

CHAPTER-I

Introduction, Concept of Study, Traffic facilities etc.

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 Limited (NCDC) is a Category-I Mini-Ratna Company since October 2007. During 2014-15, raw coal production of the company reached its highest-ever figure of 55.65 MT (UG-0.84 MT, OC-54.81 MT).
- 1.0.2 Presently CCL is managed by 12 administrative areas with 58 operative mines out of which 21 underground and 37 opencast mines. Out of 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. Presently CCL has 26 Railway sidings from which coal is despatched to various customers located all over India. The total command area of CCL is of about 2600 sq. kms. spreading over entirely within the mineral rich State of Jharkhand.
- 1.0.3 CCL has envisaged commissioning of a number of Greenfield and Expansion projects, both opencast and underground, during XI Plan with state-of-the-art technologies. Project wise peak capacity, as primarily targeted by CCL for greenfield and existing OCPs are shown respectively in Table-I & II, below:

Table I

Sl. No	Name of the Project	Peak capacity (MTPA)	Sl. No	Name of the Project	Peak capacity (MTPA)
1	Amrapali OCP	12.00	2	Bokaro Bermo OCP	00.80
3	Magadh OCP	20.00	4	Govindpur Ph-II OCP	01.20
5	Karma OCP	01.00	6	Karo OCP	03.50
7	Konar OCP	03.50	8	North Urmari OCP	03.00
9	Pachra OCP	20.00	10	Urmari OCP	02.00
11	Purandih OCP	03.00	12	Rajarappa OCP	03.00
13	Tapin OCP	02.50	14	Tarmi OCP	01.00
15	Tetariakhar OCP	02.00	16	Topare OCP	01.20
17	ChuriBenti UGP	0.81	18	Parej East UGP	0.51

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एन.ए. रॉन्ची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L., Ranchi

Page 1 of 60


  
उप महाप्रबंधक / विभागध्यक्ष (वन)  
**DY. GM/HOD (Forest)**  
CCL Ranchi



Table-II

Sl. No	Name of the Project	Peak capacity (MTPA)	Sl. No	Name of the Project	Peak capacity (MTPA)
1	Amlo Expansion	02.50	2	Ashok Expansion	10.00
3	Magadh Expansion	71.00	4	Piparwar Expansion	10.00
5	Amrapali Expansion	27.00	6	Karo Expansion	11.00
7	Sangh Mitra OCP	20.00	8	Chandragupta OCP	15.00

1.0.4 North Urimari Open Cast Project is under the administrative territory of Chief General Manager, Barka Sayal who is the In-charge of 09 (nine) projects e.g.; (1) Bhurkunda U/G, (2) Central Saunda U/G, (3) Saunda-D U/G, (4) Saunda U/G, (5) Sayal-D U/G, (6) Urimari U/G, (7) Urimari O/C, (8) North Urimari/ Birsa O/C and (9) Bhurkunda O/C.

1.0.5 Since the area is not connected with any rail-head, CCL has planned to connect the coal block with the disused Sayal-D siding situated at the east side of river Damodar by construction of a rail bridge over the river.

#### 1.1 Location of the Project

1.1.1 North Urimari Coalmines is situated in and around the village Urimari in Barkagaon Block in Hazaribagh District of Jharkhand and at the north-west bank of river Damodar. It is located 39 kms towards South direction from District headquarters Hazaribagh, 25 kms from Barkagaon and 44 kms from State capital Ranchi. Patratu, Ramngarh, Churi are the nearby towns to Urimari. This place is in the border of the Hazaribagh and Chatra District. A sketch plan of North Urimari coal mines area with adjoining railheads is shown as Annex-1.0

#### 1.2 Traffic Projection & Rail Transport Clearance

1.2.1 It was initially informed by CCL that the excavation capacity of the North Urimari Project has been targeted for 3.00 MTPA and there was no prospect of augmented loading from this project. Later, during the meeting held at Ranchi on 10.04.2014 in the office of GM/Civil, CCL in presence of the officials of CMPDI and RITES, it was informed that the excavation capacity of North Urimari OCP which was projected as 3.0 MTPA will be increased to 7.0 MTPA with the inclusion of Birsa Coalmines project.

1.2.2 However, GM (Civil)/HOD, CCL vide his letter No. GM(C)/IC/Civil & IC/2014/154 dated 19.08.2014 has finally informed that 'North Urimari Project is under expansion for 7.0 MTPA normative and 10 MTPA 'Peak capacity' and the traffic will be dispatched towards

**PROJECT OFFICER**  
**BIRSA PROJECT G.C.L.**

**Dy. GM / PO**  
**Birsa Project**

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन) / उप महाप्रबंधक / विभागाध्यक्ष (वन)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
**C.C.L., Ranchi**  
**DY. GM/HOD (Forest)**  
**CCL Ranchi**



the North India Thermal Power Houses as Up country load. To obtain necessary 'Rail Transport Clearance', CCL has to apply for the same to Chief Operations Manager, East Central Railway in authorized manner with details of projected traffic, destination and quantum wise.

- 1.2.3 To assess the quantum of traffic over the Patratu-Damodar branch line section, a study was made to work out the existing coal traffic dealt with from the various colliery siding on the serviceable South line during the last year, i.e.; 2013-14 and the siding wise traffic, as information collected, it can be opined that the present single line section (South line) is quite capable to deal with the present volume of traffic, i.e.; average 3 rakes per day. The coal traffic dealt with from the various colliery sidings on the PD branch is tabulated below in Table-III:-

Table-III

Month	No of rakes loaded						Total
	Gidi Raw	Gidi Washed	Sounda	Central Sounda	Bhurkunda	Sirka	
Apr' 13	12	06	44	15	03	09	89
May' 13	15	05	55	09	06	07	97
Jun' 13	08	04	41	10	06	06	75
Jul' 13	15	03	38	09	08	04	77
Aug' 13	12	03	19	12	07	05	58
Sep' 13	09	02	26	10	05	04	56
Oct' 13	13	03	31	12	02	06	67
Nov' 13	13	04	37	09	02	03	68
Dec' 13	15	05	34	10	02	02	68
Jan' 14	11	04	43	13	04	01	76
Feb' 14	10	03	51	13	02	02	81
Mar' 14	08	04	52	12	07	05	88
Total	141	46	471	134	54	54	900
Average	11.75	3.83	39.25	11.17	4.50	4.50	75.00

- 1.2.4 CCL has informed that the North Urimari Coalmines project will generate initially 3.00 MTPA of coal traffic and with commissioning of Birsa Coalmines, the total coal traffic would be 7.0 MTPA (normative) and 10.00 MTPA (peak). Taking into consideration of anticipated traffic, it is suggested that the proposed North Urimari siding, which is to be constructed at north bank of Damodar, will be connected with erstwhile Sayal-D siding by construction of a river bridge. The defunct North line from Patratu East Central cabin up to the unused Sayal-D siding will also require to be revived for movement of targeted traffic.

**PROJECT OFFICER**  
**BIRSA PROJECT C.C.L.**

**Dy.GM / PO**  
**Birsa Project**

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, रॉयल्टी महाप्रबंधक/विभागाध्यक्ष(वन)  
**Dy. GM/HOD (Env. & Forest)**  
**C.C.L., Ranchi**  
**DY. GM/HOD(Forest)**  
**CCL Ranchi**





### 1.3 Concept of the study

1.3.1 Chief General Manager (B-S), CCL, Bakra Sayal Area vide his letter No. CGM/B-S/North Urimari Siding/12-13/4847 dated 25.08.2012 has informed his intention to develop one coal loading siding at North Urimari OCP requesting RITES for consultancy services. An offer for undertaking the work was submitted vide RITES' letter No. RITES/RPO-KOL/Market/Vol-43/2012-2013/7655 dated 29/30.11.2012. After exchange of series of correspondences, the work order was issued by 'GM(Civil), CCL vide his letter No. GM(C)IC/N. Urimari W.O/2013/332 dated 02.11.2013.

1.3.2 The scope of works, to be undertaken and as envisaged in the work order are in two phases which are reiterated below:-

- (a) **Phase-I:** Reconnaissance & Preliminary Engineering Survey for the subject work, based on "Feasibility Report" will be submitted for approval of Central Coalfields Limited as well as East Central Railway for obtaining in-principle approval -
- i) General reconnaissance survey of the area and the site for finalizing the technical feasible and cost effective alignment of rail infrastructure in consultation with the officials of Central Coalfields Limited;
  - ii) Study for existing layout of the railway yards of the nearest and suitable Railway station to find out any modification, if necessary, to finalize the junction arrangement for undertaking train movement to and from the station and the coal loading terminal of North Urimari OCP;
  - iii) The health study of the existing track between Patratu station and Sayal-D siding shall be undertaken for necessary renovation;
  - iv) To carry out preliminary engineering survey with total station instrument for the proposed corridor of rail infrastructure;
  - v) To prepare civil engineering layout plan for the proposed rail infrastructure in scale 1 : 2500 horizontal and 1 : 500 vertical or any suitable scale applicable for preparation of the layout plans;
  - vi) Study for Signalling & Telecommunication arrangements for the proposed siding as well as the railway station for reception and despatch of train and for internal movement;
  - vii) To study the Electrical (OHE) facilities at the junction station and en-route for electrification of the siding to facilitate operation of the train services by electric

  
PROJECT OFFICER  
BIRSA PROJECT C.C.L.


  
Dy. GM / PO  
Birsa Project


  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण) / विभागाध्यक्ष (वन)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi




- traction;
- viii) To evolve system of working for operation of train services between the serving station and unloading terminal;
- ix) To prepare tentative cost estimates for Civil Engineering, S&T, and Electrical (General) works separately for development of loading facilities;
- x) Preparation of Feasibility Study Report incorporating the scope of work as mentioned in item No. (i) to (ix) for submission to both Central Coalfields Limited and East Central Railway for obtaining in-principle approval.
- (b) **Phase-II:** Final Location Survey of approved layout and preparation of "Detailed Project Report", including preparation of drawing, Estimate of Civil, S&T, Electrification works, Land plan shall be prepared on Mouza map for acquisition of land, if any-
- i) To carry out final location survey of the approved alignment of Railway infrastructure after compliance of the observation, if any, made to the feasibility study report and stacking out the concrete pillars on the ground at appropriate interval for the total alignment and fixing up permanent pillars;
- ii) To obtain cross sectional level of the proposed alignment to ascertain the earth work quantities for preparation of abstract cost estimate for Civil Engineering works;
- iii) Preparation of general arrangement drawings (GAD) after conducting Geotechnical investigation of the bridges over river Damodar, Road Over Bridge / Road Under Bridge / Level Crossing Gate etc. if any;
- iv) Preparation of land plan on Mouza maps for private land, if any, required for construction of the approved rail alignment and loading terminal;
- v) Preparation of revised Signalling & Telecommunication arrangements for compliance of the observations made on the feasibility report;
- vi) Preparation of OHE pre-pegging layout plan after complying the observations to undertake movement of trains by electric traction;
- vii) Preparation of detailed layout plan and Longitudinal Section in scale 1 : 2500 horizontal and 1 : 500 vertical or any suitable scale, as may be necessary;
- viii) Preparation of time schedule required for execution of the project;
- ix) Preparation of detailed quantitative estimates based on the present day rates of Civil Engineering, S&T works, Electrical (OHE) arrangements etc.;
- x) Preparation and submission of "Detailed Project Report" duly incorporating the observations from Railways and CCL;
- xi) To assist Central Coalfields Limited for obtaining Railway's approval on "Detailed

  
**PROJECT OFFICER**  
**BIRSA PROJECT C. C. L.**

  
**Dy. GM / SOUMITRA SINGH**

  
**Dy. GM/HOD (Env. & Forest)**  
**C.C.L., Ranchi**

  
**Dy. GM/HOD (Forest)**  
**CCL Ranchi**



Project Report".

1.3.3 On receipt of the work order, a reference was made to CGM, BarkaSayal to indicate the projection of traffic which is the main pre-requisite for planning of a railway siding vide RITES' letter No. RITES/RPO-KOL/CCL-FSR & DPR-North Urimari/2013/441 dated 24.01.2014 and Chief Manager (Civil)/IC, CCL vide his letter No. GM(C)/IC/Civil & IC/2014/30 dated 14.02.2014 (copy is shown as Annex-1.1) has informed that:-

- i) 3.00 MTY coal is to be moved annually from the proposed North Urimari siding.
- ii) North Urimari branch line will be connected at Patratu Railway station with main line.
- iii) SILO loading is envisaged in the project report.
- iv) Plan for future expansion does not exist.
- v) Proposed track alignment has already been submitted to RITES. A copy of layout plan has already been handed over to RITES earlier.
- vi) Provision of a loading platform in west side of the N-S track is to be made for loading of coal from Urimari OCP.

1.3.4 Accordingly, Preliminary Engineering Survey was conducted on the command area and on the basis of survey a tentative layout plan for the proposed alignment was prepared and was submitted to CGM, CCL vide RITES' letter No. RITES/RPO-KOL/CCL-FSR & DPR/North Urimari/2013/1544 dated 17.03.2014 for acceptance of the layout plan.

1.3.5 Thereafter, a meeting was held at Ranchi in the office of GM/Civil, CCL on 10.04.2014 in presence of the representatives of CMPDI and RITES when it was noted that (i) the location of the SILO has to be shifted further towards the mine head, and (ii) provision of one loading platform has to be kept for manual loading by means of coal dumpers, in exigencies.

1.3.6 In pursuant to this discussion, a revised layout plan for the proposed siding was prepared and was submitted to CGM, CCL, Ranchi vide RITES' letter No. RITES/RPO-KOL/CCL-FSR & DPR/North Urimari/2013/2663 dated 09.05.2014 for approval of the same. A further meeting was held in the office of GM/IC/CCL at Ranchi on 28.05.2014 when the relevant issues were discussed in details and the revised layout plan was accepted by CCL advising RITES to submit draft 'Feasibility Study Report' on the basis of this plan.

1.3.7 On the basis of accepted layout, a draft 'Feasibility Study Report' was prepared and the



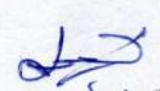
same was submitted to GM(Civil)/ HOD, CCL vide RITES' letter No. RITES/ROR-KOL/CCL/FSR & DPR-North Urimari/4213 dated 24.07.2014 for acceptance of the report before preparation and submission of final Feasibility Study Report to E. C. Railway as well as CCL.

1.3.8 On examination of the draft FSR, GM(Civil)/HOD, CCL vide his letter No. GM(C)/IC/Civil & IC/2014/154 dated 19.08.2014 has forwarded some comments from CMPDI and advised RITES to submit final FSR incorporating the said comments. A copy of this letter is shown as Annex-1.2.

