)	**mile** (km)	**13.3** 8.3			
2.3 Carriage of Cement Bags				**3.2 & 3.3**	
2.3.1 Carriage of 100 nos. 50 kg cement bags:-					

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) 1st Chain (1st 30 m)	**chain** (m)	**136** 4.47			
(b) 2nd Chain (2nd 30 m)	**chain** (m)	**23.9** 0.78			
(c) 3rd to 12th Chain (60 m - 360 m)	**chain** (m)	**14.32** 0.47			
(d) 1st 1/4 mile (400 m)	**1/4 mile** (100 m)	**261** 65.2			
(e) 2nd and subsequent 1/4 mile (400 m) upto 1 mile (1.6 km)	**1/4 mile** (100 m)	**24.6** 6.14			
(f) 2nd mile (1.61 - 3.2 km)	**mile** (km)	**86.8** 54.2			
(g) 3rd mile (3.21 - 4.8 km)	**mile** (km)	**78.2** 48.9			
(h) 4th mile (4.81 - 6.4 km)	**mile** (km)	**71.6** 44.7			
(i) 5th mile (6.41 - 8.0 km)	**mile** (km)	**66.4** 41.5			
(j) 6th mile (8.01 - 9.6 km)	**mile** (km)	**62.2** 38.9			
(k) 7th mile and subsequent mile (9.61 km & beyond)	**mile** (km)	**42.6** 26.6			
2.4 Carriage of Bitumen, Tar & Lubricants				**3.2 & 3.3**	
2.4.1 Carriage of bitumen, tar or other lubricants in drums:-					For carriage beyond 3 mile (4.8 km) proportional rate based on item 2.1.2 above be paid
(a) 1st mile (1st 1.6 km)	**per ton**	**66.9**			
(b) 2nd mile (1.6 - 3.2 km)	**per ton**	**17.4**			
(c) 3th mile and subsequent mile (3.2 km and beyond)	**per ton**	**15.6**			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
2.5 Hiring of Truck/Tractor/ Tractor Trolley				**3.2 & 3.3**	
2.5.1 Hire charges of:-					(i) This item will be allowed with prior approval of Divisional Superintendent.
(a) Truck (8 ton capacity)	**per day**	**4000**			
(b)Tractor (Fiat-480) and Trolley with Jack,Capacity 7 m³	**per day**	**6400**			(ii) The rate includes pay of driver and cleaner, repairs, if any.
(c)Tractor (Fiat-480) and Trolley without Jack,Capacity 7 m³	**per day**	**4800**			
(d) Tractor with rotater blade	**per day**	**4800**			(iii) Cost of lubrication, fuel, loading & unloading shall be paid by borrower.
					(iv) The day means the duration of 8 hrs.

CHAPTER 3

LOADING, UNLOADING & STACKING

Note.-

(1) The rate for loading into and unloading from mobile trucks, trolleys and boats, etc. will be the same as for Railway wagons.

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
3.1	**Loading/Unloading - Construction Materials**					
3.1.1	"Loading into or unloading from railway wagons, shingle, sand, ashes, kankar, brick bats, coal and lime etc. including stacking, lead up to one chain (30 m)	**100 cft** (m^3)	**726** 256			
3.1.2	"Loading into or unloading from railway wagons, including stacking, lead up to one chain (30 m) of:					
	(a) Bricks 9" x 4-1/2 x 3" or brick tiles *12" x 6" x 2"*	**1000 no.**	**454**			
	(b) Brick tiles 9" x 4-1/2" x 1-1/2"	**1000 no.**	**227**			
	(c) Concrete solid blocks 6"x8"x12"	**1000 no.**	**2420**			
	(d) Concrete hollow blocks 6"x 8"x 16"	**1000 no.**	**2074**			
3.1.3	Loading into or unloading from railway wagons, cement in 50 kg bags (from inside or outside the godown) and stacking, lead upto one chain (30 m).	**100 no.**	**726**			
3.1.4	Loading into or unloading from railway wagons, structural steel, R.S. joists, rails and rail fastenings, etc. lead upto one chain (30 m).	**per ton**	**348**			
3.1.5	Loading into or unloading, from railway wagons, 45 gallon filled drums,lead upto one chain (30 m).	**Each**	**43.6**			
3.1.6	Loading into or unloading from railway wagons, packages of all sorts, upto one cwt (50 Kg), lead upto one chain (30m)	**Each**	**21.8**			Except cement in jute or paper bags.
3.1.7	Loading into or unloading from railway wagons pitching stone or spawl, including clearing 5ft. away from rails.	**100 cft** (m^3)	**215** 75.9			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
3.2 Unloading - POL Items					
3.2.1 Unloading oil, bitumen, tar, from railway wagons					
(a) Crude oil (to be pumped from tank wagon into tank)	**1000 gln** (1000 lit)	**348** 77			
(b) Crude oil (drained by gravity)	**1000 gln** (1000 lit)	**908** 200			
(c) Crude oil materials from railway wagons, including stacking within one chain (30 m) lead.	**100 cft** (m^3)	**116.2** 41.0			
(d) Fuel oil from tank into empty tins/drums, including stacking within one chain (30 m) lead.	**per ton**	**332**			
(e) Petrol/Kerosine oil in 4 gallon tins,including stacking within one chain (30 m) lead.	**100 no.**	**944**			The rate includes checking and weighing the tins.
(f) Tar and bitumen in drums	**per ton**	**363**			
3.3 Loading/Unloading - Rail Track Materials					
3.3.1 Loading into or unloading from railway wagons sleepers other than wooden and concrete, including stacking, lead within one chain (30 m).					
(a) Broad gauge sleepers	**100 no.**	**1815**			
(b) Metre gauge and narrow gauge sleepers.	**100 no.**	**908**			
3.3.2 Loading into or unloading from railway wagons timber logs or timber for shuttering, including stacking, lead within one chain (30 m).	**per ton**	**242**			
3.3.3 Loading into or unloading from railway wagons timbers scraps or wooden plugs and stacking within one chain (30 m) lead.	**per ton**	**363**			

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
3.3.4	Loading into railway wagons girders, rails, permanent way material (except wooden sleepers), iron work, M.S. bars, Pipes, etc. including lead one chain (30 m) and stacking inside wagons.	**per ton**	**465**			
3.3.5	Unloading from railway wagons girders, rails, permanent way material (except wooden sleepers), iron works, M.S. bars, pipe, etc. including one chain (30 m) lead but excluding stacking.	**per ton**	**232**			
3.3.6	Loading into railway wagons wooden broad gauge sleepers including one chain (30 m) lead and stacking.	**100 no.**	**1452**			
3.3.7	Unloading from railway wagons wooden broad gauge sleepers including one chain (30 m) lead excluding stacking.	**100 no.**	**1162**			
3.3.8	Loading into railway wagons metre gauge or narrow gauge wooden sleepers including one chain (30 m) lead and stacking inside wagons.	**100 no.**	**774.4**			
3.3.9	Unloading from railway wagons metre gauge or narrow gauge wooden sleepers, including one chain (30 m) lead but excluding stacking.	**100 no.**	**387.2**			
3.3.10	Loading into railway wagons, bridge and crossing timbers, including one chain (30 m) lead and stacking.	**100 no.**	**2904**			
3.3.11	Unloading from railway wagons bridge and crossing timbers, including one chain (30 m) lead but excluding stacking.	**100 no.**	**1452**			
3.3.12	Loading into railway wagons wooden blocks for sleepers including one chain (30 m) lead and stacking.	**100 no.**	**545**			
3.3.13	Unloading from railway wagons wooden blocks for sleepers from wagons including one chain (30 m) lead but excluding stacking.	**100 no.**	**290**			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
3.3.14 Loading into railway wagons B.G. cement concrete sleepers including one chain (30 m) lead and stacking:-					
(a) R.C.C. Twin block sleepers.	**100 no.**	**5328**			
(b) P.S.C. Sleepers.	**100 no.**	**6453**			
3.3.15 Unloading from railway wagons B.G. cement concrete sleepers including one chain (30 m) lead but excluding stacking:-					
(a) R.C.C. Twin block sleepers	**100 no.**	**2904**			
(b) P.S.C. Sleepers	**100 no.**	**3319**			
3.4 Loading and Unloading - Earth					
3.4.1 Unloading earth from railway wagons and clearing upto 5ft (1.5 m) from rail.	**100 cft** (m^3)	**218** 76.9			
3.4.2 Unloading earth from railway wagons and spreading upto 15ft (4.5 m) from rail.	**100 cft** (m^3)	**363** 128			
3.5 Removing & Stacking of Materials					
3.5.1 Removing and stacking within one chain (30 m) lead:-					
(a) Stone, spawl, brick bats,brick tiles/concrete blocks of sizes, shingle, sand, lime, surkhi, ashes, Kankar, coal etc:	**100 cft** (m^3)	**363** 128			
(b) Bricks 9" x 4-1/2" x 3" or brick tiles 12" x 6" x 2".	**1000 no.**	**1056**			
(c) Brick tiles 9" x 4-1/2" x 1-1/2"	**1000 no.**	**528**			
(d) Broad gauge wooden sleepers	**100 no.**	**581**			
(e) Meter gauge or narrow gauge wooden sleepers	**100 no.**	**332**			
(f) Rails, girders, pipes, cement, structural steel, etc.	**per ton**	**166**			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(g) Bridge and crossing timbers, etc.	**100 no.**	**1936**			
(h) Wooden Blocks for sleepers	**100 no.**	**218**			
(i) B.G. Concrete sleepers of all kinds	**100 no.**	**2904**			

CHAPTER 4

EARTHWORKS

Notes.-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 4 Earthwork of "Technical Specifications for Railway Infrastructure Works, Volume I, (2016)"

(2) The application of rates given in this chapter for excavation in hard soil, wet soil, slush, daldal and flowing water will be subject to the prior approval of concerned Divisional/Executive Engineer.

(3) The application of rates given in this chapter for excavation in soft rock, medium hard rock and hard rock shall be subject to the prior approval of Chief Engineer, on the basis of geological investigation report of the relevant project site.

(4) The following allowances for shrinkage should be provided for earth work which is not compacted, or evenly consolidated:-

(a) Deduction for shrinkage from the bank measurements when the earthwork is done by manual labour or tractor trolly = 10%

(b) Deduction for settlement from the bank measurements when the earthwork is done by heavy earth moving machinery = 5%

(c) No deduction for shrinkage shall be made for earth work carried out and tested for 95% or above modified AASHTO dry density.

(5) The prescribed field and laboratory tests for the earthwork and its compaction will be arranged by the contractor at his own expenses .

(6) The rates for earth work are inclusive of charges such as royalty and all other such charges, where ever involved.

(7) In case of earthwork measurment, where extra lift is to be paid in terms of lead reference may be made to Annexure 1 of this chapter.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.1 Site Clearance				**4.6.2, 4.6.3, 4.6.4, 4.6.5, 4.6.6**	
4.1.1 Clearing and grubbing of sites including removal of stumps,roots,bushes,trees less than 6" (150 mm) girth and objectionable materials upto 12" (300 mm) in depth and disposal of materials within 100 ft (30 m) lead, as per drawings and in accordance with the specifications.	**100 sft** m^2	**254** 27.3			
4.1.2 Cutting of trees, removal and disposal of roots and stumps within 100 ft (30 m) lead, including filling of holes and compaction to required degree, complete in accordance with the specifications.					Uprooting stumps of trees less than 6" (150 mm) girth is included in the relevant rate for earthwork excavation.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
a) Above 6" (150 mm) and up to 12" (300 mm) girth	**No.**	**436**			
b) Above 12" (300 mm) and up to 2.0' (600 mm) girth	**No.**	**726**			
b) Above 2.0' (600 mm) girth	**No.**	**1452**			
4.1.3 Cutting and Clearing of bush stumps, shrubs, roots, logs and trees less than 6" (150 mm) girth and disposal of material within 100 ft (30 m) lead as per drawings and in accordance with the specifications.					
(a) Trees of Light Concentration	**100 sft** (m^2)	**36.3** 3.90			
(b) Trees of Thick Concentration	**100 sft** (m^2)	**54.5** 5.85			
4.1.4 Stripping and Removal of top soil to required depth and disposal of stripped material in stock pile or spreading at designated area, within 100 ft (30 m) lead, complete as per drawings and in accordance with the specifications.	**100 cft** (m^3)	**290** 102.57			
4.2 Excavation - General					
4.2.1 Earth work excavation as per designed section, grade, lines and profiles, undressed, including disposal of excavated material upto single throw of kassi, in accordance with the specifications.				**4.6.6, 4.8.3, 4.8.4, 4.8.5, 4.8.6,**	
(a) In ashes, sand, soft soil or silt clearance.	**100 cft** (m^3)	**272** 96.2			
(b) In ordinary soil.	**100 cft** (m^3)	**327** 115.4			
(c) In hard soil or soft Stratum.	**100 cft** (m^3)	**436** 154			
4.2.2 Excavation as per designed section, grade, lines & profiles, undressed, including disposal of excavated material upto 100 ft (30 m) lead & lift upto 5 ft (1.5 m) in accordance with the specifications					
(a) In ashes, sand, soft soil or silt clearance.	**100 cft** (m^3)	**399** 141			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) In ordinary soil.	**100 cft** (m^3)	**472** 167			
	(c) In hard soil or soft Stratum.	**100 cft** (m^3)	**581** 205			
4.2.3	Borrow pit excavation, undressed, lead upto 100 ft (30 m) and lift upto 5ft (1.5 m) in accordance with the specifications					
	(a) In ordinary soil.	**100 cft** (m^3)	**508** 179			
	(b) In hard soil or soft murum.	**100 cft** (m^3)	**624** 221			
	(c) In shingle and gravel formation	**100 cft** (m^3)	**799** 282			
4.2.4	Extra for excavation in wet soil.	**100 cft** (m^3)	**254** 89.7			
4.2.5	Extra for excavation in slush or daldal	**100 cft** (m^3)	**363** 128			
4.2.6	Extra for excavation in flowing water	**100 cft** (m^3)	**508** 179			
4.2.7	Excavation in rock dressed to designed section, grade, line and profile in accordance with the specifications including the disposal of excavated material upto 100 ft (30 m) lead & lift upto 5 ft (1.5 m).					(i)Tools and plants required shall be the liability of contractor. (ii) Reduce the rate by 8% if the excavated section is not dressed or levelled to designed section
	(a) In soft rock, slate, shale, schist or latrite, which can be excavated with pick and crow bar.	**100 cft** (m^3)	**835** 29.5			
	(b) In medium hard rock, requiring occasional blasting.	**100 cft** (m^3)	**1149** 406	**1228** 434		
	(c) In hard rock requiring blasting	**100 cft** (m^3)	**1936** 68.4	**2233** 78.9		
4.2.8	Excavation in hard rock requiring blasting but blasting prohibited, dressed to designed section, grade, lines and profile in accordance with the specifications including disposal of excavated material upto 100 ft (30 m) lead and lift upto 5 ft (1.5 m).	**100 cft** (m^3)	**3872** 1368	**4466** 1578	**4.8.4**	(i) Tools and plants required shall be the liability of contractor.

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
					(ii) Reduce the rate by 8% if the excavated section is not dressed or levelled to designed section.
4.3 Structural & Trench Excavations				**4.8.4, 4.9, 4.10, 4.11, 4.12**	
4.3.1 Structural excavation for foundation of buildings, bridges and other structures upto 5 ft (1.5 m) depth including dagbelling, dressing, refilling around structures with excavated earth, watering and ramming, lead upto 100 ft (30 m) complete in all respects.					
(a) In sand, ashes or loose soil.	**100 cft** (m^3)	**678** 239			
(b) In ordinary soil.	**100 cft** (m^3)	**799** 282			
(c) In hard soil or soft moorum.	**100 cft** (m^3)	**895** 316			
4.3.2 Stuctural excavation for foundation of buildings, bridges and other structures from 5.1 ft upto 10.0 ft (1.51 - 3.0 m) depth including dagbelling, dressing, refilling, around structure with excavated earth, watering and ramming, lead upto 100 ft (30 m) complete in all respect.					
(a) In sand, ashes or loose soil.	**100 cft** (m^3)	**750** 265			
(b) In ordinary soil.	**100 cft** (m^3)	**871** 308			
(c) In hard soil or soft moorum.	**100 cft** (m^3)	**968** 342			
4.3.3 Structural excavation for foundation of buildings, bridges and other structures upto 5 ft (1.5 m) depth including dagbelling, dressing, refilling, around structure with excavated earth, watering and ramming, lead upto 100 ft (30 m) complete in all respects.					

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) In soft rock, slate, shale, schist or laterite work, with pick and crow bar.	**100 cft** (m^3)	**1016** 35.9			
(b) In medium hard rock requiring occasional blasting.	**100 cft** (m^3)	**1270** 449	**1349** 477		
(c) In hard rock requiring blasting,	**100 cft** (m^3)	**2081** 735	**2378** 840		
4.3.4 Structural excavation for foundation of buildings, bridges and other structures in hard rock (requiring blasting but blasting not permitted) upto 5 ft (1.5 m) depth including dagbelling, dressing, refilling, around structure with excavated material, including raming, lead upto 100 ft (30 m) complete in all respects	**100 cft** (m^3)	**4162** 1470	**4757** 1680		Tools and plants required shall be the liability of the contractor.
4.3.5 Extra for excavation requiring shoring.	**100 cft** (m^3)	**103** 36.3	**124** 43.9		Composite rate includes material i.e., planks etc.
4.3.6 Trench excavation in open cutting for sewers and manholes chambers to the designed section, lines, grade and profile according to drawings & specifications and disposal of excavated material within 100 ft. (30m) and dressing in specified manner including shuttering, timbering and removing surface water, in all types of soil, except shingle, gravel and rock:-					
(a) 0 ft to 5.0 ft (0 to 1.52 m) depth.	**100 cft** (m^3)	**610** 216	**638** 225		(i) The rate does not include back filling after laying sewer, which is payable separately under item 4.3.8 below
(b) 5.01 ft to 10.0 ft (1.52 to 3.04 m) depth.	**100 cft** (m^3)	**1018** 360	**1059** 374		
(c) above 10.0 ft (3.04 m) depth.	**100 cft** (m^3)	**1308** 462	**1350** 477		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.3.7 Trench excavation in open cutting for sewers and manhole chambers, etc. below sub-soil water level to the designed section, line, grade and profile according to drawings & specifications including shoring, timbering and shuttering M.S. sheets on both sides of the trenches including removel / lowering of sub-soil water, in all types of soil, except shingle, gravel and rock:-					ii)The rate does not include backfilling after laying sewers which is payable separately under item 4.3.8 below.
(a) 0 ft to 4.0 ft (0 to 1.2 m) depth below SSWL	**100 cft** (m^3)	**986** 348	**1184** 418		
(b) 4.01 ft to 8.0 ft (1.2 to 2.4 m) depth below SSWL	**100 cft** (m^3)	**1233** 435	**1443** 510		
(c) exceeding 8 ft (2.4 m) depth below SSWL	**100 cft** (m^3)	**1849** 653	**2077** 734		
4.3.8 Back filling of excavated earth in trenches in all types of soil including dressing, levelling, compaction, etc. and lead upto one chain.	**100 cft** (m^3)	**460** 162			
4.3.9 Trench excavation for water supply pipeline upto 5 ft (1.5 m) depth from ground level to the design section, line, grade and profiles according to drawings & specifications in all types of soils, except rock.	**100 cft** (m^3)	**557** 197			
4.3.10 Trench excavation in open cutting up to 5' -0" ft depth for storm water channels/drains and sullage drains in open areas, roads, streets and lanes, including under pinning of walls and shoring to protect existing work, shuttering and timbering the trenches, dressed to design level and dimensions, trimming, removal of surface water from trenches, back filling, disposal and dressing of surplus excavated material within 100 ft (30 m) lead, complete.					
(a) In Ordinary soil	**100 cft** (m^3)	**583** 206	**590** 208		
(b) In hard soil	**100 cft** (m^3)	**682** 241	**691** 244		
(c) In gravel and Shingle / Soft rock not requiring blasting	**100 cft** (m^3)	**974** 344	**986** 348		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.3.11 Trench excavation in open cutting 5 - 01 ft to 10 - 0 ft (1.5 to 3.0 m) depth for storm water channels/drains and sullage drains in open areas, roads, streets and lanes including under pinning of walls and shoring to protect existing work, shuttering and timbering the trenches, dressed to design level and dimensions, trimming, removal of surface water from trenches, back filling, disposal and dressing of of surplus excavated material within 100 ft (30 m) lead complete.					
(a) In ordinary Soil	**100 cft** (m^3)	**633** 224	**658** 232		
(b) In hard Soil	**100 cft** (m^3)	**730** 258	**760** 268		
(c) In gravel and shingle / soft rock not requiring blasting	**100 cft** (m^3)	**1057** 373	**1084** 383		
4.4 Filling Earth under Floors / behind Retaining Structures				**4.9, 4.10.12, 4.11.10 & 4.12.7**	
4.4.1 Filling, watering and ramming earth under floors:-					
(a) With surplus earth from foundation, etc.	**100 cft** (m^3)	**387** 137			
(b) With new earth excavated from outside the structure	**100 cft** (m^3)	**895** 316			
4.4.2 Ramming earth work behind retaining walls.	**100 cft** (m^3)	**145** 51			
4.4.3 Providing & filling coarse grained granular backfill, without admixture of fine particles, clean and permeable behind the abutments/retaining walls, of approved gradation and source, compacted in layers with approved mechanical means, including all lead, lift, carriage, dressing to designed section/ profile, complete in all respect.	**100 cft** (m^3)	**439** 155	**3739** 1321		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.5 Embankment with Excavated/Barrow Material				**4.6.6, 4.6.7, 4.8.7 & 4.12.5**	
4.5.1 Earth work for embankment in ordinary soil with excavated material, lead upto 300 ft (90 m) including placing of earth in layers, ploughing & mixing with blade, grader, or disc horrow or other suitable equipment and compaction by mechanical means at optimum moisture content and dressing to designed section, lines, grade and profile according to drawings & specifications complete in all respects.					The "excavated material" includes all suitable material removed from excavation for railway formation, excavations from barrowpits in railway land and surplus material from structural excavations.
(a) 95% to 100% maximum modified AASHTO dry density	**100 cft** (m^3)	**571** 202	**669** 236		
(b) 90% maximum modified AASHTO dry density	**100 cft** (m^3)	**543** 192	**636** 225		
(c) 85% maximum modified AASHTO dry density.	**100 cft** (m^3)	**515** 182	**604** 213		
4.5.2 Compaction of earth work availabe at site of work, including placing of earth in layers,ploughing & mixing with blade, grader, or disc horrow or other suitable equipment and compaction by mechanical means at optimum moisture content, dressing to designed section, lines, grade and profile according to drawings & specifications complete in all respects.					The rate also includes hire charges of machinery, cost of fuel, lubricant, pay of driver and cleaner, etc., but excludes the cost of supply of earth at site of work.
(a) 95% to 100% maximum modified AASHTO dry density.	**100 cft** (m^3)	**62.9** 22.2	**161** 57.0		
(b) 90% maximum modified AASHTO dry density.	**100 cft** (m^3)	**59.8** 21.1	**153** 54.1		
(c) 85% maximum modified AASHTO dry density.	**100 cft** (m^3)	**56.8** 20.1	**146** 51.4		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.5.3 Compaction of natural ground including ploughing & mixing with blade, grader, or disc horrow or other suitable equipment and compaction by mechanical means at optimum moisture content, dressing to designed section, lines, grade and profile according to drawings & specifications complete in all respects. with power roller as per drawing and in accordance with the specifications.					
(a) 95% to 100% maximum modified AASHTO dry density.	**100 sft** (m^2)	**31.5** 3.39	**80.6** 8.68		
(b) 90% maximum modified AASHTO dry density.	**100 sft** (m^2)	**29.9** 3.22	**76.6** 8.25		
(c) 85% maximum modified AASHTO dry density.	**100 sft** (m^2)	**26.9** 2.90	**71.3** 7.67		
4.5.4 Mixing, moistening earth to optimum moisture content in layers for compaction, etc, complete.	**100 cft** (m^3)	**94.4** 33.3			
4.5.5 Compaction by rolling with animal/hand driven roller including all charges complete:-					
(a) Soft, or sandy soil	**100 cft** (m^3)	**90.8** 32.1			
(b) Ordinary soil	**100 cft** (m^3)	**108.9** 38.5			
(c) Hard soil	**100 cft** (m^3)	**127** 44.9			
(d) Admixture of shingle	**100 cft** (m^3)	**145** 51.3			
4.6 Dressing of Earthwork				**4.12**	
4.6.1 Dressing of earthwork excavated to designed section and profile etc, complete:-					
(a) Ashes, sand, silt or soft soil	**100 cft** (m^3)	**28.1** 9.92			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) In ordinary or hard soil.	**100 cft** (m^3)	**57.1** 20.2			
(c) In gravel work or soft rock not requiring blasting.	**100 cft** (m^3)	**133.1** 47.0			
4.6.2 Dressing of slopes:-					To be paid only when exclusively dressing is done and no earthwork is carried out in embankment or cutting.
(a) Dressing slopes of banks or ground surface.	**100 sft** (m^2)	**127** 13.7			
(b) Dressing of earthwork (done by machinary or otherwise and left undressed) to designed section.	**100 sft** (m^2)	**145** 15.6			(i) The surface area dressed is to be taken for measurement. (ii) The item is applicable where the dressing is done by the contractor other than the one who executed the work.
4.7 Re-handling & Carriage of Earth				**4.6.26 & 4.6.27**	
4.7.1 Rehandling of excavated earth, lead upto a single throw of kassi.	**100 cft** (m^3)	**182** 64.1			
4.7.2 Rehandling of excavated earth manually/ by cart, lead upto 50 ft (15 m):-					
(a) For earth work soft, ordinary and hard soil	**100 cft** (m^3)	**254** 89.7			
(b) For gravel, shingle or rock	**100 cft** (m^3)	**363** 128			
4.7.3 Extra for every 50 ft (15 m) additional lead or part thereof:-					This rate shall be applicable upto 1000 ft (300 m) total distance, including the lead covered in the item of earthwork.
(a) for earth work soft, ordinary, hard and very hard	**100 cft** (m^3)	**14.51** 5.12			
(b) for gravel, shingle or rock	**100 cft** (m^3)	**17.4** 6.15			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
4.7.4 Transportation of earth all types when the total distance including the lead covered in the item of work, is more than 1000 ft (300 m):-					This rate will be paid in addition to rate of earth work without deducting the lead cover in the relevant item of earth work.
(a) Upto first 1/4 mile (1320 ft)	**100 cft** (m^3)	**376** 13.27			
(b) For every 330 ft (100 m), additional lead or part thereof, beyond 1/4 mile (400 m) upto one mile (1.6 km).	**100 cft** (m^3)	**31.7** 11.21			
(c) For every 1/4 mile (400 m) additional lead or part thereof, beyond one mile upto 2 mile (beyond 1.6 km upto 3.2 km).	**100 cft** (m^3)	**27.6** 9.74			
(d) For every 1/4 mile (400 m) additional lead or part thereof, beyond 2 miles.	**100 cft** (m^3)	**24.44** 8.63			For earth work invloving carriage of more than 3 miles through rates will be called
4.8 Miscellaneous Items					
4.8.1 Berm cutting:-					
(a) Lead upto a single throw of kassi without dressing.	**100 cft** (m^3)	**218** 76.9			
(b) Upto 50 ft (15 m) lead including dressing.	**100 cft** (m^3)	**424** 150			
4.8.2 Ploughing and levelling borrow pits:-					Area ploughed to be measured.
(a) Upto 3 ft (0.9 m) depth	**acr** (ha)	**1452** 3594			
(b) Above 3 ft (0.9 m) depth	**acr** (ha)	**2178** 5391			
4.8.3 Levelling, dressing and making lawns.	**100 sft** (m^2)	**348** 37.5			
4.8.4 Plantation of grass in lawns (excluding cost of grass).	**100 sft** (m^2)	**290** 31.3			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
4.8.5	Plantation of grass on slopes of banks or lawns with grass sods including ploughing, laying, setting and watering (Turf got from within a distance of 5 miles (8 km) and maintenance for 15 days) including cost of DACCA/CHINA Grass	**100 sft** (m^2)	**1278** 138	**1617** 174		
4.8.6	Extra for clay puddling.	**100 cft** (m^3)	**363** 128			
4.8.7	Removing earth from roofs lowering to ground and disposed with in one chain (30 m) lead.	**100 cft** (m^3)	**407** 144			
4.8.8	Bailing out water:-					Rate to be operated only for very small quantities.
	(a) by hand	**100 cft** (m^3)	**218** 76.9			
	(b) by pump	**100 cft** (m^3)	**26.5** 9.35	**42.4** 15.0		Rate includes cost of providing pump, POL and operation charges etc.

ANNEXURE - A to Chapter- 4
CONVERSION OF LIFT INTO LEAD

In the case of earthwork measurement where extra lead is to be paid in lieu of 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 mean lifts are given below:

Lift in feet	Conversion factor	Equivalent Horizontal lead in feet
1	1' lift 8' lead	8
2	1' lift 8' lead	16
3	1' lift 8' lead	24
4	1' lift 8' lead	32
5	1' lift 10' lead	50
6	1' lift 10' lead	60
7	1' lift 10' lead	70
8	1' lift 10' lead	80
9	1' lift 11' lead	99
10	1' lift 12' lead	120
11	1' lift 13' lead	143
12	1' lift 14' lead	168
13	1' lift 15' lead	195
14	1' lift 16' lead	224
15	1' lift 17' lead	255
16	1' lift 18' lead	288
17	1' lift 19' lead	323
18	1' lift 20' lead	360
19	1' lift 21' lead	399
20	1' lift 22' lead	440
21	1' lift 23' lead	483
22	1' lift 24' lead	528
23	1' lift 25' lead	575
24	1' lift 26' lead	624
25	1' lift 27' lead	675
26	1' lift 27' lead	702
27	1' lift 27' lead	729
28	1' lift 27' lead	756
29	1' lift 27' lead	783
30	1' lift 27' lead	810

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

CHAPTER 5

CONCRETE

Notes:

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 5 "Concrete" of " TechnicalSpecification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and stacking them within 100 ft (30 m).

(3) If concrete mixer or high frequency vibrator, etc., is supplied by the department, all charges including depreciation will be recovered from the contractor.

