ईस्टर्न कोलफील्ड्स लिमिटेड
(कोल इंडिया का एक अभिन्न अंग)
अध्यक्ष-सह-प्रबंध निदेशक का कार्यालय
सांकतोड़िया, पत्रालय- डिसेरगढ़,
जिला- पश्चिम बर्धमान, पश्चिम बंगाल-713333
औद्योगिक अभियंत्रण विभाग
सी. आइ. एन.- U10101WB1975GOI030295
वेबसाइट- www.easterncoal.nic.in

EASTERN COALFIELDS LIMITED
(A subsidiary of Coal India Limited)
Office of the Chairman-cum-Managing Director
Sanctoria, P.O.: Dishergarh,
Dist.-Paschim Bardhman, West Bengal-713333
Industrial Engineering Department
CIN-U10101WB1975GOI030295
Website- www.easterncoal.nic.in

Ref:-ECL / HQ / IE/ SOR / 101/ 2019 / 147

Date: 24.10.19

To
The General Managers
All Areas of ECL and HQ.

Sub.: **SOR formulated by NPC for** "Hiring of HEMM for outsourcing patches, Contractual Coal Transportation, loading of coal by Pay Loader / Excavator, Crushing of Coal into (-) 100 mm size by Mobile Crusher, Contractual Sand transportation & Contractual Drilling of Boreholes".

Dear Sir,

ECL Board in its 325th meeting held on 26th Sept'2019 has approved the **SOR formulated by NPC for** "Hiring of HEMM for outsourcing patches, Contractual Coal Transportation, loading of coal by Pay Loader / Excavator, Crushing of Coal into (-) 100 mm size by Mobile Crusher, Contractual Sand transportation & Contractual Drilling of Boreholes" and also approved the following:

1. Price variation formula for preparation / updation of estimates as prepared by NPC, Kolkata.
2. Schedule of rates (SOR) submitted by NPC will be effective from 23.10.2019. However, the validity of this SOR will continue till further revision by ECL management as deemed fit.
3. Modifications of other terms & conditions of existing SOR like standard e-Discount Bid documents e-NIT, terms & conditions, LOB and BOQ and other instructions as submitted by CMC department.

Separate booklet has been issued in respect of discount bidding on SOR for transportation of Coal, Sand & loading by pay-loader, excavator by CMC Department.

SOR complete set is enclosed with this letter and published on ECL website www.easterncoal.nic.in for needful.

This is for information and needful action to all concerned.

Encl: SOR

Yours faithfully,
24/10/19
General Manager (IE)

Copy to:
1) CVO, ECL
2) GM (T&MS)/ TS to CMD
3) TS to DT(P&P)/ TS to D(F)/ TS to DT(OP)/ TS to D(P), ECL
4) Associated Finance to (i) DT(P&P), (ii) DT(OP) and (iii) D(P), ECL
5) Area Finance Manager – All Areas of ECL.
6) Office Copy

EASTERN COALFIELDS LIMITED
INDUSTRIAL ENGINEERING DEPARTMENT
TECHNICAL BUILDING
SANCTORIA, DISHERGARH -713333

SCHEDULE OF RATES FOR HIRING OF HEMM,

TRANSPORTATION

OF

COAL, SAND

AND

LOADING OF COAL BY PAYLOADERS, EXCAVATORS
IN
TIPPERS / RAILWAY WAGONS ALLIED JOBS
AND
CRUSHING OF COAL BY MOBILE CRUSHER
AND
DRILLING OF BOREHOLES

GENERAL INSTRUCTION FOR SOR

1. SOR has been prepared by National Productivity Council, Kolkata and approved by ECL Board in its 325th meeting held on 26.09.2019.
2. SOR has been prepared in three parts first part for Hiring of HEMM, second part for Coal / Sand Transportation and third part contractual drilling of Boreholes.
3. NPC has prepared the SOR at the Base diesel price Rs. 64.42/Ltr. For updation of the rates of Hiring patches of ECL while preparation of estimates the Bulk diesel price without discount from the nearest diesel Depot of the mine and for updation of the rates of Coal transportation works from the mines the retail diesel price from the nearest diesel depot has to be considered.
4. Base wage considered as per CIL HPC order vide: CIL / C – 5B / JBCCI / HPC / VDA / 1093, dated 21.12.2018 which is available in CIL website at https://www.coalindia.in/en-us/infobank/circulars.aspx (copy enclosed for ready reference)
5. Base WPI month for Wholesale Price Index (WPI) / Consumer Price Index (CPI) was October 2018 which is available in website https://dbie.rbi.org.in.
6. The price variation formula provided in the SOR will be applicable for preparation of estimate / updation of estimate. However, price variation formula for payment/ recovery on account of change in diesel price, Wages & other components will be applicable as per the contract agreement formula on the applicable components.
7. SOR will be effective from the date 23.10.2019 and shall continue till further revision by ECL management as deemed fit.
8. Separate booklet has been issued in respect of discount bidding on SOR for transportation of Coal, Sand & loading by pay-loader, excavator by CMC Department.

