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RITES LTD.
(A Govt. of India Enterprise)
Ministry of Railways

No. RITES/RPO/KOL/CCL/Amrapali Survey/2015/256
Dated 9th June 2015

GM (C)/IC/2015/267
12.06.2015

General Manager (Civil)
Central Coalfields Limited
Darbhanga House
Ranchi – 834 029

Dear Sir,

Sub: Revised Detailed Project Report for provision of rail infrastructure facilities to serve Amrapali OCP of CCL

Ref: 1. Work Order No GM (C)/IC/09/M&A/789-95 dated 09.12.2009

2. Chief Manager (Civil)/IC, CCL's letter No. GM (C)/IC/2015/124 dated 14.05.2015

In terms of the LOA issued under letter quoted above (1), a FSR for route alignment survey for the Amrapali OCP siding was submitted in March 2013 and the same was approved "in-principle" in June 2013.

Accordingly, a DPR for the project was submitted in May 2014 and Dy.COM/Plg, E.C. Railway, Hajipur vide his letter No.ECR/OPT/Pvt Sdg/ACB/505 dated 18.12.2014 has sought for compliance of some observations.

Consequently, a revised plan was developed on the basis of finalised plan for the upcoming Tori-Shivpur section and on submission of the compliance along with revised layout plan in March 2015 approval of the project was received from CFTM, E.C. Railway, Hajipur vide his letter No ECR/OPT/Pvt.Sdg/ACB/505 dated 23.03.2015 further directing to submit Detailed DPR with incorporation of compliances all relevant observations. Accordingly, the Revised DPR is being furnished.

The proposed siding, as per revised plan, will now take off from Manoharganj station by converting the station as block station. The alignment for the loading terminal will be constructed in the form of loop with 2 SILOs having 2 discharge chutes each and 4 sets of pre & post loading lines. One stone siding with full rake unloading platform has been proposed as desired. The tentative future works have also been shown in the plan.

The entire siding is proposed for electrification with 25 KV AC traction and one panel cabin will be provided at the loading yard for safe and easy train operation. Cost of the work duly updated as per revised plan and on the basis of present day cost of men and materials has been detailed in the report.

5(five) copies of the report is enclosed for your perusal please.

Thanking you,

Yours faithfully

(A. Roy)
Expert/Traffic

Encl: as above

Copy to: CTPM, E.C. Railway, Hajipur along with 5 copies of the report in reference to CFTM, E.C. Railway, Hajipur's letter quoted above.

Encl. 6 copies of the Report

Copy to: Divisional Railway Manager, E.C. Railway, Dhanbad along with 6 copies of the Report for information please. He is requested to kindly distribute one copy of the report to each of the concerned department for their perusal please.

Encl: 6 copies of the Report

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REGIONAL PROJECT OFFICE, KOLKATA, METRO RAILWAY SERVICE BUILDING (2ND FLOOR), 56, C.R. AVENUE, KOLKATA-700 012
CORPORATE OFFICE : RITES BHAWAN, NO. 1, SECTOR -29, GURGAON - 122001(INDIA)
TELEPHONE : 0124-2571660, FAX : 0124-2571663
Website : www.rites.com

CENTRAL COALFIELDS LIMITED

[A subsidiary of Coal India Limited]

REVISED
DETAILED PROJECT REPORT
FOR PROVISION OF
RAIL-INFRASTRUCTURE
FOR
THE PROPOSED
AMRAPALI OPEN CAST PROJECT
ON
EAST CENTRAL RAILWAY

MAY 2015

RITES
(A GOVERNMENT OF INDIA ENTERPRISE)
REGIONAL PROJECT OFFICE, KOLKATA,
56, C.R. AVENUE (2ND FLOOR),
KOLKATA – 700012

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THE INFRASTRUCTURE PEOPLE
AN ISO 9001 COMPANY

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(भारत सरकार का प्रतिष्ठान)
रेलवे मंत्रालय
RITES LTD.
(A Govt. of India Enterprise)
Ministry of Railways

No. RITES/RPO-KOL/CCL/Amrapali Survey/2015/
Dated 29th May, 2015

General Manager (Civil)
Central Coalfields Limited
Darbhanga House
Ranchi – 834 029

Dear Sir,

Sub: Revised Detailed Project Report for provision of rail-infrastructure facilities to serve Amrapali OCP of CCL

Ref: 1. Work Order No. GM (C)/IC/09/M&A/789-95 dated 09.12.2009

2. CPTM, E.C. Railway, Hajipur's letter No. ECR/OPT/Pvt.Sdg/ACB/505 dated 11.06.2013

3. Dy.COM, Plg, E.C. Railway, Hajipur's letter No. ECR/OPT/Pvt/Sdg/ACB /505 dated 18.12.2014

4. CFTM, E.C. Railway, Hajipur's letter No.ECR/OPT/Pvt.Sdg/ACB/505 dated 23.03.2015

We are pleased to submit the "Revised Detailed Project Report" for provision of rail-infrastructure to serve Amrapali OCP within CCL command area. On being deputed vide your letter under reference (1) for the consultancy services for the work, FSR for the project was submitted in March 2013 and 'In principle' approval for the same was received vide letter quoted above (2).

In compliances of the requisite conditions, a DPR for the project was submitted in May 2014 to obtain approval and on examination of the report, Dy. COM/Plg, E.C. Railway vide letter referred as (3) above has asked for compliances of the departmental observations.

Consequently , a revised plan was developed on the basis of finalised plan for the upcoming Tori-Shivpur section and on submission of the compliances along with revised Plan to CTPM, E.C. Railway in March 2015, approval for the project was received vide letter under reference (4) from CFTM, E.C. Railway, Hajipur directing to submit Revised Detailed Project Report with incorporation of comptances of all relevant observations. Accordingly, the Revised DPR is being furnished.

The proposed siding will take off from Manatu station by converting the station as block station. The alignment for the loading terminal will be constructed in the form of bulb with provision of 2 SILOs, having 2 discharge chutes each on the loading yard provided with 4 sets of Pre/Post Loading lines. Provision for one additional line accompanying with unloading platform for dealing of inward store materials has also been kept, as desired. The tentative future works have also been shown in the plan.

- The entire siding is proposed for electrification and one panel cabin will be provided at the in-plant yard for easy and safe train movement.

The cost of the project has been updated in accordance with latest cost of men & materials and the same is detailed in the report.

Thanking you,

Yours faithfully,

(Pallab Pal)
Group General Manager (P)

क्षेत्रीय परियोजना कार्यालय, कोलकाता, मेट्रो रेलवे सार्विस बिल्डिंग (द्वितीय तल), 56, सी. आर. एवेन्यू, कोलकाता- 700 012
REGIONAL PROJECT OFFICE, KOLKATA, METRO RAILWAY SERVICE BUILDING (2ND FLOOR), 56, C. R. AVENUE, KOLKATA- 700 012
दूरभाष/TELEPHONE (033) 2236 7116/7146/7162, 2236 3954, 2225 1766/1767/1179, 2237 9318, 2234 7705, फैक्स/FAX:(033) 2236 7141, ई-मेल/E-mail:pokolkata@rites.com
मुख्यालय : राइट्स भवन, सं 1, सेक्टर-29, गुड़गांव- 122001 (भारत)
CORPORATE OFFICE : RITES BHAWAN, NO. 1, SECTOR -29, GURGAON - 122001(INDIA)
दूरभाष / TELEPHONE - 0124-2571660, फैक्स / FAX : 0124- 2571660
Website : www.rites.com

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CHAPTER – I

INTRODUCTION, CONCEPT OF THE STUDY AND TRAFFIC FACILITIES

Introduction, concept of study and traffic facilities

1.0 Introduction

1.0.1 Among the 8 subsidiaries of Coal India Limited (CIL), Central Coalfields Limited (CCL), formerly known as National Coal Development Corporation (NCDC) Limited is a Category-I Mini-Ratna Company. During 2013-14, coal production of the company reached its highest-ever figure of 50.022 MT (UG- 0.956 MT, OC- 49.066 MT).

1.0.2 NCDC started with a nucleus of 11 old State collieries (owned by the Railways) having a total annual coal production of 2.9 MT. With gradual rise in the demand of coal due to commissioning of new Power Plants and development of other coal-based industries, production of NCDC increased matching the requirement.

1.0.3 In the 2nd phase of nationalization, another state-owned company, Coal Mines Authority Limited (CMAL) came into being with headquarters at Kolkata to manage and develop NCDC collieries and other newly nationalized units. NCDC itself, in this process, became a division of CMAL which owned 36 collieries under commercial production in Bihar, Orissa, Madhya Pradesh and Maharashtra, besides 4 coal washeries, 1 by-product coke oven plant, 2big central workshops.

1.0.4 Formation of CMAL witnessed regrouping of the coal mines into three divisions, namely, Western, Central and Easterndone according to geographical location of the collieries.The CMAL, with its three divisions continued up to 1st November 1975 when it was renamed as Coal India Limited (CIL) following the decision of Government of India to restructure the coal industry. The Central Division of CMAL came to be known as Central Coalfields Limited (CCL) and became a separate company with the status of a subsidiary of CIL.

1.0.5 Presently CCL is managed by 12 administrative areas with 58 operative mines, out of which 21 are underground and 37 opencast. Among the 7 washeries, 4 (Kathara, Rajrappa, Kedla & Sawang) are for coking coal and 3 (Piparwar, Kargali&Gidi) are for non-coking coal. East Bokaro, West Bokaro, North Karanpura, South Karanpura, Ramgarh&Giridih are the 6 coalfields under CCL.

1.0.6 The main strength of CCL, so far as coal production is concerned, is its large opencast mines with mechanized coal production, mostly through shovel-dumper combination. The main OCP mines producing more than 2 MTPA are: (1) Piparwar, (2) Ashok, (3) K. D. Hesalong, (4) Amlo, (5) Kalyani and (6) Tarmi. An Index Plan showing the

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different coal blocks and proposed route alignment on Topo sheet is shown as Annex-1.0.

1.0.7 Presently CCL has 26 Railway sidings from where coal is despatched to various customers located all over India. The total command area of about 2600 sq. kms. spreading over 6 major coalfields, fallentirely within the mineral rich State of Jharkhand in Eastern India. Out of the vast resources,only a small corner of these coalfields have yet been exploited, the majority of the planned mining blocks are as yet untouched.

1.0.8 CCL has envisaged commissioning of a number of Greenfield and expansion projects, both opencast and underground, during XIth Plan with state-of-the-art technologies. The project wise peak capacity, as targeted by CCL is shown below in Table-I:

Table-I

Sl. No.	Name of the Project	Targeted peak capacity
1.	Magadh OCP	20.00 MTPA
2.	Amrapali OCP	12.00 MTPA
3.	Karo OCP	03.50 MTPA
4.	Konar OCP	03.50 MTPA
5.	North Urimari OCP	03.00 MTPA
6.	ChuriBenti UGP	00.81 MTPA
7.	Parej East UGP	00.51 MTPA
8.	Pachra OCP	20.00 MTPA

1.1 Projected traffic & coal linkage

1.1.1 Amrapali Opencast Project in North Karanpura Coalfield has been identified for supplying coal to Barh Super Thermal Power Station (3 x 660 MW) of NTPC Limited and other end-users. CCL intends development & operation of Amrapali Open Cast mine with ultimate coal production capacity of 12.0 MTPA. Primarily, 4.50 MTPA of coal traffic from Amrapali block has been linked to NTPC's Barh Thermal Power Plant which is under process of commissioning near Barh station on Kiul-Patna section of East Central Railway.

1.1.2 At present there is no rail-head to connect these OCPs. Lack of rail connectivity is affecting the evacuation from CCL's existing mines in the area and delayed development of at least two large Open Cast Projects, e.g.,Magadh (20 MTPA) and Amrapali (12 MTPA) - both linked to NTPC's proposed power plants at Tandwa (1,980 MW) in Jharkhand and Barh-I (1,980 MW) in Bihar.

1.1.3 Two Upcoming rail link projects, e.g. (i) Koderma - Hazaribagh - Barkakana - Ranchi (189 kms.) and (ii) Hazaribagh - Shivpur - Tori (162.30 kms.) are under process of

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construction. While Railway has directly undertaken construction of the Koderma - Hazaribagh - Barkakana - Ranchi section as Railway project, the section Hazaribagh - Shivpur - Tori is under construction by Railways on 'deposit terms' at the cost of CCL. With the construction of Koderma - Tori section, proper excavation and despatch of coal from CCL's two mega mining projects, Magadh and Amrapali OCPs which are targeted to produce around 32 MTPA of coal, would be possible. Implementation of even the Tori-Shivpur segment would be a major boost to the company's production plan.

1.1.4 For the above movement of traffic CCL has not yet applied for formal 'Rail Transport Clearance' to the Railway. As per latest policy guidelines, Director, Transport Planning, Railway Board vide his letter No. 2001/TT-1/10/RTC/Review/14 dated 05.01.2015, 18.03.2015 and 27.03.2015 has advised that the practice of issuing Rail Transport Clearance (RTC)is discontinued herewith and there will be no requirement of RTC henceforth&Zonal Railway shall communicate necessary details regarding quantity &commodity wise OD flow. According to CCL, 4.50 MTPA of coal from the Amrapali OCP is linked to Barh Thermal Power Plant of NTPC. However, detail of OD flow for total 12.00 MTPA of coal traffic, which will be moved in future, is required to be submitted by the CCL to the East Central Railways

1.2 Concept of the study

1.2.1 CGM/Civil, CCL vide his letter No. CGM(C)/IC/09/M&A/162-66 dated 21.03.2009 had requested RITES, Kolkata Project office to submit 'offer' for the work of conducting route alignment survey for construction of Magadh and Amrapali sidings and to submit Detailed Project Reports separately for each siding. The scope of works, as envisaged there in are: (i) Survey for final route alignment of the two sidings along with L-section and cross section, (ii) Preparation of detailed survey report, (iii) Obtaining competent approval of final route alignment from Railway authorities, and (iv) Submission of cost estimate for the construction and commissioning of the said siding as per Railway approved final route alignment.

1.2.2 RITES, RPO, Kolkata vide its letter No. 12/P/Market/Vol-39/2009/2148 dated 27.04.2009 submitted an offer for undertaking the work envisaging the following 'scope of works' :-

(i) To identify the suitable Railway station on the proposed Tori-Shivpur-Hazaribagh line for planning of the Railway alignment to serve both the collieries;

(ii) Reconnaissance Survey of the area between the railway station and the coal

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blocks for route alignment survey with different alternatives for establishing the most technically feasible and economically viable alignment;

(iii) To identify the suitable location in the non-coal bearing area in association with the concerned officials of CCL for development of the loading terminal with most suitable alignment;

(iv) Preparation of a discussion plan with a brief report, showing the alignment, junction arrangement at a suitable station on the proposed new line and layout of the loading terminal for obtaining approval including comments/suggestion, if any from CCL;

(v) On receipt of the approval on the discussion plan preliminary engineering survey shall be carried out for the nominated alignment including junction arrangement and layout of the loading terminal;

(vi) To prepare Civil Engineering Plan for the alignment, junction arrangement etc. in scale 1:2500 horizontal and 1:500 vertical or any suitable scale applicable for preparation of the Layout Plan;

(vii) To prepare Signal & Telecommunication Plan at the junction station for smooth operation of trains between the junction station and the mine;

(viii) To evolve a system of working for operation of train services to and from the junction station and the loading terminal area;

(ix) Preparation of Overhead Electrical (OHE) arrangements for the new alignment and associate general electrical works to suit facilities for running of trains by electric traction;

(x) Preparation of tentative cost estimate for Civil, S&T and Electrical disciplines;

(xi) Preparation of Feasibility Study Report covering the scope of work as mentioned in item No. (v) to (x) for submission to CCL and East Central Railway for obtaining in principle approval;

(xii) On receipt of the in principle approval on the Feasibility Report both from CCL & Railways the final location survey shall be carried out for preparation of the necessary plans after compliance of the observations made on the Feasibility Report both by CCL and Railways;

(xiii) Preparation of abstract cost estimates for all the disciplines including Civil Engineering, Signalling & Telecommunication, Electrical Engineering works;

(xiv) Preparation of draft Detailed Project Report for submission to East Central Railway and CCL;

(xv) On receipt of approval from both Railways and CCL additional survey as may be required shall be carried out for compliances of the observations, if any, offered on the draft Detailed Project Report;

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(xvi) Preparation of Civil Engineering plans for the entire railway infrastructure as has been approved as per draft DPR in scale preferably in 1 : 2500 for the approved alignments;

(xvii) Preparation of all bridge drawings (GAD) of ROB & RUB if any on the proposed railway line, drawing for diversion/expansion of roads, major and minor bridges for inclusion in the Detailed Project Report;

(xviii) Preparation of cost estimate, schedule of quantities for the required railway infrastructure to serve the proposed coal blocks;

(xix) Preparation and submission of the Detailed Project Report to both CCL and Railways complying the observations given on draft Detailed Project Report.

1.2.3 After some interaction with CCL, a revised offer was submitted by RITES vide letter No. 12/P/Market/Vol-39/2009/4503 dated 28.08.2009with the same scope of works but modifying the remuneration part. CCL negotiated further and, finally, a LOI was issued by CCL vide CGM(C)'s letter No. GM(C)/IC/09/M&A/789-95 dated 09.12.2009. A copy of this letter is shown as Annex-1.1.

1.2.4 On receipt of the LOI, a reference was made to CGM (Civil), CCL vide RITES' letter No. 12/PCCL/Survey/Amrapali/09-10/359 dated 25.01.2010 asking details about (1) location of the takeoff point, (2) alignment of Tori-Shivpur-Hazaribagh line and (3) location of loading point and a meeting followed by site inspection was held on 28.01.2010. In the meeting, it was decided that the alignment plan of Tori – Shivpur-Hazaribagh section should have to be collected from the Dy. CE/CON(W), East Central Railway, Hazaribagh.

1.2.5 But nothing can be made available from the office of Dy. CE/CON, ECR as the proposed alignment was not then finalized by Railway for want of approval from MoEF. Another meeting was held on 11.03.2010 between the officials of CCL and RITES to discuss the progress of survey regarding the Magadh & Amrapali OCPs and it was noted that RITES have to wait for the details till finalization of the plans which is being delayed for want of MoEF clearance for the proposed Tori-Shivpur alignment.

1.2.6 Accordingly, based on the available information about the tentative layout of the proposed stations on up-coming Tori- Shivpur section, a Feasibility Study Report for the proposed rail infrastructure for Amrapali OCP was prepared by RITES and the same was submitted to both E.C. Railway and CCL vide letters No. RITES/RPO-KOL/Amrapali Survey/09/13/1895 & 1896 dated 18.03.2013 to obtain 'in-principle' approval from Railways.CGM (Civil)/IC, CCL vide his letter No. GM(IC)/M&A/2013/200

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dated 04.05.2013 has offered some comments on the FSR requesting to hold a discussion with CPMDI in respect of proposed system of working under the SILO. A copy of this letter is shown as Annex-1.2.

1.2.7 Meanwhile, CTPM, E.C. Railway, Hajipur vide his letter No. ECR/OPT/Pvt-Sdg/ACB/505 dated 11.06.2013 has communicated the 'In-principle' approval of the project subject to commissioning of Tori-Shivpur section and compliance of the following conditions:

(1) 1% of project cost should be deposited in the name of FA & CAO/ECR;

(2) Since take off cannot be provided in mid-section, so CCL has to develop a crossing station with two holding line at the location of takeoff point.

A copy of the CTPM, E. C. Railway's letter is shown as Annex-1.3.

1.2.8 On getting 'in-principle' approval of the FSR, a meeting was held in the chamber of CGM(P&P), CCL, Ranchi on 19.07.2013 in presence of the officials of CMPDI and RITES in which the observations made by Railway were examined. It was clarified in the meeting that provision of both the loading chutes of aSILO on the same track is not technically feasible when the train movement will be done by electric traction. As such, it hasbeen planned to provide the loading chutes of same SILO on the adjacent lines by which loading can be done on the adjacent line immediately after completion of loading on the other line but not simultaneously from both the chutes at a time due to limitation of storing capacity of the SILO. However, RITES were advised to process for preparation of the DPR for the Amrapali project.

1.2.9 Subsequently, GM(Civil), CCL, Ranchi during the meeting held on 30.12.2013 has handed over soft copies of the SILO locations for both Amrapali & Magadh Projects and taking into consideration of these documents, a detailed survey was conducted around the area to establish the most feasible and suitable layout of the coal loading yard as well as the junction arrangement from a suitable point on the upcoming Tori-Shivpur section.It may be pointed out that Final Location Survey was started w.e.f. 30.08.2013 but the progress had been delayed for Inclement weather and mainly due to strong resistance from Maoist group including local villagers on the plea of non-fulfillment of various demand placed to CCL by them. However, on completion of FLS, DPR for the proposed work was prepared and submitted to CCL as well as E. C. Railway vide RITES' letter No. RITES/RPO-KOL/Amrapali Survey/2013/2499 dated 01.05.2014 seeking approval from E. C. Railway.

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1.2.10 On examination of the above DPR, CTPM, E. C. Railway, Hajipur vide his letter No. ECR/OPT/Pvt.-Sdg./ACB/505 dated 28.07.2014 has advised to CE/CON/SE, E. C. Railway for finalization of the plans for the proposed sidings with an intimation to RITES for pursuing the issue. On the other hand Dy. COM/Planning, E. C. Railway, Hajipur vide his letter No. ECR/OPT/Pvt.-Sdg./ACB/505 dated 18.12.2014 has asked compliance on observations raised on the DPR by the concerned Department of Railway.

1.2.11 It may be mentioned that RITES had to wait for a long period to collect the copy of final layout plans and L-section drawings for the proposed stations on Tori - Shivpur section which were under process of finalization by Construction wing of E. C. Railway. As advised by CAO/Con, E. C. Railway, a 'Power Point' presentation on both Amrapali and Magadh OCPs were made before the concerned officials in the CAO/CON's office at Mahendrughat, Patna on 22.08.2014 to appraise the detailed of the CCL's projects. After the presentation, it was advised that RITES should interact with Dy. CE/CON/W/Hazaribagh to obtain the copies of plans including L-section drawings for the concerned stations of the Tori - Shivpur sections stating that the same are at the ultimate stage of finalization. Lastly, after a number of follow ups, in a meeting held with Dy. CE/CON/W/Hazaribagh on 04.02.2015, it was understood that the plans for all the stations over the section have been finalized by him on 14.01.2015 and the same are under process of approval from the concerned departments of E. C. Railway. He was kind enough to supply the copies of plans and L- section drawing which were under process of approval.

1.2.12 Accordingly, on the basis of the above drawings, a revised lay out plan for the proposed siding including junction arrangement at Manatu was prepared and in reference to Dy.COM/Planning's letter, quoted in para 1.2.10 above, necessary remarks along with the copy of the same plan were submitted to CTPM, E. C. Railway vide RITES' letter No. RITES/RPO-KOL/CCL/Amrapali Survey/2015/1106 dated 11.03.2015. Itemwise compliances, as were furnished are reiterated below:

A. Operating:

Item No	Observation / Compliances & Remarks	
I	Observation	It has been observed by DEN (siding)/DHN that Railway land is involved in this project. Necessary modification in proposed ESP should be made for minimum involved in Railway land (only for connectivity)
	Compliance	A revised lay out plan of the siding has been prepared on the basis of finalized layout of Manatu station. It may be seen that the revised layout plan does not infringe any additional Railway land except for the take-off point and meeting point for the proposed

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		siding at Manatu

II	**Observation**	**Yard plan of Manatu &Shivpur is yet not finalized. It should be noted during preparation of proposed ESP.**
	Compliance	After the meeting held with Dy. CE/CON/W/Hazaribagh on 04.02.2015 arevised plan for the proposed siding has been developed on the basis of finalized plan for Manatu and Shivpur Manatu station has been proposed to be constructed in a grade of 1 in 1200 and the adjoining grade is 1 in 200 on both side except a small stretch of level from kms 35/100 to kms 35/250 where a girder bridge has been planned. Though, initially two loops are proposed along the alignment of future line No. 1 &3 with CAL 795.399 m and 895.400 m respectively for the junction arrangement of the proposed siding, ultimately there will be no loop at Manatu after complete construction of Tripple line section.
iii	Observation	Connectivity provision of other private siding is not permitted which is being contemplated inside the bulb as in this case. There should be separate exit and entry. It should not affect the movement of one siding.
	Compliance	CCL is developing two coal mines e.g., Amrapali & Panchra Open Cast Projects at the same vicinity. Out of which Amrapali will be developed now and Panchra is their future project. Since, CCL is the owner of both the loading points, there may not be any objection on common lead line for the sidings connecting two separate loading points. However, commissioning of Pacnhra project is yet to be finalized by CCL, as such, the alignment under the Panchara project has been deleted from the plan keeping the alignment of the loading bulb same, as has been incorporated in the DPR.
iv	Observation	DPR does not contain details of abstract cost of all the departments. Necessary modification and repercussion cannot be examined in absence of detailed estimates.
	Compliance	Details of estimated cost, department wise which are generally shown in a DPR are duly incorporated in the report. However, due to modification of plan, the entire estimate has to be revised and the same will be incorporated in the Revised DPR which is under preparation.
v	Observation	For Kathuatia direction movement, fly over will require banking for loaded trains. For banking purpose suitable yard modeling is essential which should provide siding facilities for banker.
	Compliance	According to the revised alignment, the 'Rail-Under-Rail' line has been planned with a ruling grade of 1 in 180 (F)in empty direction and 1 in 200 (R) in the loaded direction and this gradient is matching with the ruling grade of the section Tori-Shivpur section which is under process of construction by Railway. Moreover this grade is permissible for double/multiple locos which have to be provided by Railway due to ruling grade of the adjoining sections.

B Signal & Telecommunication:

Item No	Observation / Compliances & Remarks	
I	Observation	Material procurement and executing agency to be fixed by the firm. However, the work will be done under supervision of Railway.
	Compliance	Noted.

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ii	Observation	For smooth operation and efficient maintenance of the Signaling and Telecom assets' provision for maintenance of newly created assets @ 10% per year of the estimated value of the S&T assets to be provided so that necessary infrastructure including man, material and mobility of staffs towards the maintenance of S&T assets may be arranged by Railway
	Compliance	Signalling work for proposed siding has been planned to be controlled from two separate panel cabins, one at the in-plant yard and the other at Manatu which has been planned to be converted as Block station. According to the DPR, the in-plant cabin will be operated and maintained by the siding owner solely at their cost. As regards to operation and maintenance of the newly created block cabin, the siding owner will pay a lump sum amount which would be equal to recurring cost towards maintenance & staff and employment for a period of 10 years on the basis of initial deployment of staff as per Para 4.4(iii) of FM Circular No. 1 of 2012. Apart from payment of lump sum amount, no additional cost is applicable. In this connection EDCE(G), Railway Board's letter No. 2012/CE-I/SP/1 dated 15.01.2015 which states that "it is clarified that no annual escalation of @ 10% shall be taken into account when the lump sum charges are being taken in advance for 10 years' period and it shall apply to maintenance cost and also for the cost of staff deployed at new stations, level crossings etc., as applicable to the private siding project", may kindly be perused.
iii	Observation	Exact cost required for execution of S&T work will be ascertained only after finalization of Signaling plan. However, for the time being the estimated value (Rs10.83 crore) of the S&T assets given in the DPR may be considered for the assessment purpose and therefore10% of this cost i.e. Rs.1.08 crore to be provided per year for smooth maintenance of the S&T assets by the Railway.
	Compliance	Out of Rs.10.83 crores, Rs.5.94 crore is estimated for construction of the in-plant cabin which will be solely operated and maintained by the siding owner. It has been indicated under item No.1 on Signal and Telecom portion of Sr. DSTE (Co&Tele), Dhanbad's letter No.ECR/OPT/Pvt..Sdg./Magadh/505 dated 05.01.2015, issued in connection with Magadh project that "Signal & Telecom department will maintain that portion of the yard which is maintained by Engineering department inside the railway boundary only". Since the in-plant cabin will be constructed outside Railway land, the relevant observation appears to be contradictory. Railway Board vide his letter, as quoted in the earlier paragraph has duly advised that no annual escalation of 10% shall be taken into account when the lump sum charges are being taken in advance for 10 years period.

C. Engineering:

Item No	Observation / Compliances & Remarks	
i	Observation	A new block station has been proposed between Manatu and Shivpur at Km 36.873 with a gradient 1 in 200 which is sharper than the permissible limit (1 in 1200) for any yard i. e., Manatu Yard.
	Compliance	According to the plan under finalization by Railway, the Manatu (H) station is now proposed at kms.35/700. Accordingly, the junction arrangement at Manatu has been modified and the same has been shown in the enclosed plan.
ii	Observation	The proposed siding will take off at Km 37.449 (at Ch.0) on Tori-

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		Shivpur main line section between Manatu and Shivpur stations and cross the main line through rail fly over at Km 38.633 (at Ch 1274.564 from the takeoff point of the siding) As per index L-section plan, R.L of Km 38.633 and take points are Ch 505.770 m and Ch.501.367m respectively. Considering SOD for vertical clearance for fly over, girder depth and others, R.L top of fly over may be taken as 1 in 100, which may be suitable only for movement of empty goods trains only and not for loaded one, which may be the future requirements
	Compliance	According to the revised plan the siding alignment will cross the main alignment as RUR (Rail Under Rail) and the level difference at the point of crossing has been proposed to 9.1 m. The ruling gradient of the RUR line is 1 in 180 (F) in empty direction and 1 in 200 (R) in loaded direction, where there will be no problem in movement of trains.
iii	Observation	In addition to 'Y' connection, track length about 750m falls within the Railway land. As per Board's guideline, Railway will permit for the land required for 'Y' connection only. It is corrected before sending the DPR to HQ.
	Compliance	According to revised plan no additional Railway land except for the take-off point is involved for the 'Y' connection.
iv	Observation	One block section has been proposed in between Manatu-Shivpur stations at Km 36.873 from Tori station with provision of two additional lines to facilitate taking off the Amrapali siding from the block sections in Tori-Shivpur section. As construction of Tori-Shivpur line is going on under supervision of ECR, construction department. It is therefore advised that construction department may be approached for finalizing all drawings in final DPR.
	Compliance	The issue is regularly being pursued with the Officials of E. C. Railway, Construction Department both at Patna and Hazaribagh Town.Lastly, a meeting was held with Dy. CE/CON/W, Hazaribagh on 04.02.2015 in which it was understood that the Manatu station is proposed to be constructed at location 35/700 kms from CSB of Tori and the plans, asfinalized by the Construction wing at Hazaribagh are under process of approval by Railways. The plan for junction arrangement for the proposed Amrapali siding has been revised on the basis of the proposed plan of Manatu station.

D. Commercial:

Item No	Observation / Compliances & Remarks	
I	Observation	In para No.5.2.1, it has been mentioned that five weighbridges would be provided at siding. But question of requirement of weighbridges to be decided first based on the projection/pattern of traffic.
	Compliance	4 weighbridges have been proposed at the post loading zone on each and individual loading lines to facilitate weighment of rakes from any SILO/Chute. However, the 5th weighbridge has been provided on the empty line as per request of CCL for weighment of empty rake, if necessary. The alignment does not permit any other location to provide a single weighbridge connecting all the 4 lines with due compliances of the norms as stipulated by RDSO.

E. Electrical (TRS):

Item No	Observation / Compliances & Remarks	
I	Observation	System of working as detailed at section 1.8.2 and 4.7 with electric

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		loco is not suitable Electric loco equipment/ducts at roof are similar to coal duct which may come similar SILO when the loco passes underneath. Instead electric loco can push the load from rear for loading under SILO. Once loading is complete the same loco can get detached at the front and work the train conniving that trailing load will match the hauling capacity of locomotive. RITES may be credibly advised for change.
	Compliance	The design of chute under the SILO should always be either swing type or telescopic and during in-operative condition when the loading is stopped, the gadgets will be high above the equipment of locomotive. As such there will be no chance to contact the SILO chute with electric locomotive while passing underneath the SILO. Moreover, the system of working which has been detailed in the above paragraph is under consideration of CIL. In view of running of coal trains by electric locomotive through unidirectional movement completely avoiding shunting operations for attachment/detachment/reversal of train engine. The proposed system has already been accepted by SER & SECR while approving DPR for their concerned projects.

F. Electrical (General):

Item No	Observation / Compliances & Remarks	
i	Observation	Suitable no. of posts for operation and maintenance and assets created has to be created in advance as per existing norm.
	Compliance	Electrical (G) assets inside the in-plant yard of the siding will be maintained by the Siding owner. In regard to the new block cabin, as clarified in para 2 (ii) against the observation of S&T department, the cost towards maintenance, staff and employment for a period of 10 years is payable by the siding owner before commissioning of the siding. It is the Railway to decide creation of posts etc. in consideration to other allied works.

G. Electrical (TRD):

Item No	Observation / Compliances & Remarks	
i	Observation	Tori-Shivpur section has sanction for electrification of the stretch between Tori-Shivpur-Hazaribag section butShivpur-Hazaribag section electrification work sanction not received so far. So power supply arrangement is required.
	Compliance	Noted. Proportionate cost for power supply arrangement may be shared by the Siding owner depending upon the materialization of the section involved.
ii	Observation	Following maintenance schedule to be incorporated i) 08 wheeler T/W for maintenance of OHE section. ii) Training facilities in Danapur Division.
	Compliance	Noted. This concern to Railway.

H. Mechanical – (1)[Observation of Dy. CME(Opn), E. C. Railway, Hajipur]

Item No	Observation / Compliance	
1	Observation	It is not clear in the DPR from which yard the intensively examined rakes will be supplied to meet their above requirement. The infrastructure of that yard has to be looked into for further strengthen.
	Compliance	According to linkage of coal, primarily, 4.50 MTPA of coal traffic from Amrapali block has been linked to NTPC's Barh Thermal

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		Power Plant which is under installation near Barh station on Kiul-Patna section of East Central Railway. After construction of Tori - Shivpur - Hazaribagh/Kathuatia - Koderma new line section, coal for the Barh TPP shall have to move either via Shivpur - Tori - Barkakana - Chandrapura - Dhanbad - Kulti - Sitarampur Link - Kiul- Barh or via Shivpur - Kathuatia - Koderma - Dhanbad - Kulti Link - Sitarampur Link - Kiul - Barh section according to existing traffic facilities for forward movement available en-route. Incidentally, both the routes are almost equidistant and roughly about 550 kms. In view of the projected traffic, Railway may decide formation of suitable C&W examination point for intensive examination of the rakes.
2	Observation	Weighbridges: Vide para 1.4.1 (ii) of the DPR, 05 nos. weighbridges has been proposed. Capacity, installation and commissioning of the weighbridges should be as per Railway Board's Guidelines issued vide letter No.98/Dev. Cell/IDE/21 dated 07.04.1999 and RDSO's letter No. MW/CS/PE/WB dated 22.04.2010. A minimum 100 m clear straight leveled track should be available in either side of the weighbridge. There should be no point of crossing up to a distance of 100 m on either side of weigh rail.
	Compliance	Noted. This has been complied with.
3	Observation	The siding owner shall take proper care of all wagons during loading / unloading. Siding owner shall liable to pay repair charges (Material cost, Labour cost & other incidental charges as applicable) for the wagons damaged during loading.
	Compliance	Noted for compliance.
4	Observation	The siding owner shall take proper care of all wagons in his custody and to protect theft / pilferage of wagon components in the siding premises. Siding owner shall be liable to pay the charges for loss of wagon components due to theft / pilferage at the siding.
	Compliance	Noted for compliance.
5	Observation	Proper RCC pathways in the outgoing lines of the yard are to be provided for carrying out GDR check in the private siding. Pathways will help both the Crew and Guard of the train as well as the C&W to work smoothly whenever they will be called for attending trouble shooting.
	Compliance	Noted. Facilities for pathways along the Post-loading lines will be included in the revised DPR.
6	Observation	The siding owner shall inform about all derailments / accidents occurred within his siding premises. In case of accident / derailment of locomotive and rolling stock on account of siding authority, the cost of damage to locomotive and rolling stock and the re-railment charges including ART train & staff charges along with damage wagon cost shall be borne by the siding owner.
	Compliance	Noted for compliance.

