ರೈಲು ಮೂಲಸೌಲಭ್ಯಅಭಿವೃದ್ಧಿ ಕಂಪನಿ (ಕರ್ನಾಟಕ) ನಿಯಮಿತ

रेल इन्फ्रास्ट्रक्चर डेवलपमेंट कंपनी (कर्नाटक) लिमिटेड

Rail Infrastructure Development Company (Karnataka) Limited
(K-RIDE)
(A Joint Venture of Govt. of Karnataka and Ministry of Railways)

EPC TENDER

TENDER DOCUMENT FOR THE WORK OF

"NAME OF WORK: DESIGN, SUPPLY, ERECTION, TESTING & COMMISSIONING OF 25 KV, AC, 50 HZ, SINGLE PHASE, TRACTION OVER HEAD EQUIPMENT FOR DOUBLING OF BAIYYAPPANAHALLI CABIN A (KM 205.5) (EXCLUDING) – HOSUR (KM 159) (INCLUDING) SECTION (62 TRACK KILOMETER APPROXIMATELY) OF BANGALORE DIVISION INCLUDING ANY MODIFICATION IN EXISTING OVERHEAD EQUIPMENT IF REQUIRED."

TENDER NO. K-RIDE/DL/17/2021, DATED:19/10/2021

K-RIDE

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

Samparka Soudha, 1st Floor,

Dr. Rajkumar Road,

Opposite Orion Mall,

Rajajinagar 1st Block, Bengaluru-560010

Tel +91-6364890842,
Email: jgmelec@kride.in

ಕ–ರೈಡ್
K RIDE

T E N D E R D O C U M E N T

(Through e-Tendering Mode)

Tender for the work of :

"**Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."**

TENDER NO:	**K-RIDE/DL/17/2021, Date: 19.10.2021**
TENDER DOCUMENT CAN BE DOWNLOADED FROM	Date: 19/10/2021
PERIOD OF SALE OF TENDER DOCUMENT	NA
LAST DATE FOR SALE OF TENDER DOCUMENT	NA
LAST DATE AND TIME FOR RECEIPT OF BIDS	Date: 19/11/2021, IST 15:00 Hrs (Only electronic tender permitted.)
DATE AND TIME OF OPENING OF COVER ONE OF TENDER (TECHNICAL BID)	Date: 20/11/2021, IST 15:30 Hrs
PLACE OF OPENING OF COVER ONE OF TENDER (TECHNICAL BID)	The opening of the Technical Bid shall take place at **e- procurement portal of K-RIDE** i.e., https://eproc.karnataka.gov.in
PLACE OF OPENING OF COVER TWO OF TENDERS (FINANCIAL BID)	The opening of the Financial Bid shall take place at **e- procurement portal of K-RIDE** i.e., https://eproc.karnataka.gov.in
DATE AND TIME OF OPENING OF COVER TWO OF TENDERS	Will be intimated to the Qualified Tenderers through Karnataka Public Procurement Portal.
ADDRESS FOR COMMUNICATION	***JGM/Electrical*** K-RIDE (Rail Infrastructure Development Company (Karnataka) Limited) #8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall Rajajinagar 1st Block, BENGALURU Tel – 91-6364890842 E Mail – jgmelec@kride.in

K-RIDE

CONTENTS

SECTION NO.	DESCRIPTION	PAGE NO.
1	INVITATION FOR TENDERS (IFT)	1-8
2	INSTRUCTIONS TO TENDERERS (ITT)	9-48
3	QUALIFICATION INFORMATION/ BIDDING FORMS	49-92
4	FORM OF TENDER, LETTER OF ACCEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM ETC.,	93-99
5	CONDITIONS OF CONTRACT (CC)	100-122
6	CONTRACT DATA	123-137
7	PARTICULAR CONDITIONS OF CONTRACT	138-185
8A	EMPLOYER'S REQUIREMENT – GENERAL INFORMATION AND SCOPE OF WORK	186-232
8B	TECHNICAL SPECIFICATIONS	233-365
8C	SAFETY, HEALTH AND ENVIRONMENT (SHE) MANUAL	366-371
9	Price Schedule	372-405
10	FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT ETC.,	406-422
11	TENDER DRAWINGS	

K-RIDE

SECTION: 1

NOTICE FOR INVITATION FOR TENDERS (IFT)

EPC TENDER

K-RIDE

`

Rail Infrastructure Development Company (Karnataka) Limited

INVITATION FOR BIDS ON EPC MODE.

(Through e-tendering mode)

Tender Notice No. ***K RIDE/DL/17/2021*** ***Date: 19.10.2021***

THE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED (K-RIDE), having its Corporate office, at #8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall, Rajajinagar 1st Block, Bengaluru-560010, India, which is a Joint Venture of Government of Karnataka and Ministry of Railways invites Bids from eligible Bids, for the construction of works detailed in the table below under **Single stage: Two tender document system (Technical Bid and Financial Bid) on EPC (**Engineering, Procurement and Construction**) Mode.**

SL. NO.	NAME OF WORK	TENDER SECURITY/EMD	PERIOD OF COMPLETION
1	2	3	4
1	"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."	Need not be paid. Tender Security Declaration as per form BDF-1 has to be submitted	24 months

NOTE:

1. The Selected Bidder (the "Contractor") shall be responsible for Engineering, Procurement and Construction of the Project under and in accordance with the provisions of an Engineering, Procurement and Construction agreement (the "EPC Agreement") to be entered into between the Selected Bidder and the Authority (K-RIDE). The scope of work will broadly include "Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required.", including survey, including testing.

2. The detailed terms and conditions of the Project, including the scope of the works, services and obligations are in Employer's requirement and scope of work and conditions of contract (GCC, SCC, PCC and contract data)

3. The Tenderers are advised to examine the Project in greater detail, and to carry out, at their cost, such studies as may be required for submitting their respective Bids for award of the contract

4. The Tenderers shall submit the tender through e - procurement portal. Tenderers should scan the registration copy; work done certificate and any other document and submit through online. More information can be had from website www.eproc.karnataka.gov.in

5. On the stipulated date of opening of Tenders, initially, only the Technical Bids are opened through Karnataka Public Procurement Portal. The Technical Bids shall be evaluated by the Employer in accordance with the stipulated Qualification and Evaluation criteria. No amendments or changes to the Technical Bids would be permitted after the opening of Technical Bids.

6. Tenderers who are qualified in the Technical Evaluation, their Price Bid shall be opened at a date and time advised by the Employer (K-RIDE) through e-tendering portal. The Price Bids are evaluated and the Contract is awarded to the Tenderer whose Tender has been determined to be the lowest evaluated substantially responsive tender.

7. Tenderers are advised to note the eligibility and minimum qualifying criteria specified in the Section 2: Instruction to Tenderers of the tender document.

8. Tenders must be accompanied by a Tender Security as per Form (BDF/1) in Section 3: Qualification Information/Bidding Forms in any one of the forms as specified in the tender documents and shall have to be valid for 45 days beyond the validity of the tender. Any Tenders received without tender security declaration form in the stipulated format, shall be summarily rejected.

9. Incomplete Tender submission will be considered non-responsive and such Tenders shall not be considered for further evaluation.

10. Tender Documents can be downloaded free of cost from Karnataka Public Procurement Portal i.e., https://eproc.karnataka.gov.in from **19/10/2021** and the Tenders must be submitted online via Karnataka Public Procurement Portal only.

    Please note that drawings, if any, referred in the tender document, but not uploaded with the tender document, can be viewed in this office on any working day. The Tenderer can also have a copy of the same on payment of non-refundable cost of Rs. 5,000/- (Rupees Five Thousand only) by a e-Payment mode (credit card/debit card/net banking/UPI) in favor of **Rail Infrastructure Development Company (Karnataka) Limited,** Bangalore.

    It will be the responsibility of the Tenderer who is submitting the Tender on downloaded Tender documents to check and see any Addendum/Corrigendum issued in this regard from the website from time to time and ensure submission of bid along with all Addendum/Corrigendum.

    In case of any clarification the Tenderer can visit the Rail Infrastructure Development Company (Karnataka) limited Corporate Office Bengaluru at #8, 1st Floor, Samparka Soudha, Dr.

K-RIDE

Rajkumar Road, Opposite Orion Mall, Rajajinagar 1st Block, Bengaluru-560010. Tel. No.+91-6364890842.

11. Validity of Tender: Tenders shall remain valid for a period of **180 days** after the Tender submission deadline date prescribed by the employer. A Tender valid for a shorter period shall be rejected by the employer as non-responsive.

12. In exceptional circumstances, the Employer may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender security is requested in accordance with ITT 13, it shall also be extended up to the date mentioned in the letter of request for extension. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting the request shall not be required or permitted to modify its Tender.

13. If, the office happens to be closed on the date of opening of Tender, the Tenders will be opened on next working day at the same time and venue.

14. A Pre- Bid meeting will be held on **29/10/2021** at 11:30 Hrs. IST at the office of K-RIDE, Bangalore to clarify the issues if any and to answer questions on any matter that may be raised at that stage as stated in Clause - 8 of ITT of the Tender document.

15. Other details can be seen in Tender documents.

16. **REGISTRATION:**

    a. Tenderers are required to enroll on the e-tendering Portal (https://eproc.karnataka.gov.in) with clicking on the link "Tenderers Registration" on the e-tender Portal by paying requisite registration fee as applicable.

    b. As part of the enrolment process, the Tenderers will be required to choose a unique user name and assign a password for their accounts.

    c. Tenderers are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication with the Tenderer.

    d. Upon enrolment, the Tenderers will be required to register their valid Digital Signature Certificate (Only Class III Certificates with signing + encryption key usage) issued by any Certifying Authority recognized by CCA India with their profile.

    e. Only one valid DSC should be registered by a Tenderer. Please note that the Tenderers are responsible to ensure that they do not lend their DSC"s to others which may lead to misuse.

    f. Tenderers then logs in to the site through the secured log-in by entering their user ID/password and the password of the DSC / e-Token.

    g. The scanned copies of all original documents should be uploaded on portal.

    h. For any query regarding e-procurement on the Karnataka Public Procurement Portal, contact helpdesk number
    +91-8046010000, +91-8068948777, support@eprochelpdesk.com

K-RIDE

17. **SEARCHING FOR PROPOSAL DOCUMENTS**

Once the Tenderers have selected the proposals they are interested in, the Tenderers can pay nonrefundable processing fee as per the Karnataka Public Procurement Portal.

18. **PRECAUTIONS FOR SUBMITTING / PREPARATION OF PROPOSALS THROUGH E TENDERING PORTAL**

a. Tenderer, in advance, should get ready the proposal documents to be submitted as indicated in the proposal document / schedule and generally, they can be in PDF /JPEG formats.

b. Tenderer should log into the website well in advance for the submission of the proposal so that it gets uploaded well in time i.e., on or before the proposal submission time. Bidder will be responsible for any delay due to other issues.

c. The Tenderer has to digitally sign and upload the required proposal documents one by one as indicated in the tendering document.

d. The server time (which is displayed on the consultant's dashboard) will be considered as the standard time for referencing the deadlines for submission of the proposals by the consultants, opening of proposals etc. The consultants should follow this time during proposal submission.

19. The Tenderer should furnish the Name of the individual / firm / Company / Joint venture with address and telephone number with place of registration, year of incorporation etc.,

20. Tender by a joint venture of contractors is permitted subject to conditions indicated in tender document.

21. The application made by the firm / company / Joint Venture shall be signed by a person holding the power of attorney, in which case the Tenderer shall furnish a copy of power of attorney.

22. Bid through any other mode shall not be entertained. However, power of attorney and JV agreement etc., shall be submitted by the bidder on or before submission date and time.

23. **<u>Employees Provident Fund Registration Certificate</u>**

The Contractor shall furnish EPF Registration Certificate before entering into agreement in the event of award of work to them after tender, subject to compliance with the following conditions:

a) If the contractor is registered already with the EPF authorities, they should produce a copy of the EPF Registration Certificate.

b) If not registered with the EPF authorities, the Tenderer should produce an undertaking at the time of participating in the tender that he shall within 7 days of the close of every month submit a Statement to Engineer showing the recoveries of contribution in respect of Employees by or through him and shall also furnish such information as the Engineer is required to furnish under the provisions of the Scheme to the Commissioner EPF.

K-RIDE

c) However, having given an undertaking to this effect if the Contractor does not furnish the information, the Employer will deduct the necessary amount from the amount due to the Contractor. Notwithstanding the above, the Contractor will be liable for any consequential penalty /damages levied by the EPF authorities.

24. The necessary certificates / documents in support fulfilling qualifying criteria stipulated separately shall be scanned and attached to e-procurement document. The original documents if required by the Employer shall be produced whenever asked by Employer on Technical Bid/ Financial Bid.

25. The intending Tenderers are advised to visit the site of work before attending the Pre- Bid meeting and also before submitting the Tenders.

26. **Site visit and verification of information.**

27.1 Tenderer are encouraged to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, traffic, location, surroundings, climate, availability of power, water & other utilities for construction, access to site, handling and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by them. Tenderers are advised to visit the site and familiarize themselves with the Project within the stipulated time of submission of the Bid. No extension of time is likely to be considered for submission of Bids.

27.2 It shall be deemed that by submitting a Bid, the Tenderer has:

(a) made a complete and careful examination of the Bidding Documents, Schedules annexed to the Tender document.

(b) received all relevant information requested from the Authority;

(c) accepted the risk of inadequacy, error or mistake in the information provided in the Bidding Documents or furnished by or on behalf of the Authority relating to any of the matters referred to in Clause 27.1 above. No claim shall be admissible at any stage on this account.

(d) satisfied itself about all matters, things and information including matters referred to in Clause 27.1 here in above necessary and required for submitting an informed Bid, execution of the Project in accordance with the Bidding Documents and performance of all of its obligations there under.

(e) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the matters referred to in Clause 27.1 here in above shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from the Authority, or a ground for termination of the Agreement by the Contractor.

(f) acknowledged that it does not have a Conflict of Interest; and

(g) agreed to be bound by the undertakings provided by it under and in terms hereof.

K-RIDE

27.3 The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the Tender document, including any error or mistake therein or in any information or data given by the Authority.

27. The qualification criteria as indicated in bid document should be met by the intending Tenderers.

28. Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Govt. of Karnataka, Govt of India and any PSUs thereof.

29. Pre-bid meeting will be held on **29/10/2021 at 11.30AM in** the office of K-RIDE Bangalore.

30. The conditional Tenders will not be accepted.

31. The Employer is not responsible for any delay in accessing Karnataka Public Procurement Portal.

32. The approximate value of the work is inclusive of all taxes, duties, etc., The rates quoted by the Tenderer must be inclusive of all Taxes, Duties etc.,

33. The Employer reserves the right to either postpone or to cancel the entire process of tender.

34. If Employer wishes to engage third party consultants for quality control assessment, apart from the Employer quality control and field tests, the Tenderer should co-operate with both Quality control authorities and the third party.

35. Building and other construction workers welfare: The Tenderer shall subscribe 1% of gross amount of each bill payable to him in respect of contract to the building and other construction workers welfare cess as per GO No: LD 300 LET 2006, Bangalore, dated: 18-01-2007. The amount of subscription will be recovered out of payable amount to him in each bill. This component is deemed to have been included in the quoted rate.

36. **Last Date of Receipt and opening of Bids:** The completed Tenders must be submitted through Karnataka Public Procurement Portal https://eproc.karnataka.gov.in not later than 15.00 Hrs on **19/11/2021** and shall be opened on **20/11/2021** at 15.30 hrs. K-RIDE will not be responsible for any delays in the receipt of Tender by K-RIDE. Late Tenders (received after stipulated date and time of submission of Tenders) shall not be accepted under any circumstances. K-RIDE reserves the right to accept/reject any or all proposals without assigning any reason thereof.

37. Any suit or application, arising out of any dispute or differences on account of this tender shall be filed in a competent court at Bengaluru, Karnataka only and no other court or any other district of the country shall have any jurisdiction in the matter.

38. **Address for Communication:** Interested eligible Tenderers may obtain further information from the following address:

JGM/Electrical,
Rail Infrastructure Development Company (Karnataka) Limited,
#8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall
Rajajinagar 1st Block, Bengaluru-560010

K-RIDE

Tel +91-6364890842
E-mail: jgmelec@kride.in

For any Query regarding e tendering portal/ Tender submission please contact helpdesk Number +91-8046010000, +91-8068948777
Email: support@eprochelpdesk.com

K-RIDE

SECTION – 2

INSTRUCTIONS TO TENDERERS (ITT)

K-RIDE

SECTION 2: INSTRUCTIONS TO TENDERERS (ITT)

SL.NO	DESCRIPTION	PAGE NO
	A. GENERAL	
1	SCOPE OF TENDER	11
2	ELIGIBLE TENDERERS	11
3	QUALIFICATION OF THE TENDERER	14
4	ONE TENDER FOR TENDERER	21
5	COST OF TENDERING	21
6	SITE VISIT	21
	B. TENDER DOCUMENTS	
7	CONTENT OF TENDER DOCUMENTS	22
8	CLARIFICATION OF TENDER DOCUMENT	22
9	AMENDMENT OF TENDER DOCUMENTS	22
	C. PREPARATION OF TENDERS	
10	DOCUMENTS COMPRISING THE TENDER	24
11	TENDER PRICES	24
12	TENDER VALIDITY	24
13	EARNEST MONEY DEPOSIT	25
14	FORMAT AND SIGNING OF TENDER	25
	D. SUBMISSION OF TENDERS	
15	SEALING AND MARKING OF TENDERS	28
16	DEADLINE FOR SUBMISSION OF TENDERS	28
17	LATE TENDERS	28
18	MODIFICATION AND WITHDRAWAL OF TENDERS	28
	E. TENDER OPENING AND EVALUATION	
19	OPENING OF FIRST COVER (DOCUMENT) OF ALL TENDERS AND EVALUATION TO DETERMINE QUALIFIED TENDERERS	29
20	OPENING OF SECOND COVER (DOCUMENT) TENDERS OF QUALIFIED TENDERS AND EVALUATION	29
21	PROCESS TO BE CONFIDENTIAL	30
22	CLARIFICATION OF TENDERS	30
23	EXAMINATION OF TENDERS AND DETERMINATION OF RESPONSIVENESS	30
24	CORRECTION OF ERRORS	30
25	EVALUATION AND COMPARISON OF TENDERS	31
	F. AWARD OF CONTRACT	
26	AWARD CRITERIA	32
27	EMPLOYER'S RIGHT TO ACCEPT ANY TENDER AND TO REJECT ANY OR ALL TENDERS	32
28	NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT	32
29	PERFORMANCE SECURITY	32
30	ADVANCE PAYMENT AND SECURITY	33
31	CORRUPT OR FRAUDULENT PRACTICES	33
32	PURCHASE PREFERENCE TO MAKE IN INDIA	33
33	APPEAL	34

K-RIDE

TABLE OF CLAUSES

A. GENERAL

1. SCOPE OF THE TENDER:

1.1 THE RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED (K-RIDE), Having its Corporate office, at #8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall, Rajajinagar 1st Block, Bengaluru-560010, India, which is a Joint Venture of Government of Karnataka and Ministry of Railways invites Tenders from Eligible Tenderers, for the construction of works details as given in the invitation for the Tenders (IFT). The tenderers may submit the tenders for the works detailed in the IFT.

2. ELIGIBLE TENDERERS:

2.1 The Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by Govt. of Karnataka, Govt of India and PSUs.

2.2 JOINT VENTURES:

Tendering by a joint venture of Contractors is permissible subject to following conditions:

a. If the Applicant comprises a number of firms combining their resources in a joint venture, the legal entity constituting the joint venture and the individual partners in the joint venture shall be registered after award of work and shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by GOK.

b. The joint venture must satisfy collectively the Qualification criteria. For this purpose, the following data of each member of the joint venture may be added together to meet the collective qualifying criteria:

   i. Average annual turnover (sub clause 3.2a).

   ii. Particular experience including key production rates. (Sub clause 3.2b & c).

   iii. Financial means (sub clause 3.3b liquid assets, 3.6 assessed available Tender capacity & the audited balance sheets or other financial statements acceptable to the employer, for the last five years shall be submitted and must demonstrate current soundness of the applicant's financial position and indicates its prospective long-term profitability.

   iv. Personnel capabilities (sub clause 3.3c: List of minimum key staff/position required during the contract implementation).

   v. Equipment capabilities (sub clause 3.3a: own/lease equipment's).

c. Each partner must satisfy the following criteria individually:

   i. General construction experience for the period of years stated in Tender document (Instructions to Tenderers: The intending Tenderer/firm/company/ joint venture shall provide evidence that it has been actively engaged in work of "Design, Supply, Erection,

K-RIDE

Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment for Railway Electrification" work for at least for a period of 5 years prior to the of submission of application. (From FY: 16-17 to FY: 20-21)

ii. Adequate sources to meet financial commitments on the other contracts (Sub clause 3.5: Accessed availed Tender capacity).

iii. **Financial Soundness (Instructions to Tenderers**: The intending Tenderer/firm/company shall provide the audited balance sheets or other financial statements acceptable to the employer for the last five years and must demonstrate the current soundness of the applicant's financial position and indicate its prospective long-term profitability. If deemed necessary, the employer shall have the authority to make enquiries with the applicants' bankers).

iv. **Litigation History (Instructions to Tenderers:** The intending Tenderer/firm/company/ joint venture shall provide accurate information on the related application form about any litigation or Arbitration resulting from contracts completed or on going under its execution over the last five years. The consisting history of awards against the tenderer or any partner of a joint venture may result in failure of the application).

v. In accordance with the above, the Application shall include all related information required for individual partners in the joint venture

d. **Joint venture is restricted to 3 (Three) number of partners.** One of the partners, who is responsible for performing a key function in contract management or is executing a major component of the proposed contract, shall be nominated as being in charge during the tendering periods and, in the event of a successful tender, during contract execution. The partner in charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture; this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners.

e. All partners of the joint venture shall be legally liable, jointly and severally, during the tendering process and for the execution of the contract in accordance with the contract terms, and a statement to this effect shall be included in the authorization mentioned under Sub-Clause 2.2(d) above. **To enable the above, each of the partners of the joint venture shall meet not less than 25% of the qualifying criteria specified for Average annual turnover and Line of credit / liquid assets. All members of the joint venture must have experience in execution of similar work.**

f. A copy of the Joint Venture Agreement (JVA) entered into by the partners shall be submitted with the Application. Pursuant to Sub-Clauses 2.2(c) to 2.2(f) above, the JVA shall include among other things: the JV's objectives; the proposed management structure; the contribution of each partner to the joint venture operations; the commitment of the partners to joint and several liability for due performance; recourse/sanctions within the JV in the event of default or withdrawal of any partner; and arrangements for providing the required indemnities.

The lead partner shall enter into a Joint Venture agreement of Rs. 200.00 stamp paper in the prescribed format which shall be concluded prior to Tender and enclosed to the Tender document J.V. Partner shall not enter in to multiple J. V's with different Tenderers of the same work.

K-RIDE

g. The qualification of a joint venture does not necessarily qualify any of its partners to tender individually or as a partner in any other joint venture or association. In case of dissolution of a joint venture prior to the submission of tenders, any of the constituent firms may qualify if they meet all of the qualification requirements, subject to the return approval of the employer. Individual members of a dissolved joint venture may participate as sub-contractor to qualified applicants, subject to the provisions mentioned below:

- "No firm can be a sub-contractor while submitting a tender individually or as a partner of a joint venture in the same tendering process. A firm, if acting in the capacity of sub-contractor in any tender, may participate in more than one tender, but only in that capacity. A tenderer who submits, or participates in, more than one tender will cause all the proposals in which the tender has participated to be disqualified."

- A firm shall submit only one Tender in the same Tendering process, either individually as a Tenderer or as partner of Joint Venture.

- The necessary certificates/documents in support of pre-qualification criteria fulfilled as stipulated shall be scanned and attached to e-tender document. Scanned signature of the Tenderer/authorized representatives of the Tenderer shall be attached while uploading the Tender document**.**

  Any Tenderer who is otherwise technically qualified withdraws was from the Tender process at any stage before a final decision is taken on the tender, the EMD of such Tenderer shall be forfeited, the name of such Tenderer shall be removed from the category list of contractors at least for a minimum period of one year in K-RIDE beside making such Tenderer liable for blacklisting.

- Tenders submitted by all Tenderers in the process of Tender evaluation will be opened even if the Tenderer withdraws from the Tender process by not submitting the original documents for verification or for any other reasons and the prices quoted by them will be looked into, to ascertain if there is collision amongst the Tenderers to determine the competitiveness of the L1 price quoted by other Tenderers, as per the decision by the K-RIDE.

- Prior to awarding of the work, the Lowest (L-1) Tenderer should produce the original documents in support of the uploaded documents to enter in to the agreement. If the lowest Tenderer (L-1) does not produce the original documents for entering into the agreement then his Tender can be treated as non-responsive Tender as per clause 26(4) of the KTPP Rules. The name of the Tenderers who do not produce the original documents shall be removed/debarred from the select list of K-RIDE enrollment and barred from participation in any of the tenders to be invited by K-RIDE a part from forfeiting the EMD paid through e-cash.

- The bidder, JV Partner shall not be under Corporate Debt Restructuring (CDE)/ Strategic Debt Restructuring (SDR) or Bureau of Industrial & financial reconstruction (BIFR) in last 5 years to bid submission date. In this regard, the bidder shall submit along with bid, a certificate with a declaration that, the bidder is not under CFR/SDR or BIFR.

- Further information about e-tendering can be had from Karnataka Public Procurement Portal http:\\eproc.karnataka.gov.in

K-RIDE

3. QUALIFICATION OF THE TENDERER.

3.1 All the tenderers shall provide the requested information accurately and sufficient details in section 3: Qualification information. The Joint Venture to be formed prior to the Bidding.

Pre-qualification will be based on Applicants meeting all the following minimum pass–fail criteria regarding their general and particular construction experience, financial position, personnel and equipment capabilities, and other relevant information as demonstrated by the Applicant's responses in the Information Forms attached to the Letter of Application. Additional requirements for joint ventures are given in para 2.2

3.2 The following qualification criteria should be met by the intending Tenderers.

a) Required average annual turnover (In all classes of Railway Electrification work only): **The intending Tenderer/firm/ company / Joint Venture should have achieved a MINIMUM AVERAGE ANNUAL CONSTRUCTION TURNOVER of Rs.24.42 Crores. in last five Financial Years from 2016-17 to 2020-21.**

NOTE: The Tenderers shall submit certificates to this effect which may be attested certificates from the concern departments/ Client or Audited balance sheet duly certified by the statutory Auditor/ certificate from Chartered Accountant duly supported by audited balance sheet. The Turnover certificate duly certified by statutory Auditor should be uploaded. Financial turnover of previous years will be given a weightage of 10% per year or part thereof up to the month previous to the Bid submission month as indicated in qualification information (Tender Forms) Form FIN-2 based on the rupee value to bring them to current FY: 2021-22 price value**.**

b) The Tenderer/Firm/Company/JV should have satisfactorily completed at least one similar work such as "Work of Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment for Railway Electrification" of value not less than 26.048 Crores at current FY: 2020-21 price level in the preceding five financial years. (FY 2016-17 to FY 2020-21)

NOTE:

1. The criteria above applies to the Individual Tenderer/Firm/company/Joint venture also. Certificate regarding the same duly signed by an officer not below the rank of the Executive Engineer to be submitted along with the technical Tender**.**

2. Similar work is defined as below:
   Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment for Railway Electrification.

3. The contract is considered as satisfactorily completed if 80% or more of the work is physically completed which is to be substantiated by a certificate from the Employer who has awarded the contract to the Bidder and the contract amount so received should be equal to or more than the minimum value as per eligibility criteria 3.2 (b).

4. For completed works, the value of work done shall be updated to current FY 2021-22 price level assuming 10% inflation for Indian rupees every year or part thereof up to the month previous to the Bid submission month. Credentials if submitted in foreign currency shall be converted into Indian currency i.e., Indian Rupee as under: Bids will be compared in Indian

K-RIDE

Rupees only. The exchange rate of foreign currency shall be applicable 28 days before the tender submission date. For conversion of foreign currency to Indian Rupee exchange rates published by Financial Benchmarks Private limited (www.fbil.org.in) 28 days before the date of bid submittal will be considered. In case the particular day happens to be a holiday the exchange rate published on the next working day will be considered. In case of works in foreign currency the effect of inflation is considered as included, as the exchange rate prevailing 28 days before tender submission is being considered for conversion to Indian Rupees.

5. In case of JV/Consortium, full value of the work, if done by the same JV shall be considered. However, if qualifying work (s) done by them in JV/Consortium having different constituents, then the value of work as per their percentage participation in such JV/Consortium shall be considered.

c) The intending Tenderer / firm / company / Joint Venture should have executed the components within last five financial years and Each component should have been executed in any one year (Any continuous 12 months).

Component No.	Nature of Work	Minimum component of work
1	Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment for Railway Electrification **(In maximum up to Three contracts)(Section should be commissioned)**	**20 TKM**

d) The intending Tenderer / firm/ company / Joint Venture should have executed all the components within last five financial years. (FY 2016-17 to FY 2020-21)

K-RIDE

NOTE:-

1. The criteria above applies to the Individual Tenderer/Firm/ Company / Joint Venture also. Certificate regarding the same duly signed by an officer not below the rank of the Executive Engineer should be submitted along with the technical Tender.

2. The qualifications, capacity, and resources of proposed subcontractors will not be taken into account in assessing those of individual or joint venture Applicants, unless they are named specialist subcontractors.

3. For para 3.2 (c) 2, 3 and 3.2 (d): The prior consent of the Employer shall be obtained for replacement of proposed identified Subcontractors if any and for which the same qualification criteria as indicated in paras above are required.

3.3 Each Tenderer should further demonstrate:

3.3 a) KEY PLANT AND EQUIPMENT: Availability by owning at least 50% of the required following key and critical equipment's for this work and the remaining 50 % can be deployed on lease/hire for all works provided, the relevant documents (Commitment agreements etc.,) for availability for this work are to be furnished:

The intending Tenderer/firm/company/Joint venture should furnish details of ownership / lease certificates of the following minimum requirement of machineries:

PLANT AND EQUIPMENT

(I) KEY AND CRITICAL EQUIPMENTS

Si No.	Type of Equipment required for the work	Proposed to be Deployed (Minimum)
1.	Tirfor 3/1.5 T Cap	6 Nos
2.	Pull lift 3/1.5 T Cap	6 Nos
3.	Come along clamp	6 Nos
4.	Chain Pulley Block	10 Nos
5.	"D" Shackle	20 No.
6.	Tripod	3 No.
7.	Derrick	3 No.
8.	Mandrill (50cm dia.)	6 No.
9.	Ladder Extension Type (20' x 36')	3 No.
10.	Ladder trolly P/F type	3 No.
11.	Drum lifting jacks	2 Sets
12.	Gas cutter	2 No.
13.	Grinder	1 No.
14.	Power Hacksaw	2 No.
15.	Dropper making jig & Fixture	3 No.
16.	Megger 2.5 KV	2 No.
17	Megger 5 KV	2 No.
18.	Earth Tester	2 No.
19.	Bonding Jig	3 No.
20.	Vibrator for foundations	2 No.
21.	Emergency lighting arrangement for night work.	1 Set
22	Manila rope	10 m x 10 Nos.
23	Spanners	8 Sets
24.	Hammers 1.5 Lbs.	2 No.

K-RIDE

25.	Hammers 3.0 Lbs	2 No.
26.	Discharge rod	10 No.
27.	D O operating rod	2 No.
28.	Rail Jumper	10 No.
29.	Aero plane Jack	5 No.
30.	Mixer machine	2 nos
31	Drilling machine	3 Nos

(II) Other Plant and equipment to be deployed (The Tenderer has to furnish the details of Own basis and Lease/Hire basis for the following equipment

Sl No.	Type of Equipment required for the work	Proposed to be Deployed (Minimum)
1.	Ajax (Capacity-3 m3)	2 Nos
2.	Crane/2.5T	2 Nos
3.	Portable Generator 25 kV	2 Nos
4.	Concrete Breaker	2 Nos
5.	Survey Equipment	2 Sets
6.	JCB	2 Nos
7.	Trailer	1 No
8.	Multi utility vehicle (Bolero)	1 No
9.	Eicher Truck	1 No

K-RIDE

3.3 b) LIQUID ASSETS: The Tenderer / firm/company / Joint Venture should furnish details of liquid assets and or availability of credit facilities of Rs. 5.426 Crores for the work mentioned above for meeting the required funds in the form of own funds /credit lines / certificate from scheduled Nationalized Bank.

The Bidder should have access to or has available liquid assets, lines of credit and other financial means to meet cash flow. The audited balance sheet and/or banking reference certified by Charted Accountant with their stamp, signature and membership number shall be submitted by the Tenderer along with the Tender.

Banking reference should contain in clear terms the amount that bank will be in position to lend for this work to the applicant/member of the joint venture/Consortium. In case the Net Current Assets (as seen from the balance sheet) are negative, only the banking references will be considered. Otherwise, the aggregate of Net Current Assets and submitted banking references will be considered for working out the Liquidity.

The banking reference should be, from a scheduled Bank in India it should not be more than three months old as on date of submission of Bids.

In case of JV firm's overall liquidity of JV firm shall be assessed by arithmetic sum of liquidity of all members of JV as specified in JV matrix.

3.3 c) LIST OF MINIMUM KEY TECHNICAL PERSONNEL: List of Minimum Key Technical personnel required for the work are as under and should be enrolled in company/ firm/Company/Joint Venture under Employment register and document should be uploaded. The Contractor shall have a competent team of Managers, Engineers, Technical staff etc. so as to complete the work satisfactorily as per various requirements of the contract. The Key Positions not limited to (and in addition to other manpower requirement as given in the Tender document) and corresponding qualification and experience are as under:

Sl. No.	Designation	Qualification	Experience level (For similar works)	Min. No. Required
1	Project Manager (Team Leader)	Bachelor's Degree/Post Graduate Degree in Electrical Engineering	Minimum 10 years total experience and 5-year experience in the role of Project Manager in the execution of similar type of work	1
2	Design manager	Post Graduate Degree/ Bachelor's Degree in Electrical Engineering	Minimum 10 years total experience and 07-year experience in the role of Design Manager in the execution of similar type of work	As reqd.
3	QA & QC Supervisor	Bachelor's Degree in Civil Engineering	Minimum 5 years total experience and 2-year experience in the role of QA & QC Supervisor in the execution of similar type of work	1
4	Chief Safety and Health officer	Bachelor's Degree / Diploma in Safety Course.	Minimum 5 years total experience and 3-year experience in the role of Chief Safety and Health Officer in the execution of similar type of work.	As reqd.
5	Traffic Coordinator	Diploma in Electrical / Transportation Engineering	Minimum 5 years total experience and 3-year experience in the role of Traffic Coordinator in the execution of similar type of work.	2
6	OHE Engineer	Bachelor's Degree/Diploma in Electrical Engineering	Minimum 3 Years for graduate & 5 years for Diploma in relevant field.	3

K-RIDE

Sl. No.	Designation	Qualification	Experience level (For similar works)	Min. No. Required
7	Draftsman	Bachelor's Degree/Diploma in Electrical Engineering	Minimum 1 Years for graduate & 3 years for Diploma in relevant field.	1

Note: The CV's to be given for Serial No. 1 to 5 as per Form-6 of section-3 and Serial No. 6-7 the details to be given as per Form-5 of section-3 (Qualification information /Bidding Forms).

3.4 To qualify for a package of contracts made up of this and other contracts for which tenders are invited in this IFT, the Tenderer must demonstrate having experience and resources to meet the aggregate of the qualifying criteria for the individual contracts.

3.5 Sub-contractors' experience and resources shall not be taken into account in determining the Tenderer's compliance with the Qualifying Criteria

3.6 BID CAPACITY: Tenderers who meet the above specified minimum qualifying criteria, will only be qualified, if their available tender capacity is more than the total tender value. The available tender capacity will be calculated as under:

Assessed available tender capacity = (A*N*1.5 - B) Where

A = Maximum value of works executed in any one year during the last five Financial years ending 31.03.2021 taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which tenders are invited.

B = Value at current price level (updated up to the month previous to the Bid submission month) of existing commitments and on-going works to be completed during the next two and half years *(period of completion of the works for which Tenders are invited).*

Note: Updation of Price Level shall be done at 10% per year.

The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in charge, not below the rank of an Executive Engineer or equivalent.

3.7 NETWORTH: The Bidder's net worth for the last Financial Year calculated as the difference between total assets and total liabilities **should be Positive.**

3.8 Even though the Tenderers meet the above criteria, they are subject to be disqualified if they have:

- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or

K-RIDE

- participated in the previous Tender for the same work and had quoted unreasonably high tender prices and could not furnish rational justification.

3.9 ELIGIBILITY CRITERIA TABLE/MATRIX:

Requirement	Single Entity	Joint Venture			Submission Requirements
		Lead Partner	Other Partners	All partners combined	
Clause: 3.2.(a) (Annual construction turnover in at least two out of five financial years)	Must meet the requirement	Must meet 50% of the requirement	Must meet 25% of the requirement	Must meet the requirement	Form FIN-2
Clause: 3.2 (b) One Similar work	Must meet the requirement	Must meet the requirement	Must have experience in similar work.	Must meet the requirement	Form at para 1.3/section:3
Clause: 3.2 (c) 1 Railway Electrification works - Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment (In maximum up to 03 no Contracts	Must meet the requirement	All Partners Combined Must Meet requirement			Form at para 1.4/section:3
Clause: 3.3 (I) Key and Critical Equipments	Must meet the requirement	All Partners Combined Must Meet requirement.			Form at para 1.6/section:3
Clause: 3.3 (II) Other plant and Equipments	Must meet the requirement	All Partners Combined Must Meet requirement			Form at para 1.6/section:3
Clause: 3.3(b) Liquid Asset	Must meet the requirement	Must meet 50% of the requirement	Must meet 25% of the requirement	Must meet the requirement	Form at para 1.10/section:3
Clause: 3.3(c) Minimum Key Technical Staff	Must meet the requirement	All Partners Combined Must Meet requirement			Form No.5 & 6 of Section 3

K-RIDE

Clause: 3.6 Bid capacity	Must meet the requirement	All Partners Combined Must Meet requirement			Form at para 1.5/section:3 and Form FIN-3/ section:3
Clause: 3.7 Net worth	Must meet the requirement	Must meet the requirement	Must meet the requirement	Must meet the requirement	Form FIN-1/ section:3

3.10 The applicant must attach with their application, a note giving a general description on the approach to the construction methods, technologies, quality assurance schemes proposed, deployment schedule of equipment proposed to be used, etc., for ensuring completion of the work as per specifications within the desired time-frame.

4. ONE TENDER PER TENDERER:

4.1 Each tenderer shall submit only one tender for one package. A tenderer who submits or participates in more than one Tender (other than as a sub-contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Tenderer's participation to be disqualified.

5. COST OF TENDERING:

5.1 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible and liable for those costs.

6. SITE VISIT:

6.1 The Tenderer at his own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for construction of the Works. The cost of visiting the Site shall be at the Tenderer's own expense.

K-RIDE

B -TENDER DOCUMENTS

7. CONTENT OF TENDER DOCUMENTS

7.1 The set of tender documents shall have all the Sections given in content page.

8. CLARIFICATION OF TENDER DOCUMENTS

8.1 A prospective tenderer requiring any clarification of the tender documents may notify the Employer in writing or by cable (hereinafter "cable" includes telex, E-Mail and facsimile) at the Employer's address indicated in the invitation to tender. The Employer will respond to any request for clarification which he receives earlier than 15 days prior to the deadline for submission of tenders. Copies of the Employer's response will be forwarded to all purchasers of the tender documents, including a description of the enquiry but without identifying its source.

8.2 Pre-tender meeting:

8.2.1 The tenderer or his authorized representative is invited to attend a pre-tender meeting which will take place at office of **K-RIDE Bangalore.**

Venue: #8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road,
Opposite Orion Mall, Rajajinagar 1st Block,
Bengaluru-560010
Tel +91-9891892021
Date: **29/10/2021**, **Time: IST 11.30 Hrs.**

K-RIDE

8.2.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

8.2.3 The tenderer is requested to submit any questions in writing or by cable to reach the Employer not later than one week before the meeting.

8.2.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be published without delay to all purchasers of the tender documents. Any modification of the tender documents listed in Sub-Clause 7.1 which may become necessary as a result of the pre-tender meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 9 and not through the minutes of the pre-tender meeting.

8.2.5 Non-attendance at the Pre-Tender meeting will not be a cause for disqualification of a Tenderer.

9. AMENDMENT OF TENDER DOCUMENTS

9.1 Before the deadline for submission of Tenders, the Employer may modify the tender documents by issuing addendum

9.2 Any corrigendum / addendum issued shall be part of the tender documents and shall be made available on the website or e-portal. The Provisions in corrigendum /addenda shall take priority over the Tender Documents issued previously.

9.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend as necessary the deadline for submission of Tenders, in accordance with Sub-Clause 16.2 below.

K-RIDE

C. PREPARATION OF TENDERS

10. DOCUMENTS COMPRISING THE TENDER

10.1 The Tender submitted by the Tenderer shall be in two covers (documents) and shall contain the documents as follows:

10.1.1 First Cover(Document):

- Earnest Money Deposit;
- Qualification Information as per formats given in Section 3;

10.1.2 Second Cover(Document):

- The Tender (in the format indicated in Section 4) (as per Karnataka Public Procurement Portal)

- Priced Schedule (Section 9); online through Karnataka Public Procurement Portal, no hardcopy of commercials should be attached or disclosed. (as per Karnataka Public Procurement Portal)

  And any other materials required to be completing and submitting by Tenderers in accordance with these instructions. The documents listed under Sections 3, 4, 6 and 9 shall be filled in without exception.

10.2 **DELETED**

11. TENDER PRICES

11.1 The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Price Schedule submitted by the Tenderer.

11.2 The Tenderer shall quote the total amount (both in figures and words) for each schedule of the Works described in the Price Schedule along with total tender price (both in figures and words). Schedules for which no amount or lumpsum price is entered by the Tenderer will not be paid by the Employer when executed and shall be deemed to be covered in the Priced schedule. Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.

11.3 All duties, taxes, and other levies payable by the contractor under the contract, or for any other cause, shall be included in the Price schedule, prices and total Tender Price submitted by the Tenderer.

11.4 The AMOUNT quoted by the Tenderer shall be subject to adjustment during the performance of the Contract in accordance with the provisions of Clause of the Conditions of Contract.

12. TENDER VALIDITY

12.1 Tenders shall remain valid for a period not less than **one hundred and eighty days** after the deadline date for tender submission specified in Clause 16. A tender valid for a shorter period shall be rejected by the Employer as non-responsive.

K-RIDE

12.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the Tenderers may extend the period of validity for a specified additional period. The request and the Tenderers' responses shall be made in writing or by cable. A Tenderer may refuse the request without forfeiting his earnest money deposit. A Tenderer agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 13 in all respects.

13. EARNEST MONEY DEPOSIT (TENDER/BID SECURITY)

13.1 Earnest Money Deposit/ Tender security (as per Karnataka Public Procurement Portal). The Tenderer shall furnish, as part of his tender, earnest money deposit in the amount as shown in column 4 of the Table of IFT for this particular work. This earnest money deposit shall be in favour of Rail Infrastructure Development Company (Karnataka) Limited Payable at Bangalore and may be in the form of Banker's cheque/ Demand draft/Pay Order or Specified small saving instruments pledged to K-RIDE, Bangalore/ unconditional Bank guarantee, in favour of Rail Infrastructure Development Company (Karnataka) Limited Payable at Bangalore.

13.2 Instruments having fixed validity issued as earnest money deposit for the tender shall be valid for 45 days beyond the validity of the tender.