PART – I

SOR FOR HIRING OF HEMM

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI) : October 2018.

Table – I : Hiring of HEMM for removal of OB including drilling, charging, excavation, loading & transportation of **Composite OB**

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km	5-6 Km	6-7 Km	7-8 Km
Cost of Drilling and Charging per Cum	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
Cost of excavation of OB per Cum	25.26	25.26	25.26	25.26	25.26	25.26	25.26	25.26
Cost of Dozing of OB per Cum	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71
Cost of Grading of roads per Cum Of OB	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
Cost of Water Sprinkling per Cum	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.23
Cost of Transportation of OB per Cum	18.48	30.15	41.22	51.21	62.51	71.81	80.08	88.29
Total SOR	**63.42**	**75.09**	**86.16**	**96.15**	**107.45**	**116.75**	**125.02**	**133.23**

Table – II : Hiring of HEMM for removal of OB including drilling, charging, excavation, loading & transportation of **Hard OB**

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km
Cost of Drilling and Charging per Cum	6.11	6.11	6.11	6.11	6.11
Cost of excavation of OB per Cum	28.97	28.97	28.97	28.97	28.97
Cost of Dozing of OB per Cum	6.89	6.89	6.89	6.89	6.89
Cost of Grading of roads per Cum Of OB	2.70	2.70	2.70	2.70	2.70
Cost of Water Sprinkling per Cum	4.34	4.34	4.34	4.34	4.34
Cost of Transportation of OB per Cum	19.27	31.28	42.66	52.92	64.53
Total SOR	**68.28**	**80.29**	**91.67**	**101.93**	**113.54**

Table – III : Hiring of HEMM for removal of OB including drilling, charging, excavation, loading & transportation of **Soft OB**

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km
Cost of excavation of OB per Cum	17.63	17.63	17.63	17.63	17.63
Cost of Dozing of OB per Cum	6.39	6.39	6.39	6.39	6.39
Cost of Grading of roads per Cum Of OB	2.50	2.50	2.50	2.50	2.50
Cost of Water Sprinkling per Cum	4.03	4.03	4.03	4.03	4.03
Cost of Transportation of OB per Cum	16.56	27.55	38.00	47.47	58.17
Total SOR	**47.11**	**58.10**	**68.55**	**78.02**	**88.72**

Table – IV : Hiring of HEMM for **Re-handling/ Backfilling of OB** including excavation, loading & transportation

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km	5-6 Km	6-7 Km	7-8 Km
Cost of excavation of OB per Cum	15.88	15.88	15.88	15.88	15.88	15.88	15.88	15.88
Cost of Dozing of OB per Cum	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83
Cost of Grading of roads per Cum Of OB	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
Cost of Water Sprinkling per Cum	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
Cost of Transportation of OB per Cum	14.52	23.51	33.14	40.46	48.41	58.16	67.64	77.57
Total SOR	**42.19**	**51.18**	**60.81**	**68.13**	**76.08**	**85.83**	**95.31**	**105.24**

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI) : October 2018.

Table – V : Hiring of HEMM for extraction of Coal including drilling, charging, excavation, loading & transportation of Coal (Face to Surface)

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km	5-6 Km	6-7 Km	7-8 Km	8-9 Km	9-10 Km
Cost of Drilling and Charging per MT of Coal	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
Cost of excavation of Coal per MT	20.56	20.56	20.56	20.56	20.56	20.56	20.56	20.56	20.56	20.56
Cost of Dozing of Coal per MT	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65
Cost of Grading of Roads per MT of coal	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Cost of Water Sprinkling per MT	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Cost of Transportation of Coal per MT	18.12	26.01	32.32	36.94	42.31	49.10	54.10	59.67	65.62	71.58
Total SOR	**50.41**	**58.30**	**64.61**	**69.23**	**74.60**	**81.39**	**86.39**	**91.96**	**97.91**	**103.87**

Table – VI : Hiring of HEMM for extraction of Coal using Surface Miner, loading & transportation of Coal (Face to Surface)

Description	0-1 Km	1-2 Km	2-3 Km	3-4 Km	4-5 Km	5-6 Km	6-7 Km	7-8 Km	8-9 Km	9-10 Km
Cost of extraction of Coal by surface Miner per MT	20.11	20.11	20.11	20.11	20.11	20.11	20.11	20.11	20.11	20.11
Cost of loading of coal into Tippers by Payloader per MT of coal	9.35	9.35	9.35	9.35	9.35	9.35	9.35	9.35	9.35	9.35
Cost of Grading of Road per MT of Coal	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Cost of Water Sprinkling per MT of Coal	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Cost of Transportation of Coal per MT	18.12	26.01	32.32	36.94	42.31	49.10	54.10	59.67	65.62	71.58
Total SOR	**51.31**	**59.20**	**65.51**	**70.13**	**75.50**	**82.29**	**87.29**	**92.86**	**98.81**	**104.77**

Table – VII : Pumping for dewatering in quarry

Item description	Rate (Rs./Gallon)
Dewatering of quarry by pumping of water accumulated in the mine, rain water, ground water from working faces etc through electric operated pumps from mine to specified areas.	0.04

PART – II

SOR FOR COAL / SAND TRANSPORTATION,

LOADING BY PAY LOADER / EXCAVATOR,

HIRING OF MOBILE CRUSHER AND

ALLIED JOBS AT RAJMAHAL RAILWAY SIDINGS

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI) : October 2018.