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
5.1	**Dry Ramming of Brick/Stone Ballast**				**5.2.1**	
5.1.1	Providing and laying dry rammed stone ballast 1-1/2" (40 mm) to 2" (50 mm) gauge.	**cft** (m^3)	**29.0** 1025	**59.3** 2092		
5.1.2	Providing and laying dry rammed brick ballast 1-1/2" (40 mm) to 2" (50 mm) gauge.	**cft** (m^3)	**29.0** 1026	**53.2** 1880		
5.2	**Cement Concrete in Foundations**				**5.2.1, to 5.2.3 5.2.6,5.4**	
5.2.1	Providing and laying cement concrete with stone ballast 1-1/2" (40 mm) to 2" (50 mm) gauge in foundation and plinth:-					
	(a) Ratio 1:3:6	**cft** (m^3)	**53.2** 1880	**158** 5587		
	(b) Ratio 1:4:8	**cft** (m^3)	**53.2** 1880	**143** 5051		
	(c) Ratio 1:5:10	**cft** (m^3)	**53.2** 1880	**134** 4728		
	(d) Ratio 1:6:12	**cft** (m^3)	**53.2** 1880	**127** 4476		
5.2.2	Providing and laying cement concrete with brick ballast 1-1/2" to 2" gauge in foundation and plinth:-					
	(a) Ratio 1:3:6	**cft** (m^3)	**53.2** 1880	**153** 5404		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) Ratio 1:4:8	**cft** (m^3)	**53.2** 1880	**138** 4864		
(c) Ratio 1:5:10	**cft** (m^3)	**53.2** 1880.4	**128** 4538		
(d) Ratio 1:6:12	**cft** (m^3)	**53.2** 1880	**121** 4285		
5.2.3 Extra on item No. 5.2.1 & 5.2.2 above, for sedimentation tank or filter beds:-					
(a) in bed	**cft** (m^3)	**18.8** 662			
(b) on slope	**cft** (m^3)	**26.6** 940			
5.3 Damp Proof Course (DPC)				**6.5.3**	
5.3.1 Providing and laying damp proof course of cement concrete 1:2:4 nominal mix (using cement, sand and shingle/crushed stone), including bitumen coating:-					The rate includes overlaps of polythene sheet.
(a) With one coat of bitumen 10/20 grade @ 19 lbs per 100 sft and polythene sheet 500 gauge.					
(i) 1-1/2" (40 mm) thick	**sft** (m^2)	**24.2** 261	**58.0** 624		
(ii) 2" (50 mm) thick	**sft** (m^2)	**24.2** 261	**63.5** 684		
(iii) 3" (75 mm) thick	**sft** (m^2)	**25.4** 274	**76.5** 824		
(b) with two coats of bitumen 10/20 grade @34 lbs/100 sft and ploythene sheet 500 gauge.					
(i) 1-1/2" (40 mm) thick	**sft** (m^2)	**24.2** 261	**65.3** 703		
(ii) 2" (50 mm) thick	**sft** (m^2)	**24.2** 261	**71.0** 764		
(iii) 3" (75 mm) thick	**sft** (m^2)	**25.4** 274	**84.0** 904		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
5.3.2 Providing and laying damp proof course horizontal or vertical with cement sand plaster and bitumen coating:-					The rate includes overlaps of polythene sheet
(A) With one coat of bitumen 10/20 grade @19 lbs/100 sft and polythene sheet 500 gauge;					
(a) Cement sand plaster ratio 1:4;					
(i) 1/2" (12 mm) thick.	**sft** (m^2)	**18.2** 195	**37.8** 407		
(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**40.5** 436		
(b) Cement sand plaster ratio 1:3;					
(i) 1/2" (12 mm) thick.	**sft** (m^2)	**18.2** 195	**38.6** 415		
(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**41.4** 445		
(c) Cement sand plaster ratio 1:2;					
(i) 1/2" (12 mm) thick	**sft** (m^2)	**18.2** 195	**40.0** 431		
(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**44.2** 475		
(B) With two coats of bitumen 10/20 grade @34 lbs/100 sft and polythene sheet 500 gauge;					
(a) Cement sand plaster ratio 1:4;					
(i) 1/2" (12 mm) thick	**sft** (m^2)	**18.2** 195	**44.8** 482		
(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**47.5** 511		
(b) Cement sand plaster ratio 1:3;					
(i) 1/2" (12 mm) thick.	**sft** (m^2)	**18.2** 195	**45.6** 491		
(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**48.4** 521		
(c) Cement sand plaster ratio 1:2;					
(i) 1/2" (12 mm) thick.	**sft** (m^2)	**18.2** 195	**47.5** 512		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(ii) 3/4" (19 mm) thick	**sft** (m^2)	**18.2** 195	**51.7** 556		
5.3.3	Supplying and laying polythene sheet over DPC under floors and on roofs etc.					The rate includes overlaps.
	(a) 300 gauge (.003" thick)	**sft** (m^2)	**1.82** 19.5	**4.00** 43.1		
	(b) 500 gauge (.005" thick)	**sft** (m^2)	**2.18** 23.4	**5.48** 59.0		
5.3.4	Laying 2" thick sand and bitumen carpet, with bitumen 10/20 grade mixed with sand in the ratio of 4% , on top of foundation of oil tank.	**sft** (m^2)	**15.7** 169	**41.7** 449		
5.4	**Plain Cement Concrete**				**5.2.1 to 5.2.3 5.2.6 & 5.4**	
5.4.1	Providing cement concrete plain using coarse sand and screened graded & washed aggregate of approved quality including placing compacting, finishing, curing, complete as per specifications without shuttering on ground floor of buliding and for structrues up to 20ft height.					
	(a) Nominal mix 1:2:4	**cft** (m^3)	**60.0** 2120	**197** 6941		
	(b) Nominal Mix (1:3:6)	**cft** (m^3)	**60.0** 2120	**167** 5896		
	(c) Nominal Mix (1:4:8)	**cft** (m^3)	**60.0** 2120	**150** 5290		
5.4.3	Extra for using sulphate resistant cement.	**per bag**		**55.0**		
5.5	**Shuttering for Plain Cement Concrete (vertical)**				**5.4.9**	
5.5.1	Providing vertical wooden/steel shuttering for plain cement concrete works, including its erection and removal complete.	**sft** (m^2)	**26.6** 287	**44.4** 478		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
5.6	**Fabrication of Steel Reinforcement**				**5.3, 5.6**	
5.6.1	Providing and laying mild steel reinforcement including the cost of straightening,cutting,bending,binding, wastage,and overlaps as are not shown in the drawing, placing in position on cement concrete 1:2:4 spacers or MS chairs, tying them with binding wire, complete in all respects as per drawing and in accordance with the specifications.				**5.3**	The rate includes wastage over laps and chairs, etc.
	(a) Deformed bars (Grade 40) conforming to ASTM A-615, fy=40,000 Psi/276 N/mm2 (Mpa)	**per kg**	**7.74**	**102**		For fabrication of steel reinforcement for pile foundations refer to chapter 14
	(b) Deformed bars (Grade 60) fy= 60,000 Psi/ 412 N/mm^2 (Mpa)	**per kg**	**9.68**	**108**		
	(c) Plain bars 1/4" dia (Grade -36) fy=36,000 Psi/248 N/mm^2 (Mpa)	**per kg**	**7.74**	**94.6**		
5.6.2	Providing and laying high tensile steel prestressing cable confirming to ASTM A-416 for prestressed (post tensioned) concrete including assembling by drawing the H.T. wire through metal spacer plate, inserting in helix core and taping or tying, sheathing in longitudinally welded metal corrugated sheath, positioning, anchorage with male and female set of anchorage cone, forming ducts for transverse cable stressing cables with jack at both ends as per stressing schedule, maintaining stressing record and supply the same in the approved proforma to the Engineer-in-charge, making loop at blind end, including all materials required for it, qrouting the cable ducts with cement cutting projected ends & making good recesses etc., complete in all respects in accordance with the specifications.	**per kg**	**53.5**	**310**	**5.6**	The rate includes wastage in cutting and breakage in stressing etc

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
5.6.3 Fabrication of high tensile steel reinforcement conforming to ASTM A-416 for prestressed (pre-tensioned) concrete work, including inserting wire in moulds, providing M.S. shear bars, spacers and lift hooks, male and female anchorage, tie down, struts, stressing cables, maintaining stress record and supply the same in approved proforma to the Engineer-in-charge, cutting wires and projecting ends and making good recesses.etc. complete in all respects in accordance with the specifications.	**per kg**	**31.22**	**285.5**	**5.6**	(i) The rate includes wastage in cutting and breakage in stressing etc. (ii) Quantity of H.T.wire will form basis of payment.
5.7 Reinforced/Prestressed Cement Concrete				**5.2.1 to 5.2.7 & 5.4**	
5.7.1 Providing & laying reinforced cement concrete (including prestressed concrete), using coarse sand and crushed stone of approved quality / source, including mixing, transporting,placing,compacting,finishing and curing etc. complete in all respect as per specification but excluding the cost of steel reinforcement, its fabrication and placing in position etc. (a) Reinforced cement concrete in roof slabs, beams, columns, lintels, girders & other structural members cast in-situ or prestressed members cast in-situ complete in all respect as per specifications, including the cost of form work, moulds and shuttering complete in all respects, on ground floor of the buliding and for structures upto 20 ft height					(1) The rate includes rendering surface smooth and the plastering done for making up all surfaces after removing centering. If plastering for smoothing surface not done the rate be reduced by 10%. (2) fc' means 28 days compressive cylender strength of concrete. (3)The tenders condition should specified whether concrete will be supplied

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(i) Nominal mix 1:1:2	**per cft**	**96.8**	**350**		on the basis of nomonal mix or 28 days cylinder strength. (3) For reinforced cement concrete for pile foundation refer to chapter 14
	(m^3)	3419	12346		
(ii) Nominal mix 1:1-1/2:3	**per cft**	**96.8**	**302**		
	(m^3)	3419	10665		
(iii) Nominal mix 1:2:4	**per cft**	**96.8**	**275**		
	(m^3)	3419	9707		
(b) Reinforced cement concrete in rafts/spread/strip foundations base slab of columns,retaining walls floor and track supports etc. and other structural members other than those mentioned in 5.7.1 (a) complete in all respect as per specification, but excluding the cost of form work, moulds and shuttering, for ground floor of the buliding and for strucutures upto 20 ft height.					The cost of shuttering may be paid against item 5.5.1
(i) Nominal mix 1:1:2	**per cft**	**62.9**	**274**		
	(m^3)	2222	9675		
(ii) Nominal mix 1:1-1/2:3	**per cft**	**62.9**	**227**		
	(m^3)	2222	8029		
(iii) Nominal mix 1:2:4	**per cft**	**62.9**	**201**		
	(m^3)	2222	7094		
(c) Pre-cast reinforced cement concrete and prestressed reinforced cement concrete in columns, beams, lintels, stair cases, shelves, manholes/drain covers etc. including formwork, complete in all respect as per specifications.					
(i) Nominal mix 1:1:2	**per cft**	**108.9**	**351**		
	(m^3)	3846	12387		
(ii) Nominal mix 1:1-1/2:3	**per cft**	**108.9**	**304**		
	(m^3)	3846	10741		
(iii) Nominal mix 1:2:4	**per cft**	**108.9**	**278**		
	(m^3)	3846	9806		

	Description	Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
5.7.2	Erecting and fixing in position, precast cement concrete slabs etc. including all lead and lift complete.	**per cft** (m^3)	**70.2** 2479	**83.6** 2953	**5.2.1 to 5.2.7 & 5.5**	
5.7.3	Extra labour for laying concrete plain or reinforced at					
	(a) 2nd and subsequent storeys in the buildings	**per cft** (m^3)	**29.0** 1026			
	(b) Above 20 ft (6 m) upto 40 ft (12m) for other than buildings	**per cft** (m^3)	**36.3** 1282			
	(c) For every additional 10 ft (3 m) height beyond 40 ft for other than buildings.	**per cft** (m^3)	**18.2** 641			
5.7.4	Lifting transporting and placing precast prestressed concrete beams, girders & other members, (excluding battens) etc. in position on the bridges to correct alignment and level etc. complete:-				**5.6**	
	a) Beams up to 50 ft (15m) length	**cft** (m^3)	**17.6** 621			
	(b) Beam above 50 ft (15 m) upto 75	**cft** (m^3)	**24.8** 877			
	(c) Beam above 75 ft (23 m) upto 100 ft (30.5 m) length	**cft** (m^3)	**33.8** 1194			
	(d) Beam above 100 ft (30.5 m) upto150 ft (45.75 m) length	**cft** (m^3)	**44.0** 1553			
	(e) Beam above 150 ft (45.75 m) length.	**cft** (m^3)	**54.5** 1926			
5.8	**Other Precast Cement Concrete Works**				**5.2 & 5.5**	
5.8.1	Providing & fixing in position precast cement concrete solid or face blocks (1:2:4), including cost of templates.	**per cft** (m^3)	**59.3** 2094	**202** 7132		
5.8.2	Providing & fixing in position precast cement concrete hallow blocks (1:2:4) including cost of templates.	**per cft** (m^3)	**59.3** 2094	**152** 5379		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
5.8.3	Providing and fixing in position ornamental cement concrete (1:2:4) Jali including cost of steel & its fabrication and templates complete in all respects.					
	(a) 2" (50 mm) thick	**per sft** (m^2)	**48.4** 521	**82.3** 886		
	(b) 3" (75 mm) thick	**per sft** (m^2)	**67.8** 729	**113** 1218		
	(c) 4" (100 mm) thick	**per sft** (m^2)	**87.1** 938	**144** 1550		
5.8.4	Providing reinforced cement concrete spouts, including fixing in position (2-1/2' x 6" x 5") (760 mm x 150 mm x 125 mm).	**each**	**484**	**625**		
5.9	**Admixtures**				**5.2.7 & 5.4**	
5.9.1	Extra for adding water proofing agent as approved by the Engineer incharge in cement mortar/concrete.	**per kg**		**74.8**		
5.10	**Contraction/Expansion Joints**				**5.4 & 5.7**	
5.10.1	Providing and fixing 6" (150 mm) wide curved sheet of required shape fixed on face of the expansion joint with G.I. Screw 1.5 inch long to cover expansion joints vertically:-					
	(a) Aluminum sheet 1/16 inch thick	**per rft** (m)	**22.1** 72.5	**109** 358		
	(b) G.I. Sheet 14 SWG.	**per rft** (m)	**12.60** 41.4	**62.9** 206.4		
5.10.2	Providing and fixing 6" (150 mm) wide G.I. sheet 18 SWG stopper to expansion joint.	**per rft** (m)	**7.50** 24.6	**52.5** 172		
5.10.3	Filling expansion joints with bitumen 10/20 grade / Asphatlic mixture.	**per rft** (m)	**6.66** 21.8	**18.1** 59.4		
5.10.4	Providing PVC 5 mm thick water stopper in construction joints of RCC water tanks including fixing in position, complete.	**sft** (m^2)	**6.66** 71.6	**52.6** 567		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
5.10.5	Providing brass sheet 3 mm. thick water stopper in construction Joints & RCC water tanks, including over laps, fixing in position, etc complete.	**sft** (m^2)	**9.68** 104.2	**828** 8914		
5.10.6	Providing & laying preformed expansion joint filler, non-extruding and resilient type conforming to AASHTO M-213 specifications as shown on the drawings.	**sft** (m^2)	**20.8** 68.2	**219** 718		
5.10.7	Providing & filling joint filler, hot poured elastic type, conforming to AASHTO M-173, as shown on the drawings .	**ft** (m)	**16.9** 55.6	**189** 620		
5.11	**Miscellaneous Items**					
5.11.1	Nicking cement concrete surface:-	**sft** (m^2)	**6.05** 65.13			
5.11.2	Supplying and fixing broken glasses on court yard boundary walls, including 1:3:6 cement concrete coping.	**sft** (m^2)	**35.5** 382	**77.0** 829		
5.11.3	Making holes in old cement concrete or stone masonry walls and repairing.	**per inch dia per ft depth**	**290.4**			Payment shall be made for actual depth involved.
		per cm dia per m depth	375.1			
5.11.4	Keeping holes in cement concrete and fixing bolts in true alignment and levels including grouting with cement concrete 1:1.5:3 excluding cost of bolts.	**per inch dia per ft depth**	**50.8**	**74.2**		
		per cm dia per m depth	65.6	95.9		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
5.11.5	Supplying and fixing RCC mosaic bench 8-0' (2.5 m) long of approved design as per H.Q.E. sketch No. 3298 consisting of 1/2" (12 mm) mosaic topping of one part of white cement and marble powder ratio 3:1 and two parts marble chips laid over 2" (50 mm) thick precast RCC 1:2:4 slab (seat and back of bench). The rate also includes 3 Nos. precast RCC legs 3" (75 mm) thick finished with mosaic in grey cement, bolts and nuts. etc. rubbing, polishing, lead and lift complete in all respects.	**each**	**6050**	**9853**		
5.11.6	Providing and fixing RCC fencing on Platform complete in all respect as per HQE sketch no. H.Q.E Plan No.29537 (F-54) Type	**ft**	**47.8**	**135**		

CHAPTER 6

BRICK MASONRY

Notes:

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 6 Brick Masonry of " Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and its stacking within 100 ft (30 m).

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
6.1 Brick Work in Cement Mortar				**6.4.2 & 6.4.3**	
6.1.1 Providing, laying and jointing pacca brick work in foundation and plinth in buildings or other than buildings using first class new bricks, raking of joints and curing as per drawings and specifications, complete in all respects in:-					
(a) Cement sand mortar 1:3	**cft** (m^3)	**66.0** 2333	**230** 8131		
(b) Cement sand mortar 1:4	**cft** (m^3)	**66.0** 2333	**224** 7910		
(c) Cement sand mortar 1:5	**cft** (m^3)	**66.0** 2333	**220** 7762		
(d) Cement sand mortar 1:6	**cft** (m^3)	**66.0** 2333	**217** 7659		
6.1.2 Providing, laying and jointing first class pacca brick work in foundation and plinth in buildings or other than buildings, using released bricks, including, raking of joints and curing as per drawings and specifications, complete in all respects in:-					i)The rates do not include cost of released bricks which will be supplied free of cost by Railways.
(a) Cement sand mortar 1:3	**cft** (m^3)	**66.0** 1.87	**104** 3673		
(b) Cement sand mortar 1:4	**cft** (m^3)	**66.0** 2333	**97.7** 3452		
(c) Cement sand mortar 1:5	**cft** (m^3)	**66.0** 2333	**93.5** 3304		
(d) Cement sand mortar 1:6	**cft** (m^3)	**66.0** 2333	**90.6** 3201		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
6.1.3	Providing, laying and jointing first class pacca brick work in ground floor for 9" (225 mm) to 13-1/2" (337 mm) thick walls including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects in:-					(i) Masonry of court yard wall to be considered as masonry of buildings.
	(a) Cement sand mortar 1:3	**cft** (m^3)	**72.1** 2546	**236** 8345		
	(b) Cement sand mortar 1:4	**cft** (m^3)	**72.1** 2546	**230** 8124		
	(c) Cement sand mortar 1:5	**cft** (m^3)	**72.1** 2546	**226** 7976		
	(d) Cement sand mortar 1:6	**cft** (m^3)	**72.1** 2546	**223** 7873		
6.1.4	Providing, laying and jointing first pacca brick work in ground floor for 9" (225 mm) to 13-1/2" (337 mm) thick walls with released bricks including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects. in:-					i)The rates do not include cost of released bricks which will be supplied free of cost by Railways.
	(a) Cement sand mortar 1:3	**cft** (m^3)	**72.1** 2546	**110** 3887		
	(b) Cement sand mortar 1:4	**cft** (m^3)	**72.1** 2546	**104** 3665		ii) The labor for cleaning of released bricks to be paid under items 6.8.2 or 6.8.3 as appropiate.
	(c) Cement sand mortar 1:5	**cft** (m^3)	**72.1** 2546	**99.6** 3518		
	(d) Cement sand mortar 1:6	**cft** (m^3)	**72.1** 2546	**96.7** 3414		
6.1.5	Providing, laying and jointing first class pacca brick work in ground floor for 4-1/2" thick walls. including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects in:-					
	(a) Cement sand mortar 1:3	**cft** (m^3)	**80.4** 2839	**245** 8638		
	(b) Cement sand mortar 1:4	**cft** (m^3)	**80.4** 2839	**238** 8416		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(c) Cement sand mortar 1:5	**cft** (m^3)	**80.4** 2839	**234** 8269		
(d) Cement sand mortar 1:6	**cft** (m^3)	**80.4** 2839	**231** 8165		
6.1.6 Add extra labour on item No.6.1.3, 6.1.5, for brick work in:-					
(a) First Floor	**cft** (m^3)	**20.6** 727			
(b) Second Floor	**cft** (m^3)	**24.2** 855			
(c) Third Floor	**cft** (m^3)	**30.9** 1090			
(d) Fourth and subsequent Floors	**cft** (m^3)	**38.2** 1350			
6.2 Cement Concrete Block Masonry				**6.5.2 & 6.5.3**	
6.2.1 Providing, laying and jointing block masonry using cement concrete (1:3:6) machine moulded solid blocks in foundation and plinth including scaffolding, raking of joints and curing as per drawings and specifications, complete in all respects in:-					The normal size of the solid blocks will be 6"x8"x12" (150 mm x 200mmx 300 mm) or 8"x8"x12" (200mmx 200mmx 300mm) for items 6.2.1 and 6.2.2
(a) Cement sand mortar 1:3	**cft** (m^3)	**45.6** 1610	**216** 7630		
(b) Cement sand mortar 1:4	**cft** (m^3)	**45.6** 1610	**214** 7545		
(c) Cement sand mortar 1:5	**cft** (m^3)	**45.6** 1610	**212** 7473		
(d) Cement sand mortar 1:6	**cft** (m^3)	**45.6** 1610	**211** 7444		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
6.2.2 Providing and laying and jointing block masonry using cement concrete (1:3:6) machine moulded solid blocks in ground floor including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects in:-					Same rate be paid for block masonry in other than buildings.
(a) Cement sand mortar 1:3	**cft** (m^3)	**60.7** 2145	**231** 8165		
(b) Cement sand mortar 1:4	**cft** (m^3)	**60.7** 2145	**229** 8079		
(c) Cement sand mortar 1:5	**cft** (m^3)	**60.7** 2145	**227** 8007		
(d) Cement sand mortar 1:6	**cft** (m^3)	**60.7** 2145	**226** 7978		
6.2.3 Providing and laying and jointing block masonry using cement concrete (1:3:6) machine moulded hallow blocks in ground floor including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects in:-					i) The normal size of the hallow blocks will be 6"x8"x16" (150 mm x 200mmx 400 mm) ii)Same rate be paid for block masonry in other than buildings.
(a) Cement sand mortar 1:3	**cft** (m^3)	**60.7** 2145	**179** 6325		
(b) Cement sand mortar 1:4	**cft** (m^3)	**60.7** 2145	**177** 6240		
(c) Cement sand mortar 1:5	**cft** (m^3)	**60.7** 2145	**175** 6168		
(d) Cement sand mortar 1:6	**cft** (m^3)	**60.7** 2145	**174** 6154		
6.2.4 Add extra labour on item No.6.2.2, 6.2.3 for block masonary work in:-					
(a) First Floor	**cft** (m^3)	**20.6** 727			
(b) Second Floor	**cft** (m^3)	**24.2** 855			
(c) Third Floor	**cft** (m^3)	**30.9** 1090			
(d) Fourth and subsequent Floors	**cft** (m^3)	**38.2** 1350			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
6.3 Brick Work for Cavity Walls				**6.4.2, 6.4.3, 6.4.4 & 6.4.12**	i) Actual width of wall including cavity will be measured. ii) Extra labour on item no 6.3.1 for brick work in first, Second, Third and fourth floor shall be paid as per item 6.1.6
6.3.1 Providing , laying and jointing first class pacca brick work in ground floor with 2" to 3" cavity having 4-1/2" thick walls on either side bonded with wall ties of approved design at required horizontal and vertical spacing including scaffolding, raking of joints and curing as per drawings and specifications, complete in all respects, in:-					
(a) Cement sand mortar 1:3	**cft** (m^3)	**111** 3910	**246** 8681		
(b) Cement sand mortar 1:4	**cft** (m^3)	**111** 3910	**256** 9042		
(c) Cement sand mortar 1:5	**cft** (m^3)	**111** 3910	**250** 8844		
(d) Cement sand mortar 1:6	**cft** (m^3)	**111** 3910	**247** 8708		
6.4 Brick Work other than for Buildings				**6.4.2, 6.4.3 & 6.4.4**	Workshops, godowns, bins, house type godowns, reserviors, filter beds, storage tanks, wells, screening chambers, collecting tanks, manholes, boundry wall etc., are to be treated as masonry other than buildings for items 6.4.1 and 6.4.2.
6.4.1 Providing ,laying and jointing first class pacca brick work other than in buildings above foundations and plingth upto 10 ft (3 m) height including scaffolding, raking of joints and curing as per drawings and specifications, complete in all respects, in:-					
(a) Cement sand mortar 1:3	**cft** (m^3)	**50.3** 1778	**222** 7824		
(b) Cement sand mortar 1:4	**cft** (m^3)	**50.3** 1778	**215** 7603		
(c) Cement sand mortar 1:5	**cft** (m^3)	**50.3** 1778	**211** 7455		
(d) Cement sand mortar 1:6	**cft** (m^3)	**50.3** 1778	**208** 7352		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
6.4.2	Providing laying and jointing first class pacca brick work other than in buildings above foundations and plingth upto 10 ft (3 m) height using released bricks including scaffolding, raking of joints and curing as per drawings and specifications, complete in all respects, in:-					i)The rates do not include cost of released bricks which will be supplied free of cost by railway.
	(a) Cement sand mortar 1:3	**cft** (m^3)	**50.3** 1778	**88.3** 3118		
	(b) Cement sand mortar 1:4	**cft** (m^3)	**50.3** 1778	**82.0** 2897		ii) The labor for cleaning of released bricks to be paid under items 6.8.2 or 6.8.3 as appropiate
	(c) Cement sand mortar 1:5	**cft** (m^3)	**50.3** 1778	**77.8** 2749		
	(d) Cement sand mortar 1:6	**cft** (m^3)	**50.3** 1778	**74.9** 2646		
6.4.3	Extra labour for arch work in brick masonry, including labour for centring and decentring.	**cft** (m^3)	**17.4** 615		6.4.2, 6.4.3 & 6.4.4	
6.4.4	Extra for pucca brick work in steining of wells or any other circular masonry.	**cft** (m^3)	**12.10** 427	**19.8** 698	6.4.2, 6.4.3	
6.4.5	Extra labour for profile and flared walls.	**cft** (m^3)	**4.16** 147		6.4.2, 6.4.3	
6.4.6	Extra labour for pacca brick work in piers and abutment:-				6.4.2, 6.4.3	
	(a) From 10 ft to 20 ft.	**cft** (m^3)	**4.07** 143.60			
	(b) Above 20 ft height.	**cft** (m^3)	**8.23** 290.61			
6.4.7	Add extra labour on item No. 6.4.1 for every 10 ft additional height, or part thereof.	**cft** (m^3)	**10.3** 363.27			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
6.5	**Reinforced / Perforated Brick Work**				**6.4.2, 6.4.3 & 6.4.11**	
6.5.1	Providing, laying and jointing reinforced brick work in lintel of openings laid in 1:3 cement sand mortar including all labour, material,shuttering & lifting and placing in position etc, and filling of gap between the bricks with 1:2:4 PCC (but excluding cost of steel reinforcement and its fabrications which shall be paid separately) complete in all respects:-	**cft** (m^3)	**142.10** 5019	**302** 10676		
6.5.2	Providing, laying and jointing first class pacca brick walling laid in 1:3 cement sand mortar, reinforced with 1" wide 18 gauge hoop iron including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects.					
	(a) 4-1/2" thick walling with hoop iron bonding 6" apart.	**sft** (m^2)	**24.8** 267.0	**106** 1140.1		
	(b) 4-1/2" thick walling with hoop iron bonding 12" apart.	**sft** (m^2)	**22.4** 241.0	**95.1** 1023.4		
	(c) 3" thick walling with hoop iron bonding 6" apart.	**sft** (m^2)	**19.6** 211.0	**80.5** 866.5		
	(d) 3" thick walling with hoop iron bonding 12" apart.	**sft** (m^2)	**19.6** 211.0	**71.1** 765.2		
6.5.3	Providing, laying and jointing perforated pacca brick walling half brick 4-1/2" thick in ground floor in cement sand mortor including scaffolding, raking of joints and curing as per drawings and specifications complete in all respects.					
	(i) Cement sand mortar 1:3	**sft** (m^2)	**35.5** 382	**76.5** 824		
	(ii) Cement sand mortar 1:4	**sft** (m^2)	**35.5** 382	**75.0** 807		
	(iii) Cement sand mortar 1:5	**sft** (m^2)	**35.5** 382	**73.9** 796		
	(iv) Cement sand mortar 1:6	**sft** (m^2)	**35.5** 382	**73.2** 788		
6.5.4	Add extra labour on item No. 6.5.3 for pacca brick work in:-					

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) First Floor	**sft** (m^2)	**5.14** 55.4			
(b) Second Floor	**sft** (m^2)	**11.80** 127.0			
(c) Third Floor	**sft** (m^2)	**18.5** 199			
(d) Fourth & subsequent Floor	**sft** (m^2)	**38.2** 412			
6.5.5 Providing, laying and jointing perforated pacca brick walling one brick (9") thick in ground floor in cement sand mortor including scaffolding, raking of joints and curing as per drawing and specifications complete in all respects, in				6.5,6.6.1 & 6.6.10	
(i) Cement sand mortar 1:3	**sft** (m^2)	**53.3** 574	**135** 1458		
(ii) Cement sand mortar 1:4	**sft** (m^2)	**53.3** 574	**132** 1424		
(iii) Cement sand mortar 1:5	**sft** (m^2)	**53.3** 574	**130** 1402		
(iv) Cement sand mortar 1:6	**sft** (m^2)	**53.3** 574	**129** 1386		
6.5.6 Add extra labour on item No. 6.6.5 for perforated pacca brick work in:-					
(a) First Floor	**sft** (m^2)	**21** 221.4			
(b) Second Floor	**sft** (m^2)	**24** 260.5			
(c) Third Floor	**sft** (m^2)	**31** 332.2			
(d) Fourth & subsequent Floor	**sft** (m^2)	**38** 411.6			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
6.6 Special Brick Works					
6.6.1 Providing, laying and fixing pacca Guttka bricks of first quality laid in 1:2 cement sand mortar supported with nails,including scaffolding,raking of joints and curingas per drawing and specifications complete in all respects.					
(a) Size 1-1/2"x 1-1/2"x 9" (38 x 38 x 229 mm)	**sft** (m^2)	**36.3** 390.8	**143** 1537.7		
(b) Size 2-1/4"x 3"x 9" (57 x 75 x 229 mm)	**sft** (m^2)	**36.3** 390.8	**117** 1259.2		
6.6.2 Providing, laying and jointing Fire brick masonry in fire clay mortar including sacafolding,raking of joints and curing as per drawing and specifications, complete in all respects.					
(a) Upto 20 ft (6 m) height including all charges.	**cft** (m^3)	**69.0** 2436	**295** 10426		
(b) Extra for every 5 ft (1.5) additional height or part thereof.	**cft** (m^3)	**20.6** 727			
6.6.3 Providing, laying and jointing pacca brick work with special brick (architectural design) including scaffolding,raking of joints and curing as per drawing and specifications, complete in all respects in:-				*6.4.10, 6.4.12 to 6.4.18*	
(a) Cement sand ratio 1:2	**cft** (m^3)	**63.5** 2243	**269** 9489		
(b) Cement sand ratio 1:3	**cft** (m^3)	**63.5** 2243	**258** 9120		
(c) Cement sand ratio 1:4	**cft** (m^3)	**63.5** 2243	**252** 8898		
6.6.4 Extra for masonry of any description for bonding old and new masonry including making recesses as required in old masonry (actual measurement of new masonry inserted into old masonry to be given).	**cft** (m^3)	**72.60** 2564.23			
6.6.5 Extra for chamfering bricks for:-				6.4.2, 6.4.3	
(a) Special architectural bricks	**each**	**38.77**			
(b) all other purposes.	**each**	**19.38**			

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
6.6.6	Maroo corners.	**each corner**	**242.0**			
6.7	**Termite Proofing**				**6.6**	
6.7.1	Providing pre-construction termite proofing by using diluted spray emulsion of FMC-Biflex or approved equilient at 40-liter per 100 sft of surface area complete in all respect and as directed by the enginneer incharge.	**100 sft of each spray** (m^2 of each spray)	**106.48** 1146.3	**224** 2414.7		
6.7.2	Providing termite proofing of existing buildings by drilling 3/8" dia 2-1/2' deep holes along the walls at approximately 3' c/c injecting approved anti termite chemical of FMC-Biflex or approved equilient make with pressure machine and sealing the same, as per specification complete in all respects as directed by the engineer incharge.	**Per lft** (m)	**5.81** 62.5	**7.13** 76.7		(i) Rate shall be reduced by 75% for first and each subsequent floor.
6.7.3	Providing termite prooffing of wooden fixtures inside or out side the existing buildings such as doors, windows, almirahs, sun-shades, panellings, ceilings, railings, etc. by injecting the approved anti termite chemical with pressure machine and sealing the same,as per specification complete in all respect.	**sft** (m^2)	**3.39** 36.47	**4.71** 50.68		
6.8	**Miscellaneous Items**					
6.8.1	Dry brick pitching.	**cft** (m^3)	**26.6** 940	**66.7** 2356		
6.8.2	Cleaning bricks dismantled from kacha pacca masonry.	**each**	**1.27**			
6.8.3	Cleaning bricks dismantled from pacca masonry.	**each**	**2.40**			
6.8.4	Replacing kallar eaten bricks.	**each**	**44.37**	**54.71**		

CHAPTER 7

STONE MASONRY

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 7 Stone Masonry of "Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) The cost of supply and carriage to site of work of all materials used for stone manonry is included in the composite rates.

(3) Rates for all finished work include the removal of surplus debris, unused material and by-products and stacking within 100 ft (30 m).