13.3 Any tender not accompanied by an acceptable earnest money deposit and not secured as indicated in Sub-Clauses 13.1 and 13.2 above shall be rejected by the Employer as non-responsive.

13.4 The earnest money deposit of unsuccessful Tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 12.1.

13.5 The earnest money deposit of the successful Tenderer will be discharged when the Tenderer has signed the Agreement and furnished the required Performance Security.

13.6 The earnest money deposit may be forfeited:

(A) If the Tenderer withdraws the Tender after tender opening during the period of tender validity;

(B) If the Tenderer does not accept the correction of the Tender Price, pursuant to Clause 24; or

(C) In the case of a successful Tenderer, if the Tenderer fails within the specified time limit to

(i) sign the Agreement; or

(ii) furnish the required Performance Security

14. FORMAT AND SIGNING OF TENDER

Tenderer shall submit the Tender electronically before the submission date and time published in Karnataka Public Procurement Portal. The Tenderer must submit Technical and Financial Tender as described in ITT.

All pages of the tender where entries or amendments have been made shall be initialed by the person

K-RIDE

signing the tender. The Tender shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialed by the person signing the Tender.

Language of Tender	The language of the Tender: English
Technical Tender	Alternative technical solutions are not permitted.
Technical Tender Documents	All the Forms of Section 3: Qualification Information/Bidding Forms.
Alternative Bids/Tenders	Alternative Bids are not permitted.
Currencies of Tender and Payment	The amount (Lumpsum Price) shall be quoted by the Tenderer entirely in Indian Rupees (INR). For Evaluation and comparison purposes, the currencies of the Tender shall be converted in to Indian Rupees.
Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the Person signing the Tender	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: a) In case of Private/Public Companies, a POA from the Director of the Company who has been authorized by the Board of Directors through resolution to sign on behalf of the Company. Copy of Board Resolution shall also be submitted. b) In case of proprietorship Tenderers, Power of Attorney by the Proprietors. c) In case of partnership Tenderers, Power of Attorney duly signed by all the partners. d) In case of Limited Liability Partnership (LLP), a POA from the Director of the Company who has been authorized by the Board of Directors through resolution to sign on behalf of the Company. Copy of Board Resolution shall also be submitted. e) In case of Joint Venture, Power of Attorney duly signed by individual partners to the Lead partner as per the form given in Section-4 with stipulated documents.

K-RIDE

The Bid shall be digitally signed by using class-III digital signature of a person who is dully authorized to sign on behalf of the bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. If either the Letter of Technical Bid or Letter of Price Bid or Bid-Security Declaration (if applicable) is not signed, the Bid shall be rejected. All pages of the bid, except for un-amended printed literature, shall be signed or initialed by the person signing the bid.

I. If the Tender is submitted by proprietary firm, it shall be signed by the proprietor above his full name, full name of his firm with his current address.

II. If the Tender is submitted by a firm in partnership, it shall be signed by a partner holding the power of Attorney for the firm. A certified copy of the Partnership deed and power of attorney shall accompany the Tender; Alternatively, it shall be signed by all the partners.

III. If the Tender is submitted by a limited company or a limited corporation, it shall be signed by a duly authorized person holding the power of attorney for the firm. A certified copy of the power of attorney shall accompany the Tender.

IV. If a Tender is submitted by a Joint venture/Consortium, each firm in the Joint venture/Consortium shall furnish the evidence admissible in law /Power of Attorney to sign the Form of Tender and Lead member as stated in JV Agreement shall sign the Tender documents for submission of Tender.

Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender

K-RIDE

D. SUBMISSION OF TENDERS

15. SEALING AND MARKING OF TENDERS

Tenderer shall submit the Tender electronically before the submission date and time published.

16. DEADLINE FOR SUBMISSION OF THE TENDERS

16.1 Tenders must be submitted online through Karnataka Public Procurement Portal to the Employer on or before the date as specified in the Karnataka Public Procurement Portal and the submission of tender is the responsibility of the Tenderer.

16.2 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 9, in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline.

17. LATE TENDERS

17.1 In online e-procurement system, the Tenderer shall not be able to submit the Tender after the Tender submission time and date as the icon for the task in the Karnataka Public Procurement Portal will not be available. Any Tender received by the Employer after the deadline prescribed in Clause 16 will be rejected.

17.2 "It shall be the responsibility of the tenderers to ensure that their tender is submitted in the Karnataka public procurement portal within the last date and time specified for the receipt of the tenders

K-RIDE

18. MODIFICATION AND WITHDRAWAL OF TENDERS

18.1 Tenderer may modify and correct or upload any relevant document in the portal till Tender submission date and time, as published in the Karnataka Public Procurement Portal.

18.2 No Tender may be modified after the deadline for submission of Tenders.

18.3 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in Clause 12.1 above or as extended pursuant to Clause 12.2 may result in the forfeiture of the earnest money deposit pursuant to Clause 13.

18.4 DELETED.

E. TENDER OPENING AND EVALUATION

19. OPENING OF FIRST COVER (Document): Opening of First Cover(Document) of all Tenders and evaluation to determine qualified Tenderers:

19.1 The Employer will open the First Covers (Document) of all the Tenders received (except those received late or withdrawn), including modifications for First Cover (Document) made pursuant to Clause 18, in the presence of the Tenderers or their representatives who choose to attend as per Karnataka Public Procurement Portal on the date and the place specified in Clause 16. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.

19.2 DELETED

19.3 The Tenderer name, the presence or absence of earnest money deposit (amount, format and validity), the submission of qualification information and such other information as the Employer may consider appropriate will be announced by the Employer at the opening.

19.4 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with Sub-Clause 19.3.

19.5 DELETED

19.6 The Employer will evaluate and determine whether each tender (a) meets the eligibility criteria defined in ITT Clause 2 is accompanied by the required earnest money deposit as per stipulations in ITT Clause 13 and meets the minimum qualification criteria stipulated in ITT Clause 3. The Employer will draw out a list of qualified Tenderers.

K-RIDE

20. OPENING OF SECOND COVER (DOCUMENT) OF QUALIFIED TENDERERS AND EVALUATION:

20.1 The Employer will inform all the Qualified Tenderers the time, date and venue fixed for the opening of the Second Cover (Document) containing the priced Tenders published in Karnataka Public Procurement Portal. The Employer will open the Second Covers (Document) of Qualified Tenderers at the appointed time and date in the presence of the Tenderers or their representatives who choose to attend. In the event of the specified date of financial Tender opening being declared a holiday for the Employer, the Second Covers (Document) will be opened at the appointed time and location on the next working day.

20.2 DELETED

20.3 The Tenderers' names, the Tender prices, the total amount of each Tender, Tender modifications and withdrawals, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender opening.

20.4 The Employer shall prepare minutes of the Second Cover (Document) Tender opening, including the information disclosed to those present in accordance with Sub-Clause 20.3.

21. PROCESS TO BE CONFIDENTIAL

21.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

22. CLARIFICATION OF TENDERS

22.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of Lumpsum Price. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Tenders in accordance with Clause 24.

22.2 No Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded.

If they have any query/clarification related to e-Procurement on the Karnataka Public Procurement Portal**, contact e-Procurement Help desk from 10:00 AM to 5:00 PM. Ph. No.: +91-8046010000/ 8068948777 or support@eprochelpdesk.com Karnataka Public Procurement Portal through query option on or before specified time.**

22.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers' Tender.

K-RIDE

23. EXAMINATION OF TENDERS AND DETERMINATION OF RESPONSIVENESS

23.1 Prior to the detailed evaluation of Tenders, the Employer will determine whether each Tender; (a) has been properly signed; and; (b) is substantially responsive to the requirements of the Tender documents.

23.2 A Substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employer's rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

23.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

24. CORRECTION OF ERRORS

24.1 Tenders determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

- where there is a discrepancy between the amount in figures and in words, the lower of the two will govern and
- Deleted.

24.2 The amount stated in the Tender will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Tenderer, shall be considered as binding upon the Tenderer. If the Tenderer does not accept the corrected amount the Tender will be rejected, and the earnest money deposit may be forfeited in accordance with Sub-Clause 13.6 (b).

25. EVALUATION AND COMPARISON OF TENDERS

25.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with Clause 23.

25.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:

(a) Making any correction for errors pursuant to Clause 24; and

(b) **DELETED**

25.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.

25.4 The estimated effect of the price adjustment conditions under Clause 40 of the Conditions of Contract, during the implementation of the Contract, will not be taken into account in tender Evaluation

25.5 If the tender of the successful tenderer is seriously unbalanced in relation to the Employer's estimate of the cost of the work to be performed under the contract, the Employer may require the Tenderer to produce detailed price analyses for any or all items of Priced Schedule, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 29 be increased at the expense of the successful Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful Tenderer under the contract.

K-RIDE

F. AWARD OF CONTRACT

26. AWARD CRITERIA

26.1 Subject to Clause 27, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be (a) eligible in accordance with the provisions of Clause 2, and qualified in accordance with the provisions of Clause 3.

27. EMPLOYER'S RIGHT TO ACCEPT ANY TENDER AND TO REJECT ANY OR ALL TENDERS

27.1 Notwithstanding Clause 26, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

28. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT

28.1 The Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by cable, telex, e-mail or facsimile confirmed by registered letter. This letter (hereinafter and in the *Conditions of Contract* called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

28.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of Performance Security in accordance with the provisions of Clause 29. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

28.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be kept ready for signature of the successful Tenderer in the office of Employer within 30 days following the notification of award along with the Letter of Acceptance. Within 20 days of receipt, the successful Tenderer will sign the Agreement and deliver it to the Employer.

28.4 Upon the furnishing by the successful Tenderer of the Performance Security, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.

29. PERFORMANCE SECURITY

29.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Performance Security in any of the forms given below for an amount equivalent to **3% of the Contract price plus additional security for unbalanced tenders (additional security at 50% of the estimated cost of the unbalanced component)** in accordance with Clause 25.5 of ITT and Clause 43 of the Conditions of Contract.

- Banker's cheque/Demand draft, /Pay Order/ BG in favour of K-RIDE, Bangalore or
- A bank guarantee in the form given in Section 10; or
- Specified Small Savings Instruments pledged to K-RIDE, Bangalore.

K-RIDE

29.2 If the Performance Security deposit is provided by the successful tenderer in the form of Bank Guarantee, it shall be issued either by a Nationalized / Scheduled bank.

29.3 The Performance Security deposit if furnished in cash or demand draft can, if requested, be converted to interest bearing securities at the cost of the contractor.

29.4 Failure of the successful tenderer to comply with the requirements of sub-clause 29.1 and clause 29 of additional ITT, shall constitute sufficient grounds for cancellation of the Tender award and forfeiture of the Earnest money deposit.

30. ADVANCE PAYMENT AND SECURITY:

30.1 The Employer will provide an advance payment on the contract price as stipulated in the condition of contract subject to the maximum as stated in the contract data.

31. CORRUPT OR FRAUDULENT PRACTICES

31.1 **"**corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of the public official in the procurement process or in contract execution;

"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Procurement Entity, and includes collusive practice among the tenderers either prior to or after tender submission, designed to establish tender prices at artificial non-competitive levels and to deprive the Procurement Entity of the benefits of free and open competition" The debarment action shall be taken as per KTPP Act.

K-RIDE

31.2 K-RIDE requires that the Tenderers/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, K-RIDE:

a) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a K-RIDE contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a K-RIDE contract.

31.3 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 50.2 of the Conditions of Contract.

32. PURCHASE PREFERENCE TO MAKE IN INDIA:

The provisions of revised 'Public Procurement (Preference to Make in India) Order 2017' issued by Department of Industrial Policy and Promotion under Ministry of Commerce and Industry vide letter no. P-45021/2/2017-PP (BE-II) dated 28.05.2018 shall be applicable to the tendering process and award of the contract shall be done accordingly. In this connection, the minimum local content shall be 50% and the margin of purchase preference shall be 20%. For award of contract, para 3.c. of the revised 'Public Procurement (Preference to Make in

India) Order 2017' shall be applicable in addition to the other provisions in the tendering documents in this regard.

33. APPEAL: The Tenderer shall submit online appeal within 30 days period from the date of receipt of order to the Employer through the Karnataka Public Procurement Portal. The Employer may after giving opportunity to the parties pass such order as it deems fit and such order shall be final.

K-RIDE

ADDITIONAL INSTRUCTIONS TO TENDERERS
(THIS SHOULD BE READ IN CONTINUATION OF ITT)

ITT Clause Ref.	Description
2.3	**The following paras are added:** Wherever the word JV is mentioned there, it should be read as JV/Consortium. For any purpose herein, 'Joint Venture' means an ad hoc association of firms that pool their resources and skills to undertake a large or complex contract in the role of "Contractor," with all firms (partners in the JV) being legally liable, jointly and severally, for the execution of the Contract in the event of a partner's withdrawal. A Tenderer may be a natural person, private entity, government-owned entity, or any combination of them with a format intent to enter into an agreement or under an existing agreement in the form of a Joint venture or consortium. The Tenderer must ensure the following (a) In case of Single Entity: (i) Submit Power of Attorney authorizing the signatory of the Tender to commit the Tenderer. (b) In case of Joint Venture/ Consortium: (i) The number of partners in the JV/ Consortium shall not be more than three. (ii) At the time of bidding, the tenderer (JV) to submit the JV Agreement, as per the form given in Section 3: Qualification and Information/Bidding Forms. On issue of LOA, the JV/Consortium Agreement should be registered and shall be submitted along with the performance security. (iii) The JV/ Consortium shall nominate a Representative through Power of Attorney (Form given in Section 3) who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV/ Consortium during the Tendering process and, in the event the JV/ Consortium is awarded the Contract, during contract execution. (iv) Submit Power of Attorney by individual partners to lead partners as per the form given in Section 3. (v) In case a Joint Venture/ Consortium is the successful Tenderer, the appropriate Joint Venture/ Consortium Agreement for execution of work should be entered by the Joint Venture/ Consortium partners. The duly signed Joint Venture/ Consortium Agreement should be submitted along with the tender submission. (vi) The lead member as aforesaid shall be authorized to incur liabilities and receive instructions for and on behalf of any and all the partners of the Joint venture/Consortium and the entire execution of the contract. (vii) All members of the Joint venture/Consortium shall be Jointly and severally responsible for the execution of the Contract. (viii) Change in constitution or percentage participation of JV/Consortium shall not be permitted at any stage after submission of Tenders (c) Only firms that are registered or incorporated in India are eligible to compete. Any Tenderer from a country which shares a land with India will be eligible to Tender in this tender only if the Tenderer is registered with the Competent Authority.

K-RIDE

(d) "Tenderer from a country which share a land border with India" for the purpose of this Order means: -

1. An entity incorporated, established or registered in such a country; or
2. A subsidiary of an entity incorporated, established or registered in such a country; or
3. An entity substantially controlled through entities incorporated, established or registered in such a country; or
4. An entity whose beneficial owner is situated in such a country; or
5. An Indian (or other) agent of such an entity; or
6. A natural person who is a citizen of such a country; or,
7. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

(e) The beneficial owner for the purpose of above clause will be as under:

(i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.

Explanation-

a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five percent of share or capital or profits of the company;

b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue their shareholding or management rights or shareholders agreements or voting agreements;

(ii) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

(iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profit of such association or body of individuals;

(iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

(v) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

2.4 **The Tenderer shall submit a Certificate stating that they have read the above clause using the appropriate Performa given in Section 3 - Form 3C1 & 3C2.**

Tenderer having a conflict of interest shall be disqualified. The conflict of interest is detailed below.

K-RIDE

2.5	A Tenderer or any of its constituents shall not have conflict of interest. All Tenderers found to have a conflict of interest shall be disqualified. A Tenderer may be considered to be in a conflict of interest with one or more parties in this Tendering process, if, including but not limited to:: (a) they have controlling shareholders in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this Tender; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Tender of another Tenderer, or (e) any firm, either individually or in Joint Venture (JV)/ Consortium, submits more than one offer irrespective of whether the firm is quoting against this Tender. The Tenders submitted by two different Tenderers, having any common participant in JV/ Consortium formation or any common partner in partnership firms, or an individual will be treated as having conflict of interest or (f) a Tenderer who is Sub-contractor to another Tenderer will be treated as having conflict of interest. However, this does not limit the inclusion of the same sub-contractor in more than one Tender. (g) a Tenderer participated as a consultant in the preparation of the design or specifications of the contract that is the subject of the Tender; or (h) A Tenderer was affiliated for any period(s)during last two years before the date of issue of Invitation for Tenders with a firm or entity that has been hired (or is proposed to be hired) by the Employer as Engineer for the contract. **The Tenderer shall be disqualified if**: (a) The Tenderer or any of its constituents has been blacklisted/ banned from business dealings with all Government Departments by the Government of Karnataka or by Ministry of Railways or by K-RIDE at any time till finalization of Tenders, except in cases where such blacklisting/ banning has been withdrawn by Competent Authority or has ceased or expired on the deadline for submission of the Tenders, for which satisfactory evidence is to be produced. (b) Any previous contract of the Tenderer or any of its constituents had been fully terminated or part terminated for its failure as a JV/ Consortium partner with forfeiture of its full Performance Security, by Rail Infrastructure Development Company (Karnataka) Ltd.(K-RIDE) at any time starting from 3 years before the deadline for submission of Tenders and up to one day before the date of opening of price Tenders; Provided, however, there is no stay order or declaration by any Court against such termination of the contract by Rail Infrastructure Development Company (Karnataka) Ltd. or such termination of the contract has not been revoked by Rail Infrastructure Development Company (Karnataka) Ltd or competent authority of K-RIDE has not passed an order of non-applicability of disqualification of the Tenderer or any of its constituents despite such termination. (c) The Tenderer or any of its constituents has been imposed delay damages of 5% or more of contract value by K-RIDE due to delay in the implementation of any previous contract within the period of last 2 years before the deadline for submission of Tenders (Period of 2 years shall be reckoned from the date on which the total accrued amount of Delay Damages has reached 5% or more of the contract price) or such accrued delay damages has not been fully recovered before the deadline for submission of Tenders on account of contractor's request for deferring recovery to maintain cash flow and K-RIDE has acceded to the same in the interest of the project or the work under the previous

K-RIDE

	contract in question has not been completed before the deadline for submission of Tenders, unless imposition of such delay damages has been set aside by the Competent Authority. (d) The Tenderer or any of its constituents: (i) has suffered bankruptcy/insolvency or (ii) has any ongoing case of insolvency before the NCLT/any applicable Court where Interim Resolution Professional (IRP) has been appointed or is at any later stage of the insolvency process, as on the deadline of submission of Tenders or thereafter till finalization of Tenders. (e) The Tenderer is found ineligible by the Employer, in accordance with ITB-3. (f) The Tenderer or its constituent(s) has been declared by K-RIDE to be a poor performer and the period of poor performance is still in force on the deadline for submission of Tenders. OR The Tenderer or its constituent(s) has been declared by K-RIDE to be a poor performer at any time after the deadline for submission of Tenders and upto one day before the date of opening of price Tenders. (g) The Tenderer or any of its constituents has changed its name or created a new business entity as covered by the definition of "Allied Firm" under para 1102 (iii) of Chapter XI of Vigilance Manual of Indian Railways (available on website of Indian Railways), consequent to having been banned from business dealings or suspended from business dealings or having been declared poor performer. **The Tenderer shall submit an affidavit stating that they are not liable to be disqualified as per this sub clause using the Form PS3 given in Section-3: Qualification and Information/Bidding Forms. Non-submission of an affidavit by the Tenderer shall result in summary rejection of his Tender.** Tenderers shall immediately inform the Employer in case they cease to fulfil eligibility in terms of ITT **clause** 2 above. In case the Tenderer fails to inform the Employer or submits a false affidavit, his Tender shall be summarily rejected and Tender security shall be forfeited. The Tenderer shall also be liable for Banning of Business dealings for a period up to five years
2.6	**PARTNERS IN CASE OF JV/CONSORTIUM** (i) Lead partner must have a minimum of 50% participation in the JV/Consortium. (ii) Partners having 25% or more percentage participation shall be termed as substantial partner/other Partners. (iii) In case of JV/Consortium, change in constitution or percentage participation shall not be permitted at any stage after the bid submission. The bidder, in case of JV/Consortium, shall clearly and unambiguously define the role and responsibilities for each partner in the JV agreement submitted as per Form JV/4 of Section-3, providing clearly that any abrogation/subsequent re-assignment of any responsibility by any partner of JV/Consortium in favor of other JV/Consortium partner or any change in constitution of partners of JV/Consortium (without written approval of Client) from the one given in JV agreement at tender stage, will be treated, as 'breach of contract condition' and/or 'concealment of facts' as the case may be and acted accordingly. All Members of the JV/ Consortium must have experience in execution of similar work.
3.3(a)	**The following para is added:**

K-RIDE

	Materials, Equipment and Services The materials, equipment and services to be supplied under the Contract shall be from the approved sources as specified in Section 8A: Works Requirements and Price Schedule Section-9.
7.3	**The following para is added:** The Employer is not responsible for the completeness of the Bidding Document and their Addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids. The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
8.3	**The following para is added:** The Pre-Tender meeting may also be attended through video conferencing (VC). Those Tenderers who wish to join the Video Conferencing shall send a request email on the email id (i.e. **jgmelec@kride.in**) by **29/10/2021** up to **15:00 hours IST**, so that a link for Video Conferencing can be sent by K-RIDE. Please note that the request received from the Tenderers (With details of the Company, its address, and the name and designation of the person attending the VC) will only be entertained. They should also mention the email id through which VC is desired to be joined. K-RIDE may allow maximum of two email Ids for one company to participate in the VC. Any request for VC received after the given date and time for sending the link for VC will not be entertained. Prospective Tenderers will be able to join the VC through the link provided to them on Email ID. During pre- Proposal meeting, prospective Tenderers may request for clarifications.
10.3	**The following para is added:** **Documents Comprising the Tender** • The Tender shall comprise of Tender Security/Tender Security Declaration, Technical Tender and Price Tender. The Tenderer shall submit the Tender through Karnataka Public Procurement Portal. • On the stipulated date of opening of Tenders, initially, only the Technical Tenders are opened through Karnataka Public Procurement Portal. The Technical Tenders shall be evaluated by the Employer in accordance with the stipulated Qualification and Evaluation criteria. No amendments or changes to the Technical Tenders would be permitted after the opening of technical Tenders. • Tenderers who are qualified in the technical evaluation their price Tender shall be opened at a date and time advised by the Employer(K-RIDE) through e-tendering portal. The Price Tenders are evaluated and the Contract is awarded to the Tenderer whose Tender has been determined to be the lowest evaluated substantially responsive Tender. **The Technical Tender shall contain the following:** • All the Forms of Section-3: Qualification Information/Bidding Forms including letter of technical Bid (LTB) shall be scanned and uploaded. • The Tenderer shall furnish a commitment in Letter of Technical Bid (LTB) for deployment of equipment and personnel as stipulated in Section 8A: Employers Work's Requirement.

K-RIDE

	• The Tenderer shall furnish commitment in LTB for submitting construction method statement for all major activities of work and get this approved from the engineer prior to the commencement of work on that activity in case of award of contract. • The Tenderer shall furnish a commitment in Letter of Technical Bid (LTB) for adhering to mobilisation and construction schedule as stipulated in Section 8A: Employers Work's Requirement. • **Tenderer should note that non-submission of the Letter of Technical Bid (LTB) by the Tenderer shall result in summary rejection of his Tender.** • Tenderer shall submit the Approach and Methodology for performing the assignment by using appropriate Performa given in Section 3: Qualification Information/Bidding Forms. • Scanned copy of Tender Security/Tender Security Declaration form (Section 3), in accordance with ITT Clause 13; • Scanned copy of written confirmation authorizing the signatory of the Tender to commit the Tenderer, any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender. • Scanned copy of documentary evidence with establishing the Tenderer's qualifications to perform the contract; To establish its qualifications to perform the Contract in accordance with Section 2: ITT the Tenderer shall submit as part of its technical Tender the information requested in the corresponding information sheets included in Section 3: Qualification Information/Bidding Forms. Domestic Tenderers, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility • Scanned copy of Approach and Methodology - Performa given in Section-3: Qualification Information/Bidding Forms • Scanned copy of Joint Venture Agreement entered into by all partners **The Price Tender shall contain the following:** • Scanned copy of Letter of Price Tender. • All Section-3 Documents shall be scanned and submitted. • Filled/completed schedules as required including Price Schedule in accordance with ITT Clauses should be submitted through Karnataka Public Procurement Portal only; • The Tenderer shall submit through Karnataka Public Procurement Portal, separate Technical Proposal and Price Proposal for each individual contract package, using the appropriate Submission Sheets furnished in Section-3: Qualification Information/Bidding Forms. These Forms must be completed without any alterations to their format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested. • The Tenderer shall submit, as part of the Price Tender, the Schedules, including the Price Schedule through Karnataka Public Procurement Portal only.

K-RIDE

11.5	**The following para is added:** **Tender Prices** • The prices quoted by the Tenderer in the Letter of Price Tender (LPB)and in the Price Schedule shall conform to the requirements specified below. • DELETED • The Tenderer shall fill in the amount against each schedule of the price schedule.. **Items against which no amount or price is entered by the Tenderer will not be paid for by the Employer when executed and shall be deemed to be covered by the lumpsum amount quoted in the** Price Schedule. • The price to be quoted in the Letter of Price Tender, in accordance with ITT, shall be the total price of the Tender. • DELETED. • DELETED • Unless otherwise provided in the ITT and the Contract, the lumpsum amount quoted by the Tenderer are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the indices and weightages for the price adjustment formulae shall be as specified in the Tables of Adjustment Data included in Contract Data. • DELETED • All duties, taxes including GST, royalties, cess and other levies payable by the Contractor under the Contract, or for any other cause (including standard specifications), as of the date 28 days prior to the deadline for submission of Tenders, **shall be included in the lumpsum amount of** Price Schedule **and the total Tender Price submitted by the Tenderer.** GST shall be paid by the Tenderer as applicable in accordance with the prevailing rules of Government of India. • Tenderers should note that during the progress of the works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Sub-Clause 14/ITT (Currencies of Bid and Payment) of the Conditions of Contract. Any such adjustment shall be affected by comparing the percentages quoted in the Tender with the amounts already used in the Works and the Contractor's future needs for imported items. • **Tenderer should note that non-submission of the Letter of Price Tender (LPB) by the Tenderer shall result in summary rejection of his Tender.** • Online alternative Price Tender corresponding to the alternative Technical Tender, if permissible, in accordance with ITT Clause 14;
13.7	**The following para is added:**

K-RIDE

In this tender, the tender security/ EMD need not be paid. Tender security declaration as per form BDF-1 has to be submitted.

The Tender security shall be, at the Tenderer's option, in any of the following forms:

(a) A Cashiers or Banker's certified cheque or Bank draft drawn on a Scheduled/Nationalized Bank in India in favour of "Rail Infrastructure Development Company (Karnataka) Ltd" payable at Bengaluru;

or

(b) An unconditional bank guarantee using the Form given in Section 3: Qualification Information and Bidding Forms. The bank guarantee shall be from a bank having minimum net worth of over INR 500 million from the specified banks as under:

(i) a Scheduled Bank in India, or

(ii) a Foreign Bank having their operations in India, or

(iii) a Foreign Bank which do not have operations in India is required to provide a counter-guarantee by State Bank of India,

(c) The Scheduled Bank issuing the Bank Guarantee must be on "Structure Financial Messaging System (SFMS)" platform. A separate advice of the BG shall be invariable be sent by the issuing bank to the Employer's Bank through SFMS and only after this the BG shall become operative and acceptable to the Employer.

Further, the Tender Security in Original form along with a copy of "MT760COV (in case of Bank Guarantee message) / MT767COV (in case of Bank Guarantee amendment message) Report" sent by the BG issuing Bank Sealed in an envelope shall be submitted, as stated in ITT 15.
The Issuing Bank shall send the SFMS to:
Beneficiary: Rail Infrastructure Development Company (Karnataka) Limited (K-RIDE)
Bank Name: Canara Bank
Branch: Prime Corporate Branch
Account No. 0430201012110
IFSC Code: CNRB0002636

K-RIDE

The Tender security shall be valid up to 45 days beyond tender validity, or up to the date mentioned in the letter of request for extension, if any under ITT 12.

In case the Tenderer has opted for Tender security in the form of an unconditional Bank Guarantee, the Tenderer should upload the scanned copy of Bank Guarantee with the Tender. The original Bank Guarantee should be delivered in person to the official nominated as indicated in the Tender data sheet within 5 working days of deadline of submission of Tenders. Non submission of scanned copy of Bank Guarantee with the Tender on e-tendering portal and/or non-submission of original Bank Guarantee within the specified period shall lead to summary rejection of Tender. The details of the BG, physically submitted should match with the details available in the scanned copy and the data entered during Tender submission time, failing which the Tender will be rejected.

a. Unless otherwise specified in the BDS, any Tender not accompanied by an enforceable and compliant Tender security as required in accordance with ITT, shall be summarily rejected by the Employer as non-responsive.

b. The Tender security of the Tenderer who have been determined to be unqualified for opening of their financial Tender shall be returned within 3 working days after the opening of financial Tender.

	The Tender security of unsuccessful Tenderers shall be returned within 7 working days after issue of LOA to the successful Tenderer. c. The Tender security of the unsuccessful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required performance security. d. The Tender security may be forfeited: (a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Letter of Tenders, except as provided in ITT Clause 12 or (b) if a Tenderer misrepresents or omits the facts in order to influence the procurement process; (c) if the successful Tenderer fails to: (i) sign the Contract in accordance with ITT Clause 28; (ii) furnish a performance security in accordance with ITT 29; (iii) accept the correction of its Tender Price pursuant to ITT 24; or (iv) furnish a domestic preference security if so required. (d) if the undertaking of the affidavit submitted by the Tenderer or its constituents in pursuance to ITT clause 2 or any of the declarations of Letter of Technical Tender or Letter of Price Tender submitted by the Tenderer has been found to be false at any stage during the process of Tender evaluation. e. The Tender Security of a JV/ Consortium shall be in the name of the JV/ Consortium that submits the Tender or the lead member of the JV/Consortium. If the JV/ Consortium has not been legally constituted at the time of Tendering, the Tender Security shall be in the names of all future partners as named in the letter of intent/ of JV/ Consortium mentioned in ITT Clause 2)
14	**The following para is added:** The Tender, as well as all correspondence and documents relating to the Tender exchanged by the Tenderer and the Employer, shall be written in English. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate translation of the relevant passages in English in which case, for purposes of interpretation of the Tender, such translation shall govern
15	**The following para is added:** **Sealing and Marking of Tenders** The Tenderer shall submit the technical Tender, Price Tender and the Tender Security/Tender Security Declaration through Karnataka Public Procurement Portal i.e., https://eproc.karnataka.gov.in. The original of the Technical Proposal, which will contain all Forms of Section 3 except Forms PS 2 and Price Schedule Section 9 and all other relevant data specified in the Tender document. The Price Bid, shall be submitted through Karnataka Public Procurement Portal only. This "PRICE BID" will contain only Forms PS 2 of Section 3 & Price Schedule and all other relevant data specified in this Tender document. All forms should be typed on the Tenderer's' letter head as per the exact format of the Forms. The above forms should be scanned and submitted through Karnataka Public Procurement Portal.

K-RIDE

	No details about price proposal shall be disclosed directly or indirectly in the technical proposal failing which the Tender shall be rejected. **Only Electronic Tender submission and opening procedure permitted.**
19.7	**The following para is added:** **Tender Opening** • The Employer shall conduct the opening of Technical Tenders through Karnataka Public Procurement Portal i**.e.,** https://eproc.karnataka.gov.in on the date and at the time mentioned**.** • The date and time of the opening of Price Tenders will be announced through Karnataka Public Procurement Portal • At the end of the evaluation of the Technical Tenders, the Employer will intimate Tenderers who have submitted substantially responsive technical proposals and who have been determined as being qualified for award to attend the opening of the price Proposals. The date and time, of the opening of Price Tenders will be advised through email/e-procurement. Tenderers shall be given reasonable notice for the opening of Price Tenders. • The Employer will notify Tenderers in writing who have been rejected on the grounds of being substantially non-responsive to the requirements of the Tendering Document and who have been determined as being not qualified as a result of evaluation of technical proposal and their Price Tender shall not be opened. The Tender security of the Tenderers shall be returned as per due process. • The Employer shall conduct the opening of Price Tenders through Karnataka Public procurement portal i.e., https://eproc.karnataka.gov.in of all Tenderers who have submitted substantially responsive Technical Tenders and who have been determined qualified as a result of technical evaluation.
23.4	**The following para is added:** **Deviations, Reservations, and Omissions** During the evaluation of Tenders, the following definitions apply: (a) "Deviation" is a departure from the requirements specified in the Tendering Document; (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Tendering Document; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the Tendering Document.
24.3	**The following para is added:** **Nonconformities, Errors, and Omissions** • Provided that a Tender is substantially responsive, the Employer may waive any nonconformities in the Tender that do not constitute a material deviation, reservation or omission.

K-RIDE

	• Provided that a Tender is substantially responsive, the Employer may request the Tenderer to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Tender related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Tender. Failure of the Tenderer to comply with the request may result in the rejection of its Tender.
24.4	**The following para is added:** **Correction of Arithmetical Errors and Omissions in Tender and Evaluation of Tender Price** 1. Provided that the Tender is substantially responsive, the Employer shall correct arithmetical errors and omissions in the Tender and then arrive at the Evaluated Tender Price on the following basis: (a) DELETED (b) if the amount has been quoted both in words and in figures and there is a discrepancy in such amount, then the lower of the two shall prevail and shall be considered for evaluation of the price of the schedule. (c) If the amount has been quoted either in words or in figures only, then the same shall be considered for evaluation of the price of the schedule. (d) If no amount has been indicated for any particular schedule in words, as well as in figures, irrespective of the fact whether the Tenderer has written or not written, in such cases, the lumpsum amount of the schedule shall be considered as zero and shall be calculated accordingly; (e) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. (f) DELETED 2. If the Tenderer has submitted the lowest evaluated Tender does not accept the correction of errors and omissions as per above provisions, its Tender shall be disqualified and its Tender security shall be forfeited or its Tender-Securing Declaration executed.
25.6	**The following para is added:** **Conversion to Single Currency** For evaluation and comparison purposes the currencies of the Tender shall be converted into Indian Rupees as stated in BDS. An Abnormally Low Tender is one in which the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer to perform the contract at the offered price. The Employer may in such cases seek written clarifications from the Tenderer, including detailed price analysis of its Tender price in relation to scope, schedule, allocation of risks and responsibilities, and any other requirements of the Tender document. If, after evaluating the price analyses, the Employer determines that the Tenderer has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Employer may reject the Tender/ proposal. Additional Performance Security in case of abnormally low Tenders will have to be submitted. **The calculation sheet is as below:**

K-RIDE

	If the bid, which results in the lowest Evaluated Bid Price is substantially on lower side and/or seriously unbalanced in the opinion of the Employer as per criteria defined below, the Employer may require the bidder to submit additional performance security as under:- a) If overall price quoted by the L1 bidder is below the engineer's estimated price by more than 10% and the difference between overall price quoted by the L1 and L2 is more than 5% of the estimated price, then the bid price of L1 bidder shall be treated as substantially on lower side and such bidder shall be bound to furnish additional performance security equal to the (0.9x engineer's estimated price – L1 price) or (0.95 x L2 price – L1 price) whichever is lower, on this account. Example below demonstrates the method of calculation to arrive at additional performance security: Suppose overall price quoted by the L1 bidder is 17% below the estimated price and the overall price quoted by L2 bidder is 8% below the estimated price. In this case the overall price quoted by the L1 bidder is lower by more than 10% of the estimated price and also the difference between overall price quoted by the L2 and L1 bidder is more than 5% of the estimated price, hence the L1 bidder shall be required to furnish additional performance security for an amount equal to {0.9 x engineer's estimated price – (1-17/100) x engineer's estimated price} = {0.07 x engineer's estimated price} = 7% of engineer's estimated price or {0.95 x (1-8/100) x engineer's estimated price – (1-17/100) x engineer's estimated price} = {0.044 x engineer's estimated price} = 4.4% of engineer's estimated price; whichever is lower. As per the above L1 bidder shall be required to submit additional performance security of 4.4% of engineer's estimated price. b) If for any bill/ schedule of quantities % age above or below quoted by the bidder on the estimated price is beyond 15% below the overall % age difference between the quoted contract price and the engineers estimated price, then the price for that particular schedule shall be treated as seriously unbalanced and bidder shall be bound to furnish additional performance security for such unbalanced price. Example below demonstrates the method of calculation to arrive at unbalanced price and additional performance security: Suppose for the L1 bidder overall % age difference between quoted contract price and the engineers estimated price; (Overall contract price – Overall estimated price) x 100 ÷ overall estimated price = + 4 % Maximum % age below permitted over estimated price of any bill / schedule in this case = +4 – 15 = -11% Suppose for the L1 bidder has quoted 20% below estimated price then the pricing shall be treated as unbalanced and the bidder shall be required to furnish additional performance security for an amount equal to (20 – 11) % of the estimated price.
26.2	**The following para is added:** **Award Criteria** • The Employer shall award the Contract to the Tenderer whose Tender is substantially responsive to the Tendering Document, provided further that the Tenderer is determined to be qualified to perform the Contract satisfactorily and whose offer has been determined to be the lowest evaluated subject to ITT below. In case of more than one Tenders are evaluated to be lowest, Contract shall be awarded to the Tenderer having higher average annual construction turnover (calculated as total certified payments received for contracts in progress or completed) in equivalent INR within the last Two financial years.

K-RIDE

	• The Employer has the right to review at any time prior to award of contract that the qualification criteria as specified in Section-3: Qualification Information and Bidding Forms are still being met by the Tenderer whose offer has been determined to be the lowest evaluated Tender. A Tender shall be rejected if the qualification criteria as specified in Section-3: Qualification Information and Bidding Forms are no longer met by the Tenderer whose offer has been determined to be the lowest evaluated Tender. In this event the Employer shall proceed to the next lowest evaluated Tender to make a similar reassessment of that Tenderer's capabilities to perform satisfactorily.
29.5	**The following para is added:** **Performance Security** The successful Tenderers shall have to submit a Performance Guarantee (PG) Within twenty (20) days from the date of issue of Letter of Acceptance (LOA). Extension of time for submission of PG beyond 20 days up to 60 days from the date of issue of LOA may be given by the authority who is competent to sign the contract agreement. However, a penal interest of 12% of per annum shall be charged for the delay beyond 20 days, i.e. From 21st day after the date of issue of LOA. Further if the 60th day happens to be declared holiday in the office of K-RIDE, submission of PG can be accepted on the next working day. In all other cases if the contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract is liable to be terminate. In case contract is terminated K-RIDE shall be entitled to forfeit the Tender security and other dues payable against to the contract. In case the tenderer has not submitted by security on the strength of their registration as a start-up recognized by the Department of Industrial Policy and Promotion (DIPP) under Ministry of Commerce and Industry, DIPP shall be informed to this effect. The failed contractor shall be debarred from participating in re-tender for that work. Failure of the successful Tenderer to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender security or execution of the Tender-Securing Declaration. The above provision shall also not apply to the furnishing of a Domestic Preference Security, if so required.
New Clause-1	**LITIGATION HISTORY:** (Please see Annexure Tendering Forms). The Tenderer/Tenderers should provide accurate information on any litigation or arbitration resulting from contracts completed or under its execution over the last five years as on date of submission of this tender. If the litigation started by the Tenderer without recourse to measures of Dispute Resolution and Arbitration as provided in the Contract or the litigation in respect of challenge of award of Arbitration by the Tenderer, will be treated as Litigation case indulged by the Tenderer for this Para of Litigation History. A consistent history of awards against the Applicant or any partner of a joint venture may result in failure of the application. **Note**: Tenderers including each of the partners of a Joint Venture, should provide information on any history of litigation or Arbitration resulting from contracts executed in the last 5 years as on date of submission of this tender. A separate sheet should be used for each partner of a Joint Venture

K-RIDE

New Clause-2	**Jurisdiction of Courts** The Tendering process shall be governed by and construed in accordance with the laws of India and the Courts as indicated in Tender Data Sheet shall have exclusive jurisdiction over all the disputes/issues arising under, pursuant to and/ or in connection with the Tendering process. The **Jurisdiction of Courts is Bengaluru, Karnataka**

K-RIDE

SECTION-3

QUALIFICATION INFORMATION/BIDDING FORMS

INDEX

SECTION-3: QUALIFICATION INFORMATION/BIDDING FORMS

This Section contains the forms which are to be completed by the Bidder and to be submitted as part of this Bid.

Sl. No.	Description	Form Number/ Para No.	Page No.
	A) Qualification Information/Bidding Forms		
1.	Legal status of Tenderer	Para No. 1.1	51
2.	Executed and Payment Received statement for 5 Years	Para No. 1.2	51
3.	Similar Work Experience	Para No. 1.3	52
4.	Quantities of Work executed in Last 5 years	Para No. 1.4	53
5.	Information on Works (Existing, Ongoing and Works for which Tenders already submitted)	Para No. 1.5	54
6.	Availability of Plant and Equipment Details	Para No. 1.6	55
7.	Reports of Financial Standing (Profit and Loss Statements)	Para No. 1.7	55
8.	Qualification and Experience of Key Personnel	Para No. 1.8	55
9.	Tenderers bankers Details	Para No. 1.9	55
10.	Evidence of access to Financial Resources	Para No. 1.10	55
11.	Proposed Subcontracting components	Para No. 1.11	55
12.	Information on Litigation History	Para No. 1.12	56
13.	Proposed Methodology and Program of construction	Para No. 1.13	57
	B) Additional Qualification Information/Bidding Forms		
14.	Letter of Technical Bid	Form PS 1	58
15.	Letter of Price Bid	Form PS 2	61
16.	Format for Affidavit (along with Bid)	Form PS 3	63
17.	Bid Security Declaration Form	Form BDF/1	66
18.	Letter of participation from Each partner of Joint Venture (JV)/ Consortium	Form JV/Consortium/1	67
19.	Power of attorney for authorized signatory of Joint Venture (JV)/ Consortium partners	Form JV/Consortium/2	69
20.	Power of attorney to Lead partner of joint venture (JV)/ Consortium	Form JV/Consortium/3	70
21.	Draft Joint Venture Agreement	Form JV/Consortium/4	72
	Bidder Qualification		
22.	Bidder's Information Sheet	Form ELI - 1	76
23.	JV/Consortium Information Sheet	Form ELI – 2	77
24.	Financial Situation	Form FIN - 1	78
25.	Annual Construction Turnover	Form FIN – 2	80
26.	Current Contract Commitment	Form FIN - 3	81
27.	Deleted	Form No 1	
28.	Checklist for clauses pertaining to Summary Rejection of bid	Form No 2	83
29.	Format for certificate to be submitted by bidder along with the bid	Form 3 C1	84
30.	Format for certificate to be submitted by Bidder along with the bid for subcontracting	Form 3 C2	85
31.	Deleted	Form 4	
32.	Key Personnel for the work	Form 5	86
33.	Format of Curriculum Vitae (cv) for proposed key professional staff	Form 6	87
34.	Undertaking from specialist sub-contractor	Form CL-2	88
35.	Availability of Financial Resources	Form CL-3	89
36.	Evidence of Availability of Credit Line Financial Resources	Form CL-4	90
37.	Work Experience Certificate	Form EXP-1	91

K-RIDE

A) QUALIFICATION INFORMATION/BIDDING FORMS

1. QUALIFICATION INFORMATION

The information to be filled in by the Tenderer hereunder will be used for purposes of computing Tender capacity as provided for in Clause 2 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1. **Constitution or legal status of Tenderer**

Place of Registration: _____ [Attach copy]

Principal place of business: _____ [Attach Copy]

1.2. **Total value of construction works executed and payments received in the preceding five Financial Years. (Rs. In Crores) (attach certificate from Statutory Auditors)**

2016-2017: ----------

2017-2018: ----------

2018-2019: ----------

2019-2020: ----------

2020-2021: ----------

K-RIDE

1.3. **Work performed as Contractor (in the same name) on works of similar nature over during the five financial years specified in 1.2 above**.

