CHAPTER-XI
COAL HANDLING & DESPATCH ARRANGEMENTS

11.1 INTRODUCTION

The total production of Pundi OCP has been the proposed as 3.0 MTY. Coal from this mine will be transported despatched through conveyors after crushing of ROM coal to (-) 200 mm in the proposed CHP. The ROM coal shall be crushed down to (-) 200 mm size before it is despatched to near by proposed washery.

Coal Handling Plant has been designed to handle 3.0 Mt. of coal per annum. Sufficient storage has been provided in the coal handling system to meet the eventualities of disrupted coal production in the mine or delay in conveying.

The coal handling plant shall have facilities for receiving coal from rear discharge dumpers, crushing of coal in single stage to (-) 200 mm size, conveying, storing, reclamation and conveying through belt conveyors to nearby proposed washery. The coal handling plant has also been provided with suitable repair, communication and other auxiliary facilities to meet the day to day requirement in the plant operation.

11.2 DESIGN PARAMETERS

11.2.1 BASIC DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Considered data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production capacity in MTY</td>
<td>2.50 / 3.00</td>
</tr>
<tr>
<td>No. of working days / annum</td>
<td>330</td>
</tr>
<tr>
<td>No. of working shifts / day</td>
<td>3</td>
</tr>
<tr>
<td>Duration of each shift (hours)</td>
<td>8</td>
</tr>
<tr>
<td>Effective working hours/day</td>
<td>15</td>
</tr>
<tr>
<td>Feed size of R.O.M coal in mm</td>
<td>1200</td>
</tr>
<tr>
<td>Product size of coal in mm</td>
<td>(-) 200</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Loading /despatch hours</td>
<td>Round the clock.</td>
</tr>
<tr>
<td>Average Grade of coal</td>
<td>Washery grade (IV)</td>
</tr>
<tr>
<td>Consumer</td>
<td>Proposed Washery</td>
</tr>
<tr>
<td>Mode of Despatch</td>
<td>By belt conveyors</td>
</tr>
</tbody>
</table>

11.2.2 **CHP WORKING SCHEDULE**

Crushing, storage and loading will be done in three shifts per day and seven days a week.

11.2.3 **SYSTEM CAPACITY**

The handling capacity of the CHP has been decided to match with the production capacity of the mine. In order to meet the fluctuations of coal output from the mine due to irregularities of despatch / transport system and seasonal fluctuations, the design capacity of the each circuit of CHP has been fixed as 1000 tph.

11.2.4 **SALIENT FEATURES**

The proposed CHP consists of the following units:

- Receiving pit (for two nos. of Sizers)
  - One nos. twin shaft sizers (Primary) of 1000 TPH nominal capacity at receiving pit to crush coal to -200 mm size.
  - Apron feeders to feed coal into primary sizer.
  - Self flowing storage bunker of 10,000 te capacity.
  - One set of conveyor system of 1400 mm wide and 1000 tph from each receiving pit to transfer house / hoppers.
  - One number of Tripper conveyors of 1400 mm wide and 1000 tonnes per hour capacity.
  - Reclamation of coal from the bunker by plough feeder with one no. as stand by.
  - One number of reclaim and one set of despatch conveyors of 1400 mm width and 1000 tonnes per hour capacity each.
• One numbers of magnetic separator.
• One numbers of metal detector.
• One numbers of belt weighers to weigh crushed coal.
• Miscellaneous facilities like dust control system, fire fighting and ventilation system. Plant cleaning and Infrastructure for preventive maintenance are also envisaged.
• Necessary Electrical, interlocking, signalling and communication facilities.

11.2.5 SYSTEM DESCRIPTION

ROM coal of (-) 1200 mm size transported in 60 te rear discharge dumpers will be fed into receiving pit hoppers. The coal from the receiving pit hoppers will be fed into the Primary sizers by apron feeder provided below the receiving hopper. Crushed coal (-) 200 mm will be transported by 1400 mm wide belt conveyor (C 1) and discharged into transfer hopper which will be collected by conveyor(C2 ) of 1400 mm wide. Coal from conveyor C2 will be collected by tripper conveyor (C3) and spread over the self flowing ground bunker (10,000 tonne). Coal will be reclaimed from bunker by plough feeder and collected by reclaim conveyor (C4). Reclaim conveyor (C4) will discharge coal to a transfer point. It has been proposed that this coal will be collected by a conveyor which will finally discharge coal to the proposed washery.

11.2.6 PLANT DESCRIPTION

11.2.6.1 Receiving Pit and Crusher Complex

The Run-Off-Mine coal from the open cast Project shall be received into receiving pit by means of rear discharge dumpers. Receiving pit has been provided with sufficient capacity hoppers. The ROM coal will be unloaded into the receiving hoppers of primary sizers. The
coal will be reclaimed by apron feeder and fed to primary sizers for crushing to specified size of (-) 200 mm. Crushed coal of (-) 200 mm will be collected by the conveyor (C1) of 1400 mm wide and 1000 tph, installed underneath the primary sizers and to carry up to discharge into conveyor (C2) of 1400 mm wide. Coal from conveyor C2 will be collected by tripper conveyor (C3) and spread over the self flowing ground bunker (10,000 tonne).