H. Mechanical- (2) [Observation of Sr. DME (C&W), E. C. Railway, Dhanbad

Sl No	Observation / Compliance	
1	Observation	Agreements must be executed between Railways & the siding owner.
	Compliance	Noted. The Siding holder is liable to execute the siding agreement as and when the requisite documents for the siding agreement are furnished by Railways.
2	Observation	During loading no such machine must be used which causes damage to wagons.

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	Compliance	The loading into wagons will be done through overhead SILO chute and hence no other machine is required to be used.

3	Observation	**Joint check may be conducted by Guard / Driver, siding authority and RPF regarding deficiency / theft of materials from rolling stock before and after loading, so that the cost of materials can be charged accordingly.**
	Compliance	Noted.
4	Observation	Necessary arrangement may be developed so that loading work will be done cautiously to avoid damage to the rolling stock by the loading equipment.
	Compliance	Noted.
5	Observation	As no C&W facilities have been proposed in the DPR, the rake should be inspected by Crew & Guard before start of loaded rake as per latest guidelines.
	Compliance	Concerned to Railways.
6	Observation	The Railway will have the right to undertake inspection and cross checking of the loading equipment / SILO which will be installed to verify the status of their loading.
	Compliance	Noted.

1.2.13 In reference to the points raised as regard to the proposed system of working with electric locomotive by the Sr. DEE (TRD), E. C. Railway, Dhanbad vide his letter No. ELD/367/Siding/DPR/RITES(Amrapali) dated 21.07.2014 and the Dy.CEE(W), E. C. Railway's vide his Note No.ECR/ELE/PLG/DPR/1395 dated 04.06.2014, it was clarified that the DPR (April 2014) was formulated on the basis of accepted concept of FSR and the layout of the coal loading yard has been planned with provision of bulb to facilitate all through unidirectional movement of trains during reception & despatch and also during loading under the SILO chute by means of electric locomotive. Though the proposed system of working of trains under the SILO by means of Electric locomotive including design under the SILO, have been incorporated in the report, it has been also mentioned that the proposed system is still under finalization of CIL and in any case, the system of working as proposed, for movement of trains as well for loading by electric locomotive has not been finally materialized, the Siding authority has to provide suitable hauling arrangement to pass the non-OHE zone for forward movement the rake with the help of 'Diesel Engine' or 'Side Arm Charger' or any suitable device.

1.2.14 Finally, on examination of the above compliances, CFTM, E. C. Railway, Hajipur vide his letter No. ECR/OPT/Pvt.Sdg./ACB/505 dated 23.03.2015 has conveyed approval of the DPR subject to some other conditions with further advise to submit a revised DPR incorporating the compliances of all the observation. A copy of this letter is shown as Annex-1.4.

1.2.15 Accordingly, the present "Revised Detailed Project Report" has been formulated with following item wise compliances of the observation, as sought for by CFTM, E. C.

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Railway while communicating the approval of the DPR (April 2014):

Item No.	Observations / Remarks & Compliances	
1.	Observation	*Difference of 2% of project cost, if any should be deposited in the name of FA & CAO / ECR*
	Compliance	As far as information available, against the estimated project cost of Rs.30937.97 lakh (as per DPR), CCL has duly deposited an amount of Rs.618.76 lakh in two installments, i.e. Rs.298.81 lakh as 1% of codal charges on 05.04.2013 vide Cheque No.170079 dated 30.03.2013 and Rs.319.95 lakh as balance amount of 2% of codal charges on 18.11.2014 vide Cheque No.755379 dated 12.11.2014.
2.	Observation	*If further, any remarks on compliance / proposed DPR which were left out during scrutinization of the DPR should be included in the Revised DPR which will be communicated to you soon.*
	Compliance	Noted.
3.	Observation	*CSL of all siding line should have at least 750 mtr.*
	Compliance	Complied with.The length of all the line has been proposed for more than 750 m.
4.	Observation	*Simultaneous reception and despatch facility on signal should be provided.*
	Compliance	Complied with.
5.	Observation	*RTC should be issued by Railway Board for the project.*
	Compliance	Director, Transport Planning, Railway Board vide his letter No. 2001/TT-1/10/RTC/Review/14 dated 05.01.2015, 18.03.2015 and 27.03.2015 has advised that the practice of issuing Rail Transport Clearance (RTC) is discontinued and there will be no requirement of RTC henceforth. Zonal Railway shall communicate necessary details regarding quantity & Commodity wise OD flow. According to CCL, 4.50 MTPA of coal from the Amrapali OCP is linked to Barh TPPof NTPC. However, detail of OD flow for total 12.00 MTPA coal traffic, which will be moved in future, is required to be submitted by the CCL to the East Central Railways.
6.	Observation	*At any circumstances freight rebate will not be provided.*
	Compliance	Noted.
7.	Observation	*Cost of necessary yard modification, Signalling modification, OHE modification should be borne by party.*
	Compliance	Noted.
8.	Observation	*Unloading platform preferably of 30 mtr. Width to be provided. The design of unloading platform should be such as to avoid any damage to Railway wagon at time of unloading.*
	Compliance	The proposed siding would deal with only outward traffic of coal which will be loaded through RLS by means of SILO loading arrangement. As desired by, CCL, one unloading line has been provided to deal with inward consignment, if any, and for this purpose one platform is proposed with 650 m x 30 m. However, this unloading line accompanying the platform may not be required at all..
9.	Observation	*The entire cost of project has to be borne by the Siding holder including modification proposed at the station yard. The*

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		Railway shall not bear any cost at any circumstances what so over.
	Compliance	Noted. Obviously, the cost of construction of siding facilities will be borne by the siding holder.
10.	Observation	*Incremental cost project will be part of estimate.*
	Compliance	The cost of the project has been revised as per up dated cost and detailed are incorporated in the DPR.
11.	Observation	*The siding holder has to be abiding by the Railway terms and condition according to extant rule of Railway regarding staff cost, maintenance charge of Track, OHE, Signalling etc. as applicable from time to time.*
	Compliance	Noted.
12.	Observation	*Railway reserve the right to incorporate any kind of change if felt necessary in view of operations, track laying, signalling arrangement etc which will be binding on the siding holder.*
	Compliance	Noted.
13.	Observation	*Siding will be guided by new liberalization of siding policy of Railway and correction slip / circular / amendment issued by Railway time to time in this regard.*
	Compliance	Noted.
14.	Observation	*ESP and land license plan of take off point should be approved by Railway.*
	Compliance	Noted.

1.2.16 Sr.DEE/TRD/E. C. Railway/Dhanbad vide his letter No.ELD/367/Siding/DPR/RITES (Amrapali) dated 21.07.2014 has also raised some comments, compliances / remarks against each of the items are submitted below in seriatim:

A. General:

Item No.	Observations / Remarks & Compliances	
1.	Observation	*Proposed siding falls under the new BG line section TORI-Shivpur-Hazaribagh for which route alignment not finalised by CAO/CON for want of approval from MoEF.*
	Compliance	It is understood that approval for construction of Tori-Shivpur line has already been received.
2.	Observation	*CTPM/ECR/HJP vide letter ECR/OPT/Pvt-Sdg/ACB/505 dated 11.06.2013 has granted, approval on proposed rail infrastructure for Amrapali coal block subject to commissioning of TORI-Shivpur new Line section.*
	Compliance	No comment.
3.	Observation	*Bearing capacity of the Soil is determined at the outer toe of the bottom foundation at a representative number of locations. This should be get test before starting foundation.*
	Compliance	Noted
4.	Observation	*Before execution of work, OHE layout plan, location plan of SSP including general arrangement and layout plans for fencing, foundation , structure assembly, cable run, bus bar etc. should be got approved from Railway authority. All work should be based on latest RDSO/CORE standard design drawing and guideline issued by Railway. Location of SSP within station of new proposed crossing station will be*

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		preferred by Railway.
	Compliance	Noted.Location of switching post will be finalised with approval of Railway.
5.	Observation	Conventional OHE (107 sq.mm HDGC Contact wire & 65 sq.mm Copper catenary wire) has been proposed.Feeder line should be of 150 sq.mm copper feeder and jumpers should be 160 sq.mm as per RDSO guideline.
	Compliance	Provision of 150 sq.mm feeder with 160 sq.mm jumper made in the estimate.
6.	Observation	The Track center of 6.00 meters (minimum) shall be adopted. No mast should be proposed for erection in between two tracks.
	Compliance	No comment.
7.	Observation	The implantation of main siding line mast shall be 2.80 meters. Mast implantation of 3.10 meters should be adopted for portal with BWA and 3.00 meters for portal mast. Extra allowance for mast to be considered according to norms of ACTM in case of curvature.
	Compliance	Noted.
8.	Observation	Long creepage (1050 CD) composite insulator (Stay. Bracket & 9 Ton) should be provided in the proposed section. Power supply arrangement will be decided later on after finalization of electrification of Tori-Shivpur-Hazaribagh new BG line section.
	Compliance	Provision made accordingly. Noted
9.	Observation	Except critical location, 'B' type mast should be used. Anchoring arrangement to be done by providing Dwarf mast with guy rod. Selection of the type & size of foundation is done from volume chart on the basis of FBM code.
	Compliance	Noted.
10.	Observation	Modified 3.1 ratio Regulating equipment with modified anti falling arrangement to be provided as per RDSAO drg.No.TI/DRG/OHE/ATD?RDSO/00001/99/2 or latest.
	Compliance	Noted

B. Other Comments:

Item No.	Observations / Remarks & Compliances	
(i)	Observation	Bonding & Earthing arrangement confirming to Bonding & earthing code ETI/OHE/71 (11/90) should be done.In station area M.S. Flat for bonding shall be used. At the SSP location typical earthing, station at switching post as per RDSO Drg.No.TIDRG/PSI/E.STN/00001/13/0 Sheet -1 to 4 should be provided. Details are available in RDSO's SMI No.TI/SMI/0031.
	Compliance	Noted.
(ii)	Observation	Continuous protective screen on the FOB/ROB or over line structure should be provided as per RDSO guideline & drawing, if any
	Compliance	Noted.
(iii)	Observation	Location of SSP should be finalised jointly and plan should be got approved from Railway.
	Compliance	Noted.

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(iv)	Observation	Interrupters proposed to be provided for tapping from existing main line should be provided with D.P .isolator for BS and by pass isolator (SBM) switch each for maintenance purpose
	Compliance	Noted. Provision made accordingly.
(v)	Observation	Necessary charges for hooking with SCADA for SSP with proposed RCC/HZME. should be borne by the siding authority. Similarly modification in RTU and hooking with SCADA should also borne by siding owner.
	Compliance	Noted. Provision made accordingly.
(vi)	Observation	Necessary communication facilities for SCADA to be provided at SSP by siding owner.
	Compliance	Noted. Provision made accordingly.
(vii)	Observation	Insulated catenary wire should be provided under the over line structure, if any, and safe clearance should be maintained as per guide line.
	Compliance	Necessary provision made accordingly.
(viii)	Observation	Modification of HT/LT crossing lines, if any, through underground cable, if any should be done by the siding owner for which plan, drawing etc. should be got approved from Railway.
	Compliance	Noted.
(ix)	Observation	No structure/equipments should be allowed having clearance less than 2. 0 meters.
	Compliance	Noted
(x)	Observation	All safety precautions & guide lines of ASCTM must be followed during electrification of siding.
	Compliance	Noted.
(xi)	Observation	Power & Traffic block, if required, may be charged separately according to prevailing norms of Railway/Division.
	Compliance	Token provision made in the estimate.
(xii)	Observation	Modified SWR of TRD (Appendix-G) should be prepared by siding owner and got approved from Railway for new proposed crossing station.
	Compliance	Noted.
(xiii)	Observation	At the level crossing gate, if any should be provided with earthing arrangement with separate earth pit.
	Compliance	Noted.
(xiv)	Observation	Necessary Tools & plants and machinery & tools required for maintenance should be provided as will be preferred by Railway. This list of these items will be intimated before starting of work.
	Compliance	Noted. Provision made as per norm.
(xv)	Observation	OHE spared for maintenance of OHE not considered in the estimate. The same should be included as 3% of OHE cost. General charges, supervision charges & contingencies have not been considered in the estimate for electrical works. Provision of these should be made in the estimate
	Compliance	Necessary provision available.Provision under Departmental charge available. No provision for contingency over & above Departmental charge has been made in terms of FMPC No.1 dated 30.01.2012.
(xvi)	Observation	Detailed design of OHE near SILO should be got approved by Railway before execution.

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	Compliance	Noted

C. Another Comments:

Item No.		Observations / Remarks & Compliances
(i)	Observation	*One commercial vehicle should be provided in the estimate for maintenance organisation of TRD against asset created as the maintenance depot at both ends is far away from proposed siding.*
	Compliance	Necessary provision made.
(ii)	Observation	*Provision for hiring of two Nos. Multi Utility vehicle (MUV) for three (03) years should be made in the estimate. This is essentially required for supervision/inspection of work during project execution as well as commissioning and for any exigencies during service period. Railway officials will use the vehicle.*
	Compliance	Separate provision for operation of vehicle for movement of Railway officials upto commissioning has been made.
(iii)	Observation	*One set of computer and heavy duty printer should be made available to Sr.DEE/TRD/Dhanbad office for official work related with the siding electrification & commissioning.*
	Compliance	Necessary provision made.
(iv)	Observation	*One insulator testing machine for testing of insulator should be provided at OHE dept for testing of insulators before erection in the siding as construction facilities. One Thermal imaging Camera should also be provided in the estimate for supply to Railway for hot spot detection during execution as well as for maintenance.*
	Compliance	Necessary provision made.
(v)	Observation	*Provision of new modified schematic sectioning diagram at station, cabins and RCC control room, Depot, Tower Wagon after electrification of said siding should be made in the estimate for OHE and at new proposed SSP.*
	Compliance	Necessary provision made.
(vi)	Observation	*Provision of furniture for one OHE depot should be made in the estimate to augment OHE depot for maintenance of newly created OHE in the siding.*
	Compliance	Prorata provision made in the estimate.
(vii)	Observation	*Provision of fund should be made by siding authorities for maintenance of TRD assets. This should be ensured in Agreement with Siding Authorities.*
	Compliance	In terms of liberalised rules for siding, assets created under electrification of siding are to be maintained by Railway. No fund will be provided by Siding Owner.

1.3 Proposed Rail route and pattern of movement

1.3.1 Amrapali coal block of CCL is situated at Chandawa district of Jharkhand and at present there is no rail head nearby.Two new rail link projects, e.g. (i) Koderma - Hazaribagh - Barkakana - Ranchi (189 kms.) and (ii) Hazaribagh/Kathuatia-Shivpur -

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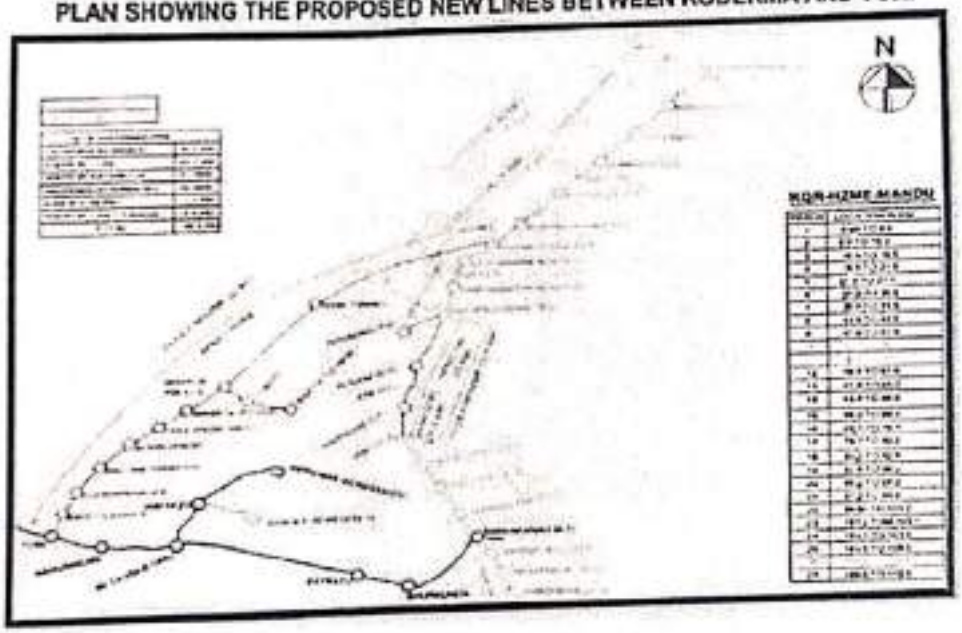
Tori (162.30 kms.) are under process of construction. While Railway has directly undertaken the construction of the Koderma - Hazaribagh - Barkakana - Ranchi section as Railway project, the section Hazaribagh/Kathuatia-Shivpur - Tori is likely to be constructed by Railways on 'deposit terms' at the cost of CCL.

1.3.2 The construction of the Railway line has not been materialized so far due to delay in granting clearance by MoEF. As far as information received, construction of Koderma - Hazaribagh section has been completed recently and passenger service opened from 20.02.2015. Although, MoEF has cleared the proposed Tori-Shivpur section, the Ministry has turned down the proposed alignment of Shivpur - Hazaribagh section for which a revised alignment is under consideration. The alignment, so chosen, from Shivpur will join at Kathautia station (situated at 49.50 kms. from Koderma) instead of connecting at Hazaribagh. The proposed alignment of the new lines between Koderma and Tori is shown in Figure-I below:

Figure-I

PLAN SHOWING THE PROPOSED NEW LINES BETWEEN KODERMA AND TORI



1.3.3 41.40 kms. long Tori - Shivpur line is under process of construction by East Central Railway on 'deposit terms' at the cost of CIL. This rail link is expected to ensure a regular coal supply from the coal blocks of North Karanpura to the thermal power plants in Jharkhand. According to revised plan of the section, the location and facilities, as proposed for the Railway stations on the upcoming Tori and Shivpursection are tabulated in Table II below:-

Table II

Sl. No.	Name of the stations	Type	Facilities planned	Location [kms]

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1.	Tori	Block station	Existing	Ch.0/000
2.	Biratoli	Block station	4 lines & 2 platforms	Ch.6/500
3.	Kusmahi	Block station	4 lines & 2 platforms	Ch.14/600
4.	Balumath	Block station	4 lines & 2 platforms	Ch.19/300
5.	Bukru	Block station	4 lines & 2 platforms	Ch.26/300
6.	Phulbasia	Block station	4 lines & 2 platforms	Ch.32/000
7.	Manalu	Halt station	1 platform	Ch.35/700
8.	Shivpur	Block station	4 lines & 2 platforms	Ch.41/500

1.3.4 Apart from the above CPSU projects, many big projects of various private sectors like Jindal Steel & Power Limited, Arcelor Mittal, Rungta Mines Limited and Bhusan Power & Steel Limited are also suffering due to land acquisition problem and for objections raised by MOEF. Due to non-clearance of forest land by MoEF, E.C. Railway has decided to divert the alignment following a new route from Shivpur to connect Kathuatia station on Hazaribagh-Koderma section instead of Hazaribagh via Banadag station.

1.3.5 After construction of Tori - Shivpur - Hazaribagh/Kathuatia - Koderma new line section, coal for the Barh TPP, from Amrapali loading yard, may move either via Shivpur - Tori - Barkakana - Chandrapura - Dhanbad - Kulti - Sitarampur Link - Kiul - Barh or via Shivpur - Kathuatia - Koderma - Dhanbad - Kulti Link - Sitarampur Link - Kiul - Barh according to existing traffic facilities available en-route. Incidentally, both the routes are almost equidistant and roughly about 550 kms. It may be mentioned that movement via the route Shivpur-Kathuatia- Koderma - Gaya - Patna - Barh, though shorter in length may not be possible due to several operating constraints like reversal of train engine and brake van at Gaya and Patna.

1.3.6 A Schematic Layout Plan showing the junction arrangements and Layout Plan for the proposed siding is shown as Annex-1.5.

1.4 Junction arrangement

1.4.1 The alignment of Hazaribagh/Kathuatia - Shivpur section and the yard diagrams for the stations en-route in Shivpur - Tori section is at the stage of final approval by Railways. However, E.C. Railways have furnished the tentative layout of the stations proposed to be constructed on the section Tori - Shivpur. Based on the layout plans received from E.C. Railways, the junction arrangement for the Amrapali coal loading has been planned in such a way that trains to and from the loading yard can move directly towards the direction of Tori station. However, a tentative alignment connecting Shivpur station has also been shown as future plan for movement of trains directly from & to Koderma direction, if required, when the Amrapali OCP will achieve its full

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capacity and CCL's another project, Panchra OCP in the same vicinity will commence its production.

1.4.2 As advised by CTPM, E.C. Railway, Hajipur while communicating 'In-principle' approval of the project,a new block station between Manatu and Shivpurat kms.36/873 from CSB of Toriwas planned initially to takeoff the proposed siding and the DPR was submitted based on the idea that the proposed siding would take off by construction of a new block station at a suitable location in between Manatu and Shivpur.

1.4.3 Meanwhile, on the way of finalization,the layout plans for the proposed stations on the upcoming Tori - Shivpur section were revised by Railway and consequently, the junction arrangement plan for the proposed siding had to be revised due to change of location of Manatu station. The proposed Amrapali OCP siding will now take off from Manatu station which will be converted to a 'Block' station instead of 'Halt' station. Since, the Manatu Halt is scheduled to be located in a grade of 1 in 1200 bounded by 1 in 200 gradesand one major bridge on either side within a short span; it is not technically feasible to provide additional loops with adequate length even after re-gradation of a small portion at Shivpur end of Manatu. As per suggested modification, both the outside lines of the proposed 3rd lines section will be constructed as common loop lines of Manatu station and with the commissioning of triple line section, these loop lines will be extended as main lines.

1.4.4 For direct movement of trains for the colliery siding two separate connections have been proposed, one as empty line which will take off from the main line at Ch.658.10 m from CSB of Manatu and the loaded line which will meet on the main line at Ch.611.10 m from CSB of the same station. However for movement of trains to &from Kathuatia/Koderma direction, a tentative alignment has also been shown (in green colour) as future connection. The alignment for Pachra coalmines which is a future project of CCL in the same vicinitybut is not within the purview of this report has not been shown. The requirement of store siding which appears to be needless but has been shown as per advice of CCL may be finally decided by CCL to delete the provision.

1.5 Layout of the coal loading yard

1.5.1 Provision of Rapid Loading System and despatch facilities has been made for transportation of coal through Rail. Although, the OCP will despatch 4.50 MTPA of coal initially, considering the final outage programme of 12.00 MTPA, two nos. of SILOs

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having storage capacity of 4000 TPH and with 2 loading chutes each, as has been desired by CCL has been shown in the plan.

1.5.2 The layout of the loading terminal will be in the form of bulb to facilitate unidirectional movement avoiding coal bearing area. After taking off, the alignment will traverse almost parallel to the Manatu-Shivpur section, under construction, and will cross this line through a rail under pass at kms.39/0195 from Tori. At the loading yard, as advised by CCL, each SILO will be provided with 2 loading chutes and the design of pre and post loading yard has been planned accordingly. The facilities, as planned, are summarized below:-

(i) 4 pre loading lines of CAL 796.80 m, 797.25 m, 798.216 m and 797.57 m;
(ii) 4 post loading lines of CAL 763.20 m, 761.03 m, 757.73 m and 765.00 m;
(iii) 5 weighbridges, 1 for weighment of empty rakes and 4 for weighment of loaded rakes;
(iv) One Store siding, as sought by CCL, for 750 m along with a platform of 650 m x 30 m.

1.5.3 CCL has earlier intimated that they have also developing Pachra OCP within the vicinity of Amrapali mines, with targeted peak capacity of 20.0 MTPA and had indicated the tentative SILO locations of both the projects. CCL is now quite silent about Pachra project, as such; the layout of loading yard for the Pachra project has notbeen shown. However, keeping in view the future loading programme of both Amrapali and Pachra OCPs, the tentative junction arrangement towards Shivpur end has been shown in the plan in 'green' colour.

1.5.4 The Civil Engineering Plan and L. Section showing the takeoff point, junction arrangements and loading terminal is placed at Annex-1.6 [7 sheets].

1.6 Signal Engineering & Telecommunication

1.6.1 Two Panel cabins are proposed for controlling the movement of trains between the upcoming Manatu block station and the Amrapali loading terminal. While the Panel cabin at the Manatu station, in addition to main line movements, shall control the movement of trains to &from the siding with 'Double Line Block Instrument'on 'Absolute Block System', the In-plant yard cabin shall controlthe loading operation including movement over the bulb through continuous track circulting.

1.6.2 In future, when the movement of trains towards Shivpur direction will be materialized, another Junction Panel cabin will require to be constructed near the junction point of

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both the directions.

1.6.3 Details of Signalling & Telecommunication arrangements have been elaborated in Chapter-III of the Report.

1.7 Electrification

1.7.1 The entire railway infrastructure planned for working right from the takeoff point including the entire loading yard except a small portion under the loading chutes of the SILOs shall be provided with 25 KV AC traction for operation of trains by Railway electric locomotive and the details of electrification are elaborated in the respective chapter.

1.8 System of working

1.8.1 An empty rake meant for loading under the SILO has to be received on any of the pre-loading line after negotiating the bulb.

1.8.2 Movement of train and loading through SILO will be done by Railway electric locomotive working the train. The portion of chute under SILO shall have an unwired zone with a gap of 6.5 m under the SILO. Following precautions have to be observed during loading:-

(a) The train will move towards the SILO with the rear pantograph as a customary system.

(b) The engine, as soon as crosses the SILO will stop at a point where a 'stop board' will be provided keeping the 'without OHE zone' in between front and rear pantograph.

(c) After stopping, the front pantograph will be raised and the rear pantograph will be lowered keeping the engine continuously energized.

(d) There after the train will start at a pre controlled speed to commence loading through SILO.

(e) A rake after loading under SILO will be received on the corresponding post loading line.

1.8.3 The design of SILO and loading by the electric locomotive is still under finalization. CCL has to keep provision of 'wagon positioner' / 'Side arm charger'for transferring the electric locomotive under the unwired portion of the SILO. However, it is advisable that CCL should initiate steps for finalization of the design of SILO matching with the minimum achievable speed of electric locomotive.

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[Rs. In lakh]

Department	Within Railway area	Outside Railway area	Total
Civil Engineering	1,936.83	31,014.29	32,951.12
Signal & Telecommunication	724.72	792.60	1,517.32
Electrical	806.32	2,214.77	3,021.09
Total :	3,467.87	34,021.66	37,489.53

8.4.2 In addition to above, as per para 3 of Railway Board's FM circular No.1 of 2012, the overhead charges, in terms of provision of Engineering Code, shall be payable by party, desirous to set up a siding. These charges shall have respective applicability for the 'Deposit works', as to be executed by Railways, by the party under Railway's supervision or by the party through Railway's Approved consultants respectively as per following table:

Sl. No	Purpose	Execution by	Charges	
1.	Departmental Charges: (Inclusive of cost of tools & plants and establishment supervision)	Railway	12½ %	Cost of project excluding cost of OHE and S&T works
		Party	6¼ %	
		Approved Consultant	4 %	
2.	Departmental Charges for OHE and S&T works (inclusive of cost of tools & plants and establishment supervision)	Railway	12½ %	Cost of OHE and S&T works for Railway's mandatory supervision
		Party	6¼ %	
		Approved Consultant	6¼ %	
3.	D & G Charges: (for work-charged establishments and other establishment supervision)	Railway	As per actuals, if any. [Ref.Para-1829E]	
		Party		
		Approved Consultant		

8.4.3 As par Para 1829 of the Code for the Engineering Department, Codal charges at the following sequence are payable to Railways:-

Surveys	(a) 1 % of the assessed cost of the project at the stage the party's proposal for undertaking the survey is approved by the Railway.
	(b) Balance amount to complete 2% of the estimated cost of the project at the stage of conveying approval to Survey/Plans and Estimates.
Final Inspection	2% of the cost of project while applying for the final approval of the completed works.

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2.0 Preface.

2.0.1 Central Coalfields Limited (CCL) has planned for construction of Amrapali Railway Siding at their Command Area to despatch coal to different linked power plants from the said Open Cast Project by introduction of Rapid Loading System (RLS) through SILO arrangement. The siding line is proposed to take off from common main lineat Railways Ch.36/358.10 km., which is 658.10 m away from CSB of Manatu Halt Station towards Shivpur Station end. Centre Line of Manatu Halt Station is fixed at Km.35/700.00 in Tori - Shivpur section, which is under process of construction by East Central Railway.

2.0.2 The present 'Revised Detailed Project Report' deals with the provision of following facilities:-

(i)4 nos. full rake capacity pre loading lines such as, L-1 of CAL 796.80 m (FM to SILO-2), L-2 of CAL 797.25 m (FM to SILO-2), L-3 of CAL 798.216 m (FM to SILO-1) & L-4 of CAL 797.57 m (FM to SILO-1) respectively;

(ii)4 nos. full rake capacity Post loading lines such as, L-1 of CAL 763.20 m (D/S to WB), L-2 of CAL 761.03 m (D/S to WB), L-3 of CAL 757.73 m (D/S to WB) & L-4 of CAL 765.00 m (D/S to WB) respectively;

(iii) 2 nos. of SILO (SILO-1 at Ch.1102.716 m of L-3 & Ch.852.57 m of L-4 and SILO-2 at Ch.13650.663 m of L-1 & Ch.852.25 m of L-2) for facilitating Rapid Loading System through SILO loading arrangement;

(iv)5 nos. of 120 T In-Motion Electronic Weighbridges, (1 no. to be installed at Ch.12284.185 m for weighment of incoming empty rakes and 4 nos. to be installed on the 4 nos. of post-loading lines at Ch.13699.458 m of L-1, at Ch.901.00 m of L-2, at Ch.1126.47 m of L-3 & at Ch.876.01 m of L-4 respectively for weighment of outgoing loaded rakes;

(v) One Store siding introduced as L-5 of CAL of 750 m (D/S to SRJ) with one Platform of size 650 m x 30.00 m.

2.1 Survey Methodology.

2.1.1 Reconnaissance survey has been conducted through the corridor to find out the most suitably feasible techno-economical alignment for planning and accommodating of the proposed Amrapali Railway Siding of CCL at proposed Tori-Shivpur section with the provisions of above mentioned features as described under paragraph 2.0.2.

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2.1.2 On getting 'in-principle' approval of the FSR, submitted in March 2013, the DPR was submitted to both E. C. Railway & CCL on 02.05.2014 in compliances of all the observations. Dy. COM/Planning, E. C. Railway, Hazipur, on examination of the DPR vide letter no. ECR/OPT/Pvt. Sdg./ACB/505, dated 18.12.2015 has advised RITES for compliances of the observations raised by theconcerned departments of Railway. Accordingly, RITES had furnished item wise compliancesalong with a revised layout plan prepared on the basis of finalized plans for the upcoming Tori -Shivpur section.Considering the above submission, CTPM, E. C. Railway, Hajipur has communicated approval of the DPR vide letter no. ECR/OPT/Pvt. Sdg./ACB/505, dated 23.03.2015 advising to submit revised DPR with due incorporation of the observations. Accordingly, the present report has been formulated.

2.1.3 Considering above, the final location survey has been carried out with the help of précised and latest survey instruments like Total Station & GPS Instrument, Digital level etc. by adopting modern survey methodology to lay out the final alignment in the field. Necessary controlling points have been established in the field by means of concrete pillars. Survey data was downloaded in AUTO CAD format and other survey software to arrive at the latest existing features of the area / corridor along the selected alignment to identify the availability of suitable open space for further required development.

2.1.4 Engineering plan along with L/section has been prepared with AUTOCAD and modern survey software. Spot levels have been taken at suitable intervals. The proposed suitable alignment along with other facilities has been incorporated in the layout plan.

2.1.5 Horizontal control points have been fixed over the selected corridor / alignment in respect to fixed reference points and a close traverse was run along the corridor. Vertical control points have been fixed at suitable locations and the levels are connected with the mother Bench Mark by using "AUTO LEVEL".

2.2 Engineering Parameter.

2.2.1 **Gauge:** The gauge adopted is 1676 mm (5'6") Broad Gauge to commensurate with the gauge of the serving Railway system.

2.2.2 **Fixed Point:** The siding line is proposed to take off from common main line at Railways Ch.36/358.10 km, which is 658.10m from CSB of Manatu Halt Station towards Shivpur Station end This point has been considered as fixed point for the engineering survey and reckoned as **"ZERO" chainage** for calculation of onward

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locations. Center Line of Manatu Halt Station is fixed at Km.35/700.00 in Tori - Shivpur section, which is under process of construction by East Central Railway. A List of Benchmark is placed at Annex-2.0.

2.2.3 **Levels:** All the levels taken for this survey are based on the existing grade of serving Railway.

2.2.4 **Gradients:**The proposed take off point for Amrapali OCP siding, which has been reckoned as Ch.0/00 at railways Ch.36/358.10 km. on Tori - Shivpur section, has been kept on falling grade of 1 in 1200 exists in between the stretch of Tori - Shivpur main line section from Ch.35/250.00 km to Ch.36/450.00km, which is required to be modified & extended up Ch.36/587.70 km of main line section (887.70 m from CSB of Manatu Station) and the same grade has been extended forthe proposed siding up to Ch.301.50 m followed by a further falling grade of 1 in 180 up to Ch.1235.00 m. The existing falling grade of 1 in 200 in the main line section is required to be modified as 1 in 180 falling grade from Ch.36/587.70 km to Ch.37/620.00 km (1920.00 m from CSB of Manatu Station).The balanced portion of the proposed siding will follow different grades comprising of level and in rise & fall, out of which 1 in 150 (F) stands as the sharpest grade in empty direction of the lead line in between Ch.3604.20 m to Ch.5004.00 m and in loaded direction on line no. L-6 the sharpest gradient of 1 in 150 (R) has been provided in between Ch.228.485 m to Ch.1632.80 m. A list of gradients and gradient abstract is placed at Annex-2.1.

2.2.5 **Curves:** On the proposed alignment of the siding, 19 (nineteen) nos. of curves have been designed, planned & required to be introduced with the ultimate motto to provide the most suitable techno-economical alignment to negotiate with the existing ground conditions as well as the existing physical features, out of which Curve No. 3 (RH) as 7^0 curve with radius of 250.00 m is the sharpest curve. A list of curves and curves abstract is shown at Annex-2.2.

2.2.6 **Speed potential:** Though the track structure will be fully suitable for Heavy coal / mineral trains consist of BOXN/BOBRN wagons, the permissible speed of the proposed siding will have to be restricted to 50 KMPH subject to other speed restrictions because of weighment and loading by SILO arrangement as well as yard movements.

2.2.7 **Length:** The route length of the proposed siding is about 15.600 kms. and the track length is about 29.300 kms. Track length falling within Railway land is for about

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2600.00 m & outside railway land is for about 26700.00 m

2.2.8 **Formation**: Formation of the proposed siding line will cross through both cutting and filling zone. Formation in filling zone is designed to be made of mechanically compacted earth with side slopes of 2H: 1V (i.e. 2 horizontal and 1 vertical). The width of single line formation is kept as 7.85 m in filling and 9.25 m in cutting including side drain with side slopes of 1H : 1V (i.e. 1 horizontal and 1 vertical). The formation, when in filling zone and if filling height is higher than 6.0 m & when in cutting zone and if depth of cutting is deeper than 6.0 m, berm width of 3.0 m has been designed to be provided on either side of the embankment. The same procedure shall be followed in every successive height / depth of 6.0 m. In formation, in case of clayey soil - a layer of 1000 mm and in case of granular soil - a layer of 600 mm thickness in filling zone and minimum 300 mm thickness in cutting zone, a compacted layer of blanketing material of approved quality granular / stone dust is designed to be provided over the compacted earthwork in formation, conforming to RDSO guide line. Side slope of the embankment is designed to be grass turfed with approved quality and thickness. A cross slope of 1 in 30 on top of formation, both in filling and cutting zone has been designed to be provided.A typical profile of embankment and cutting is placed at Annex-2.3.