Project Name	Name of Employer	Description of Work	Contract Number	Value of contract Rs. Cr.	Date of Issue of work order	Specified period of completion	Actual date of completion	If partner in a JV/ Consortium, specify participation in total contract amount	Remarks explaining reasons for delay in completion of work
1	2	3	4	5	6	7	8	9	10

Note:

(1) If the qualifying work of similar nature is done by a joint venture/consortium, then Value shall be considered as per percentage participation by the member(s) in that joint venture/consortium.

(2) Value of similar nature of work completed shall be updated up to 2021-22 price level as per table given below:

Financial year	2016-17	2017-18	2018-19	2019-20	2020-21
Indian Currency					
Foreign Currency					

K-RIDE

(3) For completed works, the value of work done shall be updated to current FY 2021-22 price level assuming 10% inflation for Indian rupees every year or part thereof up to the month previous to the Bid submission month. Credentials if submitted in foreign currency shall be converted into Indian currency i.e., Indian Rupee as under: Bids will be compared in Indian Rupees only. The exchange rate of foreign currency shall be applicable 28 days before the tender submission date. For conversion of foreign currency to Indian Rupee exchange rates published by Financial Benchmarks Private limited (www.fbil.org.in) 28 days before the date of bid submittal will be considered. In case the particular day happens to be a holiday the exchange rate published on the next working day will be considered. In case of works in foreign currency the effect of inflation is considered as included, as the exchange rate prevailing 28 days before tender submission is being considered for conversion to Indian Rupees,

The bidder shall attach a copy of the Certificate(s) issued by the employer in support of the information being furnished in the above form, failing which the claim of the bidder shall be liable to be rejected (in case of experience as a sub-contractor, the employer shall be the owner of the Project who has engaged the main Contractor).

_____

SEAL AND SIGNATURE

1.4. **Quantities of work executed as contractor (in the same name) during the last five financial years.**

Year	Name of Work	Name of Employer	Quantity of work performed (As mentioned in Qualification of the Tenderer Clause 3.2)	Remarks (Indicate contract reference Contract No., Award Date, Completion date, Role in contract, total contract amount, JV participation proportion, performance)
			Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 HZ, Single Phase, Traction Overhead Equipment for Railway Electrification	
2016-2017				
2017-2018				
2018-2019				
2019-2020				
2020-2021				

K-RIDE

Note:

1) Copy of Certificate(s) issued by the employer in support of the information being furnished above, shall be attached with each respective form, as per detailed requirements indicated in clause 3.2 (c) and 3.2 (d) of Section 2 failing which the claim of the bidder shall be liable to be rejected (in case of experience as a sub-contractor, the employer shall be the owner of the Project who has engaged the main Contractor).

_____

SEAL AND SIGNATURE

1.5. **Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.**

(A) Existing commitments and on-going works:

Description of Work	Place & State	Contract No. & Date	Name and Address of Employer	Value of Contract (Rs. In Crores)	Stipulated period of completion	Value of works remaining to be completed (Rs. In Crores) (Attach certificate from Engineer in charge)	Anticipated date of completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(B) Works for which Tenders already submitted:

Description of Work	Place & State	Name and Address of Employer	Estimated value of works (Rs. In Crores)	Stipulated period of completion	Date when decision is expected	Remarks if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)

K-RIDE

1.6. **The following items of equipment are considered essential for successfully carrying out the works. The Tenderer should furnish all the information listed below. (The item of the equipment required no.s and capacity should match with those specified in ITT clause 3.3(a)**

Item of Equipment	Requirement			Owned and available nos/Age/Capacity/ Condition	Remarks (The details of hired/leased equipment details to be indicated)
	Nos	Capacity	Owned		

1.7. **Reports on the financial standing of the tenderer, such as profit and loss statements and auditor's reports for the last five years;**

1.8. **Qualification and experience of the key technical and management personnel in permanent employment with the tenderer and those that are proposed to be deployed on this contract, if awarded.**

1.9. **Name, address, and telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.**

1.10. **Evidence of access to financial resources to meet the qualification requirement specified in ITT Clause 3.3 (b): Cash in hand, Letter of Credit etc. List them and attach certificate from the Banker in the suggested format given in Section 3, Form No.CL3 & CL4.**

1.11. **Proposals for subcontracting components of works amounting to more than 20% of the contract price**.

Item of Work	Value of Sub-Contract	Identified Sub-Contractor (Name and Address)	Experience of similar works (Attach Certificates from the respective Employers)	Remarks (Undertaking from Specialist subcontractors to be provided as per Form CL-2)

K-RIDE

1.12. **Information on litigations in which the Tenderer is involved:**

Litigation History

(This has reference to Eligibility cum Qualification Criteria document.)

Name of Tenderer or member of Joint Venture: -

Sl. No.	Name of the Employer/ Client	Name of the work	No. of cases in the work	cause of Litigation/ arbitration/ details of disputes	Year	Litigation/ arbitration initiated by	Award in favor of Tenderer/ Client	Disputed Amount	Remarks showing present status

K-RIDE

Note: Tenderers including each of the partners of a Joint Venture, should provide information on any history of litigation or Arbitration resulting from contracts executed in the last 05 years as on date of submission of this tender. A separate sheet should be used for each partner of a Joint Venture

1.13. **The proposed methodology and program of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones**.

APPROACH & METHODOLOGY PROPOSED FOR PERFORMING THE ASSIGNMENT

Name of Project: "**.....**

The approach and methodology will be detailed precisely under the following topics:

1. Understanding of the assignment
2. Work Breakdown structure/ Work plan.
3. Composition of the Team
4. Organizational set up/ Construction methodology for execution of the work as outline in Section 8A
5. Documentation and procedures to be prepared, adopted and furnished to K-RIDE (Rail Infrastructure Company (Karnataka) Limited.
6. Reporting Procedure
7. Sourcing of Material

K-RIDE

Note:

i. **The approach and methodology should be precise and relevant to the assignment. Include Bar charts.**

B) ADDITIONAL QUALIFICATION INFORMATION/BIDDING FORMS

Form: PS1

LETTER OF TECHNICAL BID

(Seperately for each Package) ……
Date……..

Invitation for Bid No.:……

To,

……..

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Tenderer (ITT);

(b) We offer to execute the Works in conformity with the Bidding Documents;

(c) Our bid shall be valid for a period of 180 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(d) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(e) If our bid is accepted, we commit to deploy key equipment and key personnel consistent with the requirements stipulated in Section 8A: Works Requirements.

(f) If our bid is accepted, we commit to submit work method statements for all major activities and get these approved from the engineer prior to commencing work on such activities. We also understand that the work shall be executed as per the approved method statements and KEY DATES without any deviations and delay in completion.

(g) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITT clause 2.4;

(h) We declare that we are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITT clause 2.2, other than alternative offers submitted in accordance with ITT clause 14;

K-RIDE

(i) We declare that we are not liable to be disqualified in Accordance with ITT clause 2.5, and we are enclosing the affidavit for the same as per the Performa given in the bid document.

(j) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(k) We have not made any deviations from the requirement of the bidding document and we have also not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes are detected at any stage, we understand the bid will invite summary rejection and invocation of bid security declaration, the contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.

(l) We understand that we will be considered for participating for which we have submitted the bid security(ies) declaration form and we will be considered for award, subject to fulfilling the eligibility criteria as given in bidding document;

(m) If our bid is accepted, we opt to take payment into the bank account, nominated by us.

(n) We declare that the submission of this bid confirms that no agent, middleman or any intermediary has been, or will be engaged to provide any services or any other item of work related to the award and performance of this contract. We further confirm and declare that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the bid price does not include any such amount. We acknowledge the right of the Employer, if he finds to the contrary, to declare our bid to be noncompliant and if the contract has been awarded to declare the contract null and void

(o) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(p) A Power of Attorney to sign and submit this letter is attached.

(q) Having inspected the site, examined the complete bid document including Employer's requirements, Conditions of Contract, Special Conditions of Contract, particular conditions of Contract, Technical Specifications, Safety, Health & Environment (SHE) manual, Eligibility Cum Qualification Criteria, Instructions to Bidder and Addenda/Corrigendum etc., thereto (if any) for above mentioned work and prepared the bid entirely in accordance with all the requirements of the bid document and agree entirely with them.

(r) We here by confirm that we have visited the sites of work and have become conversant with the local conditions of working.

(s) For the purpose of your evaluation, study, review and decision-making we are ready to let you inspect our business premises / site, etc.

(t) We authorize K-RIDE or any of their authorized representative to approach, enquire, verify and check the matter furnished in our submission with the concerned client / owner of the Project / Contract and the concerned Banker of reference provided by us.

K-RIDE

(u) We undertake to hold in confidence all documents and information whether Technical or Commercial supplied to us at any time by or on behalf of K-RIDE in connection with this bid and without your written authority or as otherwise required by law not to publish or otherwise disclose the same.

(v) If our bid is accepted, we agree to establish our project office in Bangalore.

(w) We have submitted the Statement of Integrity, Eligibility, Social, and Environmental Responsibility signed and abide by the same.

(x) We understand that this Bid shall be governed by and construed in all respects according to the laws for the time being force in India. The courts at Bangalore will have exclusive jurisdiction in the matter.

(y) We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We hereby confirm that this Tender complies with the Tender validity and Earnest money deposit required by the Tender documents.

(z) We confirm and declare that by virtue of our signature below, to the best of knowledge and belief that the information provided by us as required in this Bid Document, all supporting and explanatory information is truthful and exact.

K-RIDE

Name…… ……..... In the capacity of…… …...

Signed ……

Duly authorized to sign the Bid for and on behalf of ……. …....

Date ……

(SEAL AND SIGNATURE OF THE BIDDER)

Form: PS 2

LETTER OF PRICE BID

Date……

Invitation for Bid No.……

To,

……..

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITT) 9;

(b) We offer to execute the Work in conformity with the Bidding Documents;

(c) The total price of our Bid, indicated in the Price Bid **Section 9: Price Schedule**.

(d) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(e) We have not made any deviations from the requirement of the bidding document and we have also not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes are detected at any stage, we understand the bid will invite summary rejection and forfeiture of bid security/the contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.

(f) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name……
……..... In the capacity of
…….....
Signed
……
……....

K-RIDE

Duly authorized to sign the Bid for and on behalf of

……..

Date

……

…….....

Seal

……

…….....

K-RIDE

Form: PS 3

FORMAT FOR AFFIDAVIT TO BE SUBMITTED BY BIDDER ALONGWITH THE BID

(To be separately given for each package)

(To be executed in presence of Public Notary on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper has to be in the name of the bidder) **

I **…….** ***(Name and designation)*** ****……** appointed as the attorney/authorized signatory of the bidder (including its constituents), M/s. _____ (hereinafter called the bidder) for the purpose of the Bid for the work of _____ as per the bid No._____ of K-RIDE, do hereby solemnly affirm and state on behalf of the bidder including its constituents as under:

*1. That the bidder or any of its constituents has not been Blacklisted/ banned for business dealings for all Government Departments or by Ministry of Railways or by K-RIDE at any time and/or no such blacklisting is in force as on the deadline for submission of bids.

*2. That none of the previous contracts of the bidder or any of its constituents had been terminated/rescinded for Contractor's failure or part terminated for its failure as a JV/ Consortium partner with forfeiture of its full Performance Security, by Rail Infrastructure Development Company (Karnataka) Ltd. during the period of last 3 years before the deadline for submission of bids.

(Add Proviso of Clause 2, (ITT) suitably, if any Contract was so terminated).

*3. The bidder or any of its constituents has not been imposed liquidated damages of 5% or more of contract value by any Government Department or by Ministry of Railways or by K-RIDE due to delay in the implementation of any previous contract (either in the capacity of a single entity or as constituent of any other JV/ Consortium) within the period of last 2 years before the deadline for submission of bid [*2 years shall be reckoned from the date on which imposed L.D. has exceeded 5% of the contract price]* and there are no such accrued delay damages which has not been fully recovered before the deadline for submission of bids on account of contractor's request for deferring recovery to maintain cash flow and K-RIDE has acceded to the same in the interest of the project and the work under the previous contract in question has been completed before the deadline for submission of bid, unless imposition of such delay damages has been set aside by the Competent Authority.

4. That the Bidder or any of its constituents is neither Bankrupt/Insolvent nor is in the process of winding-up nor is such a case pending before any Court on the deadline of submission of the bid.

*5. That the name of the Bidder or any of its constituents is not on the list of "Poor Performer" of any Government Department or by Ministry of Railways or by K-RIDE as on the deadline for submission of bid.

6. We declare that the bidder or any of its constituents have not either changed their name or created a new business entity. Consequent to having been banned business dealings for specified period which is not over or suspended business dealings or having been declared as poor performer.

K-RIDE

7. We declare and certify that balance sheets for last five financial years including that for the latest concluded financial year are being submitted.

   OR

   We declare and certify that balance sheet for the latest concluded financial year has not been finalized till date and that is why we are furnishing financial data for last five financial years ignoring the latest concluded financial year.

   *(# - Delete whichever is not applicable) **.*

8. We declare and certify that we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

9. We declare that the information and documents submitted along with the bid by us are correct and we are fully responsible for the correctness of the information and documents, submitted by us.

10. We understand that in case we cease to fulfil the requirements of qualifying and eligibility criteria at any time after opening of bids and till finalization of bids, it will be our bounden duty to inform the Employer of our changed status immediately and in case of our failure to do so, our bid shall be rejected and bid security declaration form shall be forfeited. In case such failure comes to the notice of Employer at any time after award of the contract, it will lead to termination of the contract and forfeiture of Bid or Performance Security. We shall also be liable for Banning of Business dealings up to a period of five years.

11. We understand that if the contents of the affidavit are found to be false at any stage during bid evaluation, it will lead to rejection of our bid and forfeiture of the bid security. Further, we ***[insert name of the bidder]*** **_____ and all our constituents understand that we shall be liable for banning of business dealings up to a period of five years.

12. We declare and certify that we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

13. We also understand that our offer will be evaluated based on the documents/credentials submitted alongwith the offer and same shall be binding upon us.

14. We declare that the information and the document submitted along with the tender by us are correct and we are fully responsible for the correctness of the information and documents, submitted by us.

15. We undersigned that if the certificate regarding Eligibility Criteria submitted by us are found to be forged/false or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender EMD besides banning of business for five years in K-RIDE. Further, we (Insert name of the Tenderer)** ……. and all our constituents understand that our offer shall be summarily rejected.

16. We also understand that if the certificate submitted by us are found to be false/forged or incorrect at any time after the award of contract, it will lead to termination of the contract, along with forfeiture of EMD/SD and performance guarantee besides any other action provided in the contract including banning of business for five year in K-RIDE.

K-RIDE

(SEAL AND SIGNATURE OF THE BIDDER)

Verification:

We above named tenderer do hereby solemnly affirm and verify that the contents of our above affidavit are true and correct. Nothing has been concealed and no part of it is false.

(SEAL AND SIGNATURE OF THE BIDDER)

*Modify the contents wherever necessary, in terms of sub-clause 2 ITT.

** The contents in Italics are only for guidance purpose and details as appropriate, are to be filled in suitably by Bidder.

Attestation before Magistrate/Public Notary

K-RIDE

Form – BDF/1

BID SECURITY DECLARATION FORM

I, hereby submit a declaration that the tender submitted by the undersigned, on behalf of the tenderer……. **(Name of the Tenderer),** shall not be withdrawn or modified during the period of validity or extended period of validity.

I, on behalf of the Tenderer……. **(Name of the Tenderer)**, also accept the fact that in case the tender is withdrawn or modified during the period of its validity/extended validity period or if we fail to sign the contract in case a contract is awarded to us or we fail to submit a performance security and Additional Performance security, if any, before the deadline fixed in the Tender Documents, then……. **(Name of the Tenderer)** will be debarred for participation in the tendering process for the procurement of this Procurement Entity for a period of **one year** from the date of default.

(Signature of the Authorised Signatory, Official Seal)

K-RIDE

Form: JV/Consortium/1

PRO-FORMA LETTER OF PARTICIPATION FROM EACH PARTNER OF JOINT VENTURE (JV)/ CONSORTIUM

(On each Firm's Letter Head)

No……. Dated:…….

From,
……..
……..

To,

The General Manager,
Rail Infrastructure Development Company (Karnataka) Limited,
"Samparka Soudha", 1st Floor,
B.E.P Premises (Opp. Orion Mall),
Rajajinagar 1st Block,
Bangalore - 560 010.

K-RIDE

Gentlemen,

Re: … "*[Insert name of work*] ……..".
Ref: Your notice for Invitation for Bid (IFB) ……..

1. We wish to confirm that our company/firm (delete as appropriate) has formed a Joint Venture/ Consortium by name of …… with for the purposes associated with IFB referred to above.
   (Members who are not the lead partner of the JV/ Consortium *should add the following paragraph) *.*
2. 'The JV/ Consortium is led by … whom we hereby authorize to act on our behalf for the purposes of submission of Bid for ……. and authorize to incur liabilities and receive instructions for and on behalf of any and all the partners or constituents of the Joint Venture/ Consortium.'

OR

*(Member(s) being the lead member of the group should add the following paragraph) **

2. 'In this group we act as leader and, for the purposes of applying for qualification, represent the Joint Venture/ Consortium:'

3. In the event of our group being awarded the contract, we agree to be jointly with…… (names of other members of our JV/ Consortium) …… and severally liable to the (K-RIDE) Rail Infrastructure Development Company (Karnataka) Limited, Bangalore, its successors and assigns for all obligations, duties and responsibilities arising from or imposed by the contract subsequently entered into between Rail Infrastructure Development Company (Karnataka) Limited, Bangalore and our JV/ Consortium.

4. *I/We, further agree that entire execution of the contract shall be carried out exclusively through the lead partner.

Yours faithfully,

(Signature)

(Name of Signatory) …….

(Capacity of Signatory) ……

Seal

* Delete as applicable

K-RIDE

Form: JV/Consortium/2

FORMAT FOR POWER OF ATTORNEY FOR AUTHORISED SIGNATORY OF JOINT VENTURE (JV)/ CONSORTIUM PARTNERS

POWER OF ATTORNEY

(*To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney*)

Know all men by these presents, we … do hereby constitute, appoint and authorize Mr/Ms. …. who is presently employed with us and holding the position of ……as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for the work of …Including signing and submission of all documents and providing information/responses to Rail Infrastructure Development Company (Karnataka) Limited, Bangalore, representing us in all matters, dealing with Rail Infrastructure Development Company (Karnataka) Limited, Bangalore, in all matters in connection with our bid for the said project and if successful, till the whole of the bid process.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

Dated this the …… day of …….. 20…

(Signature of authorized Signatory)

……

(Signature and Name in Block letters of Signatory)

Seal of Company

Witness

Witness 1:	Witness 2:
Name:	Name:
Address:	Address:
Occupation:	Occupation:

**Notes:*

i. To be executed by all the partners individually, in case of a Joint Venture/ Consortium.
ii. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.
iii. Also wherever required, the executants(s) should submit for verification the extract of the charter documents and documents such as resolution/ power of attorney in favour of the person executing this power of attorney for the designation of power hereunder on behalf of the bidder.

K-RIDE

Form: JV/Consortium/3

FORMAT FOR POWER OF ATTORNEY TO LEAD PARTNER OF JOINT VENTURE (JV)/ CONSORTIUM

(*To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)*

POWER OF ATTORNEY

Whereas Rail Infrastructure Development Company (Karnataka) Limited Bangalore, has invited Bids for the work of

Whereas, the members of the Joint Venture/ Consortium comprising of M/s. …, M/s. ……, and M/s. …. are interested in submission of bid for the work of … *[Insert name of work*] … in accordance with the terms and conditions contained in the bidding documents.

Whereas, it is necessary for the members of the Joint Venture/ Consortium to designate one of them as the Lead Partner, with all necessary power and authority to do, for and on behalf of the Joint Venture/ Consortium, all acts, deeds and things as may be necessary in connection with the Joint Venture's/ Consortium's bid for the project, as may be necessary in connection the Joint Venture's/ Consortium's bid for the project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s. ……, hereby designate M/s. ……, being one of the partners of the Joint Venture/ Consortium, as the lead partner of the Joint Venture/ Consortium, to do on behalf of the Joint Venture/ Consortium, all or any of the acts, deeds or things necessary or incidental to the Joint Venture's/ Consortium's bid for the contract, including submission of bid, participating in conferences, responding to queries, submission of information/ documents and generally to represent the Joint Venture/ Consortium in all its dealings with K-RIDE/ Railway or any other Government Agency or any person, in connection with the contract for the said work until culmination of the process of bidding till the contract agreement is entered into with the Rail Infrastructure Development Company (Karnataka) Limited, Bangalore and thereafter till the expiry of the contract agreement.

We hereby agree to ratify all acts, deeds and things lawfully done by lead member, our said attorney, pursuant to this power of attorney and that all acts deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us/ Joint Venture/ Consortium.

Dated this the ……..… Day of …….. 202...

…….

(Signature)

……

(Name in Block letters of Executant)

Seal of Company

K-RIDE

Witness 1:	Witness 2:
Name:	Name:
Address:	Address:
Occupation:	Occupation:

Notes:

1. To be executed by all the Partners of the JV/Consortium except the lead Partner.

2. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

K-RIDE

Form: JV/Consortium/4

DRAFT FORMAT OF JOINT VENTURE/CONSORTIUM AGREEMENT

M/s ……. having its registered office at …… (hereinafter referred to as ……...…) acting as the Lead Partner of the first part,

and

M/s ……. having its registered office at ……. (here in after referred to as …….) in the capacity of a Joint Partner of the other part.

and

M/s ……. having its registered office at ……. (here in after referred to as …….) in the capacity of a Joint Partner of the other part.

The expressions of ……. and ……. shall wherever the context admit, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "the Parties" and individually as "the Party"

WHEREAS:

Rail Infrastructure Development Company (Karnataka) Limited (K-RIDE) [hereinafter referred to as "Employer"] has invited bids for … *"[Insert name of work]* ……..." Vide LOA No…….awarded contract.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The following documents shall be deemed to form and be read and construed as an integral part of this AGREEMENT.

    i. Notice for Bid, and
    ii. Bidding document
    iii. Any Addendum/Corrigendum issued by Rail Infrastructure Development Company (Karnataka) Limited
    iv. The bid submitted on our behalf jointly by the Lead Partner.
    v. Letter of Acceptance issued by Rail Infrastructure Development Company (Karnataka) Ltd.

2. The `Parties' have studied the documents and LOA issued to enter into Joint Venture/ Consortium as under and have agreed to participate.

3. M/s ……shall be the lead member of the JV/ Consortium for all intents and purpose and shall represent the Joint Venture/ Consortium in its dealing with the Employer. For the purpose of execution, the parties agree to nominate ……. as the leader duly authorized to sign and submit all documents and enter into correspondence with the Employer.

4. The 'Parties' have resolved that the distribution of share and responsibilities between the JV/Consortium partners is as under

(a) Lead Partner Share ..... %

K-RIDE

Responsibilities

(I) Key Activities and %age execution assigned

i. .....

(II) Price Schedule *No. and %age execution assigned*

i. .....

ii. .....

iii. .....

(b) Joint Venture/ Consortium Partner Share.....%

Responsibilities

(I) Key Activities and %age execution assigned

i. .....

(II) Price Schedule *No. and %age execution assigned*

i. .....

ii. .....

iii. .....

(c) Joint Venture/ Consortium Partner Share.....%

Responsibilities

(I) Key Activities and %age execution assigned

i. .....

(II) Price Schedule *No. and %age execution assigned*

i. .....

ii. .....

iii. .....

K-RIDE

Note: In case any Bill or items of a Bill are proposed to be executed by more than one JV/ Consortium partner then indicate the breakup of that Item/Bill no. for each JV/ Consortium partner.

5. JOINT AND SEVERAL RESPONSIBILITIES

The Parties undertake that they shall be jointly and severally liable to the Employer in the discharge of all the obligations and liabilities as per the contract with the Employer and for the performance of contract awarded to their JV/Consortium.

6. ASSIGNMENT AND THIRD PARTIES

The parties shall co-operate throughout the entire period of this AGREEMENT on the basis of exclusivity and neither of the Parties shall make arrangement or enter into agreement either directly or indirectly with any other party or group of parties on matters relating to the Project except with prior written consent of the other party and the Employer.

7. EXECUTIVE AUTHORITY

The said Joint Venture/ Consortium through its authorized representative shall receive instructions, payments from the Employer. The management structure for the project shall be prepared by mutual consultations to enable completion of project to quality requirements within permitted cost and time.

8. GUARANTEES AND BONDS

Performance Security and other Securities of a JV/ Consortium *shall be in the name of the JV/* Consortium *that submits the bid.*

9. BID SUBMISSION

Each Party shall bear its own cost and expenses for preparation and submission of the bid and all costs until conclusion of a contract with the Employer for the Project. Common expenses shall be shared by both the parties in the ratio of their actual participation.

10. INDEMNITY

Each party hereto agrees to indemnify the other party against its respective parts in case of breach/default of the respective party of the contract works of any liabilities sustained by the Joint Venture/ Consortium*.*

11. For the execution of the respective portions of works, the parties shall make their own arrangements to bring the required finance, plants and equipment, materials, manpower and other resources.

12. DOCUMENTS & CONFIDENTIALITY

Each Party shall maintain in confidence and not use for any purpose related to the Project all commercial and technical information received or generated in the course of preparation and submission of the bid.

13. ARBITRATION

Any dispute, controversy or claim arising out of or relating to this agreement shall be settled in the first instance amicably between the parties. If an amicable settlement cannot be reached as above, it will be settled by arbitration in accordance with the Indian Arbitration and Conciliation Act 1996 or any amendments thereof. The venue of the arbitration shall be Bangalore.

14. VALIDITY

This Agreement shall remain in force till the defect liability period is over and Securities are released.

15. *This AGREEMENT is drawn in …... number of copies with equal legal strength and status. One copy is held by M/s …… and the other by M/s. & …….M/s ……. and a copy submitted with the Bid.*

16. *This AGREEMENT shall be construed under the laws of India.*

K-RIDE

17. NOTICES BETWEEN JV/ CONSORTIUM PARTNERS

Notices shall be given in writing by fax confirmed by registered mail or commercial courier to the following fax numbers and addresses:

Lead Partner	Other Partner	Other Partner
……	……	……
……..	……	……
(Name & Address)	(Name & Address)	(Name & Address)

IN WITNESS WHEREOF THE PARTIES, have executed this AGREEMENT the day, month and year first before written.

M/s…….. M/s…….

……..…… ……..

(Seal) (Seal)

Witness

1……..(Name & Address)

2…….. (Name & Address)

K-RIDE

***

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 2 (Qualification Information) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

To establish its qualifications to perform the contract in accordance with Section 2 (Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

K-RIDE

The bidder shall attach copies of the following original documents with the form:

1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITT clause 2.
2. Authorization to represent the firm or JV/ Consortium named in above, in accordance with ITT clause 14.
3. In case of JV/ Consortium, JV/ Consortium agreement, in accordance with ITT clause 2.

SEAL AND SIGNATURE

Form ELI - 2: JV/ Consortium Information Sheet

Each member of a JV/ Consortium must fill in this form separately

JV / Consortium Information	
Bidder's legal name	
JV/ Consortium Partner's legal name	
JV/ Consortium Partner's country of constitution	
JV/ Consortium Partner's year of constitution	
JV/ Consortium Partner's legal address in country of constitution	
JV/ Consortium Partner's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Bidder's Bank Details: (a) Name of the Bank and branch: (b) Account Number: (c) IFSC code: (d) Bank's Contact Number and Fax Number: (e) PAN: (f) GST Registration No:	

K-RIDE

The bidder shall attach copies of the following original documents with the form:

1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITT clause 2.
2. Authorization to represent the firm named above, in accordance with ITT clause 14.

SEAL AND SIGNATURE

Note: Following needs to be submitted by the bidder;

(a) Affidavit in case of Proprietary firm.
(b) Partnership Deed in case of partnership firm.
(c) Memorandum & Article of Association in case of Public/Private limited company.
(d) Authorization/POA in favour of authorised signatory of bidder to sign the bid.

Form FIN-1: Financial Situation

(Each Bidder or each member of a JV/Consortium must fill in this form separately)

NAME OF BIDDER/JV/CONSORTIUM PARTNER

	Financial Data for Last 5 Years [Indian National Rupees]				
	Year 1:	Year 2:	Year 3:	Year 4:	Year 5:
1. Total Assets					
2. Current Assets					
3. Total Liabilities					
Current Liabilities					
5. **Net Worth** [= 1 – 3]					
6.Working Capital [= 2 - 4]					
7. Profit Before Tax (PBT)					

K-RIDE

1. **The bidder shall attach copies of the following original documents with the form**
   Copies of the audited balance sheets, including all related notes, and income statements for the last five years, as indicated above, complying with the following conditions.

   i. All such documents reflect the financial situation of the Bidder or partner to a JV/ Consortium, and not sister or parent companies.
   ii. Historic financial statements must be audited by a certified accountant.
   iii. Historic financial statements must be complete, including all notes to the financial statements.
   iv. Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

2. **Contents of this form should be certified by a Statutory Auditor**

   i. In the event that the audited accounts for the latest concluded Financial Year are not available, the Bidder shall furnish information pertaining to the last five financial years after ignoring the latest concluded financial year. In case, the bidder submits audited financial information for the last six or more years, only the figures for the latest five years shall be considered for evaluation.

   ii. Financial data for last five financial years has to be submitted by the bidder along with audited balance sheets. The financial information of the Bidder must be certified either by the Independent Financial Auditor (statutory Auditor) of the company appointed under the companies' Act.

iii. In case any discrepancy in data is found between the balance sheet and the financial information submitted, the data as available in the balance sheet will be considered.

iv. In case the audited balance sheet of the last financial year is not made available by the Bidder, he has to submit an affidavit certifying that 'The Balance Sheet has actually not been audited so far'. In such a case the financial data of previous '4' audited financial years will be taken into consideration for evaluation. If audited balance sheet of any year other than the last financial year is not submitted, then the bid will be considered as non-responsive

v. In case the company's financial year is from Jan 19 to Dec 19, then it will be considered under financial year 2019 - 20 similar procedure will be applicable for other financial years also.

_____

SEAL AND SIGNATURE OF THE BIDDER

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports.

K-RIDE

_____

(Signature of Statutory Auditor)

Name of Statutory Auditor : _____

Registration No: _____

_____

(Seal)

Form FIN-2: Annual Construction Turnover for the last 5 Financial years

Each Bidder or each member of a JV/ Consortium must fill in this form separately:

NAME OF BIDDER/JV/CONSORTIUM PARTNER:

Sl.No.	Year	Annual Turnover	Multiplying factor	Updated Annual turnover
		INR	INR	INR
1	2016-2017			
2	2017-2018			
3	2018-2019			
4	2019-2020			
5	2020-2021			

Annual Turnover Data for the Last 5 Financial Years (Construction only)			
Year	Amount Currency	Exchange Rate	Indian National Rupees Equivalent
Average Annual Construction Turnover for last 5 Financial Years			

1. The information supplied shall be substantiated by data in the audited balance sheets and profit and loss accounts for the relevant years and submitted as attachments to form Fin-1 in respect of the bidder or all partners constituting the bidder.
2. Contents of this form should be certified by a Statutory Auditor.
3. In the event that the audited accounts for the latest Financial Year are not available, the Bidder shall furnish information pertaining to last three financial years after ignoring the latest financial year. In case the bidder submits audited financial information for the last four or more years, only the figures for the latest three years shall be considered for evaluation.

_____

SEAL AND SIGNATURE

K-RIDE

Form FIN-3: Current Contract Commitments / Works in Progress

Bidders and each partner to a JV/Consortium should provide information on their current commitments on all contract that have been awarded, or which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Contract Commitments

Sl.No.	Description of work	Contract No. & date	Name & address of Employer, Tel./Fax/ Email	Value of con-tract in INR	Stipulated Period of completion	Value of Balance work	Anticipated date of Completion
1							
2							
3							
4							
5							
Total							

1. For calculation of 'Updated contract value" in column 5 above, assume inflation as per multiplying Factors given in FIN-2.

2. Bidder should provide information on their current commitments or all contracts that have been awarded or for which a letter of intent or acceptance has been received or for contracts approaching completion but for which a completion certificate is yet to be issued.

3. The exchange rate of foreign currency shall be applicable 28 days before the tender submission date. For conversion of foreign currency to Indian Rupee exchange rates published by Financial Benchmarks Private limited (www.fbil.org.in) 28 days before the date of bid submittal will be considered. In case the particular day happens to be a holiday the exchange rate published on the next working day will be considered. In case of works in foreign currency the effect of inflation is considered as included, as the exchange rate prevailing 28 days before tender submission is being considered for conversion to Indian Rupees,

Note: Enclose Certificate(s) from Engineer(s) Incharge (not below the rank of Executive Engineer) for Value of outstanding work. In case it is not feasible to furnish certificate from all the units the bidder should record the following certificate on Fin 3:

"Certified that current commitments on all the contracts that have been awarded or for which a letter of intent or acceptance has been received or for the works in progress or the works approaching completion, value of outstanding work has been indicated in the above table correctly. It is further certified that if later on the employer discovers that information provided in the table is incorrect then the employer will treat our bid invalid and it will be liable for rejection"

_____

SEAL AND SIGNATURE

K-RIDE

FORM NO. 1

DELETED

K-RIDE

FORM NO. 2

CHECKLIST FOR CLAUSES PERTAINING TO SUMMARY REJECTION OF BID

We, the undersigned, declare that we have read and understood the content of ITT clauses section:2 mentioned below. We also understand that our bid shall be summarily rejected in case we fail to comply the requirements of undermentioned clauses:

ITT Clause No. Section 2	Reason for Summary Rejection	Form No.	Page No.
2.5	Non-submission of Affidavit	Form PS-3	63
11.5 & 22	Non-submission of immediate information to the Employer in case Bidder ceases to fulfill eligibility in terms of ITT.	-	29 & 40
ITT	Letter of Technical Bid	Form PS-1	58
11.5	Quoting more than one Lumpsum amount for any schedule	Price schedule-Section:9	380-385
11.5	Non-submission of the Letter of Price Bid (LPB)	(Form:PS-2)	61
13	Bid not accompanied with bid security declaration	(BDF/1)	66
14	Bid not accompanied with power of attorney/General power of Attorney to sign on behalf of the bidders	JV/Consortium/1/2/3	67-71

K-RIDE

SEAL AND SIGNATURE OF THE BIDDER

Form: 3 C 1

FORMAT FOR CERTIFICATE TO BE SUBMITTED BY BIDDER ALONGWITH THE BID

(On the letter head of the Firm)

We/I, _____, having registered office at _____ do hereby certify that "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. (Where applicable, evidence of valid registration by the competent Authority shall be attached.)"

Dated this _____ day of _____, 2021

For- _____

Authorized Signatory Signature _____

Full Name: _____

Place: _____

K-RIDE

(SEAL AND SIGNATURE OF THE BIDDER)

Form: 3 C 2

FORMAT FOR CERTIFICATE TO BE SUBMITTED BY BIDDER ALONGWITH THE BID FOR SUB CONTRACTING

(On the letter head of the Firm)

We/I,_____, having registered office at _____ do hereby certify that "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the competent Authority and will not sub-contractor any work to a contractor from such countries unless such contractor is registered with the competent Authority. I hereby certify that his bidder fulfils all requirements in this regard and is eligible to be considered. (Where applicable, evidence of valid registration the Competent Authority shall be attached.)"

Dated this _____ day of _____, 2021

For- _____

Authorized Signatory Signature _____

Full Name: _____

Place: _____

K-RIDE

(SEAL AND SIGNATURE OF THE BIDDER)

Form 5

Key Personnel for the work

MINIMUM QUALIFICATION AND EXPERIENCE REQUIRED FOR KEY PERSONNEL TO BE DEPLOYED FOR THE WORK

Sl. No.	Key Personnel	Qualifications & Total Experience	Particular Experience (Minimum requirement)	Minimum Number of Personnel Required	Name of the key personnel proposed	Qualification	Total number of years of experience	Number of Years in similar works experience
1	Project Manager	BE Electrical with 10 years' experience	5 years as Project Manager or equivalent in Similar Nature of works	1				
2	Design Manager	BE Electrical with 10 years' experience	07 years as Design Manager or equivalent in Similar Nature of works.	As reqd.				

K-RIDE

Note: Further details to be updated as per clause 3.3 (c) of section 2 ITT.

(Signature)

(Name of Signatory) …….

(Capacity of Signatory) …….

Seal…….

Form 6

Format of Curriculum Vitae (cv) for proposed key professional staff

Proposed Position:
Name of Firm:
Name of Staff:
Profession:
Date of Birth:
Years with Firm/Entity: Nationality:
Membership in Professional Societies:
Detailed Tasks Assigned:
Key Qualifications:

[Give an outline of staff member's experience and training most pertinent to tasks on assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations.]

Education:
[Summarize college/university and other specialized education of staff member and degrees obtained.]
Employment Record:
[Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, names of employing organizations, titles of positions held, and locations of assignments. Also give types of activities performed and client references, where appropriate.]

Period	Name of Employing Organization	Name of the Project	Title / Position	Activity performed	Location of the Assignment

Languages:
[For each language, indicate proficiency: excellent, good, fair, or poor; in speaking, reading, and writing]

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.
Date:
[Signature of staff member and authorized representative of the Firm] Day/Month/Year

Full name of staff member: _____
Full name of the authorized representative: _____

FORM CL-2

UNDERTAKING FROM NOMINATED/IDENTIFIED SUB-CONTRACTOR

(Refer Clause of EQC)

(On the Letterhead of Nominated/Identified sub-contractor)

I/We,……(Legal Name of Nominated/Identified Subcontractor) hereby confirm that we are associating with ……..(Legal name of the bidder) for the work of ……...(Name of work as stated in Invitation for Bids {IFB}), for the key activity stated in clause 3.2 (c)/(d) of ITT (if applicable).

I/We hereby undertake that in case M/s……(Legal name of the bidder) are awarded the work of ……...(Name of work as stated in Invitation for Bids {IFB}),the key activity stated in clause 3.2 (c)/(d) of ITT shall be undertaken by us as per bid conditions (if applicable).

STAMP & SIGNATURE OF AUTHORISED
SIGNATORY OF NOMINATED/IDENTIFIED SUB CONTRACTOR

STAMP & SIGNATURE OF AUTHORISED
SIGNATORY OF BIDDER

Form CL-3

Availability of Financial Resources
(Section-2, ITT clause 3.3 (b))

Bidders must demonstrate sufficient financial resources, comprising of Working Capital supplemented by credit line statements or overdraft facilities to meet the Bidder's financial requirements for

a) its current contract commitments, and
b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Financial Resources		
No.	**Source of financing**	**Amount (equivalent)**
1	Working Capital	
2	Credit Line	
Total Available Financial Resources		

[a] *To be considered, Credit Line must be substantiated by a letter from the bank issuing the line of credit, specific for the subject contract, as prescribed. Any letter or document not complying with this requirement shall not be considered as supplementary financial resources.*

Note:

In case the financial statement data is other than Indian Rupees, the equivalent Indian Rupees with the exchange rates as defined in the Section-2, ITT.

Form CL-4

Evidence of Availability of Credit Line Financial Resources
(Section-2 ITT, Clause:3(b))

[Each Bidder must fill out this form to demonstrate financial resources comprising credit line statements or overdraft facilities.]

Project Name:
Bidding Package Name and Identification Number: *…… (to be filled in as indicated in ITT 1)* …

BANK CERTIFICATE
This is to certify that M/s ..... is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above firm, we shall be able to provide overdraft / credit facilities to the extent of Rs ..... to meet their working capital requirements for executing the above contract.

___Sd.___

Name of Bank: _____

Senior Bank Manager_____

Address of the Bank_____

[In case of Joint Venture, change the text as follows:]

This is to certify that M/s ..... who has formed a Joint Venture with M/s ..... and M/s ..... for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above joint venture, we shall be able to provide overdraft / credit facilities to the extent of Rs..... to M/s ..... to meet their working capital requirements for executing the above contract.

Form EXP-1

WORK EXPERIENCE CERTIFICATE

To whom so ever it may concern
(Issued for the purpose of Quoting in K-RIDE tenders)

M/s/Sri …….. (Name and address of the contractor) is a working contractor of this unit and was awarded the following work. The relevant details of the work are as under: -

Sl.No	Description	Details
1	Name of work	
2	Acceptance Letter No and Date	
3	Agreement Number, date and name of the agency	
4	Agreement value in Rupees (in words and figures)	
5	Due date of completion	
6	Actual date of completion of work	
7	Value of Final Bill if passed (in words)	
8	Work completed but Final measurements not recorded. a) Amount paid so far as in CC bill No.	
9	Work completed. Final measurements recorded with negative variation a) Amount so far paid as in CC bill No.	
10	Work completed. If Final measurements recorded with Positive variation which is not sanctioned yet. Original agreement value of Last sanctioned agreement value whichever is lower.	
11	Scope of work (Broad category of works i.e., the name of the work in the agreement on which work is	
12	Details of values of major components/ works executed in the completed work.	

Note:
The Certificate to satisfy similar work should be signed by an officer not lower than JAG officer in Railways and Executive Engineer rank or equivalent grade in other department of Govt. of India/State Government/PSUs of Government of India / State Undertaking and Competent Authority of Public Listed Company.

Signature :.....

Name of officer.....

Designation: .....

Address: .....

Office seal: .....

Phone/FAX No.: .....

Date : ……..

--00--00--00--

SECTION-4

FORM OF TENDER, LETTER OF ACCEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM ETC.,

FORM OF TENDER, LETTER OF ACCEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM ETC.,

SL. NO.	TITLE	FORM NUMBER	PAGE NO.
1	LETTER OF ACCEPTANCE	FORM-1	96
2	ISSUE OF NOTICE TO PROCEED WITH THE WORK	FORM-2	97
3	AGREEMENT FORM	FORM-3	98

K-RIDE

FORM OF TENDER (DELETED)

Please refer Form PS-1 of Section 3: Qualification Information/Bidding Forms.

K-RIDE

FORM-1

LETTER OF ACCEPTANCE

(Letter head paper of the Employer)

_____[date]

To: _____ _____[name and address of the Contractor]

Dear Sirs,

This is to notify you that your Tender dated _____ for execution of the **"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."** Tender No: K-RIDE/DL/17/2021, Dated:19/10/2021 for the Contract Price of Rupees_____.(_____[amount in words and figures], as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted by our Agency.

You are hereby requested to furnish (Performance Security) plus additional security for unbalanced tenders in accordance with of Clause 25.5 of ITT, in the form detailed in Clause 29.1 of ITT and clause 43 of the conditions of contract for an amount of Rs.————(As defined in contract data) within 20 days of the receipt of this letter of acceptance valid up to 30 days from the date of expiry of Defects Liability Period i.e. up to ..... and sign the contract.

K-RIDE

Yours faithfully,

Authorized Signature

Name and Title of Signatory

Name of Agency.

FORM-2

ISSUE OF NOTICE TO PROCEED WITH THE WORK

(Letter head of the Employer)

———— (Date)

To

——————————— (name and address of the Contractor)

———————————

———————————

Dear Sirs:

With reference to LOA, for the construction of **"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."** a Tender Price of Rs.————, you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

K-RIDE

Yours faithfully,

(Signature, name and title of signatory authorized to sign on behalf of Employer)

FORM-3

AGREEMENT FORM

Agreement

This agreement, made the _____day of _____20_____, between_____ _____ (Name and Address of Employer) (herein after called "the Employer") of the one part and _____[name and address of contractor] (herein after called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor execute, **"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."** Tender No. K-RIDE/DL/17/2021, Dated: 19/10/2021 (herein after called "The Works") and the Employer has accepted the Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein at a contract price of Rupees.....