Table – I: Coal Transportation from Surface to Surface by 10 Wheeler Tippers.

Lead Distance (Km)	Rate (Rs./Te)
0-1	18.59
1-2	26.76
2-3	32.80
3-4	39.42
4-5	45.78
5-6	52.83
6-7	60.02
7-8	67.73
8-9	75.48
9-10	83.25
10-11	85.75
11-12	93.16
12-13	100.14
13-14	107.64
14-15	114.63
15-16	121.66
16-17	128.68
17-18	136.31
18-19	142.67
19-20	149.68
20-21	156.77
21-22	163.69
22-23	170.70
23-24	177.79
24-25	184.80
25-26	191.82
26-27	198.81
27-28	205.76
28-29	212.79
29-30	219.89
30-31	226.86
31-32	233.86
32-33	240.87
33-34	247.88
34-35	254.86

Lead Distance (Km)	Rate (Rs./Te)
35-36	262.04
36-37	268.92
37-38	275.98
38-39	281.68
39-40	288.80
40-41	295.79
41-42	302.63
42-43	311.01
43-44	318.22
44-45	323.77
45-46	330.51
46-47	337.80
47-48	344.84
48-49	350.02
49-50	358.47
50-51	365.49
51-52	372.66
52-53	379.47
53-54	384.68
54-55	391.71
55-56	398.88
56-57	405.61
57-58	412.45
58-59	419.40
59-60	426.48
60-61	433.70
61-62	440.35
62-63	447.82
63-64	452.67
64-65	459.63
65-66	465.93
66-67	473.09
67-68	478.24
68-69	486.96
69-70	493.62

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI): October 2018.

Table – II: Coal Transportation from **Face** to Surface by 10 Wheeler Tippers

Lead Dist (Km)	Rate (Rs./Te)
0-1	18.12
1-2	26.01
2-3	32.32
3-4	36.94
4-5	42.31
5-6	49.10
6-7	54.10
7-8	59.67
8-9	65.62
9-10	71.58

Table – III: Coal Transport from **Tippler** by 10 Wheeler Tippers

Lead Dist (Km)	Rate (Rs./Te)
0-1	25.39
1-2	33.63
2-3	38.59
3-4	45.81
4-5	51.20
5-6	57.06
6-7	63.39
7-8	69.80
8-9	75.58
9-10	81.90

Table: IV Sand Transportation by 6 Wheeler Truck including loading (**Dry Season**)

Lead Dist(Km)	Rate (Rs./Te)
0-1	43.69
1-2	57.21
2-3	70.77
3-4	84.94
4-5	98.65
5-6	113.92
6-7	128.42
7-8	141.15
8-9	155.62
9-10	169.43
10-11	183.19
11-12	196.67
12-13	209.78
13-14	222.67
14-15	235.16
15-16	247.52
16-17	259.39
17-18	272.24
18-19	282.09
19-20	296.14

Lead Dist (Km)	Rate (Rs./Te)
20-21	308.16
21-22	321.75
22-23	335.06
23-24	348.48
24-25	361.95
25-26	375.42
26-27	388.81
27-28	402.06
28-29	415.82
29-30	429.34
30-31	442.53
31-32	456.18
32-33	469.37
33-34	482.99
34-35	496.01
35-36	505.93
36-37	519.67
37-38	532.62
38-39	545.92
39-40	559.61

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI) : October 2018.

Table-V: Sand Transportation by 6 Wheeler Truck including loading (Wet Season)

Lead Dist (Km)	Rate (Rs./Te)
0-1	56.23
1-2	69.67
2-3	83.48
3-4	97.76
4-5	110.70
5-6	126.69
6-7	140.21
7-8	153.91
8-9	168.33
9-10	180.89
10-11	194.46
11-12	209.31
12-13	222.41
13-14	235.19
14-15	247.46
15-16	259.62
16-17	271.29
17-18	284.42
18-19	294.02
19-20	308.03

Lead Dist (Km)	Rate (Rs./Te)
20-21	319.82
21-22	333.55
22-23	346.85
23-24	360.14
24-25	373.36
25-26	386.43
26-27	400.00
27-28	413.33
28-29	426.34
29-30	439.79
30-31	453.73
31-32	466.21
32-33	480.08
33-34	493.35
34-35	507.02
35-36	519.91
36-37	533.15
37-38	546.78
38-39	559.40
39-40	573.79

Table – VI: Coal Transportation from **Tippler** by 6 wheeler tipper:

Lead Dist (Km)	Rate (Rs./Te)
0-1	28.55
1-2	35.62
2-3	42.67
3-4	53.11
4-5	61.31
5-6	69.49
6-7	77.61
7-8	85.69
8-9	92.62
9-10	100.31

Table – VII: Loading of Coal by Pay Loader:

Description of item	Rate (Rs./Te)
Loading of Coal Into Tipping Truck	9.35
Loading of Coal at Rly Siding into wagon	10.93

Note: SOR rate in respect of Coal Transportation from Tippler to Stock / Siding by 6 wheeler tippers shall be applicable only in cases where it is not possible to deploy 10 wheeler tippers for taking loads from tippler which shall be duly certified & recommended by concerned Area General Manager.