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
7.1 Stone Masonry Works				**7.4&7.5**	
7.1.1 Providing, laying and jointing random, rubble stone masonry (uncoursed), in foundation and plinth:-				7.4, 7.7.1, 7.7.2 & 7.7.6	
(a) Dry masonry	**cft** (m^3)	**46.0** 1624	**67.1** 2370		
(b) In mud mortar	**cft** (m^3)	**57.5** 2030	**81** 2855		
(c) In cement sand mortar:-					
(i) Cement sand morter 1:3	**cft** (m^3)	**76.2** 2692	**154** 5449		
(ii) Cement sand morter 1:4	**cft** (m^3)	**76.2** 2692	**145** 5117		
(iii) Cement sand morter 1:6	**cft** (m^3)	**76.2** 2692	**134** 4737		
(iv) Cement sand morter 1:8	**cft** (m^3)	**76.2** 2692	**128** 4526		
7.1.2 Providing, laying and jointing random rubble stone masonry (uncoursed) in ground floor in buildings or upto 20 ft (6 m) height in other than building:-				7.4, 7.5.1, 7.5.2, & 7.5.6	
(a) Dry masonry	**cft** (m^3)	**46.0** 1624	**67.1** 2370		
(b) In mud mortar	**cft** (m^3)	**62.9** 2222	**86** 3047		
(c) In cement sand mortar:-					
(i) Cement sand morter 1:3	**cft** (m^3)	**78.0** 2757	**156** 5513		
(ii) Cement sand morter 1:4	**cft** (m^3)	**78.0** 2757	**147** 5181		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(iii) Cement sand morter 1:6	**cft** (m^3)	**78.0** 2757	**136** 4801		
(iv) Cement sand morter 1:8	**cft** (m^3)	**78.0** 2757	**130** 4590		
7.1.3 Providing, laying and jointing coursed rubble stone masonry hammer dressed, in foundation and plinth:-				7.4, 7.5.1, 7.5.2, & 7.5.5	
(a) Dry masonry	**cft** (m^3)	**64.1** 2265	**85** 3011		
(b) In mud mortar	**cft** (m^3)	**81.1** 2863	**104** 3688		
(c) In cement sand mortar:-					
(i) Cement sand morter 1:3	**cft** (m^3)	**105.8** 3735	**181** 6391		
(ii) Cement sand morter 1:4	**cft** (m^3)	**105.8** 3735	**173** 6095		
(iii) Cement sand morter 1:6	**cft** (m^3)	**105.8** 3735	**163** 5757		
(iv) Cement sand morter 1:8	**cft** (m^3)	**105.8** 3735	**158** 5572		
7.1.4 Providing, laying and jointing coursed rubble stone masonry hammer dressed, in ground floor in buildings or upto 20 ft (6 m) height, in other than building:-				7.4, 7.7.1, 7.7.2 & 7.7.5	
(a) Dry masonry	**cft** (m^3)	**67.8** 2393	**89** 3139		
(b) In mud mortar	**cft** (m^3)	**100.4** 3547	**122** 4297		
(c) In cement sand mortar:-					
(i) Cement sand morter 1:3	**cft** (m^3)	**111.9** 3953	**187** 6609		
(ii) Cement sand morter 1:4	**cft** (m^3)	**111.9** 3953	**179** 6313		
(iii) Cement sand morter 1:6	**cft** (m^3)	**112** 3953	**169** 5975		
(iv) Cement sand morter 1:8	**cft** (m^3)	**112** 3953	**164** 5790		
7.1.5 Extra labour on items 7.1.2 and 7.1.4 above for work in:-					
(a) First Floor	**cft** (m^3)	**24.2** 855			

	Description	Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) Second Floor	**cft** (m^3)	**24.2** 855			
	(c) Third Floor	**cft** (m^3)	**30.9** 1090			
	(d) Fourth & subsequent floors.	**cft** (m^3)	**38.2** 1350			
7.1.6	Extra labour on items 7.1.2 and 7.1.4 above for every 5 ft (1.5 m) additional height, or part thereof above 20 ft (6 m) in other than buildings.	**cft** (m^3)	**27.8** 983			
7.1.7	Extra labour for arch work in stone masonry, including centring and decentring, etc.	**cft** (m^3)	**24.2** 855	**26.6** 940	7.5, 7.7.1 & 7.7.9	
7.1.8	Extra labour for:-				7.7.1 & 7.7.8	
	(a) Coping and caps, etc.	**cft** (m^3)	**230** 8120			
	(b) Cornice & string course	**per rft** (m)	**174** 571.68			
7.2	**Dressing of Stones**				**7.7.1 & 7.7.2**	
7.2.1	Dressing stones:-					(i) This rate of dressing shall be paid only when undressed stone has been supplied. (ii) In case of rate for stone masonry, dressing is already included and this rate shall not be added thereto. (iii) Only dressed suface of stone shall be measured.
	(a) Hammer dressed	**sft** (m^2)	**78.7** 846.7			
	(b) Rough tooled dressed	**sft** (m^2)	**150** 1615.2			
	(c) Chisel dressed	**sft** (m^2)	**182** 1954			
7.3	**Miscellaneous Items**					
7.3.1	Providing and fixing stone blocks from 2 to 6 cft each in cement morter (1:6), including lift upto 20 ft (6 m).	**cft** (m^3)	**475** 16774	**512** 18095	7.7.1, 7.7.2 & 7.7.4	
7.3.2	Providing and fixing stone blocks, under 2 cft each in cement morter (1:6), including lift upto 20 ft (6 m).	**cft** (m^3)	**278** 9830	**316** 11158	7.7.1, 7.7.2 & 7.7.8	

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
7.3.3 Making 1-1/2" x 1-1/2" groove in wall of stone masonry in cement, for fixing planks upto 9" deep.	**plank**	**282.33**			
7.3.4 Drilling holes in stone masonry upto 2" dia, per inch depth.	**hole per in depth**	**90.75**			The rate is not to be operated for holes exceeding 2" diameter
	(hole per cm depth)	35.73			

CHAPTER 8
ROOFING

Note:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 8 Roofing of "Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
8.1	**RCC Slab Roofing & Roof Insulation**				**8.4 & 8.5.2**	Add extra 6%, 15% & 23% on composite rates for 2nd, 3rd, 4th and subsequent floors respectively for items no. 8.1.1 to 8.1.10
8.1.1	Providing and laying cement concrete (1:2:4) on roof top to required slope including ramming, finishing, smoothing and curing etc. as per specification and complete in all respects.	**cft** (m^3)	**47.2** 1667	**184** 6488		
8.1.2	Providing and laying two coats of bitumen laid hot using 34 lb/100 sft over roof and blinded with sand at 1 cft/100 sft as per specification and complete in all respects. .	**sft** (m^2)	**13.9** 150	**32.2** 347		
8.1.3	Providing and laying single layer of tiles 9" x 4-1/2" x 1-1/2", grouted with cement sand morter 1:3, laid over 1" mud plaster, over 4" thick earth, over 34 lbs per 100 sft bitumen coating blinded with sand at 1 cft/100 sft laid on top of RCC/Precast RCC roof slab, ,excluding polythene sheet as per specification and complete in all respects.	**sft** (m^2)	**26.0** 280	**78.6** 846		No payment for flush pointing will be made for new roofs.
8.1.4	Providing and laying single layer of tiles 9" x 4-1/2" x 1-1/2" grouted with cement sand morter 1:3, laid over 1" thick mud mortar mixed with bhoosa over existing earth,including dressing & adjusting slopes of existing earth as per specifications, complete in all respects.	**sft** (m^2)	**18.3** 197	**53.0** 571		No payment for flush pointing will be made for new roofs.
8.1.5	Earth filling over roof including watering, ramming with 1" mud plaster, finished with gobri leeping as per specification over:-					same remarks under item 8.1.4 above

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) 3" thick earth filling & 1" mud plaster.	**sft** (m^2)	**9.29** 100.0	**14.4** 155		
(b) 4" thick earth filling & 1" mud plaster.	**sft** (m^2)	**9.73** 104.7	**15.3** 165		
8.1.6 Providing and laying roof insulation, comprising of single layer of tiles 9"x4-1/2"x1-1/2" grouted with cement sand mortar 1:3 laid over 2" thick earth (including 1" mud plaster) over thermopore sheet 1" thick , over polythene sheet 300 gauge over a layer of bitumen coating at 34 lbs/100sft, as per specification and complete in all respects:-	**sft** (m^2)	**29.6** 319	**107** 1151		Add extra 6%, 15% and 23% on composite rates from 14.1', to 26', 26.1 to 38', 38.1' to 50' and above & for subsequent floors of 12' height respectively.
8.1.7 Providing and laying roof insulation, comprising of single layer of tiles 9"x4-1/2"x1-1/2" grouted with cement sand mortar 1:3 laid over 2" thick earth (including 1" mud plaster) over jambolon board, over polythene sheet 300 gauge over a layer of bitumen, coating complete in all respects:					
(a) Jumbolon Board 1" thick	**sft** (m^2)	**29.6** 319	**139** 1497		
(b) Jumbolon Board 2" thick	**sft** (m^2)	**29.6** 319	**201** 2167		
8.1.8 Providing a coat of bitumen emulsion at the rate of 4.5 kg per 100 sft on walls and floors in ground floor, as per specification.	**sft** (m^2)	**3.29** 35.4	**8.24** 88.7		same remarks under item 8.2.4 above.
8.1.9 Providing and laying two layers of bitumenous building paper, with a coat of grease in between, under bearing of roof slab, beams, lintels, etc. over 3/8" thick cement sand plaster 1:2 for free expansion and contraction as per specification.	**sft** (m^2)	**21.8** 234	**112** 1205		Add extra 6%, 15% & 23% on composite rates for 2nd, 3rd, 4th and subsequent floors respectively.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
8.1.10 Providing & fixing Khaprail tiles on roofs, laid in cement sand mortar 1:3, including jointing, curing, etc. complete in all resrects as per drawings and as per instructions of Engineer Incharge.					
(a) Size 150 x 150 mm (6"x 6") Grey Colour	**sft** (m^2)	**24.2** 261	**94.5** 1017		
(b) Size 225 x 225 mm (9"x 9") Grey Colour	**sft** (m^2)	**19.4** 208	**61.7** 664		
(c) Size 300 x 300 mm (12"x 12") Grey Colour	**sft** (m^2)	**14.5** 156	**47.3** 509		
8.2 Pre-cast Prestressed Concrete Girders/Slab Roofing				**8.5.3**	
8.2.1 Providing and laying roof in ground floor with precast prestressed concrete girders & slabs obtained from approved manufacturers (Izhar or equivalent) including cement sand plaster 1/2" thick (1:3) on top and cement pointing (1:2) flush under-neath, as per drawing & specification, complete in all respects and including all other charges.					(i) Add extra 6%, 15% & 23% on composite rates for 2nd, 3rd, 4th and subsequent floors respectively. (ii) The rates are applicable to clear span lengths.
(a) Span Length upto 15 ft	**sft** (m^2)	**11.83** 127.4	**138** 1489		
(b) Span length 15.1 ft to 20 ft	**sft** (m^2)	**11.50** 123.7	**140** 1508		
(c) Span length 20.1 to 25 ft	**sft** (m^2)	**8.52** 91.7	**166** 1783		
(d) Span length 25.1ft to 30 ft	**sft** (m^2)	**7.53** 81.0	**282** 3036		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
8.2.2 Providing and erecting in position pre-cast pre-stressed cement concrete double tee (TT) planks roofing at a height 30 to 40 ft of approved design procured from an approved manufacturers and designed for a superimposed dead load of 50 lbs/sft and a live load of 30 lbs/sft duly tested and certified by the manufacturer including loading, transportation, unloading, erection at site and placement in position as per line and level and as directed by the Engineer Incharge.					
(a) Span Length upto 40 ft	**sft** (m^2)		**183** 1966		
(b) Span Length 41-45 ft	**sft** (m^2)		**194** 2084		
(c) Span Length 46-50 ft	**sft** (m^2)		**200** 2149		
(d) Span Length 51-55 ft	**sft** (m^2)		**212** 2279		
(e) Span Length 56-60 ft	**sft** (m^2)		**230** 2475		
8.2.3 Providing and laying single layer tiles 9" x 4-1/2"xl-1/2" (first class tiles) at a height of 30 to 40 ft grouted with cement, sand mortar 1:3 laid over 3" thick mud on Double Tee Planks roofing covered by 2 coats of hot bitumen using 34 lbs/100 sft and a layer of polythene sheet 500 gauge (005" thick) including over laps, as per specifications and complete in all respects.	**sft** (m^2)	**36.9** 397	**94.8** 1021		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
8.3	**Jack Arch Roofing**				**8.4 , 8.5.4**	
8.3.1	Providing Jack arch roofing 4-1/2" thick laid in 1:5 cement sand mortar including an average depth of 4" cement concrete (1:3:6) in haunches and over crown, with 3" earth & 1" mud plaster, soffits of arches cement sand plaster 1:6 and 1/2" thick. The rate also includes bitumen coating, erecting and dismantling centring, laying skew bricks in cement sand mortar (1:3) and encasing exposed flanges of the joists with cement concrete 1:2:4 using stone aggregate, as per specificatios and complete in all respects.:--	**sft** (m^2)	**106.5** 1146	**245** 2638	**& 8.5.5**	(i) For steel part and its erection etc., items 13.2.1 & 13.4.4 under Chapter 13- structural steel works be referred if supplied by the contractor. (ii) Add extra 6%,15% & 23% on composite rates for 2nd, 3rd, 4th & subsequent floors respectively on items 8.3.1 & 8.3.2. (iii) If Rails/ R.S.Joists. are supplied by Railways then cutting of Rails /R.S.Joist, drilling holes, rivetting and erection should be paid for the items actually involved under Chapter-13. (iv) Payment of the tie rods complete be made under item of fabrication of heavy steel work under Chapter-13. (v) Bearing plates with stirrups etc. for duplicate rail girders as per type plan No.Q-24 be paid under item of fabrication of small iron work under Chapter-13.
8.3.2	Providing Jack arch roofing 4-1/2" thick laid in 1:5 cement sand mortar, inlcuding an average depth of 4" cement concrete (1:3:6) in haunches and over crown with 1/2" cement plaster 1:6 on top & soffits (except earth filling, mud plaster and gobri leeping). The rate also includes bitumen coating,erecting and dismantling centring. laying skew bricks in cement sand mortar 1:3 and encasing exposed flanges of the joists with cement concrete 1:2:4 using stone aggregate, as per specifications and complete in all respects:-	**sft** (m^2)	**86.5** 931	**223** 2405		
8.4	**Plain/Corrugated G.I Sheet Roofing**				**8.4.9 & 8.5.7**	
8.4.1	Providing Corrugated galvanized iron sheet roofing over the existing trusses / griders etc. including its fixing with G.I. bolts, nuts, limpet and bitumen washers, wind ties complete in all respects, without valleys and ridges as per drawing and specification & complete in all respects.					Add extra 6%, 15% & 23% on composite rates for heights from 14.1' to 26', 26.1' to 38', 38.1' to 50' and above for items 8.4.1 to 8.4.5

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(a) 20 S.W.G. sheets	**sft** (m^2)	**19.4** 208	**109** 1175		
	(b) 22 S.W.G. sheets	**sft** (m^2)	**19.4** 208	**92.9** 1000		
	(c) 24 S.W.G. sheets	**sft** (m^2)	**19.4** 208	**79.6** 857		
8.4.2	Providing and fixing plain galvanized iron sheets 20 S.W.G. 4" diameter rain water down pipe including clamps complete in all respects.	**rft** (m)	**94.4** 310	**186** 609		
8.4.3	Providing and fixing 4" dia M.S rain water down pipe including clamps complete in all respects.	**rft** (m)	**94.4** 310	**518** 1699		
8.4.4	Providing and fixing 20 S.W.G plain galvanized iron sheet flashing etc complete in all respects.	**sft** (m^2)	**87.1** 938	**158** 1705		
8.4.5	Providing and fixing 20 S.W.G plain galvanized iron sheet ridges including fixtures complete in all respects.					
	(a) 6" lap and 18" overall length	**rft** (m)	**94.4** 310	**514** 1685		
	(b) 9" lap and 24" overall length	**rft** (m)	**116.2** 381	**541** 1777		
	(c) 12" lap and 30" overall length	**rft** (m)	**116.2** 381	**571** 1874		
8.5	**Corrugated Asbestos Cement Sheet Roofing**				**8.4.10 & 8.5.8**	
8.5.1	Supplying & fixing Asbestos cement corrugated sheet roofing of approved quality (Izhar or equivalent) over the existing trusses / griders etc. including necessary over laps & G.I. hook bolts, nuts, screws,limpet and, bitumastic washers , wind ties, etc. (excluding valleys and ridges, etc), complete at any height as per specifiction complete in all respects.	**sft** (m^2)	**26.6** 287	**67.3** 725		
8.5.2	Supplying & fixing corrugated asbestos cement sheet ridges & valleys at any height complete in all respects.	**ft** (m)	**32.7** 107.2	**73.0** 239		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
8.5.3	Extra labour for every erection of G.I. Sheets, flat sheet or asbestos sheet roofing,or corraguated fiber glass roofing above 20 ft (6 m) height in difficult position, including lifting with care and special scaffolding along live electric wires.	**sft** (m^2)	**4.36** 46.9			
8.6	**Fiber Glass (Corrugated and Plain) Roofing**				**8.4.11 & 8.5.9**	
8.6.1	Providing and fixing corrugated fiberglass sheet roofing over the existing trusses / griders etc at any height including all fittings as per specifications and complete in all respects.	**sft** (m^2)	**26.6** 287	**212** 2279		
8.6.2	Providing and fixing plain fiberglass sheet roofing at any height, including all fittings as per specifications and complete in all respects.	**sft** (m^2)	**26.6** 287	**204.8** 2205		
8.6.3	Providing and fixing corrugated fiber glass sheet roof drains/ridge at any height including all fittings as per specifications and complete in all respects.	**sft** (m^2)	**32.7** 352	**188** 2029		
8.6.4	Providing and fixing plain fibergalss sheet roof drains/ridge at any height including all fittings as per specifications and complete in all respects.	**sft** (m^2)	**32.7** 352	**183** 1970		
8.6.5	Providing and fixing corrugated fibergalss sheet north light glass at roof at any height including all fittings complete.	**sft** (m^2)	**23.0** 247	**208** 2240		
8.6.6	Providing and fixing plain fibergalss sheet north light glass at roof at any height including all fittings as per specifications and complete in all respects.	**sft** (m^2)	**23.0** 247	**201** 2166		
8.7	**Roof Drainage Items**				**8.5.10 & 8.5.11**	
8.7.1	Khassi parnalas in cement sand mortar (1:2) 12" outside width finished smooth with a floating coat of neat cement as per specifications, complete in all respects	**ft** (m)	**80.0** 263	**99.97** 328		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
8.7.2	Khuras on roof 2' x 2' x 1 1/2" of cement concrete (1:2:4) laid over 3" thick 1:4:8 concrete as per specifications, complete in all respects.	**each**	**375**	**619**		
8.7.3	Bottom Khurras on ground in size brick masonry in cement mortar 1:6, of size 4' x 2' x 4-1/2" laid over 3" cement concrete 1:4:8 as per specifications complete.	**each**	**424**	**1108**		
8.7.4	Supplying and fixing in positon cast iron rain water down pipe as per specification (BS 416:Part-1-1990) excluding heads and shoes but including painting and clamps etc complete in all respects.					
	(a) 4" dia (internal) cast iron down pipe	**ft** (m)	**64.5** 212	**613** 187		
	(b) 3" dia (internal) cast iron down pipe	**ft** (m)	**64.5** 19.7	**519** 158		
8.7.5	Supplying & fixing inposition rain water down pipe cast iron heads as per specification (BS 416:Part-1-1990) including cost of clamps holdfast and painting complerte in all respects.	**each**	**261**	**672**		
8.7.6	Supplying & fixing shoes, bends or offsets of cast iron rain water down pipe as per specification (BS 416:Part-1-1990) including painting, complete in all respects.	**each**	**96.8**	**409**		
8.7.7	Supplying and fixing in position plain 22 gauge G.I sheet iron spouts 3" to 4" diameter as per specification complete in all respects.	**each**	**315**	**410**	**8.6.9**	
8.7.8	Supplying and fixing in position 22 gauge G.I sheet gutter semi-circular 8" (200 mm) dia as per specification, complete in all respects.	**ft** (m)	**58.1** 191	**180** 590		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
8.7.9	Providing and fixing in position G.I sheet water spouts or parnalas as per drawing complete in all respects.	**each**	**339**			
8.7.10	Providing making drip course 2" x 1/2" under R.C.C. slab edges in outer opening, in cement sand mortar 1:2.	**ft** (m)	**23.7** 77.8	**24.9** 81.8		
8.7.11	Supply & erection of rain water down pipe UPVC including heads & shoes complete in all respect as per instructions of Engineer including cost of clamp holdfast, complete in all respects.					
	(a) 75 mm (3") dia pipe	**ft** (m)	**83.2** 273	**715** 2344		
	(b) 100 mm (4") dia pipe	**ft** (m)	**133** 437	**1026** 3365		
	(c) 160 mm (6") dia pipe	**ft** (m)	**133** 437	**1683** 5522		
8.7.12	Supply & erection of rain water down pipe Asbestos cement pipes (Chrysotile cement pipes) including heads & shoes complete in all respect as per instructions of Engineer including cost of clamp holdfast, complete in all respects.					
	(a) 80 mm (3") dia pipe	**lft** (m)	**83.2** 273	**591** 1938		
	(b) 100 mm (4") dia pipe	**lft** (m)	**133** 437	**731** 2399		
	(c) 150 mm (6") dia pipe	**lft** (m)	**133** 437	**969** 3180		
8.8	**Miscellaneous Items**					
8.8.1	Making jharries in existing brick masonry for providing recesses for bearing of R.C.C. roof slab including repairing the damaged face:-					Rate will be increased by 1.5 times for making recesses / jharries in stone masonry or plain concrete and 2
	(a) for slabs upto 6" deep	**ft** (m)	**27.8** 91.3	**29.3** 96.1		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) for slabs exceeding 6" upto 12" deep	**ft** (m)	**39.9** 131.0	**42.6** 140		
8.8.2 Making recess in existing brick masonry for bearing of beam girder, R.S. joist, ect. Including repairing damaged face:-					
(a) upto 1.0' height of girder or beam	**each**	**60.5**	**66.6**		
(b) for every 6" additional height or part thereof.	**each**	**29.0**	**32.0**		

CHAPTER 9

FLOORING

Note:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 9 Flooring of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
9.1	**Brick / Brick Tile Flooring**				**9.3.6, 9.4.1& 9.4.2**	
9.1.1	Providing, laying, watering and ramming brick ballast 1-1/2" to 2" gauge mixed with 25% sand, for floor foundations, complete in all respects.	**cft** (m^2)	**18.8** 202	**46.3** 498		
9.1.2	Providing dry brick paving laid flat, sand grouted, including preparation of bed by watering, ramming, and bringing the same to proper camber by 1/2" thick mud plaster, complete in all respects	**sft** (m^2)	**12.46** 134	**46.6** 501		
9.1.3	Providing 4-1/2" thick dry brick on edge paving, sand grouted, including preparation of bed by watering, ramming and bringing the same to proper camber by 1/2" thick mud plaster, , complete in all respects	**sft** (m^2)	**18.0** 193	**68.7** 739		
9.1.4	Grouting 4-1/2" dry brick on edge flooring with cement sand mortar ratio 1:3., complete in all respects	**sft** (m^2)	**12.10** 130	**16.9** 182		
9.1.5	Providing flat brick flooring laid in 1:6 cement sand mortar over a bed of 3/4" thick cement sand mortar 1:6 , complete in all respects	**sft** (m^2)	**23.6** 254	**65.7** 707		
9.1.6	Providing brick on edge flooring, laid in 1:6 cement sand mortar over a bed of 3/4" thick cement sand mortar 1:6, complete in all respects	**sft** (m^2)	**30.3** 325.6	**90.1** 970		
9.1.7	Brick tiles 9" x 4-1/2" x 1-1/2" laid on edge 1:3 cement sand mortar over a bed of 3/4" thick cement mortar 1:6 , complete in all respects.	**sft** (m^2)	**47.8** 515	**162** 1740		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
9.1.8	Brick tiles 9"x4-1/2"x1-1/2" laid flat in 1:3 cement sand mortar over a bed of 3/4" thick cement sand mortar 1:6 , complete in all respects.	**sft** (m^2)	**26.6** 287	**67.8** 729		
9.2	**Cement Concrete Tile Flooring / Skirting**				**9.3.8 & 9.4.4**	
9.2.1	Providing cement concrete tiles laid flat in 1:2 cement sand mortar over 3/4" thick bed of cement sand mortar 1:2, complete in all respects.					
	(a) 12" x 12" x1"	**sft** (m^2)	**32.2** 346	**78.0** 840		
	(b) 9" x 9" x 3/4"	**sft** (m^2)	**32.2** 346	**83.8** 902		
	(c) 8" x 8" x 3/4"	**sft** (m^2)	**32.2** 346	**83.9** 904		
	(d) 6" x 6" x 3/4"	**sft** (m^2)	**32.2** 346	**84.1** 905		
9.2.2	Providong coloured cement concrete tiles 8" x 8" x 3/4" of approved shade laid flat in 1:2 cement sand mortar over 3/4" thick cement sand mortar of 1:2, complete in all respects.	**sft** (m^2)	**32.2** 346	**70.2** 755.4		
9.2.3	Providing 3/4" thick cement concrete tile skirting laid in 1:2 cement sand mortar, over 3/4" thick cement sand mortar 1:2, complete in all respects.	**sft** (m^2)	**26.3** 283	**82.0** 883		
9.3	**Cement Concrete Flooring**				**9.3.8 & 9.4.4**	
9.3.1	Providing & laying topping of cement concrete 1:2:4 flooring including surface finishing and dividing into pannels as per specifications and complete in all respects:-					If glass, brass or Aluminum strips are used for panelling, it will be paid extra as per item No.9.4.5
	(a) 1" thick	**sft** (m^2)	**19.5** 210	**31.6** 340		
	(b) 1-1/2" thick	**sft** (m^2)	**23.5** 253	**41.1** 442		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(c) 2" thick	**sft** (m^2)	**27.5** 296	**51.1** 550		
	(d) 3" thick	**sft** (m^2)	**31.5** 339	**66.5** 715		
	(e) 4" thick	**sft** (m^2)	**35.5** 382	**82.9** 892		
	(f) 6" thick	**sft** (m^2)	**47.2** 508	**117** 1258		
9.3.2	Providing and laying conglomerate flooring (two layer work) with top layer of 1/2" thick wearing surface consisting of one part of cement and 2 parts of stone chips passing 3/16" sieve over bottom layer of cement concrete 1:2:4, including surface finishing and dividing into pannels as per specifications and complete in all respects.				**9.4.3 & 9.4.5**	If glass, brass or Aluminum strips are used for panelling, it will be paid extra as per item No.9.4.5
	(a) 1-1/2" thick bottom layer	**sft** (m^2)	**31.0** 333	**59.5** 641		
	(b) 2" thick bottom layer	**sft** (m^2)	**34.5** 371	**69.0** 743		
9.3.3	Add extra in cement concrete floor topping, if finished with pigment and polishing.	**sft** (m^2)	**9.68** 104.2	**14.2** 153		
9.3.4	Extra labour for each storey above ground for mosaic, conglomerate stone, tiles and wooden floor.	**sft** (m^2)	**5.45** 58.6			
9.3.5	Providing & laying cement concrete1:2:4 flooring 3" thick for workshop mixed with iron dust/chipping, including surface finishing and dividing into panels as per specification complete in all respects.	**sft** (m^2)	**31.5** 339	**70.7** 762		
9.3.6	Providing grey cement skirting or dado 3/8" thick, including rounding of corner & straightening of top edge and finishing to smooth surface after plastering complete in all respects.					
	(a) 1:2 cement sand mortar	**sft** (m^2)	**43.6** 469	**49.4** 532		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) 1:3 cement, sand mortar	**sft** (m^2)	**34.9** 376	**39** 421		
(c) Extra if skirting or dado is finished with pigment of any colour.	**sft** (m^2)	**1.82** 19.5	**3.75** 40.3		
9.4 Mosaic / Mosaic Tile Flooring and Skirting				**9.4.5 & 9.4.8**	
9.4.1 Providing and laying 1-3/8" thick mosaic flooring, consisting of 3/8" mosaic topping of one part of cement and marble powder in the ratio of 3:1 and two parts of marble chips laid over 1" thick flooring of 1:2:4 cement concrete including rubbing,polishing and finishing complete in all respects.					(i) If glass or brass or Aluminum strips are used for panelling, it will be paid extra as per item No.9.4.5.
(a) using grey cement	**sft** (m^2)	**100.6** 1082	**133** 1436		(ii) Add 2% if pigment of approved quality and shade is used.
(b) using white cement	**sft** (m^2)	**100.6** 1082	**136** 1463		
9.4.2 Providing and laying 1-1/2" thick mosaic flooring, consisting of 1/2" mosaic topping of one part of cement and marble powder in the ratio of 3:1 and two parts of marble chips laid over 1" thick flooring of 1:2:4 cement concrete including rubbing,polishing & finishing complete in all respects.					If glass or brass or Aluminum strips are used for panelling, it will be paid extra as per item No.9.4.5
(a) using grey cement	**sft** (m^2)	**100.6** 1082	**136** 1460		
(b) using white cement	**sft** (m^2)	**100.6** 1082	**139** 1491		
9.4.3 Providing and laying floor of mosaic marble chips/high strength terrazo tiles of minimum size 12"x 12",of approved shade and design laid in 1:2 cement mortar over 3/4" thick bedding of cement sand mortar 1:2 including rubbing, polishing and finishing complete in all respects.				**9.4.6**	
(a) Tile 1" thick	**sft** (m^2)	**35.1** 378	**98.2** 1058		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) Tile 2" thick	**sft** (m^2)	**35.1** 378	**121.4** 1307		
9.4.4	Rubbing and chemical polishing old grit/ mosaic floor and dado, including repairing voids, uneven surface, complete in all respects.	**sft** (m^2)	**14.5** 156	**16.5** 178		
	Note: If no polishishing is done, the composite rate for 9.4.4 above shall be reduced at this rate.	**sft** (m^2)		**4.87** 52.5		
9.4.5	Providing and fixing 5 mm thick and 1-1/2" wide strips for dividing flooring into panels.				**10.5.9.7**	Labour for fixing already included in items No.9.3.1,9.3.2 9.4.1 & 9.4.2 of this chapter.
	(a) Glass	**ft** (m)		**484.00** 1588.00		
	(b) Brass	**ft** (m)		**121** 397.00		
	(c) Marble	**ft** (m)		**4.79** 15.73		
9.4.6	Providing tile skirting laid in 1:2 cement, sand mortar, over 3/4" thick cement mortar 1:2 complete in all respects.					
	(a) Mosaic tiles 3/4" thick in grey cement.	**sft** (m^2)	**44.2** 475	**112** 1210		
	(b) Mosaic tiles 3/4" thick in white cement with matching colour pigment.	**sft** (m^2)	**44.2** 475	**135** 1457		
9.4.7	Providing and laying mosaic dado or skirting with one part of cement and marble powder in the ratio of 3:1 and two parts of marble chips, laid over 1/2" thick cement plaster 1:3, including rubbing, polishing and finishing complete in all respects.					
	(a) using grey cement					
	(i) 3/8" thick	**sft** (m^2)	**94.4** 1016	**119** 1278		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(ii) 1/2" thick	**sft** (m^2)	**94.4** 1016	**125** 1342		
(b) using white cement					
(i) 3/8" thick	**sft** (m^2)	**94.4** 1016	**121** 1300		
(ii) 1/2" thick	**sft** (m^2)	**94.4** 1016	**129** 1393		
9.5 Ceramic / Porcelin Tile Flooring / Skirting				**9.4.8**	The composite rates under item 9.5 for tile flooring / skirting are for Sonex / Master or equivalent quality of tiles / skirting.
9.5.1 Providing and laying floor of local ceramic white glazed / mat tiles 1/4" thick of approved quality and size laid in cement sand mortar 1:2 over bed of 3/4" thick cement mortar 1:2, complete in all respects.	**sft** (m^2)	**43.6** 469	**143** 1544		
9.5.2 Providing and laying floor of local coloured ceramic glazed / mat tiles 1/4" thick of approved quality and size, laid in 1:2 cement sand motrar, jointed in while cement and matching pigment on a bed of 3/4" thick cement mortar 1:2, complete in all respects.	**sft** (m^2)	**43.6** 469	**146** 1567		
9.5.3 Providing and laying floor of imported ceramic glazed / mat tiles of approved quality/make/ shade/design, jointed in white cement and matching pigment on a bed of 3/4" thick cement sand mortar 1:2, complete in all respects					
a) Tile size upto 15"x 15"	**sft** (m^2)	**43.6** 469	**127** 1371		
b) Tile size more than 15"x 15"	**sft** (m^2)	**43.6** 469	**153** 1652		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
9.5.4	Providing and laying floor of local porecelain glazed tiles of approved quality and shade / design, jointed in white cement with matching pigment and laid over 3/4" thick 1:2 cement sand mortar, complete in all respects.					
	(i) Tile size 16" x 16"	**sft** (m^2)	**43.6** 469	**176** 1891		
	(ii) Tile size 24"x 24"	**sft** (m^2)	**43.6** 469	**192** 2064		
9.5.5	Providing and laying floor of imported porecelain glazed tiles of approved quality and shade / design, jointed in white cement with matching pigment and laid over 3/4" thick 1:2 cement sand mortar complete in all respects.					
	(i) Tile size 16" x 16"	**sft** (m^2)	**43.6** 469	**186** 2006		
	(ii) Tile size 24"x 24"	**sft** (m^2)	**56.9** 612	**221** 2381		
9.5.6	Providing and laying dado/skirting of white glazed tiles of approved quality and size 1/4" thick jointed in white cement and laid over 1:2 cement sand mortar 3/4" thick, including finishing complete in all respects.	**sft** (m^2)	**70.2** 755	**170** 1827		
9.5.7	Providing and laying dado/skirting of glazed coloured tile 1/4" thick jointed in white cement with matching pigment and laid over 1:2 cement sand mortar 3/4" thick, including finishing complete in all respects..	**sft** (m^2)	**70.2** 755	**172** 1850		
9.5.8	Providing and laying dado/skirting of local porecelain glazed tiles of approved quality and shade / design, jointed in white cement with matching pigment and laid over 3/4" thick 1:2 cement sand mortar complete in all respects.	**sft** (m^2)	**58.3** 628	**190** 2047		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
9.6 Marble & Granite Stone Flooring / Skirting and Marble slabs				**9.4.7**	
9.6.1 Providing and laying marble stone tile in floor, laid in white cement with matching color pigment, over 3/4" thick cement sand mortar 1:2, including jointing, curing, rubbing and chemical polishing complete in all respects and as per instructions of Engineer-in-charge.					
(a) Black Marble					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**134** 1444.6		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**202** 2172		
iii) Tile size 12" x 12" x 1" (300 x 300 x 25 mm)	**sft** (m^2)	**43.6** 469	**239** 2576		
(b) Ziarat White					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**149** 1606		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**218** 2345		
iii) Tile size 12" x 12" x 1" (300 x 300 x 25 mm)	**sft** (m^2)	**43.6** 469	**239** 2576		
(c) Nowshera Pink					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**161** 1733		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**239** 2576		
iii) Tile size 12" x 12" x 1" (300 x 300 x 25 mm)	**sft** (m^2)	**43.6** 469	**272** 2923		
(d) Boticina					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**132** 1421		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**154** 1652		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
iii) Tile size 12" x 12" x 1" (300 x 300 x 25 mm)	**sft** (m^2)	**43.6** 469	**175** 1883		
(e) Lasbela					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**126.7** 1364		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**161** 1733		
iii) Tile size 12" x 12" x 1" (300 x 300 x 25 mm)	**sft** (m^2)	**43.6** 469	**180** 1941		
(f) China verona					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**119** 1283		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**159** 1710		
(g) Badal					
i) Tile size 12" x 12" x 1/2" (300 x 300 x 12 mm)	**sft** (m^2)	**43.6** 469	**97.7** 1052		
ii) Tile size 12" x 12" x 3/4" (300 x 300 x 19 mm)	**sft** (m^2)	**43.6** 469	**138** 1485		
9.6.2 Providing and laying marble stone slab 1" thick in kitchen, staircase etc., laid in white cement mortar with matching color pigment over 3/4" thick base of cement sand mortar 1:2, including jointing, curing, rubbing and polishing complete in all resrects.					
(a) Black	**sft** (m^2)	**43.6** 469	**326** 3504		
(b) Ziarat White	**sft** (m^2)	**43.6** 469	**336** 3620		
(c) Nowshera Pink	**sft** (m^2)	**43.6** 469	**358** 3851		
(d) Boticina	**sft** (m^2)	**43.6** 469	**272** 2927		
(e) Lasbela	**sft** (m^2)	**43.6** 469	**202** 2176		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(f) China verona	**sft** (m^2)	**43.6** 469	**293** 3158		
	(g) Badal	**sft** (m^2)	**43.6** 469	**231** 2488		
9.6.3	Extra labour for rounding of edges of marble slabs including polishing.	**lft**	**9.68**			
9.6.4	Providing and laying Granite stone size 24" x 24" having varying thickness from 7/8" to 1" in floors, laid in white cement mortar with matching color pigment over 3/4" thick base of cement sand mortar 1:2 at ground floor, including jointing, curing, rubbing and chemical polishing complete in all respects..					
	(a) Indian Glaxy Black	**sft** (m^2)	**43.6** 469	**574** 6182		
	(b) Embred Pearl	**sft** (m^2)	**49.6** 534	**1158** 12464		
	(c) Silver Pearl	**sft** (m^2)	**49.6** 534	**1042** 11221		
	(d) Ten Brown	**sft** (m^2)	**49.6** 534	**580** 6248		
	(e) Red Robee	**sft** (m^2)	**49.6** 534	**638** 6869		
9.6.5	Providing and laying 1/2" thick marble stone tiles dado or skirting in white cement with matching color pigment, laid on 1/2" thick base of cement sand mortar 1:2, including jointing, curing, rubbing and chemical polishing complete in all respects..					
	(a) Jet Black	**sft** (m^2)	**33.3** 358	**120** 1291		
	(b) Ziarat White	**sft** (m^2)	**33.3** 358	**135** 1453		
	(c) Nowshera Pink	**sft** (m^2)	**33.3** 358	**147** 1580		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(d) Boticina	**sft** (m^2)	**33.3** 358	**118** 1268		
	(e) Lasbela	**sft** (m^2)	**33.3** 358	**112** 1210		
	(f) China verona	**sft** (m^2)	**33.3** 358	**105** 1129		
	(g) Badal	**sft** (m^2)	**33.3** 358	**83.5** 898		
9.6.6	Providing and laying 7/8" to 1" thick granite stone dado or skirting in white cement with matching color pigment, laid on 1/2" thick base of cement sand mortar 1:2, including jointing, curing, rubbing and chemical polishing complete in all respects.					
	(a) Indian Glaxy Black	**sft** (m^2)	**58** 628	**614** 6608		
	(b) Embred Pearl	**sft** (m^2)	**58** 628	**1219** 13121		
	(c) Silver Pearl	**sft** (m^2)	**58.3** 628	**1098** 11818		
	(d) Ten Brown	**sft** (m^2)	**58.3** 628	**614** 6608		
	(e) Red Robee	**sft** (m^2)	**58.3** 628	**674** 7259		
9.6.7	Providing, laying, fixing "Grannitta tiles in floors 300 x 300 x 8 mm size imported" of approved shade and design jointed in pigment laid in 1:2 cement, sand mortar over 3/4" thick plaster/bedding complete in all respects.	**sft** (m^2)	**58.3** 628	**592** 6374		
9.7	**Wooden Flooring / Skirting**				**9.3.10 & 9.4.11**	
9.7.1	Providing shisham wood boarding or strips flooring 3/4" thick (sawn to required size) tongued and grooved and splayed rebated fixed with brass screws on kail wood battens 1-1/2" x 2" placed at 12" centre to centre, including two coats of bitumen laid hot on the base, complete in all respects.	**sft** (m^2)	**56.9** 612	**363** 3909		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
9.7.2	Providing deodar wood boarding or strips flooring 3/4" thick (sawn to required size) tongued and grooved or splayed rebated fixed with brass screws on kail wood battens 1-1/2" x 2" size,placed at 12" centre to centre, including two coats of bitumen laid hot on the base, complete in all respects.	**sft** (m^2)	**58.1** 625	**569** 6125		
9.7.3	Providing and laying imported laminated wood flooring of approved quality / design/size including the under lay, laid over cement concrete base, complete in all respects.	**sft** (m^2)	**19.4** 208	**166** 1784		*The cost of base for laminated wood flooring is not included in the rate and is payable separately*
9.7.4	Providing and laying imported laminated wood skirting of approved quality / design/ size including the under lay, laid over cement concrete base, complete in all respects.	**sft** (m^2)	**9.68** 104.2	**95.5** 1028		
9.8	**Rubber / VenyleTile Flooring**				**9.3.9 & 9.4.9**	
9.8.1	Rubber / Venyle tiles flooring, consisting of 12" x 12" x 1/8" rubber tiles of approved quality, laid on concrete flooring.	**sft** (m^2)	**23.0** 247	**121** 1307		The cost of base floor for rubber / venyle flooring is not included in the rate and is payable separately.
9.9	**Paver Tile Flooring**					
9.9.1	Providing and fixing paver tiles (7000 psi) unglazed of different colours manufactured by Izhar/ Envircrete, or equivalant, over 2” thick sand base, as per specifications and details given in the drawing, including providing,levelling and compacting sand and preparation of the surface prior to laying of pavers / interlocking tiles					
	(a) 80 mm thick interlocking pavers					
	(i) Grey/natural colour	**sft** (m^2)	**23.0** 247	**82.6** 889		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(ii) Pigmented colour	**sft** (m^2)	**23.0** 247	**90.6** 976		
(b) 60 mm thick interlocking pavers					
(i) Grey/natural colour	**sft** (m^2)	**23.0** 247	**67.5** 727		
(ii) Pigmented colour	**sft** (m^2)	**23.0** 247	**79.1** 851		
9.10 Miscellaneous Items					
9.10.1 Cleaning and washing mosaic, marble, glazed tiles, etc., in floor and dado with caustic soda mixture.	**sft** (m^2)	**1.79** 19.3	**2.46** 26.5		
9.10.2 Supplying and filling sand under floors.	**sft** (m^3)	**3.63** 39.1	**20.1** 217		