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:
   i) Letter of Acceptance;
   ii) Notice to proceed with the works;
   iii) Contractor's Tender;
   iv) Contract Data;
   v) Conditions of contract (including Special Conditions of Contract and Particular Condition of Contract)
   vi) Specifications;
   vii) Drawings;
   viii) Price Schedule; and
   ix) Any other document listed in the Contract Data as forming part of the contract.

K-RIDE

In witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____
was hereunto affixed in the presence of:
Signed, Sealed and Delivered by the said _____
_____
in the presence of:
Binding Signature of Employer _____
Binding Signature of Contractor _____

K-RIDE

SECTION – 5

CONDITIONS OF CONTRACT(CC) AND SPECIAL CONDITIONS OF CONTRACT (SCC)

`

CONDITIONS OF CONTRACT

TABLE OF CONTENTS

SI NO.	DESCRIPTION	PAGE NO
	A. GENERAL	
1	DEFINITIONS	103
2	INTERPRETATION	104
3	LAW GOVERNING CONTRACT	104
4	EMPLOYERS DECISIONS	104
5	DELEGATION	104
6	COMMUNICATIONS	105
7	SUB-CONTRACTING	105
8	OTHER CONTRACTORS	105
9	PERSONNEL	105
10	EMPLOYER'S & CONTRACTOR'S RISKS	105
11	EMPLOYER'S RISKS	105
12	CONTRACTOR'S RISKS	106
13	INSURANCE	106
14	SITE INVESTIGATION REPORTS	106
15	QUERIES ABOUT THE CONTRACT DATA	106
16	CONTRACTOR TO CONSTRUCT THE WORKS	106
17	THE WORKS TO BE COMPLETED BY THE INTENDED COMPLETION	107
18	APPROVALS BY THE EMPLOYER	107
19	SAFETY	107
20	DISCOVERIES	107
21	POSSESSION OF THE SITE	107
22	ACCESS TO SITE	107
23	INSTRUCTIONS	107
24	PROCEDURE FOR RESOLUTION OF DISPUTES	108
	B. TIME CONTROL	
25	PROGRAM	109
26	EXTENSION OF THE INTENDED COMPLETION DATE	109
27	DELAYS ORDERED BY THE EMPLOYER	109
28	MANAGEMENT MEETINGS	109
	C. QUALITY CONTROL	
29	IDENTIFYING DEFECTS	110
30	TESTS	110
31	CORRECTION OF DEFECTS	110
32	UNCORRECTED DEFECTS	110
	D. COST CONTROL	
33	PRICE SCHEDULE	111
34	VARIATIONS	111
35	PAYMENTS FOR VARIATIONS	111
36	SUBMISSION OF BILLS FOR PAYMENT	112
37	PAYMENTS	112
38	COMPENSATION EVENTS	112

K-RIDE

39	TAX	113
40	PRICE ADJUSTMENT	113
41	LIQUIDATED DAMAGES	114
42	ADVANCE PAYMENTS	114
43	SECURITIES	114
44	COST OF REPAIRS	114
	E. FINISHING THE CONTRACT	
45	COMPLETION	115
46	TAKING OVER	115
47	FINAL ACCOUNT	115
48	AS BUILT DRAWINGS / OPERATING AND MAINTENANCE MANUALS	115
49	TERMINATION	115
50	PAYMENT UPON TERMINATION	116
51	PROPERTY	117
52	RELEASE FROM PERFORMANCE	117
	F. SPECIAL CONDITIONS OF CONTRACT	
53	LABOUR	118
54	COMPLIANCE WITH LABOUR REGULATIONS	118
55	PROTECTION OF ENVIRONMENT	118
56	CLAIMS, DISPUTES AND ARBITRATION	118

K-RIDE

CONDITIONS OF CONTRACT

A. GENERAL

1. DEFINITIONS

1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Tender.

Compensation Events are those defined in Clause 38 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Employer in accordance with Sub Clause 46.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.2 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body or Joint Venture whose Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed Tender document submitted by the Contractor to the Employer.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects liability period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an extension of time.

'Joint Venture' means an ad hoc association of firms that pool their resources and skills to undertake a large or complex contract in the role of "Contractor," with all firms (partners in the JV) being legally liable, jointly and severally, for the execution of the Contract in the event of a partner's withdrawal.

Materials are all supplies, including consumables, used by the contractor for incorporation in the Works.

K-RIDE

Plant is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A Subcontractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

A **Variation** is an instruction given by the Employer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. INTERPRETATION

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Employer will provide instructions clarifying queries about the Conditions of Contract.

2.2 The documents forming the Contract shall be interpreted in the following order of priority:

(1) Agreement
(2) Letter of Acceptance, notice to proceed with the works
(3) Contractor's Tender
(4) Contract Data
(5) Conditions of Contract
(6) Specifications
(7) Drawings
(8) Price schedule and
(9) any other document listed in the Contract Data as forming part of the Contract.

3. LAW GOVERNING CONTRACT

3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. EMPLOYER'S DECISIONS

4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. DELEGATION

5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

K-RIDE

6. COMMUNICATIONS

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. SUBCONTRACTING:

7.1 The Contractor may subcontract with the approval of the Employer but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

8. OTHER CONTRACTORS

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. PERSONNEL

9.1 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by K-RIDE from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.

9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. EMPLOYER'S AND CONTRACTOR'S RISKS

10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

11. EMPLOYER'S RISKS

11.1 The Employer is responsible for the excepted risks which are:

(a) Rebellion, riot commotion or disorder unless solely restricted to employees of the Contractor or his Sub Contractors arising from the conduct of the Works; or

(b) a cause due solely to the design of the Works, other than the Contractor's design; or

(i) could not have reasonably foreseen; or

(ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures;

(A) prevent loss or damage to physical property from occurring by taking appropriate measures or

(B) insure against such loss or damage

K-RIDE

12. CONTRACTOR'S RISKS

12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. INSURANCE:

13.1 The Contractor shall prior to commencing the works, effect and thereafter maintain insurances, in the joint names of the Employer and the Contractor, (cover from the first working day after the Start Date to the end of Defects Liability Period), in the amounts stated in the Contract Data:

(a) for loss of theft or damage to the Works, Plants and Materials and the Contractor's equipment;

(b) for liability of both Parties for loss, damage, death and injury to third parties or their property arising out of the Contractor's performance of the Contract including the Contractor's liability for damage to the Employer's property other than the Works and

(c) for liability of both Parties and of any Employer's representative for death and injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their Employees.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Employer for his approval before the Start Date. All such insurance shall provide for compensation to be payable to rectify the loss or damage incurred. All payments received from insurers relating to loss or damage shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.

13.3 If the Contractor fails to effect or keep in force any of the insurances referred to in the previous sub-clauses or fails to provide satisfactory evidence, policies or receipts, the Employer may without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor. If no payments is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of an insurance shall not be made without the approval of the Employer.

13.5 Both Parties shall comply with any conditions of the insurance policies.

14. SITE INVESTIGATION REPORTS:

14.1 The Contractor, in preparing the tender, shall rely on any site investigation reports referred to in the Contract data, supplemented by any information available to the Tenderer.

15. QUERIES ABOUT THE CONTRACT DATA

15.1 The Employer will clarify queries on the Contract Data.

16. CONTRACTOR TO CONSTRUCT THE WORKS

16.1 The Contractor shall construct the Works in accordance with the Specification and Drawings.

K-RIDE

17. THE WORKS TO BE COMPLETED BY THE INTENDED COMPLETION DATE

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Intended Completion Date.

18. APPROVAL BY THE EMPLOYER:

18.1 The Contractor shall submit Specification and drawings showing the proposed Temporary Works to the Employer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for the design of Temporary Works and Railway Electrification Works

18.3 The Employer's approval shall not alter the Contractor's responsibility for design of the Temporary Works and Railway Electrification Works

18.4 The Contractor shall obtain approval of Designers to design of the temporary and Railway Electrification Works

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Employer before their use.

19. SAFETY

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

20 DISCOVERIES

20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

21 POSSESSION OF THE SITE

21.1 The Employer shall give possession of all parts of the Site to the Contractor progressively, If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be compensation event.

22 ACCESS TO THE SITE

22.1 The Contractor shall allow the Employer and any person authorized by the Employer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

23 INSTRUCTIONS

23.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

K-RIDE

24 PROCEDURE FOR RESOLUTION OF DISPUTES:

24.1 If the Contractor is not satisfied with the decision taken by the Employer, the dispute shall be referred by either party to Arbitration within 30 days of the notification of the Employer's decision.

24.2 If neither party refers the dispute to Arbitration within the above 30 days, the Employer's decision will be final and binding.

24.3 The Arbitration shall be conducted in accordance with the arbitration procedure stated in the Special Conditions of Contract.

K-RIDE

B. TIME CONTROL

25. PROGRAM

25.1 Within the time stated in the Contract Data the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.

25.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

26. EXTENSION OF THE INTENDED COMPLETION DATE

26.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date.

26.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information.

27. DELAYS ORDERED BY THE EMPLOYER

27.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works.

28. MANAGEMENT MEETINGS

28.1 The Employer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the progress achieved and the plans for remaining work.

28.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

K-RIDE

C. QUALITY CONTROL

29. IDENTIFYING DEFECTS

29.1 The Employer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect.

30. TESTS

30.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

31. CORRECTION OF DEFECTS

31.1 The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

31.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer's notice.

32. UNCORRECTED DEFECTS

32.1 If the Contractor has not corrected a Defect within the time specified in the Employer's notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

K-RIDE

D. COST CONTROL

33. Price Schedule:

33.1 The Price Schedule shall contain items of the Design and construction, installation, testing, and commissioning work to be done by the Contractor.

33.2 The Price Schedule is used to calculate the Contract Price. The Contractor is paid as per stage wise payment of the work done as per Price Schedule.

34. VARIATIONS

34.1 The Employer shall have power to order the Contractor to do any or all of the following as considered necessary or advisable during the progress of the work by him

(a) Increase or decrease of any item of work included in the Price Schedule.;

(b) Omit any item of work;

(c) Change the character or quality or kind of any item of work;

(d) Change the levels, lines, positions and dimensions of any part of the work;

(e) Execute additional items of work of any kind necessary for the completion of the works; and

(f) Change in any specified sequence, methods or timing of construction of any part of the work.

34.2 The Contractor shall be bound to carry out the work in accordance with any instructions in this connection, which may be given to him in writing by the Employer and such alteration shall not vitiate or invalidate the contract.

34.3 Variations shall not be made by the Contractor without an order in writing by the Employer, provided that no order in writing shall be required for increase or decrease in the quantity of an item appearing in the Price Schedule so long as the work executed conforms to the approved drawings.

34.4 The Contractor shall promptly request in writing to the Employer to confirm verbal orders and the officer issuing oral instructions shall confirm it in writing within 30 days of request, failing which the work shall be carried out as though there is no variation. In case variation is approved it shall be accompanied with Price Schedule failing which the contractor shall be responsible for deviation if any.

35. PAYMENTS FOR VARIATIONS

35.1 Payment for increase/ decrease in the quantities of components of schedules A to D shall be made as per the details provided in the notes of Price Schedule. The Contractor shall execute and be bound for variations of all change of scope of orders till the price does not exceed 25% of the Contract Price as specified in LOA/Original agreement.

35.2 The rates for additional, substituted or altered item of work, Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.

35.3 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer's own forecast of the effects of the

K-RIDE

Variation on the Contractor's costs.

35.4 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

36. SUBMISSION OF BILLS FOR PAYMENT

36.1 The Contractor shall submit to the Employer monthly bills of the value of the work completed less the cumulative amount paid previously.

36.2 The Employer shall check the Contractor's bill and determine the value of the work executed which shall comprise of (i) value of the quantities of the items as per stage payment of Price Schedule and (ii) valuation of Variations and Compensation Events.

36.3 The Employer may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

37. PAYMENTS

37.1 Payments shall be adjusted for deductions for advance payments other than recoveries in terms of contract and taxes, at source as applicable under law. The Employer shall pay the Contractor within 60 days of submission of bill. The Contractor shall be liable to pay liquidated damages for shortfall in progress.

37.2 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed to be covered in lumpsum Price of the Contract.

38. COMPENSATION EVENTS:

38.1 The following are Compensation Events unless they are caused by the Contractor:

(a) The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.

(b) The Employer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.

(c) The Employer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.

(d) The effect on the Contractor of any of the Employer's Risks.

(e) The Employer unreasonably delays issuing a Certificate of Completion.

Other Compensation Events listed in the Contract Data or mentioned in the Contract

38.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Employer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

K-RIDE

38.3 As soon as information demonstrating the effect of each Compensation event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Employer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Employer shall adjust the Contract Price based on Employer's own forecast. The Employer will assume that the Contractor will react competently and promptly to the event.

38.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Employer.

39. TAX

39.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales, GST and other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

40. PRICE ADJUSTMENT:

CHANGE IN COSTS - PRICE ADJUSTMENT
PRICE ADJUSTMENT CLAUSE FOR WORKS CONTRACTS

Contract price shall be adjusted for increase or decrease in rates and prices of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formula given here under.

(a) The price Adjustment shall apply for the work done from the date of commencement up to the end of original period of completion and shall not apply to work carried out beyond the stipulated period of completion for reasons attributable to the Contractor.

(b) The Price adjustment shall be determined during each quarter from the formula given in contract data.

(c) Following expression and meanings are assigned to the work done during the quarter:

R=Total value of work done during the month shall include the value of materials on which secured advance has been granted, if any during the month less the value of materials in respect of which the secured advance has been recovered, if any, during the month. This excludes the cost of work on items for which rates were fixed under Variations Clause 35/PCC for which the escalation will be regulated as mutually agreed at the time of fixation of rate. It will also exclude the value of work done during the month which was programmed to be done prior to this month as per work schedule in the agreement.

(d) To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other Clauses in the Contract, the unit rates included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

41. LIQUIDATED DAMAGES

K-RIDE

41.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the Contract Data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

41.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

42. ADVANCE PAYMENTS:

42.1 The Employer shall make payment to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an unconditional bank guarantee in a form acceptable to the Employer issued by a Nationalized/Scheduled Bank in amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. The advance payments shall be repaid with prevailing bank interest.

42.2 The Contractor is to use the advance payment only to pay for Mobilization expenses required specifically for execution of the Works. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Employer

42.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuation of the work done, variations, price adjustments, compensation events or liquidated damages

K-RIDE

43. SECURITIES:

43.1 The Performance Security (including additional security for unbalanced tenders) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and type of instrument acceptable to the Employer. The Performance Security as indicated in the contract data shall be valid until a date 30 days from the date of expiry of Defects Liability Period and the additional security for unbalanced tenders shall be valid until a date 30 days from the date of issue of the certificate of completion. The security deposit will be released against BG.

44. COST OF REPAIRS:

44.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. FINISHING THE CONTRACT

45. COMPLETION

45.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

46. TAKING OVER

46.1 The Employer shall take over the Site and the Works within seven days of issuing a certificate of Completion.

47. FINAL ACCOUNT

47.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 90 days of receiving the Contractor's account if it is correct and complete. If it is not, the Employer shall issue within 90 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor's revised account.

48. AS ERECTED DRAWINGS AND /OR OPERATING AND MAINTENANCE MANUALS

48.1 If "As Erected Drawings" (Completion Drawing) and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

48.2 If the Contractor does not supply the Drawings by the dates stated in the Contract Data, or they do not receive the Employer's approval, the Employer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

49. TERMINATION

49.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.

49.2 Fundamental breaches of Contract include, but shall not be limited to the following:

(a) the Contractor stops work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;

(b) - "DELETED"-

(c) The Contractor becomes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) - "DELETED"-

K-RIDE

(e) the Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Employer;

(f) the Contractor does not maintain a security which is required;

(g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

(h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in the executing the Contract.

For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

49.3 When either party to the Contract gives notice of a breach of contract to the Employer for a cause other than those listed under Sub Clause 49.2 above, the Employer shall decide whether the breach is fundamental or not.

49.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

49.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

50. PAYMENT UPON TERMINATION

50.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

50.2 If the Contract is terminated at the Employer's convenience, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

K-RIDE

51. PROPERTY

51.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a contractor's default.

52. RELEASE FROM PERFORMANCE

52.1 If the Contract is frustrated by any event entirely outside the control of either the Employer or the Contractor the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

K-RIDE

F. SPECIAL CONDITIONS OF CONTRACT

1. LABOUR :

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

2. COMPLIANCE WITH LABOUR REGULATIONS:

During continuance of the Contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of security deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

3. PROTECTION OF ENVIRONMENT:

The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

4. CLAIMS, DISPUTES AND ARBITRATION

4.1 Contractor's Claims

If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not

K-RIDE

later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep and provide further contemporary records. The Contractor shall permit the Engineer to inspect all these records, and shall (if instructed) submit copies to the Engineer.

Within 45 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

(a) this fully detailed claim shall be considered as interim;

(b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Engineer may reasonably require; and

(c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

Within 45 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer and approved by the Contractor, the Engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such fixed period of time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Engineer shall proceed in accordance with Sub-Clause: [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause: [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

K-RIDE

4.2 Amicable Settlement

In case any dispute between the Engineer and the Contractor for which claim has already been made by the contractor, remains unresolved, the Contractor shall, then, give notice of dissatisfaction and intention to commence arbitration to the Employer duly specifying the subject of the dispute or difference as also the amount of claim item wise. The Parties shall make attempts to settle the dispute amicably before the commencement of arbitration as per procedure set by K-RIDE. However, unless both Parties agree otherwise, demand for arbitration may be made by the Contractor after ninety days from the day on which a notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

Procedure for Amicable Settlement in contracts

1. Amicable Settlement Committee at senior management level shall make an attempt to resolve the issues/disputes within 90 days of request by the Contractor.

2. The committee shall comprise of the following: -
   (i) GM /K-RIDE directly in-charge of the project;
   (ii) Concerned finance officer, and
   (iii) GM /K-RIDE (in the same order) directly in-charge of the project of other discipline(s) in case the issues involve other discipline(s) of the engineering

3. Whenever the Contractor submits a request for amicable settlement, MD/K-RIDE should forward the same to concerned GM /K-RIDE (in the same order) directly in-charge of the project. GM /K-RIDE on receipt of the same shall issue a note to the concerned finance officer and concerned GM/K-RIDE of other discipline in case the issues involved other discipline(s) of engineering, about the request for amicable settlement to be dealt by them and fix a date in consultation with them for a hearing. The date should then be communicated to the MD/K-RIDE, GM/ /K-RIDE of other department (if the issues involved their department) and Contractor for presenting their case before the Amicable Settlement Committee.

4. This being an additional workload like arbitration, the Committee members shall be paid fee by K-RIDE at the rates payable to the Arbitrators of K-RIDE.

4.3 Arbitration

Any dispute, in respect of which amicable settlement has not been reached, arising between the Employer and the Domestic or Foreign Contractor related to any matter arising out of or connected with this contract, then the contractor shall be entitled to demand in writing that the dispute or difference be referred to arbitration.

Only such dispute(s) or difference(s) in respect of which the demand had been made for amicable settlement under GCC 4.2 but could not be settled, shall be referred to arbitration.

The Arbitration proceedings shall commence from the day, a written and duly quantified demand for arbitration is received by Managing Director, Rail Infrastructure Development Company (Karnataka) Limited, Bangalore /K-RIDE).

K-RIDE

The disputes so referred to arbitration shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996 and any statutory modification or re-enactment thereof.

Any dispute or difference or claim arising out of, or in connection with, or relating to the present contract or the breach, termination or invalidity thereof shall be referred and settled under the Arbitration Centre – Karnataka (Domestic and International) Rules 2012, by one or more arbitrators appointed in accordance with its rules.

4.3.1 Procedure for Appointment of Arbitrators: The arbitrators shall be appointed as per following procedure:

Any dispute or difference or claim arising out of, or in connection with, or relating to the present contract or the breach, termination or invalidity thereof shall be referred and settled under the Arbitration Centre – Karnataka (Domestic and International) Rules 2012, by one or more arbitrators appointed in accordance with its rules.

4.3.2 Arbitration proceedings shall be held at Bangalore, India or at a place where K-RIDE's (dealing the contract) office is located, and the language of the arbitration proceedings and that of all documents and communications between the Parties shall be in English.

4.3.3 Where the Arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period till the date on which the award is made.

4.3.4 The fees and other charges of the conciliator/arbitrators shall be as per the fee structure fixed by the employer with reference to the Rules of Arbitration Centre – Karnataka (Domestic and International) Rules 2012. The cost of arbitration shall be borne equally by the respective parties.

4.3.5 Performance under the contract shall continue during the arbitration proceedings and payments due the Contractor by the Employer shall not be withheld, unless they are the subject matter of the arbitration proceeding.

4.3.6 Excepted matters:

The following are the list of excepted matters in arbitration.

a. Assistance by Employer for the Stores to be obtained by the Contractor.
b. Illegal Gratification.
c. Meaning and intent of specifications and Drawings.
d. Rates for Non-tendered items of works.
e. Signing of "No claim Certificate"
f. Measurement of works.
g. Provisions of Payment of Wages Act 1936.
h. Provisions of Contract Labour (Regulation and Abolition) Act, 1970.
i. Provisions of Employees Compensation Act 1923.
j. Provisions of Mines Act 1952.
k. Right of Employer to determine the Contract

K-RIDE

l. Payment on determination of Contract by Employer.

m. Bonus clause as per clause 26.14 of PCC

5.1 JURISDICTION OF COURTS

The Contract Agreement shall be subject to exclusive jurisdiction of Courts as indicated in the Contract Data. The Jurisdiction **of Courts is Bengaluru, Karnataka**

5.2 Settlement through Court

It is a term of this contract that the Contractor shall not approach any Court of Law for settlement of such disputes or differences unless an attempt has first been made by the parties to settle such disputes or differences through Dispute resolution as above.

6. If K-RIDE wishes to engage third party consultants for quality control assessment, apart from the K-RIDE quality control and field tests, the Contractor should co-operate with both Quality control authorities and the third party.

7. Defect liability period will be ONE Year from the date of commercial operations of the Section/Corridor.

8. Royalty Charges shall be recovered as per the prevailing rates by the Department of Mines & Geology, if not paid by the Contractor.

9. As per GO No. CD/300/ LET/ 2006: Dated 18-12-2007, 1% cess will be deducted from the bill as per labour welfare act.

10. All the works are to be carried out as per the Standard specification Issued from time to time.

K-RIDE

SECTION – 6

CONTRACT DATA

K-RIDE

INDEX

Table of Contents

SL NO.	DESCRIPTION	PAGE NO.
1	MILE STONE DATES	126
2	INSURANCE REQUIREMENT	135
3	PRICE ADJUSTMENT	135

K-RIDE

SECTION 6: CONTRACT DATA

Items marked "N/A" do not apply in this Contract.

The following documents are also part of the Contract:	**Clause Reference**
• The Methodology and Program of Construction	(25 of GCC)
• Site Investigation Reports	(14 of GCC)
• The Schedule of Key and Critical Equipment to be deployed on the work as per agreed program of construction.	(3.3 of ITT, 25 GCC)

The Employer is:
Name: K-RIDE (1.1 of GCC)
Address: K-RIDE, Bangalore

Name of authorized Representative: K-RIDE

NAME OF WORK: "Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Railway Electrification of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender No: K-RIDE/DL/17/2021, Dated:19/10/2021

K-RIDE

Description of Work:

The proposed work is in connection with Railway Electrification of proposed line between Baiyappanahalli Cabin A – Hosur as provision of Doubling.

a) The proposed Railway Electrification will connect railway stations viz. Belandur Road, Karmelaram, Uskur, Heelalige, Anekal Road, Maranayakanahalli, Hosur.

b) Entire section is mostly plain and maximum ruling gradient is 1 in 100 compensated. This project site lies in the state of Karnataka.

c) The section falls in the basic wind speed of 33 and 39 m/s classification given in IS 875-1987. Accordingly, the basic wind pressure of 73 and 105 kgf/m2 respectively is to be adopted. Increased wind pressure is also to be adopted on embankments more than 100 meters i.e., 150 kgf/m2. This conforms to the wind pressure adopted by State Electricity Boards for the design of their EHT transmission lines.

d) Electric Locomotives with chimney height not exceeding 4.232m (WAP with their pantographs in the locked down position) and diesel Locomotives with height of 4.42 (14 ft. 6 inch) would run on this section.

The start date shall be the date of issue of notice to proceed with the work. [1.1 of GCC]

The Intended Completion Date for the whole of the Works is
24 MONTHS INCLUDING MONSOON with the following milestones - [17, 26 of GCC]

MILESTONE DATES:

Physical works to be completed as per Milestones

I).FOR HEELALIGE STATION(Including Yard section) Ch: 182/350.00 – KARMELARAM (Including Yard Section) Ch: 193/700.00 PORTION:

1.Likely Month and Year of Commissioning- MAR-2022.

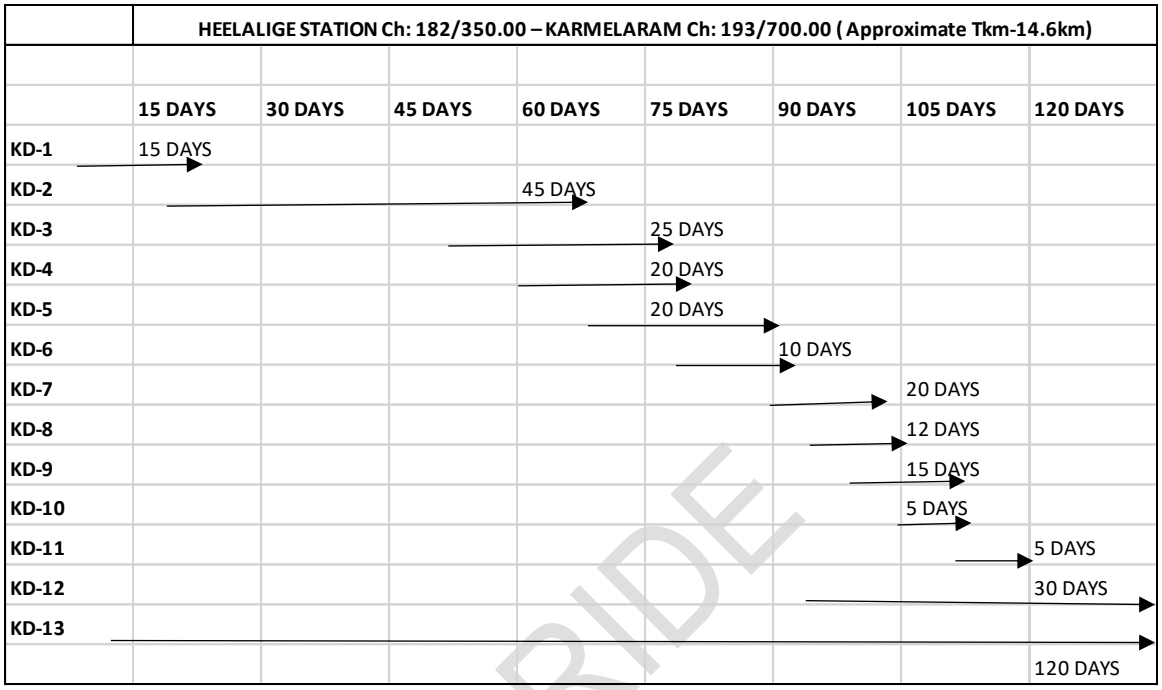
2.Likely Month and Year of Handing over of Formation- DEC-2021.

The site shall be handed over Progressively before this handing over date. However for the convenience, the milestone below have been decided from the month of handing over of formation.

K-RIDE

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work (Days).
KD 1	Foot by Foot Survey Submission of LOP & CSD	15
KD 2	Foundation Casting	45
KD-3	Mast erection & Grouting	25
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	20
KD 5	Wiring & Counter weight Erection	20
KD 6	Dropping and clipping and RT - Erection	10
KD 7	Bracket Adjustment	20
KD 8	ATD Cutting	12
KD 9	SED Checking	15
KD 10	Tower car checking and 'EIG' Documents	5
KD 11	Tower car remarks attending	7
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30

KD 13 (Taking over date)	Completion of Entire Work as per the contract	120 Days (4.0 months)



K-RIDE

ii) FOR KARMELARAM Ch: 193/700.00 – BELANDUR ROAD (Including Yard Section) Ch: 197/645.00 PORTION:

1.Likely Month and Year of Commissioning- OCT-2022.

2.Likely Month and Year of Handing over of Formation- AUG-2022.

The site shall be handed over Progressively before this handing over date**.** However for the convenience the milestone below have been decided from the month of handing over of formation.

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work
KD 1	Foot by foot survey & Submission of LOP & CSD	7
KD 2	Foundation Casting	25

KD-3	Mast erection & Grouting	15
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	15
KD 5	Wiring & Counter weight Erection	10
KD 6	Dropping and clipping and RT - Erection	7
KD 7	Bracket Adjustment	10
KD 8	ATD Cutting	7
KD 9	SED Checking	10
KD 10	Tower car checking and 'EIG' Documents	5
KD 11	Tower car remarks attending	5
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30
KD 13 (Taking over	Completion of Entire Work as per the contract	90 Days (3 months)

K-RIDE

KARMELARAM Ch: 193/700.00 – BELANDUR ROAD(BLRR) Ch: 197/645.00 (Approximate Tkm-7.1km)						
	15 DAYS	**30 DAYS**	**45 DAYS**	**60 DAYS**	**75 DAYS**	**90 DAYS**
KD-1	7 DAYS					
KD-2		25 DAYS				
KD-3			15 DAYS			
KD-4			15 DAYS			
KD-5				10 DAYS		
KD-6				7 DAYS		
KD-7					10 DAYS	
KD-8					7 DAYS	
KD-9						10 DAYS
KD-10						5 DAYS
KD-11						5 DAYS
KD-12						30 DAYS
KD-13						
						90 DAYS

iii) FOR ANEKAL ROAD (Including Yard Section) Ch: 171/600– HEELALIGE STATION Ch: 182/350.00 PORTION:

1.Likely Month and Year of Commissioning- DEC-2022.

2.Likely Month and Year of Handing over of Formation- SEP-2022.

The site shall be handed over Progressively before this handing over date. However for the convenience the milestone below have been decided from the month of handing over of formation.

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work
KD 1	Foot by foot survey & Submission of LOP & CSD	15
KD 2	Foundation Casting	45
KD-3	Mast erection & Grouting	25
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	20
KD 5	Wiring & Counter weight Erection	20
KD 6	Dropping and clipping and RT - Erection	15
KD 7	Bracket Adjustment	25
KD 8	ATD Cutting	15
KD 9	SED Checking	15
KD 10	Tower car checking and 'EIG' Documents	10
KD 11	Tower car remarks attending	7
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30
KD 13 (Taking over	Completion of Entire Work as per the contract	120 Days (4 months)

K-RIDE

	ANEKAL ROAD(AEK) Ch: 171/600 – HEELALIGE STATION Ch: 182/350.00 (Approximate Tkm-12.23km)							
	15 DAYS	**30 DAYS**	**45 DAYS**	**60 DAYS**	**75 DAYS**	**90 DAYS**	**105 DAYS**	**120 DAYS**
KD-1	15 DAYS							
KD-2				45 DAYS				
KD-3				25 DAYS				
KD-4					20 DAYS			
KD-5					20 DAYS			
KD-6						15 DAYS		
KD-7							25 DAYS	
KD-8							15 DAYS	
KD-9							15 DAYS	
KD-10							10 DAYS	
KD-11								7 DAYS
KD-12								30 DAYS
KD-13								
								120 DAYS

K-RIDE

iv) FOR MARANAYAKANA HALLI(Including Yard Section) Ch: 165/400 – ANEKAL ROAD(AEK) Ch: 171/600 PORTION:

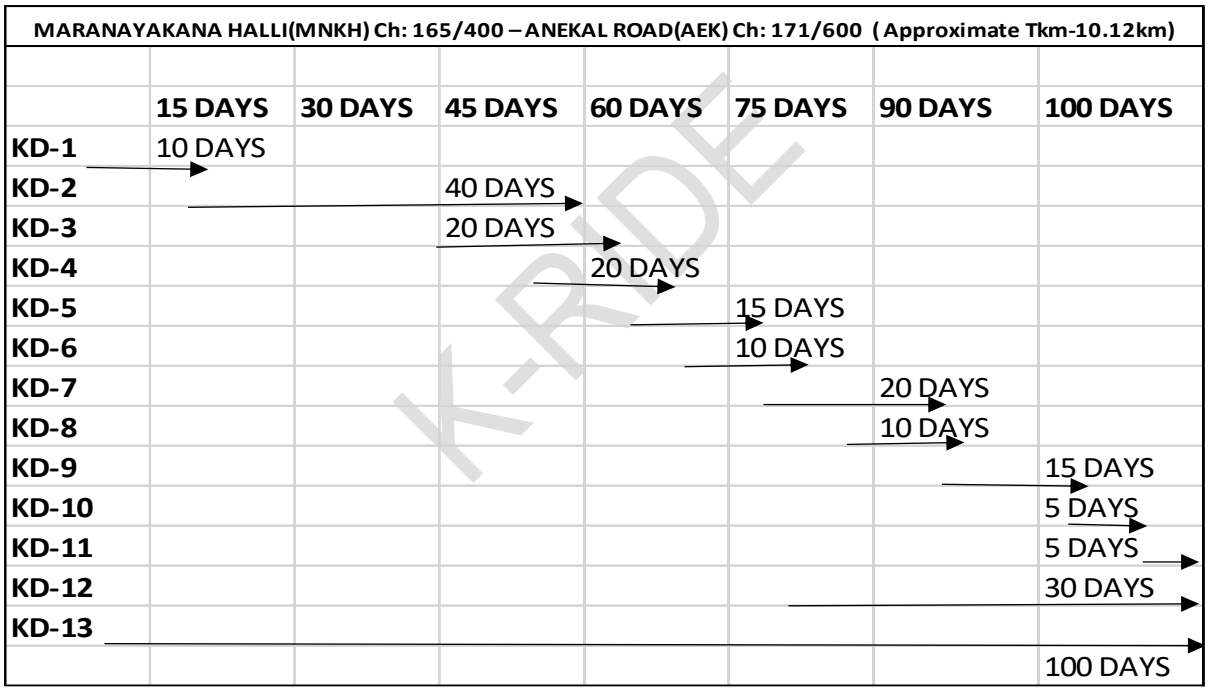
1.Likely Month and Year of Commissioning MAR-2023

2.Likely Month and Year of Handing over of Formation-DEC-2022.

The site shall be handed over Progressively before this handing over date. However for the convenience the milestone below have been decided from the month of handing over of formation.

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work
KD 1	Foot by foot survey & Submission of LOP & CSD	15
KD 2	Foundation Casting	45
KD-3	Mast erection & Grouting	25
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	20
KD 5	Wiring & Counter weight Erection	20

KD 6	Dropping and clipping and RT - Erection	15
KD 7	Bracket Adjustment	25
KD 8	ATD Cutting	15
KD 9	SED Checking	15
KD 10	Tower car checking and 'EIG' Documents	10
KD 11	Tower car remarks attending	7
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30
KD 13 (Taking over	Completion of Entire Work as per the contract	100 Days (3.5 months)



V) FOR HOSUR (Including Yard Section) Ch: 157/300– MARANAYAKANA HALLI(MNKH) Ch: 165/400 PORTION:

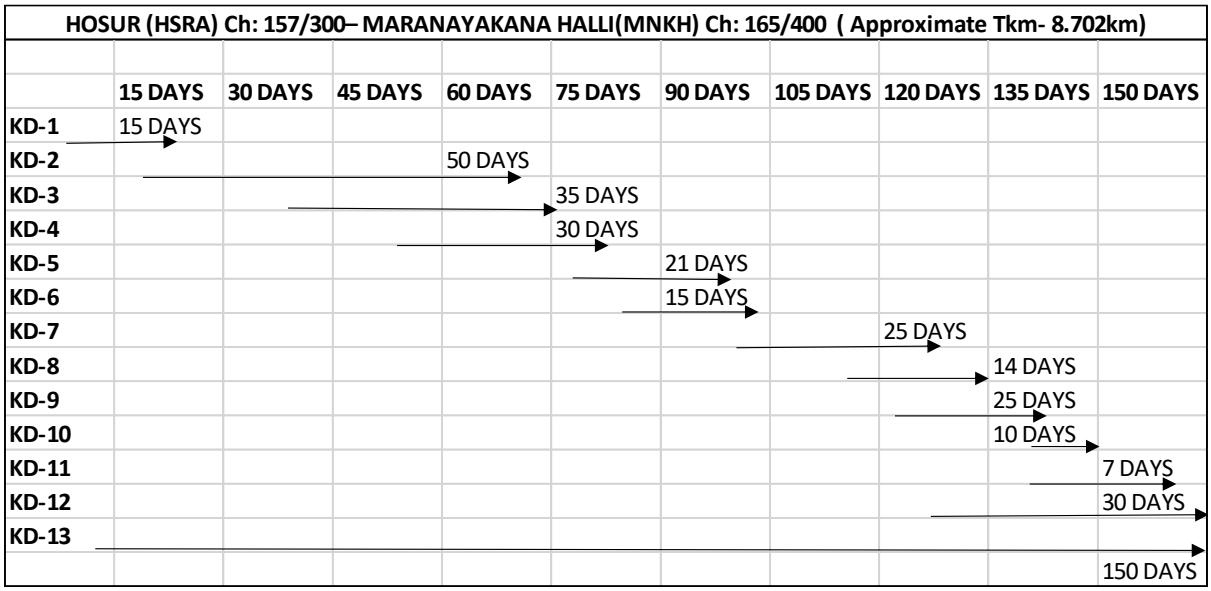
1.Likely Month and Year of Commissioning- DEC-2023.

2.Likely Month and Year of Handing over of Formation- JUNE-2023.

The site shall be handed over Progressively before this handing over date. However for the convenience the milestone below have been decided from the month of handing over of formation.

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work
KD 1	Foot by foot survey & Submission of LOP & CSD	15
KD 2	Foundation Casting	50
KD-3	Mast erection & Grouting	35
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	30
KD 5	Wiring & Counter weight Erection	21
KD 6	Dropping and clipping and RT - Erection	15
KD 7	Bracket Adjustment	25
KD 8	ATD Cutting	15
KD 9	SED Checking	25
KD 10	Tower car checking and 'EIG' Documents	10
KD 11	Tower car remarks attending	7
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30
KD 13 (Taking over	Completion of Entire Work as per the contract	150 Days (5 months)

K-RIDE



vi) FOR BELANDUR ROAD(BLRR) Ch: 197/645.00 – BYPL 'A' CABIN(BYPL) Ch: 205/500. Including Cut & Connection (Ch: 199/700-200/800) PORTION:

1.Likely Month and Year of Commissioning- DEC-2023.

2.Likely Month and Year of Handing over of Formation- JULY-2023.

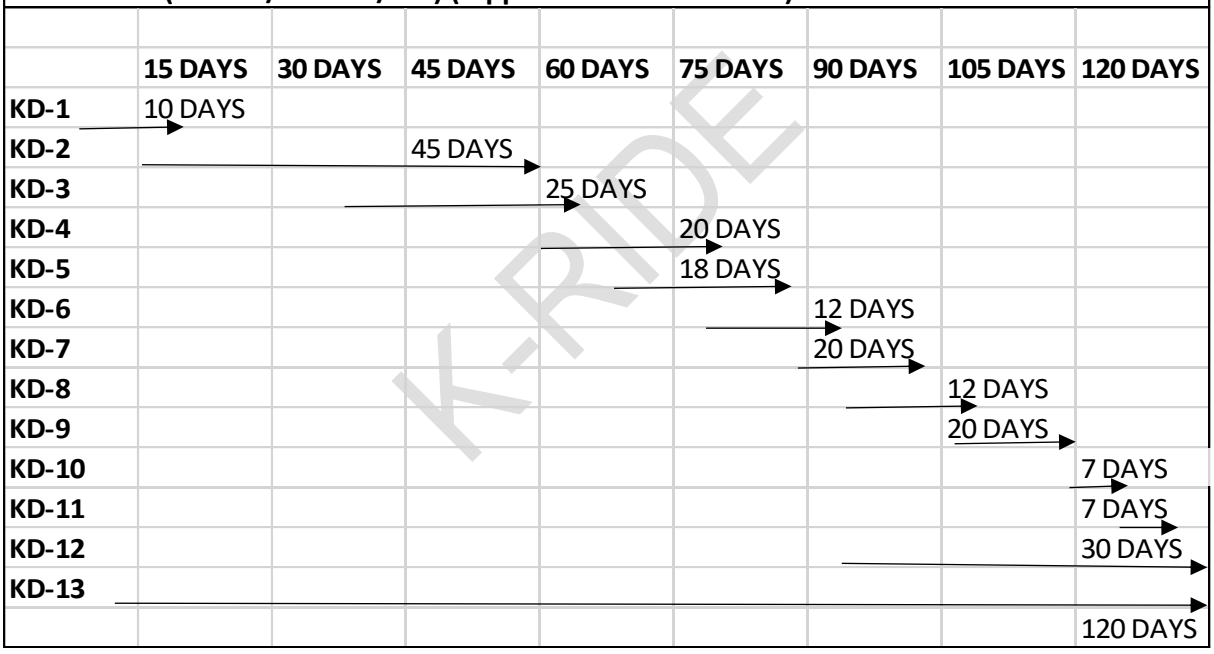
The site shall be handed over Progressively before this handing over date. However for the convenience the milestone below have been decided from the month of handing over of formation.

K-RIDE

Key Dates No. (Mile stone)	Description of stage (Physical works to be completed)	Period from the date of issue of notice to proceed with the work
KD 1	Foot by foot survey & Submission of LOP & CSD	10
KD 2	Foundation Casting	45
KD-3	Mast erection & Grouting	25
KD 4	SPS & Bracket Erection and Rail bonding , stenciling, Number plate erection	20
KD 5	Wiring & Counter weight Erection	18
KD 6	Dropping and clipping and RT - Erection	12

KD 7	Bracket Adjustment	20
KD 8	ATD Cutting	12
KD 9	SED Checking	20
KD 10	Tower car checking and 'EIG' Documents	7
KD 11	Tower car remarks attending	7
KD 12	Yard Modification works (Power Block Works and NI Works)	20-30
KD 13 (Taking over	Completion of Entire Work as per the contract	120 Days (4 months)

BELANDUR ROAD(BLRR) Ch: 197/645.00 – BYPL 'A' CABIN(BYPL) Ch: 205/500. Including Cut & Connection (Ch: 199/700-200/800) (Approximate Tkm-9.0km)



K-RIDE

The work front/ Possession of site will be provided progressively.

Milestone for TSS, SP & SSP.

S.NO	Location	Type of Switching Post	Year and Month of Commissioning
1	Heelalige	SSP	MAR-2022
2	Karmelaram	SSP	SEP- 2022
3	Anekal Road	SSP	NOV-2022

4	Hosur	TSS	SEP-2023
5	Belandur Road	SP	OCT-2023
6	BYPL-A Cabin	SSP	NOV-2023

The Defect Liability period is One year.

The insurance requirement is as below.

Sl No.	Type of Cover	Minimum cover for Insurance[36]
(i)	Works and Plant and materials	The sum stated in the Agreement plus 20%
(ii)	Loss or Theft or damage to equipment	Full replacement cost
(iii)	Loss or damage to property of Third Party	Full replacement cost
(iv)	Personal injury or death insurance (a) for Third Party	The Contractor to take appropriate policy in accordance with the statutory requirements applicable to Karnataka.
	(b) for Contractor's employees or labour	

PRICE ADJUSTMENT:
CHANGE IN COSTS - PRICE ADJUSTMENT
PRICE ADJUSTMENT CLAUSE FOR WORKS CONTRACTS: Refer Particular Conditions of Contract, Clause: Price Adjustment Clause

K-RIDE

Liquidated Damages:

For the purpose of this clause, the contract value of the works shall be taken as value of work as per contract agreement including any supplementary work order/contract agreement issued. Provided also. that the total amount of liquidated damages under this condition shall not exceed 10% of the contract value or of the total value of the item or groups of items of work for which a separated distinct completion period is specified in the contract.