2.2.9 **Track Centre:** Minimum 6.0 m track center is proposed in between two tracks unless otherwise mentioned in the Engineering Plan.

2.2.10 **Track Structures:** The proposed railway track is designed to be laid on 60 kg:90 UTS, T-12 grade, 1st quality rails on new 60 kg. PSC Mono block sleepers (T-2496) in straight and in curved alignment of radius less than 5° and in curves of radius above 5°, PSC Mono block sleeper (T-4183 to T-4186) with the provision of check rails. Sleeper density is proposed for 1660 nos. per kilometer over a layer of 300 mm thick machine broken stone ballast cushion. Points & Crossings will be of 60 kg rails along with curve switches, CMS crossings etc. on PSC sleepers with fan shaped layout. A detail of track structure is placed at Annex-2.4.

2.2.11 **Bridges & Culverts:** In the proposed alignment 41(forty one) nos. of new bridges are provided in between the takeoff point to meeting point of the siding.

In addition to above 41 nos. of new bridges, following bridge is also required to be extended / modified with new construction.

2 nos. of existing railway bridge vide no. 76& 77 (proposed Br. No.1) at railway Ch.36/400.00 km & Ch.36/475.00km respectively are required to be extended at their

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both faces as per the actual site requirement for accommodating and serving the proposed siding line at empty direction & loaded direction.

Above Bridges are proposed for new construction including extension based on the actual requirements.

Out of 41 nos. of new proposed bridges, 6 (six) nos. are major bridges and 35 (thirty five) nos. are minor bridges.

Br. No. 7 (2 x 6.0 m x 6.50 m) as Rail under Rail (RUR) bridge at siding line Ch.2791.618 m (Railway's main line Ch.39/019.50 km) is proposed for construction by Box pushing method with the provision for accommodating both present track (shown in red line) and future track (shown in green line).

All the bridges are proposed for new construction / extension of existing bridges, wherever found necessary, to discharge of rain water from adjoining catchment areas as well as diversion of roads / nalla etc. through ROB's & RUB's.

List of major &minor bridges and bridge abstract is placed at Annex-2.5.

2.2.12 **Fixed Structures:** All fixed structures are to be designed to comply with the fixed structure as indicated in the Schedule of Dimension (Revised-2004) for Broad Gauge of Indian Railways.

2.2.13 **Traction:** The line will be on Electric traction.

2.2.14 **Electrification:** The proposed railway siding line infrastructure right from the takeoff point, receiving lines, MGR line, pre & post loading lines, meeting Point of despatch line and tracks connecting SILO's including the new Block Station shall be electrified except chute zone, which shall remain unwired.

2.2.15 **Road Crossings / Level Crossings:** There are Four (4) nos. of road crossings in the proposed alignment. All the roads are proposed for pass / diversion through RUB's / ROB's as substitute of Level crossings. The existing crossing roads at Ch.3701.00 m., Ch.5404.00 m., Ch.6437.00 m., and Ch.8009.00 m respectively are proposed for pass / divert through bridge no. 11 (ROB) at Ch.3701.00 m., bridge no.18 (RUB) at Ch.5294.00 m.; bridge no 20 (ROB) at Ch.6381.00 m. & bridge no. 22 (RUB) at Ch.8041.00 m. respectively and proposed diverted routes of the respective roads are shown in the plan. A list of Road/ Level crossings is placed as Annex-2.6.

2.2.16 **Power Line Crossings:** HT (11 KV) power lines are crossing the proposed alignment in 5 (five) locations which are needed to be cabled as per crossing regulations or may be diverted through underground facilities. A list of LT/HT power line crossings

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crossing is placed as Annex-2.7.

2.2.17 **Land:** The siding alignment has taken departure from railway land boundary. Immediately after taking off from main line of railway track.Maximum portions of the land required for the proposed rail siding infrastructure falls within the Private land & forest land. Acquisition of land, as may be required, is to be arranged by CCL authorities. Track length falling within railway land is for about 2600.00 m & outside railway land is for about 26700.00 m.

2.3 Description of Alignment.

2.3.1 On account of grade constraints in the common main line (marked as L-2) at Manatu, it has been found that provision of extra loop lines with adequate length, avoiding the alignment of future 2nd& 3rd lines, on each side is not feasible.E. C. Railway has kept provision for three line section including common main line but intends to construct the section as 'single line' only with the middle one. Considering above aspect, the alignment of both the proposed Up line (L-3) & Dn line (L-1) have been planned & targeted to be used as loop lines to serve the proposed Amrapali siding of CCL, till E. C. Railway set up the commissioning of proposed L-1 & L-3 lines. On construction of the triple line section, there will be no additional loop at Manatu Station unless Railway plans for the same with entire re-gradation of the Manatu Station limit.

2.3.2 The proposed alignment of the Amrapali siding takes off from common main line (L-2) at Railways Ch.36/358.10 km. which is 658.10 m away from CSB of Manatu Halt Station towards Shivpur Station end on the Tori - Shivpur section between Manatu Halt Station and Shivpur station, which has been reckoned as **Ch.0.00 m(Zero)** with the provision of 1 in 12 Fan shaped LH Turnout on 1 in 1200 falling grade.

2.3.3 The proposed alignment, intended for movement of empty rakes, traverses straight up to Ch.395.258 m and negotiates with RH 4°Curve no.1 of radius 437.50 m which end at Ch.465.711 m. From Ch.465.711 m the alignment traverses straight up to Ch.1374.486 m and negotiates with RH 4.375°Curve no.2 of radius 400.000 m which end at Ch.1759.265 m. One D/S has been provided at Ch.220.00 m. From Ch.1759.265 m the alignment traverse straight up to Ch.2294.868 m and takes a right turn by forming a right hand 7°Curve no.3 (RH) of 250.00 m radius and the curve end at Ch.2742.369 m.

From Ch.2742.369 m the lead / empty line alignment run straight below the main line section by means of a rail under rail bridge (RUR - Br. No.7) up to Ch.3119.744 m

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within level grade and takes a left hand turn by forming a left hand 6.83°Curve no.4 (LH) of 256.00 m radius which end at Ch.3213.232 m. In between Ch.3344.200 m to Ch.3517.658 m provision has been kept for taking up of future siding lines by means of 1 in 12 (CS) towards Shivpur Station end in future (as shown in green colour). From Ch.3213.232 m the alignment will follow a straight run up to Ch.4725.572 m. The alignment further takes a left turn by means of a left hand 4.375° Curve no.5 (LH) of 400.00 m radius which ends at Ch.5032.143 m and further traverse straight up to Ch.5853.289 m.

From Ch.5853.289 m the alignment takes a right hand turn by means of a right hand 2°Curve no.6 (RH) of 875.00 m radius which end at Ch.6107.803 m and then run straight up to Ch.7637.747 m.

In between Ch.7637.747 m to Ch.7816.854 m the alignment route is required to be negotiated with two nos. of small curves i.e. left hand 4°Curve no.7 (LH) of 437.50 m radius & right hand 4.27°Curve no.8 (RH) of 410.00 m radius respectively by leaving a small straight portion in between Ch.7674.121 m to Ch.7782.767 m.

From Ch.7816.854 m the alignment run straight up to Ch.8117.260 m and traverse by taking a left hand turn with 2°Curve no.9 (LH) of 875.00 m radius up to Ch.8931.471 m and then followed by a straight run up to Ch.9199.861 m.

From Ch.9199.861 m the alignment takes a right turn by means of a right hand 5°Curve no.10 (RH) of 350.00 m radius to form the MGR system which run up to Ch.9901.718 m and further traverse a small straight up to Ch.9951.632 m and again takes a right hand turn by forming a right hand 5°Curve no.11 (RH) of 350.00 m radius which end at Ch.10675.015 m.

From Ch.10675.015 m the alignment run straight up to Ch.11529.946 m and negotiates with a small right hand 2°Curve no.12 (RH) of 875.00 m radius which end at Ch.11574.514 m and run straight up to Ch.11706.708 m and again negotiates with a left hand 2°Curve no.13 (LH) of 875.00 m radius which end at Ch.11751.276 m.

2.3.4 From Ch.11751.276 m the alignment run straight through the 120 T capacity In-Motion Electronic Weigh Bridge at center line Ch.12284.185 m meant for weighing of incoming empty rakes, if required, and the alignment starts diverging from Ch.12437.72 m to form the RLS yard and the lead line within yard will be designated as line no. L-1.

Line no. L-1 will run straight up to Ch.13857.312 m through SILO No.2 at Ch.13650.683 m and 120 T capacity In-Motion Electronic Weigh Bridge at Ch.13699.456 m. From Ch.13857.312 m. L-1 will take a left hand turn by forming a left hand 2° Curve no.14 (LH) which will end at Ch.14111.826 m and then run straight and

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after getting converged all the 4 nos. yard lines at Ch.14637.25 m it will meet at Ch.14707.30 m with the incoming empty line at Ch.5157.45 m by means of 1 in 8.5 (CS). Before meeting with the incoming empty line, the outgoing loading line will negotiate with a small left hand 4°Curve no.15 (LH) of 437.50 m radius in between Ch.14672.925 m to Ch.14709.299 m. CAL's of L-1 at pre-loading end & post-loading end are 796.80 m (FM to SILO 2) & 763.20 m (D/S to WB) respectively.

2.3.5 Line no. L-2 with its Ch.0.00 m will take off from line no. L-1 at Ch.12798.90 m and will run parallel to L-1 through SILO No.2 at Ch.852.25 m and 120 T capacity In-Motion Electronic Weigh Bridge at Ch.901.00 m. L-2 will meet at its Ch.1737.285 m with L-1 at Ch.14537.655 m. CAL's of L-2 at pre-loading end & post-loading end are 797.25 m (FM to SILO.2) & 761.03 m (D/S to WB) respectively.

2.3.6 Line no. L-3 with its Ch.0.00 m will take off from line no. L-1 at Ch.12574.40 m and will run parallel to L-2 through SILO No.1 at Ch.1102.716 m and 120 T capacity In-Motion Electronic Weigh Bridge at Ch.1126.47 m. L-3 will meet at its Ch.2061.036 m with L-1 at Ch.14637.25 m. CAL's of L-3 at pre-loading end & post-loading end are 798.216 m (FM to SILO.1) & 757.73 m (D/S to WB) respectively.

2.3.7 Line no. L-4 with its Ch.0.00 m will take off from line no. L-3 at Ch.249.50 m and will run parallel to L-3 through SILO No.1 at Ch.852.57 m and 120 T capacity In-Motion Electronic Weigh Bridge at Ch.876.01 m. L-4 will meet at its Ch.1746.67 m with L-3 at Ch.1998.352 m. CAL's of L-3 at pre-loading end & post-loading end are 797.57 m (FM to SILO.1) & 765.00 m (D/S to WB) respectively.

2.3.8 **Store Siding with Platform Arrangement:** One (1) Store siding designated as line no. L-5 with its Ch.0.00 m of CAL of 750.00 m (D/S to SRJ) has been proposed, which will take off from L-1 at its pre-loading end at Ch.12437.72 m and will meet at its Ch.1080.667 m with L-4 at its pre-loading end at Ch.691.856 m. An over run line of 120 m length has been proposed which will takeoff from Store siding line at Ch.992.917 m. One D/S has been provided at Ch.242.917 m to isolate the store siding at the entry end.

2.3.9 One Platform of size 650 m x 30.00 m for the Store siding (L-5) has been proposed to serve the necessary facilities.

2.3.10 D/S for all the four (4) loaded despatch lines are provided in L-1 at Ch.14462.655 m, L-2 at Ch.1662.03 m, L-3 at Ch.1884.20 m & L-4 at Ch.1641.01 m respectively.

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2.3.11 The return line in loaded direction, which is designated as line no. L-6, will start its run as Ch.0.00 m from the extended line no. L-1 Ch.14722.30 m. Return line L-6 will run straight and parallel to the incoming empty line from its Ch.0.00 m to Ch.200.342 m and will negotiate with a right hand 4.31°Curve no.5A (RH) of 406.00 m radius which will end at Ch.511.496 m and will traverse straight and parallel to the incoming empty / entry line up to its Ch.2050.876 m.

2.3.12 From Ch.2050.876 m, line no. L-6 will continue towards Manatu Station end by taking left hand turn by means of left hand 3.5°Curve no.16 (LH) of 500.00 m radius which will end at Ch.2653.104 m. From Ch.2653.104 m to Ch.2906.802 m the alignment will run straight and further takes right turn by means of right hand 2.9°Curve no.17 (RH) of 600.00 m radius which will end at Ch.3351.756 m. The alignment will run straight up to Ch.4449.62 m and then will turn right by means of 1 in 12 (CS) up to Ch.4491.01 m and takes a right turn to form a small right hand 4°Curve no.18 (RH) of 437.50 m radius which end at Ch.4518.898 m. The alignment then runs straight up to Ch.4695.251 m and takes a left turn by means of a left hand 4.375°Curve no.19 (LH) of 400.00 m radius which end at Ch.4778.664 m and then run up to Ch.4943.43 m to meet with common main line (L-2) at railways Ch.36/311.00 km (611.00 m away from the C.L. of Manatu Station towards Shivpur end) by means of 1 in 12 (CS). An overrun line of 120 m long has been provided on L-6 with its take point at Ch.4449.62 m and which will be buffered at Ch.4569.62 m.

2.3.13 Two no. of loop lines have been proposed at Manatu Station yard to serve Amrapali siding as discussed under para 2.3.1 above.

2.3.14 Proposed loop along Dn. Line (L-1) of CAL 762.40 m (SRJ to SRJ) will takeoff / meet by means of 1 in 12 (CS) from / at Common main line (L-2) at Ch.35/347.00 km (353.00 m away from CSB of Manatu Station towards Tori Station end) & siding Ch. (-)1011.10 m considering Ch.0.00 m at takeoff point of Amrapali siding. The proposed loop along Dn. Line will meet / take off by means of 1 in 12 (CS) at / from the siding line on empty direction towards Shivpur Station end at siding Ch.97.60 m (755.70 m from CSB of Manatu Station). An overrun line of 120.00 m long has been provided on proposed loop on Dn. Line taking off from Ch.(-)913.50 m by means of 1 in 12 (CS) at Tori Station end, which will dead ended at Ch.(-)1033.50 m.

2.3.15 Proposed loop along Up Line (L-3) of CAL 762.40 m (SRJ to SRJ) will take off / meet by means of 1 in 12 (CS) from / at Common main line (L-2) at Ch.35/300.00 km (400.00 m away from CSB of Manatu Station towards Tori Station end) & siding Ch. (-

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)1058.10 m considering Ch.0.00 m at takeoff point of Amrapali siding. The proposed loop along Up Line will meet / take off by means of 1 in 12 (CS) at / from the siding return line (L-6, on loaded direction) towards Shivpur Station end at Ch.4845.83 m (708.70 m from CSB of Manatu Station). An overrun line of 120.00 m has been provided on proposed loop on Up Line at Tori Station end which is taking off from Ch.(-)960.50 m (302.00 m from CSB of Manatu Station) by means of 1 in 12 (CS). An overrun line of 120.00 m along Up Line (L-3) at Shivpur end has been provided, which will take off from siding return line L-6 at Ch.4832.83 m.

2.4 Weighing Facilities

2.4.1 Four (4) numbers of 120 T capacity In- Motion Electronic Weigh Bridges are provided in each of the four loaded despatch line for weighment of loaded wagons simultaneously during loading. Center lines of the respective Weigh Bridges are at line no. L-1 at Ch.13699.458 m, L-2 at Ch.901.00 m, L-3 at Ch.1126.47 m & L-4 at Ch.876.01 m respectively.

2.5 Engineering Scale Plan

2.5.1 The detailed Civil Engineering Plan & L. Section drawing is placed at Annex-1.6 in 7 sheets.The future connection at Shivpur end (as shown in green line) has not been considered as a part of this revised DPR.

2.6 Civil Engineering Cost Estimate

2.6.1 The revised detailed cost estimate of Civil Engineering works has been computed on the basis of present day costs of the items like earthwork, bridges/culverts including ROB's/RUB's, permanent way materials, road/nalla diversion etc. The cost of Civil Engineering works for the proposed rail-infrastructure has been escalated to Rs.32,951.12 lakh mainly due to increases in (i) formation width in filling as per latest guidelines of Railway, (ii) Track length for about 2 kms due to change of location of serving station, (iii) No. of bridges by 10 nos., (iv) inclusion of miscellaneous civil works for Electrical and S&T departments and (v) escalation of rate. The details of the estimate is shown as Annex-8.1.

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CHAPTER - III

SIGNAL ENGINEERING & TELECOMMUNICATION

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Signal Engineering & Telecommunication

3.0 Introduction:

3.0.1 Central Coal Fields Limited (CCL) intends development and operation of Amrapali Open Cast Mines in North Karanpur Coalfields of Jharkhand with a peak capacity of 12.0 MTPA for supply of coal to Barh and Tandwa Super Thermal Power Stations of NTPC and other end users.

3.0.2 Since there is no existence of Rail head nearby it has been planned by CCL to develop rail infrastructure connecting with forthcoming new rail line between Tori - Shivpur - Hazaribagh / Kathautia section.

3.1 Engineering Layout

3.1.1 For the purpose of taking off the siding, the upcoming Manatu Halt station at location 35/700 km from Tori has been proposed for conversion into a Block Station for controlling movements of trains to and from the siding. The station will be provided with two (2) bi-directional loops of CAL 762.40 m each.

3.1.2 Amrapali siding will take off from kms.36/358.00 from CSB of Tori station (658.10 m) from CSB of new block station). After taking off, the alignment will traverse to the loading yard through a bulb to facilitate unidirectional movement. The In-plant yard of the siding will constitute of (i) 4 Pre-loading lines, (ii) 4 Post loading lines, (iii) 2 nos. of Rapid Loading System along with 2 Nos. of SILO chutes and (iv) 5 Weighbridges - 1 for weighment of empty rakes, if required and other 4 for weighment of loaded rakes.

3.1.3 For direct movement of trains from Amrapali siding to and from Koderma direction, a connectivity has been planned at Shivpur which will be constructed in future, when required.

3.2 Proposed Signalling arrangement:

3.2.1 Two Panel Cabins are proposed to be provided, one at the Manatublock station and the other one in the loading yard designated as In-Plant Cabin. Manatu station Panel Cabin shall control all points and Signals for movement of empties and loaded rakes to and from the siding. The In-Plant Cabin will control all Points and Signals of the loading yard including bulb.

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3.2.2 Signalling arrangement has been provided in the bulb in such a manner that 3 trains can be accommodated inside the bulb to avoid holding of trains.

3.2.3 Track Circuiting is proposed to be provided over the entire yard to ensure occupancy/clearance of the track which will be depicted in the Panel Board. SSDAC and Conventional DC Track Circuit are proposed to be provided with Q series AC immunized Track Relay.

3.2.4 Calling-on Signal below Home Signal is also proposed to be provided to facilitate admission of a train in case of either failure of Track Circuit of berthing zone/overlap zone or to admit a train on a blocked line.

3.2.5 All points and signals under the jurisdiction of this Cabin will be centrally controlled from the Control cum Operating Panel.

3.2.6 Digital Axle Counter for last vehicle checking is also to be provided to ensure clearance of Block section as well as to ensure complete arrival of a train. The Block Proving Axle Counter (BPAC) will be interlocked with the concerned 'Token Less Block Instruments'.

3.2.7 All the points in the station yard will be electrically operated through 110 V DC Non-trailable Rotary types IRS Point Machine.

3.2.8 Crank Handles are proposed be provided for operation of the Point machine manually in case any motor operated point fails to operate by the route setting process.

3.2.9 Data Logger which is a versatile real time data acquisition system is proposed to be provided for fault diagnosis and event logging.

3.2.10 SMPS based Integrated Power Supply (IPS) system is proposed to be provided uninterrupted supply to both AC & DC Signaling circuit.

3.3 Proposed Telecommunication arrangement

3.3.1 For effective and reliable communication the following Telecom facilities are proposed to be provided.

a) Point to point communication between:-

i) Phulbhasia Station and Manatu Sation;

ii) Shivpur Station and Manatu Station;

iii) Manatu Station and In Plant Cabin.

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b) 25 Watt VHF set complete with all accessories.

c) 5 Watt Hand held VHF section complete with all accessories.

3.4 System of Block Working

3.4.1 a) Trains will work on Absolute Block System with UFSBI Block Panel with Block Proving Axle Counter between

i) Manatu Station Cabin and Phulbasia Station;

(ii) Manatu Station Cabin and In-plant Cabin.

(iii) Manatu Station and Shivpur Station.

3.5 Abstract Cost Estimate

3.5.1 Abstract Cost for all the S&T works is estimated to Rs.1517.32 lakh and the details are placed at Annex-8.2.

3.6 Schematic Signalling Plan

3.6.1 The Schematic Signalling Plan for the proposed Signalling arrangement shown in Drg. No. RITES/KOL/CCL/Amrapali/S&T/142/15 and is placed at Annex-3.1 for appreciation.

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CHAPTER – IV

ELECTRICAL ENGINEERING

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Electrical Engineering

4.0 Introduction

4.0.1 Central Coalfields Limited (CCL) have planned to augment evacuation of coal under Amrapali OCP from 4.5 MTPA to a peak level of 12 MTPA progressively and transport it by rail to various power plants including BARH TPP under NTPC via Manatu-Tori section. As & when Shivpur-Kathuatia is opened up, this traffic may avail either of the routeafter loading through Rapid Loading System. With this end in view, rail connectivity from Manatu station on Tori-Shivpur section, which is yet to come up, has been proposed.

4.0.2 Permission for construction of section Shivpur-Kathuata has not as yet been granted. As and when the section is commissioned, the coal traffic may also be diverted via Manatu-Shivpur-Kathuatia when Up & Dn links between Amrapali Siding & Shivpur need to be provided for which no provision for electrical works has been made in this report.

4.0.3 The following rail infrastructures are proposed between Manatu & Amrapali siding to cater for an optimum traffic level of 12 MTPA.

I. **At Manatu Station**

(i) One loop at either end of single mainline with associate cross-overs;

(ii) A lead line to Amrapali siding connecting Down loop& associate overruns;

(iii) A return path linking up loop and associate over runs.

II. **At Amrapali Siding**

(a) The lead line shall be connected to return path through bulb with 4 nos of Pre-loading lines &4 nos of Post loading lines connecting 2SILOs;

(b) A cross over at Tori end to connect return leg with lead line;

(c) A store siding with platform of 650 m x 30 m

(d) Over run lines (2 nos)

(e) Each of the SILOs shall have two lines with a discharge chute on each line;

(f) Provision of a weigh bridge on lead line and one weigh bridge on each of the post loading lines.

4.1 Profile of the section

4.1.1 The section is mostly laid in straight excepting for a stretch of about 8kms in patches

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which will be laid in curves of radius varying between 350 m to 875 m.

4.1.2 Heavy filling & cutting to a maximum extent of 22 m is involved over the stretch.

4.1.3 The proposed alignment shall pass through a number of major rail bridges & ROB/ROR.

4.2 Speed Potential

4.2.1 Speed of 50 kmph has been considered for the siding.

4.2.2 The empty rake shall move under SILO at a speed of 1 kmph or so for loading.

4.2.3 The loaded rake shall negotiate the weigh bridges at a maximum speed of 15 kmph.

Part A:Traction Distribution

4.3 Mode of Traction

4.3.1 The existing section Patratu - Tori - Barwadih is already electrified. It is considered that electrification of Tori - Shivpur section shall be carried out concurrently with commissioning of the section. In view of above, the proposed sidingneedto be electrified as to maintain uniformity of traction.

4.4 Scope of wiring

4.4.1 All the lines propose under this scheme shall be wired in full excepting SILO zone which shall be left unwired. Total Track km to be wired including modification and associate dismantling work is about 30kms.

4.5 Details of OHE

4.5.1 Conventional all copper regulated OHE of 150 sq.mm section shall be provided on the proposed section matching with the one proposed to be provided on Tori - Shivpur section.

4.5.2 Standard foundations & masts suiting to loading of the location & bearing pressure of the soil shall be adopted.

4.5.3 Minimum implantation of 2.8 m shall be maintained on the proposed section. Attempt shall be made not to provide masts on lanes generally.

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4.5.3.1 Railway have proposed additional main lines with a track center of 5.3 m. In case any mast need to be provided on the lane between proposed single line & future main lines, the implantation of the mast need then to be restricted to 2.50 m.

4.5.3.2 In case of drains, the same shall be diverted.

4.5.4 Composite type stay, Bracket & 9 t. Insulators of 1050 C.D. shall be provided.

4.5.5 Modified 3:1 regulating equipment with modified anti falling device shall be provided.

4.5.6 Bonding & Earthing arrangement conforming to latest Bonding & Earthing Code shall be followed. M.S. flat type structure bond shall be provided on station area. Separate earth pit for level crossing shall be provided.

4.5.7 Insulated catenary wire underneath bridges & continuous protective screen on ROR/ROB shall be provided as per RDSO guidelines.

4.5.8 All piers of major bridges shall havefoundationon either side of the piers to facilitate siting of traction masts. Otherwise bridge uprights shall be used for supporting cantilevers.

4.6 Power supply arrangement

4.6.1 Richighutha Traction Sub-station (TSS) normally feeds Tori. Adjoining TSS at Ray feeds Tori under extended feed condition. Each of these TSSs is equipped with 2x21.6/30 MVA transformers and registering an M.D. of about 20 MVA. It is anticipated that by the time the proposed project materializes, existing TSSs will attain saturation due to normal growth in traffic. On the other hand, distance between Richighutha TSS & Siding via Manatu is about 53kmsand that of Ray is about 70 kms which in effect will result in abnormal voltage drop necessitating regulation of traffic.

4.6.2 In the circumstances, a new TSS at a suitable location is suggested. Location and capacity of transformers shall be decided by the Railway.

4.6.3 The proposed TSS shall have fixed type capacitor bank to improve power factor in line with Railway Board's letter no. 2008/RE/170/1 dated 12.6.2012.

4.6.4 A number of sidings are coming up on Tori - Shivpur section which will avail supply from the proposed TSS. It is suggested that the total cost of provision of a TSS with capacitor bank be shared by beneficiaries. Total financial implication on provision of

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TSS and extent of share under each beneficiary shall be decided by Railway. Pending finalization of amount under individual beneficiary, token provision has been made in the estimate.

4.6.5 The traffic as proposed shall pass through various sections fed by different TSSs/FPs. Impact of additional traffic on these TSSs/FPs has not been studied. Concerned Railway may like to review requirement under power supply arrangements keeping total power supply scenario in view.

4.7 Switching Post

4.7.1 It is not known if Railway have planned any Switching Post at Manatu with electrification of Tori - Shivpur section.

4.7.2 A Switching Post for feeding the siding has,however,been proposed under this scheme at Manatu with one circuit breaker & two interrupters. Supply will be tapped through circuit breaker which in turn will feed two interrupters connected by a common bus. Each of these equipments shall have bi-pass isolator to meet exigency.

4.7.2.1 Tori - Shivpur section is proposed to be opened with single line & planned to be augmented to triple line section ultimately. Location and requirement of space for siting of Switching post at Manatu shall be decided keeping future expansion of the section as well as that of Switching Post in view.

4.7.2.2 Location and dimension of Switching post shall be finalized with approval of Railway.

4.7.2.3 Attempt shall be made to provide the same within Railway area.

4.7.3 A 2-interrupter Switching Post at In-plant yard area is also proposed to control supply to bulb area. Each of these Interrupters shall get juice from lead line and return path which will in turn feed 2 numbers of motorized isolators. Motorized Isolators & Interrupters shall be connected on common bus. The circuit breaker and interrupters proposed under this scheme shall be equipped with normally open isolators.

4.7.4 Circuit Breaker & Interrupters shall be equipped with Double pole isolator.

4.7.5 150 sq.mm feeder with jumper wire of 160 sq.mm shall be used for transmitting power supply.

4.7.6 Earthing stations under Switching station shall conform to drawing

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4.7.6.1 Buried rail for earthing of Switching station shall also be provided.

4.7.7 Wiring cum power supply arrangement is appended under Annex-4.1.

4.8 Isolation Arrangement

4.8.1 Section Insulator with/without Isolator shall be provided at suitable points for isolation.

4.8.2 The store siding with an unloading platform of 650 m x 30 m shall be isolated by provision of short neutral section at either end of platform. The short neutral section shall be fed by double pole isolator with earthing heel at one end and single pole isolator with earthing heel at other end.

4.9 SCADA Work

4.9.1 The proposed switching posts shall be remotely controlled from Hajipur R.C.C. The RTU for these posts shall be compatible with SCADA system available under Hajipur R.C.C.

4.9.2 Necessary control & communication cable/equipment etc. shall be provided for hooking the RTUs with the SCADA system which is covered under S&T estimate.

4.9.3 With addition of new Switching posts under SCADA system, modification of Hajipur RCC need to be done for which necessary provision has been made.

4.10 Modification/Dismantling work

4.10.1 Tori - Shivpur section has not as yet come up. It is however considered that rail connectivity to siding shall be commissioned alongwith/after commissioning of related section when some modification at necks may have to be carried out.

4.11 Weigh Bridge

4.11.1 Glued joints at either end of weighbridge shall be provided by Civil branch for isolation.

4.11.2 Jumperbypassing the weigh bridge shall be provided for continuity of return path.

4.11.3 Maintenance free earthing station shall be provided at each of the weigh bridge.

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4.12 Tree cutting/Tree Trimming

4.12.1 Tree/bush cutting/Trimming shall be done as required.

4.13 Details of SILO

4.13.1 Details of SILO have not as yet been furnished by CCL.

4.13.2 Different types of chutes (Swing chute and Traverse cum Telescopic Chute) have so far been installed/under installation over different collieries.

4.13.3 CMPDI, the design wing of CILvide letter no. CMPDI/RIVII/E&M/BHPC SILO/2012 dated 19.4.2012have furnished some parameters for SILOs with Swing which stipulates as follows.

(i)	Height of chute from rail level under lowering down condition	3.93 m
(ii)	Height of chute form Rail level under raised condition	5.50 m

4.13.3.1 Details of Traverse cum Telescopic chute has not been furnished. Traverse cum telescopic chute so far planned are with two chutes under each line.

4.14 Arrangements of OHE under SILO

4.14.1 Railway Board vide letter no.2006/Elect(G)/170/2 dated 18.12.2008 have recommended adoption of following systems for overhead loading.

(i) Keeping the loading zone unwired as has been done under S.C. Railway.

(ii) Excess staggering of contact wire with reduction in size of discharge chute as done under S.E. Railway.

(iii) Adoption of Swiveling OHE as done under ballast siding at Obaidullahgunj of W. C. Railway.

4.14.2 In pursuance of Railway Board's letter mentioned above, it has been proposed to adopt unwired zone of 6.5 m below the loading zone.

4.14.3 The existing SILOs are having Swing chute with an overall dimension of about 5.3 m with inter distance of 9.0 m.

4.14.3.1 The traverse cum telescopic chute now under installation at other places shall maintain an inter distance of 8.5 m between chutes.

4.14.4 Depending on availability of type of electric loco & gradient of the section, Railway may

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offer single/multiple/consist locos

4.14.5 Driver of a single loco will be strained to negotiate restricted length of available contact wire beyond the unwired zone for SILOs, if equipped with swing chute.

4.14.6 At the meeting held with GM/E&M/CMPDI/Ranchi on 30.01.2012, it was proposed by RITES to adopt one number of telescopic type of chutesto obviate this difficulty. This was agreed to by CMPDI and it was assured that the same will be adopted for future projects where tender has not yet been invited.

4.14.6.1 On the contrary two numbers of traverse cum Telescopic chute has been planned for some SILOs as a result provision of unwired zone that can be negotiated by a single loco cannot be adopted

4.14.7 It is, therefore recommended that CMPDI/CCL to go for one telescopic chute with overall dimension of 2 m x 2 m (approx.) in lieu of Traverse cum Telescopic chute to facilitate negotiation of unwired zone by a single loco.

4.14.7.1 It is also considered that each SILO shall have two loading lines with an interspacing of 9 m center to center and each line shall have one telescopic chute. It is also considered that any one of the two lines will be in operation at a given time.

4.14.7.2 Due to restricted deflection of swing OHE, adoption of the same for a chute size of 2 m x 2 m is also not recommended.

4.15 Operation of Electric Loco under SILO

4.15.1 Empty rake hauled by electric loco with its rear pantograph in raised condition shall stop at 'stop board' and intimate the SILO Operator by blowing the horn once that the electric loco driver is ready to proceed for loading and waiting for signal/audible communication from SILO Operator.

4.15.2 The SILO Operator, on receipt of communication from the loco driver shall ensure that

(i) The SILO is ready for discharge;

(ii) The Telescopic chute is in raised condition;

(iii) Digital inputs indicate that traction supply is available at both ends of unwired zone.

4.15.3 The SILO Operator shall then make audible communication/signal off.

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4.15.4 The driver on receipt of communication/getting signal shall then proceed and stop at Electric Engine stop board and wait for final command from SILO operator. The driver shall then lower rear pantograph and raise front pantograph. On completion of operation, the driver shall again blow horn once to indicate that the driver is ready to proceed for loading.

4.15.5 The SILO operator shall then give audible signal to proceed forward. The driver of the loco shall then proceed at a speed of about 1 kmph synchronizing with the speed of discharge.

4.15.6 On completion of loading, the driver shall stop at signal under post loading line and change pantograph as required and thereafter proceed at permissible speed for onward journey on signal.

4.16 Sequence of operation with multiple loco

4.16.1 Same sequence shall be followed for multiple loco considering that the rear loco under multiple unit shall become 'dummy' till loading is complete.

4.16.2 Alternatively, both the locos of a multiple can be put to operation with separate Electric engine stop board for Multiple loco. In such case, the empty rake on arrival at nominated stop board shall lower all pantographs except rear pantograph of rear loco which will be in raised condition.

4.16.3 The rear pantograph of rear loco of a multi-unit on arrival at Electric Engine Stop Board shall be lowered and thereafter rear pantograph of front loco shall be raised.

4.16.4 On completion of above operation, the driver shall wait and proceed on receipt of communication from SILO operator at a speed synchronizing with the speed of discharge (around 1.0 kmph).

4.16.5 On completion of loading, the driver shall stop at Signal under Post loading line and raise rear pantograph of rear loco as well and thereafter proceed at permissible speed.

4.17 Safety features

4.17.1 No structure/equipment shall be provided having clearance less than 2.0 m.

4.17.1.1 All safety precautions & guidelines as laid down in ACTM shall be followed during electrification.

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4.17.2 The following safety features are proposed for operation of SILO in addition to above:

(i) Telescopic chute shall normally be in raised condition & locked which shall not be lowered down when electric loco is crossing the SILO.

(ii) Arrangement shall be made to ensure that the chute is in retracted position even if other associate equipments connected with chute have failed.

(iii) A sensor to monitor flight of the chute in both directions shall be provided & in case of failure to attain desired height from rail level, an audible alarm shall be sounded to caution the operator when no electric loco shall be allowed to move below it.

(iv) Hydraulic Power Unit controlling movement of Chute shall also be powered by a standby power source with appropriate back up which will get connected in the event of outage of regular supply.

(v) Flow control gate shall also have stand by supply to prevent opening out of gate with chute in raised position.

(vi) Necessary interlock to be provided to ensure that in case the operator commands for lowering of chute with obstruction (electric loco) underneath, the swing chute shall not come down.

(vii) The control system shall have interlock facility between 'Permit reception of loco' and 'Permit lowering of chute'

(viii) A signal & a crew address system shall be provided at entry point to SILO Tower which will be interlocked with status of Isolators and OHE power such that the signal is in OFF position only when Isolators are in closed position & the chute is in raised condition. Another crew address system shall be provided at exit end also to advice proceed command to driver for movement towards terminal.