1.3.9 It was also advised vide the letter as quoted in paragraph 1.3.8 that the peak capacity after expansion of the project would be 10.0 MTPA. As such, the alignment incorporated in the draft FSR had to be revised and according to the revised plan, this 'Feasibility Study Report' was prepared and submitted to CCL as well as East Central Railway vide RITES' letter No. RITES/RPO-KOL/CCL-North Urimari-FSR/2014/5114 dated 04.09.2014 and CTPM, E. C. Railway, Hajipur vide his letter No. ECR/OPT/CCL-North Urimari/505 dated 10/12.02.2015 has accorded 'in-principle' approval of the project subject to incorporation of the observations, as commented by various departments, in the FSR. A copy of this letter is shown as Annex-1.3.

1.3.10 While the above FSR was under consideration of Railway to accord 'in-principle' approval, Chief General Manager, (B S), CCL has raised a doubt on the proposed alignment infringing newly developed rehabilitation area of CCL. A meeting was arranged by GM (Civil), CCL on 18.10.2014 at his chamber at Hazaribagh along with the officials of CMPDI and RITES. During the meeting, it was opined that the layout plan which was earlier accepted by CCL advising to prepare FSR is not acceptable to CMPDI due to various reasons, mainly for the proposed locations of SILO and the wharf wall coal loading platform involving re-development of newly built up rehabilitation area. After the meeting, the site was jointly visited by the officials of CCL, CMPDI & RITES and it was advised to RITES for development of another plan shifting the position of SILO and coal loading wharf at a revised location avoiding the newly built-up rehabilitation area.

1.3.11 On the basis of the decision taken by CCL and CMPDI during the above meeting, a revised layout plan for the proposed siding was prepared and the same was submitted to CGM Barka-Sayal Area, CCL vide RITES' letter No. RITES/RPO-KOL/ CCL-FSR & DPR-North Urimari/6811 dated 29.12.2014 for acceptance of CCL as well as from CMPDI. After a

  
**PROJECT OFFICER**  
**BIRSA PROJECT C.C.L.**

  
**Dy. GM / PO SOUMITRA SINGH**  
Birsa Proj.  सौमित्र सिंह  
सम. महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण) / विभागाध्यक्ष (वन)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest) CCL Ranchi**  
**C.C.L., Ranchi**



number of interactions, GM (Civil), CCL vide his letter No. GM(C)/IC/Urimari/2015/214 dated 15/16.05.2015 has conveyed acceptance of the revised layout plan both by CMPDI and CCL. A copy of this letter is shown as Annex-1.4.

- 1.3.12 On receipt of CCL's acceptance on the revised layout plan, RITES' survey team was deputed again for re-survey which was completed on 02.07.2015. The present DPR has been formulated on the basis of the accepted layout and in compliance of all the conditions, as observed by CTPM, E. C. Railway while issuing 'in-principle' approval along with department wise remarks noted below in seriatim:-

(A) General

Item No.	Observation / Compliance & Remarks
1.	<p>Observation: 1% of the project cost (to cover 2% at the time of submission of DPR) &amp; any other statutory fee should be deposited in the name of FA&amp;CAO/ECR.</p> <p>Compliance: An amount of Rs.1,69,89,000/- towards codal charge as 1% of the estimated cost of Rs.16988.67 lakh (as per FSR) has been deposited on 07.01.2015. According to DPR, the cost has been revised to Rs.19,305.48 lakh and ECL is being advised to deposit the balance amount of 2% of codal charge.</p>
2.	<p>Observation: CSL of all siding lines should have at least 750 mtr.</p> <p>Compliance: Except for the Wharf wall loading line, one R &amp; D line and one engine escape line, the length of all other lines has been proposed for CAL more than 750 m.</p>
3.	<p>Observation: Simultaneous reception and despatch facility on signal should be provided.</p> <p>Compliance: Noted. The facilities have been provided where the layout permits.</p>
4.	<p>Observation: Cost of necessary yard modification, Signalling modification, OHE modification should be borne by the party.</p> <p>Compliance: Noted.</p>
5.	<p>Observation: Unloading platforms 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.</p> <p>Compliance: The particular siding is proposed for loading of coal as outward traffic. As there will be no need to construct unloading platform.</p>
6.	<p>Observation: The entire cost of project has to be borne by the siding holder including modification proposed at the station yard. The Railway shall not bear any cost at any circumstances what so ever.</p> <p>Compliance: Noted.</p>
7.	<p>Observation: Incremental cost of OHE, S&amp;F, Civil etc. will be part of estimate.</p> <p>Compliance: Updated cost of all the works have been incorporated in the DPR.</p>
8.	<p>Observation: The siding holder has to be abiding by the Railway terms and condition according to extant rule of Railways regarding staff cost, maintenance charge of Track, OHE, Signaling etc. as</p>

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
Dy. GM / PO सीओ सीओ एलओ, संदीप  
Birma Project Dy. GM/HOD (Env. & Forest) / विभागाध्यक्ष(वन)  
C.C.L., Ranchi CCL Ranchi



DETAILED PROJECT REPORT FOR PROVISION OF RAIL ROUTE TO SERVE  
NORTH URMARI OCP OF BARKA SAYAL AREA AT PATRATU



		<i>applicable from time to time.</i>
	Compliance	Noted.
9.	Observation	<i>Railway reserve the right to incorporate any kind of change if felt necessary in view of operations, track laying signaling arrangement etc. which will be binding on the siding holder.</i>
	Compliance	Noted.
10.	Observation	<i>Siding will be guided by existing liberalized policy of Railway siding in force and correction slip / circular / amendment issued by Railway time to time.</i>
	Compliance	Noted.
11.	Observation	<i>DPR, ESP and land license plan of take-off point should be approved by the Railway.</i>
	Compliance	Noted.

(B) Operating [Sr. DOM, Dhanbad's letter No. PL/N.Urimari/14 dated 28.01.2015.]

Item No.	Observation / Compliance & Remarks	
i)	Observation	<i>S&amp;T, Engg, TRD and C&amp;W department's observations (copy attached herewith annexure 'A' should be complied.</i>
	Compliance	Noted. Compliances are furnished item wise in respective paragraphs / chapters.
ii)	Observation	<i>One crossover connecting from point No. 24A to 26 between loading line &amp; SILO line is required for traffic flexibility towards SILO line through outer most pre loading line.</i>
	Compliance	The plan which was submitted with FSR has been changed due shifting of SILO and loading platform. However, feasible facilities have been kept for the revised alignment.
iii)	Observation	<i>Crew and other working staff rest room with necessary basic facilities should be provided at loading place. Necessary provision may be incorporated in detailed estimate.</i>
	Compliance	Complied with.
iv)	Observation	<i>Patratu Panel Interlocking is a sanctioned work. It should be kept in mind while preparation of ESP &amp; SIP.</i>
	Compliance	Noted.
v)	Observation	<i>North line take off point to siding alignment should be at level grade, so that stalling cases are avoided.</i>
	Compliance	The subject north line is lying disused and abandoned since long. It is not technically possible to restore the erstwhile take off point due to grade constraint. As such, it has been proposed to renovate the North line and to connect the same with the alignment of the proposed siding eliminating the provision of proposed Urimari Junction cabin.
vi)	Observation	<i>One four wheeler SUV type vehicle is required for Operating officials for site inspection.</i>
	Compliance	Necessary transport facilities, as and when necessary during construction stage will be provided by CCL.
vii)	Observation	<i>Operation of Urimari junction should be incorporated with Central Sounda proposed Panel cabin by shifting the Central Sounda cabin towards in between crossover point No. 22A &amp; 22B at a convenient location.</i>

Page 9 of 60

PROJECT OFFICER  
BIRSA PROJECT C. C. L.

सौमित्र सिंह  
SOUMITRA SINGH  
महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
Dy. GM / सीओ सीओ एलबि परादी  
Birsa Project Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi Dy. GM/HOD(Forest)  
CCL Ranchi



**Compliance** After detailed survey, it has been found that restoration of the erstwhile take-off point is not technically feasible due to grade constraint. The abandoned North line at this location is laid on a gradient of 1 in 141.47 (Fall) and re-gradation of the same is not possible. As such, it has been proposed to connect the siding alignment directly with the abandoned line without any provision of points & crossings so that movement of trains to and from the proposed siding can be directly controlled from Patratu.

(C) Engineering [DEN, Siding, Dhanbad's letter No. W.454/N.Urimari dated 15.01.2015]

Item No.	Observation / Compliance & Remarks	
1.	Observation	<i>Railway land boundary must be shown in the proposed plan.</i>
	Compliance	Noted.
2.	Observation	<i>Take off point-The proposed siding is considered at existing take off point of Sayal siding, hence outstanding and status of existing Sayal Assisted siding is to be cleared by CCL before approval of DPR.</i>
	Compliance	Since it is not possible to restore the erstwhile points of abandoned Sayal-D siding due to grade constrains, it has now proposed to connect the proposed siding directly with the North line alignment. The issue of outstanding dues may be dealt with CCL authority separately.
3.	Observation	<i>Involvement of Railway land for construction of new N/Urimari siding to be mentioned.</i>
	Compliance	The Railway land boundary has duly been shown in the plan
4.	Observation	<i>As per latest Railway Board's guideline, Railway will provide land for Y connection only.</i>
	Compliance	Noted. No Y connection is involved with the construction of this proposed siding.
5.	Observation	<i>One unmanned level crossing is proposed at km.1/100. Unmanned level crossing to be replaced by ROB /RUB.</i>
	Compliance	The subject road crossing has now been proposed as ROB avoiding unmanned level crossing.
6.	Observation	<i>At takeoff point of proposed siding, gradient shown in the proposed plan is different from official record. It should be reviewed.</i>
	Compliance	The grade at the above quoted position has been shown as per DRMDHN's Drg No. 220-85. However, the provision of take-off at this location has been done away with.

(D) Electrical (TRD) [Sr. DEE/TRD, Dhanbad's letter No.ELD/367/Siding/CFR/IRITES (North Urimari) dated 22.12.2014].

Item No.	Observation / Compliance & Remarks	
1.	Observation	<i>Cost of work: No abstract estimate has been furnished for Elec (TRD &amp; Gen.). Abstract details should be furnished with final DPR.</i>
	Compliance	Noted. Detailed cost estimate has duly been incorporated in the

**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

**सौमित्र सिंह**  
**Soumitra Singh**  
उप निहायबन्धक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एन०, राँची  
Dy. GM/HOD (Env. & Forest)  
Birsa Project C.C.L., Ranchi  
Dy. GM/HOD (Forest)  
CCL Ranchi



		DPR.
2.	Observation	18.50 (4.5 + 14.0) TKM will be wired for Urimari OCP siding. Taking off will be done from existing electrified PD branch section. Sectioning arrangement showing CB will be provided with N/O SBM insulator. The loading arrangement to new OCP siding will be done by laying separate feeder line and provision of isolator within PTRU station limit. Two feeder on existing mast having separate elementary section will not be allowed for safety.
	Compliance	Feeder connecting proposed CB and North Grid shall be run on separate masts.
3.	Observation	Before execution of work, OHE layout plan, isolation plan of SSP including general arrangement and layout plan for fencing, foundation, structural assembly, cable run bus bar etc. should be got approved from Railway authority. All works should be based on latest RDSO / CORE standard design, drawing and guideline issued by Railway.
	Compliance	Noted. This will be kept in view at the time of execution.
4.	Observation	Conventional OHE (107 sqmm HDGC Contact wire & 65 sqmm Cad Copper Catenary wire has been proposed.
	Compliance	No comment.
5.	Observation	Feeder line should be of 150 sqmm copper feeder and jumpers should be of 160 sqmm as per RDSO guideline.
	Compliance	Provision of copper feeder wire (150 sq. mm) and jumper wire (1600 sq. mm) has been kept.
6.	Observation	The track center of 6.00 metres (minimum) shall be adopted. No mast should be proposed for erection in between two tracks.
	Compliance	Noted.
7.	Observation	The implantation of main siding line mast shall be 2.80 metres. Mast implantation of 3.10 metres should be adopted for portal with BWA and 3.00 metres for portal mast. Extra allowance for mast should be considered according to norms of ACTM in case of curvature.
	Compliance	Extra allowance on curves shall be provided if necessary.
8.	Observation	Long creepage (1600 CD) composite insulator (Stay, Bracket & 9 Ton should be provided in the proposed section.
	Compliance	Long creepage insulator of 1600 CD is under development. Provision of insulator of 1050 CD has been considered.
9.	Observation	Except critical locations, '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 and falling arrangement to be provided as per RDSO drg No. TI/DRG/OHE/ATD/RDSO/00001/99/2 or latest.
	Compliance	Necessary provision has been made accordingly.
11.	Observation	Power supply arrangement will be finalized and sectioning diagram should be got approved from ECR both before submission of OHE layout plan.
	Compliance	Noted.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
BIRSA Dy. GM/HOD (Env. & Forest) CCL Ranchi  
C.C.L., Ranchi



12.	Observation	Bonding & Earthing arrangement conforming to Bonding & earthing code ET/OHE/71(11/90) should be done.
	Compliance	Noted. Provisions has been kept accordingly.
13.	Observation	In station area M.S. Flat for bonding shall be used. At the SSP location typical earthing station at switching post as per as per RDSO drg No. TI/DRG/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. Provisions has been kept accordingly.
14.	Observation	Continuous protective screen on the FOB / ROB or overline structure should be provided as per RDSO guideline & drawing, if any.
	Compliance	Noted.
15.	Observation	Augmentation of existing SP should be finalized jointly and plan should be got approved from Railway. A key drawing of sectioning should be got approved.
	Compliance	Noted.
16.	Observation	Circuit breakers / interrupters proposed to be provided for lapping from existing common bus bar with DP isolator for SS and by pass isolator for (SBM) switch each for maintenance purpose.
	Compliance	No comment.
17.	Observation	Necessary charges for hooking with SCADA for SSP with RCC / BRKA should be borne by the siding authority. Similar modification in RTU and hooking with SCADA should also borne by siding owner.
	Compliance	Noted.
18.	Observation	Necessary communication facilities for SCADA to be provided at SP by siding owner, if required.
	Compliance	Patratu SSP is in existence. No additional communication facility is proposed.
19.	Observation	Insulated catenary wire should be provided under the over line structure, if any, and safe clearance should be maintained as per guideline.
	Compliance	Noted.
20.	Observation	Modification of HT / LT crossing lines, if any, through under ground cable, if any, should be done by the siding owner for which plan, drawing etc. should be got approved from Railway. DOT line, if any should be removed. HT crossing up to 33 KV should be modified through underground cable.
	Compliance	Modification of overhead lines shall be carried out as per Railway Board's latest directives with approval of Railway.
21.	Observation	No structure / equipments should be allowed having clearance less than 2.00 metres.
	Compliance	Noted.
22.	Observation	All safely precautions & guidelines of ACTM must be followed during electrification of siding.
	Compliance	Noted.
23.	Observation	Power & Traffic block, if required, may be charged separately according to prevailing norms to Railway / Division.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**Soumitra Singh**  
महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एन०, राँची  
Dy.GM / HOD (Env. & Forest)  
Birsa Project C.C.L., Ranchi  
CCL Ranchi