S.No.	Damage & Delay	Rate of Penalty
(i)	For delay in achieving physical/Financial target as per the agreed programme	0.01% of contract value for each week or part of the week

S.No.	Duration of extension of time under Clause 41 of GCC	Rate of Penalty

(i)	Up to Twenty percent of original period of completion including period of extension of DOC granted under Section 41 of GCC	As decided by Engineer, between 0.01% to 0.10% of contract value for each week or part of the week
(ii)	Above Twenty percent but upto Thirty percent of original period of completion including period of extension of DOC granted under Section 41 of GCC	0.20% of contract value for each week or part of the week
(i)	Above Thirty percent but upto Forty percent of original period of completion including period of extension of DOC granted under Section 41 of GCC	0.30% of contract value for each week or part of the week
(ii)	Above Forty percent of original period of completion including period of extension of DOC granted under Section 41 of GCC	0.50% of contract value for each week or part of the week

Provided further, that if the employer is not satisfied that the works can be completed by the Contractor and in the event of failure on the part of the contractor to complete the work within further extension of time allowed as aforesaid, the employer shall be entitled without prejudice to any other right or remedy available in that behalf.

The amounts of the advance payment are: [GCC 42]

Nature of Advance	Amount Rs.	Conditions to be fulfilled
Mobilization	5% of the contract price (In Two Installments)	On submission of unconditional bank guarantee (further details are in Particular conditions of contract)

(The advance payment will be paid to the contractor no later than 30 days after fulfillment of the above condition.)

Repayment of advance payment for mobilization:

The recovery of the Mobilization and Plant and Machinery Advances shall be made from each bill in equal monthly instalments commencing after 15% of contract value is billed and recovery to be completed within 85% of the contract value and the recovery shall be made at the rate 10% of the amount the Interim payment certificate until such time as loan has been repaid, always provided that the loan shall be completely repaid prior to the expiry of the original time for completion pursuant to Clauses 17 and 26.

The date by which "as-erected" drawings (in suitable scale) in 6 sets are required is within 30 days of issue of certificate of completion of Whole or Section of the Work as the case may be. [GCC 48]

The amount to be withheld for failing to supply "As Erected " drawings Rs. 10.00 Lakhs

The following events shall also be fundamental breach of the contract: [GCC 49.2]

The contractor has contravened Sub-clause 7.1 and Clause 9 of Condition of contract.

The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the works shall be **30%**
[GCC 50.1]
Jurisdiction of Courts:

Jurisdiction of Courts is Bengaluru, Karnataka

K-RIDE

SECTION-7

PARTICULAR CONDITIONS OF CONTRACT (PCC)

PARTICULAR CONDITIONS OF CONTRACT (PCC)

The following Particular Conditions of Contract (PCC) shall supplement the Conditions of Contract (CC)/GCC/SCC/Contract Data. Whenever there is a conflict, the provisions herein shall prevail over those in the CC/GCC/SCC/Contract Data. The conditions indicated in PCC will be on priority as compared to the conditions of CC/GCC/SCC/Contract Data.

CC/SCC REFERANCE CLAUSE	DESCRIPTION
Clause-1/CC Definitions	**The following paras are added to the Existing CC Clauses.** "**Contract Agreement"** The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless they agree otherwise. **"Letter of Acceptance**" means the letter of formal acceptance, signed by the Employer, of the Letter of Bid, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression "Letter of Acceptance" means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement. **"Letter of Bid"** means the document entitled letter of bid, which was completed by the Contractor and includes the signed offer to the Employer for the Works. **"Drawings"** means the drawings of the Works, as included in the **Contract**, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract. **"Schedules"** means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Bid, as included in the Contract. Such document may include the Price schedule, data, lists, and schedules of rates and/or prices. **"Bid/Tender"** means the Letter of Technical Bid **and** Letter of Price Bid and all other documents which the Contractor submitted with the Letter of Technical Bid and Letter of Price Bid, as included in the Contract. "**Employer's Requirements"** means the document entitled 'Employer's Requirements' as part of Works Requirements and as included in the Contract, and any additions and modifications to such document in accordance with the Contract. Such document specifies the purpose, scope, and/or design and/or other technical criteria, for the works. **Parties and Persons** **"Party"** means the Employer or the Contractor, as the context requires. **"Engineer"** means the person nominated by the Employer to act as the Engineer for the purposes of the Contract and named in the Contract Data, or other person appointed from time to time by the Employer and notified to the Contractor under New-Clause 3.4 [Replacement of the Engineer]. The person nominated to act as an engineer may be an employee of Rail Infrastructure Development Company (Karnataka) Ltd (K-RIDE) or an employee of a Project Management Consultancy firm engaged by K-RIDE for project management as per the discretion of the Employer. **"Contractor's Representative"** means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under New-Clause 4.3 [Contractor's Representative], who acts on behalf of the Contractor.

K-RIDE

	"Employer's Representative" means the person named by the Employer in the Contract or appointed from time to time by the Employer who acts on behalf of the Employer. **"Employer's Personnel"** means the Engineer, the assistants referred to in New-Clause 3.2 [Delegation by the Engineer] and all other staff, labour and other employees of the Engineer and of the Employer; and any other personnel notified to the Contractor, by the Employer or the Engineer, as Employer's Personnel. **"Contractor's Personnel"** means the Contractor's Representative and all personnel whom the Contractor utilises on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works. **"Base Date"** means the date 28 days prior to the deadline for submission of bids. **"Tests on Completion"** means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 30 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Employer. **"Day"** means any (working or non-working) calendar day from 00:00 hrs. to 24:00 hrs. **"Time** Periods" Any reference to time period commencing "from" the specified day or date "till" or "until" a specified day shall include both such days. Any reference to **"Time"** shall be according to Indian Standard Time (IST). **Money and Payments** **"Accepted Contract Amount"** means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects. In the Letter of Acceptance, the Accepted Contract Amount shall have two components i.e. (i) the base amount including GST (ii) GST component (calculated at the rate for works contract service as per GST Laws). **"Cost"** means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit. **"Final Statement"** means the statement defined in Sub-Clause 37.12 [Application for Final Payment Certificate]. **"Foreign Currency"** means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency. **"Local Currency"** means the currency in Indian Rupees. "**Statement"** means a statement submitted by the Contractor as part of an application, under Clause 37 and 40 [Contract Price and Payment], for a payment certificate **Works and Goods** **"Contractor's Equipment**" means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Employer's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Electrification Works. **"Goods"** means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate. **"Railway Electrification Works"** means the Electrification works to be executed by the

K-RIDE

	Contractor under the Contract. **"Section**" means a part of the Works specified in the Contract Data as a Section (if any). **"Temporary Works"** means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Electrification Works including modification in the existing system and the remedying of any defects. **Other Definitions** **"Contractor's** Documents" means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract. **"Country**" means India, the country in which the Site (or most of it) is located, where the Railway Electrification Works are to be executed. **"Employer's Equipment**" means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Employer. **"Laws"** means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority. **"Site"** means the places where the Railway Electrification Works are to be executed and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site. **"Unforeseeable**" means not reasonably foreseeable and against which adequate preventive precautions could not reasonably be taken by an experienced contractor by the date for submission of the Bid. **"Railway"** means a railway, or any portion of a railway for public carriage of passengers and goods as defined in the Railways ACT 1989. Any reference to railway means the Indian Railways and the respective Zonal Railway (a) References to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder; (b) References to laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted; (c) **References to a "person**" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns; (d) **References to "construction" or "building" include**, unless the context otherwise requires, survey and investigation, design, developing, engineering, procurement, supply of plant, materials, equipment, labour, delivery, transportation, installation, processing, fabrication, testing, and commissioning of the Railway Project, including maintenance during the Construction Period, removing of defects, if any, and other activities incidental to the

K-RIDE

	construction and "construct" or "build" shall be construed accordingly; (e) The damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "Damages"); "**Agreement**" means this Agreement, its Recitals, the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement; "**Applicable Laws**" means all laws, brought into force and effect by GOI or the State Government(s) including rules, regulations and notifications made thereunder, and judgements, decrees, injunctions, writs and orders of any court of record, applicable to this Agreement and the exercise, performance and discharge of the respective rights and obligations of the Parties hereunder, as may be in force and effect during the subsistence of this Agreement; "**Applicable Permits**" means all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction of the Railway Project during the subsistence of this Agreement; "**Defect**" means any defect or deficiency in Construction of the Works or any part thereof, which does not conform with the Specifications and Standards; **Encumbrances**" means, in relation to the Railway Project, any encumbrances such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any insurance policy pertaining to the Railway Project, where applicable herein but excluding utilities referred to in Clause 9.1; **"EPC"** means engineering, procurement and construction "**Good Industry Practice**" means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced contractor engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Contractor in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner; "**Government Instrumentality**" means any department, division or sub-division of the Government or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body, including panchayat, under the control of the Government or the State Government, as the case may be, and having jurisdiction over all or any part of the Railway Project or the performance of all or any of the services or obligations of the Contractor under or pursuant to this Agreement; **Important Bridge**" means a bridge having a linear waterway of 300 metres or a total water way of 1000 sqm or more; "**Intellectual Property**" means all patents, trade marks, service marks, logos, get-up, trade

K-RIDE

	names, internet domain names, rights in designs, blue prints, programmes and manuals, drawings, copyright (including rights in computer software), database rights, semi-conductor, topography rights, utility models, rights in know-how and other intellectual property rights, in each case whether registered or unregistered and including applications for registration, and all rights or forms of protection having equivalent or similar effect anywhere in the world; "**Major Bridge**" means a bridge having a linear waterway of 18 meters or more or which has a clear opening of 12 meters or more in spans; "**Material Adverse Effect**" means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party; "**Minor Bridge**" means a bridge having a linear waterway of less than 18 meters or which has a clear opening of less than 12 meters or in spans; **"Power Block"** means the length of the railway line between two railway stations, on which the overhead equipment (OHE) is de-energized and earthed to enable the Contractor to execute construction or maintenance works "**Project Assets**" means all physical and other assets relating to (a) tangible assets such as civil works and equipment including [foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road over-bridges, drainage works, traffic signals, sign boards, kilometer-stones, electrical systems, communication systems, rest areas, relief centers, maintenance depots and administrative offices]; and (b) Project Facilities situated on the Site; "**Right of Way**" means the constructive possession of the Site free from encroachments and encumbrances, together with all way leaves, easements, unrestricted access and other rights of way, howsoever described, necessary for construction of the Railway Project in accordance with this Agreement; "**Specifications and Standards**" means the specifications and standards relating to the quality, quantity, capacity and other requirements for the Railway Project, as set forth in Schedule-D, and any modifications thereof, or additions thereto, as included in the design and engineering for the Railway Project submitted by the Contractor to, and expressly approved by, the Authority; "**Sub-contractor**" means any person or persons to whom a part of the Works has been subcontracted by the Contractor and the permitted legal successors in title to such person, but not an assignee to such person; "**Works**" means all works including survey and investigation, design, engineering, procurement, construction, Plant, Materials, temporary works and other things necessary to complete the Railway Project in accordance with this Agreement; and "WPI" means the wholesale price index for various commodities as published by the Ministry of Commerce and Industry, GOI and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a

K-RIDE

	reference to the WPI published for the period ending with the preceding month.
Clause-1/CC	**The following paras are added to the Existing CC Clauses.** **Employers Name and Address:** K-RIDE (Rail Infrastructure Development Company (Karnataka) Limited) (A Joint venture of GoK and MoR) #8 , 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall Rajaji Nagar 1st Block Bangalore – 560010 Tele: +91 6364890842 **Employers Representative and address:** JGM/Electrical, K-RIDE (Rail Infrastructure Development Company (Karnataka) Limited) #8, 1st Floor, Samparka Soudha, Dr. Rajkumar Road, Opposite Orion Mall Rajaji Nagar 1st Block Bangalore – 560010 Tele: +91 6364890842 E – Mail: jgmelec@kride.in
Clause -2.1/CC Interpretation.	**The following paras are added to the Existing CC Clauses.** (a) provisions including the word "agree," "agreed" or "agreement" require the agreement to be recorded in writing; (b) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and (c) the word "tender" is synonymous with "bid", and "tenderer" with "bidder" and the words "tender documents" with "bidding documents"
Clause-2.2/CC. Priority of Documents	**Replace the existing sub clause 2.2 of CC** The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence: 1. Contract Agreement (if any), 2. Letter of Acceptance, notice to proceed to works, 3. Letter of bid/Contractor tender, 4. Addendum/Corrigendum including Reply to pre bid queries, 5. Schedules (including Priced Schedule), 6. Particular Conditions of Contract, 7. Conditions of Contract/SCC and Contract Data 8. Works/Employer's Requirements, 9. Technical Specifications, 10. Drawings,

K-RIDE

	11. any other documents forming part of the Contract. If an ambiguity or discrepancy is found in the documents, the Engineer shall issue necessary clarification or instruction.
Clause-6.1/CC, Communications .	**The following para is added to the existing CC clause:** Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be: in writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Contract Data; and delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Data.
Clause- 7/CC	**The following paras are added to the Existing CC Clauses.** **7.1 Definition of nominated Subcontractor** In the Contract, "nominated Subcontractor" means a Subcontractor: (a) who is stated in the Contract as being a nominated Subcontractor, or (b) whom the Engineer, under Clause 7/CC [Sub-contracting], instructs the Contractor to employ as a Subcontractor. **Sub-contractors** The Contractor shall not subcontract the whole of the Works. The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Conditions of Contract: (a) The Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract or as specifically provided in the Contract data or value of any sub-contract for Works, provided that such works are not for the key activities. (b) The prior consent of the Engineer shall be obtained to other proposed Subcontractors and/or suppliers. While submitting his proposal in this regard, the Contractor shall ensure that; (i) Total value of Works requiring such consent for subcontracting shall not be more than 50% (fifty per cent) of the Contract Price; (ii) The proposed subcontractor must have executed woks of 40% of value of the proposed subcontract through a single contract during last seven years; and (iii) No banning/blacklisting/declaration as poor performer by K-RIDE is in force on the proposed subcontractor (on the date of grant of consent by the Engineer); (iv) No contract of the proposed subcontractor has been terminated by K-RIDE during the last two years (to be reckoned from the date of grant of consent by the Engineer); (v) The Contractor shall submit the proposal for subcontracting with the name, particulars and the relevant experience of the proposed subcontractor. (c) The Contractor shall give the Engineer not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement

K-RIDE

	of such work on the Site; (d) Each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under New-Clause 4.23/PCC [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 49.7/PCC. [Termination by Employer]; and (e) On getting consent from the Engineer, the Contractor shall provide to the Engineer copy of the agreement entered with such subcontractor. The Contractor shall ensure that the requirements imposed on the Contractor by New-Clause 1.6/PCC [Confidential Details] apply equally to each Subcontractor. Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors. The Contractor shall endeavor to resolve all matters and payments amicably and speedily with the sub-contractors. The Contractor shall indemnify and hold the Employer harmless against and from any claim of subcontractors or suppliers of the materials. The Contractor shall release payment to the Sub-contractors/Suppliers promptly and shall endeavor to resolve all issues amicably and speedily with the Sub-contractors/Suppliers, so that the execution of work is not affected in any manner whatsoever. In case a Sub-contractor/Supplier represents to the Engineer in writing with supporting documents, stating that he has not received payment due as per the agreement/work or purchase order for the works executed by such Sub-contractor or supplies made by such Supplier, which have been covered in previous Payment Certificates and the Engineer finds such representation having merit, the Engineer, before issuing next Payment Certificate, may forward a copy of the representation to the Contractor requesting the Contractor to supply reasonable evidence that the amount stated to be outstanding by the Sub-contractor/Supplier for the works executed or supplies made, which have been covered in previous Payment Certificates has been paid and if not, why the same is not payable. The Engineer may recommend to make payment to the Sub-contractor/Supplier unless the Contractor submits reasonable evidence to the Engineer: (i) that the amount claimed has been paid, or (ii) satisfying the Engineer in writing that the Contractor is entitled to withhold or that the amount is not payable. On the recommendation of the Engineer, the Employer may (at his sole discretion) directly pay to the Sub-contractor/Supplier the amount due for and on behalf of the Contractor, part or all of such amounts previously certified (less applicable deductions) as are found due to the Sub-contractor/Supplier by the Engineer. The Employer shall adjust the amount paid directly to the Sub-contractor/Supplier from any amount due by it to the Contractor. The Contractor shall repay the amount, in case no amount is found due by the Employer to the Contractor. That the payment by Employer, on behalf of the Contractor to its Sub-contractor/Supplier, shall not alter any terms of agreement between the Employer and the Contractor and nor the same shall result in any privity of contract between the Employer and the Sub-contractor/Supplier. Assignment of Contractor's and Sub-contractor's Obligations: The Contractor shall not assign a right or benefit under the Contract without first obtaining

K-RIDE

Employer's prior written consent, otherwise than by:

A. a charge in favor of the Contractor's bankers of any money due or to become due under the Contract, or

B. assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

If a Subcontractor's obligations extend beyond the expiry date of Defects Liability Period, then the Contractor shall assign the benefits of such obligations to the Employer.

In the event that a sub-contractor of any tier provides to the Contractor or any other sub-contractor a warranty in respect of Plant, Materials or services supplied in connection with the Works, or undertakes a continuing obligation of any nature whatsoever in relation to such Plant, Materials or services (including without limitation an obligation to maintain stocks of spare parts) extending for a period exceeding that of the Defects Liability Period or where there is more than one Defects Liability Period exceeding that of the latest Defects Liability Period, and if the Engineer so directs in writing within 21 days of the expiry of the Defects Liability Period or the latest Defects Liability Period (as the case may be), the Contractor shall immediately assign or obtain the assignment of the benefit of such warranty or obligation to the Employer or at the direction of the Employer, to any third party.

Specialist Subcontracting

If an Applicant intends to subcontract any highly specialized elements of the Works to specialist subcontractors, such elements and the proposed subcontractors shall be clearly identified, and the experience and capacity of the subcontractors shall be described in the relevant Information Forms.

Acceptable Substitutes

With reference to subcontracting & specialist subcontracting, the Employer may require Applicants to provide more information about their proposals. If any proposed subcontractor is found ineligible or unsuitable to carry out an assigned task, the Employer may request the Applicant to propose an acceptable substitute, and may conditionally pre-qualify the Applicant accordingly, before issuing an invitation to tender.

K-RIDE

7.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Engineer as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Employer agrees to indemnify the Contractor against and from the consequences of the matter:

(a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;

(b) the subcontract does not specify that the nominated Subcontractor shall indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or

(c) the subcontract does not specify that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:

(i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract, and

	(ii) Indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities. **7.3 Payments to nominated Subcontractors** The Contractor shall pay to the nominated Subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with Clause 34/PCC except as stated in Sub-Clause 7.4/PCC [Evidence of Payments]. **7.4 Evidence of Payments** Before issuing a Payment, Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received (Within 7 days of receipt of previous payment by the contractor) all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor, submits this reasonable evidence to the Engineer, or (i) satisfies the Engineer in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and (ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Employer may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer. **7.5 Assignment of Benefit of Subcontract** If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.
Clause11/CC	**The clause 11 of CC is modified as under:** **Risk and Responsibility** **11.1 Indemnities** The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, Employers Representative and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of: (a) bodily injury, sickness, disease or death, of any person including railway user whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and

K-RIDE

(b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel,, their respective agents, or anyone directly or indirectly employed by any of them.

The Employer shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 13.8/PCC [Insurance Against Injury to Persons and Damage to Property].

11.2 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 46.1/PCC [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Employer. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Employer.

After responsibility has accordingly passed to the Employer, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 11.3/PCC [Employer's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

11.3 Employer's Risks

The risks referred to herein below, in so far as they directly affect the execution of the works in the Country, are:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,

(c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,

K-RIDE

(d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,

(e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

(f) use or occupation by the Employer of any part of the Railway Electrification Works, except as may be specified in the Contract, and

(g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible,

11.4 Consequences of Employer's Risks:

If and to the extent that any of the risks listed in Sub-Clause 11.3/PCC above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer and shall rectify this loss or damage to the extent required by the Engineer.

If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause [Extension of Time for Completion], and

(b) In the case of sub-paragraphs (f) and (g) of Sub-Clause 11.3/PCC [Employer's Risks], Cost shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters.

11.5.1 Intellectual and Industrial Property Rights

In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.

Whenever a Party does not give notice to the other Party of any claim within 28 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

(a) an unavoidable result of the Contractor's compliance with the Contract, or

(b) a result of any Works being used by the Employer:

(i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or

(ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the

K-RIDE

Contract.

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

11.5.2 Copyright

As between the Parties, the Contractor shall retain the copyright and other Intellectual Property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor. The Contractor shall be deemed (by signing this Agreement) to give to the Authority a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

(a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,

(b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and

(c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by this Agreement, including replacements of any computers supplied by the Contractor:

11.5.2.1 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Authority for purposes other than those permitted under this Clause.

11.5.2.2 As between the Parties, the Authority shall retain the copyright and other Intellectual Property rights in this Agreement and other documents made by (or on behalf of) the Authority. The Contractor may, at its cost, copy, use, and obtain communication of these documents for the purposes of this Agreement. They shall not, without the Authority's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the contract.

11.6 Limitation of Liability

Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, provided that this exclusion shall not apply to any obligation of the Contractor to pay Delay Damages to the

K-RIDE

	Employer under Sub-Clause 26.6/PCC [Delay Damages]. The total liability of the Contractor to the Employer, under or in connection with the Contract other than under New-Clause 4.37/PCC [Electricity, Water and Gas], New Clause 4.38/PCC [Employer's Equipment and Free-Issue Material], Sub-Clause 11.1/PCC [Indemnities] and Sub-Clause 11.5/PCC [Intellectual and Industrial Property Rights], shall not exceed the sum as specified in the Contract Data or if nothing is specified in the Contract Data, the accepted Contract Amount. This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party. Maximum total liability of Contractor is accepted contract amount. **11.7 Use of Employer's Accommodation/ Facilities** The Contractor shall take full responsibility for the care of the Employer provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works). If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Employer is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.
Clause 13/CC	**The following paras are added to the Existing CC Clauses.** **INSURANCE** **13.6 General Requirements for Insurances** In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause. Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause. If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Employer shall act for Employer's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy. **Waiver of subrogation** All insurance policies in respect of the insurance obtained by the Contractor pursuant to this Insurance clause shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, the Authority, and its assigns, successors, undertakings and their subsidiaries, Affiliates, employees, insurers and

K-RIDE

	underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance. **Cross liabilities** Any such insurance maintained or effected in pursuance of this Insurance clause shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Authority as separately insured. **Accident or injury to workmen** Notwithstanding anything contained in this Agreement, it is hereby expressly agreed between the Parties that the Authority shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or Sub-contractor, save and except as for death or injury resulting from any act, omission or default of the Authority, its agents or servants. The Contractor shall indemnify and keep indemnified the Authority from and against all such claims, proceedings, damages, costs, charges, and expenses whatsoever in respect of the above save and except for those acts, omissions or defaults for which the Authority shall be liable. **Insurance against accident to workmen** The Contractor shall effect and maintain during the Agreement such insurances as may be required to insure the Contractor's personnel and any other persons employed by it on the Railway Project from and against any liability incurred in pursuance of this Insurance clauses Provided that for the purposes of this para, the Contractor's personnel/any person employed by the Contractor shall include the Sub-contractor and its personnel. Provided further that in respect of any persons employed by any Sub-contractor, the Contractor's obligations to insure as aforesaid under this para shall be discharged if the Sub-contractor shall have insured against any liability in respect of such persons in such manner that the Authority is indemnified under the policy. The Contractor shall require such Sub-contractor to produce before the Authority, when required, such policy of insurance and the receipt for payment of the current premium within 10 (ten) days of such demand being made by the Authority. **Application of insurance proceeds** The proceeds from all insurance claims, except for life and injury, shall be applied for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Railway Project and the provisions of this Agreement in respect of construction of Works shall apply mutatis mutandis to the Works undertaken out of the proceeds of insurance. **Compliance with policy conditions** The Contractor expressly acknowledges and undertakes to fully indemnify the Authority from and against all losses and claims arising from the Contractor's failure to comply with conditions imposed by the insurance policies effected in accordance with this Agreement **Periods for submission of insurance:** a) evidence of insurance: Before start date of work. b) relevant policies: Before start date of work.

K-RIDE

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:

(a) evidence that the insurances described in this Clause have been effected, and

(b) copies of the policies for the insurances described in Sub-Clause 13.7/PCC [Insurance for Works and Contractor's Equipment] and Sub-Clause 13.8/PCC [Insurance against Injury to Persons and Damage to Property].

(c) If the contractor fails to submit evidence and copies of the policies as mentioned in (a) & (b) above to prove that the policies have been obtained within the period specified in the contract data, and submits the same later on and from the submitted evidence it is found that the policies have not been obtained within the period specified, the Employer shall recover double the cost of the premium for the period the policies have been delayed.

When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay double the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

Payments by one Party to the other Party shall be subject to New-Clause 2.4/PCC

K-RIDE

[Employer's Claims] or Sub-Clause 4.1/SCC [Contractor's Claims], as applicable.

The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 13/CC/PCC with insurers from any eligible source country.

13.7 Insurance for Works and Contractor's Equipment

The Contractor shall insure the Works, Plant, Materials, including those issued by the Employer and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit, subject to a maximum value indicated in Contract Data. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 13.6/PCC [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.

The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under New-Clause 6/PCC [Defects Liability]).

The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

Unless otherwise stated in the Conditions of Contract/SCC, insurances under this Sub-Clause:

(a) shall be effected and maintained by the Contractor as insuring Party,

(b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated between the Parties for the sole purpose of rectifying the loss or damage,

(c) shall cover all loss and damage from any cause not listed in Sub-Clause 11.3/PCC [Employer's Risks],

(d) shall also cover loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 11.3/PCC [Employer's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated in the Contract Data (if an amount is not so stated, this sub-paragraph (d) shall not apply), and

(e) may however exclude loss of, damage to, and reinstatement of:

i) part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),

ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its

K-RIDE

design, materials or workmanship,

iii) a part of the Works which has been taken over by the Employer, except to the extent that the Contractor is liable for the loss or damage, and

iv) [DELETED]

If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Employer, with supporting particulars. The Employer shall then (i) be entitled subject to New-Clause 2.4/PCC [Employer's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 13.6/PCC [General Requirements for Insurances].

13.8 Insurance against injury to Persons and Damage to Property

The insuring Party shall insure against each Party's liability for any loss, theft, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 13.7/PCC [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 13.9/PCC [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data, with no limit on the number of occurrences. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

Unless otherwise stated in the Special Conditions of Contract, the insurances specified in this Sub-Clause:

(a) shall be effected and maintained by the Contractor as insuring Party,

(b) shall be in the joint names of the Parties,

(c) shall be extended to cover liability for all loss and damage to the Employer's property including Railways Property (except things insured under Sub-Clause 13.7/PCC) arising out of the Contractor's performance of the Contract, and

(d) may however exclude liability to the extent that it arises from:

(i) the Employer's right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works,

(ii) damage which is an unavoidable result of the Contractor's obligations to execute the Works and remedy any defects, and

(iii) a cause listed in Sub-Clause 11.3/PCC [Employer's Risks], except to the extent that cover is available at commercially reasonable terms.

13.9 Insurance for Contractor's Personnel

The Contractor shall abide by the provisions of ESIC Act, 1948 (extended from time to time) to take care of insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness or disease. In addition, the contractor shall also maintain insurance against liability for claim of death of any person employed by the Contractor or any other of the Contractor's Personnel.

K-RIDE

	The Employer and the Engineer shall also be indemnified under the policy of insurance, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Employer or of the Employer's Personnel. The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause. Maximum number of deductibles for insurance of Employer's risks: Nil
Clause- 22/CC. Right of Access to the Site	**The following para is added to the existing CC clause:** The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract Data. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Employer is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Specification. However, the Employer may withhold any such right or possession until the Performance Security has been received. If no such time is stated in the Contract Data, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as may be required to enable the Contractor to proceed in accordance with the programme submitted under Sub-Clause 25.3/PCC [Programme]. If the Contractor suffers delay as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Engineer and shall be entitled to: (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and After receiving this notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters. However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time or new rates. Right of access to the work site will be provided to the successful Contractor. A minimum corridor of 9m will be available. The Contractor to note this while making Launching plans. The Contractor shall prepare, at his cost, approach roads to the site of work and this cost will not be reimbursed by the Employer. The Employer reserves the right to make use of these service roads for themselves or other Contractors working on the project, as and when necessary, without any payment to the Contractor. The barricading to the extent feasible subject to a maximum of 9m width (LHS+RHS) shall be permitted for carrying out the works and suitable barricading width for off-road structures in stages as per the approved sequence of construction. The employer shall grant the contractor right of access to, and/ or possession of the site progressively for the completion of works. The contractor will draw/ modify the schedule for completion of work according to progressive possession/ right of such sites.
Clause 25 of CC	**The following paras are added to the Existing CC Clauses.**

K-RIDE

	25.3 Programme The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 26.3/PCC [Commencement of Works]. The program shall include the physical and Financial Progress vis-à-vis program and forecast cash flow adopting Project Management Software Primavera/Sure Track/MS Project or as mutually agreed. The program must identify the milestones, interface requirements and program reporting elements. The Contractor shall supply, free of cost one set of authorized software to the Engineer and the soft copy of structured program for the project. This shall be updated every month. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include: (a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing, (b) each of these stages for work by each nominated Subcontractor (as defined in Clause 7/PCC [Nominated Subcontractors]), (c) the sequence and timing of inspections and tests specified in the Contract, and (d) a supporting report which includes: (i) a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and (ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage. Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities. The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 34.2/PCC [Procedure for change of scope]. If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer within 15 days in accordance with this Sub-Clause.
Clause 26 of CC	**The following paras are added to the Existing CC Clauses.** **26.3 Commencement of Works** The Engineer shall give the Contractor not less than 7 days' notice of the Commencement of work. Unless otherwise stated in the Special Conditions of Contract,

K-RIDE

the Commencement of work shall be within the number of days after the Contractor receives the Letter of Acceptance as specified in Contract Data.

The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay.

26.4 Time for Completion

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

(a) achieving the passing of the Tests on Completion, and

(b) completing all work which is stated in the Contract as being required for whole of the Works or Section(s) to be considered to be completed for the purposes of taking-over under Sub-Clause 46.1/PCC [Taking Over of the Works and Sections].

26.5 Extension of Time for Completion

The Contractor shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 46.1/PCC [Taking-Over of the Works and Sections] is or will be delayed by any of the following causes:

a) Delay in providing the Right of Way, [approval of Drawings,] environmental/ forest clearances, in accordance with the provisions of this Agreement;

b) Change of Scope, unless an adjustment to the Scheduled Completion Date has been agreed under change of scope.

c) Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 34.2/PCC [Procedure for change of scope]) or other substantial change in the quantity of an item of work included in the Contract,

d) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,

e) exceptionally adverse climatic conditions and occurrence of Force Majeure event.

f) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or

g) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors.

If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer in accordance with Sub-Clause 4.1/SCC [Contractor's Claims]. When determining each extension of time under Sub-Clause 4.1/SCC the Engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

26.6 Delays Caused by Authorities

If the following conditions apply, namely:

(a) the Contractor has diligently followed the procedures laid down by the relevant legally

K-RIDE

constituted public authorities in the Country,

(b) these authorities delay or disrupt the Contractor's work, and

(c) the delay or disruption was Unforeseeable,

then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 26.5/PCC [Extension of Time for Completion].

26.7 Rate of Progress

If, at any time:

(a) actual progress is too slow to complete within the Time for Completion, and/or

(b) progress has fallen (or will fall) behind the current programme under Sub-Clause 25.3/PCC [Programme],

other than as a result of a cause listed in Sub-Clause 26.5/PCC [Extension of Time for Completion], then the Engineer may instruct the Contractor to submit, under Sub-Clause 25.3/PCC [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

Unless the Engineer notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Employer to incur additional costs, the Contractor shall subject to New-Clause 2.4/PCC [Employer's Claims] pay these costs to the Employer, in addition to delay damages (if any) under Sub-Clause 26.8/PCC below

26.8 Extension of Time for Completion with Delay Damages

If the Contractor fails to comply with Sub-Clause 26.4/PCC [Time for Completion for entire work or for specified section wise completion period], and he is not entitled to an extension of time under sub clause 26.5/PCC then the employer may grant extension of time with delay damage in such case, the Contractor shall subject to New-Clause 2.4/PCC [Employer's Claims] pay delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Contract Data.

Further, if the contractor fails to achieve physical/financial targets as per the agreed programme for a consecutive period of 3 months without any valid reasons, other than attributable to the contractor, a provisional recovery of delay damages shall be made from the next interim payment certificate @ 1/10th of the sum of delay damages stated in the contract data, for the entire period of 3 months. Such recovery shall continue from the further interim payment certificates till the contractor is able to make good the shortfall and achieve the cumulative targets as per agreed programme. On achieving the cumulative progress targets as per agreed programme, the entire amount recovered till that month, shall be refunded to the contractor in the next interim payment certificate. In case the contractor is unable to make good the shortfall and achieve the cumulative targets resulting in delay in completion of the project, then the provisional recoveries made shall be adjusted against the delay damages to be finally imposed on the

K-RIDE

contractor.

These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 49.7/PCC [Termination by Employer] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

26.9 Suspension of Work

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

The Engineer may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 26.10, 26.11 and 26.12 of PCC shall not apply.

26.10 Consequences of Suspension

If the Contractor suffers delay and/or incurs Cost from complying with the Engineer's instructions under Sub-Clause 26.9/PCC [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to:

a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and

b) **DELETED**

After receiving this notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters.

The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 26.9/PCC [Suspension of Work].

Table of Compensation for the suspension period has been **DELETED.**

26.11 Payment for Plant & materials in Event of Suspension DELETED

26.12 Prolonged Suspension

If the suspension under Sub-Clause 26.9/PCC [Suspension of Work] has continued for more than 84 days, the Contractor may request the Engineer's permission to proceed. If the Engineer does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 34/PCC [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice.

26.13 Resumption of Work

K-RIDE

	After the permission or instruction to proceed is given, the Contractor and the Engineer shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension **26.14 Bonus for early completion**: If the Contractor achieves completion of the whole of the Works or any section(s) prior to the intended Completion Date prescribed in Contract data (Extension of time pursuant to Clause 26.5/PCC or any other clause of these conditions will not be considered), the Employer shall pay to the Contractor a sum stated in the Contract data as bonus for early completion, for every calendar month which shall elapse between the date of completion of all items of works as stipulated in the contract, including variations ordered by the Engineer and the time prescribed in Clause 26.4. For the purpose of calculating bonus payments, the time given in the Bid for completion of the whole works or any section(s) is fixed and unless otherwise agreed, no adjustment of the time by reasons of granting an extension of time pursuant to clause 26.5/PCC or any other clause of these conditions will be allowed. Any period falling short of completed month shall be ignored for the purpose of computing the period relevant for the payment of bonus. **Amount of bonus for early completion** 1% of initial Contract Price per month (part of the month to be excluded) for substantial completion of work. **Maximum limit of bonus** 3% of Contract Price. (For earlier completion of the work as a whole from the stipulated original date of completion, a bonus payment of as above shall be paid to the contractor. The engineer's decision is final and binding on the contractor so far as bonus payment to the contractor is concerned. if bonus payment is made, earlier penalties levied for delay caused to various intermediate Key Dates will be refunded.)
	26.15 Suspension of unsafe Construction Works 1. Upon recommendation of the Authority's Engineer to this effect, or on its own volition in cases of emergency or urgency, the Authority may by notice require the Contractor to suspend forthwith the whole or any part of the Works if, in the Works reasonable opinion of the Authority's Engineer or the Authority, as the case may be, such work threatens the safety of the Users and or other persons on or about the Railway Project. 2. The Contractor shall, pursuant to the notice under the above clause, suspend the Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works, the Users, other persons and vehicles on or about the Railway Project including pedestrians. The Contractor may by notice require the Authority's Engineer to inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Authority's Engineer, the Authority shall either revoke such suspension or instruct the Contractor to carry out such other and further remedial measures as may be necessary in the reasonable opinion of the

K-RIDE

	Authority, and the procedure set forth in this Clause shall be repeated until the suspension hereunder is revoked. 3. Subject to the provisions of the contract, all reasonable costs incurred for maintaining and protecting the Works or part thereof during the period of suspension (the "Preservation Costs"), shall be borne by the Contractor. 4. If suspension of Works is for reasons not attributable to the Contractor, the Authority's Engineer shall determine any Time Extension to which the Contractor is reasonably entitled.
Clause-30/CC	**The following paras are added to the Existing CC Clauses.** **30.2 Contractor's Obligations:** **30.2.1** The Contractor shall carry out the Tests on Completion in accordance with this Clause and New-Clause 5.4/PCC [Testing], after providing the documents in accordance with sub-paragraph (d) of New--Clause 4.1/PCC [Contractor's General Obligations]. The Contractor shall give to the Engineer not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct. In considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer. Contractor's Obligations: The Contractor shall carry out the Tests on Completion at his own cost in accordance with the Contract and shall provide the documents in accordance with New-Clauses 3.1/PCC and the Contractor shall give, to the Engineer, 21days' notice of the date after which the Contractor will be ready to carry out the Tests on Completion. Unless otherwise agreed, such Tests shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct. Unless otherwise stated in Conditions of Contract/SCC, the Tests on Completion shall be carried out in the following sequence a) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include all the tests as per provision of ACTM and manufacturer's manual. b) Integrated Testing of system followed by a period of trial running. The test sequence may be as shown below:- i. Tests on Equipment ii. Installation Test and sub-system individually iii. System Integrated Test iv. Final Acceptance Test c) Current collection test with loaded train will be arranged and run by the authority to check the profile of OHE. d) trial operation which shall demonstrate that the Works or Section perform reliably and in accordance with the Contract.

K-RIDE

The Contractor at his own cost shall arrange all tools, equipment, gadgets, facilities or as deemed necessary by the Engineer for such tests, in considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed the Tests on Completion described in sub-paragraphs (a) (b) or (c),the Contractor shall provide the Engineer and the Employer with a certified report of the results of all such Tests

30.3 Delayed Tests

If the Tests on Completion are being unduly delayed by the Employer, New-Clause 5.4/PCC [Testing] (fifth paragraph) and/or Sub-Clause 46.3/PCC [Interference with Tests on Completion] shall be applicable.

If the Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.

If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer's Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

30.4 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, New-Clause 5.5/PCC [Rejection] shall apply, and the Engineer or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions

30.5 Failure to Pass Tests on Completion

If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 30.4/PCC [Retesting], the Engineer shall be entitled to:

(a) order further repetition of Tests on Completion under Sub-Clause 30.4;

(b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided in sub-paragraph (c) of New-Clause 6.4/PCC [Failure to Remedy Defects]; or

(c) issue a Taking-Over Certificate, if the Employer so requests.

In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Employer may require the reduction to be (i) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or (ii) determined and paid under New-Clause 2.4 [Employer's Claims] and New-Clause 3.5 [Determinations].

30.6 Contractor's obligations

Notwithstanding the provisions of New-clauses 4.1/PCC, clause 30.2 to 30.5/PCC the

K-RIDE

	provisions in subsequent sub-clauses shall apply for works of Permanent Way, signaling and telecommunication and railway electrification excluding General Electrical Services. (a) The Contractor shall be responsible for the execution of temporary and/or permanent Railway Electrification works which may require the prior sanction/approval of Electrical Inspectorate General(EIG) or Commissioner of Railway Safety (CRS) in accordance with extant rules for "The Railways opening for Public Carriage of Passengers and AC Traction Manual" was amended from time to time. And applicable as and when the works are undertaken. The Contractor shall initiate the process for approval at least **63** (sixty-three) days prior to undertaking such works which require the approval of Electrical Inspectorate General(EIG) or Commissioner of Railway Safety (CRS) and furnish draft documentation to the Engineer. (b) The Contractor shall ensure that existing services and operations for public carriage of passengers or goods, are not affected except those, which are essentially required to be regulated for execution of works. Such items of works shall be planned and coordinated through the Engineer. (i) Prior to the commencement of commercial operations of passenger traffic,the Employer may permit freight train operations to Railway after certification by the authorized person of Zonal Railway. The Contractor shall be responsible for maintaining the facilities ensuring safety of operations as per specifications.
Clause 34/CC	**The following paras are added to the Existing CC Clause 34.** **34.1 Change of scope.** 34.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the Contractor to make modifications or alterations to the Works ("Change of Scope") before the issue of the Completion Certificate either by giving an instruction or by requesting the Contractor to submit a proposal for Change of Scope involving additional cost or reduction in cost. Any such Change of Scope shall be made and valued in accordance with the provisions of this Article 34. 34.1.2 Change of Scope shall mean: a) change in specifications of any item of Works; b) omission of any work from the Scope of the Project c) any additional work, Plant, Materials or services which are not included in the Scope of the Project, including any associated Tests on completion of construction. 34.1.3 If the Contractor determines at any time that a Change of Scope will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Authority of executing, maintaining or operating the Railway Project, (iii) improve the efficiency or value to the Authority of the completed Railway Project, or (iv) otherwise be of benefit to the Authority, it shall prepare a proposal with relevant details at its own cost. The Contractor shall submit such proposal, supported with the relevant details including the amount of reduction in the Contract Price, if any, to the Authority to consider such Change of Scope. The Authority shall, within 15 (fifteen) days of receipt of such proposal, either accept such Change of Scope with modifications, if any, and initiate proceedings therefor in accordance with this Article or reject the proposal and inform the Contractor of its decision. For the avoidance of doubt, the Parties agree that the

K-RIDE

Contractor shall not undertake any Change of Scope without a Change of Scope Order being issued by the Authority, save and except any Works necessary for meeting any Emergency

34.2 Procedure for Change of Scope

34.2.1 In the event of the Authority determining that a Change of Scope is necessary, it may direct the Authority's Engineer to issue to the Contractor a notice specifying in reasonable detail the works and services contemplated thereunder (the "Change of Scope Notice").

34.2.2 Upon receipt of a Change of Scope Notice, the Contractor shall, with due diligence, provide to the Authority and the Authority's Engineer such information as is necessary, together with preliminary documentation in support of:

(a) the impact, if any, which the Change of Scope is likely to have on the Project Completion Schedule if the works or services are required to be carried out during the Construction Period; and

(b) the options for implementing the proposed Change of Scope and the effect, if any, each such option would have on the costs and time thereof, including the following details:

(i) break down of the quantities, unit rates and cost for different items of work;

(ii) proposed design for the Change of Scope; and

(iii) proposed modifications, if any, to the Project Completion Schedule of the Railway Project.

For the avoidance of doubt, the Parties expressly agree that, subject to the provisions of Clause 34.4.2 the Contract Price shall be increased or decreased, as the case may be, on account of Change of Scope.

34.2.3 The Contractor's quotation of costs for the Change of Scope shall be determined on the following principles:

(a) For works of similar nature compared to the Works being executed, the quotation shall be based on the rate for the work inclusive of all labour, Materials, equipment, incidentals, overheads and profit derived in accordance with the provisions and the price adjustment in accordance with relevant clause shall apply to the rates so worked out.