(ix) The chute shall be lowered after passage of loco body. Speed of lowering down of chute shall be such that it synchronizes with the speed of the empty rake.

(x) The bottom most height of chute from rail level shall be of adjustable type such that it changes with the type of wagons (BOBRN/BOXN).

4.17.3 In addition to it, following Caution Boards are proposed to be provided:

Type of Boards		
With Florescent Paint	Retro Reflect type	Illuminated type
• Stop Board	• Attention to Driver	Depending on the options accepted, illuminated boards shall be provided for the following to avoid confusion (i) Electric Engine Stop Board (ii) Raise Pantograph Board

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• Speed limiting Board	• Lower Pantograph	
• Termination of speed restriction Board		

4.17.4 Further, following digital inputs shall be made available to SILO operator in respect of status of incoming/outgoing supply to decide upon further course of action by him:

- 25 KV incoming supply ON
- 25 KV incoming supply OFF
- 25 KV outgoing supply ON
- 25 KV outgoing supply OFF
- Isolator at entry in open condition
- Isolator at entry in close condition
- Isolator at exit in open condition
- Isolator at exit in close condition.

4.17.5 The above mentioned safety and protection schemes shall be implemented with approval of Railway.

4.17.5.1 CCL to ensure that system parameters, safety measures & protection schemes as approved by Railway are followed.

4.17.6 All safety measures including earthing of SILO structures and conveyor as required for safe working shall be done.

4.18 Other Options

4.18.1 In case the scheme for operation of electric loco as proposed is not acceptable to Railway, following alternatives are suggested:

a) Pajama chute with traction conductor in between
or
b) Power winch
or
c) Side arm charger
or
d) Diesel loco

4.18.2 In case of Pajama chute, the OHE shall normally remain dead excepting for passage of loco. The pajama chute shall not come down when loco passes underneath the loading zone.

4.18.3 In case of options (b), (C) & (d) the OHE shall be terminated short of SILO Tower at either end. The electric loco on arrival at entry point of the SILO Tower shall stop at Electric Engine Stop Board, to be provided at suitable location and lower the rear pantograph of single loco and all pantos under multiple loco. The dead electric loco shall then be hauled by any of the above mentioned alternatives upto a pre-set point at

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other end of SILO Tower.

4.18.1.1 Thedead electric loco on reaching the pre-set point located at other end of SILO Tower shall then stop and raise front pantograph for onward movement duly observing cautions / directives as mentioned in 4.15.

4.19 Operation of Isolator

4.19.1 It is suggested that operation of isolators located at siding premises be carried out by authorized representatives of the siding owner having competency certificate issued by Railway.

4.20 Training of Railway Crew & Siding personnel

4.20.1 The rake is proposed to be loaded at an approximate speed of 1 kmph. In absence of 'creep-control' system, the electric loco driver has to operate the loco manually at stipulated restricted speed which is solely dependent on individual skill. Training of driving crew may be of help.

4.20.2 For opening of isolator one has to develop skill which one can gain by undergoing training.

4.20.3 Railway may like to examine the issue of imparting necessary training to loco crew and nominated siding staff.

4.21 Conveyor

4.21.1 Complete details of conveyor linking the proposed SILOs is not available. It is considered that the conveyor shall cross the electrified track for which following stipulations are recommended.

i) The conveyor shall have protective cover at bottom & two vertical sides. All covers shall run for the entire stretch of electrified track crossed by the conveyor plus 2 m on either side of it.

ii) There shall not be any leaf or sliding type window on the conveyor within 2 m on either side of wired tracks. Windows, if any, shall be blanked.

iv) Conveyor shall be properly earthed.

v) Launching of Conveyor Girder crossing railway track shall be done duly ensuring safe working.

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Part B General Services

4.22 Electrification of Service building

4.22.1 Electrification of Manatu station building has been considered.

4.22.1 'Manatu station shall have AT supply.

4.22.2 The In-plant cabin shall be electrified by availing supply from the plant.

4.22.3 A crew rest room with console room for 5 nos of weigh bridges, one FOIS & TMS roomshave been planned. Electrification of these establishments has also been considered by availing supply from the plant.

4.22.4 It is considered that CCL shall provide requisite LT supply at electrical Panel room wherefrom LT supply will be distributed to various load points. Electrification of Panel room by availing supply from the plant has been proposed.

4.23 Illumination of yard, Unloading Platform, Pathway, Weigh Bridge area

4.23.1 2 nos of 30 m High mast each with 12 x 280 w LED is proposed at Manatu station. It is considered that by the time the scheme materializes, local supply will be available.

4.23.2 4 nos of 30 m High mast each with 12 x 280 W LED is proposed for in-plant yard.

4.23.3 It is proposed to illuminate the weigh bridge area by provision of 11 m poles with 90 W LED.

4.23.4 Illumination of pathways by provision of 24 W LED at interval has been proposed.

4.23.5 Unloading platform shall be electrified with through independent poles.

4.24 D.G. Set

4.24.1 D.G. Set of 10 KVA capacity with converter of 1 KVA is proposed for console rooms to meet exigency.

4.24.2 D.G. set of 82.5 KVA has been proposed to meet power demand of Amrapali Yard Complex in the event of failure of local supply.

4.24.3 All these D.G. sets shall have AMF Panel.

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4.24.4 DG sets shall be housed in DG rooms which shall also be electrified.

4.25 Power supply

4.25.1 It is considered that LT supply shall be made available by CCL at Panel room.

4.25.2 Total Power requirement at In-plant is to the tune of 70 KW. CCL to arrange supply accordingly at Panel room.

4.25.3 Provision for distribution of LT supply to various load points has been made.

4.26 Modification of Power line

4.26.1 There are 7 nos of overhead power line crossings as detailed below:

Chainage (m)		Chainage (m)		Chainage (m)	
(i)	3548	(iv)	8403	(vi)	9526
(ii)	4298		&		
(iii)	5406	(v)	11908	(vii)	11644

4.26.2 All these crossings shall be cabled in terms of extant crossing regulation.

4.26.3 It is proposed to cable entire stretch of 11 kv overhead line crossing between chainages 8403 & 11908

4.26.4 Modification of 11 KV line shall be done as per drawing to be approved by Railway.

4.26.5 There is no other power line for the present. If any other power line comes up on this section and does not conform to crossing regulation, the same shall be modified at the cost of siding owner.

4.27 Illumination of SILO Tower

4.27.1 It is considered that illumination of SILO Tower shall be carried out by CCL separately.

4.27.2 Outdoor type fitting to be provided duly maintaining minimum clearance of 2.0 m from live OHE in vicinity.

4.28 Accommodation for Railway personnel

4.28.1 It is considered that CCL will provide residential accommodation complete with water supply arrangement, sanitary fittings & electrification for Railway personnel working in siding.

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4.28.2 The type of quarter and scale of electrical fittings in these quarters shall not be less than the yardstick laid down by Railway for identical category of staff.

4.28.3 No provision of electrification of staff quarters has been made.

Part C: General

4.29 Agency for execution of work

4.29.1 Normally such works are carried out by Railway on 'Deposit' term.

4.29.2 It appears from the observations made by Sr.DEE/TR-D/Dhanbad, East Central Railway vide letter No. ELD/367/Siding/DPR/RITES(Magadh) dated 23.07.204 that the work of electrification is to be carried out by the siding owner. In such eventuality, the siding owner shall abide by the following:

1. Work shall be carried out on the basis of Sectioning Diagram and all OHE/PSI Plans/drawings etc as approved by Railway. All works shall be carried out as per latest RDSO design/drawing and guideline issued by railway.
2. All electrification materials shall be procured from CORE/RDSO approved regular sources.
3. Forged fittings in lieu of MCI fittings & 7 mm droppers for register arm along with terminal connector (bolted type) made of bronze shall be used.
4. SCADA work shall be executed through the party whose system is in operation under Hajipur RCC or by the Contractor engaged for maintenance of SCADA system under the said RCC. The work shall be carried out under supervision of Railway.
5. As for General Services works, electrification of service buildings & other installations shall be done as per IEE Act following latest building code/NEC.

5.1 Wherever applicable, energy efficient equipment with 3-star & above rating having BEE approval shall be used. All other materials shall be from ISO approved firms.

6. All safety measures as prescribed under latest IEE rules/ACTM/Bonding &Earthing Code/Railway shall be adhered to.

4.30 Cost of work

4.30.1 Cost of work as assessed is based on the price quoted by various venders in the recent past & escalated. The estimate also includes provision of items based on directive given by Railway or as per norm.

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4.30.2 Cost of electrical work is estimated to be Rs.3021.09lakh excluding Departmental charges etc. & Rs.3226.37lakh including Departmental charge and all other incidental charges as detailed under Annex-8.3.

4.30.3 Departmental charge @ 6.25% has been considered as per Railway Board's letter No.99/TC(FM)/26/1 Pt.II dated 30.01.2012.

4.30.4 The work involves Power block works. Token provision towards Traffic & Power Block charges & hiring charge of Tower wagon has been included in the estimate. Actual cost as may be claimed by Railway to be paid.

4.30.5 Indicative cost on modification of power lines has been shown. Actual cost of modification as may be claimed by the owner of the line is to be paid.

4.30.6 The work also involves associate Civil & S&T works which are covered in the respective estimates.

4.30.7 Item nos 13(a) to 13(e) of summary sheet and Estimate E16 are earmarked for utilization by Railway. Item wise requirement with ID No & Specification as the case may be shall be advised by Railway within the amount available, prior to invitation of Tender as to process supply of materials. Otherwise above amount shall be deposited with Railway.

4.30.8 Variation in cost in respect of DPR submitted in December 2013 is mainly due to increase in scope of work by way of inclusion of additional wiring, TSS, additional items like provision of circuit breaker, Traffic & power block charges &compliances of observations apart from price escalation.

4.31 Schedule of Completion

4.31.1 It is expected that the work shall be completed within a period of 36 months from the time final peg marks on alignment, SRJs, Rail level are made available and that power and traffic blocks are granted by Railway as planned.

4.32 Maintenance of Assets

4.32.1 Electrification assets shall be maintained by Railway as per norm. Necessary infrastructural facility has been covered in the estimate.

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4.32.2 General services assets created under Manatu station shall be maintained by Railway.

4.32.3 General services assets proposed under siding premises shall be maintained by Siding owner.

4.32.4 Siding owner shall also carry out Tree cutting/Tree trimming periodically as per advice of Railway.

4.33 Compliance of observations

4.33.1 Compliance of observations made by Sr./DEE/TRD/Dhanbadvide his letter no. E&D/367/Siding/DPR/RITES (Magadh) dated 23.07.2014 &Dy CEE/W. E. C. Railway vide his letter no. ECR/ELE/PLG/DPR/576 dated 27.02.2014 are furnished under Chapter-I of the DPR.

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CHAPTER – V

COMMERCIAL

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CHAPTER-V

Commercial

5.0 Introduction

5.0.1 Central Coalfields Limited under their mega development programme has planned to start excavation of coal from Amrapali coal block with a targeted capacity of 12.00 MTPA. The coal block is linked to the Barh Thermal Power station of NTPC and at the initial stage it has been planned to load 4.50 MTPA of coal for the power house.Accordingly, it has been planned to construct rail-infrastructure facilities from the loading yard to the nearest and suitable rail head for the purpose of transporting coal traffic to power houses and other users.

5.0.2 The Policy regarding siding matters as indicated in the Freight Marketing Circular No.01 of 2012 on 'Liberalization of Siding Rules' circulated vide Ministry of Railways, Railway Board's letter No.99/TC(FM)/26/1/Pt-II dated 30.01.2012 shall be followed for construction and operation of the private siding and the siding will be opened as per 'Engine-on-Load' (EOL) scheme and in this respect, Freight Marketing Circular No. 5 of 2013 as issued under Railway Board's letter No. 2012/TC(FM)/18/21 dated 07.03.2013 shall be followed.

5.0.3 The siding holder will require to opt for the EOL operations under an agreement with the Zonal Railway administration as per terms and conditions of EOL schemes. The prescribed free time under EOL scheme for different types of rake is given as under:

Type of wagon	EOL free time in hrs.	
	Loading	Unloading
Open Rake (BOXN etc.)	3:00	5:00
Hopper Rake (BOBR etc.)	3:00	2:00

5.0.4 According to above circular, if a siding holder requires to utilize the train engine during loading or unloading of rakes, within the free time prescribed, the same will be allowed without levying any additional charges. The siding owner may, therefore, not be required to maintain a captive engine at his cost under the 'EOL' operations. Beyond the free time the engine hire charges shall be charged as per extant rules.

5.0.5 For bulb type sidings freight will be charged on the basis of through distance up to a specified loading or unloading point and not for the entire length of the siding. No siding / shunting charges for haulage of wagons within the siding will be leviable under the EOL operations.

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5.2 Weighbridge and TMS Facilities

5.2.1 Five 120 Ton Electronic In-motion Weighbridges have been provided – one (1)at the approach of Pre-loading yard for weighment of empty rakes and the other four(4) for that of loaded rakes. The incoming empty rakes shall be weighed during admission into preloading lines; the other four(4) Weighbridges shall weigh loaded stock simultaneously during loading.The Weighbridges should be linked with FOIS Terminal for which a separate office with necessary furniture will be provided at the cost of siding owner. The siding owner should also arrange calibration, testing and certification from the manufacturer/authorized service provider. TMS equipment and hardwire peripheral should also be arranged by the siding owner. However, necessary software will be supplied by Railways for issue of computerized Railway Receipt (RRs).

5.2.2 The commercial formalities for handling coal rakes including manning of weighbridges at the loading terminal may be finalized after interaction and discussion with the Commercial Department of Dhanbad Division as well as HQs of East Central Railway.

5.3 Execution of Private Siding Agreement

5.3.1 The Private Siding Agreement on the prescribed format shall be executed between Railways and Central Coalfields Limited, the siding owner who would sign the agreement as soon as the agreement documents are served to them by Eastern Railway.

5.4 Pollution Control

5.4.1 CCL has to obtain necessary clearance from MOEF for commissioning of the loading arrangement at the siding and the status be informed to the Railways.

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CHAPTER – VI

MECHANICAL ENGINEERING

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Mechanical Engineering

6.0 General

6.0.1 Central Coalfields Limited (CCL) has planned to evacuate 12.00 MTPA of coal from Amrapali coal mines situated at Chandwa district of Jharkhand. Though the subject coal mines is not adjacent to any rail head, it has been planned to develop rail infrastructure connecting with the forthcoming new line section at Manatu on the proposed Tori-Hazaribagh section.

6.0.2 Intensively examined empty trains are to be supplied for loading by IR and train should run on round-trip BPC. Hence, there will be no need for any maintenance facilities within the siding premises. However, the costs of re-railing/restoration work, in case any accident or derailment occurred owing to the fault of siding holder, will usually be borne by the Siding holder.

6.0.3 For damage and deficiency to wagons inside the siding premises owing to negligence of siding owner, regular damage and deficiency bills will be raised on the siding owner on the basis of joint sample check to be done in every six monthly or as fixed by East central Railway. However, for severely damaged wagons, this will be done on case to case basis. Railway's discretion for charging damage/deficiency bills on case to case basis shall be final.

6.0.4 Joint check of loading/unloading points where mechanized equipments are used, should be carried out by officers of Mechanical and Operating / Commercial branches of Railway once in 3 months along with the loader/un-loader. Penalties for damages, if detected, should be imposed as per extant rules.

6.0.5 One rest room with toilet facilities for the train crew should be provided near the loading point.

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CHAPTER – VII

OPERATION & MAINTENANCE OF THE SIDING

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CHAPTER- VII

Operation & Maintenance of the Siding

7.0 General

7.0.1 Central Coalfields Limited (CCL) has planned to develop Amrapali OCP at Chandwa District of Jharkhand for despatch of 4.50 MTPA of coal for Barh TPP at initial stage.

7.0.2 Thesiding facilities will be developed according to the provision of para 4 of FM circular No. 01 of 2012 circulated under Railway Board's letter No. 99/TC/(FM)/26/1/ Pt.II dated 30.01.2012 and the entire capital cost of the work will be borne by siding owner.

7.1 Operating

7.1.1 It has been proposed to run two Panel Cabins - one at the Manatu Block station and the other at the In-plant yard for controlling movement of trains to and from the siding. While the Manatu block cabin will usually be maintained and operated by Railway staff, for smooth operation of In-plant yard cabin following operating staff, may be provided, preferably from retired Railway employees, for round the clock working:

Sl No	Category of staff	Requirement
1	Supervisor (Traffic)	1
2	Cabin/Panel operation including RG & LR	4
3	Operating Assistant including RG & LR	4
	Total	9

7.1.2 The Manatu Block Panel cabin will control the movement of trains to and from the loading terminal as well as main line movements. For working of Manatu Block panel cabin the siding owner will have to pay a lump sum amount which would be equal to recurring cost towards maintenance and staff and employment for a period of 10 years on the basis of initial deployment of staff at the station. Such payment which shall be decided between CCL & Railways shall be made before commissioning of the siding in terms of para 4.4 (iii) of FM Circular No.1 of 2012.

7.2 Civil Engineering

7.2.1 Civil Engineering maintenance shall be done by the siding owner at his cost and Railways should not claim for any inspection charges. The siding may be maintained by engaging approved Agency.

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7.3 Signal & Telecommunication

7.3.1 For maintenance and up keeping of the signalling assets of Inplant yard cabin, CCL may provide following staff, may be engaged from the retired Railway employees.

Sl No	Category of staff	Requirement
1	S&T Maintainer including LR & RG	2
2	S&T Helper including LR & RG	2
	Total	4

7.4 Electric Engineering

7.4.1 Maintenance of the OHE and the cost thereof shall usually be borne by Railway. However, General Service assets at the siding premises shall always be maintained by the Siding owner.

7.5 Carriage & Wagons

7.5.1 As regard to C&W maintenance, no C&W facility should be developed. Running repairs of rolling stocks including materials and staff cost in all cases shall be borne by the Railway. However, the cost of re-railment including the repair cost of stock owning to any derailment or accident occurred due to the negligence of siding owner shall be borne by the siding owner.

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CHAPTER – VIII

ESTIMATED COST OF THE RAILWAY INFRASTRUCTURE

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Estimated Cost

8.0 Estimated cost of the proposed Railway Infrastructure

8.1 Civil Engineering

8.1.1 The capital cost of Civil Engineering works of the proposed Railway infrastructure for transportation of coal from Amrapali Coal Block has been assessed taking into consideration the present day cost of earthwork, P-way, track, ballast, track fittings, major & minor bridges, side drains etc. The Railway infrastructure as planned in the Project Report shall be constructed within the private land and as such the cost of land is not included in the estimate. The estimated cost of Civil Engineering works amounts to Rs 32,951.12 lakh. The Abstract cost estimate is placed at Annex-8.1.

8.2 Signal Engineering & Telecommunication

8.2.1 Signaling & Telecommunication works have been computed for providing Signalling &Telecommunication arrangements for reception and despatch of trains to and from the coal loading terminal. Two Panel Cabins have been provided – one at the new block station and the other at the loading yard for controlling train movements. The Abstract cost estimate has been prepared for providing the Signalling &Telecommunication arrangements works out to Rs.1517.32lakhs and is placed at Annex-8.2.

8.3 Electrical (OHE) Engineering works

8.3.1 The Abstract Cost for provision of OHE has been prepared based on the norms adopted in Railways for provision of OHE installation including wiring. The cost of General electrical works for illumination of loading yard has been included in the Cost Estimate. The Abstract Cost Estimate for providing OHE and General electrical works is estimated at Rs 3021.09lakhs.

8.4 Estimated Total Capital Cost

8.4.1 The estimated total capital cost for construction of the proposed railway infrastructure has been estimated at Rs.37,489.53 lakhs and is placed at Annex – 8.0. The details of the estimated cost of different disciplines are tabulated as under:-

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Annex-1.1

P-1
116 (11)

CCL
A Miniratna Company

सेन्ट्रल कोलफील्ड्स लिमिटेड
दामोदर भवन, राँची 834 027
CENTRAL COALFIELDS LIMITED
(Govt. of India Undertaking)
DAMODAR BHAVAN RANCHI 834 027

To,
General Manager(Projects),
RITES Ltd. : Regional project Office,
Metro Rail service Building,
56, CR Avenue : Kolkata – 12

No: CGH(C)/IC/09/M&A/162-66
Dt : 21.03.09.

Sub : Route alignment survey for the construction of Magadh & Amrapali railway siding under CCL command Area.

Dear Sir,

For evacuation of coal from Magadh & Amrapali Opencast Projects, Railway sidings have to be constructed. The take off points for above two sidings will branch off as shown in Plan, from Tori-Shivpur-Hazaribagh main BG rail line, which is being constructed by EC Railway, Patna, under CCL command area.

A tentative route alignment for the above two sidings, shown in a Plan is attached herewith for your ready reference. The salient features of these sidings is also annexed in a separate sheet.

The scope of work confirming the salient features are as under :

1) Survey for final route alignment of the two sidings alongwith longitudinal Section & cross sections.
2) Preparation of detailed survey report
3) Obtaining competent approval of Final Route Alignment from Railway Authority.
4) Submission of cost estimate for the construction and commissioning of the said sidings as per Railway approved Final Route Alignment.

The above details are to be submitted for above said two railway sidings separately.

You are, therefore, requested to kindly submit your offer for the above work on or before 30.04.2009 to this office, positively.

Thanking you,

Encl : As above(2 pages).

Yours faithfully,
21/3/09
(A.K. Bandopadhyay)
Chief General Manager(Civil)

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M-A AREA

Annex-1.2

सेन्ट्रल कोलफील्ड्स लिमिटेड
CENTRAL COALFIELDS LIMITED
CHARHANGA HOUSE

CCL
A Miniratna Company

No. GM(IC)/M&A/2013/ 207
Dated . 04.05.2013

To
The General Manager (Projects),
RITES Ltd Regional Project Office,
Metro Rail Service Building (2nd Floor)
56, CR Avenue, Kolkata – 700012

FAX NO : 033-22367143.

Sub : Feasibility report on Rail Infrastructure for dispatch of coal from Amrapali (Amrapali OCP & Pachra Integrated OCP).

Ref: RITES letter No.RITES-RPO-KOL/Amrapali Survey/09-13/1896 dtd.18th March 2013.

Dear Sir,

With reference to above the observations on the above feasibility report submitted by RITES in respect of proposed Rail Infrastructure for Amrapali & Pachra Projects is as under:

1. Alignment of Silo for Amrapali Project may be similar to alignment of silo for Pachra Project as shown in drawing no. Annex 1.2 & Annex 1.3 (5 of 8) at a distance of 25 m. Two nos. of Silo with two nos. loading conveyors for each silo have been proposed for wagon loading for each projects. Silo position may be relocated on the track to suit the proposed loading conveyors in the Amrapali Project

2. As distance between two loading lines (tracks) has been kept at 23 mtrs., both the loading chutes of a silo will be positioned on same line (track).

3. There will be two telescopic loading chutes (size not more than 1.6 x 1.6 m) under each silo on a track instead of one telescopic chute mentioned in Para 4.6.2. However only one will be working at a time. Center to Centre distance of these two chutes under the silo will be about 9.0m.

4. In the drawings enclosed with the feasibility report, Amrapali has been wrongly spelt and this should be corrected.

5. In respect of Para No.1.8.2 and Para 1.8.3, discussions are required to be done between M/S RITES with CMPDI officials, Ranchi for finalizing the matter.

It is therefore requested to send the concerned person for holding discussion with CMPDI in respect of point no 5 above at the earliest. The tentative programme may be informed to us so that CMPDI can be informed accordingly.

Thanking you,

Yours faithfully,

(C.B. Singh)
General Manager (Civil)/C

Copy to :

1. GM (Civil), CCL Ranchi
2. GM, CCL, Magadh & Amrapali Area→ with a request to send your observations, if any, on the above feasibility report immediately.

A. Roy, Expert(T)

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M.A.AREA

Annex-1.3

East Central Railway

Office of GM (OPTG)
East Central Railway
Hajipur

Date 11.06.2013

No. ECR / OPT /Pvt-Sdg/ACB/505

Advisor (Traffic)
RITES LTD
Regional Project Office
Metro Service Building (2nd floor)
56-CR Avenue, Kolkata-700012

Sub: - Feasibility report for construction of rail infrastructure for the proposed Amrapali Coal Block on Tori-Shivpur section.

Ref: - Your letter no. RITES/RPO-KOL/Amrapali/Survey/09-13/1895 dated 18.03.13

Feasibility report submitted by you has been perused. 'In principle' approval is granted subject to commissioning of TORI-SHIVPUR NEW LINE section and compliance of following conditions.

1) 1% of project cost should be deposited in the name of FA&CAO/ECR.

2) Since take off point cannot be provided in mid section so CCL has to develop a crossing station with two holding line at the location of take-off point.

Please submit the compliance report.

(Neeraj Ambastha)
CTPM/ECR

Copy - Sr.DOM/DHN- for information and n/a.

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2-11

Annex-2.0

LIST OF TBM
AMRAPALI OCP SIDING

Sl. No	Name	Description	Reduced level [in M]	Remarks
1.	TBM-1	ON TOP OF PARPET OF CULVERT NEAR HONEY VILLAGE	481.907	
2.	TBM-2	ON R.C.C. PILLAR	506.161	
3.	TBM-3	ON TOP OF PARPET OF CULVERT NEAR HONEY VILLAGE	490.216	
4.	TBM-4	ON ROCK	504.740	
6.	TBM-5	ON ROCK	505.398	
7.	TBM-6	ON WELL NEAR HAND PUMP AT SHIVPUR	516.908	
8.	TBM-7	ON ROCK	489.763	

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Annex-2.1

GRADIENT STATEMENT
(MAIN LINE)

Total Length of Line = 14797.3m

Sl. No	Chainage in 'm'		Length in 'm'	Grade	Remarks
	From	To			
01	00.000	301.500	301.500	1 in 1200	Fall
02	301.500	1235.000	933.500	1 in 180	Fall
03	1235.000	1443.000	208.000	Level	Level
04	1443.000	2622.200	1179.200	1 in 180	Fall
05	2622.200	3604.200	982.000	Level	Level
06	3604.200	5004.000	1399.800	1 in 150	Fall
07	5004.000	5267.000	263.000	Level	Level
08	5267.000	6137.000	870.000	1 in 1200	Fall
09	6137.000	6361.000	224.000	Level	Level
10	6361.000	7571.000	1210.000	1 in 1200	Fall
11	7571.000	7779.000	208.000	Level	Level
12	7779.000	9806.000	2027.000	1 in 200	Fall
13	9806.000	10002.000	196.000	Level	Level
14	10002.000	12181.000	2179.000	1 in 215	Rise
15	12181.000	12387.700	206.700	Level	Level
16	12387.700	13598.000	1211.000	1 in 1200	Rise
17	13598.000	13804.000	206.000	Level	Level
18	13804.000	14674.000	870.000	1 in 1200	Rise
19	14674.000	14797.300	123.300	Level	Level

GRADIENT STATEMENT
(LINE No – 6)

Total Length of Line = 5094.552m

Sl. No	Chainage in 'm'		Length in 'm'	Grade	Remarks
	From	To			
01	0.000	233.000	233.000	Level	Level
02	233.000	1632.800	1399.000	1 in 150	Rise
03	1632.800	2092.358	459.558	Level	Level
04	2092.358	3503.158	1410.800	1 in 200	Rise
05	3503.158	3656.950	153.792	Level	Level
06	3656.950	4566.950	910.000	1 in 200	Rise
06	4566.950	5094.522	527.572	1 in 1200	Rise

PROJECT OFFICER
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M-A AREA

Annex -2.1

GRADIENT ABSTRACT
(MAIN LINE)

Total Length of Line= 14797.3m

Sl. no	Grade	Length In 'm'	% Of Length	Remarks
01	1 in 150	1399.800	9.459%	
02	1 in 180	2112.700	14.277%	
03	1 in 200	2027.000	13.698%	
04	1 in 215	2179.000	14.725%	
05	1 in 1200	4462.500	30.157%	
06	Level	2617.000	17.684%	
	Total	= 14797.3m	100%	

GRADIENT ABSTRACT
(LINE No 6)

Total Length of Line= 5094.552m

Sl. no	Grade	Length In 'm'	% Of Length	Remarks
01	1 in 150	1399.000	27.607%	
02	1 in 200	2320.800	45.554%	
03	1 in 1200	527.572	10.355%	
04	Level	846.350	16.613%	
	Total	= 5094.552m	100%	

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Annex-2.2

LIST OF CURVES
(MAIN LINE)

Total Length of Line= 14797.3m

Sl. No	Curve No	Radius of Curve in m	Chainage in 'm' From	To	Deflection Angle	Total Length of Curve in 'm'	Direc.	Remarks
01	1	437.5	395.258	465.710	09°13'36"	70.453	RH	
02	2	400.0	1374.486	1759.265	55°06'56"	384.779	LH	
03	3	250.0	2294.868	2742.369	102°33'35"	447.501	RH	
04	4	256.0	3119.744	3213.232	20°55'25"	93.488	LH	
05	5	400.0	4725.572	5032.143	43°54'39"	306.555	LH	
06	6	875.0	5853.289	6107.803	16°39'57"	254.514	RH	
07	7	437.5	7637.747	7674.121	4°45'49"	36.374	LH	
08	8	410.0	7782.767	7816.854	4°45'49"	34.087	RH	
09	9	875.0	8117.260	8931.471	53°18'54"	814.207	LH	
10	10	350.0	9199.861	9901.718	114°53'44"	701.857	RH	
11	11	350.0	9951.632	10675.015	118°25'10"	723.383	RH	
12	12	875.0	11529.946	11574.514	2°55'06"	44.568	RH	
13	13	875.0	11706.708	11751.276	2°55'06"	44.568	LH	
14	14	875.0	13857.312	14111.826	16°39'57"	254.514	LH	
15	15	437.5	14672.925	14709.299	4°45'49"	36.374	LH	

LIST OF CURVES
(LINE No-6)

Total Length of Line= 5094.552m

Sl. No	Curve No	Radius of Curve in m	Chainage in m' From	To	Deflection Angle	Total Length of Curve in 'm'	Direc.	Remarks
01	5A	406.0	200.342	511.496	43°54'39"	311.154	RH	
02	16	500.0	2050.876	2653.104	69°00'37"	602.228	LH	
03	17	600.0	2906.802	3351.756	42°29'24"	444.954	RH	
04	18	437.5	4491.010	4518.898	03°39'08"	27.888	LH	
05	19	400.0	4695.251	4778.664	11°56'53"	83.413	LH	

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Annex-2.2

CURVE ABSTRACT
(MAIN LINE)

Total Length of Line= 14797.3m

Radius of Curve in (m)	No of Each	Length in (m)	Total Degree of Curvature	% Of Curvature of Total Length of Line
875.0	05	1412.371	92°29'00"	9.544%
437.5	03	143.201	18°45'14"	0.968%
410.0	01	34.087	4°45'49"	0.230%
400.0	02	691.334	99°01'35"	4.670%
350.0	02	1425.240	233°18'54"	9.631%
256.0	01	93.488	20°55'25"	0.631%
250.0	01	447.501	102°33'35"	3.024%

Total = 28.698%

CURVE ABSTRACT
(LINE No-6)

Total Length of Line= 5094.552

Radius of Curve in (m)	No of Each	Length in (m)	Total Degree of Curvature	% Of Curvature of Total Length of Line
406.0	01	311.154	43°54'39"	6.107%
600.0	01	444.954	42°29'24"	8.734%
500.0	01	602.228	69°00'37"	11.821%
437.5	01	27.888	03°39'08"	0.547%
400.0	01	83.413	11°56'53"	1.637%

Total = 28.839%

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M-A AREA

Annex-2.5

LIST OF BRIDGE
(MAIN LINE)

MINOR BRIDGE

Total Length of Line= 14797.3m

Sl. No	Bridge No	Chainage in 'm'	Span in (m)	Type of Bridge	Remarks
01	Exist. Br No-76	41.850	1 x 6.0m	R.C.C. Box	Exist.Br.No-76 (To be extended)
02	1	116.900	1 x 6.0m	R.C.C. Box	Exist.Br.No-77(To Be extended)
03	2	297.600	1 x 5.0m	R.C.C. Box	Nala X-ing
04	3	721.000	1 x 6.0m	R.C.C. Box	Nala X-ing
05	4	840.000	1 x 6.0m	R.C.C. Box	For drainage system
06	6	1962.000	1 x 2.0m	R.C.C. Box	Nala X-ing
07	7	2791.618	2 x 6.5m	R.C.C. Box	Box pushing
08	8	2922.000	1 x 4.0m	R.C.C. Box	For drainage system
09	9	3241.418	1 x 2.0m	R.C.C. Box	Nala to be diverted & Irrigation
10	10	3534.170	3 x 6.0m	R.C.C. Box	Nala X-ing
11	12	3714.215	1 x 2.0m	R.C.C. Box	Irrigation canal x-ing
12	13	3881.000	1 x 4.0m	R.C.C. Box	For drainage system
13	14	3974.500	1 x 4.0m	R.C.C. Box	Nala X-ing
14	15	4071.620	1 x 2.0m	R.C.C. Box	Nala X-ing
15	17	5201.000	1 x 6.0m	R.C.C. Box	Nallah crossing
16	18	5294.000	1 x 6.0m	R.C.C. Box	RUB (village road crossing)
17	19	5404.000	1 x 3.0m	R.C.C. Box	Nallah& road x-ing (Rd to be diverted through Br No-18)
18	21	7801.000	1 x 2.0m	R.C.C. Box	For drainage system
19	22	8041.000	1 x 6.0m x 5.5m	R.C.C. Box	RUB for road crossing
20	23	8121.000	1 x 6.0m	R.C.C. Box	For drainage system
21	24	8601.000	1 x 6.0m	R.C.C. Box	For drainage system
22	25	8813.000	1 x 6.0m	R.C.C. Box	Nallah crossing
23	26	8971.000	1 x 6.0m	R.C.C. Box	Nallah crossing
24	27	9126.000	3 x 6.0m	R.C.C. Box	Nallah crossing
25	28	9361.000	3 x 6.0m	R.C.C. Box	For drainage system
26	29	9826.000	1 x 6.0m	R.C.C. Box	Nallah crossing
27	31	10336.000	3 x 6.0m	R.C.C. Box	Nallah crossing
28	32	10831.000	1 x 4.0m	R.C.C. Box	For drainage system
29	33	11301.000	1 x 4.0m	R.C.C. Box	For drainage system
30	34	11441.000	1 x 2.0m	R.C.C. Box	For drainage system
31	35	11741.000	1 x 2.0m	R.C.C. Box	For drainage system

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M-A AREA

Annex-2.5

LIST OF BRIDGE
(LINE No -6)

MINOR BRIDGE

Total Length of Line=5094.552m

Sl. No	Bridge No	Chainage in 'm'	Span in (m)	Type of Bridge	Remarks
01	36	2620.000	1 x 6.0m	R.C.C. Box	Nallah crossing
02	37	1325.000	3 x 6.0m	R.C.C. Box	Nallah crossing
03	39	4056.000	1 x 6.0m	R.C.C. Box	For drainage system
04	40	4100.000	1 x 6.0m	R.C.C. Box	Nallah crossing
05	41	4600.000	1 x 6.0m	R.C.C. Box	Nallah crossing

LIST OF BRIDGE
(MAIN LINE)

MAJOR BRIDGE

Total Length of Line= 14797.3m

Sl. No	Bridge No	Chainage in 'm'	Span in (m)	Type of Bridge	Remarks
01	5	1322.000	4 x 18.3 m	Composite Girder	Nala X-ing
02	11	3701.000	1 x 12.0m	R.C T- Beam	ROB (Village road x-ing)
03	16	5101.000	3 x 18.3 m	Composite Girder	Nallah crossing
04	20	6381.000	2 x18.0m + 1 x 30.0m	Composite Girder	ROB (For prop. road x-ing)
05	30	9927.000	1 x 18.3 m	Girder	Nallah crossing

LIST OF BRIDGE
(LINE No -6)