24.	Compliance	Noted. Token provision has been made.
	Observation	Modified SWR of TRD (Appendix-G) of concerned stations should be prepared by siding owner and got approved from Railway for station.
25.	Compliance	Noted. Necessary provision has been made.
	Observation	All the level crossing gate, if any, should be provided with earthing arrangement with separate earth pit, provision of HT gauge & Retro reflective danger board.
26.	Compliance	Noted. Provision has been made accordingly.
	Observation	Necessary Tools & Plants and machinery & tools required for maintenance should be provided as will be preferred by Railway. The list of these items will be intimated before starting of work.
	Compliance	Provision made as per norms. Railway may furnish list of tools & plants etc. within the provision made.
27.	Observation	OHE spares for maintenance of OHE not considered in the estimate. The same should be included as 3% of OHE cost.
28.	Compliance	Noted. Provision has been made accordingly.
	Observation	General charges, Supervision charges and contingencies have not been considered in the estimate for electrical works. Provision of these should be made in the estimate.
	Compliance	Provision of Departmental charges has duly been made in terms of FMPC No.1 of 2012.
29.	Observation	Detailed design of OHE and sectioning arrangement in loading platform and SILO should be got approved by Railway before execution as per RDSO guideline.
	Compliance	Noted.
30.	Observation	Power line running parallel to proposed track to be wired should be undergrounded before commencement of work.
	Compliance	Noted.
31.	Observation	One commercial vehicle should be provided in the estimate for maintenance organization of TRD-against assets created as the maintenance depot at both ends is far away from proposed siding.
	Compliance	Noted. Provision has been made accordingly.
32.	Observation	Provision for hiring of two Nos. Multi Utility Vehicle (MUV) for five (05) years should be made in the estimate. This is essentially required for supervisory / inspection of work during project execution as well as commissioning and for any exigencies during service period. Railway officials will use this vehicle.
	Compliance	Siding owner shall provide vehicle to Railway officials for site inspection till commissioning of the siding.
33.	Observation	Two set of computer and heavy duty printer and Scanner should be made available to Sr. DEE / TRD / Dhanbad office for official work related with the siding electrification and commissioning. One plotter with printing facility should be provided for DEE / TRD / BRKA's office for official work of siding and others.
	Compliance	Noted. Provision has been made accordingly.
34.	Observation	One insulator testing machine for testing of insulator should be provided at OHE depot for testing of insulators before erection.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**Soumitra Singh**  
रूप महाप्रबंधक/विभागध्यक्ष (वन एवं वृक्षारोपण) / विभागध्यक्ष (वन)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest) C.C.L., Ranchi  
Dy. GM/HOD (Forest) C.C.L., Ranchi



		of 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	Noted. This is covered under the estimate.
35.	Observation	Provision of new modified schematic diagram at stations, 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	Noted. Provision has been made accordingly.
36.	Observation	Provision of furniture, vehicle for one OHE depot should be made in the estimate for maintenance organization of newly created OHE in the siding.
	Compliance	Noted. Provision has been made as per norms.
37.	Observation	Provision of construction of one sub-depot with 8 wheeler Tower wagon & TW shed should be made in the estimate for maintenance organization of TRD.
	Compliance	Railway to review requirement considering additional TKM to be maintained.
38.	Observation	Provision for staff quarters (Type-IV II & II), watering arrangement etc. should be made in the estimate for accommodation of maintenance staff of TRD keeping in view of both adjacent OHE depot are far away from proposed siding.
	Compliance	In terms of extant orders, accommodation for Commercial staff shall only be provided by siding owner.

(E) Signal & Telecommunication [Sr. DSTE/Co & Tele, Dhanbad's letter No.SG.662/8/ Works dated 20.11.2014]

Item No.	Observation / Compliance & Remarks	
1.	Observation	Proposed schematic plan has been supplied with the FSR. After checking the plan (annex-3.1) it is seen that twin single line from Patratu to Sounda has been shown in the plan. But the Sounda station is sanctioned for PI with single line in between Patratu to Sounda. So, FSR is required to be revised accordingly.
	Compliance	According to revised plan, the proposed North Urmari siding will be connected with the abandoned North line which is proposed for renovation for connectivity of the siding and now there will be no change for working patten of the Sounda cabin.

(F) Mechanical Engineering [Sr. DME (C&W), Dhanbad's letter No. MC.330.WP/2014-15 dated 20.09.2014].

Item No.	Observation / Compliance & Remarks	
1.	Observation	Agreement must be executed between the Railways & Siding owner.
	Compliance	Noted. Siding agreement will be signed by the siding holder as soon as the agreement documents are furnished by Railway.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्याव) सीओ एन०. सी०  
उप महाप्रबंधक/विभागाध्यक्ष(वन) सीओ एन०. सी०  
Dy.GM/PA सीओ एन०. सी०  
Dy. GM/HOD (Env. & Forest) सीओ एन०. सी०  
Birma Project C.C.L., Ranchi CCL Ranchi



2.	Observation	<i>During loading no such machine must be used which causes damage to wagons.</i>
	Compliance	As per suggested system, loading will be done through SILO and there is no possibility of SILO equipments with Railway wagon.
3.	Observation	<i>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.</i>
	Compliance	Noted.
4.	Observation	<i>Necessary arrangement may be developed so that loading work will be done cautiously to avoid damage to the loading stock by the loading equipment.</i>
	Compliance	Noted. Already clarified in para 2 above.
5.	Observation	<i>As C&amp;W facilities will not be provided at the project siding, the rake should be inspected by Crew &amp; Guard before start of the loaded rake as per latest guidelines.</i>
	Compliance	Noted. Concerned to Railways.
6.	Observation	<i>The Railway will have the right to undertake inspection and cross checking of the loading / unloading equipment, which will be installed to verify the status of their work.</i>
	Compliance	Noted.

#### 1.4 Junction Arrangement

1.4.1 It was earlier planned to construct the coal loading siding with provision of RLS at the North Urmari area by extending the buffer end of unused Sayal-D siding which was connected with the PD branch line at kms.3/040.99 from CSB of Patratu on the erstwhile 'Twin Single Line' section between Patratu East cabin and Sounda cabin. Presently, the North line is defunct and the South line is operative as a single line section. A number of colliery sidings of CCL e.g.; (i) Giddi A (Raw coal & Washery), (ii) Central Sounda, (iii) Sounda B (iv) Bhurkunda and (v) Sirka are worked through this single (South) line which is also electrified with 25 KV AC traction.

1.4.2 Although, the existing track structure of the erstwhile Sayal-D siding is found to be unusable, it was planned that the proposed siding would be connected with the North line by restoration of the defunct take-off point of Sayal-D siding at kms.3/040.99 from CSB of Patratu station with additional provisions of suitable cross-overs with the South line. This point was shown earlier in the FSR as '0' chainage for the purpose of calculating onward locations of the siding. The existing North line for this portion between Patratu and Sounda was proposed for complete renovation to meet up the purpose.

1.4.3 On detailed survey, it is now found that restoration of erstwhile take-off point of the Sayal-D

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**सौमित्र सिंह**  
**SOMITRA SINGH**  
Dy. GM/HOD (Forest)  
Birma Project  
Dy. GM/HOD (Env. & Forest) CCL Ranchi  
C.C.L., Ranchi



siding which was taken off within a falling grade of 1 in 141.47 is considered technically not feasible due to grade constraint. Taking off the siding from another location of the North line is also not possible due to present grade condition of the North line. Hence, it is now planned to connect the proposed North Urimari siding directly in continuation of the unused North line and for the purpose of construction, the starting / take point of the will be from North line at km.3/040.99 from CSB of Patratu station.

- 1.4.4 Although, the entire stretch of North line is required to be renovated fully and restoration of the erstwhile take-off point is not possible, the location of this point, i.e., km.3/040.99 has been considered as '0' chainage for the purpose of identifying the onward locations of the proposed construction.

#### 1.5 Lay out of the In-plant Yard

- 1.5.1 The proposed siding, after taking off, will traverse mostly following the same alignment of erstwhile Sayal-D siding up to Ch.2/332.675 kms from where the alignment will proceed further towards west to cross the river Damodar. After formation of the loading yard, the alignment will terminated to a buffer at Ch.7/749.49km. As desired by the CCL authority, the loading yard will constructed in the form of following two groups:-

(a) Wharf wall loading yard consists of:

- (i) One loading line of CAL 736.00 m accompanying with a coal loading platform of 700.0 m x 30.0 m.
- (ii) Provision for a brake van reversal loop of CAL 75.00 m in between the loading line and R&D lines for the SILO.

(b) SILO loading yard consisting of:

- (i) Three R & D cum Pre-loading lines of CAL 816.743 m, 725.439 m and 756.045 m respectively;
- (ii) One SILO having double loading chutes on adjacent lines in between the Pre & Post loading lines;
- (iii) Two Post loading lines of CAL 752.811 m and 750.061 m respectively;
- (iv) Two separate sets of engine reversal lines of CAL 728.092 m & 734.894 m with facilities for brake van reversal and SILO by-pass lines for the flexibility of movement.
- (c) One In-motion electronic weighbridge at Ch.4676.00 m near the entry point of the Manual Loading yard for weighment of outward loaded trains and weighment of empty rake, if required.

  
**PROJECT OFFICER**  
BIRSA PROJECT C. C. D.

  
**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एलओ, राँची महाप्रबंधक / विभागाध्यक्ष (वन)  
**Dy. GM/HOD (Env. & Forest)**  
C.C.D., Ranchi  
**Dy. GM/PO**  
Birsa Project

  
**Dy. GM/HOD (Forest)**  
CCL Ranchi



1.5.2 The details of the layout is elaborated in the Engineering Chapter and a detailed layout plan showing the proposed coal loading wharf and allied modifications of existing Sayal-D siding is placed at Annex-1.5 [in 5 sheets]

#### 1.6 Signalling & Interlocking

1.6.1 Existing PD branch line, though it was a 'twin single section' presently operative as single line section working on paper line clear ticket on the South line. The North line is lying abandoned and the 'single line token instruments' are defunct for a long period. Considering the projection of traffic, it is proposed to renovate the North line and to connect the same directly with the proposed siding keeping the existing system of working on the South line.

1.6.2 Following Signal Interlocking and telecommunication facilities are proposed for the purpose of efficient and safe train working:-

- (a) Provision of a EI Panel cabin at the Coal Loading yard as North Urimari Loading yard Panel cabin;
- (b) Necessary modification of the existing Patratu East Central cabin to suit the revised signalling system.

1.6.2 The details of S&T working is elaborated in the respective chapter.

#### 1.7 Electrification Works

1.7.1 The proposed siding including the North line of PD Branch and allied crossovers at the Patratu yard are required to be electrified with 25 KV AC conventional OHE to maintain uniformity of traction on the adjoining sections. The sections shall have the facility for isolation through remotely controlled interrupters and the loading line shall be isolated through isolators to ensure safe working of the SILO chutes as well as Pay loaders.

#### 1.8 Proposed pattern of working

1.8.1 The train movement between Patratu East Central Cabin and New EI cabin at the North Urimari loading yard will be controlled through 'Single Line Lock & Block' instrument.



### 1.8.2 Reception of Empty rakes

- (i) On getting information from SM/YM, Patratu that an empty rake is ready for supplying at North Urmari siding for loading, SM/Cabin Master, Patratu East Central cabin will ask line clear from North Urmari Loading Yard cabin to obtain line clear for the train;
- (ii) Panel Operator, North Urmari Loading Yard cabin after ensuring clearance of the R&D line for reception or the Wharf wall Loading line, as the case may be, for the said train, will grant line clear for the train and take off the relevant reception signals to admit the train into the respective line of the siding;

### 1.8.3 Procedure of loading

- (a) An Empty rake meant for loading at the Wharf wall loading platform can be received directly on the loading line. Loading by means of loading dumpers can be commenced only after proper isolation of the electrified line. During the process of loading, the brake van will be reversed by the train engine and the train may be kept ready for despatch as soon as loading is completed.
- (b) Similarly, an empty rake meant for loading through SILO will be received directly in any of the R&D cum Pre-loading line in compliance of following provisions:
  - (i) Movement of train and loading through SILO will be done by Railway electric locomotive working the train. The driver of the empty rake, meant for loading under the SILO, will be advised about the system of loading.
  - (ii) The portion of line under the chute of SILO shall have either an unwired zone with a gap of 6.5 m or OHE shall run through remaining 'dead'. In either case, 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 below the chute in such a way that the unwired portion should remain within the both pantographs. An 'electric engine stop board' will be provided to alert and guide the driver about the stopping place;
    - (c) After stopping, the front pantograph will be raised and the rear pantograph will be lowered keeping the engine continuously energized;

  
**PROJECT OFFICER**  
BIRSA PROJECT C. C. M.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
**C.C.L., Ranchi**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
**Dy. GM/HOD (Forest)**  
**CCL Ranchi**



- (d) On getting advice from the Loading Supervisor/Operator of the SILO, the train will be drawn slowly matching with the discharge rate of loading chute to commence loading into the wagons one after another;
- (e) A rake after loading under SILO will be received on the corresponding post loading line;
- (iii) The design of SILO vis-à-vis loading by the electric locomotive is still under finalization. CCL has to keep provision of 'wagon positioner' / 'Side arm charger' / separate diesel locomotive for transferring the electric locomotive under the unwired/dead portion of the SILO, in case the design of electrification under the SILO chute is not at all finalized.
- (iv) 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 and other associate parameters.

#### 1.8.4 Despatch of Loaded rakes

- (i) On completion of loading at the SILO yard, the brake van and Train engine will be reversed. On getting readiness, the Panel Operator North Urimari Loading Yard cabin will inform the same to Patratu East Central cabin along with load particulars asking line clear for despatch of the train;
- (ii) As soon as line clear is received, the relevant signals will be taken off to despatch the train;
- (iii) Weighment of the loaded rake will be done during departure of the same.

#### 1.9 Commercial Formalities

- 1.9.1 The siding will work as par Railway Board's policy guidelines issued under FM circular No. 01 of 2012 and the commercial formalities for working of trains on account of coal loading including manning of weighbridge at the in-plant yard may be finalized after discussion and interaction with the Commercial Department of Dhanbad Division of East Central Railway.


1.8.4 Suitable Rest room facilities will be provided near the loading yard for the train crews.

#### 1.10 Abstract Cost Estimate

- 1.9.1 The abstract cost estimate for the entire rail-infrastructure has been works out on the basis of present day cost of man and materials, department wise, and is tabulated below.

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**उप महाप्रबंधक / विभागाध्यक्ष (वन एवं पर्यावरण)**  
**DY. GM/HOD (Forest)**  
CCL Ranchi



Sl. No.	Department	Cost in lakhs of Rs.
1.	Civil Engineering	14,358.27
2.	Signal Engineering & Telecommunication	1,451.67
3.	Electrical Engineering	3,495.54
	Total:	19,305.48

1.11 Project Execution

1.10.1 On approval of the project by East Central Railways, the construction works may be done by RITES having vast experience in construction and management of Railway sidings and a Government of India Enterprise under Ministry of Railways, as per MOU executed between CIL and RITES on 30.07.2015..