The rate may be decided on the following basis:

i. Cost of Materials at current market price, as actually utilised in the final finished Railway Electrification Works, including a reasonable percentage for wastage and transportation.

ii. Cost of enabling works if any (unless provided for separately) worked out on the above basis but with less stringent quality. Specifications minus salvage value of serviceable material released after completion of work and cost of material released as scrap.

iii. Cost of labour actually used at the site of work at rates under Payment of Minimum Wages Act for the area of work for each category of worker, further enhanced by a percentage of 10% of the aforesaid rates to account for labour not directly utilised at Site and other ancillary and

K-RIDE

incidental expenses on labour.

iv. Hire charges for Plant & Machinery, scaffolding, shuttering, forms, etc., required to be used at the site of the work. The tools used by the various trades shall not be counted as Plant & Machinery for this purpose.

v. An amount of 10% of items (i), (ii), (iii) and (iv) above to allow for Contractor's overheads, profits and taxes. This percentage shall also apply to estimated cost of Materials supplied free to the Contractor.

vi. In all cases where extra items of work are involved, for which there are no rates in the accepted Price schedule the Contractor shall give a notice to the Engineer, of at least 7 days before the need for their execution arises.

(b) For works not similar in nature to the Works being executed, the cost of work shall be derived on the basis of applicable schedule of rates for the relevant zone of the Railways, LAR's of Metro Rail Projects, and such rates shall be indexed with reference to the WPI once every year at the commencement of the financial year, with the base being the month and year of the publication of the said schedule of rates; provided, however, that for any item not included in the schedule of rates, the prevailing market rates as determined in accordance with Good Industry Practice by the Authority's Engineer shall apply.

34.2.4 Upon reaching an agreement, the Authority shall issue an order (the "Change of Scope Order") requiring the Contractor to proceed with the performance thereof. In the event that the Parties are unable to agree, the Authority may:

(a) issue a Change of Scope Order requiring the Contractor to proceed with the performance thereof at the rates and conditions approved by the Authority till the matter is resolved in accordance with Article Dispute resolution (Clause 4 of SCC) ; or

(b) proceed in accordance with Clause 34.5

34.2.5 The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply mutatis mutandis to the works undertaken by the Contractor under this clause 34.

34.3 Payment for Change of Scope

Payment for Change of Scope shall be made in accordance with the payment schedule specified in the Change of Scope Order.

34.4 Restrictions on Change of Scope

34.4.1 No Change of Scope shall be executed unless the Authority has issued the Change of Scope Order save and except any Works necessary for meeting any Emergency.

34.4.2 Unless the Parties mutually agree to the contrary, the total value of all Change of Scope Orders shall not exceed **25%** of the Contract Price.

34.4.3 Notwithstanding anything to the contrary in this Article 34, no change arising from any default of the Contractor in the performance of its obligations under this Agreement shall be deemed to be Change of Scope, and shall not result in any adjustment of the Contract Price or the Project Completion Schedule.

34.5 Power of the Authority to undertake works

34.5.1 In the event the Parties are unable to agree to the proposed Change of Scope

K-RIDE

Orders in accordance with Clause 34.2, the Authority may, after giving notice to the Contractor and considering its reply thereto, award such works or services to any person on the basis of open competitive bidding from amongst bidders who are pre-qualified for undertaking the additional work; provided that the Contractor shall have the option of matching the first ranked bid in terms of the selection criteria, subject to payment of 2% (two per cent) of the bid amount to the Authority, and thereupon securing the award of such works or services. For the avoidance of doubt, it is agreed that the Contractor shall be entitled to exercise such option only if it has participated in the bidding process and its bid does not exceed the first ranked bid by more than 10% (ten per cent) thereof. It is also agreed that the Contractor shall provide assistance and cooperation to the person who undertakes the works or services hereunder, but shall not be responsible for rectification of any Defects and/or maintenance of works carried out by other agencies.

34.5.2 The works undertaken in accordance with this Clause 34.5 shall conform to the Specifications and Standards and shall be carried out in a manner that it should not cause any disruption to the Project and also minimise adverse effect to main contractor. The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply mutatis mutandis to the works carried out under this Clause 34.5.

VARIATIONS AND ADJUSTMENTS.

34.6 Right to Vary

Variations may be initiated by the Employer at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by making a request to the Contractor to submit a proposal.

The Contractor shall execute and be bound for variations of all change of scope of orders till the price does not exceed 25% of the Contract Price as specified in LOA/Original agreement

34.7 Adjustments for Changes in Legislation

Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and

(b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with New-Clause 3.5 [Determinations] to agree or determine these matters.

In case there is a decrease in cost as a result of changes of Law by Legislation after the

K-RIDE

	Base Date, the Engineer shall proceed in accordance with New-Clause 3.5 (determination) to agree or determine these matters without waiting for Contractor's / Employer's Notice. Notwithstanding the foregoing, the Contractor shall not be entitled to such an extension of time if the same shall already have been taken into account in determining an extension and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause PVC/Contract Data.
Clause 37/CC	**The clause 37 of CC is replaced with the following.** **Payments.** **37.0 Procedure for estimating the payment for the Works** 1. The Authority shall make interim payments to the Contractor, as certified by the Authority's Engineer on completion of a stage, for a length, number or area as specified, and valued in accordance with the proportion of the Contract Price assigned to each item and its stage and payment procedure in Lumpsum Price schedule and contract price weightages. 2. The Contractor shall base its claim for interim payment for the stages completed till the end of the month for which the payment is claimed, valued in accordance with para 1 supported with necessary particulars and documents in accordance with this Agreement. 3. Any reduction in the Contract Price arising out of Change of Scope or the Works withdrawn, as the case may be, shall not affect the amounts payable for the items or stage payments thereof which are not affected by such Change of Scope or withdrawal. The Parties further agree that the adjustments arising out of the aforesaid modifications shall be carried out in a manner that the impact of such modifications is restricted to the said Change of Scope or withdrawal, as the case may be, and does not alter the payments due for and in respect of items or stage payments which do not form part of such Change of Scope or withdrawal. **4. Stage Payment Statement for Works** The Contractor shall submit a statement (the "Stage Payment Statement"), in 3 copies, by the 7th (seventh) day of a month to the Authority's Engineer in the prescribed form, showing the amount calculated in accordance with Para 3 above to which the Contractor considers itself entitled for the completed stage(s) of Works. The Stage Payment Statement shall be accompanied with the progress reports and any other supporting documents. The Contractor shall not submit any claim for payment of incomplete stages of work. In the event that there is no claim for a month in accordance with the provisions of this Para 4, the Contractor shall submit a nil claim to the Authority's Engineer. **5. Stage Payment for Works** i. Within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to para 4 above , the Authority's Engineer shall broadly determine the amount due to the Contractor and recommend the release of 80% of the amount so determined as part payment against the Stage Payment Statement, pending issue of the Interim Payment Certificate by the Authority's Engineer. Within 10 (ten) days of the receipt of recommendation of the Authority's

K-RIDE

Engineer

ii. Within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in para 4, the Authority's Engineer shall determine and shall deliver to the Authority and the Contractor an IPC certifying the amount due and payable to the Contractor, after adjusting the payments already released to the Contractor against the said statement. For the avoidance of doubt, the Parties agree that the IPC shall specify all the amounts that have been deducted from the Stage Payment Statement and the reasons therefor.

iii. In cases where there is a difference of opinion as to the value of any stage, the opinion of the Authority's Engineer shall prevail and interim payments shall be made to the Contractor on this basis; provided that the foregoing shall be without prejudice to the Contractor's right to raise a Dispute.

iv. The Authority's Engineer may, for reasons to be recorded, withhold from payment:

(a) the estimated value of work or obligation that the Contractor has failed to perform in accordance with this Agreement and in respect of which the Authority's Engineer had notified the Contractor; and

(b) the estimated cost of rectification of any Works which have not been constructed in accordance with this Agreement.

v. Payment by the Authority shall not be deemed to indicate the Authority's acceptance, approval, consent or satisfaction with the work done.

vi. In the event the amounts released by the Authority under para 5 (i) exceed the amount finally determined by the Authority's Engineer pursuant to para 5 (ii) to para 5 (iv), the difference thereof shall be accounted for in the next IPC.

Time of payment

The Authority shall pay to the Contractor any amount due under any payment certificate issued by the Authority's Engineer in accordance with the provisions of the contract.

37.1 Application for Interim Payment Certificates

Payments shall be adjusted for deductions for advance payments other than recoveries in terms of contract and taxes, at source as applicable under law. The Contractor shall be liable to pay liquidated damages for shortfall in progress. Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

The Contractor shall submit a Statement in six copies to the Engineer in accordance with the payment procedure specified by the Engineer, after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with New-Clause 4.39/PCC [Progress Reports] and Record Measurement Sheets.

The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

(a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);

(b) any amounts to be added and deducted for changes in legislation and changes in

K-RIDE

cost, in accordance with Sub-Clause 34.7/PCC [Adjustments for Changes in Legislation] and Sub-Clause PVC/Contract Data [Adjustments for Changes in Cost];

(c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Contract Data to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Contract Data;

(d) Any amounts to be added and deducted for the advance payments and repayments in accordance with sub clause 42.0/PCC [Advance Payment];

(e) any amounts to be added and deducted for Materials in accordance with New-Clause 13/PCC [Materials intended for the Works];

(f) any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 4.1/SCC [Claims, Disputes and Arbitration]; and

(g) the deduction of amounts certified in all previous Payment Certificates.

(h) for invoicing as per GST Laws, the estimated contract value of the Works executed in terms of (a) above and any amounts added or deducted as per (b), I to (g) above is to be broken up in two components i.e. (i) the base amount excluding GST (ii) GST component (calculated at the rate for works contract service as per GST Laws).

(i) Statement of interim payments certificates should be submitted by the Contractor to the Engineer by the 7th day of each month for the work executed upto the end of the previous month.

(j) An amount to be deducted for the payments to be made to different Departments towards payments liable to be made by the Contractor

37.2 Schedule of Payments

If the Contract includes a schedule of payments specifying the installments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

(a) the installments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 37.1/PCC [Application for Interim Payment Certificates];

(b) New-Clause 13/PCC [Provisional payment against material at site] shall not apply; and

(c) if these installments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less than that on which this schedule of payments was based, then the Engineer may proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine revised installments, which shall take account of the extent to which progress is less than that on which the installments were previously based.

If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

K-RIDE

37.3 Issue of Interim Payment Certificates

No amount will be certified or paid until the employer has received and approved the performance security. Thereafter, the Engineer shall within two days after receiving a statement and supporting documents (including Contractor's certificate in terms of Sub-Clause 1.22/SCC, issue to the Employer a provisional interim payment certificate which shall state the amount which the Engineer determines to be due after preliminary check as per K-RIDE's procedure order. After this the Engineer shall, within 28 days after receiving a statement and supporting documents, issue to the employer an Interim Payment Certificate which shall state the amount which the Engineer fairly determines to be due, with supporting particulars.

However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue the Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated in the Contract Data. In this event, the Engineer shall give notice to the Contractor accordingly.

An Interim Payment Certificate shall not be withheld for any other reason, although:

(a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or

(b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

The Engineer may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Engineer's acceptance, approval, consent or satisfaction.

37.4 Payment

The Employer shall pay to the Contractor:

(a) the first installment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with New-Clause 4.19/PCC [Performance Security] and Sub-Clause 42.0/PCC [Advance Payment], whichever is later;

(b) (i) After preliminary scrutiny and certifications by the Engineer, payment of 80% of the certified net payment due (after recoveries and deductions), shall be made by the Employer within 10 days of receiving a statement and supporting documents by the Engineer subject to the condition that last interim payment certificate has been settled after detailed check. In the event of the contractor submitting bills based on false measurements, Project Director should issue a written warning to him to the effect that the facility of 80% payment without detailed check will be withdrawn in future. If the contractor repeats the misconduct this facility should be withdrawn.

(ii) The amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents. Any discrepancy shall be rectified in the next payment to the Contractor; and

(c) the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate or, the undisputed amount shown in the

K-RIDE

Final Statement, within 56 days after the date of notification of the suspension.

Payment of the amount due, unless specified in the Contract Data, shall be made in INR into the bank account, nominated by the Contractor.

However, in case of JV, direct payment to individual JV partners shall be made on joint certification (about the net amounts payable to individual partners) by the authorized representative of the JV and concerned respective authorized representative of individual JV partners, after making requisite recoveries/deductions from the gross payment. In case of any dispute regarding the net amounts payable to individual partners, the Engineer shall decide the same on the basis of the execution of items of works under Schedules/Bills indicated in the JV agreement as the responsibility of execution of each JV partner. Payment to individual JV partners shall be treated as payment made to the JV. The said payment shall not alter any obligation of the JV and its individual Partners under the Agreement and their obligations under the agreement shall remain joint and several.

A foreign company (either single entity or JV partner), shall have to submit proof of having opened their project office in India before any payment (including advance payment) is released to such a company. The required proof here shall be a copy of the report containing information as per format prescribed by Reserve Bank of India submitted to the Director General of Police (DGP) of the state concerned in which project office has been established.

37.5 DELETED

37.6 Delayed Payment :

If the Contractor does not receive payment in accordance with Sub-Clause 37.4/PCC [Payment], the Contractor shall be entitled to receive interest compounded monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 37.4/PCC [Payment], irrespective (in the case of its sub-paragraph (b)) of the date on which any Interim Payment Certificate is issued.

Unless otherwise stated in the Special Conditions of Contract, the interest amount be calculated at the annual rate of 7% (seven percent).

The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy, if the Contractor submits the complied (Fulfilled) documents.

37.7 DELETED

37.8 DELETED

37.9 DELETED

37.10 DELETED

37.11 Statement at Completion

Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Engineer six copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 37.7/PCC [Application for Interim Payment Certificates], showing:

K-RIDE

(a) the value of all work done in accordance with the Contract up to the date stated in the Taking- Over Certificate for the Works,

(b) any further sums which the Contractor considers to be due, and

(c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

The Engineer shall then certify in accordance with Sub-Clause 37.3/PCC [Issue of Interim Payment Certificates].

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement as per procedure prescribed by the Engineer, with supporting documents showing in detail in a form approved by the Engineer:

37.12 Application for Final Payment Certificate

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement as per procedure prescribed by the Engineer, with supporting documents (including Contractor's certificate in terms of Sub-Clause 1.22/SCC showing in detail in a form approved by the Engineer:

(a) the value of all work done in accordance with the Contract, and

(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.

If the Engineer disagrees with or cannot verify any part of the draft final statement, as per procedure prescribed by the Engineer the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".

However, if, following discussions between the Engineer and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 4.SCC [Obtaining Dispute Board's Decision] or Sub-Clause 4.2/SCC [Amicable Settlement], the Contractor shall then prepare and submit to the Employer (with a copy to the Engineer) a Final Statement.

37.13 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date

37.14 Issue of Final Payment Certificate

K-RIDE

Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 37.12/PCC [Application for Final Payment Certificate] and Sub-Clause 37.13/PCC [Discharge], the Engineer shall issue, to the Employer, the Final Payment Certificate which shall state:

(a) the amount which he fairly determines is finally due, and

(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance (if any) due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.

If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 37.12/PCC [Application for Final Payment Certificate] and Sub-Clause 37.13/PCC [Discharge], the Engineer shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 28 days, the Engineer shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

37.15 Cessation of Employer's Liability

The Employer shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

(a) in the Final Statement and also

(b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 37.11/PCC [Statement at Completion].

However, this Sub-Clause shall not limit the Employer's liability under his indemnification obligations, or the Employer's liability in any case of fraud, deliberate default or reckless misconduct by the Employer

K-RIDE

37.16 Currencies of Payment

a) The Contract Price shall be paid in Indian Rupees (INR).

37.17 Tax Deduction at Source: Tax deductions will be made at source as per statutory requirement from every payment made to the Contractor at rates notified from time to time.

i. **Income tax deduction:** Income Tax/GST deduction shall be as per law.

ii. **Labour Cess & Royalties:** The labour Cess & Royalties will be deducted as per norms of applicable law from each IPCs and remitted to the respective Authorities

37.18 Production of Vouchers

a. The Contractor shall, whenever required by the Engineer, produce or cause to be produced for examination by the Engineer, any quotation, invoice, cost or other account books, vouchers, receipts, letters, memoranda or any copy of or extract from any such documents and also furnish information and returns, as may be required, relating to the execution of this Contract or relevant for verifying or ascertaining the cost of execution of this Contract or ascertaining the Materials supplied by the Contractor are in accordance with the Specifications laid down in the Contract. The Engineer's decision on the question of relevancy of any

documents, information or returns shall be final and binding on the parties

b. If any part or item of the Work is allowed to be carried out by a Sub-Contractor, assignee or any subsidiary or allied firm, the Engineer shall have power to secure the books of such Sub-Contractor, assignee or any subsidiary or allied firm through the Contractor, and shall have power to examine and inspect the same. The above obligations are without prejudice to the obligations of the Contractor under any statute, rules or orders.

37.19 Withholding and Lien For Sums Claimed

(i) The Employer shall have lien on and over all materials of every description, tools, tackles, plant, equipment or any amount due and/or that may become due and payable to the Contractor under the Contract, and / or on and over the deposit of Performance Security or other amount or amounts made under the Contract and which may become payable to the Contractor. Employer may exercise a general lien also.

(ii) And further, unless the Contractor pays and clears immediately on demand any claim of the Employer, the Employer shall at all times be entitled to deduct the amount of the said claim from the amount, securities and / or deposits which may have become or will become payable to the Contractor under the existing contract, or under any other Contract or transaction whatsoever between the Employer and the Contractor even if the matter stands referred to Arbitration. The Contractor shall have no claim for any interest or damage whatsoever in respect of any amounts withheld or treated as withheld under the lien referred to above and duly notified as such to the Contractor

37.20 Signature on Receipts for Payments

Every receipt of payment to Contractor including refund of the Performance Security shall be signed by the person authorized to do so on his behalf. In the event of death of any of the Contractor's partners in case the Contractor is a partnership firm, during the currency of the Contract, it is hereby expressly agreed that every receipt by any one of surviving Contractor's partners, shall, if so signed as aforesaid, be a good and sufficient discharge as aforesaid, provided that nothing in this Clause shall be deemed to prejudice or affect any claim, which the Employer may hereafter have against the legal representatives of any Contractor's partner so dying, for or in respect of breach of any of the conditions of the Contract. Provided also that nothing contained in this clause shall be deemed to prejudice or affect the respective rights and obligations of the Contractor's partners, or of the legal heirs / representatives of any deceased Contractor / partner interest

37.21 Post Payment Audit

It is an agreed term of the Contract, that the Employer reserves to himself the right to carry out a post payment audit and / or technical examination of the Works, and the Final bill including all supporting vouchers, abstracts, etc., and to make a claim on the Contractor for the refund of any excess amount paid to him, if as a result of such examination, any over-payment to him is discovered to have been made in respect of any work done or alleged to have been done by the Contractor, under the Contract. If any under-payment is discovered, the same shall be paid by the Employer to the Contractor. Such payments or recoveries, however, shall not carry any interest.

37.22 Recovery of money due to the Employer

K-RIDE

	All damages (including, without limitation, liquidated damages), costs, charges, expenses, debts, or sums for which the Contractor is liable to the Employer under any provision of the Contract may be deducted by the Employer from amount due to the Contractor under the Contract including, without limitation, and the Employer shall have the power to recover any balance not so deducted from amount due to the Contractor under any other contract between the Employer and the Contractor When the Contractor has assigned to a third party the right to receive amount due, or, to become due, under the Contract to the Contractor or charged such amount in favour of a third party, the Employer's right to deduct damages (including without limitation liquidated damages), costs, charges, expenses, debts or sums for which the Contractor is liable to the Employer from amount due to the Contractor under the Contract shall be limited to the right expressed above.
Clause-38/CC	**The clause 38 of CC is substituted with the following para.** **38.1 Compensation Event:** The risks referred to in Sub-Clause 11.4/PCC below, in so far as they directly affect the execution of the works in the Country, are: (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country, (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel, (d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds, (f) use or occupation by the Employer of any part of the Railway Electrification Works, except as may be specified in the Contract, (g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible.
Clause-40/CC	**The following paras are added to the Existing CC Clauses.** **40.1 The Contract Price** **1.** The Authority shall make payments to the Contractor for the Works on the basis of the lump sum price accepted by the Authority in consideration of the obligations specified in this Agreement, which shall be subject to adjustments in accordance with the provisions of this Agreement. The Parties further agree that save and except as provided in this Agreement, the Contract Price shall be valid and effective until issue of Completion Certificate. 2 The Contract Price includes all duties, taxes, royalty, and fees that may be levied in accordance with the laws and regulations in force as on the Base Date on the Contractor's equipment, Plant, Materials and supplies acquired for the purpose of this Agreement and on the on the Works undertaken under this Agreement. Nothing in this Agreement shall relieve the Contractor from its responsibility to pay any tax including

K-RIDE

any tax that may be levied in India on profits made by it in respect of this Agreement.

3 The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs, unless otherwise provided for in this Agreement.

4 Unless otherwise specified in this Agreement, the Contract Price covers all the Contractor's obligations for the Works under this Agreement and all things necessary for the Construction thereof and for the rectification of any Defects in the Railway Project.

5 All payments under this Agreement shall be made in Indian Rupees.

Unless otherwise stated in the Special Conditions of Contract:

(a) the Contract Price shall be agreed or determined under Clause 34.3/PCC [Payment for Variation] and be subject to adjustments in accordance with the Contract;

(b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 34.7/PCC [Adjustments for Changes in Legislation];

(c) any quantities which may be set out in the Price schedule or other Schedule are estimated quantities and are not to be taken as the actual and final quantities:

(i) of the Works which the Contractor is required to execute, or

(ii) for the purposes of New-Clause 7/PCC [Measurement and Evaluation]; and

(d) the Contractor shall submit to the Engineer, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules, if applicable. The Engineer may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.

(e) It may be noted that in the event of the Contractor not making the due payments stated in sub-clause (b) above, and the concerned party puts up a claim with the Employer / Engineer, then the Employer / Engineer may make such payments and deduct the same from the sums due to the Contractor.

Change in Law

Change in Law means the occurrence or coming into force of the following, at any time after the last Date of submission of tender:

Any new Central and State Taxes, duties, cess, levies, which is imposed or any existing Central and State Taxes, duties, cess, levies & royalties are withdrawn after the due date of submission of tender and which impacts the performance of the contractor with increased cost or which results in extra financial gains to the contractor due to decreased cost in execution of contract. Such additional or reduced cost shall be certified by the Engineer after examining records provided by the contractor and shall be paid by or credited to the employer.

However, change in the rate of any existing Central & State taxes (except GST), duties, cess, levies will not be considered as change in Law. Any risk of change in rate of existing Central and State Taxes (except GST), duties, cess, levies lies with and shall be borne by

K-RIDE

	the Contractor.
Clause 42/CC	**The following paras are replacing to the Existing CC Clauses.** **Advance Payment:** **42.1 Mobilization Advance** The Employer shall make payment, as an Interest bearing advance for mobilization, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data. Unless and until the Employer receives this guarantee, or if the total advance payment is not stated in the Contract Data, this Sub-Clause shall not apply. The Engineer shall issue an interim payment certificate for the first installment of mobilization advance after receiving an application for advance payment (under sub clause 37.1/PCC [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with New-Clause 4.19/PCC [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment plus 5%. The next installment shall be released only when the contractor submits statement of having utilized the previous installment of mobilization advance and the Employer is satisfied that the utilization has been done in purposeful manner. The Mobilization **Advance shall be interest bearing and secured by BG equivalent to 105% of the advance amount** Mobilization advance payment: Comprises of the percentage of Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable and in installments as mentioned below; **Mobilisation Advance** | **Installments** As per request of the Contractor subject to a maximum of 5% | Two Equal Timing of Mobilization Advance Payment: First Installment within 21 (Twenty-one) days from the date of receipt of Bank guarantee acceptable to Employer. Second Installment shall be released only when the contractor submits statement of having utilized the First Installment of mobilization Advance and the Employer is satisfied that the utilization has been done in purposeful manner. This shall be released within 21 days from the date of receipt of Bank guarantee acceptable to the Employer. Interest on Advance Payment: At the rate of SBI MCLR+2% interest per annum on reducing balances**. The Interest rate is applicable from the date of submission of IPC / advance request by contractor.** **42.2 Advance against Plant and Machinery** This advance is payable in Indian Rupees/respective currencies as quoted in the Tender and accepted by the Employer against plant, equipment and machinery, provided the same have reached the site, or in the case of new items meant specifically for the works, firm purchase order has been placed and the invoices received. The plant and

K-RIDE

machinery shall be valued by the Engineer as follows:

(a) New items: 80% of purchase price

(b) Items valued at less than Rs. 1,000,000 (Rs. One million) per unit: Not to be considered

The total advance for Plant and Machinery shall be limited to 5% of the Contract Price and will carry an interest rate of SBI MCLR +2% interest per annum on reducing balances. The Interest rate is applicable from the date of submission of IPC / advance request by contractor It will be paid against submission of Bank Guarantees for 105% of advance value for each stage of advance to be given by each member of the consortium/JV in proportion to their participation as per format given in section 10: Formats, from an Indian Schedule bank (excluding Cooperative Banks) or from a schedule Foreign Bank as defined in Section 2I of RBI Act 1934 read with Second Schedule. All bank Guarantees should be payable in Bangalore at the designated branch. **The Plant and Machinery Advance** shall be interest bearing and secured by BG equivalent to 105% of the advance amount.

The Contractor should give an Undertaking that "No advance/loan has been taken against the subject plant & machinery from any other individual/financial institution/mobilization etc." If a wrong/false undertaking is given, all the BGs can be forfeited and the contract is liable for termination under clause 49 of CC/PCC.

The Advance against Plant and Machinery will be paid within 30 days after receipt of the Contractor's written request by the Employer which is recommended by the Engineer and submission of Bank Guarantees for procurement of plant and machinery.

Wherever Bank Guarantee or any other instrument is to be extended or fresh BG to be obtained, the cost towards getting extension of BG or fresh BG and other incidental charges will be on Contractor's account

The Contractor;

i. Shall submit the invoice and RC book (wherever applicable) in original, at the time of obtaining advance amount.

ii. Shall furnish all four Bank Guarantees one time as per Condition of Contract.

iii. Shall execute an Indemnity bond in favour of an Employer as against Third Party claim.

iv. Shall not seek the possession of machinery brought to the site till the Advance obtained from Employer is fully settled.

The contractor should ensure that in the case of "Machinery and Equipment Advance" insurance and hypothecation in favour of the Employer should be done. The contractor should submit the proof of document related to Insurance and Hypothecation to the Engineer who will certify that the insurance and hypothecation to the Employer has been done in proper manner.

K-RIDE

Employer shall be the sole custodian of the entire plant and machinery whenever the advance amount is given to the contractor and the same shall remain in the custody of Employer, till the Advance obtained from Employer, is fully settled.

The machinery and equipment brought to the site shall be exclusively intended for the execution of the work of Employer and shall not be removed without the consent of the Engineer.

The Contractor shall indemnify and hold harmless, the Employer against all actions, suits, proceedings, claims, damages, losses, expenses, demands pertaining to Advance amount towards plant and machinery.

The Contractor shall not remove any Equipment or Machinery from the site without the prior permission of the Engineer.

The contractor;

a) Shall not mortgage/create charge/hypothecate/encumber, in any way the machineries and equipment brought to site from the amounts advanced by Employer and shall give an undertaking in writing to that effect in favour of Employer.

b) Shall not sell or alienate any part/portion of machinery and equipment without the consent of Employer.

c) In the event of any such sale/alienation of any portion or part of machinery, Employer shall hold First Charge and the proceeds of such sale or alienation shall be appropriated towards the loan/ credit/ advance in respect of plant and machinery brought to the site by contractor**.**

d) All Materials and Plants shall, upon their incorporation into Works, be free from any and all Encumbrances without the Authority being required to make any payment to any person on account of any costs, compensation, expenses and charges for such Materials, Plants and Works.

42.3 Guarantees

Advances as mentioned in sub-clauses 42.1/PCC above, shall be payable against acceptable Bank Guarantees from banks as specified in New-clause 4.19/PCC. The guarantees shall be in the form as given in Section 10 (Contract Forms) or in another form approved by the Employer. The Contractor shall ensure that the guarantees are valid and enforceable until the advance amount paid as has been repaid, but its amount may be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

42.4 Recovery of Advances

Unless stated otherwise in the Contract Data, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Engineer in accordance with Sub-Clause 37.3/PCC [Issue of Interim Payment Certificates], as

K-RIDE

follows:

(a) deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment) exceeds 15 percent of the Accepted Contract Amount Less Provisional Sums or passage of six months from the date of release of first advance payment, whichever is earlier; and

(b) deductions shall be made for accrued interest on the advance up to the month and advance at the rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions and repayments of retention) in the currencies and proportions of the advance payment until such time as the advance payment and accrued interest has been repaid; provided that the advance payment and accrued interest shall be completely repaid prior to the time when 85 percent of the Accepted Contract Amount has been certified for payment. If the amount of interim payment certificate is not sufficient for recovery of accrued interest or in the opinion of the Employer satisfactory progress is not being achieved by the contractor, then the contractor will have to deposit the accrued interest and return the mobilization advance in part or in full as demanded by the Employer, failing which Employer shall have the right to encash the Bank Guarantee(s)

The contractor shall always have the option to start repayment earlier and/or to complete the repayment earlier than the due date.

If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 49.0/PCC [Termination by Employer] or New-Clause 8/PCC [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.

42.5 Repayment rate of Advance payment: 10% (Ten percent) of the amount of each running account bill payment.

42.6 Advances to be Used only for this Work

The advances shall be used by the Contractor strictly for the purpose of the Contract, and for the purpose for which they are paid. Under no circumstances, shall the advances be diverted for other purposes. Any such diversion shall be construed as a breach of the Contract and the Contractor shall be asked to return the advance at once and pay interest at 15% per annum till the advance is recovered back from him. The Contractor shall return the advance and pay the interest in one go without demur.

Employer retains the right for any other remedy prescribed for breach of Contract in this regard.

The Contractor, if required by the Engineer shall provide the details of utilization of Mobilisation advance.

42.7 If the Advance Payment has not been fully repaid prior to Termination under Force majeure event or termination Clause, as the case may be, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Authority. In the event of Termination for Contractor Default, the Advance Payment shall be deemed to carry interest at an annual rate of 3% (three per cent) above the Bank Rate from the date of Advance Payment to the date of recovery by encashment of bank guarantee for the Advance Payment. For the avoidance of doubt, the aforesaid interest

K-RIDE

	shall be payable on each instalment of the Advance Payment, regardless of whether the instalment or any part thereof has been repaid to the Authority prior to Termination.
Clause 46/CC	**The clause 46 of CC replaced with the following paras.** **Employer Taking Over** **46.1 Taking Over of the Works and Sections** The Employer shall take over the Site and the Works within after issuing a certificate of Completion. Except as stated in Sub-Clause 30.5/PCC [Failure to Pass Tests on Completion], the Works shall be taken over by the Employer/Railway when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 26.4/PCC [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause. The Contractor may apply by notice to the Engineer for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section. In case the works are to be taken over in accordance with sub-clause 30.6/PCC, the completed works shall be taken over by the Zonal Railway with the procedure specified by the Engineer. The Engineer shall, within 28 days after receiving the Contractor's application: (a) issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or (b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause. If the Engineer fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period. **46.2 Taking Over of Parts of the Works** The Engineer may, at the sole discretion of the Employer, issue a Taking-Over Certificate for any part of the Railway Electrification Works. The Employer shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Engineer has issued a Taking-Over Certificate for this part. However, if the Employer does use any part of the Works before the Taking-Over Certificate is issued: (a) the part which is used shall be deemed to have been taken over as from the date on which it is used, (b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Employer, and

K-RIDE

(c) if requested by the Contractor, the Engineer shall issue a Taking-Over Certificate for this part.

After the Engineer has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

If the Contractor incurs Cost as a result of the Employer taking over and/or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall (i) give notice to the Engineer and (ii) be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with New—Clause 3.5/PCC [Determinations] to agree or determine this Cost and profit.

If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 26.8/PCC [Delay Damages], and shall not affect the maximum amount of these damages

46.3 Interference with Tests on Completion

If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Employer/Engineer/other Contractors of the Employer, are responsible, the Employer shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

The Engineer shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Engineer shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and

(b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters.

K-RIDE

	46.4 Surfaces Requiring Reinstatement Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.
Clause-49/CC	**The following paras are added to the existing CC Clauses.** **TERMINATION BY EMPLOYER** **49.6 Notice to Correct/Notice of Termination** If the Contractor fails to carry out any obligation under the Contract as mentioned below, but not limited to the obligations mentioned herein below, the Engineer/ Employer may serve the contractor with a 14 days' notice in writing calling upon the Contractor to make good the failure and to remedy it. If the Contractor; (a) fails to comply with New-Clause 4.19/PCC [Performance Security], (b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract, (c) without reasonable excuse fails to: (i) proceed with the Works in accordance with Clause 26/CC/PCC [Commencement, Delays and Suspension], or (ii) comply with a notice issued under New-Clause 5.5 [Rejection] or New-Clause 5.6/PCC [Remedial Work], within 28 days after receiving it, or (iii) adhere to the agreed programme of work / activity on the critical path, by a margin of 10% of the stipulated period, or (iv) take steps to deploy competent and adequate number of personnel, and equipment to achieve progress as per agreed programme or (v) adhere to the instructions of Engineers/Employer persistently or (vi) comply any provision of the contract or (vii) provide the Engineer/Employer or their representative proper facilities for inspecting the works or any part thereof as required, under New-Clause 5.3/PCC (Inspection) and New-clause 5.4/PCC (Testing). (d) subcontracts the whole or major part of the Works or assigns the Contract without prior written consent of the Employer., If the Contractor does not, within 14 days of receipt of notice under this sub-clause, proceed to make good his default in so far as the same is capable of being made good and carry on the work of complying with such direction as contained in the notice under sub clause 49.6/PCC to the entire satisfaction of the Engineer/Employer, the Employer shall be entitled to take action under sub-clause 49.6/PCC, 49.7/PCC below, In case of Contractor's repeated failure to adhere to the agreed program, and whereas the contractor has been served with a Notice to Correct under Clause 49.6 of PCC, if the Contractor approaches K-RIDE with a revised program with specific monthly physical and financial targets along with the proposal to deploy matching inputs in the form of manpower and other resources to the satisfaction of the Employer, then the Employer may consider whether to proceed with termination of the contract under Clause

K-RIDE

49.7/PCC or to continue with the contract. However, the request to continue with the contract shall only be considered if the Contractor supports his earnestness to adhere to the revised program by submitting additional Performance Security in the form of Bank Guarantee(s) of specified number and value as decided by the Employer (total value of which will not exceed 10% of the contract price). The encashment of these additional Bank Guarantee(s) shall be linked with the non-achievement of agreed physical/financial targets agreed upon by the Contractor and the Employer.

In case the Contractor's failure is limited to only some of the works, and in response to Notice to Correct under Clause 49.6 of PCC, the contractor approaches the Employer that such works may be offloaded from him and got executed through another agency and additional cost incurred, if any, should be recovered from his dues, the Employer, on being convinced that the anticipated additional cost for such works will not be substantial and can be recovered from the dues of the contractor and that such offloading will help in improving the overall progress of the project, may agree to such offloading without any repercussion on the performance security and/or additional bank guarantees, if any, submitted by the contractor. However, the Employer will not be under any compulsion to agree to such a request. The Contractor shall be informed of the LOA issued to other agency(ies) for such works.

In case the Contractor does not approach the employer for offloading but the Employer is convinced that:

(i) offloading of some works will help in improving the progress of the project;

(ii) termination/part termination of the contract at this stage will not be in the interest of the project;

(iii) the anticipated additional cost for such works will not be substantial and can be recovered from the dues of the Contractor;

The Employer may issue 7 days' notice to the Contractor stating the resources required to be deployed against each work. If the Contractor fails to deploy the required resources as indicated in the notice, the employer shall offload such works and proceed with getting the works executed through other agency(ies). The Contractor shall be informed of the LOA issued to other agency(ies) for such works.

Offloading under the sub clause 49.6/PCC shall be without any repercussion on the performance security and/or additional bank guarantees, if any, submitted by the contractor. The Contractor would have no future claim on this account and the extra expenditure so incurred, if any, by the Employer in getting the offloaded work done, shall be recovered from subsequent payment certificates or any other dues of the Contractor

49.7 Termination by Employer

The Employer shall be entitled to terminate the Contract as a whole or any part or parts (as may be specified in the Notice of Termination under any of the above Sub-Clause issue) if the Contractor:

(a) fails to comply with the directions contained in the notice under Sub-Clause 49.6/PCC [Notice to Correct/ Notice of Termination],

(b) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against it by Court or Statutory Authority him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable

K-RIDE

	Laws) has a similar effect to any of these acts or events, or (c) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward: (i) for doing or forbearing to do any action in relation to the Contract, or (ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract, or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph I. However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination (d) a resolution for winding up of the Contractor is passed, or any petition for winding up of the Contractor is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 (ninety) days of the date thereof or the Contractor is ordered to be wound up by a court except for the purpose of amalgamation or reconstruction; provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of the Contractor are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Contractor under this Agreement; and provided that: (i) the amalgamated or reconstructed entity has the capability and experience necessary for the performance of its obligations under this Agreement; and (ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and has a credit worthiness at least as good as that of the Contractor as at the Appointed Date; (e) failure to complete the Punch List items within the periods stipulated. (f) the Contractor fails to rectify any Defect, the non-rectification of which shall have a Material Adverse Effect on the Project, within the time specified in this Agreement or as directed by the Authority's Engineer; (g) the Contractor creates any Encumbrance in breach of this Agreement; (h) the Contractor has failed to fulfil any obligation, for which failure Termination has been specified in this Agreement; (i) the Contractor commits a default in complying with any other provision of this Agreement if such a default causes a Material Adverse Effect on the Project or on the Authority. In any of these events or circumstances, the Employer may, by Notice Terminate the contract with immediate effect. The Employer's election to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise. The Contractor shall remove all his plants and machinery from the site then leave the Site and deliver any required Goods, all Contractors' Documents, and other design documents made by or for him, to the Engineer within 7 days from the issue of Notice of Termination, failing which Delay Damages as prescribed for delay in completion of works shall be imposed as per provision of clause 26.8/PCC However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the

K-RIDE

notice of Termination (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

After termination, the Employer may complete the Works and/or arrange for any other entities to do so. The Employer and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor for completing the work.

49.8 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause 49.7/PCC [Termination by Employer] has taken effect, the Engineer shall proceed in accordance with Sub-Clause 3.5/PCC [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract. For this purpose, the contractor shall be notified the date for witnessing of measurements and handing over of the materials for which contractor has already been paid. In case the contractor fails to attend or send a representative even after such notice, the Engineer shall export proceed with measurements of the works executed and taking over of plants and materials etc. for which payment has already been made to the contractor, which shall be treated as final.

49.9 Payment after Termination

After a notice of termination under Sub-Clause 49.7/PCC [Termination by Employer] has taken effect, the Employer may:

(a) proceed in accordance with New-Clause 2.4/PCC [Employer's Claims],

(b) encash the Performance Guarantee and forfeit the Performance Security:

i. In full including additional Performance Guarantee amount if any taken in terms of ITT and not due for release on the date of issue of termination letter, in case of termination of the contract as a whole; or

ii. in part/parts proportionate to the contract price of the bill/schedule to which the terminated part of work belongs i.e.

P = (A x B) ÷ C where,

P = Proportionate Bank Guarantee Amount

A = Contract Price of the particular bill/schedule to which the terminated part of work belongs

B = Performance Guarantee amount in terms of CC New- clause 4.19/PCC

C = Total Contract Price

Plus, additional Performance Guarantee amount if any taken in terms of ITT and not due for release on the date of issue of termination letter against that particular bill/Schedule to which the terminated part of the work belongs in case of termination in part/parts.

(c) release any payment due to the contractor for works executed prior to termination and evaluation under clause 49.8/PCC (valuation at date of termination, however, if by this time the Contractor has failed to make a payment due to the Employer, the same will be deducted from the payment due and any balance remaining shall then be paid to the Contractor.)

K-RIDE

49.10 Employer's Entitlement to Termination for Convenience

The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the Performance Security. The Employer shall not terminate the Contract under this Sub-Clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor.

After this termination, the Contractor shall proceed in accordance with the relevant clause and shall be paid in accordance with New-Clause 8/PCC [Payment and Release in case of Optional Termination].

49.11.1. Requirements after Termination

Upon Termination of this Agreement in accordance with the provisions of this clause 49, the Contractor shall comply with and conform to the following:

(a) deliver to the Authority all Plant and Materials which shall have become the property of the Authority under this clause 49;

(b) deliver all relevant records, reports, Intellectual Property and other licenses pertaining to the Works, other design documents and in case of Termination occurring after the Provisional Certificate has been issued, the "as built" Drawings for the Works;

(c) transfer and/or deliver all Applicable Permits to the Authority to the extent permissible under Applicable Laws; and

(d) vacate the Site within seven days.

49.11.2 Other rights and obligations of the Parties

Upon Termination for any reason whatsoever

(a) property and ownership in all Materials, Plant and Works and the Railway Project shall, as between the Contractor and the Authority, vest in the Authority in whole, free from any and all Encumbrances; provided that the foregoing shall be without prejudice to Clause 49.11.3;

(b) risk of loss or damage to any Materials, Plant or Works and the care and custody thereof shall pass from the Contractor to the Authority; and

(c) the Authority shall be entitled to restrain the Contractor and any person claiming through or under the Agreement from entering upon the Site or any part of the Project except for taking possession of materials, stores, implements, construction plants and equipment of the Contractor, which have not been vested in the Authority in accordance with the provisions of this Agreement.

49.11.3 Payment on Termination

After termination under Sub-Clause-49.7/PCC the Employer shall return the Performance Security, and shall pay the Contractor an amount calculated and certified in accordance with the following conditions:

A. The value of approved materials actually brought to the site and reasonably required to execute the works during next three months, as per approved programme, and

B. Value of work completed up to date by the Contractor at rates specified in the

K-RIDE

Contract, after taking into account any deductions, retentions, and setoff.

C. DELETED

The payment as above are full compensation for termination under this clause and the Contractor has no claim for damages or other entitlements whether under the contract or otherwise.

In case of termination/ foreclosure of the Contract under whatsoever circumstances, any remaining tools, plants, equipment's and surplus materials of the Employer with the Contractor will be returned to the Employer at Employer's depot at the Contractor's cost. In case of the failure of the Contractor to do so, the Employer will be entitled to recover their cost from the Contractor from the amount becoming due to the Contractor or from any other amount due in any other contracts.

The decision of the Engineer of the amount to be recovered will be final decision and full credit at rates initially charged to the Contractor shall be allowed for such materials. Similarly, the Employer shall be entitled to recover the cost of the unreturned material, plants, equipment and tools from the Contractor, where such material have been supplied free of cost and plants, equipment and tools, free of cost or on lease basis to the Contractor as stipulated in the Contract.

49.12 Survival

Termination of this Contract

a. shall not relieve the Contractor or the Employer of any obligations already incurred hereunder which expressly or by implication survives Termination hereof and

b. except as otherwise provided in any provision of this Contract expressly limiting the liability of either party, shall not relieve either party of any obligations or liabilities for loss or damage to the other Party arising out of or caused by acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination

49.13 Corrupt or Fraudulent Practices

If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 49 CC/PCC shall apply as if such expulsion had been made under Sub-Clause 49.7/PCC.

For the purposes of this Sub-Clause:

(a) "corrupt practice" means the offering, giving, receiving of soliciting of anything of "value to influence the action of a public official in the procurement process or in the Contract execution.