Table – VII: Loading of Coal by Excavator

Rate (Rs./Te)
20.56

Table – VIII : Crushing of Coal by Mobile Crusher

Description of item	Rate (Rs./Te)
Crushing of coal into (-) 100 mm. size (all dimensions) by Mobile Crusher 400 / 500 TPH (Rated / designed) capacity providing and installing suitable and matching crushing arrangement with all infrastructure. The element also includes operation and maintenance of the crushing arrangement. (Electricity will be supplied free of cost) as per technical specification provided in the SOR.	11.35

Table IX: Rates for Allied Works undertaken at railway siding of Rajmahal Area

Sl. No	Particulars		Rate (Rs. / Te)
1	Following allied works undertaken at Rajmahal / Wharf Wall Siding	With / Without Security	
	(i) Door closing of wagons and Gutka fitting. (ii) Cleaning of rail tracks, Road & Rail Weigh Bridge. (iii) The bidder will guard the coal for its security at the siding. (iv) Stacking & Shifting of Coal, if required. (v) Maintenance of Road in and around the siding and related job (vi) Water spraying, if required (vii) Bidder will be liable for paying demurrage, if any, due to bidder's responsibility either in transport, loading or maintenance at the siding. (viii) Bidder will also responsible for any shortage of Coal at the Siding (ix) Any other work as directed by the controlling officer.	With security	3.54
		Without Security	2.30
2	Following allied works undertaken at Pirpainti Railway Siding		
	(i) Door closing of wagons and Gutka fitting. (ii) Cleaning of rail tracks, Road & Rail Weigh Bridge. (iii) Operation of DG Set & Maintenance of lighting. (iv) The bidder will guard the coal for its security at the siding. (v) Stacking & Shifting of Coal, if required. (vi) Maintenance of Road in and around the siding and related job. (vii) Water spraying, if required (viii) Bidder will be liable for paying demurrage, if any, due to bidder's responsibility either in transport, loading or maintenance at the siding. (ix) Bidder will also responsible for any shortage of Coal at the Siding (x) Any other work as directed by the controlling officer.		5.25

PART – III

SOR FOR DRILLING OF BOREHOLES

Base Diesel: Rs. 64.42/Ltr.
Base wage: as per CIL order: CIL / C-5B / JBCCI / HPC / VDA / 1093 dated 21.12.2018.
Base month for wholesale price index (WPI) / Consumer Price Index (CPI): October 2018.

Table – I : Drilling of Various Size of Boreholes including lowering and casing of pipes

Depth (Mtr)	Rate for NX Coring (Rs./Mtr)	Rate for BX Coring (Rs./Mtr)	Rate for NX Non Coring(Rs./Mtr)
0-30	974.52	931.79	885.24
>30-60	1099.84	1050.41	981.58
>60-90	1225.16	1169.03	1077.92
>90-120	1350.48	1287.65	1174.26
>120-150	1475.80	1406.27	1270.60
>150-200	1642.89	1564.43	1399.05
>200-250	1851.75	1762.13	1559.61
>250-300	2060.62	1959.83	1720.18
>300-350	2269.48	2157.53	1880.74
>350-400	2478.35	2355.23	2041.31

Table – II : Drilling of Various Size of Boreholes including lowering and casing of pipes

Depth (Mtr)	Rate for 150mm Non Coring	Rate for 200mm Non Coring (Rs./Mtr)	Rate for 250mm Non Coring (Rs/Mtr)	Rate for 300mm Non Coring(Rs./Mtr)	Rate for 350mm Non Coring (Rs./Mtr)
(A) Alluvium					
0-30	1007.54	1232.34	1605.42	2434.13	2989.41
(B) Rock (Except Alluvium portion)					
0-30	1007.54	1232.34	1605.42	2434.13	2989.41
>30-60	1206.65	1483.22	1914.66	2744.39	3320.82
>60-90	1405.76	1734.10	2223.90	3054.65	3652.23
>90-120	1604.86	1984.98	2533.14	3364.91	3983.64
>120-150	1803.97	2235.86	2842.38	3675.17	4315.05
>150-200	2069.45	2570.37	3254.70	4088.85	4756.93
>200-250	2401.29	2988.51	3770.10	4605.95	5309.28
>250-300	2733.14	3406.64	4285.50	5123.05	5861.63
>300-400	3230.91	4033.85	5058.60	5898.70	6690.15