1.12 Execution schedule

1.12.1 Considering the ground reality and quantum of work involved, It is presumed that about 36 months time will be required for the completion of the entire work under normal conditions. A bar-chart showing tentative execution time schedule is placed as Annex-1.6.

PROJECT OFFICER  
BIRSA PROJECT C.C.L.

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi

Dy. GM / PO  
Birsa Project

उप महाप्रबंधक / विभागाध्यक्ष (वन)  
DY. GM/HOD (Forest)  
CCL Ranchi




CHAPTER-II

Civil Engineering

2.0 Preface

- 2.0.1 CCL has planned to construct a coal loading siding with provision of Rapid Loading System through SILO loading system at the North Urmari area by extending the buffer end of unused Sayal-D siding, which was connected with the PD branch line at km.3/040.00 from CSB of Patratu.
- 2.0.2 The existing track structure of the erstwhile Sayal-D siding is found to be in deteriorated & unusable condition, it was planned that the proposed siding would be connected with the North line from the defunct take-off point of Sayal-D siding at kms.3/040.99 from CSB of Patratu station with additional provisions of suitable cross-overs with the South line. This point was shown earlier in the FSR as '0.00' chainage for the purpose of calculating onward locations of the siding. The existing North line for this portion between Patratu and Sounda was proposed for complete renovation to meet up the purpose.
- 2.0.3 On detailed survey, it is now found that restoration of erstwhile take-off point of the Sayal-D siding which was taken off within the falling grade of 1 in 141.47 is being considered technically not feasible due to grade constraint. Taking off the siding from another location of the North line is also not possible due to present grade condition of the North line. Hence, it is now planned to connect the proposed North Urmari siding directly in continuation of the unused North line and the starting point of the siding will be from Patratu yard at Km. 3040.00 m from CSB of Patratu Station. Although, This starting point has now been shown as '0.00' (ZERO) chainage for the purpose of identifying & discussions of onward locations of the proposed siding.
- 2.0.4 The proposed siding, after starting with its Ch.0.00 m, in continuation of the unused North line at Ch.3040.00 m from CSB of Patratu Station, will traverse mostly following the same alignment of erstwhile Sayal-D siding up to Ch.2/332.675 kms from where the alignment will proceed further towards west to cross the river Damodar and after formation of the loading yard, the alignment will be terminated to a buffer at Ch.7/749.49kms.
- 2.0.5 The proposed siding infrastructure including the loading yard will be constructed with the following facilities in the form of two groups:-

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**सोमित्र सिंह** Page 21 of 60  
**SouMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल० रॉन्ची विभागाध्यक्ष(वन)  
Dy. GM/PO Dy. GM/HOD (Env. & Forest) Dy. GM/HOD(Forest)  
Birma Project C.C.L., Ranchi CCL Ranchi



Group-(a) - Wharf wall loading yard consists of:-

- (i). One loading line of CAL 736.00 m (DS to DS) accompanying with a coal loading platform of 700.00 m (L) x 30.00 m (B) for manual loading of coal by means of coal dumpers in exigencies and when required.
- (ii). Provision for a brake van reversal loop of CAL 75.00 m in between the loading line and R&D lines for the SILO has been kept.


Group-(b):- SILO loading yard consists of:-

- (i) Three R & D cum Pre-loading lines i.e. line no. L-1 of CAL 816.743 m (FM to FM), line no. L-2 of CAL 725.439 m (FM to SRJ) and line no. L-3 of CAL 756.045 m (FM to FM) respectively;
  - (ii) One SILO having facilities for double loading chutes on adjacent lines i.e. on line no. L-1 at Ch.1/044.40 km & on line no. L-2 at Ch.6/712.73 km respectively;
  - (iii) Two Post loading lines i.e. line no. L-1 of CAL 752.811m (FM to FM) and line no. L-2 of CAL 750.061 (FM to FM) m respectively;
  - (iv) Two nos. of loops at post loading end meant for engine escape facilities i.e. line no. L-3 of CAL 728.092 m (SRJ to FM) & line no. L-4 of CAL 734.894 m (SRJ to FM);
  - (v). Two nos. of SILO by-pass lines with suitable crossovers at the SILO zone for reversal of brake van and movement of loaded rakes bypassing the SILO for facilitating the overall flexibility of movement.
- (c) One In-motion electronic weighbridge has been proposed for installation near the entry point of the Manual Loading yard at Ch.4/676.00 km for facilitating weighment of outward loaded trains and weighment of empty rakes, if required.

## 2.1 Survey Methodology

2.1.1 Reconnaissance & Preliminary Engineering Survey has been conducted through the corridor to find out the most suitably feasible techno-economical alignment for planning and accommodating of the proposed North Urmari Railway Siding of CCL with the provisions of above mentioned features as described under paragraph above.

2.1.2 After in depth study, the most suitable alignment has been selected on the result of reconnaissance survey and preliminary engineering survey. Accordingly FSR was

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**सौमित्र सिंह**  
**Soumitra Singh**  
सहायक विभागाध्यक्ष (वन एवं पर्यावरण) / विभागाध्यक्ष (वन)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
CCL Ranchi



prepared and submitted to E.C.Railway & CCL for obtaining "In Principle" approval.

2.1.3 On obtaining "In Principle" approval on the submitted FSR from E.C.Railway followed by acceptance of revised layout plan by CCL, the final location survey has been carried out with the help of precise 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 were 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 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 proposed railway siding track gauge is adopted as 1676 mm (5'6") for Broad Gauge to commensurate with the existing track gauge network of the serving Railway system.

2.2.2 Fixed Point: The fixed point for the final engineering survey for the proposed North Urimari siding has been considered as the starting point which is to connect directly in continuation of the unused North line and the starting point of the siding will be from Patratu yard at Km.3040.00 m from CSB of Patratu Station. This starting point has now been considered as the "Fixed Point" and shown as '0.00' (ZERO) chainage for the purpose of identifying & discussions of onward locations of the proposed siding. List of Benchmark is placed at Annex-2.0

2.2.3 Level: All the levels have been taken for this survey are based on the existing grade of serving Railway.



- 2.2.4 Gradient: The proposed starting point of North Urimari Railway siding which has been reckoned as Ch.0.00 km has been kept on existing falling grade of 1 in 141.47 up to Ch.0/060.00kms. The balanced portion of the proposed siding will follow different grades both in rise & fall, out of which 1 in 200 (both in rise & fall) stands as the sharpest grade in both empty & loaded direction. A list of gradients and gradient abstract is placed at Annex-2.1.
- 2.2.5 Curve: On the proposed lead alignment of the siding, eleven (11) nos. of main curves, other than sub-curves, have been designed, planned & required to be introduced with the ultimate motto to provide the most suitable techno-economical alignment by negotiating with the existing ground conditions as well as the existing physical features, out of which Curve No. 8 (LH) as  $5.833^0$  curve with the radius of 300.00 m is the sharpest curve. A list of curve and curve abstract is shown at Annex-2.2.
- 2.2.6 Speed potential: Though the track structure of the siding as a whole will be fully suitable for accepting movement with fully loaded rakes of coal and other minerals etc. consisting of BOXN/BOBRN wagons like main line tracks, the permissible speed of the proposed siding will have to be restricted to 50 KMPH for facilitating smooth running of trains both in empty & loaded directions. However, the train speed will be restricted during loading through SILO arrangements followed by weighment operation in the weighbridges.
- 2.2.7 Length: The route length of the proposed siding will be about 10.80 kms and the track length will be about 19.50kms., considering the length of existing track from Patratu yard to Ch.3/040.00 kms which also need to becompletely dismantled and replaced with new track structures.
- 2.2.8 Formation: From proposed starting point at Ch.0.00 km to Ch.2/332.675 km, the formation of erstwhile Sayal-D siding is mostly ready where only repairing & dressing work along with small quantity of earth work both in cutting & filling need to be attended. Balance part of 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 7.850 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,

  
**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

  
**सौमित्र सिंह**  
**SOUMITRA SINGH**  
Dy. GM/हलाप्रबंधक/विभागाध्यक्ष (पर्यावरण) / विभागाध्यक्ष (वन)  
Birsa Proj. सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi



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 is designed to be provided. A typical profile of embankment and cutting is placed at Annex-2.3.

2.2.9. Track Center: Minimum 6 m track center is proposed in between two tracks unless otherwise mentioned in the Engineering Plan.

2.2.10 Track Structure: The proposed railway track is designed to be laid on 60 kg/90 UTS, T-12 grade, 1<sup>st</sup> 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. From starting point at Ch. km. 0.00 to Ch. km. 2/332.675, the available old & dilapidated track structure of erstwhile Sayal-D siding is required to be completely dismantled and replaced with the above proposed new track structures. In addition to above, the existing track from Patrattu yard to Ch. Km. 3040.00 m also need to becompletely dismantled and replaced with the above proposed new track structures. A detail of track structure is placed at Annex-2.4.

2.2.11 Bridges & Culverts: In the proposed alignment there are 12 (twelve) nos. of bridges are proposed to be constructed based on the actual requirements. Br. No. 1 to 3 are required to be constructed newly after dismantling of the existing bridges which are found to be in dilapidated condition. Out of 12 (twelve) nos. of bridges, 3 (three) bridges i.e. Br. No.4, 8 & 11 are the major bridges and rest of the 9 are minor bridges. Br. No.8 with its center line at Ch. km. 3/462.164 will be a major railway bridge with (2 x 30.50 m + 5 x 45.70 m) "Open Web Through Girder Bridge" which has been proposed to cross the Damodar river. Retaining wall at the both end of the Br. No. 8 has been proposed & to be designed suitably with the objective to reduce the bottom width of the formation in high filling to



ensure for minimizing the width of land corridor. Br. No. 4 (ROB) & Br. No.11 (ROB) are other two major Road Over Bridges (ROB's) with 1 x 18.00 m Composite Girder /each.Br. No. 5 at Ch. km. 2/450.00 & Br. No. 9 at Ch. km. 4/400.00 are proposed as RUB to negotiate the existing roads to pass under the proposed railway track. All other remaining bridges are designed to discharge of rain water from adjoining catchment areas. List of minor & major bridges abstract is placed at Annex-2.5.

2.2.12 Fixed Structure: All fixed structures, which are infringing the siding line corridor are required to be dismantled and the essentially required structures are required to be relocated and designed by conforming to the fixed structures as indicated in the Schedule of Dimension (Revised-2004) for Broad Gauge of Indian Railways.

2.2.13 Traction / Electrification: The proposed railway siding line, except for a portion under the SILO chutes, will be provided with Electric Traction system. (Details are placed in the concerned Electrical Engineering paragraphs).

2.2.14 Road Crossing / Level Crossing: The existing CCL road connecting in between North Urimari to Patratu, crossings the alignment at Ch.1/100.00kms, is proposed to flyover by means of a ROB (Br. No. 4).Other existing village roads & CCL roads crossing the proposed siding at few locations are proposed to be closed and suitably diverted through the proposed ROB & RUB's / Underpassesat Ch.5/693.50 km (Br. No.11 - ROB), Ch.2/450.00 km (Br. No.5 - RUB) & Ch.4/400.00 km (Br. No.9 - RUB).Provisions of RUB's / Underpasses are considered as the best solution because of topographical advantage and it will ensure uninterrupted movement for both road & rail crossings with least operational & safety hazards. A list of Road / Level crossing is placed as Annex-2.6.

2.2.15 Power Line Crossing: A number of HT & LT lines are crossing / running parallel to the proposed siding alignment at several locations. These lines are required to be underground cabled / diverted/ raised suitably as the case may be considering the ground realities. A list of LT&HT power line crossings is placed as Annex-2.7.

2.2.16 Land: It is found that the total land corridor likely to be required for accommodating the proposed railway siding infrastructure falls within the CCL land. Acquisition of the required portion of land corridor, if required further, is being sought for by CCL. The existing North line was constructed on assisted siding terms. The condition for use of the portion of North line may be decided by Railway.



### 2.3 Description of Alignment

- 2.3.1 Throughout the total length of the alignment, frequent changes both in direction of the route as well as in the gradients have been designed, planned & required to be introduced with the ultimate motto to provide the most suitable techno-economical alignment by negotiating with the existing ground conditions with minimum involvement of cutting & filling as well as with the existing physical features. For accommodating the proposed alignment with its best suitability, considerable numbers of existing structures like CCL's quarters / buildings etc., mostly infringing in the post & pre loading corridor (as shown the plan), are required to be dismantled and relocated appropriately by CCL.
- 2.3.2 The fixed point for the proposed North Urimari siding has been considered as the starting point which is to connect directly in continuation of the unused North line on Patratu-Damodar section, commonly known as PD branch line which was a "Twin Single Line" section working between Patratu East Central cabin and Sounda cabin and the starting point of the proposed siding will be from Patratu yard at Km.3040.00 from CSB of Patratu Station. This starting point has now been considered as the "Fixed Point" and shown as '0.00' (ZERO) chainage for the purpose of identifying & discussions of onward locations of the proposed siding alignment.
- 2.3.3 From starting point at Ch.0.00km to Ch.2/332.675kms, the available old & dilapidated track structure of erstwhile Sayal-D siding is required to be completely dismantled and replaced with the above proposed new track structures. In addition to above, the existing track from Patratu yard to Ch.3040.00 kms also need to becompletely dismantled and replaced with the above proposed new track structures as per the present planning & design requirement.
- 2.3.4 The proposed alignment from its starting point at Ch.0.00 km. traverses with a small  $4^{\circ}$  left hand curve no. 1A(LH) of 437.50 m radius up to Ch.0/036.374 km and then traverses straight up to Ch.0/259.063 km. and further negotiates with a  $5^{\circ}$  left hand curve no. 1 (LH) of radius 350.00 m up to Ch.0/597.463 km.  
From Ch.0/597.463 km the alignment traverses straight up to Ch.0/852.059 km. and then negotiates with a  $3^{\circ}$  left hand curve no. 2 (LH) of radius 583.33 m which continues up to Ch.1/403.896 km. and again traverse straight up to Ch.2/332.675 km.  
From Ch.2/332.675 km the alignment further negotiates with a  $3.5^{\circ}$  left hand curve no. 3 (LH) of radius 500 m which ends at Ch.2/573.761 km and then traverses straight up to

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, उप महाप्रबंधक/विभागाध्यक्ष(वन)  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi  
**Dy. GM/PO**  
Birsa Project  
  
**Dy. GM/HOD (Forest)**  
CCL Ranchi



Ch.2/961.843km.