MAJOR BRIDGE

Total Length of Line= 5094.552m

Sl. No	Bridge No	Chainage in 'm'	Span in (m)	Type of Bridge	Remarks
01	38	3580.000	4 x 18.3m	Composite Girder	Nallah crossing

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M-A AREA

BRIDGE ABSTRACT
(MAIN LINE)

MINOR BRIDGE

Total Length of Line = 14797.3m

Sl. no	Type of Bridge	Span in 'm'	Total no of Span	Linear Water way in 'm'
01	R.C.C. Box	2	7	14
02	R.C.C. Box	3	1	03
03	R.C.C. Box	4	6	24
04	R.C.C. Box	6	26 (ROB & RUB = 4)	

Total Linear Water Way = 41m

BRIDGE ABSTRACT
(LINE No-6)

MINOR BRIDGE

Total Length of Line = 5049.552

Sl. no	Type of Bridge	Span in 'm'	Total no of Span	Linear Water way in 'm'
01	R.C.C. Box	6	7	42

Total Linear Water Way = 42m

BRIDGE ABSTRACT
(MAIN LINE)

MAJOR BRIDGE

Total Length of Line = 14797.3m

Sl. no	Type of Bridge	Span in 'm'	Total no of Span	Linear Water way in 'm'
01	R.C.T -Beam	12	1 (ROB)	-
02	Composite Girder	18	2 (ROB)	-
03	Composite Girder	18.3	8	146.5
04	Composite Girder	30	1 (ROB)	-

Total Linear Water Way = 146.4m

BRIDGE ABSTRACT
(LINE No-6)

MAJOR BRIDGE

Total Length of Line = 5094.552m

Sl. no	Type of Bridge	Span in 'm'	Total no of Span	Linear Water way in 'm'
01	Composite Girder	18.3	4	73.2

Total Linear Water Way = 73.2m

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Annex-2.6

LIST OF ROAD/LEVEL CROSSINGS
AMRAPALI OCP SIDING
(MAIN LINE)

Total Length of Line= 14797.3m

Sl. No	Chainage in 'm'	Type of Xing	Remarks
01	3701.000	Katcha Road Xing	ROB provided
02	5380.000	Katcha Road Xing	Closed & diverted through RUB
03	6437.000	Katcha Road Xing	Closed & diverted through ROB
04	8009.000	Katcha Road Xing	Closed & diverted through ROB
05	11906.000	Katcha Road Xing	Closed & diverted through ROB

LIST OF ROAD X-INGS
(LINE No 6)

Total Length of Line= 5094.552m

Sl. No	Chainage in 'm'	Type of Xing	Remarks
01	1536.000	Katcha Road Xing	ROB provided

Annex-2.7

LIST OF HT/LT CROSSING
(MAIN LINE)

Total Length of Line = 14797.3m

Sl. No	Chainage in 'm'	Type of Xing	Remarks
01	3369.027	11 KV HT Line Xing	To be modified
02	4119.000	11 KV HT Line Xing	To be modified
03	5227.000	11 KV HT Line Xing	To be modified
04	8224.00	11 KV HT Line Xing	To be modified
05	9347.50	11 KV HT Line Xing	To be modified
06	10665.600	11 KV HT Line Xing	To be modified
07	11729.000	11 KV HT Line Xing	To be modified

LIST OF L.T & H.T X-ING
(LINE No - 6)

Total Length of Line = 5094.552m

Sl. No	Chainage in 'm'	Type of Xing	Remarks
01	17.908	11 KV HT Line Xing	To be modified
02	1113.500	LT Line Xing	To be modified
03	1861.160	LT Line Xing	To be modified

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Annex-8.0

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
SIGNAL ENGINEERING & TELECOMMUNICATION ESTIMATE
SUMMARY OF ALL COSTS

Sl. No.	Type of works	Cost [in lakh of Rs]		
		Within Railway Land	Outside Railway Land	Total
1	Civil Engineering [8.1]	1,936.83	31,014.29	32,951.12
2	Signal Engineering & Telecommunication [8.2]	724.72	792.60	1,517.32
3	Electrical Engineering [8.3]	806.32	2,214.77	3,021.09
	GRAND TOTAL	**3,467.87**	**34,021.66**	**37,489.53**
NB:	*The above cost is exclusive of Codal Charges, Departmental charges and other statury charges of Railway*			

PROJECT OFFICER
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M-A AREA

Annex-8.1

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
SUMMARY OF ALL WORKS

SL NO	DESCRIPTION OF ITEMS	Cost [in Rs.]		
		Within Railway land	Outside Railway land	Total
1	Railway formation Works [Annex - 8.1.1]	3,71,23,820.00	1,28,83,44,390.00	1,32,54,68,210.00
2	Permanent Way Works [Annex - 8.1.2]	9,70,98,680.00	72,17,84,460.00	81,88,83,140.00
3	Minor & Major Bridges [Annex - 8.1.3]	5,20,00,000.00	1,05,35,50,000.00	1,10,55,50,000.00
4	Other Engineering Works [Annex-8.1.4]	74,60,000.00	3,77,50,000.00	4,52,10,000.00
	Total	19,36,82,500.00	3,10,14,28,850.00	3,29,51,11,350.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
RAILWAY FORMATION WORKS

OUTSIDE RAILWAY LAND

SL NO	DESCRIPTION OF ITEMS	UNIT	QTY	RATE	AMOUNT
				RS P	RS P
1	Preliminary expenses for survey ,soil test etc.	LS			16,00,000.00
2	Site Clearance including up rooting and removal of grass vegetation,shurbs and trees	sqm	1,75,000.00	8.00	14,00,000.00
3	Felling of trees of grith size 1.5m and upto 3 m.	each	150.00	720.00	1,08,000.00
4	Earthwork in filling in embankment with earth arranged by contractor including all leads & lift etc.	cum	25,75,000.00	286.00	73,64,50,000.00
5	Earthwork in cutting in formation including side drain, trolley refuges, etc in all sorts of soil except soft rock not requiring blasting,leading and spreading to adjacent bank and disposal of surplus earth if any, including all lead lift complete.	cum	10,03,600.00	198.00	19,87,12,800.00
6	Earthwork in cutting in formation including side drain, trolley refuges, etc in all sorts of soil of Soft Rock not requiring blasting in all Conditions,leading and spreading to adjacent bank and disposal of surplus earth if any, including all lead lift complete.	cum	2,00,000.00	316.00	6,32,00,000.00
7	Provision of blanketing layers with contractor's stone dust of approved quality over previously formed embankment including mechanical compaction with contracto's power driven Roller.	cum	1,69,273.00	1,110.00	18,78,93,030.00
8	Mechanical compaction of earthwork in formation with contractor's own plant and machinery etc.	cum	35,76,000.00	18.00	6,43,68,000.00
9	Turfing in slopes with contractors grass sods 50mm thick & 250mm square including all leads & lifts transportation and watering the same till it holds the ground firmly.	sqm	4,07,880.00	62.00	2,52,88,560.00
10	Construction of Side Drain.	Rm	7,770.00	1,200.00	93,24,000.00
	Total			RS	1,28,83,44,390.00

PROJECT OFFICER
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REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
PERMANENT WAY WORKS
INSIDE RAILWAY LAND

SL NO	DESCRIPTION OF ITEMS	UNIT	QTY	RATE	AMOUNT
				RS P	RS P
1	Laying and linking of BG straight & curve Track (less than 5°)with new 60 Kg (IRS T-12) 90 UTS First Quality Rail on PSC sleepers (1660 Nos/Km) with cost of Rail and standard fitting with 300 mm Ballast cushion including packing complete.	TM	2470	25,000.00	6,17,50,000.00
2	Laying and linking BG curve track 5° & above with 60 Kg (IRS T-12) 90 UTS First Quality Rail (Single)on PSC sleepers (1660 Nos/Km)with one extra at staggered joint on Ballast cushion 300 mm including 4 round through packing & check rail fitting complete.	TM	130	28,000.00	36,40,000.00
3	Assembling Laying & Linking 1 in 12 P & C fan shape with new 60 Kg (IRS T-12) 90 UTS First Quality lead Rail on ballast cushion 300 mm including 4 round through packing.	SET	12	24,95,000.00	2,99,40,000.00
5	Assembling Laying & Linking 60 Kg Derailing Switch (1 in 8.5) Fan Shape on ballast cushion 300 mm including 4 round through packing.	SET	1	6,00,000.00	6,00,000.00
4	Manufacturing & Fixing of Fouling Mark.	EACH	12	2,140.00	25,680.00
5	Construction of RCC Buffer.	EACH	4	2,56,500.00	10,26,000.00
6	Regradation of Existing Track	TM	1170	100.00	1,17,000.00
	TOTAL			RS	9,70,98,680.00

PROJECT OFFICER
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REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
PERMANENT WAY WORKS
OUTSIDE RAILWAY LAND

SL NO	DESCRIPTION OF ITEMS	UNIT	QTY	RATE	AMOUNT
				RS P	RS P
1	Laying and linking of BG straight & curve Track with new 60 Kg (IRS T-12) 90 UTS First Quality Rail on PSC sleepers (1660 Nos/Km) with cost of Rail and standard fitting with 300 mm Ballast cushion including 4 round throughpacking complete.	TM	26850	25,000.00	67,12,50,000.00
2	Laying and linking BG curve track 5° & above with 60 Kg (IRS T-12) 90 UTS First Quality Rail (Single)on PSC sleepers (1660 Nos/Km)with one extra at staggered joint on Ballast cushion 300 mm including 4 round through packing & check rail fitting complete.	TM	670	28,000.00	1,87,60,000.00
3	Assembling Laying & Linking 1 in 12 P & C fan shape with new 60 Kg (IRS T-12) 90 UTS First Quality lead Rail on ballast cushion 300 mm including 4 round through packing.	SET	1	24,95,000.00	24,95,000.00
4	Assembling Laying & Linking 1 in 8.5 P & C fan shape with new 60 Kg (IRS T-12) 90 UTS First Quality lead Rail on ballast cushion 300 mm including 4 round through packing.	SET	13	19,60,000.00	2,54,80,000.00
5	Assembling Laying & Linking 60 Kg Derailing Switch (1 in 8.5) Fan Shape on ballast cushion 300 mm including 4 round through packing.	SET	5	6,00,000.00	30,00,000.00
6	Making & Fixing of Fouling Mark.	EACH	14	2,140.00	29,960.00
7	Construction of RCC Buffer	EACH	3	2,56,500.00	7,69,500.00
	TOTAL			RS	72,17,84,460.00

PROJECT OFFICER
AMRAPALI OCP.
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REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
MINOR BRIDGE WORKS

INSIDE RLY LAND				
	MINOR BRIDGES			
SL NO	Br. No.	Ch No.	DESCRIPTION	Amount
1	1	120	1X6.0mX6.0m RCC Box(Bothside Extn.)	2,00,00,000.00
2	2	297.8	1X5.0mX5.0m RCC Box	1,50,00,000.00
3	41	4600	1X6.0mX6.0m RCC Box	1,70,00,000.00
		Total:	Rs	5,20,00,000.00

PROJECT OFFICER
AMRAPALI OCP.

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
MINOR & MAJOR BRIDGE WORKS

OUTSIDE RLY LAND				
SL NO	Br. No.	Ch No.	DESCRIPTION	Amount
A	MAJOR BRIDGES			
1	5	1322	4X18.3m Composite Girder	5,00,00,000.00
2	11	3701	1X12m RCT Beam (ROB)	1,50,00,000.00
3	16	5101	3X18.3m Composite Girder	3,60,00,000.00
4	20	6381	2X18m+1X30m Composite Girder(ROB)	4,70,00,000.00
5	30	9927	1X18.3m Composite Girder	1,80,00,000.00
6	38	3580	4X18.3m Composite Girder	5,00,00,000.00
7	7	2791.618	2X6X6.5m RCC Box pushing,BL-24.00m	17,81,60,000.00
		Total:	Rs	39,61,60,000.00
B	MINOR BRIDGES			
1	3	721	1X6.0m X6.0m RCC Box	2,20,00,000.00
2	4	840	1X6.0m X6.0m RCC Box	3,20,00,000.00
3	6	1962	1X2.0m X1.8m RCC Box	15,40,000.00
4	8	2922	1X4.0m X4.0m RCC Box	70,50,000.00
5	9	3241	1X2.0m X1.8m RCC Box	20,00,000.00
6	10	3534.17	3X6.0m X4.0m RCC Box	90,00,000.00
7	12	3714.21	1X2.0m X1.8m RCC Box	20,10,000.00
8	13	3881	1X4.0m X4.0m RCC Box	95,00,000.00
9	14	3974.5	1X4.0m X4.0m RCC Box	80,00,000.00
10	15	4071.82	1X2.0m X1.8m RCC Box	15,30,000.00
11	17	5201	1X6.0m X6.0m RCC Box	4,20,00,000.00
12	18	5294	1X6.0m X6.0m RCC Box	3,40,00,000.00
13	19	5404	1X3.0m X3.0m RCC Box	35,15,000.00
14	21	7801	1X2.0m X2.0m RCC Box	30,30,000.00
15	22	8041	1X6.0m X5.5m RCC Box(RUB)	2,60,00,000.00
16	23	8121	1X6.0m X4.0m RCC Box	2,00,00,000.00
17	24	8601	1X6.0m X6.0m RCC Box	3,15,00,000.00
18	25	8813	1X6.0m X6.0m RCC Box	3,65,00,000.00
19	26	8971	1X6.0m X6.0m RCC Box	4,08,00,000.00
20	27	9123	3X6.0m X6.0m RCC Box	5,45,00,000.00
21	28	9361	3X6.0m X6.0m RCC Box	5,50,00,000.00
22	29	9826	1X6.0m X6.0m RCC Box	5,30,00,000.00
23	31	10336	3X6.0m X6.0m RCC Box	5,50,00,000.00
24	32	10831	1X4.0m X4.0m RCC Box	50,00,000.00
25	33	11301	1X4.0m X4.0m RCC Box	50,00,000.00
26	34	11441	1X2.0m X2.0m RCC Box	15,05,000.00
27	35	11741	1X2.0m X2.0m RCC Box	15,10,000.00
28	36	2620 of L6	1X6.0m X6.0m RCC Box	1,50,00,000.00
29	37	1325 of L6	3X6.0m X6.0m RCC Box	3,70,00,000.00
30	39	4056 of L6	1X6.0m X6.0m RCC Box	2,20,00,000.00
31	40	4100 of L6	1X6.0m X6.0m RCC Box	2,09,00,000.00
		Total:	Rs	65,73,90,000.00
	Total Cost(A+B)		Rs	1,05,35,50,000.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
CIVIL ENGINEERING ESTIMATE
OTHER CIVIL ENGINEERING WORKS

Sl No	Description of items	Unit	Qty	Rate	Inside Railway land	Outside Railway land	Amount [in Rs.]
A	**For Civil Engineering Works**						
1	Construction of In Motion Weigh Bridges	Each	5	25,00,000.00		1,25,00,000.00	1,25,00,000.00
2	Crew Rest Room	LS				50,000.00	50,000.00
3	Bituminous Road Diversion work	Rm	1000	2,000.00		20,00,000.00	20,00,000.00
4	Construction of Loading Platform (650 m x 30 m)	LS				1,40,00,000.00	1,40,00,000.00
5	Construction of RCC Path Way	Rm	100	2,500.00		2,50,000.00	2,50,000.00
6	Diversion of Existing Nala	Rm	600	550.00		3,30,000.00	3,30,000.00
	Total:					**2,91,30,000.00**	**2,91,30,000.00**
B	**For Signal & Telecommunication Works**						
1	Construction of Pannel Cabin Building at In-plant yard	LS				30,00,000.00	30,00,000.00
2	Construction of Pannel Cabin Building at Manatu	LS			30,00,000.00		30,00,000.00
3	Glued joints for In-plant cabin	120	Nos.	30,000.00		36,00,000.00	36,00,000.00
4	Glued joints for Manatu cabin	100	Nos.	30,000.00	30,00,000.00		30,00,000.00
	Total:				**60,00,000.00**	**66,00,000.00**	**1,26,00,000.00**
C	**For Electrical Works**						
1	Provision of Control Cubicle	Sq.m	33	20,000.00	6,60,000.00		6,60,000.00
2	Provision of Control Cubicle	Sq.m	22	20,000.00		4,40,000.00	4,40,000.00
2	Provision of Panel Room	Sqm	16	20,000.00		3,20,000.00	3,20,000.00
3	Provision of DG Room	Sqm	27	20,000.00		5,40,000.00	5,40,000.00
4	Provision of DG Room	Sqm	36	20,000.00		7,20,000.00	7,20,000.00
6	Augmentation of Depot	Sqm	40	20,000.00	8,00,000.00		8,00,000.00
	Total:				**14,60,000.00**	**20,20,000.00**	**34,80,000.00**
	Total (A+B+C):			**Rs**	**74,60,000.00**	**3,77,50,000.00**	**4,52,10,000.00**

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA.

Annex-8.2

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

SIGNAL ENGINEERING & TELECOMMUNICATION ESTIMATE

SUMMARY OF ALL COSTS

Sl No.	Name of the work	Cost in lakh of Rs.		
		Within Railway Land	Outside Railway Land	Total
1	Manatu Panel Cabin [8.2.1]	724.72		724.72
2	In-plant yard Panel Cabin [8.2.2]		792.60	792.60
3	Other S&T works [8.2.3]		10.00	10.00
	Total	**724.72**	**792.60**	**1,517.32**

N.B *The cost of Civil and Electrical portion associated with S&T works have been included in the Civil and Electrical Estimate*

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

SIGNAL ENGINEERING & TELECOMMUNICATION ESTIMATE

DETAILED COST ESTIMATE FOR NEW BLOCK CABIN AT MANATU

Sl No	Description of Items	Unit	Qty	Rate	Cost [in Rs.]
1	Electrical Interlocking Domino type complete with Push button, indication lamps etc	1	No.	3,00,000.00	3,00,000.00
2	Electrical Point Machine complete with ground connection	14	No.	90,000.00	12,60,000.00
3	MACLS complete with all accessories with LED lit				
	i) 3 Aspect	4	No.	56,000.00	2,24,000.00
	ii) 2 Aspect	12	No.	48,000.00	5,76,000.00
4	Calling-on Signal with LED lit	3	No.	12,000.00	36,000.00
5	Independent Position Light Shunt Signal with LED lit	3	No.	36,000.00	1,08,000.00
6	Dependent Position Light Shunt Signal with LED lit	6	No.	20,000.00	1,20,000.00
7	Jn. Type Route indicator with LED lit - 2 way	2	No.	32,000.00	64,000.00
8	Track circuit complete with all acceessories	44	No.	35,000.00	15,40,000.00
9	Underground Signalling Cable PVC insulated unscreened				
	i) 24 Core	15	Km.	4,00,000.00	60,00,000.00
	ii)18 Core	20	Km.	3,00,000.00	60,00,000.00
	iii)12 Core	30	Km.	2,50,000.00	75,00,000.00
	iv) 6 Core	20	Km.	1,70,000.00	34,00,000.00
	v) 2 Core Power Cable 25sq mm	10	Km.	1,50,000.00	15,00,000.00
10	6 Quad Telecom cable	12	Km.	3,50,101.00	42,01,212.00
11	Signalling Relay of sorts	1,200	No.	4,500.00	54,00,000.00
12	SSDAC	4	Pair	7,00,000.00	28,00,000.00
13	Rorary Key Transmitter (RKT)	10	No.	6,000.00	60,000.00
14	Steel Apparatus case	60	No.	12,000.00	7,20,000.00
15	Q Series Relay rack	14	No.	16,000.00	2,24,000.00
16	Battery Rack	4	No.	8,000.00	32,000.00
17	Integrated Power Supply (IPS)	1	No.	11,50,000.00	11,50,000.00
18	Data Logger with installation	1	set	7,00,000.00	7,00,000.00
19	Wiring and terminating materials	LS		2,00,000.00	2,00,000.00
20	Cable Termination Rack	2	No.	6,250.00	12,500.00
21	Building materials	LS		2,00,000.00	2,00,000.00
22	25 Watt VHF Set complete with all accessories	1	Set	40,000.00	40,000.00
23	5 Watt hand Walkie Talkie set	6	Set	20,000.00	1,20,000.00
24	Block working by UFSBI	3	pair	12,00,000.00	36,00,000.00
25	Solar panel	1	Set	13,50,000.00	13,50,000.00
26	Telecom Facility	LS			1,50,000.00
27	Misc. Stores/Furniture	LS		2,00,000.00	2,00,000.00
	Subtotal				**4,97,87,712.00**
28	Transportation,installation etc	40	%		1,99,15,084.80
	Subtotal				**6,97,02,796.80**
29	Contingencies	1	%		6,97,027.97
	Subtotal				**7,03,99,824.77**
30	Cable trenching, laying & refilling	28	Km.	74,000.00	20,72,000.00
	TOTAL				**7,24,71,824.77**
31	Cabin Building	120	Sqm		
32	Glued Joint	100	No.		

N.B *The cost of Civil and Electrical portion associated with S&T works have been included in the Civil and Electrical Estimate*

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

SIGNAL ENGINEERING & TELECOMMUNICATION ESTIMATE

DETAILED COST ESTIMATE FOR IN-PLANT CABIN

Sl No	Description of items	Unit	Qty	Rate	Cost (in Rs.)
1	Electrical Interlocking Domino type complete with Push button, indication lamps etc	1	No.	3,00,000.00	3,00,000.00
2	Electrical Point Machine complete with ground connection	20	No.	90,000.00	18,00,000.00
3	MACLS complete with all accessories with LED lit				
	i) 3 Aspect	1	No.	56,000.00	56,000.00
	ii) 2 Aspect	16	No.	48,000.00	7,68,000.00
4	Independent Position Light Shunt Signal with LED lit	10	No.	36,000.00	3,60,000.00
5	Calling-on Signal with LED lit	6	No.	12,000.00	72,000.00
6	Dependent Shunt Signal with LED lit	10	No.	20,000.00	2,00,000.00
7	Jn. Type Route indicator with LED lit - 3 way	1	No.	32,000.00	32,000.00
8	Track circuit complete with all acceessories	55	No.	35,000.00	19,25,000.00
9	Underground Signalling Cable PVC insulated unscreened				
	i) 24 Core	18	Km.	4,00,000.00	72,00,000.00
	ii)18 Core	12	Km.	3,00,000.00	36,00,000.00
	iii)12 Core	40	Km.	2,50,000.00	1,00,00,000.00
	iv) 6 Core	16	Km.	1,70,000.00	27,20,000.00
	v) 2 Core Power Cable 25sq.mm	10	Km.	1,50,000.00	15,00,000.00
10	6 Quad Telecom cable	10	Km.	3,50,101.00	35,01,010.00
11	GI pipe	100	Nos.	800.00	80,000.00
12	Signalling Relay of sorts	1200	Nos.	4,500.00	54,00,000.00
13	SSDAC	12	Nos.	7,00,000.00	84,00,000.00
14	Rotary Key Transmitter (RKT)	10	Nos.	6,000.00	60,000.00
15	Steel Apparatus case	60	Nos.	12,000.00	7,20,000.00
16	O Series Relay rack	15	Nos.	16,000.00	2,40,000.00
17	Battery Rack	4	No.	8,000.00	32,000.00
18	Integrated Power Supply (IPS)	1	No.	11,50,000.00	11,50,000.00
19	Data Logger	1	No.	7,00,000.00	7,00,000.00
20	Wiring and terminating materials	LS		5,00,000.00	5,00,000.00
21	Cable Termination Rack	2	No.	6,250.00	12,500.00
22	Building materials	LS		2,00,000.00	2,00,000.00
23	25 Watt VHF set complete with all accessories	1	No	40,000.00	40,000.00
24	5 Watt hand Walkie Talkie set	6	No.	20,000.00	1,20,000.00
25	Block working by UFSBI	1	pair	12,00,000.00	12,00,000.00
26	Misc. Stores/Furniture	LS		2,00,000.00	2,00,000.00
27	Solar panel	1	Set	13,50,000.00	13,50,000.00
28	Telecom Facility	LS			1,50,000.00
	Subtotal				**5,45,88,510.00**
29	Transportation,installation etc	40	%		2,18,35,404.00
	Subtotal				**7,64,23,914.00**
30	Contingencies	1	%		7,64,239.14
	Subtotal				**7,71,88,153.14**
31	Cable trenching, laying & refilling	28	Km.	74,000.00	20,72,000.00
	TOTAL				**7,92,60,153.14**
32	Cabin Building	120	Sqm		
33	Glued Joints	120			

N.B *The cost of Civil and Electrical portion associated with S&T works have been included in the Civil and Electrical Estimate*

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Annex-8.2.3

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

SIGNAL ENGINEERING & TELECOMMUNICATION ESTIMATE

SUMMARY OF ALL COSTS

Sl No	Description of items	Unit	Qty	Rate	Cost [in Rs.]
C	**For Electrical Works**				
1	Provision of Emergency Socket, Control and communication equipments / cable for new SS at Manatu	LS	LS		4,00,000.00
2	Provision of Control and communication equipments / cable for new SS at Amrapali Inplant siding.	LS	LS		6,00,000.00
	Total			**Rs**	**10,00,000.00**

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

SUMMARY OF ALL COSTS

Cost (Rs. in lakh)

Sl No.	Item	Under TRD		Under ELEC (G)		Ref
		Within Rly	Outside Rly	Within Rly	Outside Rly	
1	Provision of OHE (30 kms) & assobiate works	246.89	1495.84	-	-	E1
2	Provision of Switching Post at	-	-	-	-	
a)	Manatu	79.99	-	-	-	E2
b)	Amrapali siding	-	59.82	-	-	E3
c)	Electrification of Manatu switching post	-	-	0.81	-	E2/1
d)	Electrification of Amrapali switching post	-	-	-	0.65	E3/1
3	Provision of AT at Manatu	9.04	-	-	-	E4
4	Provision of SCADA work at	-	-	-	-	
a)	Manatu	20.39	-	-	-	E5
b)	Amrapali siding	-	19.31	-	-	E6
5	Provision of TSS	300.00	-	-	-	LS
6	Total (Rs.)	656.32	1574.97	0.81	0.65	
7	Electrification of					
a)	Manatu Station Building	-	-	7.11	-	E7
b)	Inplant Cabin	-	-	-	5.58	E8
c)	Crew Rest Room etc	-	-	-	33.80	E9
8	Illumination of					
a)	Manatu yard	-	-	44.29	-	E10
b)	Inplant yard	-	-	-	69.35	E11
c)	Weigh bridge area	-	-	-	5.15	E11/1
d)	Pathway	-	-	-	65.31	E12
e)	Illumination of loading platform	-	-	-	39.19	E12/1
9	Provision of DG set at					
a)	Amrapali (10 KVA x 3)	-	-	-	14.54	E13
b)	Amrapali (82.5 KVA)	-	-	-	16.21	E14
10	Power supply arrangement	-	-	2.00	60.00	LS
11	Modification of power line					
a)	11 KV - 5 nos	-	-	-	55.35	E15
b)	11 KV - 1 no	-	-	-	14.25	E15/1
12	Infrastructural facilities	-	-	-	25.36	E16
13	Total (Rs.)	656.32	1574.97	54.21	404.74	
14a)	Initial spares @3% on item no 6	19.69	47.25	-	-	
b)	Testing & measuring equipments	10.00	24.00	-	-	LS
c)	BD Transport	9.00	45.00	6.00	-	LS
d)	Furniture	7.00	16.00	5.00	-	LS
e)	Electrification of traction depot	-	-	2.00	-	E16
15	Total (Rs.)	702.01	1707.22	67.21	404.74	
16	Labour welfare cess @1% on item no. 13	6.56	15.75	0.54	4.05	
17	Misc. Works					
a)	Cost of Publication of NIT & Warning Notices	10.00	60.00	10.00	5.00	
b)	Hiring of vehicle for transportation of Railway officials upto commissioning	5.00	15.00	5.00	3.00	
18	Total Rs.	723.57	1797.97	82.75	416.79	
	Total Traction		2521.54			
	Total General service				499.54	
	Overall total traction + General				3021.09	
	Cost of Works within Railway land				806.32	
	Cost Works outside Railway land				2214.77	
	Total cost excluding Departmental charges				3021.09	

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

19	Departmental charges etc					
(i)	Departmental charges @ 6.25% on item 15	43.88	106.70	4.20	25.30	
(ii)	Service charge @14% on item no. 18(i)	6.14	14.94	0.59	3.54	
20	Total Rs.	50.02	121.64	4.79	28.84	
21	Total Traction	773.59	1919.61	-	-	
22	Total General service	-	-	87.54	445.63	
23	Overall total traction + General	3226.37				

(Associate Civil & S&T works covered under respective Civil and S&T estimates)

24	Civil works					
	Provision of					
(i)	Control cubicle (33 sqm)	-	-	-	-	E2
(ii)	Control cubicle (22 sqm)	-	-	-	-	E3
(iii)	Panel room (16 sqm)	-	-	-	-	E9
(iv)	DG room (27 sqm)	-	-	-	-	E13
(v)	DG room (36 sqm)	-	-	-	-	E14
(vi)	Augmentation of depot (40 sqm)	-	-	-	-	E16
	S&T works	-	-	-	-	
i)	Provision of emergency socket, control cable/	-	-	-	-	E4
ii)	Provision of emergency socket, control	-	-	-	-	E5

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Annex-E1

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

PROVISION OF OHE

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
1	Foot by foot survey & preparation of OHE pegging plan including modification, dismantling works	TKM	30	6,152.00	1,84,560.00
2	Preparation of Design & Drawing of Overhead equipment including modification, dismantling works	TKM	30	8,134.00	2,44,020.00
3	Concrete for foundation & Plinth				
	(i) Ordinary soil/Hard soil including rock required chiseling (Grade M-15)	Cu.m	3750	6,396.00	2,39,81,250.00
	(ii) Reinforced Concrete	Cu.m	30	6,835.00	2,05,050.00
	(iii) Rocky soil	Cu.m	20	7,134.00	1,42,680.00
4	Supply and Manual erection of traction mast/other special masts (BFB/RSJ/B-Series) including terminating structures & gantry masts				
	(i) Supply	MT	262	1,04,737.00	2,74,41,094.00
	(ii) Erection	MT	255	3,307.00	8,43,285.00
5	Supply & Erection of TTC/Portal assembly complete				
	(i) Supply	MT	14	1,10,250.00	15,43,500.00
	(ii) Erection	MT	10	5,512.00	55,120.00
6	Supply of				
	(i) Hard drawn grooved copper contact wire (107 Sq mm)	Km	38.5	9,92,250.00	3,82,01,625.00
	(ii) Cadmium copper catenary wire (65 Sq mm)	Km	41.5	6,61,508.00	2,74,52,582.00
	(iii) Large span wire	Km.	0.50	9,33,122.00	4,66,561.00
7	Supply & Erection of fabricated steel works other than mast				
	(i) Supply	MT	30	1,10,250.00	33,07,500.00
	(ii) Erection	MT	26	5,572.00	1,44,872.00
8	Supply & Erection Guy rod assembly				
	(i) Supply	No.	130	7,712.00	10,02,560.00
	(ii) Erection	No.	130	1,102.00	1,43,260.00
9	Supply & Erection of single Bracket Assembly without insulators				
	(i) Supply	No.	760	9,922.00	75,40,720.00
	(ii) Erection	No.	730	1,102.00	8,04,460.00
10	Supply & Erection of Overhead Equipment				
	(i) Supply	Km.	37.5	33,075.00	12,40,312.50
	(ii) Erection	Km.	35.5	19,845.00	7,04,497.50
11	Supply & Erection of regulating equipment (3 pulley modified type) with normal counter weight assembly for conventional OHE				
	(i) Supply	No.	70	54,352.00	38,04,640.00
	(ii) Erection	No.	66	2,877.00	1,89,882.00

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
12	Supply & Erection of materials for termination of double overhead equipment conductor (Excluding 9 tonne insulator)				
	(i) Supply	No.	81	5,922.00	4,79,682.00
	(ii) Erection	No.	72	586.00	42,192.00
13	Supply & Erection of materials for termination of single overhead equipment conductor (excluding 9 ton insulator)				
	(i) Supply	No.	74	4,961.00	3,67,114.00
	(ii) Erection	No.	70	1,102.00	77,140.00
14	Supply & Erection of anti-creep (excluding 9 tonne insulator and catenary wire with SPS)				
	(i) Supply	No.	24	8,310.00	1,99,440.00
	(ii) Erection	No.	23	1,136.00	26,128.00
15	Supply & erection of 9 tonne insulator (1050 mm suitable for polluted zone)				
	(i) Supply	Each	205	3,325.00	6,81,625.00
	(ii) Erection	Each	160	265.00	47,700.00
16(a)	Supply of large (105 sqmm) Copper jumper (G jumper)	Mtr	275	1,092.00	3,00,300.00
16(b)	Supply & erection of copper jumper (160)				
	(i) Supply	Mtr	180	1,156.43	2,08,157.40
	(ii) Erection	Mtr	150	370.00	55,500.00
17	Supply of small (50 sqmm) Copper jumper (C/F/AT Jumper)	Mtr	625	446.00	2,78,750.00
18	Erection of copper jumper (105 sqmm)	Mtr	225	1,102.00	2,47,950.00
19 a)	Erection of copper jumper (50 sqmm)	Mtr	550	185.00	1,01,750.00
19 b)	Erection of large span wire	Mtr	250	94.00	23,500.00
20	Supply & Erection of Structure bond (Wire bond type)				
	(i) Supply	Each	700	3,671.00	25,69,700.00
	(ii) Erection	Each	700	91.00	63,700.00
21	Supply & Erection of Transverse and Special Bond (Wire bond type)				
	(i) Supply	Each	180	2,629.00	4,73,220.00
	(ii) Erection	Each	180	98.00	17,640.00
22	Supply & Erection of longituditinal bond (Wire bond type)				
	(i) Supply	Each	4500	292.00	13,14,000.00
	(ii) Erection	Each	4500	124.00	5,58,000.00
23	Supply & Erection of single earth electrode with earth pit box cover complete				
	(i) Supply	Each	336	2,361.00	7,93,296.00
	(ii) Erection	Each	336	1,507.00	5,06,352.00
24	Supply & Erection of section insulator assembly including core insulator (excluding cut in insulator)				
	(i) Supply	Each	25	39,690.00	9,92,250.00
	(ii) Erection	Each	17	4,410.00	74,970.00
25	Supply & Erection of pull off arrangement for one OHE (excluding 9 tone insulator)				
	(i) Supply	No.	6	7,718.00	46,308.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
	(ii) Erection	No	6	284.00	1,704.00
26	Supply & erection of various types of caution boards to RDSO specification	No.	30	1,323.00	39,690.00
27	Supply & erection of number plates (enamelled)				
	(i) Supply	No	720	344.00	2,47,680.00
	(ii) Erection	No.	720	35.00	25,200.00
28	Supply & Erection of sectioning Diagram Board (Size 4'x2')	No.	12	7,486.00	89,832.00
29a)	Supply of bracket insulator for Polluted Zone (1050mm)	No.	760	3,000.00	22,80,000.00
29b)	Supply of Stay Insulator for Polluted Zone (1050mm)	No.	760	3,000.00	22,80,000.00
30(a)	Supply & Erection of 25 KV Single Pole Isolator 1600 Amp complete with insulators etc.				
	(i) Supply	No.	17	45,754.00	7,77,818.00
	(ii) Erection	No	14	3,754.00	52,556.00
30(b)	Supply & Erection of 25 KV Double Pole Isolator 1600 Amp complete				
	(i) Supply	No.	1	1,08,929.00	1,08,929.00
	(ii) Erection	No.	1	3,698.00	3,698.00
30(c)	Supply & Erection of interlocking device				
	(i) Supply	No.	6	11,209.00	67,254.00
	(ii) Erection	No.	6	1,121.00	6,726.00
30(d)	Supply & Erection of Earthing heel				
	(i) Supply	No.	2	9,360.00	18,720.00
	(ii) Erection	No.	2	936.00	1,872.00
31	Supply & erection of additional fittings at turnouts, overlaps etc				
	(i) Supply	No.	54	5,434.00	2,93,436.00
	(ii) Erection	No.	48	491.00	23,568.00
32	Supply & Erection of Key Box for isolator etc.	No.	1	581.00	581.00
33	Supply & erection of 25 KV Post insulator with clamps etc.				
	(i) Supply	No.	38	6,001.00	2,28,038.00
	(ii) Erection	No.	32	552.00	17,664.00
34	Supply & Erection of earth bus of MS flat size 50mm x 6mm				
	(i) Supply	Mtr	1680	276.00	4,63,680.00
	(ii) Erection	Mtr	1680	34.00	57,120.00
35	Supply & Erection of 25 KV feeder wire 37/2.25 mm, 150 sqmm copper				
	(i) Supply	Mtr	250	1,323.00	3,30,750.00
	(ii) Erection	Mtr	250	56.00	14,000.00
36	Extra for supply & erection of lemination arrangement of Feeder (excluding 9 ton insulator)				
	(i) Supply	No.	12	3,310.00	39,720.00
	(ii) Erection	No.	12	326.00	3,912.00