CHAPTER 10

SURFACE RENDERING

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 10 Surface Rendering of "Technical Specification for Railway Infrastructure Works, Volume I (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) Rates include scraping of existing white wash, distemper, colour wash, emulsion, paint etc.

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
10.1	**Mud Plaster & Gobri Leeping**				**10.4.5**	
10.1.1	Mud plaster on floor or on roof upto 20ft (6m) height (excluding gobri leeping):-					
	(a) 1/2" thick	**sft** (m^2)	**5.45** 58.6	**6.62** 71.3		
	(b) 1" thick	**sft** (m^2)	**5.45** 58.6	**7.80** 84.0		
10.1.2	Gobri leeping over roofs upto 20ft (6m) height	**sft** (m^2)	**1.60** 17.2	**1.64** 17.6		
10.2	**Gypsum Plaster**				**10.4.6**	
10.2.1	Gypsum plaster upto 20 ft (6 m) height:-					
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**13.6** 146	**17.1** 184		
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**13.6** 146	**18.0** 194		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**17.8** 192	**24.9** 268		
10.2.2	Providing under coat of Gypsum sand in ratio 1:1 (average thickness 1/2") upto 20 ft (6 m) height.	**sft** (m^2)	**14.2** 153	**16.3** 175		
10.3	**Cement Sand Plaster**				**10.3, 10.4.1, 10.4.2 & 10.4.3**	
10.3.1	Cement sand plaster 1:2 upto 20 ft (6 m) height:-					

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**18.2** 195.4	**24.0** 258.1		
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**18.2** 195	**25.7** 276		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**23.0** 247	**34.7** 373		
10.3.2	Cement sand plaster 1:3 upto 20 ft (6 m) height:-					
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**18.2** 195	**22.3** 240		
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**18.2** 195	**23.7** 256		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**23.0** 247	**31.4** 338		
10.3.3	Cement sand plaster 1:4 upto 20 ft (6 m) height:-					
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**18.2** 195	**21.9** 236		
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**18.2** 195	**23.0** 247		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**23.0** 247	**30.5** 328		
10.3.4	Cement sand plaster 1:5 upto 20 ft (6 m) height:-					
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**18.2** 195	**21.6** 232		
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**18.2** 195	**22.4** 241		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**23.0** 247	**29.8** 321		
10.3.5	Cement sand plaster 1:6 upto 20 ft (6 m) height:-					
	(a) 3/8" thick (9 mm)	**sft** (m^2)	**18.2** 195	**21.0** 226		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) 1/2" thick (12 mm)	**sft** (m^2)	**18.2** 195	**21.9** 236		
	(c) 3/4" thick (19 mm)	**sft** (m^2)	**23.0** 247	**28.7** 309		
10.3.6	Stucco cement plaster 2" (50 mm) thick 1:2:4 (cement, sand and shingle), upto 20 ft (6 m) height.	**sft** (m^2)	**43.3** 466	**70.2** 756		
10.3.7	Providing and laying machine sprayed plaster 1/2" thick, using cement and chips zero gauge, over the existing plastered and roughened surface, upto 20 ft (6 m) height:-					
	(a) Ratio 1:1	**sft** (m^2)	**17.4** 188	**34.1** 367		
	(b) Ratio 1:1-1/2"	**sft** (m^2)	**17.4** 188	**33.5** 361		
	(c) Ratio 1:2	**sft** (m^2)	**17.4** 188	**33.1** 357		
10.3.8	Extra cost of labour and material for red oxide pigment in cement pointing to match with the colour of bricks.	**sft** (m^2)	**1.82** 19.5	**6.96** 75.0		
10.3.9	Extra labour for making vertical or Horizontal grooves in cement plaster upto 1/2" width and 3/8" depth.	**ft** (m)	**1.82** 5.96			
10.3.10	Extra for making cement sand plaster mixed with waterproofing admixture (febtite powder, etc.).					
	(a) Cement plaster 1:2	**sft** (m^2)		**0.96** 10.36		
	(b) Cement plaster 1:3	**sft** (m^2)		**0.68** 7.29		
	(c) Cement plaster 1:4	**sft** (m^2)		**0.56** 6.05		
10.4	**Cement Sand Pointing**				**10.3, 10.4.1,& 10.4.6**	
10.4.1	Cement sand pointing flush, upto 20 ft (6 m) height:-					
	(a) Ratio 1:2	**sft** (m^2)	**16.3** 176	**20.7** 223		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) Ratio 1:3 (Cement & sand)	**sft** (m^2)	**16.3** 176	**19.7** 213		
10.4.2	Cement sand pointing 1:2 flush, on floor.	**sft** (m^2)	**12.10** 130	**16.5** 177		
10.4.3	Cement sand pointing struck joints on walls, upto 20 ft (6 m) height:-					
	(a) Ratio 1:2 (Cement & sand)	**sft** (m^2)	**18.8** 202	**23.0** 248		
	(b) Ratio 1:3 (Cement & sand)	**sft** (m^2)	**18.8** 202	**22.2** 239		
10.4.4	Pointing flush on stone work, upto 20 ft (6 m) height:-					
	(a) In cement mortar 1:3	**sft** (m^2)	**15.1** 163	**18.5** 200		
	(b) On stone work raised in cement mortar 1:3.	**sft** (m^2)	**28.4** 306	**31.6** 340		
10.5	**Colour/Cement/White Washing**				**10.3, 10.4.7 & 10.4.8**	
10.5.1	Colour washing:-					
	(a) New surface:					
	(i) One coat	**sft** (m^2)	**1.31** 14.1	**2.09** 22.5		
	(ii) Two coat	**sft** (m^2)	**1.96** 21.1	**3.26** 35.1		
	(b) Old surface:					
	(i) One coat	**sft** (m^2)	**1.31** 14.1	**1.80** 19.4		
	(ii) Two coat	**sft** (m^2)	**1.96** 21.1	**2.94** 31.7		
10.5.2	Cement washing.	**sft** (m^2)	**6.05** 65.1	**6.72** 72.3		
10.5.3	White washing:-					
	(a) New surface:					
	(i) One coat	**sft** (m^2)	**1.31** 14.1	**1.78** 19.1		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(ii) Two coats	**sft** (m^2)	**1.96** 21.1	**2.61** 28.1		
	(iii) Three coats	**sft** (m^2)	**2.54** 27.4	**3.47** 37.4		
	(b) Old surface:					
	(i) One coat	**sft** (m^2)	**1.31** 14.1	**1.67** 18.0		
	(ii) Two coats	**sft** (m^2)	**1.96** 21.1	**2.51** 27.0		
10.6	**Distempering**				**10.1 & 10.4.9**	
10.6.1	Priming coat of chalk under distemper.	**sft** (m^2)	**1.69** 18.2	**2.19** 23.6		
10.6.2	Distempering:-					
	(a) New surface:					
	(i) One coat	**sft** (m^2)	**2.64** 28.4	**7.66** 82.4		
	(ii) Two coat	**sft** (m^2)	**3.90** 41.9	**10.60** 114.1		
	(iii) Three coat	**sft** (m^2)	**5.15** 55.5	**13.46** 144.9		
	(b) Old surface:					
	(i) One coat	**sft** (m^2)	**2.40** 25.8	**5.73** 61.7		
	(ii) Two coat	**sft** (m^2)	**3.90** 41.9	**8.91** 96.0		
10.7	**Extra for Work above 20 ft Height**					
10.7.1	Extra labour for mud, cement or Gypsum plaster and pointing from 20 (6 m) and above, for each additional 10 ft (3 m) height, or part thereof.	**sft** (m^2)	**3.27** 35.2			
10.7.2	Extra labour for white washing, colour washing, cement washing, priming coat and distempering etc. from 20 (6 m) height and above requiring scaffolding, for every additional 10 ft (3 m) height or part thereof.	**sft per coat** (m^2)	**0.08** 0.84			The height will be taken from the floor, roof or ground underneath, as the case may be on the side towards which the work is to be done.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
10.8 Miscellaneous Items					
10.8.1 Raking and washing joints of stone masonry (old work).	**sft** (m^2)	**7.26** 78.2			
10.8.2 Raking and washing joints of brick masonry (old work).	**sft** (m^2)	**3.63** 39.1			

CHAPTER 11

WOOD WORK

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 11 Wood Work of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) No extra rate is to be paid for sawing as the rates are inclusive of this.

(3) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m) .

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
11.1	**Wood Work (General)**				**11.4 & 11.5.1**	
11.1.1	Providing plain wood work sawn, wrought, planned & fixed in position, including cost of nails and screws etc complete in all respects.					
	(a) Deodar wood	**cft** (m^3)	**932** 32908	**6072** 214463		
	(b) Shisham wood	**cft** (m^3)	**1573** 55558	**4031** 142373		
11.1.2	Sawing wood by hand:-					
	(a) Soft wood (deodar, kail or chir)	**sft** (m^2)	**6.35** 68.4			
	(b) Hard wood (shisham, kikar or teak)	**sft** (m^2)	**12.7** 137			
11.1.3	Sawing wood by machine:-					
	(a) Soft wood (deodar, kail or chir)	**sft** (m^2)	**5.09** 54.8			
	(b) Hard wood (shisham, kikar or teak)	**sft** (m^2)	**7.65** 82.3			
11.1.4	Making and fixing sun-shade of deodar wood,including fixing brackets.	**sft** (m^2)	**143** 1537	**524** 5639		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
11.2 Panelled & Glazed Doors & Windows				**11.4, 11.5.1 & 11.5.2**	
11.2.1 Providing first class deodar wood wrought joinery in doors and windows, etc. panelled, or panelled and galzed, or fully galzed, fixed in position, including deodar wood chowkat, holdfast, hinges, tower bolts, chocks, rubber stop, cleats/G.I. Clamp handles and chord with hooks, etc. complete in all respects (excluding sliding bolt and lock):-					
(a) Panelled					
(i) 2" thick	**sft** (m^2)	**161** 1737	**1283** 13810		
(ii) 1-3/4" thick	**sft** (m^2)	**161** 1737	**1135** 12214		
(iii) 1-1/2" thick	**sft** (m^2)	**161** 1737	**1059** 11399		
(b) Panelled & glazed with 5mm thick plain glass					
(i) 2" thick	**sft** (m^2)	**161** 1737	**1169** 12580		
(ii) 1-3/4" thick	**sft** (m^2)	**161** 1737	**1095** 11787		
(iii) 1-1/2" thick	**sft** (m^2)	**161** 1737	**1028** 11063		
(c) Fully glazed with 5mm thick plain glass					
(i) 2" thick	**sft** (m^2)	**161** 1737	**1102** 11863		
(ii) 1-3/4" thick	**sft** (m^2)	**161** 1737	**1028** 11071		
(iii) 1-1/2" thick	**sft** (m^2)	**161** 1737	**975** 10497		
11.2.2 Extra for brass fittings to doors and windows, except for hinges which shall be of iron:-					
(a) Deodar wood panelled or panelled and glazed or fully glazed.	**sft** (m^2)	**5.25** 56.6	**44.1** 475		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
	(b) Deodar wood wire gauzed shutters.	**sft** (m^2)	**2.07** 22.3	**29.6** 318		
11.2.3	Providing & fixing approved quality rim lock.	**each**	**321**	**948**		
11.2.4	Providing and fixing handle lock of approved make/quality	**each**	**426**	**1163**		
11.2.5	Providing 1-1/2" thick deodar wood panelled or panelled and glazed, doors and windows, with mild steel chowkat as detailed below,fixed in position complete in all respects (excluding sliding bolt and lock) with:-					
	(a) M.S. angle iron 1-1/2" x 1-1/2" x 1/4" welded with M.S. flat 2" x 1/4"					
	(i) Panelled	**sft** (m^2)	**167** 1800	**915** 9845		
	(ii) Panelled & glazed with 5mm thick plain glass	**sft** (m^2)	**167** 1800	**877** 9437		
	(iii) Fully glazed with 5mm thick plain glass	**sft** (m^2)	**167** 1800	**799** 8601		
	(b) M.S tee iron 1-1/2" x 1-1/2" x 1/4" welded with M.S. flat 1/2" x 1/4".					
	(i) Panelled	**sft** (m^2)	**167** 1800	**883** 9507		
	(ii) Panelled & glazed with 5mm thick plain glass	**sft** (m^2)	**167** 1800	**846** 9103		
	(iii) Fully glazed with 5mm thick plain glass	**sft** (m^2)	**167** 1800	**768** 8268		
11.2.6	Providing first class deodar wood wrought joinery in sliding windows 1-1/2" thick in cabin fully glazed, fixed in position as per type 0-42/R-I including chowkat, hold fast, tower bolts, handles flat iron 2" x 1/4" on top and bottom and 1-1/2"x1/8" at bottom only fixed to frame, etc. complete in all respects.	**sft** (m^2)	**279** 3005	**1348** 14508		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
11.2.7	Providing casement windows (excluding chowkat) panelled or panelled and glazed, or fully glazed, flush, ledged & battened and fixed in position including holdfasts,hinges, etc. complete in all reespect as per specification.					
	(a) Deodar wood frame (3" x 1-1/2") & 3/4" panel	**sft** (m^2)	**131.1** 1411	**634** 6821		
	(b) Deodar wood battened 3/4" & ladged 3/4", 2' apart	**sft** (m^2)	**80.7** 868.4	**529** 5695		
11.3	**Framed, Ledged, Braced, Battened Doors & Windows**				**11.4, 11.5.1, 11.5.2, 11.5.5 to 11.5.7**	
11.3.1	Providing deodar wood framed, braced and battened doors and windows, complete with iron fittings and fixed in position, excluding wooden chowkats,sliding bolts & lock, compete in all respect.					
	(a) 2-1/4" thick, with 1-1/4" battens and 1" planks.	**sft** (m^2)	**179** 1923	**1149** 12370		
	(b) 1-3/4" thick, with 1" battens and 3/4" planks.	**sft** (m^2)	**161** 1737	**985** 10608		
	(c) 1-1/2" thick, with 3/4" battens and 3/4" planks.	**sft** (m^2)	**155** 1670	**955** 10285		
11.3.2	Providing 1" thick battened doors and windows fitted in position, complete with iron fittings, without chowkats.	**sft** (m^2)	**240** 2579	**664** 7145		
11.4	**Wire Gauzed Doors & Windows**				**11.4, 11.5.1, 11.5.2, 11.5.8 & 11.5.9**	
11.4.1	Providing and fxing first class deodar wood wrought joinery work in wire gauze doors and windows with 22 SWG G.I. wire gauze, 12x12 meshes per square inch including iron fittings, wooden strips etc. complete in all respects.					
	(a) Deodar wood framing 1-3/4" thick with wire gauze fixed in position;					

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(i) Without springs or spring hinges	**sft** (m^2)	**174** 1874	**517** 5568		
(ii) With springs or spring hinges.	**sft** (m^2)	**174** 1874	**564** 6076		
(b) Deodar wood framing 1-1/2" thick, with wire gauze fixed in position;					
(i) Without springs or spring hinges	**sft** (m^2)	**174** 1874	**478** 5145		
(ii) With springs or spring hinges.	**sft** (m^2)	**174** 1874	**521** 5611		
(c) G.I. Wire gauze 22 SWG, 12x12 meshes per square inches, fixed to chowkat with 3/4" thick deodar wood strip and screws.	**sft** (m^2)	**65.5** 706	**169** 1817		
(d) G.I. Wire gauze 22 SWG, 12x12 meshes per square inches, fixed to chowkat with 1/2" strip on separate frame of deodar wood 2"x2".	**sft** (m^2)	**90.8** 977	**376** 4047		
11.4.2 Providing and fixing spring hinges, to wire gauzed doors:-					
(a) Brass	**each**	**96.8**	**757**		
(b) Iron Enameled	**each**	**96.8**	**317**		
11.4.3 Providing and fixing G.I.wire gauze 22 SWG 12x12 meshes per square inch, fixed to steel window with flat iron patti 1/2" x 1/8" and machine made screws, complete in all respects.	**sft** (m^2)	**25.2** 271	**64.1** 690		
11.4.4 Providing and fixing expended metal, fixed to steel window with flat iron patti 1/2" x 1/8" and machine made screws, complete in all respects.	**sft** (m^2)	**25.2** 271	**61.4** 661		
11.5 Hallow & Solid Flush Doors				**11.4, 11.5.1, 11.5.2 & 11.5.3**	
11.5.1 Providing 1-1/2" thick hollow flush doors, with commercial ply (3 Ply) on both faces of deodar wood shutter frame 1-1/4" thick and partal wood braces at about 4" apart and deodar wood lipping 1-1/2" x 3/8", fixed in position including chromium plated fitting, complete in all respects (excluding chowkat lock & sliding bolt):-	**sft** (m^2)	**108.9** 1172	**336** 3620		

	Description	Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
	1	2	3	4	5	6
11.5.2	Providing 24 SWG aluminum kick plate, fixed in position with screws, on bottom rail of flush doors.	**ft** (m)	**36.3** 119.1	**53.6** 176		
	a) 4" high	**ft** (m)	**36.3** 119.1	**53.6** 176		
	b) 6" high	**ft** (m)	**36.3** 119.1	**62.3** 204		
	c) 8" high	**ft** (m)	**36.3** 119.1	**71.0** 233		
11.5.3	Providing and fixing 1-1/2" thick hollow flush doors & windows with commercial ply (3 ply) on both faces of deodar wood shutter frame 1-1/4" thick and deodar wood braces at about 4" apart and deodar wood lipping 1-1/2"x 3/8" fixed to deodar wood dolly frame of full width of jamb for 9" to 13-1/2" walls made of 2"x 1-1/2" vertical battens and cross pieces at 6" c/c including commercial ply and deodar wood fillets, etc. complete in all respects. The rate also includes chromium plated fittings but excludes sliding bolts and lock.	**sft** (m^2)	**242** 2605	**670** 7217		
11.6	**Wooden / Steel Chowkats for Doors & Windows**				**11.4 & 11.5.1, 11.5.2 & 11.5.8.2**	
11.6.1	Providing and fixing deodar wood chowkat (3"x4") for doors, windows and C. windows, including holdfast etc. complete in all respects.	**sft** (m^2)	**28.1** 302	**338** 3643		
11.6.2	Providing and fixing MS sheet 16 gauge chowkat, molded in the shape of wooden chowkat including application of bitumen compound inside the chowkat and filling it with CC 1:3:6 including cost of hold fast 2 Nos. round iron at bottom of chowkat complete in all respects as per instruction of Engineer Incharge:					
	(a) Size 2" x 5"	**sft** (m^2)	**31.7** 341	**96.3** 1037		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) Size 2" x 10"	**sft** (m^2)	**31.7** 341	**131** 1411		
(c) Size 2" x 14"	**sft** (m^2)	**47.6** 512	**177** 1904		
11.6.3 Providing and fixing mild steel chowkat of doors, windows, C. windows, etc. including holdfast, making and threading holes for hinges etc. complete:-					
(a) M.S. angle iron 1-1/2" x 1-1/2" x 1/4" welded with M.S. Flat 2" x 1/4"	**sft** (m^2)	**42.4** 456	**154** 1659		
(b) M.S. tee iron 1-1/2" x 1-1/2" x 1/4" welded with M.S. Flat 1/2" x 1/4"	**sft** (m^2)	**42.4** 456	**114** 1228		
11.7 Wooden almirah/wardrobe/ showcase/ cabin				**11.4, 11.5.1 & 11.5.2**	
11.7.1 Providing and fixing deodar wood almirahs:-					
(a) 12" depth, including boxing with 3/4" thick back, shelves, shutter and brass fittings,etc complete in all respects.	**sft** (m^2)	**226** 2431	**1418** 15263		
(b) 12" depth, with 3/4" thick shelves, shutters, brass fittings, etc. complete in all respects, (without boxing and back)	**sft** (m^2)	**165** 1780	**724** 7792		
11.7.2 Providing and fixing wooden box type wardrobe 22" deep, including 3/4" thick boxing and shelves, hanger rods, hard board back, drawers, brass fittings, locking arrangements handles, internal bolts, shoe, rods etc. including three coats of enamel paints on internal side, complete in all respects.					If hollow flush door leaves 1" thick with commercial ply (3 ply) on both sides of deodar wood frame is used, the composite rate will be reduced by Rs.12.00 per Sft.
(a) Partal wood boxing and back, deodar wood shelves and leaves, etc.	**sft** (m^2)	**289** 3106	**1018** 10959		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) Deodar wood boxing, and deodar wood shelves and leaves and back etc.	**sft** (m^2)	**289** 3106	**1482** 15957		
11.7.3	Providing and fixing in position ward robe box type 2 ft deep made of lamination sheet including lamination board door shutters piano hinges, hawees handles, catchers, locks all labour and material complete.	**sft** (m^2)	**313** 3365	**775** 8344		
11.7.4	Providing & fixing in position show case made of lamination sheets depth 2'-0" and height 2'-0" to 8'-0" including all labour and material C.P. Brass mongry, sliding glass shutters, lamination sheet doors complete in all respects.	**sft** (m^2)	**140** 1506	**563** 6058		
11.7.5	Providing and fixing kitchen wall cabinet made of lamination board including all labour and material C.P. Brass mongrey and fittings etc. complete.	**sft** (m^2)	**173** 1864	**751** 8087		
11.7.6	Fixing wooden almirahs and wardrobes:-	**sft** (m^2)	**83.2** 895.5			
11.8	**Wooden Planking/Shelves**				**11.4 & 11.5.1**	
11.8.1	Providing deodar wood planking in eave boards, etc planed on both sides, rebated and fixed in position, including nails and screws, bolts and brackets:-					
	(a) 1" (25 mm) thick	**sft** (m^2)	**55.7** 599	**474** 5101		
	(b) 3/4" (19 mm) thick	**sft** (m^2)	**55.7** 599	**369** 3974		
	(c) 1/2" (13 mm) thick.	**sft** (m^2)	**55.7** 599	**265** 2851		
11.8.2	Providing and fixing deodar wood shelves, including brackets:-					
	(a) 1" (25 mm) thick	**sft** (m^2)	**55.7** 599	**474** 5101		
	(b) 1-1/2" (31 mm) thick	**sft** (m^2)	**55.7** 599	**683** 7351		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(c) 2" (50 mm)thick.	**sft** (m^2)	**55.7** 599	**892** 9601		
11.9	**Fixing Glass Panes to Doors & Windows**				**11.4 & 11.5.11**	
11.9.1	Glazing with plate glass 5 mm thick including the cost of deodar wood fillets and putty, upto any height complete in all respects.	**sft** (m^2)	**50.5** 544	**153** 1646		
11.9.2	Glazing with plate glass 8 mm thick including the cost of deodar wood fillets and putty,upto any height complete in all respects	**sft** (m^2)	**50.5** 544	**196** 2110		
11.9.3	Glazing with tinted glass including the cost of deodar wood fillet, nails and putty, upto any height complete in all respects.					
	(a) Tinted glass 5 mm thick	**sft** (m^2)	**52.9** 570	**195** 2097		
	(b) Tinted glass 8 mm thick	**sft** (m^2)	**52.9** 570	**247** 2658		
11.9.4	Glazing with tampered plate glass 5 mm thick including the cost of deodar wood fillets and putty,complete in all respects.	**sft** (m^2)	**50.5** 544	**231** 2489		
11.9.5	Glazing with reinforced plate glass 5 mm thick including the cost of deodar wood fillets and putty,complete in all respects.	**sft** (m^2)	**50.5** 544	**192** 2070		
11.10	**Doors & Windows Fixtures**				**11.5.1 & 11.5.2**	
11.10.1	Providing & Fixing:-					
	(a) Cleats for doors and windows, including hinges and screws.	**each**	**62.9**	**188**		
	(b) Cleats with brass hooks for roof ventilators.	**each**	**77.4**	**178**		
	(c) G.I. Hook with clamps for doors.	**each**	**3.23**	**21.9**		
	(d) Doors stop of 1-1/2" dia rubber block.	**each**	**12.10**	**50.6**		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
11.10.2	Extra for providing and fixing iron double spring hinges, with brass fittings (it shall include brass finger plate, 6" tower bolt).	**sft** (m^2)	**4.61** 49.6	**13.0** 140		
11.10.3	Providing and fixing approved quality lock for drawer/box, complete in all respects.	**each**	**60.5**	**66.5**		
11.10.4	Providing and fixing hydraulic door closer heavy duty, approved superior quality including screws etc, complete in all respects.	**each**	**315**	**2515**		
11.10.5	Supplying and fixing tower bolts including screws for doors and windows, complete in all respects.					
	(a) Iron Tower Bolts 6" long	**each**	**12.10**	**100**		
	(b) Brass/chromium plated tower bolts 6" long	**-do-**	**12.10**	**243**		
11.10.6	Supplying and fixing handles with screws complete for doors and windows.					
	(a) Iron handles	**each**	**19.4**	**144**		
	(b) Brass/chromium plated handles	**each**	**19.4**	**285**		
11.10.7	Providing and fixing, sliding bolt to doors, complete in all respects.					
	(a) Iron sliding bolt, 10" (250 mm) long	**each**	**98.3**	**263**		
	(b) Iron sliding bolt, 12" (300 mm) long	**each**	**98.3**	**296**		
	(c) Brass sliding bolt, 10" (250 mm) long	**each**	**98.3**	**758**		
	(d) Brass sliding bolt, 12" (300 mm) long	**each**	**98.3**	**868**		
	(e) C.P.brass sliding bolt, 10" (250 mm) long	**each**	**98.3**	**1033**		
	(f) C.P.brass sliding bolt, 12" (300 mm) long	**each**	**98.3**	**1198**		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
11.11 Wooden Partitions				**11.4 & 11.5.1**	
11.11.1 Providing & fixing partition, including framework of deodar wood 2"x3" at 2' c/c, complete in all respects.					
(a) Sheets on one side of frame work;					
(i) Hard board	**sft** (m^2)	**22.7** 244	**260** 2799		
(ii) Ply wood Teak (3 Ply)	**sft** (m^2)	**22.7** 244	**260** 2799		
(iii) Ply wood commercial (3 Ply)	**sft** (m^2)	**22.7** 244	**208** 2240		
(iv) Chip Board 1/2" thick	**sft** (m^2)	**22.7** 244	**208** 2240		
(b) Sheets on both side of frame work;					
(i) Hard board	**sft** (m^2)	**26.5** 285	**287** 3093		
(ii) Ply wood Teak (3 Ply)	**sft** (m^2)	**26.5** 285	**345** 3715		
(iii) Ply wood commercial (3 Ply)	**sft** (m^2)	**26.5** 285	**241** 2596		
(iv) Chip Board 1/2" thick	**sft** (m^2)	**26.5** 285	**241** 2596		
11.12 Wooden / Gypsum Borar / Thermopore False Ceiling				**11.4 & 11.5.1**	
11.12.1 Providing and fixing false ceiling, including framework of deodar wood 2"x2" at 2' centres on either side, cost of M.S. Clamps, making holes in walls and repairing damaged surfaces complete in all respects,with:-					
(a) Hard board	**sft** (m^2)	**30.3** 326	**305** 3280		
(b) Chip Board 1/2" thick	**sft** (m^2)	**30.3** 326	**283** 3043		
(c) Ply wood Teak (3 Ply)	**sft** (m^2)	**30.3** 326	**294** 3162		
(d) Ply wood commercial (3 Ply)	**sft** (m^2)	**30.3** 326	**278** 2993		
(e) Thermopore 1" thick	**sft** (m^2)	**30.3** 326	**273** 2934		

	Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
	1	2	3	4	5	6
11.12.2	Providing and fixing false ceiling of Gypsum board of prime quality as per approved shade/design fixed/ laid on aluminum T-section size 1" x 1" x 1" x 1/8" hanged with aluminum string 1/16" dia fixed to rawl plug complete in all respect.	**sft** (m^2)	**26.6** 287	**122** 1317		
11.12.3	Providing and fixing false ceiling of Plaster of paris as per approved shade and design fixed/ laid on aluminum T-section size 1" x 1" x 1" x 1/8" hanged with aluminum string 1/16" dia fixed to rawl plug complete in all respect.	**sft** (m^2)	**26.6** 287	**153** 1643		
11.12.4	Providing and fixing false ceiling of Thermopore sheet of prime quality as per approved shade/design fixed/ laid on aluminum T-section size 1" x 1" x 1" x 1/8" hanged with aluminum string 1/16" dia fixed to rawl plug complete in all respect.	**sft** (m^2)	**13.3** 143.3	**84.8** 913		
11.13	**Wooden Panelling**				**11.4 , 11.5.1 & 11.5.3.3**	
11.13.1	Providing and fixing panelling including deodar wood frame work 1"x3/4" at appropriate spacing not exceeding 2' including cost of nails, screws and deodar wood moulding on top of panelling etc, complete in all respects, with:-					
	(a) Hard board	**sft** (m^2)	**28.2** 304	**141** 1521		
	(b) Vin board	**sft** (m^2)	**28.2** 304	**134** 1445		
	(c) Chip board 1/2" thick	**sft** (m^2)	**28.2** 304	**118** 1268		
	(d) Deodar wood 1/2" thick	**sft** (m^2)	**64.5** 695	**345** 3712		
11.13.2	Providing and fixing 3 ply over hard board/Vin board/Chip board panelling complete in all respects including the cost of deodar wood moulding on top of panelling:-					
	(a) Commercial ply (3 ply)	**sft** (m^2)	**28.2** 304	**58.1** 626		
	(b) Teak ply (3 ply)	**sft** (m^2)	**28.2** 304	**110.9** 1194		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
11.14	**Miscellaneous Items**					
11.14.1	Providing and fixing deodar wood architrave 3"x1-1/2" of approved design including moulding etc. complete in all respects.	**ft** (m)	**96.8** 318	**328** 1077		
11.14.2	Fixing doors & windows including chowkats, complete in all respects.					
	(a) Fixing door, including chowkats	**sft** (m^2)	**17.3** 186			
	(b) Fixing windows, including chowkats	**sft** (m^2)	**8.64** 93.0			
11.14.3	Supplying & fixing formica of approved quality and shade including cost of glue/solution, complete in all respects.	**sft** (m^2)	**6.05** 65.1	**34.9** 376		
11.14.4	Making and fixing 1" thick kail or chir wood notice board with frame, complete in all respects	**sft** (m^2)	**80.7** 868	**225** 2426		
11.14.5	Dismantling and refixing eave boards.	**ft** (m)	**22.5** 73.7			
11.14.6	Providing and fitting curtain railing of approved design / quality to doors and windows, fixed over 4"x3/4" deodar wood strip, including painting, complete in all respects.	**ft** (m)	**15.1** 49.6	**156** 512		

CHAPTER 12

PAINTING & VARNISHING

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in chapter 12 "Painting & Varnishing" of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) The rates include charges for scaffolding and other arrangements.