(b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of the Contract to the detriment of the Employer, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition

(c) "collusive practice" means a scheme or arrangement between two or more bidders, with or without the knowledge of the Employer, designed to establish bid

K-RIDE

	prices at artificial, non-competitive levels. (d) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.
Clause 1/SCC	**The following New-paras are added to the Existing SCC Clauses.** **1.1 Engagement of Staff and Labour** Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transport. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within the Country. **1.2 Rates of Wages and Conditions of Labour** The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor. If the Employer is obliged to provide amenities or arrange payment of wages to contract labour employed by the contractor either directly or through sub-contractor under the contract on account of failures on the part the contractor to provide the amenities and / or arrange payment of wages to the contract labour as required of him under the provision of the applicable acts / rules made there under, the Engineer/Employer shall be at liberty without prejudice to the rights of Engineer/Employer under Section 20(2) and 21(4) of the Contract Labour (Regulation and Abolition) Act 1970 to recover the whole or part of the expenditure so incurred on the wages so paid by the Engineer/Employer/Railway from the security deposit and/or from any sum or sums due to the Contractor whether under this contract or any other contract. The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances, and any benefits as are subject to taxes under the Laws of the Country for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there-under, regulation or notifications including amendment. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/ regulations including amendments, if any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct any money due to the contractor including his amount of performance security. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer. The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time. The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of

K-RIDE

1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subject to all liabilities provide by the said Act and said Rules.

The Contractor and his Sub Contractors shall comply with all applicable Labour Laws, and should not employ Child Labour for construction and maintenance activities. The Contractor shall provide appropriate facilities for children in Construction Camp sites.

The Contractors shall not differentiate wages between men and women for work of equal value

1.3 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst persons in the service of the Employer or the Engineer

1.4 Labour Laws

The Contractor shall comply with all the relevant Labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration, and emigration, and shall allow them all their legal rights. The Contractor and his sub-contractors shall be responsible to ensure at his own cost, compliance to all laws, bye-laws, rules and regulations for the time being in force pertaining to the employment of local or imported labour and shall take all necessary precautions to ensure and preserve the health and safety of all staff employed directly or through sub-contractors or petty contractors on the works which shall include all the acts listed in Appendix – 1 but not limited to the same.

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

During continuance of the Contract, the Contractor and his Sub-Contractors shall abide at all times by all existing labor enactments and rules made thereunder, regulations, notifications and bye laws of the State or Central government or local authority and any other labor laws (including rules), regulations, bye laws that may be passed or notification that may be issued under any labor law in future either by the State or the Central Government or the local authority. Salient features of some of the major labor laws that are applicable to construction industry are given in Appendix 1 to these Conditions of Contract

1.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the Contract Data, unless:

(a) otherwise stated in the Contract,

(b) the Engineer gives consent, or

(c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

(d) The Contractor, generally will have to carry out work during night hours also and in shifts unless specifically provided otherwise in the Contract. No increase in rates or extra payments shall be admissible for night work. Wherever night working is carried out by Contractor, temporary lighting arrangements as per approved layout shall be provided, installed, maintained for the duration of the contract and removed after

K-RIDE

completion of work. Flashing lights to warn the traffic on roads shall be used at all times on all obstructions. No extra payment will be made for the provision of temporary lighting, flashing lights and for maintenance. It is to be noted that the works are being undertaken in an urban area.

(e) Should there be complaints received by members of the public regarding excessive noise or vibration, etc. especially at night, and if such complaints are valid, then the contractor shall take remedial measures to prevent such nuisance. No extra payment will be made to the contractor for the provision of such measures.

(f) Working hours during the Defect liability period will be curtailed when certain system become operational

1.6 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

1.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and a standing arrangement for ambulance service are available at a phone call at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

K-RIDE

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same. The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence.

HIV-AIDS Prevention. The Contractor shall conduct an HIV-AIDS awareness programme via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals

Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the

Government or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.

Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

Submission of Returns

The contractor shall be responsible for timely submission of all returns and statements to the concerned authorities in full compliance of all rules, bye-laws and regulations for the time being in force.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 25.3 an alleviation program for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.**1.8 Contractor's Superintendence**

Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.

Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause **3/CC** [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

The Contractor shall employ the key personnel named in the Schedule of Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

K-RIDE

The Contractor shall not employ any retired government Gazetted officer, who has either not completed one year after the date of retirement, or has not obtained permission to employment with the Contractor

1.9 Contractor's Personnel

The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

(a) persists in any misconduct or lack of care,

(b) carries out duties incompetently or negligently,

(c) fails to conform with any provisions of the Contract, or

(d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven (7) days and has no further connection with the work in the Contract. The replacement person shall be appointed within fourteen (14) days of the notification by the Engineer.

A reasonable proportion of the Contractor's Superintending Staff shall have a working knowledge of the English language or the Contractor shall have available on site at all times a sufficient number of competent interpreters to ensure the proper transmission of instructions and information. If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person

1.10 Records of Contractor's Personnel and Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works

1.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site

1.12 Foreign Personnel

The Contractor may bring in to the country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, without any financial liability, if requested by the Contractor, use his best endeavours in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.

The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be

K-RIDE

responsible for making the appropriate arrangements for their return or burial. Contractor shall also be responsible for any legal liabilities during their stay.

1.13 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract

1.14 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel

1.15 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide

The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria, and take steps to prevent the formation of stagnant pools of water. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticides all buildings erected on the site such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of diseases like Malaria, Filaria and other contagious diseases etc. and also regarding, Scorpions, Snakes, Wild animals etc. and preventive actions required to be taken by the labour and staff

1.16 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal thereto by Contractor's Personnel.1.17 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

1.18 Festivals and Religious Customs

The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs

1.19 Funeral Arrangements

The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of his local employees who may die while engaged upon the Works.

1.20 Prohibition of Forced or Compulsory Labour

The contractor shall not employ "forced or compulsory labour" in any form. "Forced or compulsory labour" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

1.21 Prohibition of Harmful Child Labour

K-RIDE

	The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. **1.22 Employment Records of Workers** The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and shall be available for inspection by the Engineer during normal working hours. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 1.10/SCC of PCC [Records of Contractor's Personnel and Equipment].
Clause Price adjustment/ Contract data	**REPLACE THE SUB-CLAUSE OF PRICE ADJUSTMENT IN CONTRACT DATA WITH THE FOLLOWING:** PRICE VARIATION CLAUSE (PVC) **Adjustment for changes in cost for the work of Railway Electrification of Doubling** Contract price shall be adjusted for increase or decrease in rates and prices of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formula given here under. The amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs. **(A) Adjustment Formula** The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following: Following expressions and meanings are assigned to the work done during each month. **Total value of work done during the month** shall include the value of materials on which secured advance has been granted, if any during the month less the value of materials in respect of which the secured advance has been recovered, if any, during the month. This excludes the cost of work on items for which rates were fixed under Variations Clause 34.3/PCC for which the escalation will be regulated as mutually agreed at the time of fixation of rate. It will also exclude the value of work done during the month which was programmed to be done prior to this month as per work schedule in the agreement. The Contract Price shall be adjusted for increase or decrease in rates and prices of labour, Materials, fuel and lubricants, equipment, Machinery, Plant and other Materials or inputs in accordance with the principles, procedures and formulae specified below:

K-RIDE

a)**Price adjustment shall be applied on completion of the specified stage of the respective item of work.**

1.The following expressions and meanings are assigned to the value of the work done for electrification works

OHE = Value of work done for the completion of a stage under the item Overhead Equipment Work;

SP = Value of work done for the completion of a stage under the item Switching Posts

TRANSAUX = Value of work done for the completion of a stage under the item Auxiliary

EXTNLTPWRSPLY= Value of work done for the completion of a stage under the item extension/ augmentation of power supply for CLS wok;

(b) Price adjustment shall be applied on completion of the specified stage of the respective item of work in accordance with Price schedule (SECTION-9). The 1st Quarter will start from Bid Due date month;

(c) Price adjustment for changes in cost for electrification works shall be paid in accordance with the following formula:

PVC For OHE WORKS

(i) VOHE = 0.85 OHE x [PLB x (LBi – LBo)/LBo + PC x (Ci – Co)/Co + PSST x (SSTi – SSTo)/SSTo + PCU x (CUi – CUo)/CUo + PINS x (INSi – INSo)/ INSo];

PVC For Switching Posts

(ii) VSP = 0.85 SP x [PLB x (LBi – LBo)/LBo + PC x (Ci – Co)/ Co + PSWGR x (SWGRi – SWGRo)/SWGRo];

PVC For Auxiliary Transformers

(iii) VTRANSAUX = 0.85 TRANSAUX x [PLB x (LBi – LBo)/LBo + PSST x (SSTi – SSTo)/SSTo + PTR x (TRi – TRo)/TRo];

(iv) **PVC FOR CLS PANELS**

VEXTNPWRSUPLY=0.85 EXTNPWRSIPLY x [PLB x (LBi – LBo)/LBo + POTH x (OTHi-OTHo)OTHo];

Where

K-RIDE

	VOHE = Increase or decrease in the cost of Over Head Equipment and other related works during the period under consideration due to changes in the rates for relevant components VSP = Increase or decrease in the cost of Switch Post and other related works during the period under consideration due to changes in the rates for relevant components VTRANSAUX = Increase or decrease in the cost of auxiliary transformer and other related works during the period under consideration due to changes in the rates for relevant components VEXTNLTPWRSPLY = Increase or decrease in the cost of extension/augmentation of power supply for CLS work and related works during the period under consideration due to changes in the rates for relevant components. PC = percentages of cement PCU = Percentage of Copper Wire PINS = percentages of Insulators PLB = percentages of Labour PSWGR = percentages of Electrical Switch Gears PSST = percentages of Structural Steel PTR = percentages of Transformer POTH = Other items Co = The wholesale price index as published by the Ministry of Commerce & Industry, Government of India (hereinafter called "WPI") for cement, lime, plaster for the month of the Base Month; Ci = The wholesale price index for cement, lime, plaster for the average price index of the 3 months of the quarter under consideration; CUo = The wholesale price index for copper wire for the month of the Base Month; Cui = The wholesale price index for copper wire for the average price index of the 3 months of the quarter under consideration; INSo = The wholesale price index for insulators for the month of the Base Month; INSi = The wholesale price index for insulators for the average price index of the 3 months of the quarter under consideration; LBo = The consumer price index for industrial workers – All India, published by Labour Bureau, Ministry of Labour, Government of India, (hereinafter called "CPI") for the month of the Base Month; LBi = The consumer price index for industrial workers – All India for the average price index of the 3 months of the quarter under consideration SSTo = The wholesale price index for structural steel for the month of the Base Month; SSTi = The wholesale price index for structural steel for the average price index of the 3 months of the quarter under consideration; SWGRo = The wholesale price index for electric switch gears for the month of the Base Month; SWGRi = The wholesale price index for electric switch gears for the average price index of the 3 months of the quarter under consideration;

K-RIDE

TRo = The wholesale price index for transformers for the month of the Base Month; and

TRi = The wholesale price index for transformers for the average price index of the 3 months of the quarter under consideration

OTHo = The WPI for all commodities for the month of the Base Month;

OTHi = The WPI for all commodities for the average price index of the 3 month of the quarter under consideration

Period of Work under consideration will mean as under:

i. In the case of first Bill the period from the month of signing of agreement to the month of measurement of the first bill.

ii. In the case of second and subsequent interim payment certificate and Final bills, the Period from the month of measurement for previous bill to the month of measurement of that bill.

iii. As per provisions of contract (Clause 37.3/PCC) interim payments certificates are to be submitted by the contractor on monthly basis for the works/supply of items pertaining to a particular month. However, in case a bill is submitted for a period pertaining to more than a calendar month the average indices for those months and previous month(s) shall be used for calculation purpose.

Responsibility of arranging the RBI indices /Economic advisor indices/Labour Bulletins desired by the Employer or the Engineer shall rest with the Contractor.

(B) Procedure in case of Delay in Availability of Final RBI Indices/ Economic advisor indices

Where the final Price Indices are not available in the Economic advisor, while making payment towards interim payment certificate, payment towards Price Variation will be made on provisional basis based on the indices available, to be adjusted in subsequent bills as and when the final Indices figures become available.

(C) Adjustment on Account of Price Variation

Adjustment on account of Price Variations may be positive (in which case extra amount shall be paid to the Contractor), or negative (in which case the amount of Price Variation shall be recovered from the Contractor). Adjustment on account of Price Variation shall be calculated separately, for each period, between two successive dates of measurements for bills and paid along with each bill as claimed by the contractor.

After verifying the bill, the Engineer shall certify the adjustment amount and advise the same to the Employer along with the interim payment certificate. Should any extra amount be due to Contractor, the Employer shall pay the same. Any amount due from Contractor on account of negative adjustment shall be recovered from his pending or other bills at the earliest.

The above adjustment on account of Price Variation payment shall be made to the contractor in accordance with the proportion stipulated in Schedule of Payment Currencies by using exchange rate on the last day of the period to which a particular interim payment certificate is related as per the website of Reserve Bank of India (RBI). In case the exchange rate on the above date, is not available in this web site, it will be as per the web site of Financial Benchmark India Private Limited (FBIL) as

K-RIDE

recommended by RBI.

In case the exchange rate of particular currency is not available on the above date in both these websites then the exchange rate as per the website of the Central Bank of that country to which this currency belongs will be adopted. In case the exchange rate of that currency is not directly available in INR on that website then the currency will be first converted to USD as per the exchange rate between that foreign currency and US Dollar on that web site and then converted from USD to INR as per RBI or FBIL exchange rate between US Dollar and INR, as prevailing on the said date.

(D) Limit of Price Adjustment

Provided that, in determining all such price adjustment in accordance with the aforesaid Sub-Clauses:

a. No account will be taken of any amount by which any cost incurred by the Contractor has been increased by default or negligence of the Contractor.-p

b. If the Contractor fails to complete the work within time for completion prescribed under Clause 26.4 the adjustment of prices thereafter until the completion of the works shall be made using either the indices or prices, whichever is more favourable to the Employer, provided that if an extension of time is granted pursuant to Sub-Clause 26.5/PCC, the above position shall apply to the adjustments made after expiry of such extension of time.

(E) Price Variation during extended period of completion

The price adjustment as worked out above i.e., either increase or decrease will be applicable up to the stipulated Completion Date of the Works, including the extended period of completion where such extension has been granted under Sub-Clause 26.5/PCC and where such an extension has been granted, the price adjustment will be due as follows:

a. In a. In case the indices increase above the indices applicable to a bill made on the last date of original completion period or the extended period under Sub-Clause 26.5/PCC, the price adjustment for the period of extension granted in accordance with Sub-Clause 26.5/PCC will be limited to the amount payable as per the indices applicable to a statement made on the last date of the original completion period or the extended period as the case may be.

b. In case the indices fall below the indices applicable to a statement made on the last date of the original or extended period of completion, then the lower indices will be adopted for Price Adjustment for the period of extension

K-RIDE

	The following percentages shall govern the price adjustment of the Contract Price for electrification works: (i) For OHE, Switching stations, Auxiliary transformer stations:							
Component	**1.0 Over Head Equipment Work (Open Route)**				**3.1Switch Posts except commissioning and charging**	**4.1Auxiliary transformer stations**	**4.2 CLS Panel work except commissioning.**	**OHE other works, commissioning and charging of TSS, SP, Booster Transformer stations, auxiliary transformer stations**
	Foundation, mast erection, bracket, erection, insulators			**Stringing of catenary and contact wire**				
	1.1 Completion of Design & drawing and Foundation work including block sections.	**1.2 Supply of steel and Completion of Steel erection (Mast & Portal) & grouting with painting of location Numbers.**	**1.3Completion of erection of Bracket, Guy Rod, anticreep(Complete pre wiring activity), Height gauge & protection screen**	**1.4Supply of Contact & Catenary wire and complication of wiring along with erection of balance weight, droppering & clipping including antitheft charging**				
Labour (PLB)	22.24%	2.35%	6.28%	2.91%	0.20%	12.74%	20.0%	100%
Cement (PC)	76.86%	3.15%			0.32%			
Structural steel (PSST)	0.90%	94.5%	64.63%	5.56%	19.44%	1.28%		
Insulators (PINS)			29.09%	1.46%	0.64%			
Copper wire (PCU)				90.07%	2.92%			
Transformer (PTR)						85.98%		
Electrical Switch Gear (PSWGR)					76.48%			
All other commodities (POTH							80.0%	
Total	100%	100%	100%	100%	100%	100%	100%	100%

K-RIDE

The following percentages shall govern the price adjustment of the Contract Price for electrification works: (ii) For OHE:				
Component	**2.0 Over Head Equipment Yard Section**			
	Foundation, mast erection, bracket, erection, insulators			**Stringing of catenary and contact wire**
	2.1 Completion of Design & drawing and Foundation work including block sections.	**2.2 Supply of steel and Completion of Steel erection (Mast & Portal) & grouting with painting of location Numbers.**	**2.3 Completion of erection of Bracket, Guy Rod, anticreep(Complete pre wiring activity), Height gauge & protection screen**	**2.4 Supply of Contact & Catenary wire and complication of wiring along with erection of balance weight, droppering & clipping including antitheft charging**
Labour (PLB)	22.24%	2.6%	6.28%	3.71%
Cement (PC)	76.86%	2.9%		
Structural steel (PSST)	0.90%	94.5%	64.63%	7.10%
Insulators (PINS)			29.09%	1.85%
Copper wire (PCU)				87.34%
Transformer (PTR)				
Electrical Switch Gear (PSWGR)				
All other commodities (POTH				
Total	100%	100%	100%	100%

K-RIDE

New Clause-1.1	**Assignment** Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party: i. may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and ii. may, as security in favour of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.
New Clause -1.2	**Care and Supply of Documents** The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor. Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents. The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times. If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.
New Clause-1.3	**Delayed Drawings or Instructions** The Contractor shall give notice to the Engineer whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and details of the nature and amount of the delay or disruption likely to be suffered if it is late. If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Clause 4.1/SCC of contract conditions [Contractor's Claims] to: (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and (b) payment of any such Cost, which shall be included in the Contract Price. After receiving this further notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters. However, if and to the extent that the Engineer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.
New Clause-1.4	**Employer's Use of Contractor's Documents** As between the Parties, the Contractor shall retain the copyright and other intellectual

K-RIDE

	property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor. The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall: (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works, (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and (c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor. The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this Sub-Clause.
New Clause-1.5	**Contractor's Use of Employer's Documents** As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.
New Clause-1.6	**Confidential Details** The Contractor shall disclose all such confidential and other information as the Engineer may reasonably require in order to verify the Contractor's compliance with the Contract. The Contractor shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out the Contractor's obligations under the Contract or to comply with applicable Laws. The Contractor shall not publish or disclose any particulars of the Works without the previous agreement of the Employer. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.
New Clause-1.7	**Compliance with Laws** The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Special Conditions of Contract: (a) the Employer shall have obtained (or shall obtain) the planning, zoning or similar permission for the Railway Electrification Works, and any other permissions described in the Specification as having been (or being) obtained by the Employer; and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and (b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the Laws in relation to the execution and

K-RIDE

	completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.
New Clause-1.8	**Joint Venture — Joint and Several Liability** If the Contractor constitutes (under applicable Laws) a Joint Venture of two or more persons/firms: (a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract; (b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and (c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer. (d) In the event of default by any partner of Joint Venture, on or after achieving 25% of the financial progress (excluding advance if any) the lead partner or remaining partner(s), in case the defaulting partner is the lead partner, shall notify the Employer within twenty eight (28) days of the occurrence and within Fifty six (56) days of the said notification, the lead partner or remaining partner(s), who are not the defaulting partner, shall assign the works of the defaulting partner, to equally competent party with prior consent of the Employer. For this purpose the term "equally competent party" shall mean as under: "The new JV partner replacing the defaulting partner should meet the EQC requirement of package/combination of packages which was met by the defaulting partner on the basis of which the original tender was awarded." The replacement of any defaulting partner, with the new partner shall be subject to the condition that the new partner has to submit additional performance security equal to 10% of balance cost of work of the JV partner being replaced. The performance security submitted by the defaulting partner shall also continue with K-RIDE till satisfactory completion of the work. (e) Notwithstanding the consent of the Employer for change in composition or legal status of the Joint Venture the partners shall continue to be jointly and severally liable to the Employer. (f) The Joint Venture shall enter into a Joint Venture Agreement incorporating the provisions of sub-paras (a) to I based upon the form annexed to the Conditions of Contract. The JV agreement shall indicate precisely the specific role of all members of the JV in respect of planning, design, construction equipment, key personnel, work execution, and financing of the project. The authority to sign the JV Agreement shall be evidenced by approved legal instruments. Notwithstanding the contents of the sub-clauses above, if the performance of any JV partner is not found satisfactory by the Employer, in respect of the responsibilities assigned to him as per JV agreement which is a part of this agreement, the Employer may issue notice of such default to the said JV partner or the JV (depending upon reasons of default) and declare the said JV partner or the JV as Poor Performer. The issue of such notice shall automatically debar the JV partner or JV as the case may be from participating in any K-RIDE tender from

K-RIDE

	the date of issue of notice of default.
New Clause-1.9	**Inspections by the Employer** The Contractor shall permit the Employer and/or persons appointed by the Employer to inspect the Site and/or the Contractor's records relating to the performance of the Contract.
New Clause-1.10	**Bidder's Credentials:** The bidder shall submit an affidavit on a stamp paper to the effect that all the documents submitted by her along with her bid are true. This shall be mandatory all bids. The bid shall be summarily rejected if the bidder fails to submit this undertaking along with the bid. After opening the financial bid, the tender committee shall verify the credentials of the bidder who is declared as the lowest bidder (L1) for their authenticity. In case the credentials of L1 are not found to be in order, The bid shall be treated as technically unresponsive and thus invalid. The process shall be repeated for the next higher bidder till the valid L1 is established. If any document (or copy thereof) submitted by a bidder is found to be false/forged: a) The bidder/each partner/member of the bidding firm shall be liable to legal actions apart from punitive actions, as decided by competent authority of K-RIDE. In such an eventuality. The bid shall also be summarily rejected. b) If the contract has already been awarded, or Letter of Acceptance (LoA) has been issued and in the event of any failure to comply with the above, the contract shall be terminated, irrespective of the stage of progress in execution of the work. In such an eventuality, Security Deposit (SD), performance Guarantee (PG) and partial/full payments otherwise due to the contractor, in respect of the partial/full work executed by the contractor, shall be forfeited by the K-RIDE. c) Other punitive actions, like banning the bidder and partners/members of the biding firm for future dealings with K-RIDE/Government of India/ Government of Karnataka may also be taken.
	2. THE EMPLOYER
New clause 2.0	**Obligations of the Employer** **1.** The Employer shall, at its own cost and expense, undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder. **2.** The Employer shall be responsible for the correctness of the Scope of the Project, Project Facilities, Specifications and Standards and the criteria for Testing of the completed Works. 3. The Employer shall, upon receiving the Performance Security, provide to the Contractor: (a) the Right of Way in accordance with the provisions progressively. (b) all environmental and forest clearances as required and approval of the general arrangement drawings (the "GAD") from road authorities to enable the Contractor to construct road over-bridges and under-bridges at level crossings on the Railway Project in accordance with the Specifications and Standards, and subject to the terms and conditions specified in such approval. 4. In the event that

K-RIDE

(i) the Employer does not procure fulfilment of any or all of the obligations set forth in para 3 above within the period specified in respect thereof, and

(ii) the delay has not occurred as a result of breach of this Agreement by the Contractor or due to Force Majeure, the Employer shall extend Time Extension in accordance with the provisions.

5. The Employer agrees to provide support to the Contractor and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and Applicable Laws, the following:

a) upon written request from the Contractor, and subject to the Contractor complying with Applicable Laws, provide reasonable support to the Contractor in procuring Applicable Permits required from any Government Instrumentality for implementation of the Project;

b) upon written request from the Contractor, provide reasonable assistance to the Contractor in obtaining access to all necessary infrastructure facilities and utilities, including water and electricity.

c) procure that no barriers that would have a material adverse effect on Works are erected or placed on or about the Railway Project by any Government Instrumentality or persons claiming through or under it, except for reasons of Emergency, national security or law and order;

d) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;

e) support, cooperate with and facilitate the Contractor in the implementation of the Project in accordance with the provisions of this Agreement; and

6. Environmental and Forest Clearances

The Employer will obtain the required environmental and forest for construction of project before issue of LOA. In the event of any delay, the Contractor shall be entitled to Time Extension for the period of such delay in accordance with the provisions.

7. Provision of Power Blocks and Traffic Blocks

The Employer shall provide Power Block or Traffic Block or both to enable the Contractor to undertake the construction of overhead equipment, or such other work as may be determined by the Employer's Engineer.

The Contractor shall, in consultation with the Employer's Engineer, submit a weekly programme of Blocks.

The minimum period for which a Power Block or Traffic Block shall be provided to the Contractor shall not be less than two hours, period being counted from the time the track is placed at the disposal of the Contractor and until it is cleared by the Contractor. Provided, however, that a Power Block or Traffic Block, as the case may be, of shorter duration may be provided with mutual consent of the Parties.

K-RIDE

	The Contractor shall organize its work so as to complete all Construction Works within such period. In the event of any change in the schedule of Power Block or Traffic Block or both, as the case may be, the Employer shall inform the Contractor. The Contractor shall be entitled to undertake the Construction Works within the traffic block /power block period, provided, In the event the block period utilized by the Contractor exceeds the period specified, the Contractor shall pay to the Authority hourly charges at the rate specified.
New Clause-2.1	**Permits, Licenses or Approvals** The Employer shall (where he is in a position to do so) provide reasonable assistance to the Contractor at the request of the Contractor: (a) by obtaining copies of the Laws of the Country which are relevant to the Contract but are not readily available, and (b) for the Contractor's applications for any permits, licences or approvals required by the Laws of the Country: (i) which the Contractor is required to obtain under New-Clause 1.7/PCC [Compliance with Laws], (ii) for the delivery of Goods, including clearance through customs, and (iii) for the export of Contractor's Equipment when it is removed from the Site.
New Clause -2.2	**Employer's Personnel** The Employer shall be responsible for ensuring that the Employer's Personnel and the Employer's other contractors on the Site: (a) co-operate with the Contractor's efforts under New-Clause 4.24/PCC [Co-operation], and (b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of New-Clause 4.26/PCC [Safety Procedures] and under New-Clause 4.36/PCC [Protection of the Environment].
New Clause-2.3	**Employer's Financial Arrangements** The Employer has sourced the funds to finance the project **Assignment by the Employer** The Employer shall be fully entitled without the consent of the Contractor, to assign the benefit of the Contract or any part thereof and any interest therein or there under to any third party.
New Clause-2.4	**Employer's Claims** If the Employer considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Employer or the Engineer shall give notice and particulars to the Contractor. However, notice is not required for payments due under New-Clause 4.37/PCC [Electricity, Water and Gas], under New-Clause 4.38/PCC [Employer's Equipment and Free-Issue Material], or for other services requested by the Contractor.

K-RIDE

	The notice shall be given as soon as practicable after the Employer became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period. The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The Engineer shall then proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine (i) the amount (if any) which the Employer is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defects Notification Period in accordance with New-Clause 6.12[/PCC Extension of Defects Notification Period]. This amount may be included as a deduction in the Contract Price and Payment Certificates. The Employer shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.
	3.THE ENGINEER
New Clause-3.1	**Engineer's Duties and Authority** The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract. The Engineer's staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties. The Engineer shall have no authority to amend the Contract. The Engineer may exercise the authority attributable to the Engineer as specified in or necessarily to be implied from the Contract. However, the Engineer shall obtain the specific approval of the Employer before taking action under the-following Sub-Clauses of these Conditions: a) New-Clause 4.30/PCC [Unforeseeable Physical Conditions] Agreeing or determining an extension of time and/or additional cost. b) Sub-Clause 26.5/PCC [Extension of Time for Completion] Agreeing or determining extension of time. c) New-Clause 6.9/PCC [Performance Certificate] Issue of Performance Certificate. d) Sub-Clause 34. Except, (i) in an emergency situation as determined by the Engineer and as amplified in sub-paras (h) and (i) below, or (ii) DELETED e) Sub-Clause 34.2 – Procedure for change of scope: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 34.1 f) Sub-Clause 37.16 -Payment in applicable Currencies: Specifying the amount payable in each of the applicable currencies for a Variation. g) Clause 4.1/SCC: Contractor Claims for extension of time and/or additional payment. h) Providing Power block or Traffic block to the contractor. i) DELETED

K-RIDE

	Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 34/PCC and shall notify the Contractor accordingly, with a copy to the Employer. j) In case the emergency mentioned in above Sub-paras occurs on account of failure of Contractor, by way of not adhering to the approved scheme of work or not taking adequate safety precautions or by any other reason attributable to the contractor, then no additional amounts shall be paid to the Contractor for attending to such emergencies and the Contractor shall be liable for Employer's claims. k) Clause7/PCC regarding deployment of Sub-Contractors.
New Clause-3.2	**Delegation by the Engineer** The Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Engineer shall not delegate the authority to determine any matter in accordance with New-Clause 3.5/PCC [Determinations]. Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in Sub-Clause 3/CC [Law and Language]. Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorised to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However: (a) any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Engineer to reject the work, Plant or Materials; (b) if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.
New Clause-3.3	**Instructions of the Engineer** The Engineer may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, Clause34/PCC [Variations and Adjustments] shall apply.

K-RIDE

	The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer or a delegated assistant, (a) gives an oral instruction and (b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and (c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation, (d) then the confirmation shall constitute the written instruction of the Engineer or delegated assistant (as the case may be).
New Clause-3.4	**Replacement of the Engineer** Notwithstanding New-Clause 3.1/PCC, if the Employer intends to replace the Engineer, the Employer shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the replacement Engineer.
New Clause-3.5	**Determinations** Whenever these Conditions provide that the Engineer shall proceed in accordance with this New-Clause 3.5/PCC to agree or determine any matter, the Engineer shall consult with each Party in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances. The Engineer shall give notice to both Parties of each agreement or determination, with supporting particulars. Each Party shall give effect to each agreement or determination unless and until revised under Clause 4/SCC [Claims, Disputes and Arbitration].
New Clause-3.6	**Remuneration of the Authority's Engineer** The remuneration, cost and expenses of the Authority's Engineer shall be borne by the Authority
New Clause-3.7	**Interim Arrangement** In the event that the Authority has not appointed an Authority's Engineer, or the Authority's Engineer so appointed has relinquished its functions, the Authority may, in the interim, designate and authorise any person to discharge the functions of the Authority's Engineer in accordance with the provisions of this Agreement, save and except that such person shall not exercise any functions relating to review, comment, approval or inspection as specified in this Agreement for and in respect of the Authority's Engineer, and such functions shall be discharged as and when an Authority's Engineer is appointed in accordance with the provisions of this Agreement. Provided, however, that nothing contained in this Clause shall in any manner restrict the rights of the Authority to enforce compliance of the provisions of this Agreement.
	4.THE CONTRACTOR
New Clause-4.1	**Contractor's General Obligations** 4.1.1 Subject to and on the terms and conditions of this Agreement, the Contractor shall undertake the survey, investigation, design, engineering, procurement, and construction of the Railway Project and observe, fulfil, comply with and perform all its

K-RIDE

obligations set out in this Agreement or arising hereunder.

4.1.2 The Contractor shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.

4.1.3 Save and except as otherwise provided in this Agreement or Applicable Laws, as the case may be, the Contractor shall, in discharge of all its obligations under this Agreement, conform with and adhere to Good Industry Practice at all times.

4.1.4 The Contractor shall remedy any and all loss or damage to the Railway Project, occurring on or after the Appointed Date and until the date of Provisional Certificate, with respect to the Works completed prior to the issuance of the Provisional Certificate and/or Completion Certificate, with respect to the Works referred to in the Punch List, at its own cost, save and except to the extent that any such loss or damage shall have arisen from any default of the Authority or on account of a Force Majeure Event in which case the provisions of New Clause 8/PCC/ Force majeure shall apply.

4.1.5 The Contractor shall remedy any and all loss or damage to the Railway Project during the Defects Liability Period at its own cost, to the extent that such loss or damage shall have arisen out of the reasons specified.

4.1.6 The Contractor shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:

(a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details as may be required for obtaining Applicable Permits and obtain and keep in force and effect such Applicable Permits in conformity with Applicable Laws;

(b) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for Materials, methods, processes, know-how and systems used or incorporated into the Railway Project;

(c) make reasonable efforts to maintain harmony and good industrial relations among the personnel employed by it or its Sub-contractors in connection with the performance of its obligations under this Agreement;

(d) ensure and procure that its Sub-contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Contractor's obligations under this Agreement;

(e) always act in a manner consistent with the provisions of this Agreement and not cause or fail to do any act, deed or thing, whether intentionally or otherwise, which may in any manner be violative of any of the provisions of this Agreement;

(f) support, cooperate with and facilitate the Authority in the implementation and operation of the Project in accordance with the provisions of this Agreement;

(g) ensure that the Contractor and its Sub-contractors comply with the safety and welfare measures for labour in accordance with Applicable Laws and Good Industry Practice;

(h) keep, on the Site, a copy of Agreement, publications named in Agreement, the Drawings, Documents relating to the Project, Change of Scope Orders and other communications sent under Agreement, and provide access to all these documents at all reasonable times to the Authority's Engineer and its Mobilization personnel;

K-RIDE

(i) cooperate with other contractors employed by the Authority and with personnel of any other public authority; and

(j) not interfere unnecessarily or improperly with the convenience of the public, or the access to and use and occupation of all the existing facilities within the Right of Way, irrespective of whether they are public or in the possession of the Authority or of others.

(k) to provide reasoned comments on any information relating to the contractor's activities under or pursuant to the agreement, which the Authority may publish.

(l) The Contractor shall undertake all necessary superintendence to plan, arrange, direct, manage, inspect and test the Works

4.1.7 Electricity, water and other services

The Contractor shall be responsible for procuring of all power, water and other services that it may require for the Railway Project.

4.1.8 Unforeseeable difficulties

Except as otherwise specified in the Agreement:

(a) the Contractor accepts complete responsibility for having foreseen all difficulties and costs of successfully completing the Works;

(b) the Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs; and

(c) the Scheduled Completion Date shall not be adjusted to take account of any unforeseen difficulties or costs.

For the purposes of this Clause, unforeseeable difficulties include physical conditions like man-made or natural physical conditions including sub-surface and hydrological conditions which the Contractor encounters at the Site during execution of the Works.

4.1.9 Safety at work site

The Contractor and its sub-contractors shall follow the safety instructions and take all safety measures for workmen and vehicles plying in the work area in accordance with Applicable Laws, Good Industry Practice and the provisions of this Agreement.

The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works.

The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

All equipment, and material, to be incorporated in or required for the Works shall be procured from approved sources as stipulated in the Contract.

i. All plants / equipment to be deployed on the work shall carry designated authority certificate. Where not specified, it shall have third party safety certificate for the safe working of the equipment and shall be renewed after every 3 months. This certificate shall be produced to the Engineer as and when required.

K-RIDE

	ii. All the construction plant shall be provided with the experienced operators having valid license issued by the competent authority. iii. Any material or equipment not meeting the approval of the Engineer shall be removed from the site immediately. iv. All Contractor's Equipment and Temporary Works provided by the Contractor shall, when brought on to the site, be deemed to be exclusively intended for execution of the Works and not be removed without the consent in writing of the Engineer. Such consent shall not be unreasonably withheld or delayed. The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractors' Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Railway Electrification Works. The Contractor shall throughout the execution of the Works including the carrying out of any testing, commissioning or remedying of any defect: i. provides and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required by the Engineer or by laws or by any relevant authority for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the Site; and ii. Contractor is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Contractor's price shall be inclusive of all the necessary costs to meet the prescribed safety standards as specified in the Special Conditions of Contract. In the case, the Contractor fails in the above; the Employer may provide the necessary arrangements and recover the costs from the Contractor
New Clause-4.2	**Tools, Plants and Equipment Supplied by the Employer** i. Except for any specific item mentioned in the Special Conditions of Contract or in Employer's Requirements, the Contractor shall provide all tools, plants and Equipment for the Works. In respect of such exceptional tools, plants or Equipment committed to be provided by the Employer under terms and conditions specified in the Special Conditions of Contract, the Contractor shall take all reasonable care and shall be responsible for all damages or loss caused by him, his representatives, sub-contractors or his workmen or others while they are in his charge. ii. No tools, plant and equipment shall be supplied by the Employer. Unless specifically incorporated in special conditions, the Contractor has to arrange all tools, plant, equipment required for the work. iii. On completion of the Works, the Contractor shall hand over the unused balance of the tools, plants and Equipment supplied by the Employer to the Employer back in good order and repair, fair wear and tear expected, and shall be responsible for any failure to account for the same or any damage done thereto. iv. The decision of the Engineer as to the amount recoverable from the Contractor on this account shall be final and binding.
New Clause-4.3	**Employer's Materials**

K-RIDE

	Except for items mentioned in the Special Conditions of Contract, the Contractor shall provide all materials for the Works. Material if any, to be provided by Employer will be done only in a phased manner as per pre-approved program, against a Bank Guarantee for the value of the Material and at terms and conditions for issue, upkeep, usage, return and recovery of such Materials as specified in Special Conditions of Contract.
New Clause-4.4	**Sheds, Stores, Yards** It shall be the responsibility of the Contractor to provide at his own expense the required sheds, store houses, and yards for both Permanent and Temporary Works and provide free access to the Engineer and the Engineer's Representative who will have right of inspection including that of instructing the Contractor to remove a particular material from the stores and not to use the same on the Works.
New Clause-4.5	**Temporary Works** The Contractor's proposals for erection of all ancillary and temporary works shall be in conformity with the proposals submitted along with the Tender and modifications thereto as approved by Engineer. The Contractor shall submit drawings, supporting design calculations of Temporary works, where called for by the Engineer and other relevant details of all such works to the Engineer for approval at least one month before he desires to commence such works. Approval by the Engineer of any such proposal shall not relieve the Contractor of his responsibility for sufficiency of such works. All temporary works necessary for the proper execution of the Works shall be provided and maintained by the Contractor at his cost (unless otherwise provided in tender document) and subject to the consent of the Engineer shall be removed by Contractor at his own expense when they are no longer required and in such manner as the Engineer shall direct. In case the Contractor fails to remove the temporary works on completion the Engineer is authorized to get the same removed and recover the cost thereof from the Contractor.
New Clause-4.6	**Access for Engineer** The Contractor shall allow at all times the Engineer or the Engineer's assistant or any other person authorised by the Engineer access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured, fabricated and/or assembled for the Works. The Contractor shall ensure that sub contracts if any shall contain provisions entitling the Engineer or any person authorised by him to have such access.
New Clause-4.7	**Access Road and Way Leave** I. Providing access roads/ way leaves to the site will be Contractor's responsibility. II. The Contractor shall pay the statutory vehicle license and permit fees for use of public roads. The Contractor's heavy construction or tracked equipment shall not travel on any public road or bridge, unless the Contractor has made arrangements with the authority concerned and has obtained the approval of the Engineer to such arrangements. III. The Contractor shall repair any damage to the road or bear the cost thereof due to movement of contractor's plants and equipment, vehicles etc. to the specifications and satisfaction of road authorities as well as of Engineer. IV. The Contractor shall plan transportation of construction materials to work site in accordance with traffic regulations enforced by local traffic authorities from time to time and in such a way that congestion on the roads and road accidents are avoided. The Contractor should study this aspect thoroughly before quoting for the work.
New Clause-4.8	**Contractor to keep Site Clear**

K-RIDE

	i. During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required. ii. On completion of the works, the Contractor shall clear away and remove from site all Constructional Plant, surplus material and Temporary Works. He should leave the whole of the site and Works in a clean, tidy and workman like condition to the satisfaction of the Engineer. iii. On completion of Work the Contractor shall also clear away the labour camps, hutments and other related installations and restore the land to its original condition to the satisfaction of the Engineer within 45 days of the physical completion of Work. The cost on account of delay in return of land and reinstatement of original condition within the stipulated time as determined by Engineer will be recovered from the Contractor's dues. iv. All garbage shall be removed from site daily or as they accumulate. All surface and sub-soil drains shall be maintained in a clean, sound and satisfactory state of performance. No extra payment shall be made on this account. No final payment in settlement of the accounts for Works shall be made till, in addition to any other condition necessary for such final payment, site clearance and clearances of labour camps etc. shall have been effected by him. Such clearance may be made by the Engineer through any other agency at the expense of the Contractor in the event of the Contractor's failure to comply with this provision within 7 days after receiving notice to that effect from the Engineer. All expenses on such removal / clearance shall be debit able to the Contractor as loans due from the Contractor to the Employer, and the Employer shall be competent to recover the same from Contractor's on-account or final bills, or from Performance Security amount or from any other amount payable to the Contractor in any other Contract.
New Clause-4.9	**Security of the Site** I. The Contractor shall take all measures necessary to ensure security, including exercising control over all persons and vehicles which are employed or engaged on the Site or in connection with the Works or the other works comprising the Project and with the security arrangements applicable to any other site within the Project. II. The Contractor shall arrange the issue of passes for the admission of all persons and vehicles to the Site or to any part thereof and may refuse admission to or remove from the Site any person or vehicle failing to show an appropriate pass on demand to any duly authorized person. III. If required by the Engineer, the Contractor shall submit a list identifying all persons to whom passes have been issued together with two photographs of each person and all entities to which a pass has been issued in respect of any vehicle and shall satisfy the Engineer of the bonafides of any such person or entity. IV. The Contractor shall not, without the written permission of the Engineer or otherwise in accordance with the Contract, allow access to the Site to any person unless the presence on Site of such person is necessary in connection with the execution of the Works or with the discharge of the duties of any relevant authority. V. The Contractor shall be wholly responsible for security of site and Works. The

K-RIDE

	Contractor shall follow relevant Safety and Security instructions issued by the concerned Authorities from time to time and shall work in close coordination with the concerned Authorities.
New Clause-4.10	**Contractor's Operations on Site** I. The Contractor shall confine his operations to the Site, and to any additional area which may be provided to the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep his personnel and equipment within the Site and such additional areas, and to keep and prohibit them from encroaching on adjacent land. II. The Contractor, after obtaining any necessary consent from any relevant authority, shall submit to the Engineer proposals showing the layout of pedestrian routes, lighting, signs, and guarding any road opening or traffic diversion which may be required in connection with the execution of the Works and which the Contractor intends to construct. Any consent given by the Engineer to such proposals shall not relieve the Contractor of any obligation under the Contract or absolve the Contractor from any liability for or arising from such proposals or the implementation thereof. III. All lights provided by the Contractor shall be so placed or screened as not to interfere with signs, signals or lights. The Contractor shall not in any way obscure or affect signs, signals or lights, in use by any relevant authority. In the event that the Contractor does so, the Contractor shall pay all costs associated with the re-fitting, re-instating or provision of alternatives for any sign, signal or light, obscured or affected. IV. For the purposes of this Clause only, "Site" shall include off-Site places of manufacture or storage and the Contractor's Work Areas and shall include, areas provided to the Contractor by others.
New Clause-4.11	**Publicity** The Contractor shall not publish or otherwise circulate alone or in conjunction with any other person, any articles, photographs or other materials relating to the Contract, the Site, the Works, the Project or any part thereof, nor impart to the press, or any radio or television network any information relating thereto, nor allow any representative of the media access to the Site, Contractor's Works Areas, or off-Site place of manufacture, or storage except with the permission, in writing, of the Employer. The Contractor shall ensure that his sub-contractors of any tier shall be bound by a like obligation and shall, if so required by the Employer, enforce the same at his own expense. The provisions of this Sub-Clause shall not exempt the Contractor from complying with any statutory provision in regard to the taking and publication of photographs.
New Clause-4.12	**Disclosure of Relationship** If the Contractor or any partner of the Contractor or Director of the Contractor's company is closely related to any of the Officers of the Employer or the Engineer, or alternatively, if any close relative of an officer of the Employer or the Engineer has financial interest / stake in the Contractor's firm, the same shall be disclosed by the Contractor at the time of filing his tender. Any failure to disclose the interest involved, shall entitle the Employer to rescind the Contract, without payment of any compensation to the Contractor. The Contractor shall note that he is prohibited from developing such interest during the Contract period.
New Clause-4.13	**Use Of Explosives** Explosives if required on the Work shall be used by Contractor only with prior Approval of the Engineer and in the manner and to the extent permitted by him. The explosives shall be