The alignment then takes a  $4.861^{\circ}$  right hand curve no. 4 (RH) of 360.00 m radius which ends at Ch.3/236.706 km. From this chainage the alignment traverses straight to cross the Damodar River through an "Open Web through Girder" Bridge No. 8 and also within the high filling zone at the both end of Damodar River and the straight runs up to Ch.3/686.532km.

The alignment again takes a right turn from Ch.3/686.532 km by means of a  $3.5^{\circ}$  right hand curve no. 5 (RH) of 500 m radius and the curve ends at Ch.4/048.506km.

The alignment further traverses straight up to Ch.4/239.753 km and again takes a small right turn by means of a  $3.5^{\circ}$  right hand curve no.6 (RH) of 500 m radius which ends at Ch.4/321.706km.

From Ch.4/321.706 km the alignment traverses straight up to Ch.4/998.951 km and then takes another small right turn by means of a  $4^{\circ}$  right hand curve no.7 (RH) of 437.50 m radius which ends at Ch.5/123.629km.

The lead alignment, which is designated as line no. L-2, further runs straight from Ch.5/123.626 km to Ch.5/804.807 km and then takes a left turn by forming a  $5.5^{\circ}$  left hand curve no. 8 (LH) of 300.00 m radius which ends at Ch.5/886.058 km.

One platform loading line of CAL 736.00 m (DS to DS) accompanying with a coal loading platform of 700.00 m (L) x 30.00 m (B) for manual loading of coal by means of coal dumpers in exigencies and when required has been provided in between Ch. 4/778.66 km. to Ch. 5/664.839 km. Provision for a brake van reversal loop of CAL 75.00 m in between the platform loading line and pre loading cum R&D lines for the SILO has been kept.

The alignment (L-2) then runs straight up to Ch.6/157.136 km and further takes a left turn by forming a  $5.72^{\circ}$  left hand curve no. 9 (LH) of radius 306.00 m which ends at Ch.6/470.778 km.

From chainage 6/470.778 km the proposed alignment L-2 as Pre loading cum R&D line of CAL 725.439 m, runs straight under the Shoot No. 2 of SILO being located at Ch.6/712.73 km. From Shoot No. 2, the alignment L-2 will further traverse straight at its post loading end up to Ch. 6/929.55 km and takes a left turn by means of a  $2.479^{\circ}$  left hand Curve No. 10 (LH) of radius 706.00 m which ends at Ch. 7/147.876 km and further run straight up to its buffer end at Ch. 7/749.49 km. and will be designated as Post loading line No. 2 with CAL m of 750.061 m.

  
PROJECT OFFICER  
BIRSA PROJECT C.C.L.

  
सौमित्र सिंह  
SOUMITRA SINGH  
रूप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi  
महाप्रबंधक / विभागाध्यक्ष (वन)  
Dy. GM/HOD (Forest)  
CCL Ranchi



Two more pre-loading loops has been provided, which are designated as Line No. 1 of CAL 756.045 m & Line No. 3 of CAL 816.743 m, will be taking off with its individual starting chainages as 0.00 m each from pre-loading Line No. 2 at Ch.5/677.839 km & Ch.5/713.839 km respectively and runs parallel to either side of Line No. 2 (L-2). Loop line no. 3 (L-3) will meet with L-2 at Ch.6/588.637 km. Loop line no. 1 (L-1) will continue parallel to L-2 and will run under Shoot No. 1 of SILO. From Shoot No. 1, the alignment L-1 will traverse exactly parallel to L-2 at its post loading end by keeping a CAL of 752.811 m and finally will be buffer ended with its Ch.2084.211 m.

Two nos. of SILO bypass lines has been provided on either sides of line no. L-1 & line no. L-2 with suitable insertion of crossovers, in between, at the SILO zone for facilitating reversal of brake van and movement of loaded rakes bypassing the SILO / SILO lines for facilitating the overall flexibility of traffic movement.

Two nos. of Engine escape loop lines have been provided on either end of post loading lines ie. L-1 & L-2 at post loading end and both of which will be taking off from the bypass lines and traverses parallel to L-1 & L-2 towards post loading end. These two engine escape loop lines are designated as Line No. L-3 & L-4 of CAL's 728.092 m & 734.894 m respectively as shown in the plan. Line no. L-3 with its Ch.1086.55 m will meet with the rear end of L-2 at its Ch.7/689.49 km and L-4 with its Ch.1087.145 m will meet with the rear end of L-1 at its Ch.2024.211m.

2.3.5 Provision for one 120 Ton capacity Electronic In-Motion Weighbridge at Ch.4/676.00 km has been kept for facilitating weighment of outward loaded rakes during departure and, if required, weighment of empty rakes during admission into the R&D yard. The weighbridge has been planned to be installed on the portion of track within level grade.

2.3.9 The Civil Engineering Plan & L/Section drawing is placed at Annex-1.5 in 5 sheets.

#### 2.4 Civil Engineering Cost Estimate

2.4.1 The detailed cost estimate of Civil Engineering works has been computed taking into consideration of the present day costs of the items like earthwork, bridge / culvert including ROB & RUB, retaining wall, permanent way, track ballast, track fittings, drain, road diversion, dismantling of tracks etc. and tabulated accordingly. The abstract Civil Engineering cost has been estimated to the tune of Rs.14,358.27 lakh and detailed are shown at Annex-8.1.

  
PROJECT OFFICER  
BIRSA PROJECT C. C. L.

  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एनओ, रॉडी महाप्रबंधक/विभागध्यक्ष(वन)  
Dy. GM/HOD (Env. & Forest)  
Birsa Project C.C.L., Ranchi  
Dy. GM/HOD (Forest)  
CCL Ranchi



CHAPTER-III

Signal Engineering & Telecommunication

3.0 Introduction

3.0.1 Central Coalfields Limited has planned to develop one coal loading siding at North Urmari coalmines with provision of Rapid Loading System through SILO loading arrangement by extending the buffer end of unused Sayal-D siding, which was connected with the PD branch line at km.3/040.00 from CSB of Patratu. Presently, a number of colliery sidings are served through South line of the PD branch and the North line is lying abandoned for a long period. It has been proposed to renovate the defunct North line to connect the proposed North Urmari siding with some modification of Patratu yard.

3.0.2 For efficient and safe movement of trains, one cabin is proposed at the loading yard of North Urmari siding. Electronic Interlocked system is proposed for this cabin as it will be maintenance free and easily expansion able for addition / alteration when necessary. Following signalling arrangements are proposed for development:-


- (1) Provision of Panel cabin / VDU at North Urmari Loading yard cabin;
- (2) Provision of Block working between North Urmari Loading yard cabin and Patratu East Central cabin;
- (3) Necessary modification in the Patratu East Central Cabin to incorporate the revised signalling system.

3.1 Engineering Layout

3.1.1 The In-plant yard for the North urimari OCP will be constituted of Pre-loading and Post-loading yard. The Pre-loading yard will consist of 3 Reception & Despatch lines and the Post-loading yard will have 4 lines, namely, 2 post-loading lines and 2 engine escape line. In addition, there will be one Coal loading wharf line for mechanical loading from platform. The details of layout are described in the Civil Engineering chapter of this report.

3.2 Proposed Signalling Arrangement

3.2.1 For restoration of working on the North line of PD Branch, the existing Patratu East Central Cabin requires some addition/alteration for which a Lump Sum cost has been catered for in the Cost Estimate.

  
**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

  
**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल० सी०  
Dy. GM/PO सी० सी० एल० सी०  
Birsa Project Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi Dy. GM/HOD(Forest)  
CCL Ranchi



- 3.2.2 One new EI Cabin namely North Urimari Cabin is proposed to be constructed at the Coal Loading yard at a suitable location for controlling reception and despatch of trains at the loading yard and for all the movements for SILO loading operations and to and from the coal loading platform line. All the points and signals for the Coal loading platform line, Pre loading cum R&D lines and Post loading lines except the buffer end points will be controlled from In-plant Yard Panel Cabin. The points of the buffer end of Post loading yard will be non-interlocked and will be operated manually at site.
- 3.2.3 Axle Counters, Track Circuiting is proposed for the entire yard to ensure occupancy / clearance of the track which will be depicted in the Panel Board. Conventional DC Track Circuit is proposed with Q Series AC immunized Track Relay.
- 3.2.4 Calling-on Signal below Home Signal is also proposed 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 EI 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 UFSBI equipments in section between North Urimari Loading yard Cabin and Patratu East Central cabin.
- 3.2.7 All the points in the Coal Loading yard will be electrically operated through 110 V DC Non-trailable Rotary type IRS Point Machine.
- 3.2.8 Crank Handles are proposed 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 for fault diagnosis and event logging.
- 3.2.10 SMPS based integrated Power Supply (IPS) system is proposed for uninterrupted supply to both AC & DC Signaling circuit.
- 3.2.11 In the North Urimari Coal Loading yard cabin, Distant and Home Signals are proposed for reception of trains. Starter and Advance Starter Signals are proposed for despatch of

PROJECT OFFICER  
BIRSA PROJECT C.C. D

सोमित्र सिंह  
SOMITRA SINGH  
महाप्रबंधक/विभागाध्यक्ष(वन)  
GM/HOD(Forest)  
CCL Ranchi  
By, GM/HOD (Env. & Forest)  
C.C.L., Ranchi



trains. Shunt Signals are also proposed for shunting operation. Individual Starters are proposed at all the R & D lines including wharf wall platform loading line. Moreover, Shunt Signal is also proposed for the Pre loading & Post loading lines for shunting movements.

### 3.3 Telecommunication

3.3.1 Point to point communication facilities are proposed for smooth operation of train working between

- i) Patratu East Central Cabin & North Urimari Coal Loading yard EI Cabin.

Moreover, Section control phone will be provided at North Urimari Coal Loading yard Elcabin and Hand held Walkie-Talkie sets will also be provided for effective and reliable communication.

### 3.4 System of Working

- i) Trains will work on Absolute Block System between Patratu East Central Cabin and North Urimari Coal Loading yard cabin with UFSBI and Block Panel.

### 3.5 Cost Estimate

3.5.1 The detailed cost estimate for the Signal & Telecommunication works has been worked out to Rs.1451.67lakhs which is summarized below and detailed are placed at Annex -8.2.

Sl. No	Works involved	Total
1.	Addition / alteration of Patratu East Central Cabin	Rs.186.00 lakh
2.	Provision of EI Cabin at North Urimari Coal Loading yard.	Rs.1255.67lakh
3	Other S&T works in connection with Electrification	30.00 lakh
Grand Total:		Rs.1451.67lakh

### 3.6 Signalling Plan

3.6.1 A Schematic Plan for the proposed Signalling arrangements is placed at Annex-3.1. vide Drawing No. RITES/KOL/CCL/North Urimari/S&T-150/15 August' 2015.

**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

**Dy.GM / PO**  
Birsa Project

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
रूप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi

Page 32 of 60

**सुदीप महाप्रबंधक / विभागध्यक्ष (वन)**  
**DY. GM/HOD(Forest)**  
CCL Ranchi



CHAPTER-IV

Electrical Engineering

4.0 Introduction

- 4.0.1 Central Coalfield Limited (CCL) have planned to augment evacuation of coal under North Urimari OCP from 3 MTPA initially to a peak level of 10 MTPA progressively and transport them to North Indian Power houses by train, after loading through SILO, for which a rail connectivity between the pit head and North road of P-D line connecting Patratu station are proposed with following rail infrastructures:

A single lead line taking off from Northline at Ch.3.040 m in reference to Patratu station.

**I. Manual Loading Yard**


- (a) A loading loop with loading platform of 650 m x 30 m.
- (b) A brake van reversal line.

**II. SILO Loading Yard**

- (a) Lead line cum pre loading line.
- (b) Second Pre loading line taking off lead line
- (c) 2 nos of buffer ended post loading lines.
- (d) 2 nos of Engine/Brake van reversal/load dispatch loop line avoiding SILO
- (e) Associate cross-overs (4 nos)

4.1 Profile of the section

- 4.1.1 The proposed section of about 7.75 RKM (13.5 TKM approximately) is mostly laid in straight excepting for a stretch of about 2.5 TKMs which is proposed to be laid in curves of radius ranging from 218 m to 583 m.
- 4.1.2 Heavy filling/cutting is involved. Maximum filling is around 27 m and that of cutting is around 25 m.
- 4.1.3 A number of major bridges including ROB is proposed. A FOB and an overhead pipe line are also available on the section.
- 4.1.4 Speed of 50 kmph is considered for the proposed section. Siding shall operate at a restricted speed of 25 kmph. Loading shall be done at a speed of 1 kmph to synchronize

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण) / विभागाध्यक्ष (वन)  
सी० सी० एल०, सी० सी० एल०, सी० सी० एल०  
Dy. GM/HOD (Env. & Forest)  
Dy. GM/HOD (Forest)  
C.C.L., Ranchi



with the rate of discharge of SILO. Loaded rake shall negotiate the weigh bridge at a maximum speed of 15 kmph.

- 4.1.5 Wind pressure of  $112.5 \text{ kg/m}^2$  has been considered for the section provisionally.

Part-A: Traction Distribution

4.2 Mode of Traction

- 4.2.1 The section Barkakana – Barwardih and adjoining sections are already electrified.

- 4.2.2 It is imperative that the proposed siding connecting Patratu gets electrified to maintain uniformity of traction.

4.3 Scope of wiring

- 4.3.1 All the lines proposed under this scheme shall be wired in full excepting SILO zone which is proposed to be left unwired subject to approval of Railway.

- 4.3.2 The North line between km 0/329 from CSB Patratu to Km 3.04 is disused now and is proposed to be renovated to connect the proposed siding and therefore need to be electrified.

- 4.3.2.1 North line is presently wired at Damodar end up to traction mast no.0/9.

- 4.3.3 The existing pre-weighment line between Km 0/101 from CSB Patratu to Km 1/216 connecting wired North empty receiving lines & North line is also proposed to be wired.

- 4.3.4 In addition to it, modification/dismantling at wired necks are also involved. Total TKM to be wired including feeder line and modification/dismantling works sums up to about 19 km.

4.4 Description of OHE


- 4.4.1 Conventional simple all copper regulated OHE of 600A current carrying capacity matching with the OHE available on connected section shall be provided.



- 4.4.2 Standard masts with minimum implantation of 2.8 m shall be provided. Long creepage insulator of 1050 mm CD is proposed. Modified 3:1 ratio regulating equipment with modified anti-falling arrangement shall be adopted.