(3) The rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100ft (30 m).

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
12.1	**Cleaning & Scraping of Painted Surfaces**				**12.4**	
12.1.1	Cleaning painted wood work with oil and water.	**sft** (m^2)	**1.45** 15.6	**2.36** 25.4		
12.1.2	Oiling wood work with boiled linseed oil.	**sft** (m^2)	**1.45** 15.6	**4.17** 44.9		
12.1.3	Scraping and brushing blisters of old paints, from wood work.	**sft** (m^2)	**2.90** 31.3			
12.1.4	Scraping, brushing and removing old paint, from metal surface.	**sft** (m^2)	**14.5** 156			
12.1.5	Burning off or rubbing down with pumice stone, old paint from wood work.	**sft** (m^2)	**9.08** 97.7	**9.24** 99.5		
12.1.6	Removing with caustic soda, old paint from wood work.	**sft** (m^2)	**3.63** 39.1	**3.70** 39.8		
12.1.7	Removing paint or varnish from wall.	**sft** (m^2)	**7.26** 78.2			
12.1.8	Scraping rust from old rail or girders.	**sft** (m^2)	**10.89** 117.2	**11.35** 122.2		
12.1.9	Chiselling old paint from brick work.	**sft** (m^2)	**14.5** 156	**14.9** 160		
12.1.10	Cleaning glasses, with chalk and spirit, etc.	**sft** (m^2)	**9.68** 104.2	**9.92** 106.8		
12.1.11	Cleaning and oiling rafter or rolled steel beams.	**sft** (m^2)	**3.63** 39.1	**4.30** 46.2		
12.2	**Painting Old Surfaces**				**12.3, 12.4 & 12.5**	
12.2.1	Painting corrugated surfaces, patent roofing, etc with oil paint;					

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) First coat	**sft** (m^2)	**6.39** 68.8	**11.3** 121		
(b) Each subsequent coat.	**sft** (m^2)	**4.84** 52.1	**7.31** 78.6		
12.2.2 Painting sashes, fanlights, glazed or gauzed doors and windows;					
(a) First coat	**sft** (m^2)	**3.87** 41.7	**6.39** 68.8		
(b) Each subsequent coat.	**sft** (m^2)	**3.29** 35.4	**5.24** 56.4		
12.2.3 Painting doors and windows, of type other than those under item 12.2.2;					
(a) First coat	**sft** (m^2)	**6.39** 68.8	**10.74** 116		
(b) Each subsequent coat.	**sft** (m^2)	**4.84** 52.1	**8.11** 87.3		
12.2.4 Painting guard bars, gates of iron bars, gratings, railing boiler tube, tie bar and wooden fencing (including standards, braces, etc) and similar open work;					
(a) First coat	**sft** (m^2)	**3.87** 41.7	**6.10** 65.7		
(b) Each subsequent coat.	**sft** (m^2)	**3.29** 35.4	**5.00** 53.8		
12.2.5 Painting fillets, framings, skirting, pipes, gutters and similar linear work, not exceeding 6" in girth;					
(a) First coat	**ft** (m)	**3.29** 10.80	**5.52** 18.1		
(b) Each subsequent coat.	**ft** (m)	**2.32** 7.62	**4.03** 13.2		
12.2.6 Painting small detached articles, not exceeding one square foot of painted surface;					
(a) First coat	**each**	**13.92**	**18.2**		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) Each subsequent coat.	**each**	**10.89**	**13.12**		
12.2.7 Painting small detached articles, exceeding one square foot but not exceeding three square feet of painted surface;					
(a) First coat	**each**	**27.8**	**40.7**		
(b) Each subsequent coat.	**each**	**15.7**	**22.2**		
12.2.8 Painting railway girders and other heavy railway steel structures, including scaffolding upto 20ft height as per specifications complete in all respects.				**12.4.4**	
(a) First coat	**sft** (m^2)	**9.68** 104.2	**17.5** 189		
(b) Each subsequent coat.	**sft** (m^2)	**7.87** 84.7	**10.04** 108.1		
12.3 Painting New Surfaces				**12.3 & 12.4.1 to 12.4.7 & 12.5**	The rates of painting new surfaces under subsection 12.3 are by using best quality paints such as ICI,Berger or Equivalent as specified /approved by Engineer in-charge.
12.3.1 Preparing surface and painting corrugated surface, patent roofing etc;					
(a) Primimg Coat	**sft** (m^2)	**6.92** 74.5	**14.3** 154		
(b) Each subsequent coat of paint.	**sft** (m^2)	**3.61** 38.8	**9.66** 104.0		
12.3.2 Preparing surface and painting sashes, fan light, glazed or guazed doors and windows, etc. any type (including edges);					
(a) Priming coat	**sft** (m^2)	**3.61** 38.8	**7.89** 85.0		
(b) Each subsequent coat of paint.	**sft** (m^2)	**2.32** 25.0	**5.75** 61.9		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
12.3.3 Preparing surface and painting of doors and windows, of type other than those under item 12.3.2 (including edges);					
(a) Priming coat	**sft** (m^2)	**6.92** 74.5	**13.3** 143.6		
(b) Each subsequent coat of paint.	**sft** (m^2)	**3.61** 38.8	**8.99** 96.8		
12.3.4 Preparing surface and painting guard bars, gates of iron bars, gratings, railing, boiler tube, tie bar and wooden fencing (including standards, braces, etc.) and in similar open work;					
(a) Priming coat	**sft** (m^2)	**4.3** 45.9	**8.05** 86.6		
(b) Each subsequent coat of paint.	**sft** (m^2)	**2.32** 25.0	**5.35** 57.6		
12.3.5 Preparing surface and painting of fillets, framing, skirtings, pipes, gutters and similar linear work, not exceeding 6"girth.					
(a) Priming coat	**sft** (m)	**3.29** 35.4	**6.18** 66.5		
(b) Each subsequent coat of paint.	**sft** (m)	**1.55** 16.7	**4.01** 43.2		
12.3.6 Preparing surface and painting of small detached articles, not exceeding one sft of painted surface;					
(a) Priming coat	**per no.**	**14.5**	**27.9**		
(b) Each subsequent coat of paint.	**per no.**	**7.24**	**17.9**		
12.3.7 Preparing surface and painting of small detached articles, exceeding one sft. but not exceeding 3 sft of painted surface;					
(a) Priming coat	**per no.**	**28.4**	**54.0**		
(b) Each subsequent coat of paint.	**per no.**	**12.7**	**31.9**		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
12.3.8 Extra for knotting and stopping to priming coat on new surface of wood.	**sft** (m^2)	**0.73** 7.82	**0.81** 8.73		
12.3.9 Preparing surface and painting with epoxy paint of approved quality, on heavy steel (foot over bridges) complete in all respect.	**sft** (m^2)	**11.81** 127.1	**24.8** 267		
12.3.10 Preparing surface and Painting railway girders and other heavy railway steel structures, including scaffolding upto 20ft height as per specifications complete in all respects;				**12.4.4**	
(a) Priming coat	**sft** (m^2)	**12.71** 136.8	**20.6** 222		
(b) Each subsequent coat.	**sft** (m^2)	**7.21** 77.6	**12.55** 135.1		
12.4 Painting with Emulsion Paint				**12.3, 12.4.1, 12.4.8, 12.4.9 & 12.5**	The rates of painting new surfaces under subsection 12.4 are by using best quality paints such as ICI,Berger or Equivalent as specified /approved by Engineer in-charge.
12.4.1 Preparing surface and painting with emulsion paint:-					
(a) Priming coat	**sft** (m^2)	**4.43** 47.7	**17.61** 189.5		
(b) Second and each subsequent coat	**sft** (m^2)	**3.39** 36.5	**13.31** 143.3		
12.4.2 Preparing surface and painting exteriors of buidings with weather shield paint:-					
(a) Priming coat	**sft** (m^2)	**4.43** 47.7	**9.35** 100.6		
(b) Second and each subsequent coat	**sft** (m^2)	**3.39** 36.5	**7.15** 77.0		
12.4.3 Preparing surface and painting interiors of buiding with textured paint complete in all respect.					
(a) Priming coat	**sft** (m^2)	**4.43** 47.7	**17.55** 188.9		
(b) Second and each subsequent coat	**sft** (m^2)	**3.39** 36.5	**13.31** 143.3		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
12.5 Polishing				**12.3, 12.4.1, 12.4.14, 12.4.15 & 12.5**	
12.5.1 French polishing complete:-					
(a) On new work.	**sft** (m^2)	**50.8** 547	**58.4** 629		
(b) on old work.	**sft** (m^2)	**26.6** 287	**30.5** 328		
12.6 Varnishing				**12.3, 12.4.1, 12.4.13 & 12.5**	
12.6.1 Varnishing wood work, including cleaning and preparing surface:-					
(a) First Coat	**sft** (m^2)	**3.87** 41.7	**8.70** 94		
(b) Second Coat	**sft** (m^2)	**1.94** 20.8	**5.61** 60.4		
(c) Third Coat	**sft** (m^2)	**1.94** 20.8	**4.85** 52.2		
12.7 Painting/Varnishing above 20 ft					
12.7.1 Extra labour for painting, varnishing etc. from 20' height and above for every additional 10' height or part thereof requiring scaffolding.	**sft** (m^2)	**1.94** 20.8			The height will be taken from the floor, roof or ground underneath as the case may be, on the side towards which the work is to be done.
12.8 Painting with Coaltar/ Bitumen Solignum & Creosote				**12.3, 12.4.1, 12.4.15 & 12.5**	
12.8.1 Bitumen coating to plastered or cement concrete surface:-					
(a) 9 kg per 100 sft	**sft** (m^2)	**3.63** 39.1	**14.41** 155		
(b) 6.3 kg per 100 sft	**sft** (m^2)	**2.90** 31.3	**10.49** 113.0		
(c) 4.5 kg per 100 sft	**sft** (m^2)	**2.4** 25.8	**7.79** 83.8		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
12.8.2	Coaltar painting:-					
	(a) First Coat, laid hot	**sft** (m^2)	**2.40** 25.8	**10.80** 116.2		
	(b) Second Coat, laid hot	**sft** (m^2)	**1.16** 12.5	**6.59** 71.0		
12.8.3	Solignum painting:-					
	(a) one coat, applied hot	**sft** (m^2)	**3.99** 43.0	**5.56** 59.8		
	(b) two coats, applied hot	**sft** (m^2)	**6.05** 65.1	**8.69** 93.5		
12.8.4	Cresote painting:-					
	(a) one coat, applied hot	**sft** (m^2)	**3.99** 43.0	**5.03** 54.2		
	(b) two coats, applied hot.	**sft** (m^2)	**6.05** 65.1	**7.77** 83.7		
12.9	**Miscellaneous Items**					
12.9.1	Painting traffic lane 5" wide with road marking enamel.	**ft** (m)	**1.94** 6.35	**4.96** 16.29		

CHAPTER 13

STRUCTURAL STEEL / ALUMINIUM WORKS

Note:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in chapter 13 "Technical Structural Steel / Aluminium Works" of "Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) The rates for all finished works include the removal of surplus debris, unused material and by products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
13.1	**Fabrication of Small Steel Works**				**13.3 13.4.1 to 13.4.7, 13.4.14 & 13.5**	
13.1.1	Fabrication of small steel work, such as gusset plates, knees, bends, stirrups, straps, rings, etc, including cutting, drilling, rivetting, handling, assembling and fixing but excluding erection in position.	**per kg**	**86.4**	**185**		
13.1.2	Making bolts and nuts of steel rods.	**per kg**	**69.3**	**201**		
13.1.3	Hoop iron netted trelliss work fixed with nails.	**sft** (m^2)	**53.78** 578.92			
13.2	**Fabrication of Heavy Steel Works, i.e. Trusses, Girder & Tanks etc.**				**13.3 13.4.1 to 13.4.7, 13.4.14 & 13.5**	
13.2.1	Fabrication of heavy steel works, with angle, tees, flat iron, round iron and sheet iron for making trusses, girders, tanks, gate leaves, special type iron grills, etc. including cutting, drilling, rivetting/welding, handling, assembling and fixing but excluding erection in position.	**per kg**	**34.6**	**120**		
13.3	**Revitting Works**				**13.3,13.4.1,13.4.5 & 13.5**	
13.3.1	Rivitting 1/8" to 1 "					
a)	Rivetting 1/8" to 3/8" dia.	**per no.**	**1.00**	**7.60**		
b)	Revit 1/2"	**per no.**	**1.69**	**13.8**		
c)	Revit 5/8"	**per no.**	**1.89**	**28.3**		
d)	Revit 3/4"	**per no.**	**4.11**	**42.6**		
e)	Revit 7/8"	**per no.**	**4.60**	**58.5**		
f)	Revit 1"	**per no.**	**5.45**	**60.4**		

Description	Unit	Rate (PKR)		Railways Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
13.3.2 Cutting out revits size 1/8" to 1 "					
a) Rivetting 1/8" to 3/8" dia.	**per no.**	**2.66**			
b) Revit 1/2"	**per no.**	**4.45**			
c) Revit 5/8"	**per no.**	**6.17**			
d) Revit 3/4" to 7/8"	**per no.**	**8.47**			
e) Revit 1"	**per no.**	**10.4**			
13.4 Erection of Small/Heavy Steel Works				**13.4.1, 13.4.8 to 13.4.10 & 13.5**	
13.4.1 Erection and fitting in position iron trusses, staging of water tanks, manufactured girders, steel tanks, etc.	**per kg**	**9.68**			
13.4.2 Fixing corrugated iron sheet, including rivetting, etc.	**sft** (m^2)	**15.5** 167			
13.4.3 Erecting cast iron sheet tanks upto 20' height.	**per kg**	**11.65**			
13.4.4 Erecting rolled steel beams or old rails in roofs, etc. erection and fixing in position.	**per kg**	**7.4**			
13.4.5 Erecting rolled steel beams or rails, erection for posts, gate leaves, special type iron grills, etc. (other than in roofs).	**per kg**	**3.7**			
13.4.6 Fitting and erection of gutters of sheet iron.	**ft** (m)	**96.8** 318			
13.5 Providing & Fixing Steel Doors & Windows				**11.7**	
13.5.1 Providing and fixing steel grated doors, complete with locking arrangement, angle iron frames 2" x 2" x 3/8" and 3/4" square bars 4" centre to centre.	**sft** (m^2)	**285** 3070	**869** 9351		
13.5.2 Providing and fixing steel grated doors with 1/16" thick sheeting, including angle iron frame 2" x 2" x3/8" and 3/4" square bars 4" centre to centre, with locking arrangement.	**sft** (m^2)	**298** 3210	**983** 10585		

	Description	Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
	1	2	3	4	5	6
13.5.3	Providing and fixing grating in opening, including fixing at site with flat iron 2" x 3/8" and 3/4" square bars at 4" centre to centre.	**sft** (m^2)	**133.1** 1433	**412** 4429.91		
13.5.4	Providing and fixing G.I. Wire gauze 24 SWG 12x12 meshes per square inch fixed to steel windows or doors with flat iron 1/16" thick and screws, complete in all respects.	**sft** (m^2)	**29.3** 316	**39.2** 422		
13.5.5	Providing and fixing steel windows with openable glazed panells, using beam section for frame 1-1/2" x 1" x 5/8" x 1/8", Z-section for leaves 3/4" x 1"x 3/4" x 1/8", T-section sashes 1" x 1" x 1/8", glass panes, wooden screed for glazing embedded over a thin layer of putty duly screwed with leaves, brass fittings holdfast, duly painted, complete in all respects, including all cost of material and labour, etc., as per approved design and as directed by the engineer-in-charge:-					
	(a) without wire gauze:-					
	(i) Glass Pane 3 mm thick.	**sft** (m^2)	**119.7** 1289	**442** 4762		
	(ii) Glass Pane 4 mm thick.	**sft** (m^2)	**119.7** 1289	**451** 4859		
	(iii) Glass Pane 5 mm thick.	**sft** (m^2)	**119.7** 1289	**457** 4924		
	(b) fixed with wire gauze 22 SWG					The composite rate will be reduced by Rs.6.00 per Sft. If 24 SWG wire gauze is used.
	(i) Glass Pane 3 mm thick.	**sft** (m^2)	**108.6** 1169	**471** 5073		
	(ii) Glass Pane 4 mm thick.	**sft** (m^2)	**108.6** 1169	**480** 5170		
	(iii) Glass Pane 5 mm thick.	**sft** (m^2)	**108.6** 1169	**486** 5235		
	Note 1:					
	Reduction in the composite rates under 13.5.5 above in case of fixed panels.	**sft** (m^2)		**63.0** 678		

	Description	Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
	1	2	3	4	5	6
13.5.6	Providing and fixing in position steel pipe window, partly fixed and partly sliding made of hollow steel pipe of 16 guage, fixing wire guaze 22 SWG, glazing with tinted glass 5 mm thick including holdfast, handles, latches, hooks, sliding rail and wheels, painting including steel pipe grill complete	**sft** (m^2)	**99.2** 1068	**402** 4325		
13.5.7	Making and fixing steel door with 20 SWG sheet fixed on 1-1/4"x1-1/4"x1/8" angle iron frame & Chowkat of angle iron frame 2"x2"x3/16" including locking arrangement complete.	**sft** (m^2)	**79.3** 854	**222** 2393		
13.5.8	Providing and fixing panelled door of M.S. sheet, with forged door leaves of M.s. sheet 22 S.W.G. fitted in hollow frame chowkat 3"x4-1/2" made of M.S. sheet 18 S.W.G. filled with plain cement concrete 1:3:6 etc. complete, with all fittings and hammer painting, including carriage to site and fixing in position.	**sft** (m^2)	**160** 1721	**414** 4456		
13.6	**Providing & Fixing Steel Railings**					
13.6.1	Providing and fixing stair railing (all types and designs) of hard wood, including bends and corner screwed to 5/8" x 5/8" M.S. square bars 2.75 ft. high at 5.5 inch centre to centre fixed in steps of stairs, M.S. flat 1/2" x 1/4" welded to bars, painting/polishing 3 coats, etc. complete.	**ft** (m)	**513** 1683	**997** 3270		
13.6.2	Providing and fixing terrace railing of 2" i/d conduit pipe 16 SWG, welded with 5/8" x 5/8" square bar 2.75 ft. high fixed at 5" centre to centre, in reinforced cement concrete slab with suitable arrangement, complete in all respects, as per design and drawing.	**ft** (m)	**120.3** 395	**700** 2296		
13.6.3	Providing and fixing M.S. angle iron 1-1/2"x 1-1/2"x1/4" edge protector nozing of steps of stairs, having holdfast of 3/8" dia. M.S. bars 8" long welded at 2' centre to centre & embedded in cement concrete on steps, compete in all respects.	**ft** (m)	**39.3** 129.0	**140** 458		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
13.6.4	Providing and fixing stair railing of 2-1/2" i/d G.I. pipe welded with 5/8" x 5/8" square M.S. bars 2'-9" high fixed in each step, complete in all respects including painting three coats.	**ft** (m)	**92.5** 303	**577** 1893		
13.7	**Providing & Fixing Steel Grill for Windows**				**13.3, 13.4.1, 13.4.14 to 13.4.17 & 13.5**	
13.7.1	Providing and fixing M.S. flat 1/2" x 1/8" or M.S. Square 1/4" x 1/4" grill in windows, of approved design, including painting 3 coats, complete in all respects.	**sft** (m^2)	**238** 2559	**320** 3445		
13.8	**Providing & Fixing Steel Gates**				**13.3, 13.4.1, 13.4.14 to 13.4.17 & 13.5**	
13.8.1	Providing and fixing collapsible gate made of 2"x2"x1/4" tee iron at top and bottom, channel iron verticals 3/4" x 1/4"x1/4"x1/8" at 3" to 5" centre to centre (approximate) and flat iron crosses 3/4"x3/16" and best quality rollers at bottom of 3" diameter including holdfast, handles 12" long of 3/4"x1/4"x1/4"x1/8" channel iron, locking arrangement inside and outside, painting 3 coats of black Japan enamel, complete in working order.	**sft** (m^2)	**299** 3218	**629** 6767		
13.8.2	Providing and fixing 24 SWG G.I. sheet rolling shutter, consisting of steel frame of M.S. channel 2"x 1-1/4"x1/8" angle iron 1-1/2" x1-1/2"x1/8" M.S. flat 1"x1/8" G.I. Pipe 1-1/2" dia, springs 2' centre to centre, rollers 24" SWG G-I. Covering 1 ft. x 1 ft. handles, holdfast, and painting three coats, complete in all respects.	**sft** (m^2)	**204** 2193	**357** 3839		

Description	Unit	Rate (PKR)		Railways Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
13.9 Providing & Fixing Aluminum Doors & Windows				**11.5**	Note:- For rate of items 13.9.1 to 13.9.4 (i) The composite rates are based on Pakistan Cables aluminum sections (1.6mm thickness) Natural colour.
13.9.1 Providing and fixing aluminum door consisting of chowkat of special type 'U' section 4"x1-3/4" and leaf of rectangular section 2" x1-3/4" jointed with sheet metal screws including pivoted hinges, 6" handles. 9" tower bolts on top and bottom and 5 mm thick glass fixed with special type rubber channel etc. complete in all respect as approved by the Engineer Incharge.	**sft** (m^2)	**195** 2101	**1088** 11710		
13.9.2 Providing and fixing aluminum windows sliding, consisting of chowkat of special type 'U' section 4"x1" and leaf with vertical styles 2"x1", 1-1/4" x 1" bottom rail 2-1/2"x1" and top rail 1-1/4"x1" including latch, screws, sliding wheels, 5 mm. glass sheet fixed with special rubber channel etc. complete in all respects as approved by the Engineer Incharge.	**sft** (m^2)	**131** 1407	**471** 5067		(ii) For Pak Alco or other equivalent approved sections of the same thickness, the composite rates will be reduced by 20%, (iii) For sections 2mm in thickness, the composite rates will be increased by 10%.
13.9.3 Providing and fixing aluminum wire gauze shutter to windows consisting of special type section 1-5/8"x1/2" with Aluminum wire gauze of 16x16 mesh per square inch fixed with special rubber channel including cost of wheels, screws, etc. complete as approved by the Engineer Incharge.	**sft** (m^2)	**30.3** 326	**151** 1626		
13.9.4 Providing and fixing frame work of aluminum sections D 11, D 15 & D 16 and glazing with glass sheet fixed with rubber ring as per design and approved by Engineer Incharge:-					
(a) With plain glass sheet;					
(i) 5 mm thick	**sft** (m^2)	**54.5** 586	**191** 2060		
(ii) 8 mm thick	**sft** (m^2)	**54.5** 586	**230** 2478		
(b) With tinted glass sheet;					
(i) 5 mm thick	**sft** (m^2)	**54.5** 586	**230** 2478		
(ii) 8 mm thick	**sft** (m^2)	**54.5** 586	**274** 2951		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
13.10	**Providing & Fixing Barbed Wire Fencing / Razor Wire Fencing**				**13.3, 13.4.1, 13.4.14 to 13.4.17 & 13.5**	
13.10.1	Providing and fixing barbed wire fencing consisting of 1-1/2"x1-1/2"x3/16" angle iron post 3-1/4 ft. long 5 to 6 ft. centre to centre embedded in cement concrete 1:2:4, base of size 9"x9"x12", and three rows of barbed wire, painting posts, etc., compete in all respects.	**ft** (m)	**16.4** 53.9	**107** 350		
13.10.2	Providing and fixing barbed wire fencing on compound wall, consisting of 1-1/2"x1-1/2"x 3/16" angle iron post 3' long 4' apart embedded in cement concrete 1:2:4 base of size 6" x 6" x 9" and 4 rows of barbed wire, including binding wire, painting posts, etc. complete in all respects.	**ft** (m)	**27.4** 0.90	**139** 4.56		
13.10.3	Providing and fixing barbed wire fencing with 4 horizontal and 2 number cross wires fixed with posts of R.C.C. 1:2:4 straining posts 7' x 9" x9" at 100 centre to centre stiffening posts 7' x 6" x 6" at 50 ft. interval and intermediate post 7' x 5" x 5" at 8 ft. centre to centre, including cost of steel, its fabrication and placing of steel reinforcement, eye bolts, washers, etc. Also including base concrete (1:2:4) with shuttering and excavation as per P.R. Type No.F-64 complete.	**ft** (m)	**39.2** 129	**123** 404		(i) Vertical bars in straining and stiffening posts to be 4 Nos. each 1/2" dia for intermediate posts to be 4 Nos. of 3/8" dia. (ii) Stirrups for all posts to be 1/4" dia at 12" centre to centre.
13.10.4	Providing and fixing fencing consisting of 1-1/2" dia G.I pipe (medium quality) at 6' c/c embedded in cement concrete (1:2:4) base of size 9" x 9" x 18" deep and 2" x 2" G.I mesh chain link fencing wire fixed to pipe with G.I hooks complete in all respects.					Measurement shall be made of only mesh chain link area.
	(a) 8 SWG chian link wire	**ft** (m)	**109** 357	**340** 1115		
	(b) 10 SWG chian link wire	**ft** (m)	**109** 357	**264** 867		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
13.10.5	Supply and fixing razor barbed wire fencing consisting of 11/2"X11/2"X3/16" angle iron post 2'-6" long 10' center to center embedded in C.C 1:2:4 case of size 3"X9"X6" painting posts etc. Complete in all respect.	**ft** (m)	**38.72** 127.0	**315.6** 1035		
13.11	**Miscellaneous Items**					
13.11.1	Cutting rails, rolled steel joists and beams, with hacksaw:-					
	(a) upto 6" size.	**cut**	**290**			
	(b) above 6" size.	**cut**	**436**			
13.11.2	Cutting rails or rolled steel beams of size upto 6" with jim.	**cut**	**136**			
13.11.3	Bending rolled steel beams or rails.	**bend**	**145**	**453**		
13.11.4	Drilling holes, in plates upto 1/2" thick per inch dia or part thereof.	**hole**	**51.4**	**-**		
13.11.5	Extra for drilling holes in plates over 1/2" thick per inch dia, or part thereof.	**hole**	**26.7**	**-**		
13.11.6	Providing, cutting and fixing iron bars for 1/2" dia for barred windows.	**bar**	**55.3**	**67.6**		
13.11.7	Cutting G.I. Sheets.	**each cut**	**29.8**	**-**		
13.11.8	Notching web or foot of rail posts.	**notch**	**645**	**858**		

CHAPTER 14

PILE FOUNDATIONS

Notes:

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 14 Pile Foundations of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) If concrete mixer or high frequency vibrator, etc., is supplied by the department, all charges including depreciation will be recovered from the contractor.