Table – III (Contd....): Drilling of Various Size of Boreholes including lowering and casing of pipes

Depth (Mtr)	Rate for 400mm Non Coring(Rs./Mtr)	Rate for 450mm Non Coring(Rs./Mtr)	Rate for 500mm Non Coring(Rs./Mtr)	Rate for 550mm Non Coring(Rs./Mtr)	Rate for 600mm Non Coring(Rs./Mtr)
(A) Alluvium					
0-30	3468.04	4634.56	5517.65	6387.43	7346.77
(B) Rock (Except Alluvium portion)					
0-30	3468.04	4634.56	5517.65	6387.43	7346.77
>30-60	3788.71	5016.28	5914.55	7005.88	8010.70
>60-90	4109.38	5398.00	6311.45	7624.33	8674.63
>90-120	4430.05	5779.72	6708.35	8242.78	9338.56
>120-150	4750.72	6161.44	7105.25	8861.23	10002.49
>150-200	5178.28	6670.40	7634.45	9685.83	10887.73
>200-250	5712.73	7306.60	8295.95	10716.58	11994.28
>250-300	6247.18	7942.80	8957.45	11747.33	13100.83
>300-400	7048.85	8897.10	9949.70	13293.45	14760.65

Table – IV : Drilling of Various Size of UG Boreholes including lowering and casing of pipes

Drilling of Boreholes per meter (UG)			
Depth	Rate for NX Coring (Rs./Mtr)	Rate for BX Coring (Rs./Mtr)	Rate for NX Non Coring (Rs./Mtr)
(a) For drilling in coal bearing strata			
0-30	2885.53	2885.53	2746.55
>30-60	3245.59	3245.59	3089.24
>60-90	3605.65	3605.65	3431.93
>90-120	3965.71	3965.71	3774.62
>120-150	4325.77	4325.77	4117.31
(b) For drilling in coal seam only			
0-30	2885.53	2814.57	2591.40
>30-60	3245.59	3170.31	2955.99
>60-90	3605.65	3526.05	3320.58
>90-120	3965.71	3881.79	3685.17
>120-150	4325.77	4237.53	4049.76
(c) For drilling in coal bearing strata with igneous intrusive			
0-30			
>30-60	5003.44	4732.615	4505.23
>60-90	5350.60	5060.425	

Table – V : Drilling of various size of UG Boreholes including lowering and casing of pipes

Drilling of Boreholes per meter (UG)				
Depth	Rate for 100mm Non Coring (Rs./Mtr)	Rate for 150mm Non Coring (Rs./Mtr)	Rate for 200mm Non Coring (Rs./Mtr)	Rate for 250mm Non Coring (Rs./Mtr)
(a) For drilling in coal bearing strata				
0-30	3325.07	4285.95	5063.42	5786.06
>30-60	3794.21	4895.64	5705.45	6556.37
>60-90	4263.35	5505.33	6347.48	7326.68
>90-120	4732.49	6115.02	6989.51	8096.99
>120-150	5201.63	6724.71	7631.54	8867.30
(b) For drilling in coal seam only				
0-30	2983.90	3873.03	4882.25	5173.02
>30-60	3428.89	4454.49	5553.95	5931.06
>60-90	3873.88	5035.95	6225.65	6689.10
>90-120	4318.87	5617.41	6897.35	7447.14
>120-150	4763.86	6198.87	7569.05	8205.18

Technical Specification for Mobile Crusher

DESIGN REQUIREMENTS

Skid Mounted Crushing Plant should have following features:

GENERAL REQUIREMENT:

1. Crushing PLANT shall be designed and constructed for 24 hrs. / day continuous operation.
2. The Crusher shall have a feed size of (-) 600 mm uniformly graded, blasted and fed in general but occasional pieces bigger than this dimension cannot be ruled out.
3. The Crusher will be operated continuously and therefore, provision for running and preventive maintenance should be incorporated in such a way that it can be performed with minimum downtime.
4. The Crusher is required to be operated in high dusty atmosphere and for this, necessary design measures should be taken especially for electrical, lubrication and hydraulic installations.
5. Necessary automatic protection should be incorporated in the crusher to allow passage of uncrushable (i.e. iron block, timbers & any other uncrushable debris).
6. The Crushing plant should be suitable for operation in ambient temperature ranging from 10^0 C to 48^0 C and varying humidity.

OPERATIONAL CHARACTERISTICS

Type: Hopper with fixed Grizzly (600mm x 600mm), Rock Breaker, Apron Feeder, Double Roll Crusher, Conveyors.
Capacity: 400 TPH (rated); 500 TPH (designed)
Feed Size: 0 – 600 mm (oversize to be restricted by fixed Grizzly and should be broken by Rock Breaker)
Final Product Size: (-) 100 mm in all three dimensions.