11.2.6.2 Storage Bunker and Reclamation system

Storage facility of 10,000 te capacity above ground bunker has been provided meet the requirement of fluctuation of coal production and despatch. The bunker shall be constructed of pre-cast concrete slabs sloping at 55 deg. to the horizontal with single slit type opening for plough feeder. Below the slits opening reclaim conveyors are provided to collect coal from the feeder. The peak capacity of the reclaim conveyor and plough feeder shall be of 1000 tonnes per hour. Reclaim conveyor (C4) from bunker will discharge coal into the despatch conveyor. Coal from conveyor C4 will be received by conveyor (washery) which will finally discharge coal in the proposed washery

11.2.6.3 Load out system

Coal will be despatched to nearby proposed washery through series of conveyors as described above. Further transport is by rail through adjoining Pundi Railway Siding.

11.2.6.4 Dust Control System

The Dust control system envisages both dust extraction as well as dust suppression system.

Dust Extraction system
The objective of the system is to extract coal dust from various dust generating points, clean the dust laden air by trapping coal particles and finally discharge clean air into the atmosphere so that dust concentration in the CHP premises, even under the critical / worst operating condition.

The dust extraction system envisaged is of wet type. This will include net-work of suction hoods and ducting connected to a wet wall cyclone for separating dust from the air stream. Air outlet of cyclone collectors will be connected so as to discharge clean air to atmosphere. Collected dust from the cyclone collector shall be disposed off suitably. The wet type extractor is preferred because of its high efficiency and elimination of risks of secondary dusting problem and coal dust explosion.

11.2.6.5 Dust Suppression System
The objective of this system is to eliminate the air born coal dust or suppress the dust at its source. The system involves confinement of the dust within the dust producing area by a curtain of moisture and wetting the coal dust by direct contact between the particles and droplet of water. Adequate number of precision anti-clog nozzles will be installed at suitable locations for suppressing dust by spraying water mixed with suppressant. Suitable control for dust suppression shall be provided and the system shall be so inter-locked that it functions only when the conveyor system is operating or the loading operation is on.

11.2.6.6 Noise Control
Noise pollution causes fatigue to operating personals. Provision will therefore be made to keep down the noise level to the extent possible. All machine mountings will have in their foundations anti-
vibration pads/sheets for reducing the vibration and thereby noise. All transfer chutes and hoppers, silo shall have wear resistant rubber or ultra high molecular weight plastic liners of various thickness as per design requirement and their suitability.

11.2.6.7 **Fire Fighting System**

Necessary fire fighting system has also envisaged for the plant, which includes fire hydrant tees at strategic locations at equal spacing of 25 to 35 meters with suitable water supply pipe lines. Also portable type fire extinguishers to deal with electrical / oil /ordinary fires shall be provided at all strategic locations in the plant.

11.2.6.8 **Plant cleaning system**

To facilitate cleaning at strategic locations ample number of high pressure water servicing points have been envisaged. These service points will be so located that with a 15/20 m long hose any working area in the plant or equipment working place can be reached. These service points will be provided with quick connecting hose couplings for easy fixing and dismantling of hoses. To handle discharge from plant effluent and washing of the plant area, sump pumps of suitable design and capacities have also been envisaged where required. Plant effluent shall be discharged through open drain/pipe.

11.2.6.9 **Plant Preventive Maintenance**

For effective maintenance of all the equipment, there will be sufficient working space around the equipment/machinery. All the equipment and conveyor discharge drums/transfer points, etc shall have covered and well ventilated housing complete with access stair ways, hand rails, platforms, cross-over ladders, etc as required.
Necessary mono-rails electric hoists and chain pulley blocks at suitable points of adequate capacity will also be provided on respective floors.

11.2.6.10 **Weighment**

For the purpose of weighment of coal handling and dispatched in the CHP, one belt weigher has been provided in circuit of the CHP conveyor.

11.3 **ELECTRICALS**

The electrical system shall comprise:

- Power reception and distribution system
- Centralized sequence control–cum–interlocking, automation, signaling and instrumentation system
- Illumination of plant and adjacent area
- Centralized welding circuit
- Earthing

11.4 **CAPITAL INVESTMENT REQUIREMENT**

The details of cost estimate for capital requirement of CHP have been shown in Appendix – A.3.5.0

11.5 **DRAWINGS**

A tentative key plan of the proposed coal handling Plant has been given in the drawing no. R3/Mech/002509.

11.6 **RAILWAY SIDING**

The coal produced from this mine has been proposed to be fed to proposed pit top Washery of 3.00MTY. The conceptual note for the proposed washery has been enclosed in the present Project Report as a separate chapter (Chapter XXII).