- 4.4.3 At critical locations, TTC/Portals with implantation as recommended by Railway Board vide letter no.2006/RE/161/1 Pt.III dated 03.11.2010 shall be followed.
- 4.4.4 Standard foundations suiting to bearing pressure of the soil and loading of the location shall be adopted.
- 4.4.5 Insulated catenary wire under FOB/ROB with continuous protective screen shall be provided. Anchoring arrangement shall be done with Dwarf mast.
- 4.4.6 Copper feeder (150 sq mm) & Jumper wire (160 sq mm) shall be used. The feeder shall be provided on separate masts.
- 4.5 Power supply arrangement
- 4.5.1 The siding is proposed to be fed from Ray TSS having 2 x 21.6/30.4 MVA transformers. The TSS is presently recording a demand of about 20 MVA. No augmentation of this TSS is proposed for the present considering trend in growth of traffic.
- 4.5.2 The traffic when materializes will move through various TSSs/FPs en-route to destinations. Impact on power supply arrangement due to additional traffic as projected has not been studied for other TSSs/FPs. Concerned Railway may like to examine implications keeping total power supply scenario in view.
- 4.6 Isolation arrangement
- 4.6.1 It is proposed to isolate the siding through circuit breaker to be installed at existing Patratu SSP/SP by extension & relocation of Bridging Interrupter.
- 4.6.1.1 The circuit breaker shall have double pole isolator with a normally open single pole bi-pass isolator. The control cubicle is also proposed to be extended at Patratu station end.
- 4.6.2 A single interrupter for isolation of pre loading and post loading lines under SILO is also proposed at siding yard. The Interrupter shall feed 4 nos of motorized isolators to control feed to pre & post loading lines. These isolators are proposed to be controlled by SILO operator, subject to approval of Railway.

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh** Page 35 of 60  
उप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi  
  
**DY. GM/HOD (Forest)**  
CCL Ranchi



4.6.3 The location of siding switching post is provisional and shall be decided with approval of Railway.

#### 4.7 SCADA System

4.7.1 With provision of circuit breaker, additional RTU shall be installed at extended control cubicle under Patratu SSP/SP.

4.7.1.1 RTU shall be provided for the siding switching posts also.

4.7.2 The proposed RTUs shall be compatible with the system available under RCC/Barkakana.

4.7.3 Necessary modification to RCC/Barkakana shall be done for control of additional RTUs.

#### 4.8 Sectioning arrangement

4.8.1 Section insulator with/without Isolator shall be provided at suitable location for isolation of the section.

4.8.2 It is considered that manual/pay loaders shall be used for loading of coal from loading platform. Section Insulator type short neutral section shall be provided at either end of platform which shall be equipped with Double Pole Isolator with earthing heel at one end and single pole isolator with earthing heel at other end.

4.8.3 Necessary changes in sectioning diagram/provision of sectioning diagram due to introduction of siding shall be done.

4.8.4 Wiring cum tentative power supply diagram is placed at annex 4.1.

#### 4.9 Modification/Dismantling works

4.9.1 Marginal modification/dismantling works at wired necks are involved.

4.9.2 Modification/Dismantling of Patratu SSP/SP bus bar and feeder run connecting BM710 is proposed.

#### 4.10 Details of SILO

4.10.1 No details on SILO to be installed under this siding has been furnished by CCL.



4.10.2 CMPDI, the Design wing of CIL has so far approved the following type of chutes:

- (i) Swing chute (ii) Traverse cum Telescopic chute

4.10.3 At the meeting held on 01.12.2012 between Director (P+D)/CMPDI/Ranchi & GM (Projects)/Kolkata it was suggested to adopt one number of Telescopic chute on each line, in lieu of double chute on single line.

4.10.4 In terms of ESP, a 20 m diameter SILO Tower covering 2 tracks with a spacing of 9 m is proposed.

4.10.5 It is noted that CMPDI is currently approving Traverse cum Telescopic chutes. One such scheme is under construction at Lingraj siding of MCL.

4.10.5.1 Following basic details on Lingaraj siding is noted.

Sl. No.	Particulars	Dimensions/Units
1	SILO Tower Type	Circular type
2	Type of Chute	Traverse-cum-Telescopic
3	Bottom most height of telescopic chute under discharge condition (from Rail Top Level)	3.47 m
4	Height of Chute from Rail Level under parking mode	4.15 m
5	Bottom most height of horizontal Rail provided for traversing of Chute (from Rail level)	6.232 m
6	Horizontal traversing of Chute for parking (from center line of track)	3.50m (across track)
7	Dimension of discharge Chute (inner)	1.625 m x 1.625 m
8	Overall dimension of discharge chute including hydraulics etc.	2.05 m
9	Distance from face of operator room to centre line of track	3.15 m
10	Horizontal opening at entry and exit from center line of track	3.357 m
11	Vertical clearance at entry and exit from Rail top.	12.00 m

4.10.6 In addition to above data, following details are also noted:

- I The maintenance platform and operator's room are in juxta-position.
- II The chutes will be away from track (in parking mode) normally and will come over the track during loading.
- III Chute on completion of loading shall move & be raised by application of telescopic system before approaching maintenance platform.

**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

**सौमित्र सिंह**  
**Soumitra Singh**  
Dy. GM/PO  
Birma Project  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi



IV Selection of Chute between working and standby mode is left to the discretion of operator.

4.10.7 It is considered that similar type of SILO will be installed at this siding.

4.11 Arrangement of OHE inside SILO Tower –Developments

4.11.1 Railway Board vide letter No.2006/Elect (G)/170/2 dated 08.12.2008 have recommended adoption of the following systems for overhead loading:

- (I) Keeping loading zone unwired as has been done under Munugudu siding under S.C. Railway.
- (II) Excess staggering of contact wire with reduction in size of discharge chute duly maintaining safe clearance between chute & contact wire, as adopted for Rajarappa Siding under S.E. Railway.
- (III) Adoption of Swiveling OHE as provided under ballast siding at Obaigullagunj under West Central Railway

4.11.2 Single chute with overall dimension of 2.05 m as assumed for this siding is ideal for adoption of unwired zone underneath SILO as recommended under item (i) above provided that E.C. Railway agree to the proposal of pulling the rake with lowering and raising the panto at preset points.

4.11.3 With reduction in chute size, as proposed under item (ii) above, comparatively longer period will be required for loading a rake and therefore benefit of rapid loading system cannot be reaped and is not, therefore, recommended for adoption under SILO loading system.

4.11.4 The Swing OHE proposed under item (iii) is available under Obaidullagunj & comprises of HDGC contact wire (107 sq mm) suspended freely from 65 sq mm cadmium Copper Catenary wire through droppers. The OHE is supported from special brackets, swiveling from Masts/supports provided at a maximum interval of 9.5 m. Catenary wire is tensioned & equipped with 120 kg counter weight at one end. First & the last brackets, holding Swing OHE, are connected by SS wire rope which is bind in a drum at both ends of a tension length after passing through pulley. These drums are connected to speed reducer & coupled to 3 phase motors of 5 H.P. having limit switch. All the brackets under swing OHE



are interconnected by conduit pipe. The Swing OHE shall remain along the axis of the track normally and will get shifted when necessary by operation of motor.

4.11.4.1 However, following demerits were noted:

- a) Frictional loss is high
- b) Sag of contact wire between droppers is high
- c) Cable get punctured often
- d) Distance traversed by Swing OHE is about 0.8 m from centre line of track with a deflection of 70°.

4.11.4.2 The system cannot therefore operate as such for chute with overall dimension of 2.05 m for which the design is to be suitably modified such that OHE deflects more than 1.025 m. Preliminary discussion with manufacturers suggests that change in dimension of chute as required for adoption of existing swing OHE with 70° deflection will have cascading effect on entire SILO design and rate of discharge.

4.11.4.3 As such, adoption of unwired zone of about 6.5 m with raising/lowering of panto is recommended out of the three schemes approved by Railway Board.

4.11.4.3.1 In principle approval to adoption of unwired zone underneath the SILO has been accorded by South Eastern & South East Central Railways. East Coast Railway is implementing the same at Balram siding under Mahanadi Coalfields Limited (MCL).

4.12 System of working & Sequences for loading a rake with unwired zone below SILO

4.12.1 Depending on availability of type of Loco, Railway may offer single loco or multiple loco keeping sectional characteristics in view. The electric loco shall pull the empty rake for loading with single or multiple loco as per sequence detailed below based on number of loco hauling the rake.

4.12.2 Condition-I: Empty rake hauled by single electric loco

4.12.2.1 Following sequences shall be followed for rakes hauled by single electric loco:

- (a) Empty rake hauled by an electric loco with its rear panto in raised condition shall move to siding at permissible speed after ensuring that



- i) Traction Power is available on nominated pre-loading & post loading line, and
- ii) Caution notice has been served by control station to electric loco Driver of the rake for observance of various cautions en-route;
- (b) The driver of the rake shall proceed on signal over siding at a permissible speed for approaching the SILO.
- (c) The electric loco hauled rake with its rear panto in raised condition shall then stop at 'STOP' board and wait for signal/audible communication from SILO operator.
- (d) The SILO Operator after ascertaining the following shall make the signal OFF and advise loco driver through PA System to 'proceed' towards SILO:
  - (i) The SILO is ready for discharge;
  - (ii) The chute is in parking condition & locked;
  - (iii) Stand by supply powering the hydraulics for controlling the chute is in position;
  - (iv) The flow control gate of chute is in locked condition;
  - (v) Digital inputs to SILO operator to indicating availability of traction supply both at entry & exit.
- (e) The electric loco with its rear panto in raised condition waiting at STOP board on receipt of proceed communication from SILO Operator shall then proceed towards SILO at a reasonable speed (say 5 kmph) to stop at 'Electric engine Stop Board' ahead.
- (f) Electric loco Driver after crossing 'stop board' shall pass through a retro reflect type Caution Board enroute drawing attention of the loco driver that he is 'approaching unwired zone'.
- (g) A pre-recorded speech cautioning the driver that he is 'approaching the unwired zone' under SILO shall also be played twice at an interval of 1 minute from the time the signal is made OFF.
- (h) Lowering of panto shall be done after stopping the loco at Electric Engine Stop board followed by Raising of front panto after ensuring that the rear panto has been lowered.
- (i) Electric loco waiting at electric engine stop board after raising front panto shall wait for final advise from the operator after sounding a short whistle once - indicating that the driver is ready for onward movement.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

Dy. GM / PO  
Birsa Project

सौमित्र सिंह  
**SOUMITRA SINGH** / विभागाध्यक्ष(वन)  
उप महाप्रबंधक/विभागाध्यक्ष वन  
सीओ सीओ एलओ, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi



- (j) The SILO Operator, on hearing audible signal from the driver of the loco waiting at electric engine stop board shall once again ensure that the SILO is ready for discharge and that the proposed isolator at exit end is in closed condition who shall then instruct the loco driver to proceed for loading by an audible communication.
- (k) The loco driver shall then proceed at a speed synchronizing with the speed of discharge (about 1 kmph) till the entire rake is loaded, keeping front panto of the loco in raised condition. A speed limit board shall be provided at suitable point ahead of electric engine stop board.
- (l) The driver shall pick up speed once it crosses the Caution board marked T/G provided at suitable point covering full length rake.
- (m) The electric loco driver on completion of loading shall detach the loco from the rake and proceed at permissible speed over bypass line without change in position of panto. The loco crew shall however change cab for reverse movement.

#### 4.12.2.2 Condition-II: Multiple Loco

In case of multiple electric loco unit, the loco will follow all stages as followed by a single loco under condition-I, the front loco shall be operative and the rear loco shall remain dummy throughout till it reaches the terminal end of post loading line. The crew shall then change cab & also raise rear panto of front loco (in the direction of movement) for onward movement in addition to rear panto of rear loco in raised condition.

#### 4.12.2.3 Condition-III: Alternative Arrangement for multiple loco

4.12.2.3.1 Under alternative arrangement following sequences are proposed:

- (a) The multiple electric loco with its rear panto of front loco in raised condition (other pantos in locked down condition) hauling empty rake, on arrival at stop board shall stop and lower the rear panto of front loco followed by raising of rear panto of rear loco.
- (b) The electric loco driver on receipt of signal/audible instruction from the SILO operator shall proceed forward from stop board to reach nominated ELECTRIC ENGINE. Stop Board at a speed of 5 kmph or so.

  
PROJECT OFFICER  
BIRSA PROJECT C.C.L.

  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन)  
सी० सी० एल०, राँची  
Dy. GM/PO  
Birsa Project  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi  
M/HOD (Forest)  
CCL Ranchi



- (c) The loco driver on arrival at nominated ELECTRIC ENGINE STOP Board shall stop and lower rear panto of rear loco and raise front panto of front loco and wait for further advice from SILO operator.
- (d) Electric Loco Driver on receipt of final advice from SILO operator shall then 'proceed' at restricted speed of about 1 kmph synchronizing with the rate of discharge of SILO till it reaches the nominated STOP board ahead of T/G board with front Panto of front loco in raised condition.
- (e) The loco on arrival at STOP Board shall detach it from the loaded rake & move to bypass Line to get attached to loaded rake on post loading line with front panto of rear loco in raised position.
- (f) The crew of the loco on arrival at post loading line shall change cab and raise rear panto of front loco also (in the direction of movement) and move forward.

#### 4.13 Safety Features

##### 4.13.1 The following safety features are proposed:

- (i) Chute shall normally be in parking position (raised condition) & locked which shall not approach the track 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 position horizontally/vertically, an audible alarm shall be sounded to alert the operator when no 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 standby 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 (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

**PROJECT OFFICER**  
BIRSA PROJECT C. G. U

**सौमित्र सिंह** महाप्रबंधक / विभागध्यक्ष (वन)  
Dy. GM / PO **SOUMITRA SINGH** GM/HOD (Forest)  
Birsa Project महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण) L. Ranchi  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C. G. U, Ranchi



is in OFF position only when Isolators are in closed position & the chute is in parking & raised mode. Another crew address system shall be provided at exit end also to advice proceed command to driver for movement toward 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 matches with the variable top height of BOBRN/BOX N wagons from tail level.

#### 4.14 Provision of Caution Boards

4.14.1. In addition to above safety features following Caution Boards are proposed to be provided.

Type of Board			
Boards with Florescent Paint	Stop Board,	Speed limiting Board,	Termination of speed restriction Board
Retro Reflect type Boards	Attention to Driver		Lower Panto
Illuminated type Boards	Electric Engine Stop Board		Raise Panto board

4.14.

- 2 Location of 'Electric Engine Stop' and 'Raise panto' boards being different for different types/combination of locos, illuminated boards are proposed to avoid confusion.

#### 4.15 Other constraints

4.15.1 The following points need also to be addressed:

- (i) Chute under discharge mode shall be at a height of 0.25 m from the top of BOX 'N' wagon, Chances of hitting/damaging of wagon floor at the initial stage of loading is not rules out.
- (ii) Electric loco is not equipped with speed control (creep control) and provision of the same on all electric loco cannot be ensured by Railway and therefore constant uniform speed as required for loading SILO may not be possible to be maintained by the loco pilot at all times.
- (iii) Depending on availability of type of electric loco, Single/Multiple/consist loco shall be deployed for handling rakes.

**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

**Dy.GM/PO**  
Birsa Project

सौमित्र सिंह Page 43 of 60  
**Soumitra Singh**

उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एलओ सीओ  
**Dy. GM/HOD (Eny. & Forest)**  
C.C.L., Ranchi  
CCO Ranchi



4.16 Recommendations to obviate constraints

4.16.1 Following recommendations are therefore made keeping constraints in view.

4.16.2 CCL & CMPDI to examine feasibility of lowering down the chute further to minimize hitting/damaging of wagon floor.