SYSTEM DESCRIPTION:

The crushing plant should be comprised of steel Hopper with minimum 50 cum capacity mounted above heavy duty Apron Feeder. A fixed Grizzly (600 mm x 600 mm) to be installed on hopper to restrict any oversize. A Rock Breaker with suitable breaking capacity must be installed for breaking oversize lumps. The dumpers / tippers shall feed the coal to the hopper through a ramp. The Apron feeder shall extract the material from hopper and feed it to a Double Roll Crusher. The coal crusher shall crush down the material from (-) 600 mm to (-) 100 mm. The product from the crusher shall then be discharged by a set of conveyors for suitable stockpiling. The complete set-up comprising of the Hopper with grizzly, Apron Feeder, Roll Crusher and conveyors to be mounted in skid structure for minimizing civil work and easy dismantling and shifting of plant whenever required.

CONSTRUCTIONAL FEATURES REQUIREMENT:

In general the crushing plant shall have the following features:-

Hopper with fixed Grizzly:
The hopper shall be constructed with structural steel, suitable liners and fixed Grizzly (600mm x 600mm) to restrict any oversize.
Suitable arrangement for dust suppression by water to be provided on the hopper in order to reduce dust emission

Rock Breaker:
A suitable Rock Breakers shall be provided for breaking of the oversize lumps of coal / material retained on the grizzly installed on the hopper.

Apron Feeder with Scrapper Conveyor:
Apron Feeders shall be with inboard Roller designs / similar to undercarriage and suitable to absorb Impact loads by pans of rolled alloy/cast alloy/manganese steel material and are similar to heavy-duty track-type undercarriage shoes. A scrapper conveyor to be incorporated along with the apron feeder to collect all fines and discharge it to the belt conveyor.

Roll Crusher:
The Roll Crusher shall be two roll type with one fixed roll and another floating with automatic tramp relief mechanism.

Automatic Gap Adjustment and Tramp Relief:
One Crusher roll assembly shall be floating type and shall be independently adjustable to produce the required product size. The adjustment mechanism shall be arranged centrally and form one unit with the overload protection device with an automatic hydro-pneumatic system.

The parallel movement of the rolls must be ensured for the uniform gap to be maintained throughout the crushing operation and to prevent skew loading of the bearing and shaft. The adjustment shall ensure shifting of rolls parallel to the axis if foreign material enters the crushers.

Belt Conveyor:
Belt conveyor with suitable belt width to discharge the crushed coal from the crusher and make suitable stockpile as per the requirement.

Dust emission control measure: The feed hopper should be fitted with hessian cloth / brattice cloth / appropriate material in three sides keeping feeding side open with top either conical or fully covered up to certain suitable height to allow a tipper to feed coal freely into hopper along with adequate water spraying arrangement from top and adjacent sides.

PRICE VARIATION FORMULA ON ACCOUNT OF DIESEL / WAGES / OTHER COMPONENTS:

(i) PRICE VARIATION FORMULA ON ACCOUNT OF **DIESEL**:

Price Variation compensation/recovery on account of Diesel (in Rs / Cu.M for OB / Sand & Rs /MT for Coal) = R0 X a X (D1 – D0) / D0

Where,
R0: Base Rate (in Rs / Cu.M for OB / Sand & Rs /MT for Coal)
a: Constant
D1: Current price of Diesel Component.
D0: Base price of Diesel Component.

(ii) PRICE VARIATION FORMULA ON ACCOUNT OF **WAGES**:

Price Variation compensation/recovery on account of Wages (in Rs / Cu.M for OB & Rs /MT for Coal) = R0 X b X (W1 – W0) / W0

Where,
R0: Base Rate (in Rs / Cu.M for OB / Sand & Rs /MT for Coal)
b : Constant
W1: Rate of Wages including VDA per day of unskilled worker as per HPC Recommendations, for the period to which price variation relates, as published by CIL

W0: Base Rate of Wages including VDA per day of unskilled worker as per HPC Recommendations, published by CIL.

(iii) PRICE VARIATION FORMULA ON ACCOUNT OF **OTHER COMPONENTS**:

Similarly Price Variation compensation/recovery on account of other components (in Rs / Cu.M for OB & Rs/MT for Coal) = R0 X c X (M1 – M0) / M0

Where,
R0: Base Rate (in Rs / Cu.M for OB / Sand & Rs /MT for Coal)
c : Constant
M1: Average All India Whole sale Price Index for all commodities, WPI for the period to which price variation relates as published by RBI bulletin, Ministry of Commerce & Industry, Govt. of India.

M0: Base All India Whole sale Price Index for all commodities, WPI as published by RBI bulletin, Ministry of Commerce & Industry, Govt. of India.