Description	Unit	Rate (PKR)		Railways Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
14.1 Providing Cast-in-Situ Bored RCC Piles				**14.4 & 14.5.1 to 14.5.4 & 14.5.6**	
14.1.1 Boring of RCC piles in common soil, including lowering of steel cage and casting in situ bored reinforced concrete piles with nominal concrete mix, using 10% extra cement in dry mix, including all labour and material (except the cost of steel reinforcement and labour for its fabrications etc. which will be paid seperately) complete in all respects as per specification.					
(a) Nominal Mix 1:2:4 (fc' =3000 psi)					
(i) 18" (450 mm) dia pile	**ft** (m)	**893.1** 2930	**1164** 3820		fc' = 28 days compressive cylinder strength of concrete.
(ii) 24" (600 mm) dia pile	**ft** (m)	**1584** 5197	**2065** 6776		
(iii) 30" (750 mm) dia pile	**ft** (m)	**2354** 7725	**3103** 10181		
(iv) 36" (900 mm) dia pile	**ft** (m)	**3378** 11083	**4459** 14629		
(v) 42" (1050 mm) dia pile	**ft** (m)	**4600** 15093	**6070** 19917		
(vi) 48" (1200 mm) dia pile	**ft** (m)	**5995** 19669	**7916** 25972		
(vii) 78" (1950 mm) dia pile	**ft** (m)	**6673** 21895	**11745** 38536		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) Nominal Mix 1:1-1/2:3 (fc' = 4000 Psi)					
(i) 18" (450 mm) dia pile	**ft** (m)	**893** 2930	**1216** 3989		
(ii) 24" (600 mm) dia pile	**ft** (m)	**1584** 5197	**2157** 7076		
(iii) 30" (750 mm) dia pile	**ft** (m)	**2354** 7725	**3245** 10648		
(iv) 36" (900 mm) dia pile	**ft** (m)	**3378** 11083	**4664** 15303		
(v) 42" (1050 mm) dia pile	**ft** (m)	**4600** 15093	**6350** 20834		
(vi) 48" (1200 mm) dia pile	**ft** (m)	**5995** 19669	**8281** 27170		
(vii) 78" (1950 mm) dia pile	**ft** (m)	**6673.15** 21895	**12709** 41699		
(c) Nominal Mix 1:1:2 (fc' = 5000 Psi)					
(i) 18" (450 mm) dia pile	**ft** (m)	**893** 2930	**1306** 4285		
(ii) 24" (600 mm) dia pile	**ft** (m)	**1584** 5197	**2317** 7601		
(iii) 30" (750 mm) dia pile	**ft** (m)	**2354** 7725	**3494** 11465		
(iv) 36" (900 mm) dia pile	**ft** (m)	**3378** 11083	**5024** 16483		
(v) 42" (1050 mm) dia pile	**ft** (m)	**4600** 15093	**6839** 22439		
(vi) 48" (1200 mm) dia pile	**ft** (m)	**5995** 19669	**8920** 29267		
(vii) 78" (1950 mm) dia pile	**ft** (m)	**6673** 21895	**14396** 47234		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
14.2	**Fabrication of Steel**				**14.4 & 14.5.1 to 14.5.4 & 14.5.6**	
14.2.1	Fabrication of mild steel reinforcement conforming to ASTM A615 bar cage for RCC bored piles, including cutting, bending, laying in position, welding & fastening including cost of binding wire and labour charges for binding of steel reinforcement (also includes removal of rust from the bars):-					The rate includes wastage and over laps, etc.
	(a) Deformed steel bars (Grade 40)	**per kg**	**9.68**	**104**		
	(b) Deformed steel bars (Grade 60)	**per kg**	**16.34**	**115**		
14.3	**Testing of Piles**				**14.5.3 & 14.5.6**	
14.3.1	Carrying out load test on piles including cost of making suitable load platform to hold the test load, arrangment of load material & its placing on load platform, providing and installation of necessary equipment like pressure gauge, hydraulic jack, removal and disposal of load material, complete in all respects including submission of test report as per specification.					i)The cost of casting test piles shall be paid seperately under items nos. 14.1 ii) For intermediate test load rate may be calculated by interpolation.
	(a) 250 ton/sft	**each test**	**73568**	**253455**		
	(b) 500 ton/sft	**each test**	**77924**	**408217**		
	(c) 750 ton/sft	**each test**	**79666**	**560366**		
	(d) 1000 ton/sft	**each test**	**82280**	**713387**		
14.4	**Miscellaneous Items**					
14.4.1	Providing & installation of liner of M.S sheet 10 mm thickness for piles.	**kg**	**12.10**	**89.1**		
14.4.2	Providing & fixing Elastromeric Bearing Pads imported including their fixing with epoxy coating as per approved design complete in all respects as per specification.	**cm^3**	**6.05**	**40.70**		

CHAPTER 15

WELL FOUNDATIONS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 15 Well Foundations of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) Well curbs to be laid at spring level or as deep as possible.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
15.1 Excavation of Well in Dry				**15.4.3**	
15.1.1 Excavation of well in dry upto 20 ft below ground level, and disposal of soil within one chain as per specification.					
(a) in ordinary soil or sand;					
(i) from 0' to 5' (0 to 1.500 m) depth.	**cft** (m^3)	**5.39** 191			
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth	**cft** (m^3)	**5.63** 199			
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** (m^3)	**6.34** 224			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**7.27** 257			
(b) in hard soil;					
(i) from 0' to 5' (0 to 1.500 m) depth .	**cft** (m^3)	**6.57** 232			
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth	**cft** (m^3)	**6.87** 243			
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** **cft** (m^3)	**7.51** 265			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**8.44** 298			
(c) in shingle and gravel, etc.;					
(i) from 0' to 5' (0 to 1.500 m) depth.	**cft** (m^3)	**14.2** 501			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth	**cft** (m^3)	**14.7** 518			
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** (m^3)	**15.3** 541			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**16.4** 580			
15.2 Dry Sinking of Wells				**15.4.3**	
15.2.1 Dry sinking of well, including loading, and removing excavated material within one chain as per specification.					
(a) In ordinary soil or sand					
(i) from 0' to 5' (0 m to 1.500 m) depth.	**cft** (m^3)	**14.5** 513			
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth.	**cft** (m^3)	**21.8** 769			
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** (m^3)	**29.0** 1026			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**36.3** 1282			
(v) from 20.1' to 25' (6.030 m to 7.500 m) depth.	**cft** (m^3)	**43.6** 1539			
(vi) from 25.1' to 30' (7.530 m to 9.000 m) depth.	**cft** (m^3)	**50.8** 1795			
(vii) from 30.1' to 35' (9.030 m to10.500 m) depth.	**cft** (m^3)	**58.1** 2051			
(viii) from 35.1' to 40' (10.530 m to 12.000 m) depth.	**cft** (m^3)	**65.3** 2308			
(ix) from 40.1' to 45' (12.030 m to 13.500 m) depth.	**cft** (m^3)	**72.6** 2564			
(x) from 45.1' (13.530 m) to any depth.	**cft** (m^3)	**79.9** 2821			
(b) in hard soil;					
(i) from 0' to 5' (0 m to 1.500 m) depth.	**cft** (m^3)	**25.4** 897			
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth.	**cft** (m^3)	**32.7** 1154			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** (m^3)	**39.9** 1410			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**47.2** 1667			
(v) from 20.1' to 25' (6.030 m to 7.500 m) depth.	**cft** (m^3)	**54.5** 1923			
(vi) from 25.1' to 30' (7.530 m to 9.000 m) depth.	**cft** (m^3)	**61.7** 2180			
(vii) from 30.1' to 35' (9.030 m to 10.500 m) depth.	**cft** (m^3)	**69.0** 2436			
(viii) from 35.1' to 40' (10.530 m to 12.000 m)depth.	**cft** (m^3)	**76.2** 2692			
(ix) from 40.1' to 45' (12.030 m to 13.500 m) depth.	**cft** (m^3)	**83.5** 2949			
(x) from 45.1' (13.530 m) to any depth.	**cft** (m^3)	**90.8** 3205			
(c) In hard strata such as shingle, gravel etc.;					
(i) from 0' to 5' (0 m to 1.500 m) depth.	**cft** (m^3)	**39.9** 1410			
(ii) from 5.1' to 10' (1.530 m to 3.000 m) depth.	**cft** (m^3)	**47.2** 1667			
(iii) from 10.1' to 15' (3.030 m to 4.500 m) depth.	**cft** (m^3)	**54.5** 1923			
(iv) from 15.1' to 20' (4.530 m to 6.000 m) depth.	**cft** (m^3)	**61.7** 2180			
(v) from 20.1' to 25' (6.030 m to 7.500 m) depth.	**cft** (m^3)	**69.0** 2436			
(vi) from 25.1' to 30' (7.530 m to 9.000 m) depth.	**cft** (m^3)	**76.2** 2692			
(vii) from 30.1' to 35' (9.030 m to 10.500 m) depth.	**cft** (m^3)	**83.5** 2949			
(viii) from 35.1' to 40' (10.530 m to 12.000 m) depth.	**cft** (m^3)	**90.8** 3205			
(ix) from 40.1' to 45' (12.030 m to 13.500 m) depth.	**cft** (m^3)	**98.0** 3462			

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(x) from 45.1' (13.530 m) to any depth.	**cft** (m^3)	**105.3** 3718			
15.3 Wet Sinking of Wells				**15.3, 15.4.1 to 15.4.6 & 15.4.7**	
15.3.1 Wet sinking of well, in ordinary soil (value of C upto 5), for depths below spring level, as per specification, including charges of machinery, shoring, kentledge and removal of excavated spoil within one chain:-					The outer dimensions of the curb shall form basis of payment.
(a) from 0' to 10' (0 to 3.000 m) depth.	**cft** (m^3)	**69.9** 2469			C means cohosioen of soil which is measure of clay content in the soil
(b) above 10.1' to 20' (3.030 m to 6.000 m) depth.	**cft** (m^3)	**78.7** 2778			
(c) above 20.1' to 30' (6.030 m to 9.000 m) depth.	**cft** (m^3)	**96.8** 3419			
(d) above 30.1' to 40' (9.030 m to 12.000 m) depth.	**cft** (m^3)	**126** 4445			
(e) above 40.1' to 50' (12.030 m to 15.000 m) depth.	**cft** (m^3)	**140** 4939			
(f) above 50.1' to 60' (15.030 m to 18.000 m) depth.	**cft** (m^3)	**157** 5556			
(g) above 60.1' to 70' (18.030 m to 21.000 m) depth.	**cft** (m^3)	**161** 5698			
(h) above 70.1' to 80' (21.030 m to 24.000 m) depth.	**cft** (m^3)	**166** 5848			
(I) above 80' (24.000 m) to any depth.	**cft** (m^3)	**180** 6350			
15.3.2 Wet sinking of well, in cohesive soil (value of C more than 5), for depths below spring levelas per specification, including charges of mchinery, shoring, kentledge and removal of excavated spoil within one chain:-					The outer dimensions of the curb shall from basis of payment.
(a) from 0' to 10' (0 to 3.000 m) depth.	**cft** (m^3)	**96.8** 3419			
(b) above 10.1' to 20' (3.030 m to 6.000 m) depth.	**cft** (m^3)	**119** 4193			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(c) above 20.1' to 30' (6.030 m to 9.000 m) depth.	**cft** (m^3)	**135** 4779			
(d) above 30.1' to 40' (9.030 m to 12.000 m) depth.	**cft** (m^3)	**182** 6442			
(e) above 40.1' to 50' (12.030 m to 15.000 m) depth.	**cft** (m^3)	**242.0** 8547			
(f) above 50.1' to 60' (15.030 m to 18.000 m) depth.	**cft** (m^3)	**300** 10583			
(g) above 60.1' to 70' (18.030 m to 21.000 m) depth.	**cft** (m^3)	**370** 13073			
(h) above 70.1' to 80' (21.030 m to 24.000 m) depth.	**cft** (m^3)	**449** 15874			
(I) above 80' (24.000 m) to any depth.	**cft** (m^3)	**535** 18913			
15.3.3 Wet sinking of well, in shingle, or gravel etc. for depths below spring level as per specification including charges of machinery, shoring, kentledge and removal of excavated spoil within one chain:-					The outer dimensions of the curb shall form basis of payment.
(a) from 0' to 10' (0 to 3.000 m) depth.	**cft** (m^3)	**121** 4274			
(b) above 10.1' to 20' (3.030 m to 6.000 m) depth.	**cft** (m^3)	**155** 5470			
(c) above 20.1' to 30' (6.030 m to 9.000 m) depth.	**cft** (m^3)	**213** 7514			
(d) above 30.1' to 40' (9.030 m to12.000 m) depth.	**cft** (m^3)	**293** 10361			
(e) above 40.1' to 50' (12.030 m to 15.000 m) depth.	**cft** (m^3)	**421** 14865			
(f) above 50.1' to 60' (15.030 m to 18.000 m) depth.	**cft** (m^3)	**605** 21369			
(g) above 60.1' to 70' (18.030 m to 21.000 m) depth.	**cft** (m^3)	**765** 27027			
(h) above 70.1' to 80' (21.030 m to 24.000 m) depth.	**cft** (m^3)	**968** 34190			
(I) above 80' (24.000 m) to any depth.	**cft** (m^3)	**1210** 42737			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
15.4 Providing & Laying RCC Curbs				**15.3, 15.4.1 & 15.4.7**	
15.4.1 Providing, making and laying R.C.C. well curb in position, using coarse sand for concrete, including all kinds of forms, moulds, curing, shuttering, rendering and finishing the exposed surface, (including screening & washing of aggregate:-					(i) The rate does not include cost of steel reinforcement and labour for its fabrication and laying in positions etc complete , which is payable separately under item 5.6.1.
(a) Ratio 1:1-1/2:3.	**cft** (m^3)	**261** 9231	**474** 16728		
(b) Ratio 1:2:4.	**cft** (m^3)	**261** 9231	**448** 15838		
15.4.2 Providing and fixing structural steel cutting edge for well curb.	**kg**	**9.7**	**91**		
15.5 Providing False Brick Masonry on Wells & its Dismantling				**15.3.4, 15.4.2 & 15.4.7**	
15.5.1 Providing false brick masonry on wells in 1:8 cement sand morter and its dismantling after sinking of wells to required depth including the scraping of the released brick sand their stacking within 100 ft (30 m).	**cft** (m^3)	**76.6** 2704	**210** 7406		In case scraped released bricks are used for brick masonry of buildings or other than buildings it shall be paid under the approperiate item of brick masonry with released bricks in chapter 6. Brick Masonry

CHAPTER 16

PROTECTION & DIVERSION WORKS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 16 River Protection & Diversion Works of "Technical Specification for Railway Infrastructure Works, Volume I, (2016)".

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) The composite rates of the items of this chapter in which stone, boulders or spawl are used do not include the carriage of these materials from the quarry to site of work, which will be paid separately by road, and/or rail, whichever means of transport is approved before the commencement of work. The supply and carriage to site of work of all other materials, required in these items, is included in their composite rates.

(4) The quantity of finished and completed item of work shall ordinarily form the basis of payment.

(5) Where stone, boulder or spawl is issued from stock and contractor is paid for its 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 sack measurement (without any reduction factor) shall form the basis of payment of supply or carriage of the stone, boulder or spawl, etc.

(6) In case of the items in which the rates include carriage of sacks, bushing, pilchi, sarkanda or farash etc: within one mile (1.6 km):-

(i) the cost of the carriage within one mile (1.6 km) shall not be deducted from the carriage charges to follow thereafter from the point of supply.

(ii) if the site of work happens to be within one mile (1.6 km) of the source of supply, the materials will be collected and measured at site of work and no extra carriage would be admissible in such cases.

(iii) where the site of the work is situated at more than one mile (1.6 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 most economically. Extra carriage will be admissible from the place of supply of the material which will be considered its starting point. The demarcation of the place of supply will be pre-determined before calling the tenders.

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.1	**Cutting Pilchi, Farash & Sarkanda, making Bundles and Launching them in Position**				**16.2, 16.3.1 & 16.4**	
16.1.1	Cutting pilchi, farash or Sarkanda including carriage within one mile (1.6 km).	**cft** (m^3)	**11.04** 390			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.1.2	Weaving matresses.	**cft** (m^3)	**20.9** 738			
16.1.3	Making compact round pilchi, farash or sarkanda round bundles of specified size for the work.	**cft** (m^3)	**14.2** 500	**15.6** 550		Measured in the shape of compact round bundles and of size specified for the work, before filling at site.
16.1.4	Launching of Pilchi, Farash or sarkanda round bundle etc. and placing in position.	**cft** (m^3)	**6.97** 246			
16.2	**Supplying jute bags, filling them with sand/earth and laying them in position**				**16.2, 16.3.2 & 16.4**	
16.2.1	Supplying and filling jute bags:-					The rate does not include supply of sand or earth for filling bags, which will be paid extra.
	(a) Supplying and filling jute bags 1.25 cft capacity, with sand or earth, sewing and stacking in dry.	**bag**	**32.7**	**89.7**		
	(b) Supplying and filling jute bags 1.25 cft capacity, with sand or earth, sewing and laying in position under water.	**bag**	**50.8**	**107.8**		
16.2.2	Supplying & filling new jute bags:-					The rate does not include supply of sand or earth for filling bags, which will be paid extra.
	(a) Supplying and filling new jute bags 4 to 5 cft capacity, with sand or earth, sewing and stacking in dry.	**bag**	**72.6**	**187**		
	(b) Supplying and filling new Jute bags 4 to 5 cft capacity, with sand or earth, sewing and laying in position, under water.	**bag**	**116.2**	**231**		
16.2.3	Carriage of jute bags 1.25 cft capacity, filled with sand or earth:-					
	(a) Ist, chain (30 m)	**no.**	**2.90**			
	(b) 2nd, to 4th chain (30 m to 120 m) Rate for each chain (30 m)	**no.**	**1.05**			
	(c) 5th and subsequent chains (120 m to 150 m and beyond) Rate for each chain (30 m)	**no.**	**0.41**			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
16.2.4 Carriage of new jute bags 4 to 5 cft capacity filled with sand or earth:-					
(a) Ist, chain (30 m)	**no.**	**11.62**			
(b) 2nd, to 4th chain (30 m to 120 m) Rate for for each chain (30	**no.**	**4.07**			
(c) 5th and subsequent chains (120 m to 150 m and beyond) Rate for each chain (30 m)	**no.**	**1.57**			
16.3 Supplying boulders, Munj or Patha Trungers & G.I. Wire nets				**16.2, 16.3 & 16.4**	
16.3.1 Supplying and stacking within 5 chains (150 m):-					
(a) Boulders 9" (225 mm) and above	**cft** (m^3)	**21.0** 743	**21.7** 766		The rate of the boulder is at source and lead will be payable at the site of work against corresponding rate in chapter 2
(b) Over size shingle 3" to 9" (75 to 225 mm)	**cft** (m^3)	**14.1** 496	**18.5** 652		
(c) Mixed graded shingle	**cft** (m^3)	**16.7** 589	**21.1** 744		
16.3.2 Supplying and stacking Munj or Patha Trungers 6" x 6" (150 x 150 mm) mesh to hold 3 cft (0.085 m^3) of boulders.	**each**	**90.8**	**152**		
16.3.3 Providing and weaving G.I wire netting for wire crates with G.I wires of approved size (including siding & partition to make crate):-					
(a) 6" mesh;					
(i) 15 SWG wire	**sft** (m^2)	**13.6** 146	**17.7** 190		
(ii) 10 SWG wire	**sft** (m^2)	**14.5** 156	**27.1** 291		
(iii) 8 SWG wire	**sft** (m^2)	**14.5** 156	**34.1** 367		
(b) 4" mesh;					
(i) 15 SWG wire	**sft** (m^2)	**17.4** 188	**23.6** 254		
(ii) 10 SWG wire	**sft** (m^2)	**19.4** 208	**38.2** 411		
(iii) 8 SWG wire	**sft** (m^2)	**19.4** 208	**48.8** 525		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.3.4	Supplying welded mesh manufactured from 6" x 6" (150 x 150 mm) mesh, 8 SWG G.I. Wire, including all charges complete:-					
	(a) 3.15 m x1.05 m x1.05 m fitted with two equally spaced divider 1.05 m x1.05 m	**each**		**3880**		
	(b) 2.1 m x1.05 m x1.05 m fitted with one centrally spaced divider 1.05 m x1.05 m	**each**		**2851**		
	(c) 1.05 m x 1.05 m x 1.05 m	**each**		**1445**		
16.3.5	Supplying weld mesh manufactured from 4" x 4" (100 mm x 100mm) mesh, 8 SWG G.I. Wire, including all charges complete:-					
	(a) 3m x 1m x1m fitted with two equally spaced dividers 1m x 1m	**each**		**4486**		
	(b) 2m x 1m x1m fitted with one centrally spaced dividers 1m x1m	**each**		**3192**		
	(c) 1m x1mx1m	**each**		**1709**		
16.4	**Supplying and dumping at site boulders/ brick bats etc. without boats.**				**16.2. 16.3 & 16.4**	
16.4.1	Providing and laying shingle on top of bund, including handling of materials within three chains (90 m).	**cft** (m^3)	**7.26** 256	**11.66** 412		
16.4.2	Supplying & dumping at site without boat, including handling of materials within three chains (90 m):-					The rate includes supply of brickbats to site of work.
	(a) Stone or boulder	**cft** (m^3)	**12.7** 449	**13.4** 472		
	(b) Shingle or spawl	**cft** (m^3)	**12.7** 449	**17.1** 604		
	(c) Brick bats	**cft** (m^3)	**9.80** 346	**31.8** 1123		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.5	**Supplying and Dumping Boulders/Brick Bats with Boats**				**16.2. 16.3 & 16.4**	
16.5.1	Supplying & dumping by boat, including loading into boats within three chains (150 m) lead, and hire charges of boat and boatman:-					
	(a) stone or boulder	**cft** (m^3)	**21.8** 769	**22.4** 793		
	(b) shingle or spawl	**cft** (m^3)	**21.8** 769	**26.2** 925		
	(c) brickbats	**cft** (m^3)	**18.9** 667	**40.9** 1444		The rate includes supply of brickbats to site of work.
16.5.2	Providing and filling brickbats in crates (excluding cost of crates).	**cft** (m^3)	**16.7** 590	**38.7** 1367		same remarks as against item 16.5.1 (c) above
16.5.3	Supplying & filling bricks in crates and hand packing (excluding cost of crates).	**cft** (m^3)	**20.3** 718	**33.0** 1164		same remarks as against item 16.5.1 (c) above
16.5.4	Supplying and filling in wire crates, including sewing crates (excluding cost of crates):-					
	(a) Stone or boulder	**cft** (m^3)	**23.2** 821	**23.9** 844		
	(b) Shingle or spawl	**cft** (m^3)	**23.2** 820.6	**27.6** 976		
16.5.5	Extra for anchoring boat, for dumping by boats or tipping crates.	**cft** (m^3)	**2.56** 90.3			
16.5.6	Extra for tipping crates (in addition to anchoring boats).	**cft** (m^3)	**11.62** 410			
16.6	**Providing and Laying Pilchi Revetment**				**16.2.1 16.3.1 & 16.4**	
16.6.1	Providing and laying pilchi revetment, including carriage upto one mile (1.6	**sft** (m^2)	**7.26** 78.2	**29.3** 316		
16.6.2	Providing and laying surface protection with pilchi matresses, carriage upto one mile (1.6 km).	**sft** (m^2)	**18.2** 195	**20.6** 222		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.7	**Providing and laying Stone Pitching**				**16.2.2, 16.3.2 & 16.4**	
16.7.1	Providing and laying stone pitching, dry hand packed, behind retaining walls.	**cft** (m^3)	**14.5** 513	**15.3** 541		
16.7.2	Providing and laying stone pitching, dry hand packed with surface levelled off to the correct section in floors of bridges along banks and in aprons etc.:-					
	(a) Top layer on slope	**cft** (m^3)	**36.3** 1282	**37.1** 1310		
	(b) Top layer on level	**cft** (m^3)	**32.7** 1154	**33.5** 1182		
16.7.3	Providing and laying stone or spawl filling, dry hand packed in floor of bridges along banks and in aprons etc.:-					
	(a) On slope (other than top layer)	**cft** (m^3)	**11.91** 421	**17.2** 607		
	(b) On level (other than top layer)	**cft** (m^3)	**9.68** 342	**15.0** 528		
16.7.4	Providing and laying stone pitching, hand packed with surface levelled off to the correct section and voids filled in 1:8 cement sand mortar, in floors of bridges along banks and in aprons etc:-					The cost of pitching stone does not include the lead charges from quarry to site of work, as per note 3 at the start of this chapter.
	(a) Top layer on slope	**cft** (m^3)	**54.1** 1909	**75.5** 2667		
	(b) Top layer on level	**cft** (m^3)	**50.4** 1781	**71.9** 2539		
	(c) Stone pitching on slope or level (other than top layer).	**cft** (m^3)	**28.7** 1014	**50.2** 1771		
16.7.5	Grouting stone pitching or apron, etc. in:-					
	(a) cement sand mortar 1:3	**sft** (m^2)	**16.4** 176	**54.3** 585		
	(b) cement sand mortar 1:8	**sft** (m^2)	**15.1** 163	**40.2** 433		

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
16.7.6	Sand grouting in stone apron, with high pressure hose.	**sft** (m^2)	**5.57** 59.9	**16.6** 178		
16.7.7	Grouting stone filling or pitching, with bajri.	**sft** (m^2)	**9.08** 97.7	**19.0** 204		
16.7.8	Removing stone and repitching hand packed, on slopes or level after making good damaged slope/portion.	**cft** (m^3)	**42.5** 1500			
16.8	**Miscellaneous Items**					
16.8.1	Collecting and stacking boulders from nullah beds or loose shale, or from any other site, within 3 chains (90 m) lead.	**cft** (m^3)	**11.62** 410			
16.8.2	Levelling and dressing stone filling under blocks and grouting with shingle.	**cft** (m^3)	**9.68** 342	**11.00** 389		
16.8.3	Grouting jharies between blocks with bajri.	**cft** (m^3)	**9.68** 342	**16.3** 575		
16.8.4	Breaking stone into spawls and stacking.	**cft** (m^3)	**8.71** 308			

CHAPTER 17

ROAD AND ROAD STRUCTURES

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 17 "Technical Road & Road Structures" of "Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused materials and by-products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
17.1	**Sub Base Course**					
17.1.1	Providing and laying sub-base course of brick on edge 4-1/2" thick, including compaction to required camber,grade and density.	**cft** (m^3)	**38.5** 1359	**174** 6153	17.5.2 to 17.5.4	The nominal thickness of bricks shall be taken for the purpose of measurement and payment.
17.1.2	Providing and laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100% maximum modified AASHTO dry density, including carriage of all material to site of work, except crushed stone aggregate, for which supply within three miles is included in the rate.				17.5.2 to 17.5.4	No reduction in the rate will be made if carriage of crushed stone aggregate or gravel is less than three miles.
	(a) Pit run or bed run gravel	**cft** (m^3)	**33.5** 1182	**39.1** 1381		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) Crushed stone aggregate as per specifications	**cft** (m^3)	**33.5** 1182	**41.4** 1462		(i) For the carriage of gravel or crushed stone aggregate, the whole distance to the site of work shall be calculated on the basis of the rate of actual means of transport used in carriage, I.e. road and/or rail, as the case may be and it shall be reduced by the carriage rates for the Ist three miles (4.8 km). (ii) It shall be payable from the nearest approved quarry. (iii) The quantity of material for payment of carriage shall be taken on the basis of the finished and consolidated measurements of the sub-base.
17.2 Base Course				**17.6.2 to 17.6.4**	
17.2.1 Providing and laying base course of crushed stone aggregate of approved quality and grade, and supply and spreading of stone, screening, including placing, mixing, spreading and compaction of base course material to required depth, camber and grade to achieve 100% maximum modified AASHTO dry density, including carriage of all materials to site of work except crushed stone aggregate, for which supply within three miles is included in the rate.	**cft** (m^3)	**33.5** 1182	**47.6** 1680		Same as item against 17.1 2

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
17.3 Bitumen Work & Surfacing					
17.3.1 Providing and laying bituminous priming coat, using 10 lbs, kerosene oil and 10 lbs bitumen (binder) per 100sft.	**sft** (m^2)	**1.45** 0.16	**11.2** 1.21	17.8.1 to 17.8.4	
17.3.2 Providing and laying bituminous tack coat using 15 lbs of bitumen (binder) per 100sft.	**sft** (m^2)	**1.45** 0.16	**8.90** 0.96	17.9.1 to 17.9.4	
17.3.3 Providing surface treatment to roads, including supply of bitumen and bajri/crushed stone aggregate of approved quality, including cleaning of road surface, heating and spraying bitumen, spreading bajri and rolling with road roller (including its operation cost, fuel and hire charges, etc) etc, complete, including carriage of all materials to site of work except crushed stone aggregate, for which supply within three miles is included in the rate.				17.10.1 to 17.10.4	i) No reduction in the rate will be made if carriage of crushed stone aggregate or gravel is less than three miles. ii) For carriage of crushed stone same remarks as against item 17.1.2 above
(a) Ist coat;					
(i) 40 lbs, bitumen, and 5.5 cft bajri of nominal size 1" per 100sft	**sft** (m^2)	**2.79** 30.1	**24.2** 260		
(ii) 35 lbs, bitumen and 4.0 cft bajri of nominal size 3/4"per 100sft.	**sft** (m^2)	**2.79** 30.1	**21.4** 230		
(b) 2nd coat:;					
(i) 25 lbs, bitumen and 2.75 cft bajri of nominal size 1/2"per 100sft.	**sft** (m^2)	**2.15** 23.1	**15.6** 168		
(ii) 18 lbs, bitumen and 2.0 cft bajri of nominal size 3/8" per 100sft.	**sft** (m^2)	**2.15** 23.1	**11.72** 126		
(c) 3rd coat;					
(i) 14 lbs, bitumen and 1.5 cft bajri of nominal size 1/4"per 100sft.	**sft** (m^2)	**1.47** 15.8	**8.63** 92.9		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
17.3.4 Resurfacing of road, including supply of bitumen and bajri/crushed stone aggregate of approved quality, including cleaning of road surface, heating and spraying of bitumen, and spreading bajri/crushed stone aggregate and rolling with road roller (including its operation cost, fuel and hire charges, etc) complete, including carriage of all materials to site of work except crushed stone aggregate, for which supply within three miles is included in the rate.					.
(a) Bitumen and bajri					
(i) 22 lbs, bitumen and 2.5 cft bajri of nominal size 1/2".	**sft** (m^2)	**1.33** 14.3	**13.0** 140		
(ii) 20 lbs, bitumen, and 2.0 cft bajri of nominal size 3/8".	**sft** (m^2)	**1.33** 14.31	**11.79** 126.92		
17.3.5 Providing and laying plant premix bituminous carpet mixed in batching plant and laid with paver premix including compaction, finishing to required camber, grade and density (including seal coat) complete in all respect:-				17.11.1 to 17.11.4	Mixing and rolling to be done by mechanical means.
(a) 4.0% Bitumen	**sft per in thick** (m^2 per cm thick)	**10.9** 46.0	**42.4** 1.8		
(b) 5.0% Bitumen	**sft per in thick** (m^2 per cm thick)	**10.9** 45.99	**48.5** 2.1		
17.3.6 Scarifying old road surface, including removal of debris within one chain.	**sft** (m^2)	**2.40** 25.8			

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
17.4	**Dry Brick Pavement/Soling**				**17.5.1 & 17.5.4**	
17.4.1	Providing and laying dry brick pavement/soling in streets or roads, etc. sand grouted, laid in proper camber, including preparation, watering, compaction of bed to proper camber and sand cushion.	**cft** (m^3)	**29.8** 1051	**166** 58.5		The nominal thickness of bricks shall be taken for the purpose of measurement and payment.
17.5	**Road Edging**					
17.5.1	Providing and laying road edging of 3" wide and 9" deep brick on edge, complete in all respect:-	**ft** (m)	**8.47** 27.8	**27.0** 88.6	**17.7.1 to 17.7.4**	
17.5.2	Providing and laying road edging of 6" wide and 18" deep precast concrete kerb stone (1:2:4) of approved quality complete in all respect.	**ft** (m)	**16.9** 55.6	**145** 475	**17.12.1 to 17.12.3**	
17.6	**Supplying and fixing Cats - Eye.**				**17.13.1 to 17.13.3**	
17.6.1	Cats-eye single (Flush / raised surface) Plastic	**each**	**182**	**457**		
17.6.2	Cats-eye double (Flush / raised surface) Plastic	**each**	**182**	**490**		
17.6.3	Cats-eye single (Flush / raised surface) Aluminum	**each**	**182**	**622**		
17.6.4	Cats-eye double (Flush / raised surface) Aluminum	**each**	**182**	**721**		