4.16.3 Railway is also requested to organize training to goods drivers periodically for improvement of individual skill in operating electric loco at a uniform speed of around 1kmph till loading of the rake is complete.

4.17 Sliding OHE - A concept

4.17.1 In case Railway are not agreeable for adoption of unwired zone underneath the SILO, provision of sliding OHE may be a possible solution.

4.17.2 Under this scheme, short lengths of contact wire supported from Knuckle tube clamps mounted on a tube & placed at interval & is proposed which in turn is supported from a cross track members (2 nos) formed out of conventional cantilever (modified). Length of each contact bit is 5.4 m tentatively.

4.17.2.1 The two adjoining contact wires shall be separated by 400 mm to 500 mm (i.e. 200/250mm on either side of centre line and shall overlap between themselves at each end over a length of 500 mm.

4.17.2.2 The contact bits shall be provided for a length of about 25 m on each side of chute to meet the terminated conventional OHE at either end of SILO.

4.17.2.3 All bits shall be of rigid type OHE and remain fixed in position except the bit (s) under chute(s) which will slide backward & forward over the cantilever as necessary by operation of motor or hydraulic. This can be used for both single and double chute.

4.17.2.3.1 In case of multiple chute, one fixed OHE shall be changed to sliding OHE to move backward or forward and overall length is increased suitably.

4.17.2.3.2 The conventional OHE & associate fixed OHE shall be connected together through isolator & jumper as required. The sliding OHE shall remain away from centre line of

PROJECT OFFICER  
BIRSA PROJECT C.C.L.

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
Birma Project सीओ सीओ एलओ, रॉन्ची  
Dy. GM/HOD (Env. & Forest)  
C.C.L. Ranchi  
महाप्रबंधक/विभागाध्यक्ष (वन)  
GM/HOD(Forest)  
CCL Ranchi



track normally excepting for passage of loco. The sliding OHE shall be fed through separate single pole isolator with earthing heel. The OHE inside SILO zone including sliding OHE shall remain dead all the time excepting for passage of loco. Under double chute, a separate bit of fixed OHE is proposed between two chutes which will be fed through independent isolator. The edge of live contact wire shall maintain a clearance of about 800 mm from the edge of the chute.

4.17.2.4 A gap of 9.0 m between center line of chutes is proposed.

4.17.2.5 In the instant scheme, raising/lowering of panto is avoided. However, use of front panto during loading is recommended.

4.17.2.6 A sketch elaborating proposed disposition of fixed/sliding bets is enclosed under sketch no.21/15 (sheet-2).

#### 4.18 Recommendation-Interim phase

4.18.1 Since concept to implementation of above scheme with approval of railway will take considerable time, it is suggested that OHE be terminated at either end short of SILO Tower for the present.

4.18.1.1 In such situation, electric loco shall stop at pre-set entry point & thereafter lower the pantograph(s). The electric loco with all pantos in lowered down condition along with the empty rake shall then be hauled by any one of the following alternatives upto a pre-set exit point ahead of SILO Tower:

- a) Power winch  
Or
- b) Side arm charger\
- Or
- c) Diesel loco

4.18.1.2 The electric loco on arrival at pre-set exit point at other end shall raise pantograph to proceed forward for loading of the rake.

4.18.1.3 It is recommended that any one of above options be retained even after finalization of OHE designs under SILO to meet exigency.

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ एनओ, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi

PROJECT OFFICER  
BIRSA PROJECT C. C. L.

Dy. GM / PO  
Birsa Project

उप महाप्रबंधक / विभागाध्यक्ष (वन)  
DY. GM/HOD (Forest)  
CCL Ranchi



4.19 Operation of Electric loco under SILO for sliding OHE

4.19.1 Operation of electric loco shall follow same safety features and sequences as mentioned under para 4.12 & 4.13. In addition, following stipulations are also proposed:

4.19.1.1 The SILO operator shall first ensure the following before giving final command.


- 1) 25 KV supply to sliding OHE underneath has been made OFF;
- 2) Sliding OHE has been earthed;
- 3) Sliding OHE has been shifted fully & chute zone is completely cleared for traversing of chute.


4.20 Safety precautions

4.20.1 The following safety features are also proposed:

- (I) Traverse-cum-Telescopic chutes shall normally be in the parking position and locked. Any one of the two chutes shall be operative at a time during loading of a rake and will approach center line of track only when the sliding OHE has shifted at desired position after the OHE is switched off and earthed.
- (II) Arrangement to be made to ensure that chutes are in retracted position, even if other associate equipments connected with chute have failed.
- (III) A Sensor to monitor across track movement of traverse-cum-telescopic chute & sliding OHE in both directions to be provided and in case of failure to attain desired position by any one system, an audible alarm shall be sounded to alert the operator who shall ensure that the Sliding OHE shall not be put back or traverse cum Telescopic chute shall remain in parking mode till status of any one of the two changes.
- (IV) Hydraulic controlling movement of sliding OHE shall be operative when OHE is not energized.
- (V) Necessary interlocks to be provided to ensure that in case the operator commands for movement of traverse-cum-Telescopic chute in parking position with Sliding OHE over the track, the Traverse-cum-Telescopic chute shall not move.
- (VI) Insulated paint may be provided all round the telescopic chute.
- (VII) The isolators (motorized) at either end of sliding OHE shall be in open condition with earth switch in closed condition during loading.

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**

उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L., Ranchi



(VIII) A signal & a crew address system shall be provided at entry point which will be interlocked with the status of isolators on both sides. Another crew address system shall be provided at exit end to advise the loco crew as required.

4.20.2 It is also suggested that following digital inputs be made available to SILO operator.

A	• 25 KV incoming supply ON	• 25 KV outgoing supply ON
	• 25 KV incoming supply OFF	• 25 KV outgoing supply OFF
B	• Isolator (motorized) at entry ON	• Isolator (motorized) at exit ON
	• Isolator (motorized) at entry OFF	• Isolator (motorized) at exit OFF
C	• Sliding OHE is on track	• Sliding OHE is away from track
D	• Earthing Isolator ON	• Earthing Isolator OFF

4.20.3 However, provision of safety & precautionary systems as mentioned above and under para 4.13 is indicative and to be provided as per advise of Railway.

4.20.4 CCL to ensure that system parameters, safety measures & protection for safe working shall be done to the full satisfaction of the Railway.

4.20.5 It is left to Railway to decide which of the following two scheme (i) unwired zone or (ii) Sliding OHE is acceptable.

#### 4.21 Conveyor

4.21.1 Details of the conveyor is not available. It is considered that the conveyor connecting SILO will cross the proposed wired tracks maintaining adequate clearance. It is, however, recommended from the point of safety that the launching of girder for conveyors crossing the track be done duly ensuring safety.

4.21.2 The following stipulations are however recommended:

- The length of conveyor crossing the track proposed to be electrified 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 2.0 m from either side.
- There shall not be any leaf or sliding type window on the area crossing electrified track.
- Conveyor shall be properly earthed.

**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

**Dy.GM / PO**  
Birsa Project

**सौमित्र सिंह**  
**SOUMITRA SINGH**  
उप महाप्रबंधक (विद्युत एवं पर्यावरण)  
सीओ एलओ, रॉन्ची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L. Ranchi  
उप महाप्रबंधक / विनायादप्रसाद (बन)  
**DY. GM/HOD(Forest)**  
CCL Ranchi



- d) The conveyor including its supports shall maintain adequate Horizontal & Vertical clearance from live OHE underneath.

#### 4.22 Operation of Isolator

4.22.1 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. The proposal may be examined by Railway.

#### 4.23 Training of Siding Personnel & Railway Crew

4.23.1 Railway may like to examine the proposal of imparting working knowledge for operation of isolators by authorized siding personnel.

4.23.2 Railway is also requested to organize training to the electric Loco Drivers periodically for improvement of individual skill in operating electric loco at a uniform speed of 1 kmph.

#### 4.24 Weigh Bridge

4.24.1 Glued joint at either end of weigh bridge is provided under civil estimate.

4.24.2 Jumper bi-passing the weigh bridge is proposed to ensure continuity of return path.

4.24.3 Maintenance free copper clad steel electrodes using graphite components and non-corrosive salt shall be provided for earthing adhering to latest Bonding & Earthing Code.

#### 4.25 Level Crossing

4.25.1 One unmanned level crossing is proposed over the alignment. The same shall be equipped with level crossing height gauge with Caution Board.

#### 4.26 ROB/FOB/Major bridge/overhead pipe line

4.26.1 Insulated catenary wire shall be provided underneath FOB & ROB.

4.26.1.1 The FOB is maintaining a height of 6.5 m from existing rail level, which will increase to 7.3 m after construction of siding line.

4.26.1.2 The ROB shall maintain adequate clearance from live OHE underneath.

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi

PROJECT OFFICER  
BIRSA PROJECT G.O. M

Dy. GM / PO  
Birsa Project

उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
Dy. GM/HOD (Forest)  
CCL Ranchi



4.26.1.3 FOB/ROBs shall have protective screen throughout the length.

4.26.1.4 Through bridge of 2 x 30.5 m+5x45.7 m is proposed over river Damodar. Holding down bolts/foundation for supporting traction structures shall be provided on either side of each of the piers.

4.27 Tree cutting/Trimming

4.27.1 Tree cutting/Trimming shall be done to maintain adequate clearance from live OHE.

4.28 Modification of Power Line/DOT Line

4.28.1 A number of LT/11 KV/33 KV/132 KV/400 KV lines are crossing/running along the alignment. Modifications of these crossings are proposed adhering to Board's letter no. 2011/CEDO/SD/IRSOD/Elect/02 dated 08.11.2012.

4.28.2 Voltage wise no of crossings are tabulated below:

LT	11 KV	400 KV
4	14	1

4.28.2.1 11 KV & 33 KV lines are also running parallel over different stretches as detailed below:

11 KV	33 KV
3 Nos	1 Nos

4.28.2.2 Necessary modification of the same is proposed to avoid induction effect.

4.28.3 Detail List of crossings & modification proposed is furnished under para 4.33.

4.28.4 Modification of crossings shall be done as per drawings to be approved by Railway.

4.28.5 There is no DOT line crossing the alignment or running along the proposed track.

#### Part B: General Services

4.29 Electrification of Service buildings

4.29.1 One In-plant Cabin has been proposed. In addition to it, crew rest room, console room for weighbridge & FOIS & TMS room are also proposed.

PROJECT OFFICER  
BIRSA PROJECT C. C. U

Dy.GM/PO  
Birsa Project

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक (वन एवं पर्यावरण)  
सी० सी० एल०, सी०  
Dy. GM/HOD (Env. & Forest)  
CCL Ranchi

उप महाप्रबंधक / विभागाध्यक्ष (वन)  
DY. GM/HOD (Forest)  
CCL Ranchi



4.29.2 All these establishments shall be electrified and shall have air conditioners for proper functioning of equipments in extremely dusty environment.

4.30 Illumination of loading platform, Pathway & yard.

4.30.1 A loading platform of 650 m x 30 m has been proposed for loading of coal.

4.30.2 Both pre-loading and post-loading lines connecting SILO and the loading platform are proposed to be illuminated.

4.30.3 Pathway for GDR check is also proposed to be illuminated to facilitate check by Guard & Driver.

4.30.4 The section being heavily polluted & often foggy, adoption of SON light is proposed for illumination of these establishments in lieu of eco-friendly and cost effective LEDs.

4.31 Provision of DG set

4.31.1 A 10 KVA DG set with converter & AMF panel is proposed to feed the console room in the event of outage of supply.

4.31.2 A DG set of 125 KVA with AMF panel is also proposed to maintain feed to essential services in the event of outage of supply.

4.31.3 Electrification of DG rooms has also been considered.

4.32 Power supply (General) arrangement

4.32.1 A sub-station is available at terminal end of the siding. It is proposed to avail supply from the said sub-station. Anticipated requirement is of the order of 200 KW. CCL to provide LT supply at a switch room to be provided at suitable location for incoming supply & distribution of outgoing supply. Electrification of switch room has been considered.

4.32.2 CCL to examine if capacity augmentation of the sub-station is necessary to meet the demand as projected. No provision for the same has been accounted.

  
PROJECT OFFICER  
BIRSA PROJECT G. E. M.

Dy. GM / PO  
Birsa Project

  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (सू. एवं पर्याव.)  
सी० सी० एल० रौंची  
Dy. GM/HOD (Env. & Forest)  
उप महाप्रबंधक / विभागाध्यक्ष (वन),  
Dy. GM/HOD (Forest)  
CCL Ranchi



#### 4.33 Modification of overhead Power lines

4.33.1 The proposed alignment is crossing following Power lines as per details given below

Sl.No.	Chainage	Voltage class (KV)	Modification proposed
1	0/957	11	To be cabled
2	1/069.35	11	To be cabled
3	1/093.65	11	To be cabled
4	1/234	11	To be cabled
5	1/459	11	To be cabled
6	1/810	11	To be cabled
7	1/845	LT	To be cabled
8	1/868	11	To be cabled
9	2/760	11	To be cabled
10	4/311.5	11	To be cabled
11	4/319.35	11	To be cabled
12	4/472	LT	To be cabled
13	4/607	400	To be raised
14	4/685	11	Proposed to be terminated short of track
15	4/791.5	11	To be cabled
16	4/855.35	LT	To be cabled
17	4/898.06	11	To be cabled
18	5/284.91	LT	To be cabled
19	6/867.89	11	To be cabled
20	7/563.30	11	To be cabled

4.32.2 One 11 KV line is running along the track close to loading platform for a distance of about 450 m maintaining a clearance of about 48 m. No modification is proposed for this line.

4.33.2.1 11 KV lines are running parallel

- (a) between chainage 2/100 to 2/600 maintaining a clearance of about 12.5 m,
- (b) between chainage 4/898 & 6/880 maintaining a clearance of about 32 m .

4.33.2.2 These lines are also connecting the crossing alignment also at Ch.2/467 & atCh.5/995.

4.33.3 11 kv line is running parallel between chainages 6267 & 7340. Dismantling of the same is suggested or else cabling to be done in view of proximity of wired track.

4.33.4 33 kv overhead line near Ch.11 10 m & Ch.2133 m shall maintain a horizontal clearance of about 18 m & is proposed to be replaced by cable.

**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

**Dy.GM / PO**  
Birsa Project

**सौमित्र सिंह**  
**Soumitra Singh**  
Page 60  
उप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल० सी०  
**Dy. GM/HOD (Env. & Forest)**  
**C.C.L. Ranchi**  
**GM/HOD (Forest)**  
CCL Ranchi



4.33.5 The 400 KV line towers maintain adequate horizontal clearance. Height of Tower is 21.25 m from ground level which will reduce to about 14 m with provision of alignment. Raising of conductor & raising / relocation of tower is suggested in terms of latest crossing regulation.