Value of constant a, b, c, considered in PRICE VARIATION FORMULA ON ACCOUNT OF DIESEL, WAGES, OTHER COMPONENTS respectively are as under:

Table- I: For Face to Surface Coal Transportation by 10 wheeler tippers

Lead	a	b	c
0.5	23.90	37.03	10.04
1.5	36.76	26.26	13.96
2.5	41.52	21.29	16.83
3.5	42.04	19.44	19.17
4.5	44.91	17.11	19.83
5.5	47.31	15.38	20.14
6.5	48.15	14.53	20.59
7.5	49.49	13.68	20.58
8.5	50.99	12.91	20.25
9.5	52.25	12.24	19.99

Table – II: For Surface to Surface Coal Transportation

Lead	a	b	c	Lead	a	b	c
0.5	25.23	35.50	8.93	**35.5**	39.76	18.84	21.01
1.5	35.72	26.46	12.93	**36.5**	39.83	18.81	20.98
2.5	38.20	22.87	16.13	**37.5**	39.88	18.79	20.96
3.5	37.24	22.25	18.09	**38.5**	40.11	18.86	20.62
4.5	36.59	21.93	19.24	**39.5**	40.14	18.85	20.61
5.5	36.51	21.39	20.16	**40.5**	40.18	18.83	20.60
6.5	37.20	20.94	20.19	**41.5**	40.24	18.81	20.57
7.5	37.65	20.43	20.58	**42.5**	40.10	18.71	20.86
8.5	38.29	20.02	20.59	**43.5**	40.12	18.70	20.86
9.5	38.80	19.66	20.65	**44.5**	40.33	18.78	20.53
10.5	35.93	20.57	22.05	**45.5**	40.40	18.75	20.50
11.5	36.23	20.30	22.20	**46.5**	40.40	18.75	20.51
12.5	36.63	20.15	22.04	**47.5**	40.42	18.74	20.50
13.5	36.81	19.93	22.22	**48.5**	40.66	18.80	20.16
14.5	37.12	19.80	22.09	**49.5**	40.53	18.70	20.46
15.5	37.39	19.71	21.99	**50.5**	40.55	18.70	20.45
16.5	37.63	19.62	21.88	**51.5**	40.56	18.69	20.44
17.5	37.68	19.45	22.10	**52.5**	40.60	18.68	20.42
18.5	38.05	19.46	21.71	**53.5**	40.82	18.75	20.10
19.5	38.23	19.40	21.63	**54.5**	40.83	18.74	20.09
20.5	38.37	19.35	21.58	**55.5**	40.83	18.74	20.09
21.5	38.55	19.29	21.51	**56.5**	40.88	18.72	20.07
22.5	38.68	19.23	21.45	**57.5**	40.91	18.71	20.06
23.5	38.79	19.19	21.41	**58.5**	40.93	18.70	20.05
24.5	38.91	19.15	21.36	**59.5**	40.94	18.70	20.05
25.5	39.01	19.11	21.31	**60.5**	40.94	18.70	20.05
26.5	39.12	19.07	21.27	**61.5**	40.99	18.68	20.03
27.5	39.22	19.04	21.23	**62.5**	40.96	18.70	20.04
28.5	39.31	19.00	21.19	**63.5**	41.17	18.77	19.71
29.5	39.37	18.98	21.17	**64.5**	41.18	18.76	19.71
30.5	39.46	18.95	21.13	**65.5**	41.26	18.73	19.68
31.5	39.53	18.92	21.10	**66.5**	41.25	18.74	19.68
32.5	39.60	18.90	21.08	**67.5**	41.42	18.83	19.37
33.5	39.66	18.87	21.05	**68.5**	41.28	18.72	19.67
34.5	39.73	18.85	21.02	**69.5**	41.32	18.71	19.65

Table-III For Face to Surface OB Transportation

Lead	a	b	c
0.5	30.55	21.78	8.70
1.5	37.87	17.13	12.68
2.5	40.08	15.33	14.86
3.5	41.15	14.56	15.69
4.5	42.14	13.77	16.57
5.5	43.31	12.92	17.38
6.5	44.43	12.34	17.61
7.5	45.10	11.83	18.15

Table – IV For Loading of Coal by Payloaders

Position	a	b	c
Loading of Coal	48.66	13.37	8.66
Wagon Loading Site	27.63	21.87	7.87

Table – V For Excavators: Excavation of Coal and OB

Position	a	b	c
OB	45.46	6.02	3.16
Coal	42.70	6.37	3.31

Table – VI For Surface Miner: Mining of Coal

Position	a	b	c
Coal	51.07	8.75	0.00

Table – VII For Chain Drill

Position	a	b	c
OB	43.70	8.18	0.00
Coal	45.52	7.82	0.00

Table – VIII For Excavator: Loading of Coal into tippers by excavators

Position	a	b	c
Coal	42.70	6.37	3.31

Table – IX For Dozer / Grader / Water Sprinkler

OB				**Coal**			
Equipment	**a**	**b**	**c**	**Equipment**	**a**	**b**	**c**
Dozer	43.21	3.21	0.00	Dozer	43.01	3.29	0.00
Grader	20.19	21.15	2.40	Grader	20.28	20.979	2.0979
Water Sprinkler	32.84	13.73	15.52	Water Sprinkler	33.04	13.91	15.65