PROJECT OFFICER
AMRAPALI OCP
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
37	Supply & erection of suspension arrangement of feeder				
	(i) Supply	No.	2	1,714.00	3,428.00
	(ii) Erection	No.	2	190.00	380.00
38	Extra Erection charge under Power block				
a)	Traction masts/TTC/Portal	MT	11	4,803.00	52,833.00
b)	SPS	MT	4	4,803.00	19,212.00
c)	Cantilever	No.	30	721.00	21,630.00
d)	OHE	Km.	2	19,809.00	39,618.00
e)	Regulating equipment	No.	4	2,642.00	10,568.00
f)	Section insulator	No.	8	1,921.00	15,368.00
g)	Cut in Insulator 9 t	No.	25	361.00	9,025.00
h)	Termination of OHE	No.	13	541.00	7,033.00
i)	Large jumper wire (105)	Mtr	50	2,204.00	1,10,200.00
j)	Small jumper wire	Mtr	75	370.00	27,750.00
k)	Additional fittings	No.	6	816.00	4,896.00
l)	Insulated catenary	m	30	416.00	12,480.00
m)	Jumper 160	m	30	740.00	22,200.00
n)	Anticreep	No.	1	2,272.00	2,272.00
o)	Large span wire	m	250	188.00	47,000.00
p)	Single pole isolator	No.	3	7,504.00	22,512.00
q)	Post insulator	No.	6	1,104.00	6,624.00
39	Adjustment of OHE after Tower Wagon checking	Span	900	368.00	3,31,200.00
40a)	Splicing & extension of an overhead equipment under power block	No.	1	5,544.00	5,544.00
40b)	Slewing of OHE	Span	4	1,575.00	6,300.00
41	Hiring charges of Tower Wagon including crew from Railway	Day	45	79,726.00	35,87,670.00
42	Supply & Erection of insulated catenary wire (including associated components) underneath FOB				
	(i) Supply	Mtr	135	2,076.00	2,80,260.00
	(ii) Erection	Mtr	105	208.00	21,840.00
43	Supply & erection of Protective screen				
	(i) Supply	No.	30	44,000.00	13,20,000.00
	(ii) Erection	No.	30	2,200.00	66,000.00
44	Provision of Level crossing height gauge	No.	2	7,05,821.00	14,11,642.00
45	Transfer of OHE from one mast to another under power block	No.	4	6,905.00	27,620.00
46	Dismantling charges under power block				
i)	Cutting of old masts	No.	4	6,673.00	26,692.00
ii)	Cantilever	No.	6	2,205.00	13,230.00
iii)	SPS	t.	0.5	11,025.00	5,512.50
iv)	Regulating equipment	No.	1	5,754.00	5,754.00
v)	Guy rod	No.	1	2,205.00	2,205.00
vi)	Section Insulator	No.	0	8,820.00	0.00
vii)	Isolator	No.	0	3,754.00	0.00
viii)	Cut In Insulator 9 t.	No.	1	552.00	552.00
ix)	OHE	Km.	0.1	39,090.00	3,969.00
47	Extra for Anti theft charging	LS	LS	1,00,000.00	1,00,000.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
48	Supply of Thermal imager	No	0	5,38,342.00	0.00
49	Station Working Rule Diagram	No	1	10,843.00	10,843.00
50	Anti corrosive painting on cantilever & mast	No	1460	2,100.00	30,66,000.00
51	Manning of Section				
a)	Without gun	Man month	9	12,500.00	1,12,500.00
b)	With gun	man month	6	25,000.00	1,50,000.00
52	Site clearance	LS	LS	5,00,000.00	5,00,000.00
53	Extra for stage working	LS	LS	10,00,000.00	10,00,000.00
54a)	Provata cost on testing of insulator	No	1700	400.00	6,80,000.00
55	Supply of Tensile testing jig for insulator	No.	0	2,75,915.00	0.00
56	Supply & erection of maintenance free earth	No.	10	43,733.00	4,37,330.00
57	Misc. Unforeseen works	LS		30,00,000.00	30,00,000.00
	Total Rs.				17,42,72,235.90

Under Railway land (4.25 km)	Rs.	2,46,88,566.75
Outside Railway land (25.75 km)	Rs.	14,95,83,669.15
		17,42,72,235.90

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

PROVISION OF SWITCHING POST AT MANATU

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
1(a)	Preparation of Design & Drawing of Switching Station	Set	1	18,461.00	18,461.00
1(b)	Foot by Foot survey & preparation of Design/Drawings for feeder	Km	0.25	6,445.00	1,611.25
2	Concrete for foundation, Plinth & trenches				
	(i) Ordinary soil/Hard soil inlcuding rock required chiseling (Grade M-15)	Cu.m	80	6,395.00	5,11,600.00
	(ii) Reinforced Concrete	Cu.m	2	6,835.00	13,670.00
	(iii) Rocky soil	Cu.m	3	7,134.00	21,402.00
3(a)	Supply and erection of main mast of Switching Station				
	(i) Supply	MT	2.6	1,04,737.00	2,72,316.20
	(ii) Erection	MT	2.6	3,307.00	8,598.20
3(b)	Supply and erection of Rolled/ Fabricated masts				
	(i) Supply	MT	2	1,10,250.00	2,20,500.00
	(ii) Erection	MT	2	5,512.00	11,024.00
4	Supply & Erection of Galvanised fabricted Steel works other than Main Mast				
	(i) Supply	MT	3.5	1,10,250.00	3,85,875.00
	(ii) Erection	MT	3.5	5,572.00	19,502.00
5a)	Supply, Erection, testing & commissioning of vaccum circuit breaker 25 KV				
	(i) Supply	No	1	6,23,035.00	6,23,035.00
	(ii) Erection, testing & Commissioning	No	1	25,854.00	25,854.00
5b)	Supply, Erection, testing of 25 KV SF6/ Vacuum type interruptor				
	(i) Supply	No	2	3,94,164.00	7,88,328.00
	(ii) Erection, testing & Commissioning	No	2	9,230.00	18,460.00
6(a)	Supply & erection of 25 KV Double Pole isolator complete in all respect				
	(i) Supply	No	3	1,08,929.00	3,26,787.00
	(ii) Erection	No	3	3,698.00	11,094.00
6(b)	Supply & erection of 25 KV Single Pole isolator complete in all respect				
	(i) Supply	No	3	45,754.00	1,37,262.00
	(ii) Erection	No	3	3,754.00	11,262.00
6(c)	Supply & erection of Interlocking device				
	(i) Supply	No	12	11,209.00	1,34,508.00
	(ii) Erection	No	12	1,121.00	13,452.00
6(d)	Supply & erection of Key box	No	1	561.00	561.00
7 a)	Supply, Erection, testing and commissioning of 25 KV Potential Transformer Type-I				
	(i) Supply	No	3	51,149.00	1,53,447.00
	(ii) Erection	No	3	1,470.00	4,410.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
7 b)	Supply & Erection of potential transformer type-II				
	(i) Supply	No	1	73,640.00	73,640.00
	(ii) Erection	No	1	1,470.00	1,470.00
7 c)	Supply, Erection and commissioning of current transformer 1000-500/5A				
	(i) Supply	No	1	55,083.00	55,083.00
	(ii) Erection	No	1	1,593.00	1,593.00
8	Supply, Erection of 42 KV Lightning arrester (Gap less type) with surge monitor and insulating base				
	(i) Supply	No	4	42,468.00	1,69,872.00
	(ii) Erection	No	4	924.00	3,696.00
9(a)	Supply, Erection of 25 KV copper feeder wire 150 sqmm (along/across)				
	(i) Supply	Mtr	250	1,323.00	3,30,750.00
	(ii) Erection	Mtr	150	56.00	8,400.00
9(b)	Supply of feeder Jumper (160) copper				
	(i) Supply	Mtr	30	1,156.43	34,692.96
	(ii) Erection	Mtr	0	370.00	0.00
9(c)	Supply, Erection of feeder suspension arrangement wihout insulator				
	(i) Supply	No	2	1,714.00	3,428.00
	(ii) Erection	No	2	190.00	380.00
9 (d)	Supply & erection of large jumper wire				
	(i) Supply	Mtr	20	1,092.00	21,840.00
	(ii) Erection	Mtr	20	1,102.00	22,040.00
10(a)	Supply & erection of Structure bond of MS flat size 40mm x 6mm				
	(i) Supply	No	40	416.00	16,640.00
	(ii) Erection	No	40	162.00	6,480.00
10(b)	Supply & erection of earth bus 50 x 6 mm				
	(i) Supply	Mtr	200	276.00	55,200.00
	(ii) Erection	Mtr	200	34.00	6,800.00
10(c)	Supply & Erection of single earth electrode with earthpit box cover complete				
	(i) Supply	Each	4	2,361.00	9,444.00
	(ii) Erection	Each	4	1,507.00	6,028.00
11	Supply, Erection, Testing & Commissioning of Control & Relay Panel				
	(i) Supply	No	1	15,89,372.00	15,89,372.00
	(ii) Erection	No	1	36,162.00	36,162.00
12	Supply & erection of Guy rod assembly				
	(i) Supply	No	2	7,717.00	15,434.00
	(ii) Erection	No	2	1,102.00	2,204.00
13	Supply & erection of 9 ton insulator composite				
	(i) Supply	No	10	3,325.00	33,250.00
	(ii) Erection	No	4	265.00	1,060.00
14	Supply & erection of 25 KV Post insulator with clamps etc.				
	(i) Supply	No	24	6,001.00	1,44,024.00
	(ii) Erection	No	24	552.00	13,248.00
15	Supply & Erection of copper strips size (25mm x 3mm) for equipments earthing				
	(i) Supply	Mtr	40	473.00	18,920.00
	(ii) Erection	Mtr	40	74.00	2,960.00

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
16(a)	Supply & Erection and Commissioning of low maintenance lead acid Battery 110V, 40 AH				
	(i) Supply	Set	2	1,07,432.00	2,14,864.00
	(ii) Erection	Set	2	6,066.00	12,132.00
16(b)	Supply & Erection and commissioning of battery charger for 110V, 40 AH low maintenance lead acid battery				
	(i) Supply	No	2	1,18,333.00	2,36,666.00
	(ii) Erection	No	2	3,790.00	7,580.00
17	Supply & Erection of Terminal Board in Control Cubicle				
	(i) Supply	No	2	9,816.00	19,632.00
	(ii) Erection	No	2	634.00	1,268.00
18	Supply & Erection of 110V DC distribution Board.				
	(i) Supply	No	2	26,110.00	52,220.00
	(ii) Erection	No	2	2,900.00	5,800.00
19	Supply & Erection of 240V AC distribution Board.				
	(i) Supply	No	2	28,488.00	56,976.00
	(ii) Erection	No	2	3,160.00	6,320.00
20	Supply & Installation of Cables				
	(a) For Control and Indication (7 Core x 2.5 Sq mm) Copper				
	(i) Supply	Mtr	150	158.00	23,700.00
	(ii) Erection	Mtr	150	32.00	4,800.00
	(b) For Catenary indication (2 Core x 2.5 Sq.mm) Copper				
	(i) Supply	Mtr	150	97.00	14,550.00
	(ii) Erection	Mtr	150	32.00	4,800.00
	(c) For Heater Supply (2 Core x 4 Sq mm) Aliminium				
	(i) Supply	Mtr	100	93.00	9,300.00
	(ii) Erection	Mtr	100	34.00	3,400.00
	(d) For 110 V DC Supply (2 Core x 4 Sq.mm) Copper				
	(i) Supply	Mtr	100	106.00	10,600.00
	(ii) Erection	Mtr	100	34.00	3,400.00
	(e) Flexible PVC				
	(i) Supply	Mtr	30	39.42	1,182.60
	(ii) Erection	Mtr	30	3.94	118.20
21	Supply & Erection of Aluminium busbar 36/28mm				
	(i) Supply	Mtr	60	502.00	30,120.00
	(ii) Erection	Mtr	60	119.00	7,140.00
22	Supply & Erection of Aluminium Bus Connectors				
	a) Bus Terminal (6480)				
	(i) Supply	No	16	1,636.00	26,176.00
	(ii) Erection	No	16	100.00	1,600.00
	b) Bus Splice(6490)				
	(i) Supply	No	4	1,687.00	6,748.00
	(ii) Erection	No	4	100.00	400.00

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
	c) Bus Tee Connector(6500)				
	(i) Supply	No	2	1,714.00	3,428.00
	(ii) Erection	No	2	93.00	186.00
	d) 36/20mm terminal connector (6530)				
	(i) Supply	No	4	1,636.00	6,544.00
	(ii) Erection	No	4	93.00	372.00
	e) Tap Connector(6520)				
	(i) Supply	No	1	1,714.00	1,714.00
	(ii) Erection	No	1	93.00	93.00
	f) Flexible Bus Splice (6550)				
	(i) Supply	No	1	3,956.00	3,956.00
	(ii) Erection	No	1	112.00	112.00
	g) Terminal Connector Bolted type(6830-1)				
	(i) Supply	No	1	1,450.00	1,450.00
	(ii) Erection	No	1	93.00	93.00
23	Supply & Erection of materials for termination of 25 KV feeder wire				
	(i) Supply	No	8	3,310.00	26,480.00
	(ii) Erection	No	2	326.00	652.00
24	Supply and erection of fencing panel				
	(i) Supply	Mtr	40	1,728.00	69,120.00
	(ii) Erection	Mtr	40	146.00	5,840.00
25	Supply and erection of fencing upright	Mtr			
	(i) Supply	MT	0.30	69,888.00	20,966.40
	(ii) Erection	MT	0.30	3,317.00	995.10
26	Supply and erection of Anti-Climbing device				
	(i) Supply	Mtr	180	360.00	64,800.00
	(ii) Erection	Mtr	180	86.00	15,480.00
27 i)	Supply of various type of Enamelled Board				
a)	Name Board	No.	1	1,376.00	1,376.00
b)	Number plate	No.	18	344.00	6,192.00
c)	Caution Board	No.	2	1,203.00	2,406.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
27 ii)	Erection of enamelled board				
a)	Name Board	No	1	138.00	138.00
b)	Number plate	No.	18	35.00	630.00
c)	Caution Board	No.	2	120.00	240.00
28	Supply & Erection of Schematic power supply diagram board (size 4' x 2')	No	4	8,176.00	32,704.00
29 a)	Brick Soling	Sqm	25	80.00	2,000.00
29 b)	Surface raming	Sqm	25	263.00	6,575.00
29 c)	Gravel carpetting	Cum	20	1,526.00	30,520.00
30	Supply & erection of Cable clamps	LS	LS	1,000.00	1,000.00
31	Supply & erection of connector				
	(i) Supply	LS		5,000.00	5,000.00
	(ii) Erection	LS		500.00	500.00
32	Testing, commissioning	LS	LS	20,000.00	20,000.00
33	Supply & erection of A.T. 25 KV/10 KVA with D.O. Fuse switch assembly support insulators ((without mast & anticlimbing device)				
	(i) Supply	No	1	1,01,415.00	1,01,415.00
	(ii) Erection	No.	1	7,604.00	7,604.00
34	Supply & erection of 2 x 70 sqmm cable Aluminium	No.			
	(i) Supply	Mtr	20	480.00	9,600.00
	(ii) Laying of cable	Mtr	20	202.00	4,040.00
35a)	Supply & laying of 50 mm dia GI pipe	Mtr	15	450.00	6,750.00
35b)	Supply, laying & fixing of RCC/Hume pipe 150	Mtr	10	386.00	3,860.00
36	Supply & erection of Shock Treatment chart (Laminated)	No.	1	1,582.00	1,582.00
37a)	Supply & Fitment of Fire Extinguisher CO2 type capacity 9 ltr. (wall mounted)	No.	2	2,902.00	5,804.00
37b)	Fire buckets 9 ltr cap. Filled with dry sand mounted on stand (4 in a set)	Set	1	7,276.00	7,276.00
38	Shed with stand for fire brackets	LS	1	2,000.00	2,000.00
39	First Aid Box	Set	1	885.00	885.00
40	Manning of post	Man Month	9	12,500.00	1,12,500.00
41	Power block works				
a)	Erection of cross /along track	Mtr	100	208.00	20,800.00
b)	Erection of jumper	No.	6	554.00	3,324.00
c)	9t. Insulator	No.	8	2,076.00	16,608.00
42	Supply of 52/60 kg BG rail for buried rail	m	26	4,800.00	1,24,800.00
43	Welding of rail	No.	5	4,000.00	20,000.00
44a)	Placement under track	Loc.	1	3,000.00	3,000.00
44b)	Earthlead 5 places	No.	5	1,000.00	5,000.00
44c)	Ballast removal for 30 m. @ 2.3 cum per RM	Cum.	69	190.00	13,110.00
44d)	Ballast spreading for 30 m for 30 m @ 2.3 cum for TM (Traction)	Cum.	69	280.00	19,320.00
	Total (Elect) Rs.				**79,99,463.91**
a)	Wiring of control cubicle	LS		80,841.00	80,841.00
	Total Rs.				**80,841.00**
	Total (Electrical) Rs.				**80,80,304.91**
46	**Civil work**				
a)	Provision of cubicle	Sqm	33		
	Total (Civil works are covered under respective civil Estimate)				

PROJECT OFFICER
AMRAPALI OCP.
N. A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

ELECTRIFICATION OF MANATU SWITCHING POST

SN	Item	Unit	Qty	Rate	Amount
1	Supply, installtion , testing, commissioning & provision of 2X4'-0"X 28 W T-5 batten type flourescent light fitting indoor conforming to IS 10322 part-5, section 2/82 with Electronic ballast, PF improvement capacitor,starter , rotary holders, etc., including lamp, supply , connection from ceiling rose using 3 core PVC flexible chord wire using wooden round blocks , M.S. down rod/M.S. bracket pipe on wall, etc., fixing arrangment suitable at site location , etc., (Inside service Building)	No.	6	3,675.00	22,050.00
2	Supply, installtion & testing of of 450mm, 900 RPM heavy duty exhaust fan suitable for 1 dia, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	no.	2	5,833.00	11,666.00
3	Supply,fixing,testing & commissioning of CFL Bracket light fittings,holder alongwith 18W CFL lamp	No.	2	712.00	1,424.00
a	5/6 amps switch	No.	4	81.00	324.00
b	5/6 amp socket outlet 3 pin	No.	4	79.00	316.00
c	15/16 amps switch	No.	3	111.00	333.00
d	6 pin 15/16 amp socket outlet	No.	3	150.00	450.00
4a)	Wiring for light point/ fan point/ exhaust fan point/ call bell pointwith 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit with piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm, FRLS PVC insulated copper conductor single core cable etc as required.INCLUDING PROVISION of control switch in tw decolam board testing & commissioning	point	11	585.00	6,435.00
b)	Wiring of plug points	Point	7	162.00	1,134.00
5	Wiring of circuit /Submain wiring in surface /recessed PVC conduit				
a	2X2.5 Sqmm + 1X2.5 Sqmm	mtr	80	131.00	10,480.00
b	2X4 sqmm+1X4 sqmm	mtr	50	162.00	8,100.00
6	Supply, fixing GI box laong with modular base & cover plate switch in recess (75x75 mm)	No.	4	166.00	664.00
7	Supply , fixing of PVC conduit along with accessories in surface /recess including cutting the wall				
a	25 mm	mtr	60	65.00	3,900.00
8	Supply, erection of MCB DB complete with metal enclosure , internal wiring busbar earth bus neutral link etc. (2+4 way)	No.	1	2,508.00	2,508.00
9	Supply of 6 amps. to 32 amps. ratings , SP MCB, "C" curve, 10 KA breaking capacity	No.	1	117.00	117.00
10	Outdoor Luminaries 150 W MH Fitting & Lamp	No.	1	7,014.00	7,014.00
11	Earthing with G.I earth pipe 4.5 metre long, 40 mm dia including with cover plate, having locking arrangment and watering pipe etc. with charcoal/coke and salt as required.	No.	1	3,926.00	3,926.00
	Total				80,841.00

PROJECT OFFICER
AMRAPALI OCP
M-A AREA

Annex-E 3

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

SWITCHING POST AT AMRAPALI SIDING

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
1(a)	Preparation of Design & Drawing of Switching Station	Set	1	18,461.00	18,461.00
1(b)	Foot by Foot survey & preparation of Design/Drawings for feeder	Km	0.4	6,445.00	2,578.00
2	Concrete for foundation, Plinth & trenches				
	(i) Ordinary soil/Hard soil including rock required chiseling (Grade M-15)	Cu.m	95	6,395.00	6,07,525.00
	(ii) Reinforced Concrete	Cu.m	2	6,835.00	13,670.00
	(iii) Rocky soil	Cu.m	3	7,134.00	21,402.00
3(a)	Supply and erection of main mast of Switching Station				
	(i) Supply	MT	4	1,04,737.00	4,18,948.00
	(ii) Erection	MT	4	3,307.00	13,228.00
3(b)	Supply and erection of Rolled/ Fabricated masts				
	(i) Supply	MT	2.5	1,10,250.00	2,75,625.00
	(ii) Erection	MT	2.5	5,572.00	13,930.00
4	Supply & Erection of Galvanised fabricted Steel works other than Main Mast				
	(i) Supply	MT	4	1,10,250.00	4,41,000.00
	(ii) Erection	MT	4	5,572.00	22,288.00
5	Supply, Erection, testing of 25 KV SF6/ Vacuum type interruptor				
	(i) Supply	No	2	3,94,164.00	7,88,328.00
	(ii) Erection, testing & Commissioning	No	2	9,230.00	18,460.00
6(a)	Supply & erection of 25 KV Double Pole isolator complete in all respect				
	(i) Supply	No	2	1,08,929.00	2,17,858.00
	(ii) Erection	No	2	3,698.00	7,396.00
6(b)	Supply & erection of 25 KV Single Pole isolator complete in all respect				
	(i) Supply	No	2	45,754.00	91,508.00
	(ii) Erection	No	2	3,754.00	7,508.00
6(c)	Supply & erection of interlocking device				
	(i) Supply	No	8	11,209.00	89,672.00
	(ii) Erection	No	8	1,121.00	8,968.00
6(d)	Supply & erection of Key box	No	1	581.00	581.00
7	Supply, Erection, testing and commissioning of 25 KV Potential Transformer Type-I				
	(i) Supply	No	2	51,149.00	1,02,298.00
	(ii) Erection	No	2	1,470.00	2,940.00
8	Supply, Erection of 42 KV Lightning arrester (Gap less type) with surge monitor and insulating base				
	(i) Supply	No	2	42,468.00	84,936.00
	(ii) Erection	No	2	924.00	1,848.00
9(a)	Supply, Erection of 25 KV copper feeder wire 150 sqmm (along/across)				
	(i) Supply	Mtr	450	1,323.00	5,95,350.00
	(ii) Erection	Mtr	200	56.00	11,200.00

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
	(ii) Supply	No	1	28,488.00	28,488.00
	(iii) Erection	No	1	3,160.00	3,160.00
19	Supply & Installation of Cables				
	(a) For Control and Indication (7 Core x 2.5 Sq mm) Copper				
	(i) Supply	Mtr	250	158.00	39,500.00
	(ii) Erection	Mtr	250	32.00	8,000.00
	(b) For Catenary indication (2 Core x 2.5 Sq mm) Copper				
	(i) Supply	Mtr	250	97.00	24,250.00
	(ii) Erection	Mtr	250	32.00	8,000.00
	(c) For Heater Supply (2 Core x 4 Sq mm) Aluminium				
	(i) Supply	Mtr	150	93.00	13,950.00
	(ii) Erection	Mtr	150	34.00	5,100.00
	(d) For 110 V DC Supply (2 Core x 4 Sq mm) Copper				
	(i) Supply	Mtr	50	106.00	5,300.00
	(ii) Erection	Mtr	50	34.00	1,700.00
	(e) Flexible PVC				
	(i) Supply	Mtr	15	39.42	591.30
	(ii) Erection	Mtr	15	3.94	59.10
20	Supply & Erection of Aluminium busbar 36/28mm				
	(i) Supply	Mtr	60	502.00	30,120.00
	(ii) Erection	Mtr	60	119.00	7,140.00
21	Supply & Erection of Aluminium Bus Connectors				
	a) Bus Terminal (6480)				
	(i) Supply	No	20	1,636.00	32,720.00
	(ii) Erection	No	20	100.00	2,000.00
	b) Bus Splice(6490)				
	(i) Supply	No	1	1,687.00	1,687.00
	(ii) Erection	No	1	100.00	100.00
	c) Bus Tee Connector(6500)				
	(i) Supply	No	4	1,714.00	6,856.00
	(ii) Erection	No	4	93.00	372.00
	d) 36/20mm terminal connector (6530)				
	(i) Supply	No	4	1,636.00	6,544.00
	(ii) Erection	No	4	93.00	372.00
	e) Tap Connector(6520)				
	(i) Supply	No	2	1,714.00	3,428.00
	(ii) Erection	No	2	93.00	186.00
	f) Flexible Bus Splice (6550)				
	(i) Supply	No	2	3,956.00	7,912.00
	(ii) Erection	No	2	112.00	224.00
	g) Terminal Connector Bolted type(6830-1)				
	(i) Supply	No	2	1,450.00	2,900.00
	(ii) Erection	No	2	93.00	186.00
22	Supply & Erection of materials for termination of 25 KV feeder wire				
	(i) Supply	No	10	3,316.00	33,160.00

PROJECT OFFICER
AMRAPALI OCP
M:A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
	(ii) Erection	No	10	326.00	3,260.00
23	Supply and erection of fencing panel				
	(i) Supply	Mtr	45	1,728.00	77,760.00
	(ii) Erection	Mtr	45	146.00	6,570.00
24	Supply and erection of fencing upright	Mtr			
	(i) Supply	MT	0.50	69,888.00	34,944.00
	(ii) Erection	MT	0.50	3,317.00	1,658.50
25a)	Supply and erection of Anti-Climbing device				
	(i) Supply	Mtr	200	360.00	72,000.00
	(ii) Erection	Mtr	200	86.00	17,200.00
25b)	Anticlimbing with SPS	LS	0	0.00	0.00
26 i)	Supply of various type of Enamelled Board				
a)	Name Board	No.	1	1,376.00	1,376.00
b)	Number plate	No	20	344.00	6,880.00
c)	Caution Board	No	2	1,203.00	2,406.00
26 ii)	Erection of enamelled board				
a)	Name Board	No.	1	138.00	138.00
b)	Number plate	No	20	35.00	700.00
c)	Caution Board	No	2	120.00	240.00
27	Supply & Erection of Schematic power supply diagram board (size 4' x 2')	No	6	8,176.00	49,056.00
28 a)	Brick Soling	Sqm	25	80.00	2,000.00
28 b)	Surface raming	Sqm	25	263.00	6,575.00
29 c)	Gravel carpetting	Cum	20	1,526.00	30,520.00
30	Supply & erection of Cable clamps	LS	LS	2,000.00	2,000.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
31	Supply & erection of connector				
	(i) Supply	LS	LS	5,000.00	5,000.00
	(ii) Erection	LS	LS	500.00	500.00
32	Testing, commissioning	LS	LS	50,000.00	50,000.00
33	Supply & erection of A.T. 25 KV/10 KVA with D.O. Fuse switch assembly support insulators ((wilhout mast & anticlimbing device)				
	(i) Supply	No.	1	1,01,415.00	1,01,415.00
	(ii) Erection	No.	1	7,604.00	7,604.00
34	Supply & erection of 2 x 70 sqmm cable Aluminium	No.			
	(i) Supply	Mtr	20	480.00	9,600.00
	(ii) Laying of cable	Mtr	20	202.00	4,040.00
35a)	Supply & laying of 50 mm dia GI pipe	Mtr	10	450.00	4,500.00
35b)	Supply, laying & fixing of RCC/Hume pipe 150	Mtr	6	384.00	2,304.00
36	Supply & erection of Shock Treatment chart (Laminated)	No.	1	1,582.00	1,582.00
37a)	Supply & Fitment of Fire Extinguisher CO2 type capacity 9 ltr. (wall mounted)	No.	2	2,902.00	5,804.00
37b)	Fire buckets 9 ltr cap. Filled with dry sand mounted on stand (4 in a set)	Set	1	7,276.00	7,276.00
38	Shed with stand for fire brackets	LS	1	2,000.00	2,000.00
39	First Aid Box	Set	1	685.00	685.00
40	Manning of post	Man Month	6	12,500.00	75,000.00
41	Power block works				
a)	Erection of cross /along track	Mtr	250	208.00	52,000.00
b)	Erection of jumper	No.	8	554.00	4,432.00
c)	St. Insulator	No.	8	2,076.00	16,608.00
42a)	Supply of 52/60 kg BG railfor buried rail	m	26	4,800.00	1,24,800.00
		t.	(1.56)	(80000)	
42b)	Welding of rail	No.	5	4,000.00	20,000.00
42c)	Placement under track	Loc.	1	3,000.00	3,000.00
42d)	Earthlead at 5 places	No.	5	1,000.00	5,000.00
42e)	Ballast removal for 30 m. @ 2.3 cum per RM	Cum.	70	190.00	13,300.00
42f)	Ballast spreading for 30 m for 30 m @ 2.3 cum for TM	Cum.	70	280.00	19,600.00
43	Supply & erection of				
a)	Operating rod insulator for motorised Isolator				
	(i) Supply	No	2	2,496.00	4,992.00
	(ii) Erection	No	2	250.00	500.00
b)	Single pole motorised isoaltor				
	(i) Supply	No	2	1,55,302.00	3,10,604.00
	(ii) Erection	No	2	4,190.00	8,380.00
	Total (Traction) Rs.				**59,82,299.18**
44	Electrification of control cubicle				65,057.00
	Total (Electrical) Rs.				**60,47,356.18**
	Civil work				
1	Provision of control cubicle	Sqm	22		

(Civil work are covered under respecive civil estimate)

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ELECTRIFICATION OF AMRAPALI SWITCHING POST

SN	Item	Unit	Qty	Rate	Amount
1	Supply, installtion , testing, commissioning & provision of 2X4'-0"X 28 W T-5 batten type flourescent light fitting indoor conforming to IS 10322 part-5, section 2/82 with Electronic ballast, PF improvement capacitor,starter , rotary holders, etc., including lamp, supply , connection from ceiling rose using 3 core PVC flexible chord wire using wooden round blocks , M.S. down rod/M.S. bracket pipe on wall, etc., fixing arrangment suitable at site location , etc., (Inside service Building)	No.	4	3,675.00	14,700.00
2	Supply, installtion & testing of of 450mm, 900 RPM heavy duty exhaust fan suitable for 1 dia, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	no.	2	5,833.00	11,666.00
3	Supply,fixing,testing & commissioning of CFL Bracket light fittings,holder alongwith 18W CFL lamp	No.	1	712.00	712.00
a	Supply & fixing of piano type 5/6 amps switch	No.	3	81.00	243.00
b	Supply & fixing of 5/6 amp socket outlet 3 pin	No.	3	79.00	237.00
c	Supply & fixing of piano type 15/16 amps switch	No.	2	111.00	222.00
d	Supply & fixing of 6 pin 15/16 amp socket outlet	No.	2	150.00	300.00
4 a)	Wiring for light point/ fan point/ exhaust fan point/ call bell pointwith 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required including provision of control switch in tw decclam board testing & commissioning	point	8	585.00	4,680.00
4b)	Wiring of plug points	point	5	162.00	810.00
5	Wiring of circuit /Submain wiring in surface /recessed PVC conduit				
a	2X2.5 Sqmm + 1X2.5 Sqmm	mtr	60	131.00	7,860.00
b	2X4 sqmm+1X4 sqmm	mtr	40	162.00	6,480.00
6	Supply, fixing GI box laong with modular base & cover plate switch in recess (75x75 mm)	No.	2	166.00	332.00
7	Supply , fixing of PVC conduit along with accessories in surface /recess including cutting the wall				
a	25 mm	mtr	50	65.00	3,250.00
8	Supply, erection of MCB DB complete with metal enclosure , internal wiring busbar earth bus neutral link etc. (2+4 way)	No.	1	2,508.00	2,508.00
9	Supply of 5 amps. to 32 amps. ratings , SP MCB, "C" curve, 10 KA breaking capacity	No.	1	117.00	117.00
10	Outdoor Luminaries 150 W MH Fitting & Lamp	No.	1	7,014.00	7,014.00
11	Earthing with G.I earth pipe 4.5 metre long, 40 mm dia including with cover plate, having locking arrangment and watering pipe etc. with charcoal/coke and salt as required.	No.	1	3,926.00	3,926.00
	Total				65,057.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

Provision of 10 KVA AT FOR MANATU

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
1	Preparation of design and drawing for AT	LS	LS	5,000.00	5,000.00
2	Concrete for foundation	Cum	4	6,395.00	25,580.00
3	Supply & erection of Fabricated mast				
	(i) Supply	t.	0.4	1,10,250.00	44,100.00
	(ii) Erection	t.	0.4	5,572.00	2,228.80
4	Supply & erection of				
(a)	SPS for AT & Anti climbing device				
	(i) Supply	Ton	0.12	1,10,250.00	13,230.00
	(ii) Erection	Ton	0.12	5,572.00	668.64
(b)	Catenary wire				
	(i) Supply	Mtr	0	456.00	0.00
	(ii) Erection	Mtr	0	46.00	0.00
(c)	Suspension arrangement for (b) including connector/lugs/clamps				
	(i) Supply	LS	LS	1,000.00	1,000.00
	(ii) Erection	LS	LS	250.00	250.00
(d)	No. plate (Enamel)				
	(i) Supply	No.	2	344.00	688.00
	(ii) Erection	No.	2	35.00	70.00
(e)	Caution Board (Enamel)				
	Supply & Erection	No.	1	1,323.00	1,323.00
(f)	Supply & erection of Large jumper wire				
	(i) Supply	Mtr	10	1,092.00	10,920.00
	(ii) Erection	Mtr	10	1,102.00	11,020.00
5	Supply & erection of				
(a)	Earth station				
	(i) Supply	No.	2	2,361.00	4,722.00
	(ii) Erection	No.	2	1,507.00	3,014.00
(b)	Structure Bond				
	(i) Supply	No.	2	416.00	832.00
	(ii) Erection	No.	2	162.00	324.00
(c)	63A fuse switch DP with enclosure				
	(i) Supply	No.	1	3,280.00	3,280.00
	(ii) Erection	No.	1	328.00	328.00
(d)	Terminal Board in control cubicle				
	(i) Supply	No.	1	9,816.00	9,816.00
	(ii) Erection	No.	1	634.00	634.00
6	Cable laying (above 35 sqmm & upto 95 sqmm)				
(i)	along track	Mtr	220	202.00	44,440.00
(ii)	across track	Mtr	20	25.00	500.00
(iii)	on the wall	Mtr	10	70.00	700.00
7	Supply and erection of 25 KV/240V 5 KVA Auxilary Transformer with DO fuse switch assembly complete with support insulator without mast & anticlimbing device				
	(i) Supply	No	1	1,01,415.00	1,01,415.00
	(ii) Erection	No	1	7,604.00	7,604.00