CHAPTER 18

INSTALLATION OF TUBE WELLS

Note:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 18 Installation of Tube Well5 of "Technical Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
18.1 Percussion Drilling for Tube Well				**18.2, 18.3.1 to 18.3.6 & 18.4.1**	
18.1.1 Drilling of Bore holes for tube well by percussion method in all types of soil except shingle and rock, from ground level upto 100 ft (30 m) depth, including sinking, collection of 100 % corings and withdrawing of casing pipe, complete as per specifications.					
(a) Internal dia of bore 3"(75 mm)	**ft** (m)	**51.4** 169			
(b) Internal dia of bore 4"(100 mm)	**ft** (m)	**78.8** 259			
(c) Internal dia of bore 5"(125 mm)	**ft** (m)	**156** 510			
(d) Internal dia of bore 6" (150 mm)	**ft** (m)	**246** 808			
(e) Internal dia of bore 8" (200 mm)	**ft** (m)	**394** 1293			
(f) Internal dia of bore 10" (250 mm)	**ft** (m)	**492** 1616			
(g) Internal dia of bore 12"(300 mm)	**ft** (m)	**537** 1763			
18.1.2 Drilling of Bore holes for tube well by percussion method in all types of soil except shingle and rock, from a depth of 100.1 ft to 200 ft (30 to 60 m) below ground level, including sinking, collection of 100 % corings and withdrawing of casing pipe, complete as per specifications.					
(a) Internal dia of bore 5"(125 mm)	**ft** (m)	**185** 606			
(b) Internal dia of bore 6" (150 mm)	**ft** (m)	**281** 923			
(c) Internal dia of bore 8" (200 mm)	**ft** (m)	**455** 1491			
(d) Internal dia of bore 10" (250 mm)	**ft** (m)	**537** 1763			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(e) Internal dia of bore 12" (300 mm)	**ft** (m)	**591** 1939			
18.1.3 Drilling of Bore holes for tube well by percussion method in all types of soil except shingle and rock, from a depth of 200.1 ft to 300 ft (60 to 90 m) below ground level, including sinking , collection of 100 % corings and withdrawing of casing pipe, complete as per specifications.					
(a) Internal dia of bore 5" (125 mm)	**ft** (m)	**219** 718			
(b) Internal dia of bore 6" (150 mm)	**ft** (m)	**311** 1020			
(c) Internal dia of bore 8" (200 mm)	**ft** (m)	**492** 1616			
(d) Internal dia of bore 10" (250 mm)	**ft** (m)	**591** 1939			
(e) Internal dia of bore 12" (300 mm)	**ft** (m)	**657** 2154			
18.1.4 Drilling of Bore holes for tube well by perscssion method in all types of soil except shingle and rock, from a depth of 300.1 ft to 400 ft (90 to 120 m) below ground level, including sinking, collection of 100 % corings and withdrawing of casing pipe, complete as per specifications.					
(a) Internal dia of bore 8" (200 mm)	**ft** (m)	**537** 1763			
(b) Internal dia of bore 10" (250 mm)	**ft** (m)	**657** 2154			
(c) Internal dia of bore 12" (300 mm)	**ft** (m)	**739** 2424			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
18.2 Direct Rotary/Reverse Rotary Drilling in Common Soil				**18.2, 18.3.1 to 18.3.6 & 18.4.1**	
18.2.1 Direct rotary/ reverse rotary drilling of bore for tube wells in all type of soil except shingle, gravel and rock including sinking, collection of 100 % corings & withdrawing of casing pipe complete as per specifications.					
(a) From ground level to 250 ft (75 m), below ground level:					
(i) 15" (375 mm) to 18" (450 mm) i/d	**ft** (m)	**603** 1980			
(ii) 20" (500 mm) to 26" (650 mm) i/d	**ft** (m)	**868** 2847			
(b) Exceeding 250 ft (75 m) depth below					
(i) 15" (375 mm) to 18" (450 mm) i/d	**ft** (m)	**748** 2455			
(ii) 20" (500 mm) to 26" (650 mm) i/d	**ft** (m)	**1123** 3683			
18.3 Direct Rotary/Reverse Rotary Drilling in Shingle & Gravel				**18.2, 18.3.1 to 18.3.6 & 18.4.1**	Location and depth of shingle, gravel or rock is to be determined from the bore log.
18.3.1 Direct rotary/ reverse rotary drilling of bore for tube wells in shingle, gravel and rock, including sinking, collection of 100 % corings & withdrawing of casing pipe complete as per specifications.					
(a) From ground level to 250 ft (75 m), below ground level:					
(i) 12" (300 mm) to 18" (450 mm) i/d	**ft** (m)	**1361** 4464			
(ii) 20" (500 mm) to 26" (650 mm) i/d	**ft** (m)	**1840** 6038			
18.3.1 (b) Exceeding 250 ft (75 m) depth below ground level:					
(i) 12" (300 mm) to 18" (450 mm) i/d	**ft** (m)	**1633** 5357			
(ii) 20" (500 mm) to 26" (650 mm) i/d	**ft** (m)	**2721** 8929			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
18.4 Collection & Preservation of Coring and Water Samples from Bore Holes				**18.3.1.7**	
18.4.1 Providing strong box of deodar wood 4' x 2½' x 9" with compartments, lock and locking arrangement,and preserving in it the corings / samples of strata collected from bore hole and supply to the approved soil testing laboratory for testing.	**job for each bore hole**	**1042**	**16040**		
18.4.2 Collection and submission at approved soil testing laboratory of two water samples in bottles from each bore hole for testing.	**set of two bottles per bore hole**	**436**	**490.6**		
18.5 Providing & Installing Brass Strainers				**18.3.2 & 18.4.2**	
18.5.1 Providing and installing Brass Strainer of approved make \ quality in tubewell bore hole, including socket, special sockets, studs etc. complete as per specification.					Cost/labour of jointing both ends is included in the rate.
(a) 2" (50 mm) i/d 5/32" (4 mm) thick	**ft** (m)	**26.1** 85.8	**765** 2511		
(b) 3" (75 mm) i/d 5/32" (4 mm) thick	**ft** (m)	**26.1** 85.8	**1293** 4243		
(c) 4" (100 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**34.8** 114.3	**1567** 5140		
(d) 5" (125 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**40.2** 132	**1693** 5555		
(e) 6" (150 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**43.6** 142.9	**1642** 5389		
(f) 7" (175 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**52.3** 172	**1948** 6392		
(g) 8" (200 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**65.3** 214	**2600** 8530		
(h) 9" (225 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**65.3** 214	**2655** 8710		
(i) 10" (250 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**74.7** 245	**2774** 9102		
(j) 10" (250 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**74.7** 245	**3434** 11267		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(k) 12" (300 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**74.7** 245	**3710** 12173		
(l) 15" (375 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**87.1** 286	**4713** 15462		
(m) 18" (450 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**87.1** 286	**5186** 17014		
(n) 20" (500 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**104.5** 343	**5852** 19201		
(o) 22" (550 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**104.5** 343	**6656** 21839		
18.6 Providing & Installing M.S Bail Plug				**18.3.2 & 18.4.2**	
18.6.1 Providing and installing M.S. Bail plug of approved make / quality in tubewell bore hole complete as per specification:-					In the case of increase or decrease in the length of bail plug, the rate will be increased or decreased as per rates given against item No. 18.7.1 of this chapter for the respective diameter.
(a) 2" (50 mm) i/d 1.5 ft (450 mm) long.	**each**	**41.1**	**648**		
(b) 3" (75 mm) i/d 1.5 ft (450 mm) long.	**each**	**41.1**	**876**		
(c) 4" (100 mm) i/d 2 ft (600 mm) long.	**each**	**51.4**	**1551**		
(d) 5" (125 mm) i/d 2 ft (600 mm) long.	**each**	**51.4**	**1584**		
(e) 6" (150 mm) i/d 2 ft (600 mm) long.	**each**	**73.5**	**2159**		
(f) 7" (175 mm) i/d 2 ft (600 mm) long.	**each**	**73.5**	**2452**		
(g) 8" (200 mm) i/d 2 ft (600 mm) long.	**each**	**85.7**	**2530**		
(h) 9" (225 mm) i/d 2 ft (600 mm) long.	**each**	**85.7**	**2727**		
(i) 10" (250 mm) i/d 2 ft (600 mm) long.	**each**	**85.7**	**3676**		
(j) 12" (300 mm) i/d 2 ft (600 mm) long.	**each**	**102.9**	**4250**		
(k) 15" (375 mm) i/d 2 ft (600 mm) long.	**each**	**102.9**	**5255**		
(l) 18" (450 mm) i/d 2 ft (600 mm) long.	**each**	**128.6**	**6068**		
(m) 20" (500 mm) i/d 2 ft (600 mm) long.	**each**	**137**	**6627**		
(n) 22" (550 mm) i/d 2 ft (600 mm) long.	**each**	**137**	**7286**		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
18.7 Providing & Installing M.S Blind Pipe				**18.3.2 & 18.4.2**	
18.7.1 Providing and installing M.S. blind pipe of socketed & welded, M.S. reducer (where necessary) of approved make / quality in tubewell bore hole, including jointing/welding with strainer, etc. complete as per specifcation:-					
(a) 2" (50 mm) i/d 1/8" (3 mm) thick	**ft** (m)	**51.7** 169.8	**250** 819		
(b) 3" (75 mm) i/d 1/8" (3 mm) thick	**ft** (m)	**51.7** 169.8	**349** 1144		
(c) 4" (100 mm) i/d 1/8" (3 mm) thick	**ft** (m)	**64.7** 212	**450** 1475		
(d) 5" (125 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**64.7** 212	**802** 2630		
(e) 6" (150 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**92.4** 303	**824** 2703		
(f) 7" (175 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**92.4** 303	**1038** 3407		
(g) 8" (200 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**107.8** 354	**1285** 4215		
(h) 9" (225 mm) i/d 3/16" (5 mm) thick	**ft** (m)	**107.8** 354	**1571** 5154		
(i) 10" (250 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**107.8** 354	**1923** 6309		
(j) 12" (300 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**129.4** 424	**2329** 7643		
(k) 15" (375 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**129.4** 424	**2714** 8906		
(l) 18" (450 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**161.7** 531	**3407** 11177		
(m) 20" (500 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**172** 566	**4022** 13198		
(n) 22" (550 mm) i/d 1/4" (6 mm) thick	**ft** (m)	**172** 566	**4165** 13667		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
18.8 Shrouding of Tube Well Bore with Gravel				**18.3.3 & 18.4.3**	
18.8.1 Shrouding with graded pea gravel 3/8" (10 mm) to 1/8" (3 mm) around tubewell in bore hole complete as per specification:-	**100 cft** (m^3)	**3122** 1103	**6587** 2326		The rate includes wastage, etc.
18.9 Testing/Developing of Tube Well				**18.3.5,18.3.6 &18.4.5**	
18.9.1 Testing and developing of tubewell of size 6" i/d and above complete as per specifications:-					Compressor, accessories along with working staff, to be supplied by Railways.
(a) Upto 1.5 cusecs (42 l) discharge.	**hr**	**786**			
(b) Above 1.5 (42 l) cusecs discharge.	**hr**	**951**			
18.10 Supplying & Erecting DWT Pumps				**18.4.6**	
18.10.1 Supplying and erecting electric driven Deep Well Turbine Pump (PECO or KSB or Equivalant) alongwith electric motor of suitable H.P. coupled through hollow shaft, complete with accessories i.e. foot valve with strainer, suction pipe 10 ft (3 m) long, back valve with bypass connection, sluice valve, pressure gauge with cock and nipple, water meter of suitable size, star delta starter, main switch volt. and amp meter etc as per specification and / or as directed by the Engineer Incharge.					
(a) 25 H.P. Electric Driven D.W.T. Pump complete of 1 cusec (28 l) discharge at 128' head with 90' setting.	**each**	**9075**	**251075**		
(b) 35 H.P. Electric Driven D.W.T. Pump complete of 1-1/2 (42 l) cusecs discharge at 130' head with 90' setting.	**each**	**9075**	**284075**		
(c) 50 H.P. Electric Driven D.W.T. Pump complete of 2 cusecs (56 l) discharge at 30' head with 90' setting.	**each**	**9075**	**322575**		

CHAPTER 19

WATER SUPPLY

Note:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 19 Water Supply System of " Technical Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
19.1	**Providing & Laying Cast Iron Pipes**				**19.6.1, 19.7.1 to 19.7.6, 19.7.8, 19.7.9 & 19.8**	
19.1.1	Providing, laying, cutting, jointing, testing and disinfecting grey cast iron spun pipes in trenches with spigot and socket, caulked lead joint (BS 416 Part-1),including cost of jointing material, such as lead, yarn, etc. complete as per specifications.					i) Cost of providing and installing specials is not included in the rate. ii) Labour includes the cost of jointing material
	(a) 3" (75 mm) i/d	**ft** (m)	**81.7** 268	**499** 1638		
	(b) 4" (100 mm) i/d	**ft** (m)	**107.3** 352	**616** 2021		
	(c) 6" (150 mm) i/d	**ft** (m)	**153** 503	**1109** 3639		
	(d) 8" (200 mm) i/d	**ft** (m)	**182** 596	**1883** 6177		
19.1.2	Providing, laying, cutting, jointing, testing and disinfecting grey cast iron (C.I) spun pipes in trenches with flanged joints (BS 2035), including cost of jointing materials such as nuts & bolts, rubber sheets etc. complete as per specifications.					i)Cost of providing and installing specials is not included in the rate. ii) Labour includes the cost of jointing material
	(a) 3" (75 mm) i/d	**ft** (m)	**37.2** 122.1	**455** 1492		
	(b) 4" (100 mm) i/d	**ft** (m)	**40.8** 134.0	**550** 1803		
	(c) 6" (150 mm) i/d	**ft** (m)	**61.4** 201.6	**1017** 3338		
	(d) 8" (200 mm) i/d	**ft** (m)	**67.7** 222.2	**1769** 5803		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
19.2	**Providing & Fixing Cast Iron Specials/Fixtures**				**19.6.1, 19.7.1 to 19.7.6, 19.7.8, 19.7.9,19.7.14 & 19.8**	
19.2.1	Providing and fixing cast iron special of BSS class "B" (such as bend, tee, cross collar, reducer, tail piece, flanged spigot, cap, flanged socket, taper, angle branch, plug, etc.) for cast iron pipe line, complete:-					
	(a) C.I. S.S.Specials with spigot and socket joints:					
	(i) 1-1/2" (38mm) to 4" (100mm) i/d	**kg**	**127.9**	**202**		
	ii) 6" (150 mm to 8 (200 mm)" i/d"	**kg**	**88.1**	**163**		
	(b) C.I.flanged specials, with flanged joints:					
	(i) 1-1/2" (38mm) to 4" (100mm) i/d	**kg**	**117.6**	**192**		
	(ii) 6" (150mm) to 8" (200mm) i/d	**kg**	**74.2**	**149**		
19.2.2	Providing and fitting C.I./G.I. Flanges on pipes, including turning, threading, facing and fitting etc., complete in all respects:-					
	(i) 1-1/2" (38mm) to 4" (100mm) i/d	**kg**	**43.1**	**123**		
	(ii) 6" (150mm) to 8" (200mm) i/d	**kg**	**88.8**	**168**		
19.2.3	Cutting C.I. Pipe, and welding spigot or socket, flanged or tyton end, after finishing ends of pipes:-					
	(a) 1-1/2" (38mm) to 4" (100mm) i/d	**per inch i/d of pipe**		**88.4**		
		per cm i/d		**34.8**		
	(b) 6" (150mm) to 8" (200mm) i/d	**-do-**		**109.4**		
		-do-		**43.1**		
19.2.4	Providing and fixing, fire hydrants B.S.S. quality and weight of 2-1/2" (65 mm) dia (including cost of jointing material):-	**each**	**204**	**3504**		Connecting pipes and special if used, will be paid extra.

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
19.2.5 Providing and fixing sluice valve of BSS quality (BS 5163) and weight Class 'B' for cast iron pipeline (including cost of jointing material):-					
(a) Sluice Valve 3" (75 mm) i/d	**each**	**847**	**6087**		
(b) Sluice Valve 4" (100 mm) i/d	**each**	**1029**	**7399**		
(c) Sluice Vlave 5" (125 mm) i/d	**each**	**1815**	**9498**		
(d) Sluice Valve 6" (150 mm) i/d	**each**	**1997**	**10780**		
19.2.6 Providing and fixing, air valve (Kitz Japan make or equivalent) 3" dia of B.S.S. quality and weight (BS 1074) complete with jointing material.					
(a) Single	**each**	**60.5**	**3101**		
(b) Double	**each**	**60.5**	**5011**		
19.2.7 Supplying and installation of Brass Non return valves (Kitz Japan make or equivalent) on pipe complete with jointing material.					
(a) size 12 mm (1/2") Ø dia	**each**	**303**	**797.5**		
(b) size 19 mm (3/4") Ø dia	**each**	**303**	**963**		
(c) size 25 mm (1") Ø dia	**each**	**303**	**1238**		
(d) size 38 mm (1-1/2") Ø dia	**each**	**303**	**2833**		
(e) size 50 mm (2") Ø dia	**each**	**303**	**3603**		
(f) size 75 mm (3") Ø dia	**each**	**303**	**9393**		
(g) size 100 mm (4") Ø dia	**each**	**303**	**13823**		
19.3 Providing & Laying Galvanized Iron (GI) Pipes				**19.6.1, 19.7.1 to 19.7.6, 19.7.8, 19.7.10 & 19.8**	
19.3.1 Providing, laying, cutting, jointing, testing and disinfecting GI pipeline in trenches, with socket joint, using GI pipes of B.S.S. Class 'B working pressure ' (medium quality IIL or equivalent) including specials and valves etc. complete as per specifications.					i) Cost of sockets, tees, elbows, bends, crosses, unions and plugs etc., is included in the rates. ii)In case these items are to be operated for internal GI piping (1"
(a) 1/2" (15 mm) dia	**ft** (m)	**6.78** 22.2	**62.9** 206.3		
(b) 3/4" (20 mm) dia	**ft** (m)	**7.77** 25.5	**79.8** 262		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(c) 1" (25 mm) dia	**ft** (m)	**9.43** 30.9	**97** 317		3/4" and 1/2" dia) in bath room / labatories, the composite rate be reduced by 8% and specials mentioned in note 1 above be paid under chapter 20.
(d) 1-1/4" (32 mm) dia	**ft**	**9.55**	**152**		
(e) 1-1/2" (40 mm) dia	**ft** (m)	**9.61** 31.5	**176** 578.6		
(f) 2" (50 mm) dia	**ft** (m)	**10.06** 33.0	**241** 791		
(g) 2-1/2" (65 mm) dia	**ft** (m)	**10.55** 34.6	**306** 1004		
(h) 3" (80 mm) dia	**ft** (m)	**11.9** 39.1	**391** 1282		
(i) 4" (100 mm) dia	**ft** (m)	**13.3** 43.5	**557** 1828		
(j) 5" (125 mm) dia	**ft** (m)	**15.5** 50.8	**749** 2457		
(k) 6" (150 mm) dia	**ft** (m)	**15.8** 51.7	**882** 2893		
19.3.2 Providing, laying, cutting, jointing, testing and disinfecting G.I. Pipe line in trenches, with flanged joints, using G.I. Pipe of B.S.S. class 'B' (medium quality IIL or equivalent including specials and valves etc. complete as per specifications.					Cost of sockets, tees, elbows, bends, crosses, unions and plugs etc., is included in the rates.
(a) G.I Flanged Joints					
(i) 1-1/2" (38 mm) i/d	**ft** (m)	**9.73** 31.9	**186** 610		
(ii) 2" (50 mm) i/d	**ft** (m)	**9.73** 31.9	**253** 829		
(iii) 2-1/2" (65 mm) i/d	**ft** (m)	**10.54** 34.6	**318** 1045		
(iv) 3" (75 mm) i/d	**ft** (m)	**11.50** 37.7	**405** 1328		
(v) 4" (100 mm) i/d	**ft** (m)	**12.64** 41.5	**578** 1897		
(vi) 6" (150 mm) i/d	**ft** (m)	**18.1** 59.3	**904** 2965		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
19.4 Providing and Laying Unplasticised Polyvinyle Chloride (UPVC) Pressure Pipes				**19.6.1, 19.7.1 to**	
19.4.1 Providing, laying, cutting, jointing, testing and disinfecting UPVC pressure pipeline in trenches (conforming to BS 3505 manufactured by Dadex/Beta or equilent) jointed with socket, elbow, tee, bend and plug bend etc.manufactured by the respective manufacturer complete as per specifications.				**19.7.6, 19.7.8, 19.7.12 & 19.8**	Cost of sockets, tees, elbows, bends, crosses, unions and plugs etc., is included in the rates.
(a) UPVC Pressure Pipes Class B (6 Bar)					
(i) 3" (75 mm) i/d	**ft** (m)	**6.49** 21.3	**140** 461		
(ii) 4" (100 mm) i/d	**ft** (m)	**8.54** 28.0	**194** 635		
(iii) 5" (125 mm) i/d	**ft** (m)	**10.22** 33.5	**271** 890		
(iv) 6" (150 mm) i/d	**ft** (m)	**10.22** 33.5	**379** 1244		
(v) 8" (200 mm) i/d	**ft** (m)	**14.4** 47.4	**582** 1911		
(v) 10" (250 mm) i/d	**ft** (m)	**20.04** 65.8	**1135** 3725		
(v) 12" (300 mm) i/d	**ft** (m)	**25.0** 82.0	**1573** 5162		
(b) UPVC Pressure Pipes Class D (12 Bar)					
(i) 2" (50 mm) i/d	**ft** (m)	**5.28** 17.3	**97.6** 320		
(ii) 3" (75 mm) i/d	**ft** (m)	**6.52** 21.4	**201** 658		
(iii) 4" (100 mm) i/d	**ft** (m)	**8.54** 28.0	**331** 1086		
(iv) 5" (125 mm) i/d	**ft** (m)	**10.22** 33.5	**484** 1589		
(v) 6" (150 mm) i/d	**ft** (m)	**10.29** 33.7	**710** 2328		
(vi) 8" (200 mm) i/d	**ft** (m)	**10.36** 34.0	**1080** 3542		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
19.5 Providing and Laying Polypropylene Random Copolymer (PPRC) Pipes & Fittings				**19.6.1, 19.7.1 to 19.7.8, 19.7.12 & 19.8**	
19.5.1 Providing, laying cutting, jointing, testing PPRC pipeline in walls/trenches with pipes (confirming to DIN 8077/8078, PN 20 manufactured by Dadex/Beta or equivalent & fittings conforming to DIN 16962,PN25 of the same manufacturer) for cold/hot water supply systems including specials complete in all respect as per specifications.					Cost of sockets, tees, elbows, bends, crosses, unions and plugs etc., is included in the rates.
(i) 3/4" (20 mm) external dia, 32 mm internal dia	**Rft** (m)	**19.6** 64.3	**108** 353		
(ii) 1" (25 mm) external dia	**Rft** (m)	**19.6** 64.3	**146** 478		
(iii) 1-1/4" (32 mm) external dia	**Rft** (m)	**19.6** 64.3	**345** 1131		
(iv) 1-1/2" (40 mm) external dia	**Rft** (m)	**19.6** 64.3	**523** 1717		
(v) 2" (50 mm) external dia	**Rft** (m)	**19.6** 64.3	**865** 2836		
(vi) 2-1/2" (63 mm) external dia	**Rft** (m)	**19.6** 64.3	**1287** 4223		
19.6 Providing & Fixings Hand Pumps & Pressure Pipes					
19.6.1 Supplying and fixing 2-1/2" dia G.I. Pipe hand pump machine 3' long with brass accessories and iron handle etc. complete in all respect.	**each**	**363**	**1463**		The composite rate may be increase by 15% for every additional 1 ft length of the hand pump machine
19.6.2 Supplying and fixing perforated 1- 1/4" G.I. Pipe with brass strainer for hand pump, complete:-	**ft of filter** (m of filter)	**215** 706	**386** 1267		
19.6.3 S upplying and fixing plunger valves for hand pump complete.	**each**	**121.0**	**1221**		
19.6.4 Supplying and fixing brass cup for top and bottom and sleeves etc. for hand pump.	**kg**	**151.3**	**481**		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
19.6.5	Supplying and fixing leather cup bucket/rubber ring of plunger valve for hand pump.	**each**	**60.5**	**193**		
19.6.6	Hand pump and pressure pipe cutting pipes above 2" dia.	**cut**	**142.2**			
19.6.7	Threading pipe ends 1-1/2" to 4" dia.	**each end**	**105.9**			
19.6.8	Assembling 1-1/2" dia pressure pipe.	**each end**	**383**			
19.6.9	Boring and fixing 1-1/2" dia, pressure pipe:-					
	(a) in ordinary soil	**ft** (m)	**125.0** 410			
	(b) in clay	**ft** (m)	**234** 768			
	(c) in shingle	**ft** (m)	**343** 1125			
19.6.10	Repair to hand pump, pulling out and refitting.	**ft** (m)	**51.4** 169			
19.7	**Supply and Installation of Water Pumps**					
19.7.1	Supplying and installation of Goldamatic water pumps complete in all respect, as per instructions of Engineer Incharge.					
	(a) Model G1, 0.5 H.P motor 15 m suction & 30 m head (non automatic)	**each**	**1210**	**10450**		
	(b) Model G2, 1 H.P motor, 21 m suction & 30 m head (non automatic)	**each**	**1210**	**13530**		
	(c) Model G3, 2 H.P motor. 27 m suction & 35 m head (non automatic)	**each**	**1210**	**16500**		
	(d) Model G4, 2.5 H.P motor. 38 m suction & 38 m head (non automatic)	**each**	**1210**	**19580**		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
19.8 Supply and installation of water storage tanks (polyethylene) Blue.					
19.8.1 Supplying and installation of vertical water storage tanks (polyethylene) blue (Dura or equivalent), complete in all respect, as per instructions of Engineer Incharge.					
(a) Size 200 gln capacity	**each**	**1464**	**16314**		
(b) Size 250 gln capacity	**each**	**1464**	**18514**		
(c) Size 300 gln capacity	**each**	**1464**	**21814**		
(d) Size 500 gln capacity	**each**	**1464**	**27864**		

CHAPTER 20

PLUMBING AND SANITARY INSTALLATIONS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 20 Plumbing & Sanitory Installations of "Technical Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) The rates include cutting and making good of the surface of walls, roofs, floors, etc. where necessary.

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.1 Providing & Fixing Water Closets, Urinals & other Sanitary ware				**20.4 to 20.6, 20.7.1, to 20.7.3, 20.7.15, 20.8, & 20.9**	The rates of saintary ware included under subsection 20.1 are for best quality locally manufactured sanitary ware such as Sonex, Master,and Faisal or equivalent (Class A) as specified /approved by Engineer in-charge.
20.1.1 Providing and fixing glazed earthware water closet european type, of approved make/size, excluding seat & cover complete in all respects:-					
(a) White	**each**	**484**	**6520**		
(b) Coloured	**each**	**484**	**6861**		
20.1.2 Providing and fixing double seat and cover only for europoen style water closet.					
(a) bakelite	**each**	**6.30**	**886**		
(b) plastic	**each**	**6.30**	**501**		
20.1.3 Providing and fixing white / coloured glazed earthenware water closet squatter type combined with foot rest, 19" measured between flushing rims complete in all respects.					
(a) White	**each**	**375**	**1999**		
(b) Coloured	**each**	**393**	**2238**		

Description		Unit	Rate (PKR)		Railways Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
20.1.4	Providing and fixing white / coloured glazed earthenware water closet, squatter type, without foot rest, 19" measured between flushing rims complete in all respects.					
	(a) White	**each**	**393**	**1743**		
	(b) Coloured	**each**	**393**	**1963**		
20.1.5	Providing and fixing glazed earthenware flat back urinal complete in all respects.	**each**	**439**	**3204**		
20.1.6	Providing and fixing glazed earthen ware low down flushing cistern 3 gallons (13.63 litres) capacity, including bracket set, copper connection, etc. complete in all respects.					
	(a) white	**each**	**439**	**2699**		
	(b) coloured	**each**	**439**	**3029**		
20.1.7	Providing and fixing low down flushing cistern 3 gallons (13.63 litres) capacity, including bracket set, copper connection, etc. complete in all respects.					
	(a) white enamelled cast iron	**each**	**439**	**3784**		
	(b) plastic	**each**	**439**	**1819**		
	(c) stainless steel	**each**	**439**	**1929**		
20.1.8	Providing and fixing cast iron high level flushing cistern, including cost of bracket set, copper connection, etc complete in all respects.					
	(a) 3 gallons (13.63 litres) capacity	**each**	**469**	**1692**		
	(b) 1 gallons (4.55 litres) capacity	**each**	**469**	**1967**		
20.1.9	Providing and fixing choricum plated soap dish complete.	**each**	**30.3**	**425**		
20.1.10	Providing and fixing glazed earthenware soap dish complete.	**each**	**30.3**	**315**		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.1.11 Providing and fixing, chromium plated toilet paper holder complete.	**each**	**40.3**	**551**		
20.1.12 Providing and fixing chromium plated towel rail complete.					
(a) 60 cm (24") long and 2 cm (3/4") dia	**each**	**40.3**	**661**		
(b) 50 cm (20") long and 1.5 cm (1/2") dia	**each**	**40.3**	**551**		
(c) circular type	**each**	**40.3**	**441**		
20.1.13 Providing and fixing looking glass 5 mm thick, neatly fitted on masonry walls etc., as per instructions of Engineer In-charge complete.					
(a) Looking glass (Class A) with deodar wood frame	**sft** (m^2)	**50.4** 543	**197** 2120		
(b) Looking glass (Class A) without frame fitted on masonite sheet.	**sft** (m^2)	**24.2** 261	**126** 1355		
(c) Looking glass (Class A) with beveled edge frame.	**sft** (m^2)	**24.2** 261	**159** 1714		
(d) Looking glass (Class A) with plastic frame.	**sft** (m^2)	**24.2** 261	**126** 1355		
20.1.14 Providing and fixing glass shelf 60cm x 13 cm (24" x 5") with 5 mm thick glass complete.					
(a) with chromium plated brackets and railing	**each**	**87.0**	**762**		
(b) glass shelf only, without chromium plated brackets and railing.	**each**	**60.5**	**281**		
20.1.15 Providing and fixing glazed earthen ware shelf 60cm x 13 cm (24" x 5") with chromium plated bracket and railing.					
(a) white	**each**	**87.0**	**597**		
(b) coloured	**each**	**87.0**	**487**		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.1.16 Providing and fixing superior quality:-					
(a) plastic soap dish	**each**	**30.3**	**205**		
(b) plastic toilet paper holder	**each**	**40.3**	**345**		
(c) plastic towel rail	**each**	**40.3**	**345**		
(d) plastic shelf 60 x 13 cm (24" x 5") with bracket.	**each**	**40.3**	**400**		
20.1.17 Supplying and fixing, telephone shower with flexible pipe 4 ft (1.3 m) long, complete.					
(a) Plastic	**each**	**121**	**1111**		
(b) Chromium Plated	**each**	**121**	**1727**		
(c) Chromium Gold	**each**	**121**	**2761**		
20.1.18 Supplying and fixing Muslim shower with flexible pipe 3 ft (1m) long complete.					
(a) Plastic	**each**	**121**	**1078**		
(b) Chromium Plated	**each**	**121**	**1881**		
(c) Chromium Gold	**each**	**121**	**2871**		
20.1.19 Supplying and fixing wall shower of complete in all respect.					
(i) Plastic	**each**	**121**	**1551**		
(ii) Chromium Plated	**each**	**121**	**1925**		
(iii) Chromium Gold	**each**	**121**	**2871**		
20.1.20 Providing and fixing, shower rose Complete:-					
(a) Size 1/2" x 4" (5 mm x 100 mm)					
(i) Plastic	**each**	**40.3**	**546**		
(ii) Chromium Plated	**each**	**40.3**	**1910**		
(iii) Chromium Gold	**each**	**40.3**	**2790**		
(b) Size 3/4" x 6" (20mm x 150 mm)					
(i) Plastic	**each**	**40.3**	**920**		
(ii) Chromium Plated	**each**	**40.3**	**2460**		
(iii) Chromium Gold	**each**	**40.3**	**3560**		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.1.21 Supplying and fixing, flexible pipe 3 ft (1 m) long, for telephone shower, complete.					
(a) Plastic	**each**	**48.4**	**323**		
(b) Chromium Plated	**each**	**48.4**	**598**		
(c) Chromium Gold	**each**	**48.4**	**1038**		
20.1.22 Supplying and fixing, rose with handle for telephone shower, complete.	**each**	**48.4**	**2468**		
20.1.23 Providing and fixing glazed earthenware colored/white coupled set including WC, flushing tank, rubber connection and bacolite seat as per instructions of Engineer In-charge.					
(a) Bathroom coupled set Master or equivalent (White)	**set**	**1210**	**16060**		
(b) Bathroom coupled set Master or equivalent (Coloured)	**set**	**1210**	**16610**		
20.1.24 Providing and fixing bath room accessories set consisting of looking glass, shelf, towel rail, towel ring, toilet paper holder, soap dish and brush holder complete in all respects and as per instructions of Engineer Incharge.					
(a) Plastic	**set**	**605**	**1925**		
(b) Chrome Plated	**set**	**1210**	**14165**		
(c) Chrome Gold	**set**	**1210**	**17412**		
20.1.25 Providing and fixing bath cabinet of approved quality neatly fitted on masonry wall in toilets complete in all respect as instruction of Engineer in-charge.					
(a) Supreme quality (Class A)	**each**	**121.0**	**2871**		
(b) Good quality (Class B)	**each**	**121.0**	**2321**		

Description	Unit	Rate (PKR)		Railways Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.2 Providing & Fixing Sinks, Wash Hand Basin, Bath Tubs				**20.4 to 20.6, 20.7.4, 20.7.5, 20.7.16, 20.7.17 20.8,& 20.9**	The rates of saintary ware included under subsection 20.2 are for best quality locally manufactured sanitary ware such as Sonex, Master,and Faisal or equivalent (Class A) as specified /approved by Engineer in-charge.
20.2.1 Providing and fixing 22" x 16" glazed earthenware wash hand basin including bracket set, waste pipe and waste coupling, etc. complete:-					
(i) white, with pedestal	**each**	**484**	**5852**		
(ii) coloured, with pedestal	**each**	**484**	**5962**		
(iii) white, without pedestal	**each**	**439**	**3937**		
(iv) coloured, without pedestal	**each**	**439**	**4047**		
20.2.2 Providing and fixing stainless steel sink, including bracket set, waste pipe and waste coupling, etc. complete:-					
(a) with single drain board size 105 x 45 cm (42"x18").	**each**	**439**	**5646**		
(b) with double drain board size 150 x 60 cm (60"x24")	**each**	**439**	**15766**		
20.2.3 Providing and fixing glazed earthenware sink, including bracket set, waste pipe and waste coupling complete.					
(a) 60 x 45 cm (24"x18")	**each**	**439**	**5322**		
(b) 37.5 x 45 cm (15"x18")	**each**	**439**	**4442**		
20.2.4 Providing and fixing, angle iron brackets for:-					
(a) wash hand basin and cistern.	**each**	**60.5**	**941**		
(b) sinks.	**each**	**60.5**	**941**		
20.2.5 Supplying and fixing, earthen ware pedestal for 22" x 16" wash hand basin of approved make /quality.	**each**	**48.4**	**1148**		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
20.2.7	Supplying and fixing, bath tub (5'x2.5'x1.2'5(1.5x0.75x0.375M) Complete with all acceries of approved quality / make.					
	(a) Fiber Glass		**3267**	**14817**		
	(b) Ecrylic		**3267**	**18117**		
20.3	**Providing & Fixing Various Valves, Cocks & Traps**				**20.4 to 20.6, 20.7.18 to 20.7.21, 20.8,& 20.9**	The rates of saintary ware included under subsection 20.3 are for best quality locally manufactured sanitary ware such as Sonex, Master,and Faisal or equivalent (Class A) as specified /approved by Engineer in-charge.
20.3.1	Providing and fixing, chromium plated stop cock, heavy of approved quality.					
	(a) 3/4" (20mm)	**each**	**40.33**	**1360**		
	(b) 1/2" (15mm)	**each**	**40.3**	**1140**		
20.3.2	Providing and fixing, chromium plated stop cock, heavy of approved quality					
	(a) 3/4" (20mm) dia	**each**	**40.3**	**535**		
	(b) 1/2" (15mm) dia	**each**	**40.3**	**425**		
20.3.3	Providing and fixing underground stop cock 1/2" (15mm) with chromium plated cover of approved quality.	**each**	**56.5**	**461**		
20.3.4	Providing & fixing, chromium plated bib cock of approved quality					
	(a) 3/4" (20mm) dia	**each**	**40.3**	**1085**		
	(b) 1/2" (15mm) dia	**each**	**40.3**	**1030**		
20.3.5	Providing and fixing chromium plated tee stop cock 1/2" (15mm) dia of approved quality.	**each**	**40.3**	**1118**		
20.3.6	Providing & fixing chromium plated mixing valve (large size), for wash hand basin, sink or shower of approved quality.	**each**	**50.4**	**875**		
20.3.7	Providing & fixing, gun metal gate valve (screwed) of approved quality.					
	(a) 1-1/4" (30 mm) dia.	**each**	**60.5**	**501**		