Table – X For Electric Crusher

Position	a	b	c
Crusher	0.00	18.41	0.00

Table – XI For Electric Pump

Position	a	b	c
Pump	0.00	75.00	0.00

Table – XII For Sand (Dry Season) Transportation

Lead	a	b	c	**Lead**	a	b	c
0.5	30.32	31.82	6.15	**20.5**	37.95	24.83	10.44
1.5	37.20	27.12	7.29	**21.5**	37.97	24.83	10.43
2.5	39.88	25.12	8.03	**22.5**	38.02	24.80	10.42
3.5	39.97	24.78	8.53	**23.5**	38.05	24.78	10.42
4.5	39.62	24.64	9.11	**24.5**	38.08	24.77	10.41
5.5	40.54	24.19	8.95	**25.5**	38.10	24.76	10.41
6.5	40.30	24.02	9.48	**26.5**	38.13	24.75	10.40
7.5	40.00	24.16	9.54	**27.5**	38.17	24.73	10.39
8.5	40.32	24.00	9.48	**28.5**	38.17	24.73	10.39
9.5	39.77	23.98	10.07	**29.5**	38.18	24.73	10.39
10.5	39.83	23.95	10.07	**30.5**	38.22	24.70	10.38
11.5	39.79	23.97	10.08	**31.5**	38.22	24.70	10.38
12.5	39.68	24.02	10.10	**32.5**	38.26	24.69	10.37
13.5	39.49	24.11	10.13	**33.5**	38.26	24.69	10.38
14.5	39.28	24.21	10.18	**34.5**	38.31	24.66	10.36
15.5	38.98	24.35	10.23	**35.5**	38.59	24.83	9.81
16.5	38.68	24.49	10.29	**36.5**	38.58	24.83	9.81
17.5	38.62	24.52	10.30	**37.5**	38.62	24.81	9.80
18.5	37.97	24.82	10.43	**38.5**	38.63	24.81	9.80
19.5	38.13	24.75	10.40	**39.5**	38.62	24.81	9.80

Table – XIII For Sand (Wet Season) Transportation

Lead	a	b	c	Lead	a	b	c
0.5	23.56	35.37	6.83	**20.5**	36.56	25.79	10.18
1.5	30.54	30.87	7.51	**21.5**	36.62	25.76	10.18
2.5	33.81	28.47	8.37	**22.5**	36.72	25.71	10.16
3.5	34.72	27.66	8.83	**23.5**	36.82	25.67	10.14
4.5	35.31	27.38	8.74	**24.5**	36.91	25.62	10.12
5.5	36.45	26.48	9.12	**25.5**	37.02	25.57	10.10
6.5	36.91	26.25	9.05	**26.5**	37.06	25.55	10.09
7.5	36.68	26.04	9.63	**27.5**	37.13	25.52	10.08
8.5	37.28	25.76	9.52	**28.5**	37.23	25.47	10.06
9.5	37.25	25.77	9.53	**29.5**	37.27	25.45	10.05
10.5	37.52	25.64	9.48	**30.5**	37.28	25.45	10.05
11.5	37.38	25.40	10.03	**31.5**	37.40	25.39	10.03
12.5	37.42	25.38	10.03	**32.5**	37.41	25.39	10.03
13.5	37.39	25.39	10.03	**33.5**	37.46	25.36	10.02
14.5	37.32	25.43	10.04	**34.5**	37.48	25.35	10.01
15.5	37.16	25.50	10.07	**35.5**	37.55	25.32	10.00
16.5	36.98	25.59	10.11	**36.5**	37.60	25.30	9.99
17.5	36.97	25.60	10.11	**37.5**	37.62	25.29	9.99
18.5	36.44	25.85	10.21	**38.5**	37.70	25.25	9.97
19.5	36.66	25.74	10.17	**39.5**	37.67	25.26	9.98

Table – XIV For Surface to Surface Coal Transportation **6 Wheelers** Tipper

Lead	a	b	c
0.5	14.71	39.96	6.51
1.5	21.22	35.49	7.80
2.5	24.94	32.93	8.58
3.5	28.05	31.09	8.66
4.5	31.25	29.20	8.74
5.5	33.70	27.80	8.75
6.5	35.65	26.70	8.68
7.5	37.26	25.83	8.61
8.5	39.07	24.83	8.54
9.5	40.32	24.17	8.43

Table XV For Surface to Surface Coal Transportation **10 Wheelers** Tipper

Lead	a	b	c
0.5	18.47	31.78	6.46
1.5	28.43	26.02	8.50
2.5	32.47	23.24	10.16
3.5	32.05	23.03	11.07
4.5	32.71	22.34	11.80
5.5	33.81	21.63	12.20
6.5	35.23	20.89	12.30
7.5	36.53	20.26	12.34
8.5	38.24	19.44	12.32
9.5	39.44	18.91	12.21

Table – XVI For Coring & Non Coring bore holes

Position	a	b	c
Coring & Non Coring bore holes	3.21	23.70	0.89

Table – XVII For Coring & Non Coring bore holes (UG)

Position	a	b	c
Coring & Non Coring bore holes	0.0	23.70	0.0

Note: For combo coal transportation, the values of a, b & c may be referred from the same table as of Surface to Surface coal transportation.