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
8	Supply & laying of cable for 240V A.C. supply (2 core x 25 sqmm) Aluminium				
	(i) Supply	Mtr	250	480.00	1,20,000.00
9	Supply & Erection of copper strips size (25mm x 3mm) for equipment earthing				
	(i) Supply	Mtr	5	473.00	2,365.00
	(ii) Erection	Mtr	5	74.00	370.00
10	Supply & Erection of Anti climbing device				
	(i) Supply	Mtr	10	344.00	3,440.00
	(ii) Erection	Mtr	10	82.00	820.00
11	Supply and erection of 9 tonne insulator Porcelain				
	(i) Supply	Mtr	1	2,792.00	2,792.00
	(ii) Erection	Mtr	1	265.00	265.00
12	Oil filtration, Testing & Commissioning of AT	LS	LS	5,000.00	5,000.00
13	Misc. works	LS	LS	10,000.00	10,000.00
14	Supply of GI pipe 50 mm laying, fixing GI pipe in ground complete with GI fittings including trenching & refilling etc.	Mtr	30	450.00	13,500.00
	Total Rs.				**4,52,239.44**
	Total for 2 nos				**9,04,478.88**

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMPRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

SCADA UNDER MANATU SSP

SN	Description of work	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Design, Engineering & supply of RTU FP	No.	1	9,53,623.00	9,53,623.00
2	Erection, testing & commissioning of RTU	No.	1	55,424.00	55,424.00
3	Modification to SCADA equipment Hardware & Software at RCC, Hajipur		1	1,90,725.00	1,90,725.00
4	Provision of Sectioning diagram at RCC/Hajipur	Each	1	99,556.00	99,556.00
5	Manning of Post	Man Month	3	12,500.00	37,500.00
6	Supply & erection of lead acid battery 200AH, 110V complete with stand & accessories				
	(i) Supply	No.	1	3,65,235.00	3,65,235.00
	(ii) Erection	No.	1	8,728.00	8,728.00
7	Supply & erection of battery charger for 200AH, 110V battery				
	(i) Supply	No.	1	3,23,068.00	3,23,068.00
	(ii) Erection	No.	1	5,454.00	5,454.00
	Total (Electrical) Rs.				**20,39,313.00**
	S&T work				
1	Provision of emergency socket control cable/communication equipment equipments	LS			

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
SCADA UNDER AMRAPALI SSP

SN	Description of work	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Design, Engineering & supply of RTU /SSP	No.	1	8,26,474.00	8,26,474.00
2	Erection, testing & commissioning of RTU	No.	1	43,108.00	43,108.00
3	Modification to SCADA equipment Hardware & Software at RCC, Hajipur		1	1,90,725.00	1,90,725.00
4	Provision of Sectioning diagram at RCC/Hajipur	Each	1	99,554.00	99,554.00
5	Manning of Post	Man Month	3	12,500.00	37,500.00
6	Supply & erection of lead acid battery 200AH, 110V complete with stand & accessories				
	(i) Supply	No.	1	3,96,222.00	3,96,222.00
	(ii) Erection	No.	1	8,728.00	8,728.00
7	Supply & erection of battery charger for 200AH, 110V battery				
	(i) Supply	No.	1	3,23,668.00	3,23,668.00
	(ii) Erection	No.	1	5,454.00	5,454.00
	Total (Electrical) Rs.				**19,31,433.00**
8	**S&T work**				
	Provision of emergency socket control cable/communication equipment	LS	LS		

PROJECT OFFICER
AMRAPALI OCP.
M-AAREA

REVISED DETAILED PROJECT REPORT

ELECTRICAL ENGINEERING ESTIMATE

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRIFICATION OF STATION BUILDING AT MANATU (INCLUDING PANEL ROOM)

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
1(a)	Supply of energy efficient T5 regal batten Powder coated Regal Batten for T5 2X 28W with high performance EB (THD<10%) fitting indoor conforming to IS 10322 part-5, section 2/82 with Electronic ballast , PF improvement capacitor,starter , rotary holders, etc., including lamp, supply connection from ceiling rose using 3 core PVC flexible chord wire using wooden round blocks ,fixing arrangment suitable at site location , etc	No	24	2,543.00	61,032.00
1 (b)	Supply of 2X4'-0"X 28 W T-5 batten type MAGNUM2 Corrosion proof IP 65 fluorescent luminaire in polycarbonate for wet location (Havells model no LHIT56228033)	Nos	2	5,861.00	11,722.00
1(b)	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube etc. directly on ceiling/ wall, including connection with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	No.	26	91.00	2,366.00
2(a)	Supply of 5star rated 1200 mm sweep ceiling fan suitable for 1 phase, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	No.	8	2,988.00	23,904.00
2(b)	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable	No.	8	95.00	760.00
2 (c)	Supply, fixing, testing & commissioning of Electronic Fan Regulator (Flush type) 200V complete with provision of new termination on decolorn TW board	No.	8	284.00	2,272.00
3(a)	Supplyof CFL Bracket light fittings,holder alongwith 18W CFL	No.	8	260.00	2,080.00
3(b)	Erection of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS lamps per fitting, complete with all accessories including connection etc. as required.	No.	8	52.00	416.00
4(a)	Supply of 450mm, 900 RPM heavy duty exhaust fan suitable for	No.	2	6,224.00	12,448.00
4(b)	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required.				
	Upto 450 mm sweep	No.	2	204.00	408.00
5 (a)	Wiring for light point/ fan point/ exhaust fan point/ call bell pointwith 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.Including provision of control switch in tw decolam board testing & commissioning	Point	44	593.00	26,092.00
5 (b)	Wiring for light/Power plug with 2 X 4 Sqmm + earthing 1 X 4 Sqmm FRL 5 PVC	Mtr	50	162.00	8,100.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
6	Wiring of circuit /Submain wiring in surface /recessed PVC conduit along with earth wire				
i)	2X2.5 Sqmm + 1X2 5 Sqmm	Mtr	140	131.00	18,340.00
ii)	2X4 sqmm+1X4 sqmm	Mtr	70	162.00	11,340.00
iii)	2X6 sqmm+1X6 sqmm	Mtr	35	221.00	7,735.00
7	Supplying & fixing following modular switch/socket on the existing switch box/cover including connection etc. as required.				
i)	5/6 amp switch	No.	10	81.00	810.00
ii)	3 pin 5/6 amp socket outlet	No	10	79.00	790.00
iii)	15/16 amp switch	No.	6	111.00	666.00
iv)	6 pin 15/16 amp socket outlet	No	6	150.00	900.00
8	Supplying and fixing metal box of 150mm X 75mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 amps socket outlet and 5/6 amps piano type switch, connection, painting etc. as required. (For light plugs to	Each	8	303.00	2,424.00
9	Supplying and fixing metal box of 180mm X 100mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6 & 15/16 amps socket outlet and 15/16 amps piano type switch, connection, painting etc. as required.	Each	5	395.00	1,975.00
10	Supply, fixing GI box along with modular base & cover plate switch in recess (75x75 mm)	No.	10	166.00	1,660.00
11	Supply, fixing GI box along with modular base & cover plate switch in recess (100x75 mm)	No	5	175.00	875.00
12	Supply , fixing of following sizes of medium class PVC conduit along with accessories in surface /recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	25 mm	Mtr	300	65.00	19,500.00
13 (a)	Supply, installation & testing of 5 star rated inverter control 1.5 Ton or 17100 Btu/h capacity split Air Conditioner automatic operation mode etc. complete as required.	No.	2	34,701.00	69,402.00
13 (b)	Supply of unarmoured copper PVC/XLPE Control cable 3 X 1.5 Sqmm 1100 V grade	Mtr	20	190.00	3,800.00
14	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar,earth bar, din bar, interconnections, powder painted including earthing etc.as required. (But without MCB/RCCB/Isolator)	No.	1	2,508.00	2,508.00
a)	2+4 way, double door				
15	Supply of 5 amps. to 32 amps. ratings , MCB, "C" curve,miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connection, testing and commissioning as required.				
a)	Single pole	No.	12	169.00	2,028.00
16	Supplying and fixing following way, horizontal type three pole andneutral, sheet steel, MCB distribution board, 415 volts, on surface/recess, complete with tinned copper bus bar, neutral bus bar,earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without				
a)	4 way (4 + 12), Double door	No.	1	2,175.00	2,175.00

PROJECT OFFICE
AMRAPALI LOCALITY
M-1 AREA

S.N	Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
17	Supplying and fixing following rating four pole 415 volts isolator in the existing MCB DB complete with connections, testing and commissioning etc as required				
a)	40 amps	No	1	659.00	659.00
18	Supply of L T Aluminium Armoured PVC/XLPE cable of size 4 x 35 Sqmm 1100 Volts Grade.	Mtr	100	694.48	69,447.88
19	Supply of L T Aluminium Armoured PVC/XLPE cable of size 4 x 16 Sqmm 1100 Volts Grade	Mtr	100	413.00	41,300.00
20	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
(a)	Upto 35 sq. mm	Mtr	200	195.00	39,000.00
21	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
(a)	Upto 35 sq. mm	Mtr	10	16.00	160.00
22	Supplying and fixing of light class G.I. pipe of 50 mm dia (nominal) 3 metres length along the pole for protection of under ground cable as required	Mtr	10	470.00	4,700.00
21	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc with charcoal/coke and salt as required	No.	5	3,926.00	19,630.00
22	Supply of 9 mtr steel tubular poles with short arm bracket	No.	5	9,218.00	46,090.00
23	Erection of steel tubular or rail pole strut in cement concrete 1:3:6(1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling and secured with holding clamps, bolts, nuts, etc. as required.	Each	5	4,318.00	21,590.00
24	Providing and making steel pole collar with cement concrete (1cement : 3 coarse sand : 6 stone aggregate 20mm) of specified size and shape including form work, plastering if required, curing etc as required. (volume of pole/ pipe not to be deducted)	Cum	5	4,556.00	22,780.00
25	Supplying and embedding 40 mm dia G.I. pipe (medium class) in pole collar/ foundation (during casting) for cable entry including bending the pipe to the required shape complete as	Mtr	10	325.00	3,250.00
26	Supply & fixing of J-Box with AC-bus & MCB DB 1 x 16A	No.	5	13.58	67.89
27	Supply, installtion of street light fitting with 150 W MH light & all accessories including connection etc as required.	Each	5	8,926.00	44,630.00
28	Auto changeover panel (60A - 3 point)				
a)	Supply	No.	1	61,881.00	61,881.00
b)	Erection	No.	1	6,188.00	6,188.00
29	Supply & erection of glow sign Board 2m X 1 m	No.	1	1,157.00	1,157.00
30	Endura Cityliner 24W New generation energy saving & environmental friendly long life Versatile pressure die-cast aluminium roadway luminaire with high power LEDs as light				
a)	Supply	No.	1	21,313.00	21,313.00
b)	Installation	No.	1	2,131.30	2,131.30
31	High quality Aluminium pressure die casted low watt loss silicon Steel tornination of High flow V 2 0.37 KW/0.5 HP Pump motor set complete as required				
a)	Supply	Set	1	6,351.00	6,351.00
b)	Installation	No.	1	635.10	635.10

PROJECT MANAGER
AMRAPALI GROUP
M-AAREA

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
32	40 mm dia medium G.I Pipe for pump motor set	Mtr	40	252.00	10,080.00
33	Supply of armoured at PVC / XLPE Power cable of size 2 X 6 Sqmm 1.1 Kv grade	Mtr	10	218.00	2,180.00
34	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I.pipe from earth electrode including connection with G.I. nut,bolt, spring, washer excavation and re-filling etc. as required.	Mtr	5	421.00	2,105.00
	Total				7,10,854.07

PROJECT OFFICER
AMRAPALI OCP
MAAREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

ELECTRIFICATION OF INPLANT CABIN

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
1(a)	Supply of energy efficient T5 regal batten Powder coated Regal Batten for T5 2X 28W with high performance EB (THD<10%) fitting indoor conforming to IS 10322 part-5, section 2/82 with Electronic ballast , PF improvement capacitor,starter , rotary holders, etc., including lamp, supply , connection from ceiling rose using 3 core PVC flexible chord wire using wooden round blocks ,fixing arrangment suitable at site location , etc.	No.	32	2,543.00	81,376.00
1(b)	Supply, installation , testing, commissioning & provision of 2X4'-0"X 28 W T-5 batten type MAGNUM2 Corrosion proof IP 65 fluorescent luminaire in polycarbonate for wet location (Havells model no LHIT56228033)	No.	4	5,328.00	21,312.00
1(c)	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube etc. directly on ceiling/ wall, including connection with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	No.	36	91.00	3,276.00
2(a)	Supply of 5star rated 1200 mm sweep ceiling fan suitable for 1 phase, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	Nos	16	2,988.00	47,808.00
2(b)	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable etc. as required.	no	16	95.00	1,520.00
2 (c)	Supply, fixing, testing & commissioning of Electronic Fan Regulator (Flush type) 200V complete with provision of new termination on decolom TW board.	nos	16	284.00	4,544.00
3(a)	Supplyof CFL Bracket light fittings,holder alongwith 18W CFL lamp	nos	14	260.00	3,640.00
3(b)	Erection of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS lamps per fitting, complete with all accessories including connection etc. as required.	nos	14	52.00	728.00
4(a)	Supply of 450mm, 900 RPM heavy duty exhaust fan suitable for 1 dia, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	nos	10	6,224.00	62,240.00
4(b)	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required.				
	Upto 450 mm sweep	nos	10	204.00	2,040.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
5 (a)	Wiring for light point/ fan point/ exhaust fan point/ call bell pointwith 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with piano type switch, phenolic laminated sheet, suitable size M.S box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc as required including provision of control switch in tw decolam board testing & commissioning	Point	76	593.00	45,068.00
5 (b)	Wiring for light/Powe plug with 2 X 4 Sqmm + earthing 1 X 4 Sqmm FRL 5 PVC	Mtr	75	162.00	12,150.00
6	Wiring of circuit /Submain wiring in surface /recessed PVC conduit along with earth wire				
i)	2X2.5 Sqmm + 1X2.5 Sqmm	mtr	230	131.00	30,130.00
ii)	2X4 sqmm+1X4 sqmm	mtr	110	162.00	17,820.00
iii)	2X6 sqmm+1X6 sqmm	mtr	50	221.00	11,050.00
7	Supplying & fixing following modular switch/socket on the existing switch box/cover including connection etc as required .				
i)	5/6 amp switch	No	15	81.00	1,215.00
ii)	3 pin 5/6 amp socket outlet	No	15	79.00	1,185.00
iii)	15/16 amp switch	No	6	111.00	666.00
iv)	6 pin 15/16 amp socket outlet	No	6	150.00	900.00
8	Supplying and fixing metal box of 150mm X 75mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 amps socket outlet and 5/6 amps piano type switch, connection, painting etc. as required. (For light plugs to be used in non residential buildings).	Each	5	303.00	1,515.00
9	Supplying and fixing metal box of 160mm X 100mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6 & 15/16 amps socket outlet and 15/16 amps piano type switch, connection, painting etc. as required.	Each	3	395.00	1,185.00
10	Supply, fixing GI box along with modular base & cover plate switch in recess (75x75 mm)	No.	20	166.00	3,320.00
11	Supply, fixing GI box along with modular base & cover plate switch in recess (100x75 mm)	No.	10	175.00	1,750.00
12	Supply , fixing of following sizes of medium class PVC conduit along with accessories in surface /recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	25 mm	mtr	400	65.00	26,000.00
13 (a)	Supply, installation & testing of 5 star rated inverter control 1.5 Ton or 17100 Btu/h capacity split Air Conditioner automatic operation mode etc. complete as	no	2	34,701.00	69,402.00
13 (b)	Supply of unarmoured copper PVC/XLPE Control cable 3 X 1.5 Sqmm 1100 V grade	Mtr	20	190.00	3,800.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

S.N.	Item	Unit	Qty	Rate (Rs.)	Amount (Rs)
14	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar,earth bar, din bar, interconnections, powder painted including earthing etc.as required. (But without MCB/RCCB/Isolator)	No.	1	2,508.00	2,508.00
i)	2+4 way, double door				
15	Supply of 5 amps. to 32 amps. ratings , MCB, "C" curve,miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connection, testing and commissioning as required.				
i)	Single pole	No.	5	169.00	845.00
16	Supply & erection of Auto changeover panel (60A - 3 point)				
	i) Supply	No.	1	61,881.00	61,881.00
	ii) Erection	No.	1	6,188.00	6,188.00
17	Supply & erection of glow sign Board 2m X 1 m	No.	1	1,157.00	1,157.00
18	Endura Cityliner 24 New generation energy saving & environmental friendly long life Versatile pressure die-cast aluminium roadway luminaire with high power LEDs as light source and HF electronic driver.				
a)	Supply	No.	1	21,313.00	21,313.00
b)	Installation	No.	1	2,131.30	2,131.30
19	High quality Aluminium presoure die asted law watt loss silicon Steel termination of High flow V 2 0.37 KW/0.5 HP Pump motor set complete	Set	1	6,351.00	6,351.00
20	40 mm dia medium G.I Pipe for pump motor set	Mtr	40	252.00	10,080.00
21	Supply of armoured at PVC / XLPE Power cable of size 2 X 6 Sqmm 1.1 Kv grade	Mtr	10	218.00	2,180.00
	Total				5,58,014.30

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

ELECTRIFICATION OF CREW REST ROOM (1 NO.), PANEL ROOM (1 NO.),CONSOLE ROOM (5NOS.), DG ROOM (3NOS.), FOIS&TMS ROOM (1NO.)

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
1(a)	Supply of Energy efficient type regal batten Powder coated T5 28W with high performance EB (THD<10%) 1X 28 W FTL T-5 flouresent light fitting indoor conforming to IS 10322 part-5, section 2/82 with Electronic ballast , PF improvement capacitor,starter , rotary holders, etc., including lamp.	No.	30	1,744.00	52,320.00
1(b)	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube etc. directly on ceiling/ wall, including connection with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	No.	30	91.00	2,730.00
2(a)	Supply of CFL Bracket light fittings,holder alongwith 18W CFL lamp	nos	16	312.00	4,992.00
2(b)	Erection of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS lamps per fitting, complete with all accessories including connection etc. as required.	nos	16	52.00	832.00
3	Endura Cityliner 24 New generation energy saving & environmental friendly long life Versatile pressure die-cast aluminium roadway luminaire with high power LEDs as light source and HF electronic driver.				
a)	Supply	No.	11	11,350.00	1,24,850.00
b)	Installation	No.	11	1,135.00	12,485.00
4	Supplying & fixing following modular switch/socket on the existing switch box/cover including connection etc. as required.				
a)	5/6 amp switch	No.	14	81.00	1,134.00
b)	3 pin 5/6 amp socket outlet	No.	14	79.00	1,106.00
c)	15/16 amp switch	No.	14	111.00	1,554.00
d)	6 pin 15/16 amp socket outlet	No.	14	150.00	2,100.00
5(a)	Supply of 5star rated 1200 mm sweep ceiling fan suitable for 1 phase, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	Nos	14	2,988.00	41,832.00
5(b)	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable etc. as required.	no	14	95.00	1,330.00

PROJECT OFFICER
AMRAPALI OCP.
M-AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
5(c)	Supply, fixing, testing & commissioning of Electronic Fan Regulator (Flush type) 200V complete with provision of new termination on decolom TW board.	nos	14	275.00	3,850.00
6 (a)	Supply of 450mm, 900 RPM heavy duty exhaust fan suitable for 1 dia, 50 HZ, AC supply complete with motor, louvers/ shutters etc. complete as required.	nos	10	6,224.00	62,240.00
6	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required.				
a)	Upto 450 mm sweep	nos	8	204.00	1,632.00
7	Wiring for light point/ fan point/ exhaust fan point/ call bell pointwith 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with piano type switch, phenolic laminated sheet, suitable size M.S. box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.Including provision of control switch in tw decolam board testing & commissioning.	Point	81	543.00	43,983.00
8	Wiring of circuit /Submain wiring in surface				
a)	2X2.5 Sqmm + 1X2.5 Sqmm	mtr	350	131.00	45,850.00
b)	2X4 sqmm+1X4 sqmm	mtr	275	162.00	44,550.00
c)	2X6 sqmm+1X6 sqmm	mtr	150	221.00	33,150.00
9	Supplying and fixing metal box of 150mm X 75mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 amps socket outlet and 5/6 amps piano type switch, connection, painting etc. as required. (For light plugs to be used in non residential buildings).	Each	14	194.00	2,716.00
10	Supplying and fixing metal box of 180mm X 100mm X 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6 & 15/16 amps socket outlet and 15/16 amps piano type switch, connection, painting etc. as required.	Each	14	276.00	3,864.00
11	Supply, fixing GI box along with modular base & cover plate switch in recess (75x75 mm)	No.	30	166.00	4,980.00
13	Supply, fixing GI box along with modular base & cover plate switch in recess (100x75 mm)	No.	16	175.00	2,800.00

PROJECT OFFICER
AMRAPALI OCP.
M-AAREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
14	Supply , fixing of following sizes of medium class PVC conduit along with accessories in surface /recess including cutting the wall and making good the same in case of recessed conduit as required.				
a)	25 mm	mtr	800	65.00	52,000.00
15	Supply, installation & testing of 5 star rated inverter control 1.5 Ton or 17100 Btu/h capacity split Air Conditioner automatic operation mode etc. complete as required.	no	8	34,701.00	2,77,608.00
16	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	No.	22	3926.00	86372.00
17 (a)	Supply of L.T. Aluminium Armoured PVC/XLPE cable of size 4 x 16 Sqmm 1100 Volts Grade.	Mtr	3250	407.00	1322750.00
17 (b)	Supply of L.T. Aluminium Armoured PVC/XLPE cable of size 2 x 6 sqmm	Mtr	250	215.00	53750.00
18	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
a)	Upto 35 sq. mm	mtr	3000	195.00	585000.00
19	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
a)	Upto 35 sq. mm	mtr	250	16.00	4000.00
12	Supply & laying of 40 mm dia HDPE pipe	Mtr	250	80.00	20000.00
13	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, double door MCB distribution board, 415 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a)	4 way (4 + 12), Double door	No.	12	2175.00	26100.00

PROJECT OFFICER
AMRAPALI OCP,
M/A AREA

Item No	Description of the Item	Unit	Qty	Unit Rate (Rs.)	Amount (Rs.)
14	Supplying and fixing following way, single pole and neutral, sheet steel, double door MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar,din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/ RCCB/Isolator)				
a)	2 + 4 way/6 way, Double door	No.	8	923.00	7384.00
b)	2 + 6 way/8 way, Double door	No.	2	1041.00	2082.00
15	Supply, fixing & laying of GI pipe 100 mm	Mtr	250	983.00	245750.00
16	**Total Rs.**				**3179676.00**
17	Furniture, testing equipments at Panel room	LS	LS		200000.00
18	**Total Rs.**				**3379676.00**

	Civil works (To be covered under Civil works)				
	Provision of Panel room 4 m x 4 m	Sqm	16		
	Total Rs.				

PROJECT OFFICER
AMRAPALI Gen
M-A AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ILLUMINATION OF MANATU YARD

Sl. No.	Description	Unit	Qty	Rate (In Rs)	Amount (In Rs)
1	Supply of 30 m high mast system complete with its accessoreis & Foundation bolt.	No	2	3,95,595.00	7,91,190.00
2	Supply of non-integral flood lights/liminiare with 280 W LED	Set	24	1,26,922.00	30,46,128.00
3	Supply of double dome aviation obstruction light	No	2	4,450.00	8,900.00
4	Supply of Feeder pillar	No	2	21,362.00	42,724.00
5	Design, casting of suitable RCC foundation	No	2	1,96,729.00	3,93,458.00
6	Erection of 30 m high mast with modern practice	No	2	55,966.00	1,11,932.00
7	Provision of G.I. Pipe (40 mm dia) 4.5 m long including connection to High mast earth terminal with 25 x 3 mm G.I. Plots with all materials and labour (2 nos. per mash)	No	4	3,753.00	15,012.00
8	Misc. Works	LS	2	10,000.00	20,000.00
	Total Rs.				**44,29,344.00**

Annex-E 11

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ILLUMINATION OF INPLANT YARD

Sl. No.	Description	Unit	Qty	Rate (In Rs)	Amount (In Rs)
1	Supply of 30 m high mast system complete with its accessoreis & Foundation bolt.	No	4	2,72,975.00	10,91,900.00
2	Supply of non-integral flood lights/liminiare with 280 W LED	Set	48	97,058.00	46,58,784.00
3	Supply of double dome aviation obstruction light	No	4	4,450.00	17,800.00
4	Supply of Feeder pillar	No	4	21,362.00	85,448.00
5	Design, casting of suitable RCC foundation	No	4	1,96,729.00	7,86,916.00
6	Erection of 30 m high mast with modern practice	No	4	55,966.00	2,23,864.00
7	Provision of G.I. Pipe (40 mm dia) 4.5 m long including connection to High mast earth terminal with 25 x 3 mm G.I. Plots with all materials and labour (2 nos. per mash)	No	8	3,753.00	30,024.00
8	Misc. Works	LS	4	10,000.00	40,000.00
	Total Rs.				**69,34,736.00**

PROJECT MANAGER
AMRAPALI OCP.
M-AAREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ILLUMINATION OF WEIGH BRIDGE

Sl. No.	Description	Unit	Qty	Rate (in Rs)	Amount (in Rs)
1(a)	Supply of 11 m tubular poles with top cap, Jn Box at	No	5	13,751.00	68,755.00
1(b)	Erection of Pole including foundation etc.	No	5	3,897.00	19,485.00
2	Endura Cityliner 90 Environmental friendly long life				
a)	Supply	No	5	73,262.00	3,66,310.00
b)	Installation	No	5	7,326.20	36,631.00
3	Supply & erection of earthing arrangement	Mtr	10	194.00	1,940.00
4	Wiring of pole	Points	5	404.00	2,020.00
5	Misc. works	LS	LS	20,000.00	20,000.00
	Total Rs.				**5,15,141.00**

Annex E 12

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ILLUMINATION OF PATHWAY

Sl. No.	Description	Unit	Qty	Rate (in Rs)	Amount (in Rs)
1	Supply, erection & commissioning of 4 m long street light	Each	240	4,951.00	11,88,240.00
2	Foundation for above	Cum	220	6,395.00	14,06,900.00
3	Wiring of pole	Each	240	404.00	96,960.00
4	Supply & erection of earthing arrangement	LS		5,00,000.00	5,00,000.00
5	Supply & laying of HDPE pipe 40 mm dia	Mtr	3500	80.00	2,80,000.00
6	Supply of 24W LED light outdoor fittings	No.	240	7,806.00	18,73,440.00
7	Supply of 4 x 16 sqmm cable	Mtr	3600	244.00	8,78,400.00
8	Laying of cable through G1/HDPE pipe	Mtr	3600	16.00	57,600.00
9	Straight through Heat shirnkable jointing kit	No.	4	1,220.00	4,880.00
10	Supply & laying of G.I. Pipe 50 mm	Mtr	100	450.00	45,000.00
11	Misc. Works	LS			2,00,000.00
	Total				**65,31,420.00**

Annex - E 12/1

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
ILLUMINATION OF UNLOADING PLATFORM

Sl. No.	Description	Unit	Qty	Rate (in Rs)	Amount (in Rs)
1(a)	Supply of 11 m tubular poles with top cap, Jn.Box at	No	27	14,251.00	3,84,777.00
1(b)	Erection of Pole including foundation etc.	No	27	3,897.00	1,05,219.00
2	BVP 410 LED 115W Environmental friendly long life				
a)	Supply	No	54	48,953.00	26,43,462.00
b)	Installation	No	54	4,895.30	2,64,346.20
3	Supply & erection of earthing arangement	Mtr	54	194.00	10,476.00
4	Wiring of pole	Points	27	404.00	10,908.00
5	Misc. works	LS	LS	5,00,000.00	5,00,000.00
	Total Rs.				**39,19,188.20**

PROJECT OFFICE
AMRAPALI OCP
M-AAREA

Annex - E 13

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

PROVISION OF DG SET (10 KVA) FOR CONSOLE ROOMS

SN	Description of work	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Supply of DG set 10 KVA	No.	1	3,63,630.00	3,63,630.00
2	Supply of AMF Panel	No.	1	52,785.00	52,785.00
3	Supply of Converter	No.	1	24,287.00	24,287.00
	Total (Rs.)				**4,40,702.00**
4	Installation charge @10%				44,070.20
	Total Rs. (for 1 no.)				**4,84,772.20**
	Total Rs. (for 3 nos.)				**14,54,316.60**
	Civil works				
	Provision of D.G. Room (1 no.) i.e. (3x3x3) sqm	Sqm	27		

[Civil work are covered under respective Civil estimate]

Annex-E 14

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

PROVISION OF DG SET (82.5 KVA) AT AMRAPALI

SN	Description of work	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Supply of DG set 100 KVA (3 phase)	No.	1	9,85,908.00	9,85,908.00
(b)	AMF panel	No.	1	1,23,749.00	1,23,749.00
	Total (Rs.)				**11,09,657.00**
2	Installation charge @10%				1,10,965.70
	Total				**12,20,622.70**
3	Electrification of DG room	LS			4,00,000.00
	Total (Rs.)				**16,20,622.70**
	Civil works				
	Provision of D.G. Room (6 x 6) sqmm	Sqm	36		

[Civil work are covered under respective Civil estimate]

PROJECT OFFICER
AMRAPALI OCP.
M.A.AREA

REVISED DETAILED PROJECT REPORT
PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP
ELECTRICAL ENGINEERING ESTIMATE
MODIFICATION OF POWER LINE 11 KV

SL NO	DESCRIPTION OF MATERIALS	SIZE	UNIT	Rs.	Qty	Amount
1	PCC Pole (WL-400 K.G)	9 MTR	NO	7,078.00	4	28,312.00
2	M.S. Angle (Sectional WT. 9.2 kg/mtr.)	65x65x6 MM	KG	49.00	150	7,350.00
3	M.S. Flat (Sectional WT. 3.1 kg/mtr)	65x6 MM	KG	67.00	50	3,350.00
4	Stay Set H.T (Safe working load 7900 kg.)	1830x20 MM	SET	841.00	4	3,364.00
5	G.I Earth Spike	1853 x 20 MM	NO	332.00	4	1,328.00
6	ACSR DOG (6/4.72 mm AL.+7/1.57 mm Steel)	100 SQ. MM.	KM	78,307.00	0.1	7,830.70
7	Stay Wire 7/10 SWG	7/3.15 MM	KG.	80.00	150	12,000.00
8	G.I Wire 8 SWG	4.00 MM	KG.	87.00	10	870.00
9	Cable 11 KV XLPE, 3 Core	300 SQ. MM.	KM	49,57,000.00	0.15	7,43,550.00
10	Composite Hardware Fittings for 'DOG'	for 100 Sq.mm. Conductor	SET	440.00	4	1,760.00
11	Composite Hardware Fittings for Weasel / Rabbit	for 50/30 Sq mm. Conductor	SET	298.00	4	1,192.00
12	11 KV pin insulator with pin washer & nuts		SET	256.5	4	1,026.00
13	Galvanised insulator hardware fitting ball and socket type with strain clamps, bolts, nuts and washers for 3 Nos 11 KV disk insulator		SET	433.8	6	2,602.80
15	L.A 12 KV, 5 KA, Class-II (Metal Oxide)		NO.	500	6	3,000.00
16	G.I EYE BOLT		NO.	38	10	380.00
17	Outdoor cable jointing kit with cast resin compound with lugs for 11 KV grade XLPE cable for 3 core 300 sq. mm.		NO.	2060.1	4	8,240.40
18	**Total material cost**					8,26,155.90
19	**Sundry Charges @ 5% on Material Cost**					41307.795
20	**Total Cost of Material**					**8,67,463.70**
21	Survey of H.T.O.H line		Km's	1450	1.15	1,667.50
22	Erection of DP Structure complete with all fittings	9 Mtrs	Nos.	5831	4	23,324.00

PROJECT OFFICER
AMRAPALI OCP
M-A AREA

23	Earthing complete with Driving of Earth Spike & connection of Earth Electrode with non-current carrying metalic parts.		Nos.	165	4	660.00
24	Fixing of 11 KV pin insulator		Nos.	35	4	140.00
25	Fixing of Box Bracket		Nos.	904	2	1,808.00
26	Stringing & sagging of 100 sq. mm ACSR DOG or Eq. size of AAAC	3 wire	Km's	9434	1.15	10,849.10
27	Fixing of 12 kv lighting arrester on structure (1 set of 3 LA.s)		Set	198.45	6	1,190.70
28	Up-rooting of PCC Pole and returned to the store	9 Mtrs	Nos.	399	2	798.00
29	Re-sagging of 100 sqmm ACSR wire	3 Wire	Km's	2255	0.15	338.25
30	Dismantling of Conductor and returning to the store of 100 sqmm ACSR , wire	3 wire	KM	3845	0.8	3,076.00
31	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.					
a)	Above 120 sq. mm and upto 400 sq. mm		KM	278000	0.15	41,700.00
Total Labour Rs.						85,551.55
Total (Material + Labour) Rs.						9,53,015.25
Supervision Cost(15%)						1,42,952.29
Total Cost						10,95,967.53
Cess @1% of total project Cost						10,959.68
Total Cost						11,06,927.21
TOTAL FOR 5 CROSSINGS						55,34,636.04

PROJECT OFFICER
AMRAPALI OCP,
M-AARJA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

MODIFICATION OF 11KV OVER HEAD LINE BY UNDERGROUND CABLE (Ch 8403 & 11908)

SL NO	DESCRIPTION OF MATERIALS	SIZE	UNIT	Rs.	Qty	Amount
1	PCC Pole (WL-400 K G)	9 MTR	NO	7,078.00	4	28,312.00
2	M.S Angle (Sectional WT. 9.2 kg/mtr.)	65x65x6 MM	KG.	49.00	150	7,350.00
3	M.S. Flat (Sectional WT. 3.1 kg/mtr)	65x6 MM	KG.	67.00	50	3,350.00
4	Stay Set H.T (Safe working load 7900 kg.)	1830x20 MM	SET	841.00	4	3,364.00
5	G.I Earth Spike	1853 x 20 MM	NO	332.00	4	1,328.00
6	ACSR DOG (6/4.72 mm AL.+7/1.57 mm Steel)	100 SQ. MM.	KM	78,307.00	0.1	7,830.70
7	Stay Wire 7/10 SWG	7/3.15 MM	KG.	80.00	150	12,000.00
8	G I Wire 8 SWG	4.00 MM	KG.	87.00	10	870.00
9	Cable 11 KV XLPE, 3 Core	300 SQ. MM.	KM	49,57,000.00	0.2	9,91,400.00
10	Composite Hardware Fittings for 'DOG'	for 100 Sq.mm.	SET	440.00	4	1,760.00
11	Composite Hardware Fittings for Weasel / Rabbit	for 50/30 Sq. mm. Conductor	SET	298.00	4	1,192.00
12	11 KV pin insulator with pin washer & nuts		SET	256.50	4	1,026.00
13	Galvanised insulator hardware fitting ball and socket type with strain clamps, bolts, nuts and washers for 3 Nos 11 KV disk insulator		SET	433.80	6	2,602.80
15	LA 12 KV, 5 KA, Class-II (Metal Oxide)		NO.	500.00	6	3,000.00
16	G.I EYE BOLT		NO.	38.00	10	380.00
17	Outdoor cable jointing kit with cast resin compound with lugs for 11 KV grade XLPE cable for 3 core 300 sq. mm.		NO.	2,060.10	4	8,240.40
18	**Total material cost**					10,74,005.90
19	**Sundry Charges @ 5% on Material Cost**					53,700.30
20	**Total Cost of Material**					**11,27,706.20**
21	Survey of H.T.O.H line		Km's	1,450.00	1.2	1,667.50
22	Erection of DP Structure complete with all fittings	9 Mtrs	Nos.	5,831.00	4	23,324.00
23	Earthing complete with Driving of Earth Spike & connection of Earth Electrode with non-current carrying metalic parts.		Nos.	165.00	4	660.00
24	Fixing of 11 KV pin insulator		Nos.	35.00	4	140.00
25	Fisxing of Box Bracket		Nos.	904.00	2	1,808.00
26	Stringing & sagging of 100 sq. mm ACSR DOG or EQU. SIZE OF AAAC	3 wire	Km's	9,434.00	1.2	10,849.10
27	Fixing of 12 kv lighting arrester on structure (1 set of 3 L.A.s)		Set	198.45	6	1,190.70
28	Up-rooting of PCC Pole and returned to the store	9 Mtrs	Nos.	399.00	2	798.00

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

29	Re-sagging of 100 sqmm ACSR wire	3 Wire	Km's	2,255.00	0.2	338.25
30	Dismantling of Conductor and returning to the store of 100 sqmm ACSR , wire	3 wire	KM	3,845.00	0.8	3,076.00
31	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.					
a)	Above 120 sq. mm and upto 400 sq. mm		KM	2,78,000.00	0.2	55,600.00
Total Labour Rs.						**99,451.55**
Total (Material + Labour) Rs.						**12,27,157.75**
Supervision Cost(15%)						1,84,073.66
Total Cost						**14,11,231.41**
Cess @1% of total project Cost						14,112.31
Total Cost						**14,25,343.72**

PROJECT OFFICER
AMRAPALI OCP,
M-A AREA

REVISED DETAILED PROJECT REPORT

PROVISION OF RAIL-INFRASTRUCTURE FACILITIES TO SERVE AMRAPALI OCP

ELECTRICAL ENGINEERING ESTIMATE

INFRSTRUCTURAL FACILITIES

SN	Description of work	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	High end work station (1 no.)	LS	LS	1,30,000.00	65,000.00
2	Jet printer (3500) scan copy 36 inch MFP - 1 no.	LS	LS	10,03,000.00	10,03,000.00
3	Insulator testing Jig	No.	1	2,75,915.00	2,75,915.00
4	Thermal Imager (Oliver GHX)	No.	1	11,92,400.00	11,92,400.00
	Total Rs.				**25,36,315.00**
	Electification of Depot.	LS			2,00,000.00
	Civil Works:				
	Augmentation of depot	Sq.m	40		

PROJECT OFFICER
AMRAPALI OCP
M-A AREA

सीएमपीडीआई
cmpdi
A Mini Ratna Company

Approved
[illegible]

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FOR COMPANY USE ONLY
The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the Government

04.04.15

CENTRAL COALFIELDS LIMITED (CCL)

DETAILED PROJECT REPORT
OF
AMRAPALI OCP
(12.0 MTY)
(WITH UPDATED COST ESTIMATES APPROVED BY CIL BOARD ON 13/02/2012)

AUTHORIZED & CONTROLLED	
Document ID & Name	APR – (A 03)
Location	A.NO -11 (1/2)
GM/HOD (Sign/Date)	महाप्रबंधक (परि० एवं योजना) General Manager (P & P) सी.सी.एल., राँची CCL, Ranchi

REGIONAL INSTITUTE-III

CENTRAL MINE PLANNING & DESIGN INSTITUTE LIMITED
(A Subsidiary of Coal India Limited)
GONDWANA PLACE, KANKE ROAD, RANCHI – 834 031,
JHARKHAND, INDIA

PROJECT OFFICER
AMRAPALI OCP.
M-AREA

Coal India Limited
A MAHARATNA COMPANY
10, Netaji Subhas Road, Kolkata-700001
PHONE: 033 2248 5123, GRAM:COALINDIA
FAX:033-2231-5060
Email mviswanathan2@coalindia.in
WEBSITE:www.coalindia.in

Ref No. CIL:XI(D):04112:2012

Dated 23rd Feb, 2012

To
General Manager (PMD),
Coal India Limited,
10, N.S.Road,
Kolkata – 1

Sub: Minutes of 278th CIL Board Meeting held on 13th Feb.'2012.