4.33.6 In case any other crossing comes up by the time the scheme materializes & does not conform to crossing regulations, cost of modification of the same shall also be borne by the siding owner.

#### 4.34 Illumination of SILO Tower

4.34.1 It is considered that illumination of SILO Tower shall be carried out by the siding owner separately.

4.34.2 The lights shall be of outdoor type and mounted at such height that the same maintains a clearance of 2.0 m (minimum).

#### 4.35 Accommodation for Railway staff

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


4.35.2 The scale of electrical fittings shall not be less than the yardstick laid down by Railway for type of quarters where railway staff shall be housed.


#### Part C: General

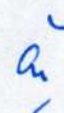
#### 4.36 Agency for execution of work

4.36.1 Normally such works are carried out by Railway on Deposit terms. Siding owner can as well carry out such works through approved Consultant with approval of Railway. It appears from the observations made by Sr. DEE/TRD/Dhanbad vide letter No.ELD/367/Siding/DPR/RITES/North Urmari at 22.12.2014 that the work is to be carried out by siding owner. The estimate has accordingly been made.

4.36.2 The work shall be carried out duly abiding the following:

  
PROJECT OFFICER  
BIRSA PROJECT C.C. M

  
Dy. GM / PO  
Birsa Project

  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्याव)  
Page 52 of 60  
सीओ सीओ एलओ, राँची  
Dy. GM/HOD (Env. & Forest)  
CCL, Ranchi  
उप महाप्रबंधक/विभागाध्यक्ष(ब-1);  
DY. GM/HOD(Forest)  
CCL Ranchi




1. The work shall be carried out based on approved sectioning diagram/OHE layout plan/Location of SSP/GAD & other drawings associated with provision of SSP. The work shall include modification/dismantling in Railway yard also.
2. All work including Bonding & earthing work shall be carried out as per RDSO/Railway Board's latest directives. Separate earth shall be provided at level crossing.
3. All electrification materials shall be procured from the regular sources approved by CORE/RDSO.
4. SCADA work shall be executed through the party whose system is in operation under Barkakana RCC or by the contractor engaged for maintenance of SCADA system under said RCC. The works shall be carried out under the supervision of Railway.
5. Electrification of service buildings/other installations under general services shall be done as per latest IEE rules/Building Code/ECBC 2007/NEC.
6. Wherever possible, energy efficient equipment with 3-star & above rating having BEE approval shall be used. All other materials shall be from ISO approved terms.
7. All safety measures as prescribed under latest IEE rules/ACTM/Bonding & Earthing/Code/Railway shall be adhered to.

#### 4.37 Cost of work

- 4.37.1 The estimate has been worked out based on the rates offered by various vendors/Tenderer in the recent past & escalated.
- 4.37.2 Input of Rs.3465.40 Lakhs excluding Departmental & other incidentals is required for works to be carried out by Siding Owner. Overall cost of work including all incidentals stands at Rs.3702.17 lakhs as detailed out under annex 8.1.
- 4.37.3 This also includes services charge and Sachh Bharat charge on Departmental charge.
- 4.37.4 Indicative cost towards hiring of Tower wagon, Traffic/power block charges has been shown. Actual amount as claimed by Railway to be paid.

  
PROJECT OFFICER  
BIRSA PROJECT C.C. B

  
Dy. GM / PO  
Birsa Project

  
सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक (वन एवं पर्यावरण)  
सीओ सीओ एलओ, राँची  
Dy. GM/HOD (Env. & Forest)  
उप महाप्रबंधक (वन एवं पर्यावरण)  
DY. GM/HOD (Forest)  
CCL Ranchi



4.37.5 Token provision towards modification of power lines has been shown. Actual cost on the basis of drawings approved by Railway to be obtained from owner of the line.

4.37.6 Railway shall indicate item wise quantity and source of materials within the amount covered under initial spares, testing & measuring tools, office equipments/furniture, BD transport etc. prior to invitation of tender. Otherwise whole of the amount will be deposited with Railway.

#### 4.38 Schedule of completion

4.38.1 Time frame for completion of electrical works is set as 34 months from the time final peg marks on rail level, TP & SRJs are made available and power blocks are granted and Tower wagons are offered as planned.

4.38.2 Siding owner to ensure that modification to power line is carried out at without hindrance to progress of Civil/Electrical works.

4.38.3 The work may have to be carried out in stages.

#### 4.39 Maintenance of Asset

4.39.1 Railway shall maintain the OHE. Power supply installation etc. in terms of FMPC No.1 dated 30.01.2012.

4.39.2 All general services assets shall be maintained by siding owner.

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

#### 4.40 Compliance of observations

4.40.1 Compliance of observations made by Sr.DEE/TRD/Dhanbad vide letter No. ELD/367/Siding/DPR/IRITES/North Urmari dated 22.12.2014 is appended under Chapter I.

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L., Ranchi  
उप महाप्रबंधक / विभागाध्यक्ष(वन)  
**DY. GM/HOD(Forest)**  
CCL Ranchi



Commercial aspects

5.0 Introduction

- 5.0.1 Central Coalfields Limited (CCL), a subsidiary of Coal India Limited, is working on the plan to open four new mines in the state of Jharkhand with a total production capacity of around 38 million tonne per annum (MTPA) in the current fiscal. The production capacity of North Urimari will be 3.0 MTPA (normative) and 10 MTPA (peak).
- 5.0.2 The policy of 'Engine-on-Load' (EOL) scheme as incorporated in Freight Marketing Circular No. 5 of 2013 dated 07.03.2013 shall be followed. The loading will be done within the specified free time for various types of block rakes which 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

5.1 Weighbridge and TMS Facilities

- 5.1.1 One 120 ton 'Electronic In-Motion Weighbridge' will be provided at Ch.5600 m for weighment of outward coal traffic. The weighbridges should conform to the Schedule of Technical Requirements as per RDSO's specification circulated in June, 2005. The siding owner should arrange calibration, testing & certification from the manufacturer/authorized service provider.
- 5.1.2 The Weighbridge should be linked with FOIS Terminal for which a separate office with necessary furniture will be provided at the cost of siding owner. TMS equipment and hardware peripheral should also be arranged by the siding owner. However, necessary software will be supplied by Railways for issue of computerized Railway Receipt (RR).
- 5.1.3 The commercial formalities for handling coal rakes including manning of Weighbridge 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.

5.2 Pollution Control

- 5.2.1 CCL has to obtain necessary environment clearance from MOEF before commissioning of the loading arrangement at the siding and the status be informed to the Railways.

PROJECT OFFICER  
BIRSA PROJECT & C. L.

Dy. GM / PO  
Birsa Project

सौमित्र सिंह  
SOUMITRA SINGH  
उप महाप्रबंधक/विभाग (वन एवं पर्यावरण)  
सी. एल. रॉची  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi  
Page 55 of 60

उप महाप्रबंधक/विभाग (वन एवं पर्यावरण)  
Dy. GM/HOD (Forest)  
CCL Ranchi



CHAPTER-VI

**Mechanical Engineering**

**6.0 General**

- 6.0.1 Central Coalfields Limited (CCL) has planned to evacuate 7.00 MTPA normative and 10 MTPA (peak) of coal from North Urmari and Birsa coal mines situated at Chandwa district of Jharkhand. It has been planned to develop rail infrastructure by extending the unused Soyals-D siding situated on P-D branch line by development of a rail bridge over river Damodar.
- 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.

  
**PROJECT OFFICER**  
BIRSA PROJECT C.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
Dy. GM/HOD (Env. & Forest)  
C.C.L. Ranchi  
उप महाप्रबंधक / विभागध्यक्ष (वन एवं पर्यावरण)  
**DY. GM/HOD (Forest)**  
CCL Ranchi



CHAPTER - VII

Operation & Maintenance of the Siding

7.0 General

7.0.1 Central Coalfields Limited has planned to develop North Urimari and Birsa Coalmines project with a targeted excavation capacity of 7.0 MTPA normative and 10 MTPA peak. The siding facilities will be developed according to the provisions 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.

7.0.2 It has been proposed to provide One Panel Cabin at the Loading yard for controlling train movements. For smooth operation of this cabin following operating staff including Rest Giver and Leave Reserve may be provided, preferably from retired Railway employees, for round the clock working:

1	Supervisor (Traffic)	1
2	Panel operator including RG & LR	4
3	Operating Assistant including RG & LR	4
Total		9

7.0.3 Civil Engineering maintenance shall be done as per Railway Board's letter No. 96/CE-I/SP/7 dated 05.03.1999 and No. 2012/CE-1/CT/SP/10 dated 16.10.2012. The siding owner should first approach the Railway for siding maintenance at the cost of the party. In case the necessary manpower is not there with the Railways, Siding owner may get the maintenance done by a private consultant / contractor, borne on the approved list of a Railway for siding works.

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

1	S&T Maintainer including LR & RG	2
2	S&T Helper including LR & RG	2
Total		4

7.0.5 General services assets under siding premises shall be maintained by the Siding owner. OHE maintenance cost for the siding and General services assets under Railway premises shall be maintained by Railway.

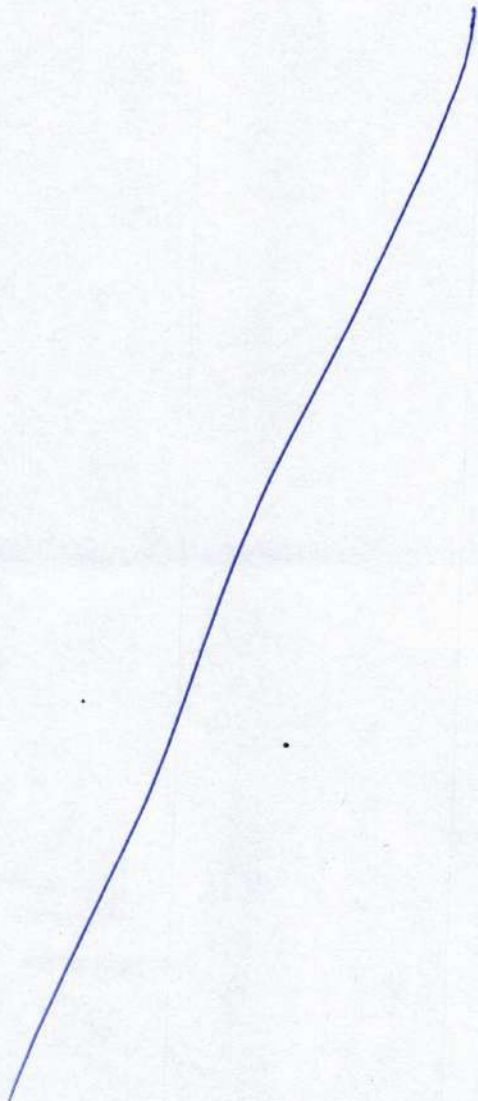
PROJECT OFFICE  
BIRSA PROJECT C.C.L.


Dy. GM / PO  
Birsa Project

सौमित्र सिंह  
SOUMITRA SINGH महाप्रबंधक / विभागाध्यक्ष (वन)  
Dy. GM/HOD (Forest)  
सीओ एनओ. रॉडी  
Dy. GM/HOD (Env. & Forest)  
C.C.L., Ranchi



7.0.6As 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 owing to any derailment or accident occurred due to the negligence of siding owner shall be borne by the siding owner.



  
**PROJECT OFFICER**  
BIRSA PROJECT C. C. L.

  
**Dy. GM/PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्याव)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L., Ranchi



CHAPTER - VIII

Estimated Cost of Railway Infrastructure

8.0 Introduction

8.0.1 Detailed cost estimate has been framed separately for Civil Engineering, Signal & Telecommunication and Electrical Engineering including OHE and general electrification works. The estimates are based on prevailing market prices and quantitative estimates as per Preliminary Engineering survey conducted by RITES.

8.1 Civil Engineering Cost

8.1.1 The cost of Civil Engineering works for proposed rail infrastructure has been computed taking into consideration the present day cost of earthwork, Permanent Way, Track Ballast, Track Fittings, side drain, etc. The estimated cost of Civil Engineering works amounts to Rs.14,358.27 lakh details of which is placed at Annex-8.1.

8.2 Signal & Telecommunication Cost

8.2.1 The detailed cost for provision of 1 EI Cabin and for modification of signalling arrangement of existing Patratu East Central cabin has been estimated at Rs.1,451.67lakh. The details of the cost estimate are placed at Annex-8.2


8.3 Electrical Engineering Cost


8.3.1 The estimated cost for electrification of the proposed new siding including electrification of existing North line between Patratu East Central cabin and the takeoff point has been estimated to Rs.3495.54 lakh which has been detailed as Annex-8.3.

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.19,783.98lakh and is placed at Annex-8.0. The details of the estimated cost of different disciplines are given as under:-

  
**PROJECT OFFICER**  
BIRSA PROJECT G.C.L.

  
**Dy. GM / PO**  
Birsa Project

  
**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सी० सी० एल०, राँची  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L., Ranchi  
Page 59 of 60  
विभागाध्यक्ष (वन)  
**Dy. GM/HOD (Forest)**  
CCL Ranchi



Sl. No.	Works involved	Cost [in lakh of Rs.]
1	Civil Engineering	14,358.27
2	Signal Engineering & Telecommunication	1,451.67
3	Electrical	3,495.54
	<b>Total</b>	<b>19,305.48</b>

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:

SI No	Purpose	Execution by	Charges
1.	Departmental Charges: (Inclusive of cost of tools & plants.	Railways	12½%
		Party	6%
		Approved Consultant	4%
2.	Departmental charges for OHE and S&T works (inclusive of cost of tools & plants and supervision)	Railways	12½%
		Party	6¼%
		Approved Consultant	6¼%
3.	D&G charges: (for work-charged establishments and other establishment supervision)	Railways	As per actuals, if any. [Ref: Para-1829E]
		Party	
		Approved Consultant	

8.4.3 As per Railway Board's letter No. 2012/CE-I/SP/1 dated 17.08.2012 "the charges mentioned in Para 3 of the FM circular No.1 of 2012 are total charges inclusive of survey and final inspection charges" and as per Railway Board's letter No. 2012/CE-I/SP/1 dated 22.06.2012 "these charges shall be collected from the party in stages as mentioned in Engineering Code". The respective para of the code is reiterated below:

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.

**PROJECT OFFICER**  
BIRSA PROJECT G.C. U

**Dy.GM/PO**  
Birsa Project

**सौमित्र सिंह**  
**Soumitra Singh**  
उप महाप्रबंधक/विभागाध्यक्ष (वन एवं पर्यावरण)  
सीओ सीओ  
**Dy. GM/HOD (Env. & Forest)**  
C.C.L Ranchi

**उप महाप्रबंधक / विभागाध्यक्ष (वन)**  
**DY. GM/HOD (Forest)**  
CCL Ranchi