Description		Unit	Rate (PKR)		Railways Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(b) 1-1/2" (40 mm) dia.	**each**	**60.5**	**556**		
	(c) 2" (50 mm) dia.	**each**	**60.5**	**1106**		
	(d) 2-1/2" (65 mm) dia.	**each**	**60.5**	**1271**		
	(e) 3" (75 mm) dia.	**each**	**60.5**	**1711**		
20.3.8	Providing and fixing, chromium plated or brass oxidised, swan neck cock 1/2" (15mm) dia of approved quality.					
	(a) single way.	**each**	**40.3**	**799**		
	(b) double way.	**each**	**60.5**	**2096**		
	(c) three way.	**each**	**80.7**	**2886**		
20.3.9	Providing and fixing, union brass cock of approved quality					
	(a) 1/2" (15mm) dia	**each**	**40.3**	**425**		
	(b) 3/4" (20mm) dia	**each**	**40.3**	**563**		
20.3.10	Providing and fixing, floor trap of cast iron, of approved quality including concrete chamber all round, and C.I. grating:-					
	(a) 4" x 2" (100 mm x 50 mm).	**each**	**121.0**	**556**		
	(b) 4" x 3" (100 mm x 75 mm)	**each**	**121.0**	**611**		
20.3.11	Providing and fixing, 'P' trap, of approved quality including concrete chamber with G.I. grating:-					
	(a) 4" (100 mm) of cast iron.	**each**	**100.8**	**1873**		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(b) 4" (100 mm) glazed.	**each**	**100.8**	**526**		
20.3.12 Providing and fixing 4" (100 mm) gully trap, of approved quality including cement concrete cost of PVC grating 6" x 6" (150 x 150 mm) and masonry chamber 12" x 12" (300 x 300 mm).	**each**	**151**	**859**		
20.3.13 Providing and fixing, brass stop cock/bib cock of approved quality					
(a) 1/2" (15 mm) dia.	**each**	**40.3**	**238**		
(b) 3/4" (20 mm) dia.	**each**	**40.3**	**425**		
20.3.14 Providing and fixing, chromium plated bottle trap of approved quality.with waste pipe, etc. of approved quality complete:-					
(a) 1-1/4" (30 mm) dia	**each**	**60.5**	**853**		
(b) 1-1/2" (40 mm) dia	**each**	**60.5**	**963**		
20.3.15 Providing and fixing, brass ball float valve of approved quality.					
(a) 1/2" (15 mm) dia.	**each**	**50.4**	**600**		
(b) 3/4" (20 mm) dia.	**each**	**50.4**	**655**		
(c) 1" (25 mm) dia.	**each**	**50.4**	**765**		
(d) 1-1/4" (30 mm) dia.	**each**	**50.4**	**985**		
(e) 1- 1/2" (40mm) dia.	**each**	**50.4**	**1205**		
(f) 2" (50 mm) dia.	**each**	**50.4**	**1535**		
20.3.16 Supplying and fixing, C.I. water hydrant/control valve of special type with brass spindle and detachable spanner required to be fixed with 2" (50 mm) to 3" (75 mm) dia pipe of approved quality.Also includes 3/4" (20 mm) dia G.I. bend complete.	**each**	**48.4**	**3898**		
20.4 Providing & Laying Soil,Waste and Vent Pipes				**20.4 to 20.6, 20.8,& 20.9**	
20.4.1 Providing & fixing, cast iron soil pipe of approved quality with:-					
(a) Lead caulked, yarn joint;					
(i) 4" (100 mm) dia	**ft** (m)	**40.6** 133	**564** 1851		

Description		Unit	Rate (PKR)		Railways Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(ii) 2" (50 mm) dia.	**ft** (m)	**16.2** 53.2	**349.1** 1145		
	(b) Cement caulked joint;					
	(i) 4" (100 mm) dia	**ft** (m)	**10.60** 34.8	**523** 1718		
	(ii) 2" (50 mm) dia..	**ft** (m)	**4.24** 13.9	**332** 1088		
20.4.2	Providing and fixing, Asbestos Cement (A.C) / fiber cement. soil pipe (DADEX or equivalent) with cement caulked joint, including all specials complete in all respects.					
	(a) 60 mm (2-1/4") i/d.	**ft** (m)	**8.48** 27.8	**73.8** 242		
	(b) 80 mm (3-1/4") i/d.	**ft** (m)	**9.42** 30.9	**148** 487		
	(c) 100 mm (4") i/d.	**ft** (m)	**10.60** 34.8	**172** 563		
	(d) 150 mm (6") i/d.	**ft** (m)	**14.14** 46.4	**249** 816		
20.4.3	Providing and fixing, cast iron specials, such as tee, bend, collar, cross, etc. plain type of approved quality.					
	(a) lead caulked joint	**kg**	**75.0**	**187**		
	(b) cement caulked joint	**kg**	**73.5**	**153**		
20.4.4	Providing and fixing, uPVC Pipes for Soil, Waste & Vent System (DADEX or equivalent) including cost of all specials complete in all respects.					
	(a) 40 mm (1-1/2") i/d	**ft** (m)	**9.68** 31.8	**176** 579		
	(b) 50 mm (2") i/d	**ft** (m)	**14.5** 47.6	**451** 1478		
	(c) 75 mm (3") i/d	**ft** (m)	**19.4** 63.5	**799** 2622		
	(d) 110 mm (4-1/2") i/d	**ft** (m)	**24.2** 79.4	**2179** 7148		
	(e) 160 mm i/d (6-1/2") i/d	**ft** (m)	**29.0** 95.3	**639** 2098		

Description		Unit	Rate (PKR)		Railways Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
20.5	**Providing & Fixings C.I Manhole Covers**				**20.4 to 20.6, 20.7.22 20.8,& 20.9**	
20.5.1	Supplying and fixing, cast iron manhole cover with frame, etc. (Heavey Type) of approved quality complete.					
	(b) 18" (450 mm) dia.	**each**	**60.5**	**1216**		
	(c) 24" (600 mm) dia.	**each**	**80.7**	**1896**		
20.5.2	Supplying & fixing, C.I. manhole cover without frame, heavy type of approved quality complete.					
	(a) 12" (300 mm) dia.	**each**		**495**		
	(b) 18" (450 mm) dia.	**each**		**1155**		
	(c) 24" (600 mm) dia.	**each**		**1815**		
20.6	**Providing & Laying RCC Pipe in Trenches**				**21.4 to 21.6**	
20.6.1	Providing, laying, cutting, jointing and testing of R.C.C. pipe 4" (100mm) dia in 1:1-1/2 3, in cement concrete, laid in trenches as per specifications complete in all respects.	**ft** (m)	**20.3** 66.6	**130** 427		
20.7	**Providing & Laying G.I Pipe Fittings**				**19.6.1, 19.7.1 to 19.7.6, 19.7.8, 19.7.10 & 19.8**	
20.7.1	Supplying and fixing, G.I. pipe fittings such as, socket, nipple, elbow, check nut and plug (ordinary or reducing) of approved quality as per specifications and compete in all respects.					
	(a) 1/2" (15 mm) dia.	**each**	**13.31**	**35.3**		
	(b) 3/4" (20 mm)dia.	**each**	**13.31**	**46.3**		
	(c) 1" (25 mm)dia.	**each**	**15.1**	**92.1**		
	(d) 1-1/4" (30 mm) dia.	**each**	**30.3**	**116**		
	(e) 1-1/2" (40 mm) dia.	**each**	**33.9**	**135**		
	(f) 2" (50 mm) dia.	**each**	**33.9**	**204**		
	(g) 2-1/2" (62 mm)dia.	**each**	**33.9**	**353**		
	(h) 3" (75 mm) dia.	**each**	**38.7**	**572**		
	(i) 4" (100 mm) dia.	**each**	**54.5**	**835**		

Description		Unit	Rate (PKR)		Railways Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
20.7.2	Supplying and fixing G.I. Bend, bush, crosspleces and Tees (ordinary or reducing) of approved quality complete in all respects.					
	(a) 1/2" dia.	**each**	**21.8**	**80.1**		
	(b) 3/4" dia.	**each**	**21.8**	**101**		
	(c) 1" dia.	**each**	**24.2**	**162**		
	(d) 1-1/4" dia.	**each**	**34.5**	**265**		
	(e) 1-1/2" dia.	**each**	**36.3**	**344**		
	(f) 2" dia.	**each**	**39.3**	**567**		
	(g) 2-1/2" dia.	**each**	**39.3**	**1051**		
	(h) 3" dia.	**each**	**42.4**	**1439**		
	(i) 4" dia.	**each**	**54.5**	**2804**		
20.7.3	Supplying and fixing, G.I. Union nuts, wheel valves, sluice valves, etc of approved quality complete in all respects.					
	(a) 1/2" dia.	**each**	**21.8**	**110**		
	(b) 3/4" dia.	**each**	**21.8**	**137**		
	(c) 1" dia.	**each**	**24.2**	**184**		
	(d) 1-1/4" dia.	**each**	**34.5**	**260**		
	(e) 1-1/2" dia.	**each**	**36.3**	**344**		
	(f) 2" dia.	**each**	**39.3**	**479**		
	(g) 2-1/2" dia.	**each**	**39.3**	**974**		
	(h) 3" dia.	**each**	**42.4**	**1285**		
	(i) 4" dia.	**each**	**54.5**	**2386**		
20.8	**Miscellaneous Items**					
20.8.1	Providing and fixing, chromium plated waste coupling of approved quality.					
	(a) 3 cm (1-1/4").	**each**	**60.5**	**193**		
	(b) 4 cm (1-1/2").	**each**	**60.5**	**248**		

Description	Unit	Rate (PKR)		Railways Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
20.8.2 Providing and fixing, rubber plug with chain of approved quality.					
(a) 3 cm (1-1/4").	**each**	**2.42**	**90.4**		
(b) 4 cm (1-1/2").	**each**	**2.42**	**90.4**		
20.8.3 Providing and fixing, waste pipe of PVC of approved quality.					
(a) 3 cm (1-1/4").	**each**	**30.3**	**63.3**		
(b) 4 cm (1-1/2").	**each**	**30.3**	**74.3**		
20.8.4 Providing and fixing, flushing bend of PVC of approved quality.					
(a) 3 cm (1-1/4").	**each**	**26.9**	**81.9**		
(b) 4 cm (1-1/2").	**each**	**26.9**	**70.9**		
20.8.5 Providing and fixing, 1.5 cm (1/2") dia connection including check nuts etc of approved quality.					
(a) Plastic/rubber connection.	**each**	**24.2**	**222**		
(b) copper connection.	**each**	**24.2**	**332**		

CHAPTER 21

SEWERAGE & RCC PIPE SEWERS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 21 Sewerage & RCC Pipe Sewers of "Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
21.1 Providing & Laying Reinforced Concrete (RCC) Pipes in Trenches				**21.4 to 21.6**	
21.1.1 Providing and laying R.C.C. pipe, moulded with cement concrete 1:1-1/2:3, with spigot, socket or collar joint, etc. including cost of reinforcement, conforming to B.S. 5911: Part-I, 1981 Class "L" including carriage, lowering in trenches to correct alignment and grade, jointing, cutting pipe where necessary, finishing and testing, etc. complete:-					
(a) 4"(100 mm) i/d.	**ft** (m)	**25.2** 82.7	**142** 465		
(b) 6" (150 mm) i/d.	**ft** (m)	**30.3** 99.3	**207** 680		
(c) 9" (225 mm) i/d	**ft** (m)	**56.5** 185	**275** 903		
21.1.2 Providing & laying R.C.C. pipe sewers, moulded with cement concrete 1:1-1/2:3 conforming to ASTM specification C-76-79, Class II, Wall B, including carriage, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc. complete:-					
(a) 12" (300 mm) i/d.	**ft** (m)	**57.5** 189	**431** 1416		
(b) 15" (375 mm) i/d.	**ft** (m)	**71.8** 236	**512** 1679		
(c) 18" (450 mm) i/d.	**ft** (m)	**86.2** 283	**691** 2268		
(d) 21" (525 mm) i/d.	**ft** (m)	**107.8** 353.6	**828** 2718		
(e) 24" (600 mm) i/d.	**ft** (m)	**123.2** 404	**981** 3219		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(f) 27" (685 mm) i/d.	**ft** (m)	**184** 602	**1421** 4662		
(g) 30" (760 m m) i/d	**ft** (m)	**220** 723	**1507** 4945		
(h) 33" (840 mm) i/d.	**ft** (m)	**275** 903	**1667** 5469		
(i) 36" (910mm) i/d.	**ft** (m)	**339** 1112	**2077** 6814		
(j) 42" (1070 mm) i/d.	**ft** (m)	**440** 1445	**2805** 9205		
(k) 48" (1220mm) i/d.	**ft** (m)	**840** 2756	**3359** 11021		
(l) 54" (1370 mm) i/d.	**ft** (m)	**1176** 3859	**4509** 14794		
(m) 60" (1520 mm) i/d.	**ft** (m)	**1470** 4824	**5595** 18358		
(n) 66" (1680 mm) i/d.	**ft** (m)	**2352** 7718	**6730** 22082		
(o) 72" (1830 mm) i/d.	**ft** (m)	**2940** 9647	**8396** 27548		
21.1.3 Providing & laying R.C.C. pipe sewers, moulded with cement concrete 1:1-1/2:3 conforming to ASTM specification C-76-79, Class III, Wall B, including carriage, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc. complete:-					
(a) 12" (300 mm) i/d.	**ft** (m)	**57.5** 189	**437** 1434		
(b) 15"(375 mm) i/d.	**ft** (m)	**71.8** 236	**523** 1715		
(c) 18" (450 mm) i/d.	**ft** (m)	**86.2** 283	**697** 2286		
(d) 21" (525 mm) i/d.	**ft** (m)	**107.8** 354	**955** 3133		
(e) 24" (600 mm) i/d.	**ft** (m)	**123.2** 404	**1355** 4446		
(f) 27" (690 mm) i/d.	**ft** (m)	**184** 602.1	**1465** 4807		
(g) 30" (760 mm) i/d.	**ft** (m)	**220** 723	**1529** 5017		
(h) 33" (840 mm) i/d.	**ft** (m)	**275** 903	**1722** 5649		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(i) 36" (910 mm) i/d.	**ft** (m)	**339** 1112	**2132** 6994		
(j) 42" (1070 mm) i/d.	**ft** (m)	**440** 1445	**2981** 9782		
(k) 48" (1220 mm) i/d.	**ft** (m)	**840** 2756	**3524** 11563		
(l) 54" (1370 mm) i/d.	**ft** (m)	**1176** 3859	**4564** 14975		
(m) 60" (1520 mm) i/d.	**ft** (m)	**1470** 4824	**5760** 18899		
(n) 66" (1680 mm) i/d.	**ft** (m)	**2352** 7718	**7104** 23309		
(o) 72" (1830 mm) i/d.	**ft** (m)	**2940** 9647	**8836** 28992		
21.1.4 Providing & laying R.C.C. pipe moulded with cement concrete 1:1-1/2:3 conforming to ASTM specification C-76-79, Class II, Wall B, fixed with R.C.C. collar for culvert, bridges etc., including carriage, lowering in trenches to correct alignment and grade, cutting pipes where necessary, gape filled with cement concrete 1:2:4 complete in all respect:-					
(a) 12" (310 mm) i/d.	**ft** (m)	**57.5** 189	**431** 1416		
(b) 15" (380 mm) i/d.	**ft** (m)	**71.8** 236	**512** 1679		
(c) 18" (460 mm) i/d.	**ft** (m)	**86.2** 283	**691** 2268		
(d) 21" (530 mm) i/d.	**ft** (m)	**107.8** 354	**828** 2718		
(e) 24" (610 mm) i/d.	**ft** (m)	**123.2** 404	**981** 3219		
(f) 27" (690 mm) i/d.	**ft** (m)	**184** 602	**1421** 4662		
(g) 30" (760 m m) i/d	**ft** (m)	**220** 723	**1507** 4945		
(h) 33" (840 mm) i/d.	**ft** (m)	**275** 903	**1667** 5469		

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(i) 36" (910 mm) i/d.	**ft** (m)	**339** 1112	**2077** 6814		
(j) 42" (1070 mm) i/d.	**ft** (m)	**440** 1445	**2805** 9205		
(k) 48" (1220 mm) i/d.	**ft** (m)	**840** 2756	**3359** 11021		
(l) 54" (1370 mm) i/d.	**ft** (m)	**1176** 3859	**4509** 14794		
(m) 60" (1520 mm) i/d.	**ft** (m)	**1470** 4824	**5595** 18358		
(n) 66" (1680 mm) i/d.	**ft** (m)	**2352** 7718	**6730** 22082		
(o) 72" (1830 mm) i/d.	**ft** (m)	**2940** 9647	**8396** 27548		
21.2 Providing & Laying Non Reinforced Concrete Pipes in Trenches				**21.4 to 21.6**	
21.2.1 Providing and laying non-reinforced concrete pipe moulded with cement concrete 1:1-1/2:3 conforming to ASTM Specification C-14-73, Class-2, including carriage of pipe from factory to site of work, lowering in trenches to correct alignment and grade, jointing, cutting pipe where necessary, finishing and testing, etc. complete:-					
(a) 4" (100 mm) i/d.	**ft** (m)	**25.2** 82.7	**75.6** 248		
(b) 6" (150 mm) i/d.	**ft** (m)	**30.3** 99.3	**103** 337		
(c) 8" (200 mm) i/d.	**ft** (m)	**42.4** 139	**129** 423		
(d) 9" (225 mm) i/d.	**ft** (m)	**56.5** 185	**160** 524		
(e) 10" (250 m m) i/d.	**ft** (m)	**61.5** 202	**181** 594		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
21.3 Lowering of Sub Soil Water Table & Laying of Pipe Sewers in Trenches				**21.4 to 21.6**	
21.3.1 Lowering of sub soil water table, by installation of tubewells along sewer line for laying of pipe sewer in trenches complete in all respects.					(i) This rate shall be payable, in addition to the item of excavation below SSWL for sewers & manholes under chapter, earthwork and laying of sewer pipe under items 21.1 and 21.2
(a) 0-1 ft. (0-0.300 m) below SSWL.	**ft** (m of laid sewer)		**215** 705		
(b) 0-2 ft. (0-0.600 m) below SSWL.	**-do-**		**417** 1368		(ii) The grant of these rates shall be subject to approval of Chief Engineer. (iii) The rate includes cost of providing pumps, POL, and all operation charges at the site of work etc.
(c) 0-3 ft. (0- 0.900 m)below SSWL.	**-do-**		**691** 2267		
(d) 0-4 ft. (0-1.200 m) below SSWL.	**-do-**		**987** 3238		
(e) 0-5 ft. (0-1.500 m) below SSWL.	**-do-**		**1395** 4576		
(f) 0-6 ft. (0-1.800 m) below SSWL.	**-do-**		**1725** 5660		
(g) 0-7 ft. (0-2.100 m) below SSWL.	**-do-**		**2086** 6845		
(h) 0-8 ft. (0-2.400 m) below SSWL.	**-do-**		**2364** 7756		
(i) 0-9 ft. (0-2.700 m) below SSWL.	**-do-**		**2493** 8178		
(j) 0-10 ft. (0-3.000 m) below SSWL.	**-do-**		**2869** 9412		
(k) 0-11 ft. (0-3.300 m) below SSWL.	**-do-**		**3186** 10452		
(l) 0-12 ft. (0-3.600 m) below SSWL.	**-do-**		**3525** 11567		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
21.4 Construction Gully Grating Chamber with Gully Trap				**21.4 to 21.6**	
21.4.1 Constructing gully grating chamber, 12"x 12" (300 mm x300 mm) complete in all respects:-					Pipe connection to be paid separately.
(a) With C.I. Gully Trap, weighing 81 lbs, frame hinged safety type.	**each**	**2373**	**3127**		
(b) Concrete Gully Trap.	**each**	**1252.6**	**3231**		
21.5 Providing Manhole Chambers & Manhole Covers				**21.4 to 21.6**	
21.5.1 Extra for making and finishing benching floor work in manhole chamber, with 1/8" (3 mm) thick cement finish.	**100 sft** (m^2)	**1256.0** 135	**1712** 184		
21.5.2 Providing and fixing 1-1/4" x 1-1/4" x 3/16" angle iron step in manhole chambers, including carriage and setting the same in work to correct lines and levels.	**each**	**60.40**	**204**		
21.5.3 Fixing manhole frame and cover in R.C.C. slab, including carriage to site.	**set**	**266**			
21.5.4 Providing and fixing 3" (75 mm) thick R.C.C. manhole cover 22" (550 mm) dia with tee shaped C.I. Frame of 20" (500 mm) clear i/d (frame weighing 37.324 KG or one maund) as per H.Q.E. Sketch No.3295 complete in all respects.	**set**	**296**	**2843**		
21.5.5 Providing and fixing "6 thick R.C.C. manhole cover with 3" x 3" x 1/4" angle iron frame 22" i/d as per H.Q.E. Sketch No.3297 complete in all respects.	**set**	**463**	**4091**		
21.5.6 Providing and fixing "6 thick R.C.C. manhole cover with 3" x 3" x 1/4" angle iron frame 24" i/d as per H.Q.E. Sketch No.3297 complete in all respects.	**set**	**295**	**3923**		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
21.6	**Desilting of Disposal Works, Collecting Tanks & Wells**					
21.6.1	Desilting of disposal work collecting tank, including removal of sludge within 3 chains (90 m).	**100 cft** (m^3)		**467** 165		
21.6.2	Silt clearing 10' (3 m) dia. wells and					
	(a) Upto 10' (3 m) depth of slush.	**well**	**6556**			
	(b) Beyond 10' (3 m) depth of slush.	**well**	**13119**			

CHAPTER 22

SUI GAS

Notes:-

(1) The items of work included in this chapter, shall conform to the relevant specifications, given in Chapter 23 Sui Gas Supply System of "Specification for Railway Infrastructure Works, Volume II, (2016)"

(2) Rates for all finished works include the removal of surplus debris, unused material and by-products and their stacking within 100 ft (30 m).

(3) The rates include cutting and making good of the surface of walls, roofs, floors, etc. where necessary.

(4) All materials should conform to specifications of Sui Northern Gas Pipeline & Sui Southern Gas Pipeline Companies.

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
22.1 Supplying & Laying High Pressure Sui Gas Pipeline				**23.4 to 23.6**	
22.1.1 Supplying, laying, cutting, jointing and welding in position high pressure sui gas pipe line (class medium of IIL or equivalent) wrapped with fiber sheet & coated with approved bitumen compound complete in all respect as per specification.					The rate does not include digging and back filling of trenches which is payable separately.
One wrap two coats;					
(a) 1" (25 mm) dia Pipe (M.S. Pipe 8 SWG).	**ft** (m)	**22.1** 72.5	**99** 324		
(b) 1-1/2" (38 mm) dia Pipe (M.S. Pipe 8 SWG).	**ft** (m)	**31.8** 104.3	**141** 461		
(c) 2" (50 mm) dia Pipe (M.S. Pipe 7 SWG).	**ft** (m)	**33.5** 109.9	**181** 594		
(d) 3" (75 mm) dia Pipe (M.S. Pipe 6 SWG).	**ft** (m)	**40.1** 132	**270** 886		
(e) 4" (100 mm) dia Pipe (M.S. Pipe 5 SWG).	**ft** (m)	**49.7** 163	**371** 1217		
(f) 6" (150 mm) dia Pipe (M.S. Pipe 5 SWG).	**ft** (m)	**63.8** 209	**585** 1920		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
22.2 Supplying & Laying Low Pressure Sui Gas Pipeline				**23.4 to 23.6**	
22.2.1 Supplying, laying, cutting and jointing in position low pressure sui gas pipe line for internal fittings (G.I. Pipe, class medium of IIL) complete in all respect as per specification.					(i) The rate includes making & repairing holes in wall and roof etc.
(a) 1/2" (12.5 mm) dia	**ft** (m)	**10.22** 33.5	**66.3** 217.6		(ii) Cost of sockets, tees, elbows, union, reducers, nipples etc. is included in the rates.
(b) 3/4" (19 mm) dia	**ft** (m)	**10.22** 33.5	**83.2** 273		
(c) 1"(25 mm) dia	**ft** (m)	**12.16** 39.9	**103** 339		
(d) 1-1/4" (31 mm) dia	**ft** (m)	**12.16** 39.9	**149** 490		
(e) 1-1/2" (38 mm) dia	**ft** (m)	**14.1** 46.3	**171** 561		
(f) 2" (50 mm) dia	**ft** (m)	**20.0** 65.6	**239** 786		
22.3 Supplying & Fixing in Position Sui Gas Appliances & Their Fittings				**23.4 to 23.6**	
22.3.1 Supplying & fixing in position approved quality Sui Gas Burners:-					
(a) Single Burner.	**each**	**242**	**1067**		
(b) Double Burner.	**each**	**242**	**1947**		
(c) Commercial Burner;					
(i) 12 Nozzles.	**each**	**242**	**2167**		
(ii) 18 Nozzles.	**each**	**242**	**2607**		
(iii) 24 Nozzles.	**each**	**242**	**3102**		
(iv) 32 Nozzles.	**each**	**242**	**3762**		
22.3.2 Supplying and fixing Sui Gas lamp of superior quality including bracket complete.	**each**	**242**	**765**		
22.3.3 Supplying and fixing in position approved quality Sui Gas room heaters of superior quality with exhaust etc:-					

Description	Unit	Rate (PKR)		Railway Speci-fication	Remarks
		Labour	Composite		
1	2	3	4	5	6
(a) Single Plate.	**each**	**484**	**3454**		
(b) Double Plate.	**each**	**484**	**6754**		
22.3.4 Providing and fixing in position Sui gas water heater best quality manufacturer with fittings including thermostat, safty valve etc.:					
(a) 35 Gallon capacity.	**each**	**968**	**17468**		
(c) 55 Gallon capacity.	**each**	**968**	**33968**		
22.3.5 Providing and fixing in position approved quality Instant Gas water heaters with fittings including thermostat, safety valve etc:-					
(a) 6 Gallon capacity.	**each**	**968**	**10318**		
(b) 12 Gallon capacity.	**each**	**968**	**14718**		
22.3.6 Supplying and fixing in position approved quality Sui Gas cooking range:-					
(a) Three Burners.	**each**	**363**	**17963**		
(b) Five Burners.	**each**	**363**	**20163**		
22.3.7 Providing and fixing Bunsen burner, complete.	**each**	**60.5**	**446**		
22.3.8 Supplying and fixing in position approved quality fittings of Sui Gas appliances:-					
(a) Black pipe for single burner.	**each**	**60.5**	**77**		
(b) Black pipe for double burner.	**each**	**60.5**	**78**		
(c) Jet.	**each**	**60.5**	**71.5**		
(d) C.I. Tikkee.	**each**	**60.5**	**127**		
(e) C.I. Grating.	**each**	**60.5**	**149**		
(f) Bush	**each**	**60.5**	**93.5**		
(g) Regulator Plug.	**each**	**60.5**	**82.5**		
(h) Copper pipe for pilot burner.	**each**	**60.5**	**259**		
(i) Peeble regulator.	**each**	**60.5**	**446**		

Description		Unit	Rate (PKR)		Railway Speci-fication	Remarks
			Labour	Composite		
1		2	3	4	5	6
	(j) Regulator 043.	**each**	**60.5**	**2371**		
	(k) Regulator 143.	**each**	**60.5**	**4131**		
	(l) Exhaust for room heater.	**each**	**484.0**	**1144**		
	(m) Thermostat for water heater.	**each**	**605.0**	**2365**		
	(n) Knob.	**each**	**60.5**	**105**		
	(o) Radiant plate for heater.	**each**	**60.5**	**446**		
22.4	**Supplying & Fixing in Position Valves/Cocks etc.**				**23.4 to 23.6**	
22.4.1	Supplying and fixing in position approved quality ball valve (Kitz Japan):-					
	(a) 1/2" dia.	**each**	**121.0**	**836**		
	(b) 3/4" dia.	**each**	**121.0**	**1056**		
	(c) 1" dia.	**each**	**121.0**	**1221**		
	(d) 1-1/2" dia.	**each**	**121.0**	**1716**		
	(e) 2" dia.	**each**	**121.0**	**2156**		
22.4.2	Supplying and fixing in position approved quality Audco type valve or Eclips cocks:-					
	(a) 3/4" dia.	**each**	**60.5**	**336**		
	(b) 1" dia.	**each**	**121.0**	**562**		
	(c) 1-1/2" dia.	**each**	**121.0**	**674**		
	(d) 2" dia.	**each**	**121.0**	**894**		
22.4.3	Making connection with existing Sui Gas Pipe line complete in all respect.	**per in dia per conection**	**793**	**870**		
		per cm dia per connection	**312**	**342**		
22.4.4	Providing & fixing Brass cocks, complete 1/4":-					
	(a) One way.	**each**	**60.5**	**336**		
	(b) Two way.	**each**	**60.5**	**446**		

CHAPTER 23

MISCELLANEOUS

Note:-

(1) Rate for all finished works include the removal of surplus debris, unused material and by products and their stacking within 100 ft (30 m).

Description		Unit	Rate (PKR)		Railway Specification	Remarks
			Labour	Composite		
1		2	3	4	5	6
23.1	**Miscellaneous Items**					
23.1.1	Notice board made of cement sand moter 1:3.	**sft** (m^2)	**30.3** 326	**39.8** 429		The board is to be of cement plaster 1/2" thick, with 2" wide and 1" thick beading.
23.1.2	Fixing handles to iron hammer.	**each**	**151.3**			
23.1.3	Supplying Bamboo Jhandies 10' to 12' with iron shoes, and flags 15" square.	**each**	**62.9**	**261**		
23.1.4	Supplying wooden pegs for levelling 1-1/2" dia 6" long.	**each**	**6.05**	**6.56**		
23.1.5	Supplying wooden pegs for alignment, 2" to 3" dia. 9" long.	**each**	**12.10**	**14.2**		
23.1.6	Fixing enamelled iron gauges flush with masonry including cost of hooks.	**ft** (m)	**84.7** 278	**89.7** 294		
23.1.7	Placing boundary pillars in position, including digging pits.	**each**	**56.5**			
23.1.8	Fixing mainline type distance mark in position including making 1:3:6 cement concrete base block size 14" x 10" x 15".	**each**	**242**	**380**		Composite rate does not include cost of iron distance marks.
23.1.9	Washing Niwar of bed.	**per bed**	**545**	**568**		
23.1.10	Washing Durries.	**sft** (m^2)	**7.26** 78.2	**7.81** 84.1		
23.1.11	Recaning chairs:-					
	(a) Office chairs, single caning seat only.	**each**	**484**	**528**		
	(b) Office chairs, double caning seat only.	**each**	**639**	**699**		
	(c) Office chairs, single caning back only.	**each**	**415**	**437**		

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
(d) Office chairs, double caning back only.	**each**	**605**	**649**		
(e) Easy chairs, single caning seat only.	**each**	**726**	**787**		
(f) Easy chairs, double caning seat only.	**each**	**968**	**1056**		
(g) Easy chairs, single caning only back and seat in one piece.	**each**	**1936**	**2123**		
(h) Easy chairs, double caning back and seat in one piece or couches with caned area about 16 sft.	**each**	**2904**	**3399**		
23.1.12 Making and fixing hat pegs fixed on wooden strip 4" wide 3/4" thick at 9" spacing including polishing complete:-					Rate be reduced/ increased by 17% for each peg if number of pegs are reduced /increased.
(a) 4 No. ordinary shisham wooden pegs.	**each**	**145**	**449**		
(b) 4 No special alloy pegs on deodar wood strip.	**each**	**121.0**	**552**		
23.1.13 Weaving charpy.	**each**	**330**			
23.1.14 Sweeping chimneys.	**each**	**182**	**195**		
23.1.15 Cutting fuel wood, from plantation.	**100 kg**	**195**			
23.1.16 Splitting fuel wood.	**100 kg**	**389**			
23.1.17 Filling cement bags with coal and sewing (including cost of strings).	**cft** (m^3)	**18.6** 657	**18.7** 662		
23.1.18 Supplying manure.	**cart load**	**108.9**	**219**		Capacity of cart 20 cft.
23.1.19 Washing punkha frills.	**each**	**182**			
23.1.20 Washing:-					
(a) Table cloth	**each**	**45.4**			
(b) Napkins, dusters, etc.	**each**	**27.9**			
(c) Bed sheet	**each**	**72.6**			
(d) Carpet	**sft**	**7.26**			
23.1.21 Hoisting and placing sleepers for centering including carriage within one chain.	**each**	**72.6**			

Description	Unit	Rate (PKR)		Railway Specification	Remarks
		Labour	Composite		
1	2	3	4	5	6
23.1.22 Dismantling sleepers from centring including stacking within one chain.	**each**	**87.1**			
23.1.23 Dredging Sumps.	**shift**	**2723**			Not less than five gangmen to be employed for each shift to ensure effective dredging.
23.1.24 Fixing 'U' bolt in masonry or concrete, including levelling and tying for fixing angle iron post.	**each**	**290**			
23.1.25 Drilling holes in R.C. Trough.	**each**	**176**			

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List of Correction Slips			
Correction Slip No.	**Date**	**Reference to the Chapter**	**Brief Description**

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