Dear Sir,

Reproduced below is the relevant extract from the minutes of 278th meeting of Board of Directors of Coal India Limited held on 13th Feb.'2012 at New Delhi with regard to the following item:

"ITEM NO.278:4 (H)

Sub : Project Report of Amrapali OCP (12.0 MTY), CCL.

4.8 A presentation was made by RI-III & CCL officials. After detailed deliberations, Board accorded its approval for the Project Report of Amrapali OCP for a rated capacity of 12.0 MTY at an estimated initial capital investment of Rs.858.11 crore (base date January'2012) with outsourcing of both coal production and OB removal as brought out in the agenda note.

During the course of discussions, CCL officials had pointed out that the project could be able to produce 1.5 MT of coal in the next year. Hence Board advised the company to place an Action Taken Report to its Board on how to achieve 1.5 MT in 2012-2013 on fast track basis from this project."

This is for your information and necessary action please.

Yours faithfully,

23/2/12

(M.Viswanathan)
Company Secretary

PROJECT OFFICER
AMRAPALI OCP,
M-AREA

UPDATED COST ESTIMATES (JANUARY'12)

SUMMARISED DATA

1. Name of the Project : Amrapali OCP (12.00 MTY)
2. Coalfield : North Karanpura Coalfield
3. Location : Chatra District, Jharkhand
4. Company : Central Coalfields Limited
5. Seamwise Coal Reserves :

Sl. No.	Seam	Mineable Reserves (M.tes.)		
		East Section	West Section	Total
a)	I (B)/I(B+M)/ I (B+M+T)	88.47	40.41	128.88
b)	I (M)	3.46	6.75	10.21
c)	I (T)/I(T+M)	23.11	23.26	46.37
d)	II (B)	12.93	1.81	14.74
e)	II(T)	9.05	2.25	11.3
f)	III (C)	29.73	18.1	47.83
g)	IV	22.28	9.49	31.77
h)	TOTAL	189.03	102.73	291.1
i)	Total OBR(Mm^3)	265.95	193.73	459.68
j)	S. Ratio (m^3/te.)	1.41	1.90	1.58
k)	Quarry Parameters			
l)	Dip of seams (Degree)	6-8	3-6	
m)	Strike Length (Km)	2.2	2.4	4.6
n)	Width (Km)	1.4	1.4	
o)	Maximum depth (m)	135	135	
p)	Area of Excavation (Ha.)	337.25	493.7	830.95

6. Av. Grade of Coal (ROM) : Gr F
7. Main Consumer : Barh STPS
8. Method of Mining : Shovel-Dumper & Dragline
9. Main Equipment Configuration : Both outsourcing with Departmental CHP

a	- Dragline, 20/90	OUTSOURCED
b	- Elect. Rope Shovel, 20 m^3	
c	- Elect. Hyd. Shovel, 8.3 m^3	
d	- Rear Dumper, 170T	
e	- Rear Dumper, 85T	
f	-Elect. RBH Drill, 250 mm (Long Mast)	
g	- Elect. RBH Drill, 160 mm	
h	- Dozer 410 HP	
i	- Wheel Dozer- 460 HP	
k	-Grader –280 HP	
l	-Water Sprinkler- 28KL	
m	-Diesel Hydraulic BH shovel(1.2Cum)	

RI-3,CMPDI

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Techno-Economic Parameters

Sl No	Description	Both outscurcing with Departmental CHP
1	Target Output (COAL)	
	at 100% level (Mte/Year)	12.00
	at 85% level (Mte/Year)	10.20
	Peak OBR (in Mcum/year)	21.81
2	Life of the Mine (Years)	30.00
3	Initial Capital (Rs. Crore)	858.11
4	Initial Capital Outlay	
	at 100% level (Rs/te)	715.09
	at 85% level (Rs/te)	841.28
5	Initial Capital on P& M (Rs. Crore)	402.16
	Initial Capital outlay on P& M (Rs/te)	335.13
6	Cost of Production	
	at 100% level (Rs/te)	471.38
	at 85% level (Rs/te)	515.86
7	Profit	
	at 100% level (Rs/te)	255.62
	at 85% level (Rs/te)	211.14
8	Ave Selling Price (Rs/te)	727.00
9	Financial IRR	
	at 100% level (Rs/te)	31.03
	at 85% level (Rs/te)	24.34
10	Economic IRR	
	at 100% level of rated output	39.46
	at 85% level of rated output	32.29
11	Completion Capital (Rs. Crore)	1160.10
12	Completion IRR (Fin.)	
	at 100% level of rated output	25.58
	at 85% level of rated output	19.70
13	Completion IRR (Eco)	
	at 100% level	33.22
	at 85% level	26.80
14	EMS (Rs.)	1950.03
15	OMS (Old) (Te)	132.52
16	No. of Personnel	343

PROJECT OFFICER
AMRAPALI OCP.
M-A AREA

Detailed Project Report

Of

AMRAPALI OCP
(12.0 MTY)

Of

Central Coalfields Limited

April 2005
Regional Institute-III

SUMMARISED DATA

1	Name of the Project	Amrapali OCP (12.00 MTY)
2	Coalfield	North Karanpura Coalfield
3	Location	Chatra District, Jharkhand
4	Company	Central Coalfields Limited
5	Seamwise Coal Reserves	

Sl. No.	Seam	Mineable Reserves (M.tes.)		
		East Section	West Section	Total
a)	I (B)/I(B+M)/ I (B+M+T)	88.47	40.41	128.88
b)	I (M)	3.46	6.75	10.21
c)	I (T)/I(T+M)	23.11	23.26	46.37
d)	II (B)	12.93	1.81	14.74
e)	II(T)	9.05	2.25	11.3
f)	III (C)	29.73	18.1	47.83
g)	IV	22.28	9.49	31.77
h)	TOTAL	189.03	102.73	291.1
i)	Total OBR(Mm^3)	265.95	193.73	459.68
j)	S. Ratio (m^3/te.)	1.41	1.90	1.58
k)	Quarry Parameters			
l)	Dip of seams (Degree)	6-8	3-6	
m)	Strike Length (Km)	2.2	2.4	4.6
n)	Width (Km)	1.4	1.4	
o)	Maximum depth (m)	135	135	
p)	Area of Excavation (Ha.)	337.25	493.7	830.95

6	Av. Grade of Coal (ROM)	Gr F
7	Main Consumer	Barh STPS
8	Method of Mining	Shovel-Dumper & Dragline

9	Main Equipment Configuration (FOR TOTAL MINE LIFE)	Coal outsourcing with CHP Main Variant	Departmental option with CHP Variant-I	Both outsourcing with CHP Variant-II
a	- Dragline, 20/90	1	1	OUTSOURCED
b	- Elect Rope Shovel, 20 m^3	3	3	
c	- Elect Hyd Shovel, 8.3 m^3	8	12	
d	- Rear Dumper, 170T	20	20	
e	- Rear Dumper, 85T	48	78	
f	-Elect RBH Drill, 250 mm (Long Mast)	11	11	
g	- Elect RBH Drill, 160 mm	3	7	
h	- Dozer 410 HP	18	20	
i	- Wheel Dozer- 460 HP	2	4	
k	-Grader –280 HP	6	6	
l	-Water Sprinkler- 28KL	6	6	
m	-Diesel Hydraulic BH shovel(1.2Cum)	2	2	

Sl No	Description	Fully Departmental option with CHP) Variant-I	Coal outsourcing with CHP Main Variant	Both outsourcing with CHP Variant-II
1	Target Output (COAL)			
	at 100% level (Mte/Year)	12 00	12 00	12 00
	at 85% level (Mte/Year)	10 20	10 20	10 20
	Peak OBR (in Mcum/year)	21 81	21 81	21 81
2	Life of the Mine (Years)	30 00	30 00	30 00
3	Initial Capital (Rs Crore)	1311 25	1178 31	496 81
4	Initial Capital Outlay			
	at 100% level (Rs/te)	1092 71	981 93	414 01
	at 85% level (Rs/te)	1285 54	1155 21	487 07
	per cu m at 100% level (Rs/CuM)	491 07	441 28	186 06
5	Initial Capital on P& M (Rs Crore)	914 34	793 22	232 97
	Initial Capital outlay on P& M (Rs/te)	761 95	661 02	194 14
6	Cost of Production			
	at 100% level (Rs/te)	329.90	342 96	302 43
	at 85% level (Rs/te)	377 19	385 47	324 29
7	Profit			
	at 100% level (Rs/te)	262 10	249 04	289 57
	at 85% level (Rs/te)	214 81	206 53	267 71
8	Ave Selling Price (Rs/te)	592 00	592 00	592 00
9	Financial IRR			
	at 100% level (Rs/te)	31 44	31 92	51 84
	at 85% level (Rs/te)	24 40	25 01	44 63
10	Economic IRR			
	at 100% level of rated output	39 89	40 40	61 16
	at 85% level of rated output	32 01	32 68	53 38
11	Completion Capital (Rs Crore)	1691.44	1523 34	661 42
12	Completion IRR (Fin.)			
	at 100% level of rated output	24 35	24 82	42 96
	at 85% level of rated output	18 44	19 00	36 46
13	Completion IRR (Eco)			
	at 100% level	31 52	32 05	51 47
	at 85% level	24 83	25 47	44 37
14	EMS (Rs.)	772 21	771 38	793 00
15	OMS (Old) (Te)	40 33	46 01	132 52
16	No of Personnel	1127	988	343

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CHAPTER-VIII

8.0 COAL HANDLING PLANT:

8.1 INTRODUCTION:

The Coal Handling Plant for this project is envisaged to handle total production (12.0 MTY) of coal from the mine.

The coal handling plant shall have facilities for receiving coal from rear discharge dumpers, crushing of coal to (-) 50 mm size, conveying, storing, reclamation and loading into railway wagons through SILO. Sufficient storage has been provided in the coal handling system to meet the eventualities of disrupted coal production in the mine or delay in off-take of NTPC.

Considering the fact that a very high tonnage of coal has to be despatched within the stipulated time, a rapid loading system for loading into railway wagons has been adopted.

The plant will be operated in synchronisation with the production of the mine. 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.

8.2 LOCATION

The layout Plan of CHP is shown in the Drawing No: RI 3 / Mech. / 002266

The CHP has been planned keeping in view the rugged terrain. The following factors have been considered in finalising the location of CHP:

a) Mine boundary
b) Mine entry
c) Topography
d) Availability of free space
e) External dumps of the mine
f) Proposed Railway siding / MGR
g) Overall economy of the system

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8.3 System Parameters As Per Project Report

The system parameters taken while formulation of project report was as follows: -

Sl.No.	Particulars	Considered Summarised Data
(a)	Coal production of mine in MTY	12.00
(b)	Number of working days/year	330
(c)	Number of working shift/day	3
(d)	Number of effective working hours/day	15
(e)	Feed size of ROM. coal (in mm)	(-) 1200
(f)	Product size (in mm)	(-) 50
(g)	Type of loading desired	By Rapid loading System @5500 TPH
(h)	Wagon Marshalling arrangement	By creep control loco of Customer
(i)	Loading hours	Round the clock.
(j)	Grade of coal	F
(k)	H.G.I.	59-69
(l)	Consumer	Power House of NTPC
(m)	Mode of Despatch	By rail / MGR
(n)	Rake capacity	58 Nos. of Box 'N' wagons.

8.4 System Capacity

The system capacity of the coal handling plant has been designed in such a way so that it can cater fluctuations in the coal production within an overall rated production of 12.0 MTY from the mine. The system capacity of crushing and conveying has been kept as 4000 TPH, distributed equally in two circuits. However, one circuit of crushing has been kept as standby considering the high production of mine a set of conveyors have been provided to carry crushed coal. Storage capacity of the bunker has been kept as 2x25000 Te to meet the fluctuation in loading and despatch. The capacity of silos in rapid loading system has been kept as 2x4000 Te where from wagon will be loaded @ 5500 TPH.

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8.4 System description of CHP as per Project Report

The CHP will have the following functional units as shown in layout of CHP Plan Drg. No: RI-3 / Mech / 002266.

- Receiving.
- Primary Crushing from (-) 1200 mm to (-) 200 mm.
- Secondary Crushing from (-) 200 to (-) 50 mm.
- Storage & reclamation.
- Rapid loading with SILO.
- Dust suppression, Extraction, fire-fighting etc. & other Auxiliary facilities.
- Belt weighing.

8.4.1 Receiving and Crushing

The necessary control over fragmentation of coal will be exercised in the quarry itself by designing suitable blasting parameters to maintain the lump size within (-) 1200 mm. Heavy duty sizers of 2000 TPH.capacity have been envisaged to crush ROM coal from (-) 1200 mm to (-) 50 mm size. For this three numbers of primary Sizers and three numbers of secondary sizers have been provided. 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 installed underneath the primary sizers and fed to the secondary sizers for sizing to (-) 50 mm. Three such circuits comprising of crushing and conveying have been provided so that two circuits will be in operation and one circuit will be kept as standby.

8.4.2 Conveying

Two nos. conveyors of 1600 mm belt width will be installed below the secondary sizers and feed to the elevating conveyors for onward transportation to bunkers. The elevating

Conveyor will have two circuits in which coal from any Sizer can be fed. The elevating conveyors will carry coal to ground bunker. The capacity and size of reclaim and

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loading conveyors have been selected to match the desired loading rate of Rapid loading System in combination with Silo.

8.4.3 Storage and Reclamation

Provision has been made for two numbers of double-slit self-flowing ground bunkers having capacity of 25000 Tonnes each. Each ground bunker has two nos. of tripper conveyor installed over it. The elevating conveyor carries the crushed coal (-) 50 mm size and discharge on tripper conveyor installed over the bunkers for spreading of coal in bunker.

The tripper conveyor will uniformly spread the crushed coal in the bunkers. Arrangement of tripper conveyor will be such that it can move from one end to other to discharge the coal into the bunker in the form of layers, so that proper blending of coal takes place. Since the height of fall of coal mass is very high, so a suitable cascading arrangement at any terminal point of the bunker will be provided to avoid the impact of free fall of coal mass on the bowl face of the bunker. Continuous bin level indicators will be provided to gauge the level of coal in the bunkers.

Suitable measures will be taken for the smooth flow of (-) 50 mm coal at bunkers / chutes.

The bunker opening is fitted with plough feeders with a capacity of 2000 TPH for reclaiming crushed coal for onward transportation to reclaim conveyor. Three number of plough feeders have been provided in each ground bunkers. Out of three, two will be working and one will be kept as stand by. Sufficient space will be provided for repair, maintenance of the plough feeders. A motorized hoist will be used for handling feeders and its components.

8.4.4 Rapid Loading and Despatch

Provision has been made for dispatch of coal through Rail. Since the coal production and dispatch of coal is interlinked, hence handling of 40000 tonnes per day of coal is done. Considering a rake of 58 Box 'N' wagon, the total capacity of coal loaded into a rake will be 3300 tes. and thus minimum of 13 rakes will be loaded daily. For such a huge quantity off take of coal, two nos. of rapid load out system have been envisaged along with two nos. of Silo. The capacity of Silo will be 4000 te. each. The two rail lines

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CHAPTER - IX

9.0 RAILWAY SIDING

9.1 Coal evacuation from Amrapali OCP

The proposed Amrapali OCP is located in a green field area and at present there is no arrangement for coal evacuation from this OCP. The coal from Amrapali OCP is proposed to be linked to Barh STPS, located at a distance of about 300 Km from the mine site, near Patna. Hence, for the transportation of coal from this OCP to the proposed STPS, a railway siding is to be constructed and commissioned. For this purpose CCL as already appointed RITES for the preliminary survey work. **It has been assumed that till this siding is constructed, alternative arrangement of loading the coal temporarily through Piparwar siding may be arranged.**

9.2 Preliminary Traffic Survey Report by RITES

RITES was engaged by CCL for conducting study relating to the development of Railway infrastructure for Ashok OCP, Magadh OCP and Amrapali OCP, located in the northern fringe of N.K. Coalfield, in such a way that it can be extended and integrated in future for the development of other blocks of this coalfield. RITES has already submitted its report of Phase-I in Feb.'88 and Phase-II in Feb.'90.

9.3 Arterial Line from Tori to Shivpur

In Phase-I report, RITES has proposed to construct an Arterial line from Tori to Shivpur. It was further proposed that a siding will be branched off from Jogladih Station, on Tori Shivpur line for linking Ashok/Purnadih/Piparwar OCP's.The distance from Tori to Jogladih is about 17 Km and double line has been proposed to construct in this section.Presently, a line has been/is being constructed from Mckluskieganj to Piparwar, for the evacuation of coal from existing Piparwar OCP. From Jogladih, a single line section has been proposed to construct and the line will meet the existing Mckluskieganj-Piparwar line near Khuntitoli Station (the track length from Jogladih to Khuntitoli Station is 16.9 Km) for the evacuation of additional coal from the proposed Ashok/Purnadih OCP. Subsequently, this Arterial line will be extended from Jogladih to Shivpur for a route length of 24.70 Km with single line section and crossing stations at

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along with Silo have been envisaged so that simultaneous loading on both lines could be done.

8.4.5 Auxiliary Facilities

In auxiliary facilities the following arrangements have been provided:

- Tramp iron removal
- Dust suppression / Extraction.
- Fire fighting
- Weigh-ment of coal

Provision has been made for metal detection to detect ferrous and non-ferrous materials coming in the CHP. An electronic tramp iron remover has been made. This will facilitate removal of magnetic materials from the belt conveyor. These devices will be located suitably.

The dust suppression and dust extraction units have also been provided to control dust in the working zones of CHP area as per environmental requirement.

For plant safety elaborate fire fighting system have been provided.

There shall be a common control room for all equipment in accordance with pre-determined sequence for starting and stopping. But provision for local control of any equipment has also been provided for emergency purpose. Sequence inter-locking between different equipments shall also be provided.

A set of belt weighing scale has been envisaged. This will be suitably located on the conveyors discharging coal onto the tripper conveyor over the bunker.

Two nos. in-motion rail weighbridges have also been provided.

8.5 Capital Estimates & Economics

The capital estimates for coal Handling plant have been given in the appendix (A.3.4.0).

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Phulbasia and Shivpur As per the RITES report, prepared in Feb. 88 the cost of the arterial line upto Shivpur for a track length of 43.00 Km was estimated as Rs.100 81 crores

9.4RITES Phase-II Report

Seven non-coking coal blocks located between Amrapali and Badam Blocks located in the North-Eastern fringe of N.K. Coalfield, can be linked to consumers of non coking coal by extending the Tori-Shivpur Arterial line along the Northern boundary of coal field for a route length of 39 8 Km upto Ambajit Station (81.50 Km from Tori) in the distant future.

The RITES report has further suggested that ultimately this Arterial Railway line can be linked to the Barkakana-Dehri-on-sone section at Bhurkunda Rly. station (122.7 Km from Tori via Shivpur)via Ambajit station so as to provide a connection for despatch of coking coal from Badam and Rohne and other blocks to steel plants.

9.5Railway siding of Amrapali

For evacuation of coal from N.K. coalfield, an Arterial line from Tori to Shivpur (41.7 Km route) in Phase-I and from Shivpur to Bhurkunda via Ambajit in Phase-II is proposed to be constructed. At present, a railway line from Ranchi to Kodarma via Barkakana /Hazaribagh is under construction.

Coal from Amrapali OCP will be despatched to proposed Barh STPS by Rail. The route to be followed will be Amrapali - Shivpur - Ambajit - Hazaribagh - Kodarma. From Kodarma the coal will be despatched by Gaya - Kiul line to Barh through Mokama Railway Junction.

The daily requirement of Box'N' wagons and No. of trains are as below :-

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Daily loading in tonnes	Daily requirement of no. of Box'N'wagon	Daily train to be run	
		In single unit of 58 Box'N' rake	In long unit of 116 Box'N' rake
40,000	690	12	6

9.6 **Yard Layout**

A yard has been proposed which can cater to the loading of two long trains from two silos. The wagons are proposed to be loaded from the silos @ 5000 TPH. The proposed siding will take-off from the proposed Shivpur Station. The link portion will have a route length of 4.8 Km and the yard portion will have a track length of 15.10 Km. For smooth loading and despatch of coal , it is proposed that the coal will be loaded from two loading points. By this, the reliability of loading will increase and it will be possible to load and despatch a long train(116. 'N' Box) within the stipulated duration of 110 minutes.

9.7 **Characteristics of Railway Siding**

(a)Two empty receiving lines of full rake length of 116 Box'N' wagons

(b)Two after load lines of full rake of 116 Box N wagons through M G R bulb. The bulb arrangement would provide the movement of train without detaching the engine with provision of creep control loco during the loading at 0.80 Km/hour.

(c)Two small stores have also been provided to facilitate the siding.

(d) The provision of in-motion electronic weigh bridge for weighing both empties and loaded wagons has been made. A pre-weigh hopper system of loading into wagons has been adopted.

9.8 **Sequence of operation with Box'N' wagons.**

Empty rake will be brought by railway loco for loading the rake, from terminal station Shivpur. Wagons will be placed on the receiving line below silo. Rake will

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remain attached to the pilot for getting the wagons loaded. After loading the wagons, the pilot will move through MGR bulb and will take the rake to Shivpur station.

9.9 **Land**

The total requirement of land for Railway Siding is 179 Ha. including 28.80 Ha. for link portion and 105.70 Ha. for yard portion and 44.50 Ha. for inside MGR bulb.

9.10 **Capital Estimates.**

Pending detailed instrumental suyrvey, design and estimates by the railway,the provision on railway siding has been estimated and given in Appendix-A.5.

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UCE FOR AMRAPALI OCP [12.0 MTY]

SUMMARY STATEMENT OF CAPITAL EXPENDITURE ESTIMATE FOR P&M

COAL HANDLING PLANT

(Amount in Rs Lakhs)

Sl No	PARTICULARS	COST	PHASING				
			1	2	3	4	5
A	Mechanical System						
	i) P & M / Equipment	8143.90	0.00	0.00	4239.00	3412.00	492.90
	ii) Conveyors	2058.00	0.00	411.60	823.20	823.20	0.00
	iii) Belting						
	a) Nylon Nylon Belting	0.00					
	b) Steel Cord Belting	1210.00	0.00	0.00	303.00	484.00	423.00
1	Total of 'A'	11411.90	0.00	411.60	5365.20	4719.20	915.90
2	Electrical & Control System	2489.40	0.00	102.90	1247.30	1034.30	104.90
3	Erection and Commissioning	1390.13	0.00	51.45	661.25	575.35	102.08
4	Civil & Structral Works (Including Over Head construction cost and design & Engg.)	9637.50	0.00	2513.30	3317.00	2344.00	1463.20
5	Design & Engineering	764.57	0.00	28.30	363.69	316.44	56.14
6	Over Head Construction Cost	2408.40	0.00	89.14	1145.62	996.79	176.86
7	Insurance	114.69	0.00	4.24	54.55	47.47	8.42
8	Sub Total (1) to (7)	28216.59	0.00	3200.93	12154.61	10033.55	2827.50
9	Contingency	650.27	0.00	24.07	309.32	269.13	47.75
10	Training of O&M Staff	14.43	0.00	1.61	8.23	5.15	1.44
11	Spares	486.55			0.00	0.00	486.55
12	Sub Total (10) + (11) +(12)	29367.83	0.00	3226.61	12470.15	10307.84	3363.23
13	Misc.Work Contract tax etc.	587.36	0.00	64.53	249.40	206.16	67.26
14	Service tax.	1209.95	0.00	132.94	513.77	424.68	138.57
15	Grand Total	31651.69	0.00	3424.08	13233.33	10938.68	4055.61

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UCE FOR AMRAPALI OCP [12.0 MTY]

[A] STATEMENT SHOWING THE PHASED CAPITAL EXPENDITURE ON P&M :CHP [CONVEYOR]

[Amount in R

SL. No.	PARTICULARS		TOTAL QTY.	UNIT COST	TOTAL COST	PHASING			
						1	2	3	4
1	Conveyor Dgn.	: C1	3	8200	24600		4920	9840	9840
	Width in mm	: 1600							
	Length in m	: 175							
	Power in kW	: 1X150							
2	Conveyor Dgn.	: C2	2	9600	19200		3840	7680	7680
	Width in mm	: 1600							
	Length in m	: 300							
	Power in kW	: 2X250							
4	Conveyor Dgn.	: C3	4	9200	36800		7360	14720	14720
	Width in mm	: 1600							
	Length in m	: 180							
	Power in kW	: 2X150							
5	Conveyor Dgn.	: C4	4	15100	60400		12080	24160	24160
	Width in mm	: 1600							
	Length in m	: 330							
	Power in kW	: 2X300							
6	Conveyor Dgn.	: C5	2	14000	28000		5600	11200	11200
	Width in mm	: 1600							
	Length in m	: 250							
	Power in kW	: 2X250							
7	Conveyor Dgn.	: C6	2	14000	28000		5600	11200	11200
	Width in mm	: 1600							
	Length in m	: 250							
	Power in kW	: 2X250							
8	Conveyor Dgn.	C7	2	4400	8800		1760	3520	3520
	Width in mm	1600							
	Length in m	50							
	Power in kW	1X90							
	TOTAL	::			205800		41160	82320	82320

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[B] STATEMENT SHOWING THE PHASED CAPITAL EXPENDITURE ON P&M CHP [BELTING]

[Amount in Rs. '000]

SL No.	PARTICULARS			TOTAL QTY (m)	UNIT COST	TOTAL COST	PHASING				
							1	2	3	4	5
1	Width of Belt,mm	:	1600	9200	13.15	121000			30300	48400	42300
	Type of Belt	:	SC								
	Type of Carcass	:	ST 1250								
TOTAL		=				121000			30300	48400	42300

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[C].STATEMENT SHOWING THE PHASED CAPITAL EXPENDITURE ON P&M:CHP
[SIZER MODULE]

(Amount in Rs '000)

SL. No.	PARTICULARS	TOTAL QTY.	UNIT COST	TOTAL COST	PHASING				
					1	2	3	4	5
1	Twin Shaft Sizer(Primary), Output Capacity 2000 tph, Feed size 1200mm, Product Size 200mm	3	49000	147000			98000	49000	
2	Twin Shaft Sizer(Secondary), Output Capacity 2000 tph, Feed Size 200mm, Product Size -50 / 100 mm	3	46000	138000			92000	46000	
3	Apron Feeder (2000 tph)	3	23500	70500			47000	23500	
4	Fright, Insurance, Transport, Duty Charges etc.	LS		160000			71100	88900	
5	Magnetic Separator, for 1600 mm belt.	3	2030	6090			0	4060	2030
6	Metal Detector	3	500	1500			500	500	500
7	Motorised Hoist, 10 / 20 te	3	800	2400			800	800	800
TOTAL				525490			309400	212760	3330

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UCE FOR AMRAPALI OCP [12.0 MTY]

[C].STATEMENT SHOWING THE PHASED CAPITAL EXPENDITURE ON P&M:CHP [AUXILIARY EQUIPMENT]

[Amount in Rs '000]

SL No	PARTICULARS	TOTAL QTY.	UNIT COST	TOTAL COST	PHASING				
					1	2	3	4	5
1	Rail Weigh Bridge 100t Digital Display & Recordor	2	1450	2900			0	1450	1450
2	Plough Feeder 2000 tph	6	18500	111000			55500	55500	0
3	Motorised Flap or Sector Gate	6	400	2400			1200	1200	0
4	Non-clogging Pump 20 lps x 60 m.x 22 kW	8	450	3600			900	1800	900
5	Motorised Hoist, 5 / 10 t	3	600	1800			600	1200	0
6	Wear Resistent liner, machine-tools,Chute etc.	LS	---	5000			2000	2000	1000
7	Plant Safety and Fire Fighting System	LS	---	5000			0	2000	3000
8	Dust Suppresion	LS	6600	8600			2150	3440	3010
9	Dust Extraction	LS	6000	6000			1500	2400	2100
10	E.O.T Crane,Cap.20 t With Structure	2	2550	5100			2550	2550	0
11	Rapid Loadout with Silo, with P.W Hopper & Auto Sampler.	2	68000	136000			47600	54400	34000
12	Belt Weighing Scale	3	500	1500			500	500	500
13	Misc tools & tackles etc			24430			7300	9800	7330
	TOTAL			288900			114500	128440	45960

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[F].STATEMENT SHOWING THE PHASED CAPITAL EXPENDITURE ON P&M :CHP

[CIVIL & STRUCTURALS]

[Amount in Rs.'000]

Sl. No.	PARTICULARS	TOTAL QTY.	UNIT COST	TOTAL COST	PHASING				
					1	2	3	4	5
1	Conveyor Gantries Inclined Roof Type	LS	—	180000		36000	63000	54000	27000
2	Transfer Houses / Drive House	LS	28900	28900		5800	10100	7200	5700
3	Receiving Pit-cum-Crusher House (Primary Sizers)	LS	195000	195000		58500	68300	39000	29200
4	Ground Bunker, Cap.25000 te	2	165000	330000		99000	115500	82500	33000
5	Silo with sampler house for Rapid Loading, Capacity 4000 Te	2	75500	151000		37800	52900	30200	30100
6	Civil structure for sizers & other equipments	LS	—	19750		5930	6900	4900	2020
7	General Development in CHP Area	LS	—	3500		2100	1100	300	0
8	Survey, Soil Investigation & Hydrogeological Data	LS	—	1600		1000	500	100	0
9	CHP Office Building, Road,Drain, Water supply, Sanitation etc	LS	—	26000		5200	7800	7800	5200
10	Contingencies & Misc.	LS	—	28100			5600	8400	14100
TOTAL				953750		251330	331700	234400	146320

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Appendix-A.3.5

UCE FOR AMRAPALI OCP (12.0 MTY)

Amount in Rs. Lakh

Estimated Capital Requirement on other P&M

Sl. No.	Description	Total			Capital Phasing on Target year of coal production														Capital requirement beyond target year			
					Y1		Y2		Y3		Y4		Y5		Y6		Y7		Y8		Y9	
									P1		P2		P3		P4		P5		P6		P7	
					Construction Period								Capacity Building Period									
		No.	Unit Cost	Cost	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.	No.	Amt.
1	Exploder with continuity tester	6	0.06	0.36							3	0.18	3	0.18								
	for 200 shots			0.00																		
2	Road Roller (10T) & Tar Boiler	2	15.33	30.66					1	15.33			1	15.33								
3	Survey Instrument			0.00										13.00								
a)	Total Station(short Range 2 km	1		13.00																		
	with Accessories)			0.00													0.00					
b)	Theodolite	1		0.00													1.00					
c)	Auto set leveller	1		1.00													2.00		2.00			
d)	i) PC Core 2 Duo,3 GHz,2GB RAM	11		4.00																		
	Combo 160 GB HDD,			0.00																		
	Graphics Card 64 MB			0.00																		
e)	Soft ware			0.00										1.00								
	Autocad			1.00										0.25								
	MS office			0.25										1.50								
	Minex			1.50										4.00								
f)	A0 Plotter	1		4.00										0.50								
g)	Digital Planimeter	1		0.50									LS	10.00	LS	10.00						
4	Mechanised explosive handler	LS		20.00									1	8.77			1	8.77				
5	F.E. Loader 6.5 Cum	3	8.77	17.53									1	13.03	1	13.03	1	13.03	1	13.03	1	13.03
6	Explosive Van	6	13.03	52.11					1	13.03			1	9.27	1	9.27	1	9.27	1	9.27	2	18.54
7	Boom Truck	7	9.27	37.07							1	9.27	1	18.26					1	18.26		
8	Line truck with hydraulic boom	2	18.26	18.26									1	5.00	LS	20.00	LS	10.00				
9	Miscellaneous Equipment	LS		45.00							LS	10.00	LS	5.00		18.51						
10	RT Mobile Crane	1	19.51	19.51											1				1	7.63		
11	Fuel Truck 7500 litre capacity	2	7.63	7.63									1	7.63			1	10.90				
12	Fire Truck	1	10.90	10.90																		
13	Mobile Light Plants	2	15.00	30.00							1	15.00			1	15.00						
	Total			214.29				15.33		13.21		62.77		79.21		80.81		53.99		48.19		31.58

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