K-RIDE

	handled, stored in a special magazine to be provided at the cost of the Contractor and used under the strict supervision of persons licensed for this purpose under the requisite statutory rules and regulations. The Contractor shall take all precautions in transporting and using the explosives and avoid damage to nearby structures and utilities. The Contractor shall be responsible for taking all the precautions in the usage of the explosives at Contractor's cost, sole risk and responsibility. The Contractor shall hold the Employer harmless and indemnify for the above.
New Clause-4.14	**In pursuance with this policy, the Employer** a. Will reject the Tender for the Work or rescind the Contract, if the Employer determines that the Tenderer/Contractor has engaged in corrupt or fraudulent practices. b. Will declare a Tenderer/Contractor ineligible, either indefinitely or for a minimum period of 2 years from the date of identification of such prohibited conduct, to be awarded a Contract/s if the Employer at any time determines that the Contractor has engaged in corrupt or fraudulent practices in competing for, or in executing the Contract.
New Clause-4.15	**Compensation to Contractor on rescission of Contract under this clause** In the event of rescission of Contract, the Contractor shall not be entitled to any compensation whatsoever, except for the work done up to the date of rescission.
New Clause-4.16	**Quality Assurance** Unless otherwise stated in Special Conditions of Contract and/or Employer's Requirement, the Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. Such system shall be in accordance with the details stated in the Contract. Compliance with the quality assurance system shall not relieve the Contractor of his duties, obligations or responsibilities. Details of all procedure and compliance documents shall be submitted to the Engineer for his consent before each execution stage is commenced
New Clause-4.17	**Work by Persons Other than Contactor** I. If the Contractor shall fail to carry out any work required under the Contract or refuse to comply with any instruction or order given by the Engineer in accordance with the Contract within a reasonable time, the Engineer may give the Contractor 14 days' notice in writing to carry out such work or comply with such instruction. II. If the Contractor fails to comply with such notice, the Employer shall be entitled to carry out such work or instruction by his own workmen or by other contractors in whatever manner the Engineer decides, be it single Tender or limited Tender or open Tender or on entrustment basis without any right of appeal by the contractor. III. However, in case of emergencies/urgencies/affecting safety the period of 14 days' notice shall be 24hours notice in writing. The Classification of work as emergencies/urgencies/affecting safety is the prerogative of Engineer and his decision is final and binding on the contractor. Without prejudice to any other right or remedy, all additional expenditure properly incurred by the Employer in having such work or instruction carried out shall be recoverable by the Employer from the Contractor. IV. If by reason of any accident or failure or other event occurring to, in, or in connection with the Works any remedial or other work shall, in the opinion of the Engineer, be urgently necessary and the Contractor is unable or unwilling at once to do such remedial or other work, the Engineer may authorize the carrying out of such remedial or other work by a person other than the Contractor. **V.** If the remedial or other work so authorized by the Engineer is work, which, in the Engineer's opinion, the Contractor was liable to do under the Contract; all expenses

K-RIDE

	properly incurred in carrying out the same shall be recoverable by the Employer from the Contractor. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.
New Clause-4.18	**Confidentiality of Information** I. The Contractor shall not use or divulge, except for the purpose of the Contract or with the written permission of the Employer, any information relating to the Works or the Project provided in the Contract or otherwise provided by the Employer, or the Engineer. The Contractor shall ensure that his sub-contractors of any tier shall be bound by a like confidentiality undertaking. II. The Employer, Engineer and any third party to whom an assignment has been made in accordance with New-clause 2.3/PCC may use any information provided by the Contractor in accordance with the Contract. The Employer shall use reasonable endeavours to ensure that the Engineer and any third party referred to in aforesaid New-clause 2.3/PCC shall not; divulge such information except for any purpose connected with the Contract. On completion of the works, the contractor shall arrange to furnish to the Employer two (2) bound sets of all "As Erected" drawings for every component of the Works at his own cost, all such copies being on Polyester film of quality to be approved by the Engineer or his Representative. The Taking – over Certificate of the Works, as per the provisions of Clause 46.1/PCC herein, shall not be issued by the Engineer in the event of the Contractor's failure to furnish the aforesaid "As Erected" drawings for the entire works. If the Contract specifies that the Contractor shall design any part of the Railway Electrification Works, then unless otherwise stated in the Special Conditions of Contract: (a) the Contractor shall submit to the Engineer the Contractor's Documents for this part in accordance with the procedures specified in the Contract; (b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 3/CC [Law and Language], and shall include additional information required by the Engineer to add to the Drawings for co-ordination of each Party's designs; (c) the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract; and (d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer the "as-built" documents and operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 46.1/PCC [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.
New Clause-4.19	**Performance Security**

K-RIDE

	The Contractor shall obtain (at his cost) a Performance Security and an additional Performance Security, if any in terms of ITB 35.5, for proper performance of the contract, for the amount, currencies and validity period for Performance Security stated in the Contract Data. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply. The Contractor shall deliver the Performance Security and additional Performance Security, if any, to the Employer within 28 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The Performance Security/additional Performance Security shall be issued by an entity and from within a country (or other jurisdiction) approved by the Employer and shall be in the form as given in Section 10 (Formats) or in another form specifically approved by the Employer. The procedure for obtaining Performance Guarantee is outlined below: The successful bidder shall have to submit a Performance Guarantee (PG) within 28 (Twenty-eight) days from the date of issue of Letter of Acceptance (LOA). Extension of time for submission of PG beyond 28 (Twenty-eight) days and upto 60 days from the date of issue of LOA may be given by the Authority who is competent to sign the contract agreement. However, a penal interest of 12% per annum shall be charged for the delay beyond 28(Twenty-eight) days, i.e. from 29th day after the date of issue of LOA. Further, if the 60th day happens to be a declared holiday in the concerned office of the Railway, submission of PG can be accepted on the next working day. In all other cases, if the Contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract is liable to be terminated. In case contract is terminated railway shall be entitled to forfeit Earnest Money Deposit and other dues payable against that contract. In case a tenderer has not submitted Earnest Money Deposit on the strength of their registration as a Start-up recognized by Department for promotion of industry and internal trade (DPIIT) under Ministry of Commerce and Industry, DPIIT shall be informed to this effect. The failed Contractor shall be debarred from participating in re-tender for that work. The Performance Security/additional Performance Security shall be, at the Contractor's option, in any of the following forms: (i) An unconditional Bank Guarantee in the prescribed format (ii) A Pay Order / Demand Draft drawn on a Scheduled / Nationalized Bank in India in favour of "Rail Infrastructure Development Company (Karnataka) Ltd" payable at Bangalore (iii) FDR in favour of "Rail Infrastructure Development Company (Karnataka) Ltd." (free from any encumbrance). (iv) A online bank transfer to K-RIDE account . The Bank Guarantee shall be from a bank having minimum net-worth of over INR 500 million from the specified banks as under: (i) a Schedule Bank in India, or (ii) a Foreign Bank having their operations in India, or (iii) a Foreign Bank which does not have operations in India is required to provide a counter-guarantee by State Bank of India, The Scheduled Bank is suing the Bank Guarantee must be on "Structured Financial Messaging System(SFMS)"platform. A separate advice of the BG shall be invariable be sent by the issuing bank to the Employer's Bank through SFMS and only after this the BG shall

K-RIDE

become operative and acceptable to the Employer.

The Issuing Bank shall send the SFMS to:

Beneficiary: Rail Infrastructure Development Company (Karnataka) Ltd. (K-RIDE)Bank Name: Canara Bank
Branch: Prime Corporate Branch
Account No. 0430201012110
IFSC Code: CNRB0002636

In case the contractor is a JV; "the Performance Security/additional Performance Security, if any in terms of ITB 35.5, shall be submitted by each JV Partner separately on behalf of the JV in favour of K-RIDE in proportion of their respective percentage share specified in the JV Agreement. The additional Performance Security shall be submitted by the partner(s) responsible for execution of schedule(s) (as per JV agreement) against which additional Performance Security is required to be submitted in terms of ITB 35.5.

However, Submission of Performance Guarantee Security by individual partners on behalf of the JV shall in no way dilute their Joint & Several responsibility. The Employer shall be entitled to recover the amount of Bank Guarantees individually and / or from all the Partners jointly at its discretion."

The Contractor shall ensure that the Performance Security/additional Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied defects, if any. If the contractor does not complete the work for any reasons whatsoever, the terms of the Performance Security/ additional Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall be bound to extend the validity of the Performance Security/additional Performance Security until the Works have been completed and any defects have been remedied.

Failure of the successful Tenderer to furnish the required Performance Security shall be a ground for the annulment of the award of Contract and execution of the Tender Securing Declaration.

Release of performance security

(i) The whole or such portion of the Performance Security amount shall be liable to be forfeited by the Employer at the discretion of the Employer, in the event of any breach of Contract on the part of the Contractor.

(ii) After completion of the entire Work, the Performance Security shall be released to the Contractor, on issue of last Taking Over Certificate if more than one Certificate exist, by the Engineer, the release of Performance Security shall not relieve the Contractor from his obligations and liabilities, to make good that may be detected during the Defects Liability Period.

The Guarantees shall be unconditional and irrevocable. The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate or passing of the Final Payment Certificate whichever is later. However, on completion of specified section(s) and successful passage of defect liability period for such section(s) along with execution of any leftover works at the time of completion of such section(s), the contractor shall be entitled for release of 90% of the proportionate Performance Security calculated as specified in Contract Data subject to the condition that

K-RIDE

	Engineer certifies that no recoveries are pending in the contract. In case Engineer points out amount to be recovered then the contractor shall be entitled for release of 90% of the proportionate Performance Security calculated as specified in Contract Data minus the amount to be recovered. The Employer shall return additional Performance Security submitted in terms of ITB 35.5 as per the following; (a) If the Contractor submits an application stating that all the works against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5 have been completed in all respect, then the Employer, on being satisfied with the claim of the Contractor, shall return the full additional Performance Security against the particular schedule(s). Decision of the Employer regarding completion of works against a particular schedule/bill shall be final and binding on the Contractor. (b) If the Contractor submits an application stating that majority of the works (physical progress being not less than 90%) against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5 have been completed and execution of balance works is held up for reasons not attributable to the Contractor, then the Employer, on being satisfied with the claim of the Contractor, shall return 75% of the amount of additional Performance Security against the particular schedule(s). The balance amount of additional Performance Security shall however be returned only after completion of the works against the particular schedule(s)/bill(s) for which additional Performance Security was submitted in terms of ITB 35.5, in all respects to the satisfaction of the Employer. Decision of the Employer regarding completion of works against a particular schedule/bill shall be final and binding on the Contractor. Without limitation to the provisions of the rest of this Sub-Clause, whenever the Engineer determines an addition or a reduction to the Contract Price as a result of a change in cost and/or legislation or as a result of a Variation amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Engineer's request promptly submit Performance Guarantee @ 10% of the increased amount over the original contract price in a specific currency. On the other hand if the value of contract price decreases by more than 25% of the original contract price payable in a specific currency, Performance Guarantee @ 10% of the decrease in contract price from the original contract price in a specific currency shall be returned to the contractor, on his request. Wherever the contract is terminated under Clause 49.7/PCC, the Performance Guarantee shall be encashed by the Employer: i) in full including additional Performance Guarantee amount, if any, taken in terms of clause 25.5 and 29 of ITT and not due for release on the date of issue of termination letter in terms of this clause, in case of termination of the contract as a whole; Or ii) at the discretion of the Employer it may be encashed in part/parts proportionate to the Contract price of the bill/schedule to which the terminated part of work belongs i.e., P=(A x B)÷C where P=Proportionate Bank Guarantee Amount. A=Contract price of the particular bill/schedule to which the terminated part of work belongs.

K-RIDE

	B=Performance Guarantee amount in terms of CC New-clause 4.19/PCC C=Total Contract price. Plus additional performance Guarantee amount, if any, taken in terms of sub clause 25.5 and 29 of ITT and not due for release on the date of issue of termination letter in terms of this clause against this particular bill/schedule to which the terminated part of the work belongs, in case of termination in part/parts. The balance work should be got done separately, and independently by K-RIDE without risk and cost of the original contractor. The original contractor shall be debarred from participating in the tender for executing the balance work. If the failed contractor is a JV or a partnership firm, then every member/partner of such a firm would be debarred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other JV/partnership firm. In case the Contractor fails to perform the Contract or any JV partner fails to perform its obligations under the JV agreement, which is a part of this agreement, the Employer may issue notice of such default to the said JV partner or the JV (depending upon reasons of default) and declare the said JV partner or the JV as Poor Performer. The issue of such notice shall automatically debar the JV partner or JV, as the case may be, from participating in any K-RIDE tender from the date of issue of notice of default. The relevant performance security including additional performance security, if any, in terms of sub clauses 25.5 and 29 of ITT submitted by the Contractor or submitted on behalf of JV partner to the extent not due for release at the time of contemplation of such action shall be encashed and forfeited either fully or in proportion of the percentage share of that partner in the JV agreement, as the case may be.
New Clause-4.20	**Security Deposit**: The Security Deposit shall be 5% of the contract value. Security Deposit may be deposited by the Contractor before release of first on account bill in cash or Term Deposit Receipt issued from Scheduled Bank, or may be recovered at the rate defined in this section PCC, the bill amount till the full Security Deposit is recovered. Provided also that in case of defaulting Contractor, the Employer may retain any amount due for payment to the Contractor on the pending "on account bills" so that the amounts so retained (including amount guaranteed through Performance Security) may not exceed 10% of the total value of the contract. The security deposit may be recovered at the rate 6% of bill amount till the security deposit is recovered. Further, in case of contracts having value equal to or more than ₹ 50 crore (Rs Fifty crore) the Security Deposit may be deposited as Bank Guarantee Bond also, issued by a scheduled bank after execution of contract documents, but before payment of 1st on account bill. Provided further that the validity of Bank Guarantee Bond shall be extended from time to time, depending upon extension of contract granted in terms Clause No 26 of PCC. Further, in case Security Deposit has been submitted as Term Deposit Receipt/Bank Guarantee Bond in full amount, the Bid security by Contractor with his tender will be returned by K-RIDE. Note: After the work is physically completed as certified by competent authority, Security Deposit recovered from the running bills of a Contractor can be returned to him, if he so desires, in lieu of Term Deposit Receipt/irrevocable Bank Guarantee for equivalent amount from Scheduled Bank, to be submitted by him. 4.2.b(i) Refund of Security Deposit: Security Deposit mentioned in clause above shall be

	returned to the Contractor along with or after, the following: (a) Final Payment of the Contract and (b) Execution of Final Supplementary Agreement or Certification by Engineer that K-RIDE has No Claim on Contractor and (c) Maintenance Certificate issued, on expiry of the maintenance period. 4.2.b(ii) Forfeiture of Security Deposit: Whenever the contract is rescinded as a whole under clause 49 of CC/PCC, the Security Deposit already with K-RIDE under the contract shall be forfeited. However, in case the contract is rescinded in part or parts under clause 49 of CC/PCC, the Security Deposit shall not be forfeited. 4.2.(c) No interest shall be payable upon the Bid Security and Security Deposit or amounts payable to the Contractor under the Contract, but Government Securities deposited in terms of New-Clause 4.19/PCC of this clause will be payable with interest accrued thereon.
New Clause - 4.21	**Contractor Representative:** The Contractor shall depute his Representative to attend all the review meetings notified by the Engineer. Facilities for and Co-ordination with Others The Contractor shall not impede and shall afford all necessary facilities, access and/or services to the Employer, Engineer, Designated Contractors, utility undertakings, other relevant authorities and other contractors (whether employed by the Employer or not) who are carrying out on, or in the vicinity of, the Site, works not included in the Contract but forming part of the Project: A. The Contractor shall take all reasonable steps to ensure that the Works are co-ordinated and integrated with the Design, manufacture, installation execution and testing of such other works and shall in particular (but without limitation): (i) comply with any direction which the Engineer may give for the integration of the Design with the design of any other part of the Project; (ii) consult, liaise and co-operate with those responsible for carrying out such other works, including where necessary, in the preparation of the respective designs, the preparation of co-ordinated programmes, method statements, co-ordination drawings and specifications together with arrangements of service priorities and zoning; B. The Contractor shall undertake Design co-ordination with other contractors who are carrying out works forming part of the Project as described in the Employer's Requirements. At the end of each such co-ordination period, the Contractor and the other contractor with whose works the interface period refers shall jointly state in writing that their design co-ordination activities are complete and that their respective designs are integrated and can be finalised without interference with each other's designs or the designs with which their designs have already been integrated. A copy of this joint written statement shall be provided to the Engineer within 7 days of the end of the said design co-ordination period. Unless and until copies of all relevant and necessary design co-ordination statements have been submitted to the Engineer,

K-RIDE

	the Engineer shall be entitled to suspend any review or further review of the Contractor's or the other contractor's design submissions. Such suspension shall not be grounds for the Contractor to claim nor shall be entitled to receive an extension of time or additional payments. C. The Contractor shall share within the Site, staging, storage and unloading areas for the use of Designated Contractors, if any, who are undertaking civil work, fare collection system, supply, testing and commissioning of Rolling Stock, escalators, lifts, signalling and telecommunications and traction power installation works, etc. Separate locations shall be provided for each such contractor. The exact size and location of these staging, storage and unloading areas, and the commencement date shall be co-ordinated and agreed during the design interface period with each Designated Contractor. D. Any other contract which depends for its execution on the Contract or upon which the Contract is dependent for its own execution shall be identified by the Engineer as a "Designated Contract". The Contractor shall provide attendance on Designated Contractors in accordance with the Employer's Requirements and as instructed by the Engineer. The identity of the contractor for a Designated Contract may not be known before the execution of the Contract but this shall not be a ground for the Contractor to object to the subsequent appointment of a Designated Contractor E. The Contractor shall in accordance with the requirements of the Engineer co-ordinate his own Works with that of Designated Contractors through Co-ordinated Installation Programme (CIP) stated in the Employer's Requirements, or as the Engineer may require, and shall afford the Designated Contractors all reasonable opportunities for carrying out their works. F. The Contractor shall afford all reasonable opportunities, for carrying out their work, to other contractors employed by the Employer and their workmen respectively and the workmen of the Employer who may be engaged on or near the Site of any work, ancillary to the Works, but, not included in the Contract and shall not cause them inconvenience. G. If the Contractor shall suffer delay by reason of failure by any Designated Contractor to meet the specified installation interfacing and co-ordination, completion dates, which delay shall be caused otherwise than by fault of the Contractor, or, if compliance with sub-clause (f) herein shall involve the Contractor in delay beyond that which could be reasonably foreseen by an experienced contractor at the time of tender, then the Engineer shall take such delay into account in determining any extension of time to which the Contractor is entitled under the Contract. H. It shall be the responsibility of the Contractor to ensure that the full extent of the Works under the Contract and the works to be carried out by Designated Contractors within the Works or, in, on, under, through and over the Site are co-ordinated and integrated in their design, manufacture, installation and construction. Such responsibility shall neither be mitigated nor in any other way affected by virtue of similar responsibilities being placed on other contractors. The Contractor shall be deemed to have made adequate allowance in the Contract Price and in the Works Programme in respect of these obligations. If any act or omission of the Contractor whether directly or indirectly results in the delay in the execution of the works of a Designated Contractor, the Contractor, in addition to his liability in respect of liquidated damages if they become due, shall pay to the Employer, or the Engineer may deduct from Interim Payment Certificates such amount as the Engineer shall have certified in respect of additional payments or costs to the

K-RIDE

	Designated Contractor in respect of such delay.
New Clause-4.22	DELETED
New Clause-4.23	DELETED
New Clause-4.24	**Co-operation** The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to: (a) the Employer's Personnel, (b) any other contractors employed by the Employer, and (c) the personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract. Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor. If, under the Contract, the Employer is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Engineer in the time and manner stated in the Specification.
New Clause-4.25	**Setting Out** The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the works, notifying the Engineer within 28 days of the date of commencement In the event of such discrepancy arising during the course of the work, for which Employer's documents are handed over after the date of commencement, the contractor shall seek clarifications within 14 days of receipt of such documents The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used. Contractor shall promptly notify the Employer and the Engineer of any error, omission, fault, or any other defect in the design, drawing or specifications for the works, which he discovers when reviewing the Contract Documents, and in the process of execution of the Works. The Contractor shall be responsible to ensure correlation in various drawings and **Price schedule**, before commencement and execution of work. In case of any discrepancy the Contractor shall bring it to notice of the Engineer for clarification within 28 days of the issue of Letter of Acceptance. In the event of such discrepancy arising during the course of the work, for which drawings are given after the date of issue of Letter of Acceptance, the Contractor shall seek clarifications within 14 days of receipt of such drawings. Notwithstanding with any other provision, the Contractor shall have to pay penalty for damage to Railway cable in terms of clause C 15 of the JPO as given in para 1.2 of Chapter 1. (Safety and Security) of Section 8 and shall also indemnify the Employer against any losses, damages to property or life in terms of para 1.11 and 1.12 of the chapter 1. (Safety and Security) of Section 8.

K-RIDE

New Clause-4.26	**Safety Procedures** The Contractor shall follow the provisions laid down in Chapter 1. (Safety and Security) of Section 8 and shall: (a) comply with all applicable safety regulations, (b) take care for the safety of all persons entitled to be on the Site, (c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons, (d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 46/PCC [Employer's Taking Over], and (e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land. **Additional Safety Precautions** (1) The Contractor shall comply with all the precautions as required for the safety of the workmen by the I.L.O Convention No.62 as far as they are applicable to the Contract. The Contractor shall provide all necessary safety appliances; such as safety goggles, helmets, masks, etc to the workmen and the staff. (2) Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground, or from solid construction except for such short period work as can be done safely from ladders. When a ladder is used, an extra labourer shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot-holds and hand-holds shall be provided on the ladder, which shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal in 1 vertical). **(3) DELETED** **(4) DELETED** (5) Every opening in the floor of a structure or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of one metre. (6) Safe means of access and egress shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between side rails in a rung ladder shall in no case be less than 30 cm for ladders up to and including 3 metres in length. For longer ladders the width shall be increased at least 6 mm for each additional 30 cm of length. Spacing of steps shall be uniform and shall not exceed 30 cm. (7) Adequate precautions shall be taken to prevent danger from electrical equipment. Adequate safety measures shall be taken when any work is undertaken near any live highly charged electric wire. Necessary shutdown may be arranged, where and whenever essential. All rules in force in this connection shall be fully complied with. The Contractor shall ensure all precautions to prevent any accidents due to electrocution or otherwise.

K-RIDE

(8) No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect the public from accidents and shall be bound to bear the expenses of defending every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.

(9) DELETED

(10) Demolition: Before any demolition work is commenced and also during the process of the work:

(a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.

(b) No electric cable or apparatus, which is liable to be a source of danger other than a cable or apparatus used by operators, shall remain electrically charged:

(c) All practical steps shall be taken to prevent danger to persons employed by the Employer, from risk of fire or explosion, or flooding. No floor, roof or other part of a building shall be so overloaded with debris or materials as to render it unsafe.

(11) All necessary personal safety equipment as considered adequate by the Engineer shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use; and the Contractor shall take adequate steps to ensure proper use of such equipment by those concerned.

(a) Workers employed on mixing asphaltic materials, cement, lime mortars, concrete etc. shall be provided with protective footwear and protective goggles.

(b) Those engaged in handling any material, which is injurious to the eyes, shall be provided with protective goggles.

(c) Those engaged in welding works shall be provided with welder's protective eye-shield.

(d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

(e) DELETED

(f) The Contractor shall not employ men below the age of 18 years and women, on the work of painting with products containing lead in any form. Whenever men above the age of 18 years are employed on the work of lead painting, the following precautions shall be taken

K-RIDE

(g) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

(h) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

(i) Overalls shall be supplied by the Contractor to workmen and adequate facilities shall be provided to enable workers to wash during and at the close of any day's work.

(12) When work is performed near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

(13) Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:

a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order, be regularly inspected and properly maintained.

b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from defects

c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 shall be in charge of any hoisting machine including scaffold equipment. Only trained men over the age of 21 shall be permitted to give signals to such plant and appliance operators.

d) For every hoisting machine and every chain hook, shackle, swivel and pulley block used in hoisting, lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine or a variable safe working load, each safe working load and conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to in the paragraph above shall be loaded beyond safe working load except for the purpose of testing.

e) In case of the Employer's machine, safe working load shall be notified by the Engineer or his Representative. As regards Contractor's machines, the Contractor shall notify safe working load of each machine to the Engineer or his Representative, whenever he brings it to the site of work and get it verified by him.

(14) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards; hoisting appliances shall be provided with such means as will reduce the risk of accident during descent of load to the minimum. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already utilized, insulating mats, working apparel such as gloves, sleeves and boots, as may be

K-RIDE

	necessary, shall be provided. Workers shall not wear any rings, watches and carry keys or other materials which are good conductor of electricity. (15) (All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work. (16) These safety provisions shall be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work location. Persons responsible for ensuring compliance with the Safety Code shall be named therein by the Contractor. (17) To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the contractor shall be open to inspection by the Engineer or his Representative. (18) Notwithstanding anything contained in conditions (1) to (17) above, the Contractor shall at its own costs, remain liable to comply with the provisions of all acts, rules, regulations, and bylaws for the time being in force in India and applicable in this matter. (19) For work carried out in the vicinity of any wharf or quay, the Contractor shall abide by all the provisions of the Dock Workers (Safety, Health and Welfare) Scheme, 1961. (20) The Contractor shall at his own expense provide protective safety Equipment like gloves and footwear for all labour engaged on concrete mixing work and all other types of working involving the use of tar, cement, etc. to the satisfaction of the Engineer or his Representative, and on his failure to do so, the employer shall be entitled to provide the same and recover the cost from the Contractor. The Contractor shall be responsible for observance, by the sub-contractors, of the foregoing provisions. **(21) All construction labour at all-time shall use personal protective equipment like, safety shoes, helmets and reflective jackets in all activities at site. This shall be ensured without fail on each work site. Failing to comply with this, provision shall attract penalty of Rs. 500/- per occasion per staff.** Notwithstanding with any other provision, the Contractor shall have to pay penalty for damage to Railway cable in terms of clause C 15 of the JPO as given in para 1.2 of Chapter 1. (Safety and Security) of Section 8 and shall also indemnify the Employer against any losses, damages to property or life in terms of para 1.11 and 1.12 of the chapter 1. (Safety and Security) of Section 8).
New Clause-4.27	**Quality Assurance** The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Engineer shall be entitled to audit any aspect of the system. Details of all procedures and compliance documents shall be submitted to the Engineer for information before each design and execution stage is commenced. When any document of a

K-RIDE

	technical nature is issued to the Engineer, evidence of the prior approval by the Contractor himself shall be apparent on the document itself. Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract. **Quality Control** Within 28 days of the issue of the Letter of acceptance, the Contractor shall submit to the Engineer, for his consent, his proposed Site Quality Plan based on the Outline Quality Plan and the Employer's Requirements. The quality manual should address the quality system as required by ISO 9001-1991. Any supplement to the Site Quality Plan shall be submitted at least 14 days before commencement of the relevant work. Upon the Engineer notifying his consent to the Site Quality Plan, or any supplement thereto, the Contractor shall, adhere to the principles and procedures contained in such document, except where the Engineer gives his consent to any amended or varied version thereof. The Contractor shall cause any sub-contractors to adhere to this Plan. The Contractor shall appoint a suitably qualified and experienced person, not otherwise engaged in the performance of the Contract, to act as manager of the quality assurance system and shall provide such other personnel and resources as required to ensure effective operation of the quality assurance system. The said manager shall carry out audits of the application of the quality assurance system, and ensure effective quality control and delivery of quality assurance. The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out surveillance visits both on and off the Site to verify that the quality assurance system is being properly and fully implemented. No extra payment shall be made in this regard and the cost of the Work under this element shall be deemed to be included in the Contract Price. **Quality control records and Documents** The Contractor shall hand over to the Authority's Engineer a copy of all its quality control records and documents before the Completion Certificate is issued. **Video recording** During the Construction Period, the Contractor shall provide to the Authority for every calendar month, a video recording, which will be compiled into a 3 (three) hour digital video disc or any substitute thereof, covering the status and progress of Works in that month. The video recording shall be provided to the Authority no later than 15 (fifteen) days after the close of each month after the Appointed Date.
New Clause-4.28	**Site Data** The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data. To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Bid or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the

K-RIDE

	above data and other available information, and to have been satisfied before submitting the Bid as to all relevant matters, including (without limitation): (a) the form and nature of the Site, including sub-surface conditions, (b) the hydrological and climatic conditions, (c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects, (d) the Laws, procedures and labour practices of the Country, and (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services. (f) Data made available by the Employer in accordance with the preceding paragraph shall be deemed to include data listed elsewhere in the contract as open for inspection at the address stipulated in the Contract.
New Clause-4.29	**Sufficiency of the Accepted Contract Amount** The Contractor shall be deemed to: a) have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in New-Clause 4.28/PCC [Site Data]. Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.
New Clause-4.30	**Unforeseeable Physical Conditions** In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions. If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable. This notice shall describe the physical conditions, so that they can be inspected by the Engineer, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Engineer may give. If an instruction constitutes a Variation, Clause 34/PCC [Variations and Adjustments] shall apply. If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to: (a) An extension of time for any such delay, if completion is or will be delayed, under Sub-

K-RIDE

	Clause 26.5/PCC [Extension of Time for Completion], and (b) Payment of any such Cost, which shall be included in the Contract Price. After receiving such notice and inspecting and/or investigating these physical conditions, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent. However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Engineer may also review whether other physical conditions in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Bid. If and to the extent that these more favourable conditions were encountered, the Engineer may proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price. The Engineer may take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Bid, which may be made available by the Contractor, but shall not be bound by any such evidence.
New Clause-4.31	**1. Rights of Way and Facilities** The Contractor shall bear all costs and charges for special and/or temporary rights-of-way which he may require, including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facilities outside the Site which he may require for the purposes of the Works. In case any operation connected with traffic necessitates diversion, obstruction or closure of any road, railway or any other right of way, the approval of the Engineer and the concerned authorities shall be obtained well in advance by the Contractor. Provided that if it is found necessary for the Contractor to move one or more loads of heavy constructional plants and equipment, materials or Pre-constructed units or parts of units of work over roads, highways, bridges on which such oversized and overweight items that are not normally to be moved, the contractor shall obtain prior permission from the concerned authorities. Payments for complying with the requirements, if any, for protection or strengthening of the roads, highways or bridges shall be made by the contractor and such expenses shall be deemed to be included in his quoted contract price. **2. Protection of Site from encroachments** The Contractor shall maintain a round-the-clock vigil over the Site and shall ensure and procure that no encroachment thereon takes place. During the Construction Period, the Contractor shall protect the Site from any and all occupations, encroachments or Encumbrances, and shall not place or create nor permit any Sub-contractor or other person claiming through or under the Agreement to place or create any Encumbrance or security interest over all or any part of the Site or the Project Assets, or on any rights of the Contractor therein or under this Agreement, save and except as otherwise expressly set forth in this Agreement. In the event of any encroachment or occupation on any part of the Site, the Contractor shall report such encroachment or occupation forthwith to the

K-RIDE

	Authority and undertake its removal at its own cost and expenses. **3. Temporary Right of Way** The Contractor shall bear all costs and charges for any temporary right of way required by it in connection with access to the Site. The Contractor shall obtain at its cost such facilities on or outside the Site as may be required by it for the purposes of the Railway Project and the performance of its obligations under this Agreement. **4. Access to the Authority and the Authority's Engineer** 4.1 The Right of Way given to the Contractor hereunder shall always be subject to the right of access of the Authority and the Authority's Engineer and their employees and agents for inspection, viewing and exercise of their rights and performance of their obligations under this Agreement. 4.2 The Contractor shall ensure, subject to all relevant safety procedures, that the Authority has unrestricted access to the Site during any Emergency. 5. **Geological and archaeological finds** It is expressly agreed that mining, geological or archaeological rights do not form part of this Agreement with the Contractor for the Works, and the Contractor hereby acknowledges that it shall not have any mining rights or interest in the underlying minerals, fossils, antiquities, structures or other remnants or things either of particular geological or archaeological interest and that such rights, interest and property on or under the Site shall vest in and belong to the Authority or the concerned Government Instrumentality. The Contractor shall take all reasonable precautions to prevent its workmen or any other person from removing or damaging such interest or property and shall inform the Authority forthwith of the discovery thereof and comply with such instructions as the Authority or the concerned Government Instrumentality may reasonably give for the removal of such property.
New Clause-4.32	**Avoidance of Interference** The Contractor shall not interfere unnecessarily or improperly with: a) the convenience of the public, or b) the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Employer or of others or c) Passenger amenities at stations and station platforms. The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.
New Clause-4.33	**Access Route** The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes. Except as otherwise stated in these Conditions: (a) the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

K-RIDE

	(b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions; (c) the Employer shall not be responsible for any claims which may arise from the use or otherwise of any access route; (d) the Employer does not guarantee the suitability or availability of particular access routes; and (e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.
New Clause-4.34	**Transport of Goods** Unless otherwise stated in the Special Conditions of Contract: (a) the Contractor shall give the Engineer not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site; (b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and (c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.
New Clause-4.35	**Contractor's Equipment** The Contractor shall be responsible for all Contractors' Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site In the event of Contractor imports any equipment the following shall apply" A. **Custom Clearance:** The Employer will assist the contractor, when required by furnishing letters of recommendation for obtaining expeditious clearance through customs of constructional plants, material and other things required for the works and then for re-export, if any. The following publications, may be referred to by the contractor for guidance about custom regulations etc : i. Import & export policy, together with amendments, if any, published by Govt. of India, Ministry of Commerce.. ii. Hand Book of Procedures, together with amendments, if any, Volume 1 and 2 published by Ministry of Commerce. iii. Customs Tariff, together with amendments, if any published by Central Customs. The Contractor shall be responsible to follow the latest rules and regulations without any liability of the Employer. B. **Re-export of contractors equipment:** The contractor shall obtain all the relevant information regarding procedure for the import and subsequent re-export of his equipment and materials from the Chief Controller of Imports and Exports, Bangalore, and shall inform himself and keep himself informed on the details of custom charges and

K-RIDE

	draw-back regulations as applicable to the items of Constructional plant. The contractor shall provide the necessary guarantee/bonds where these are required by the customs notwithstanding that import licenses may be granted in the name of Employer. C. Notwithstanding the provisions mentioned above, Contractor's Equipment, including essential spare parts therefore, imported by the Contractor for the sole purpose of executing the Contract shall be temporarily exempt from the payment of import duties and taxes upon initial importation, provided the Contractor shall post with the customs authorities at the port of entry an approved export bond or bank guarantee, valid until the Time for Completion plus six months, in an amount equal to the full import duties and taxes which would be payable on the assessed imported value of such Contractor's Equipment and spare parts, and callable in the event the Contractor's Equipment is not exported from the Country on completion of the Contract. A copy of the bond or bank guarantee endorsed by the custom authorities shall be provided by the Contractor to the Employer upon the importation of individual items of Contractor's Equipment and spare parts. Upon export of individual items of Contractor's Equipment or spare parts, or upon the completion of the Contract, Contractor shall prepare for approval by the customs authority the authorities, an assessment of the residual value of the Contractor's Equipment and spare parts to be exported based on the depreciation scale(s) and other criteria used by the customs authorities for such purposes under the provisions of the applicable Laws. Import duties and taxes shall be due and payable to the customs authorities by the Contractor on (a) the difference between the initial imported value and the residual value of the contractor's equipment and spare parts to be exported and (b) on the initial imported value that contractor's equipment and spare parts remaining in the Country after completion of the Contract. Upon payment of such dues within 28 days of being invoiced, the bond or bank guarantee shall be reduced or released accordingly; otherwise the security shall be called in the full amount remaining in the Country. D. Conditions of hire of the contractor's equipment: A certified copy of the agreement in respect of any item of Equipment held by contractor under any agreement for hire or hire purchase thereof, shall be supplied to the Engineer/Employer."
New Clause-4.36	**Protection of the Environment** The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.
New Clause-4.37	**Electricity, Water and Gas** The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require. The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specification. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed. The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Engineer in accordance with New-Clause 2.4/PCC [Employer's

K-RIDE

	Claims] and New-Clause 3.5/PCC [Determinations]. The Contractor shall pay these amounts to the Employer.
New Clause-4.38	**Employer's, Equipment and Free-Issue Material** The Employer shall make the Employer's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification: (a) the Employer shall be responsible for the Employer's Equipment, except that (b) the Contractor shall be responsible for each item of Employer's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it. The appropriate quantities and the amounts due (at such stated prices) for the use of Employer's Equipment shall be agreed or determined by the Engineer in accordance with New-Clause 2.4/PCC [Employer's Claims] and New-Clause 3.5/PCC [Determinations]. The Contractor shall pay these amounts to the Employer. The Employer shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Contract data. The Employer shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Employer shall immediately rectify the notified shortage, defect or default. In case materials are handed over, in accordance with the procedure prescribed by the Engineer, after proper measurement and accounted for, the contractor shall be solely liable for any shortage, damage, defect or default in such material, and shall indemnify the Employer until the final account of materials is made by the Contractor on completion of the work.
New Clause-4.39	**Progress Reports** Unless otherwise stated in the Special Conditions of Contract, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates. Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include: Charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 7/PCC (Nominated Subcontractors)), photographs showing the status of manufacture and of progress on the Site; for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of: (i) commencement of manufacture,

K-RIDE

	(ii) Contractor's inspections, (iii) tests, and (iv) shipment and arrival at the Site; the details described in Sub-Clause 1.10/SCC of PCC [Records of Contractor's Personnel and Equipment]; a) copies of quality assurance documents, test results and certificates of Materials; b) list of notices given under New-Clause 2.4/PCC [Employer's Claims] and notices given under Sub-Clause 4.1/SCC [Contractor's Claims]; c) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and d) Comparisons of actual and planned progress of all activities, with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.
New Clause-4.40	**Security of the Site** Unless otherwise stated in the Special Conditions of Contract: (a) the Contractor shall be responsible for keeping unauthorised persons off the Site, and (b) authorised persons shall be limited to the Contractor's Personnel and the Employer's Personnel; and to any other personnel notified to the Contractor, by the Employer or the Engineer, as authorised personnel of the Employer's other contractors on the Site.
New Clause-4.41	**Contractor's Operations on Site** The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land. During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required. Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfill obligations under the Contract.
New Clause-4.42	**Design – General Obligations:** **Drawings for OHE works:** Preliminary Drawings such as ESP/L-Section showing general dimensions & details elaborating the scope of work (not based on detailed design) will be supplied along with the Tender documents. **Design, Drawings and Specifications:** The Contractor shall Design the Sectioning Diagram, General Power Supply Diagram,

K-RIDE

	pegging plan, Layout plan, OHE profile drawings, Cross Section Drawing etc. required to perform their work and shall get the same and related working drawings approved by the Engineer. The Contractor would supply 2 sets of these drawings to the Engineer for the latter's use. The Contractor would supply 5 sets of As Erected drawings to the Engineer after final adjustment. **Shop Drawings - DELETED** Approval of Engineer of any such proposal / drawings shall not relieve the contractor of his responsibility of sufficiency of such works. It shall be the responsibility of the Contractor to promptly bring to the notice of the Engineer any error or discrepancy in the Contract documents and obtains his orders thereon. Only stated dimensions are to be taken and not those obtained from scaling drawings. In case any feature of the work is not fully described and set forth in the Drawings and Specifications, the Contractor shall forthwith apply to the Engineer for further instructions, Drawings or Specifications.
New Clause-4.43	**Fossils** All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Employer. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings. The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to: (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and (b) payment of any such Cost, which shall be included in the Contract Price. After receiving this further notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine these matters.
	5. PLANT, MATERIALS AND WORKMANSHIP.
New Clause-5.1	**Manner of Execution** The Contractor shall carry out the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works: (a) in the manner (if any) specified in the Contract, (b) in a proper workmanlike and careful manner, in accordance with recognised good practice, and (c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.
New Clause-5.2	**Samples** The Contractor shall submit the following samples of Materials, and relevant information, to the Engineer for consent prior to using the Materials in or for the Works: (a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and

K-RIDE

	(b) additional samples instructed by the Engineer as a Variation. Each sample shall be labelled as to origin and intended use in the Works.
New Clause-5.3	**Inspection** The Employer's Personnel shall at all reasonable times: (a) have full access to all parts of the Site and to all places from which natural Materials are being obtained, and (b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials. The Contractor shall give the Employer's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility. The Contractor shall give notice to the Engineer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Engineer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost. **Inspection and technical audit by the Authority** The Authority or any representative authorised by the Authority in this behalf may inspect and review the progress and quality of the construction of Works and issue appropriate directions to the Authority's Engineer and the Contractor for taking remedial action in the event the Works are not in accordance with the provisions of this Agreement. **External technical audit** At any time during construction, the Authority may appoint an external technical auditor to conduct an audit of the quality of the Works. The findings of the audit, to the extent accepted by the Authority, shall be notified to the Contractor and the Authority's Engineer for taking remedial action in accordance with this Agreement. The Contractor shall provide all assistance as may be required by the auditor in the conduct of its audit hereunder. Notwithstanding anything contained in this Clause, the external technical audit shall not affect any obligations of the Contractor or the Authority's Engineer under this Agreement. **Inspection of construction records** The Authority shall have the right to inspect the records of the Contractor relating to the Works.
New Clause-5.4	**Tests :** I. For determining that the Works conform to the Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests, at such time and frequency and in such manner as specified in this Agreement, and in accordance with Good Industry Practice for quality assurance. The Contractor shall, with due diligence, carry out all the tests in accordance with the Agreement and furnish the results thereof to the Authority's Engineer. Of the total tests for each category or type to be undertaken by the Contractor under the provisions of this Agreement and Good Industry Practice, the Authority's Engineer or his authorized representative may witness or participate in such tests conducted or cause to be conducted by the Contractor.

K-RIDE

Documentation of test records to be maintained by Contractor and Authority Engineer or his authorized representative shall scrutinize 100% Testing records of all tests conducted as per existing guidelines of Indian Railways and Indian Road Congress.

In the event that results of any tests conducted under in the above Clause establish any Defects or deficiencies in the Works, the Contractor shall carry out remedial measures and furnish a report to the Authority's Engineer in this behalf. The Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests to determine that such remedial measures have brought the Works into compliance with the Specifications and Standards, and the procedure shall be repeated until such Works conform to the Specifications and Standards. For the avoidance of doubt, the cost of such tests and the remedial measures in pursuance thereof shall be solely borne by the Contractor.

II. Examination of work before covering up

In respect of the work which the Authority's Engineer is entitled to examine, inspect, measure or test before it is covered up or put out of view or any part of the work is placed thereon, the Contractor shall give notice to the Authority's Engineer whenever any such work is ready and before it is covered up. The Authority's Engineer shall then either carry out the examination, inspection or testing without unreasonable delay, or promptly give notice to the Contractor that the Authority's Engineer does not require to do so. Provided, however, that if any work is of a continuous nature where it is not possible or prudent to keep it uncovered or incomplete, the Contractor shall notify the schedule of carrying out such work to give sufficient opportunity, not being less than 3 (three) business days' notice, to the Authority's Engineer to conduct its inspection, measurement or test while the work is continuing. Provided further that in the event the Contractor receives no response from the Authority's Engineer within a period of 3 (three) business days from the date on which the Contractor's notice hereunder is delivered to the Authority's Engineer, the Contractor shall be entitled to assume that the Authority's Engineer would not undertake the said inspection.

This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

The Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

The Engineer may, under Clause 34/PCC [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

The Engineer shall give the Contractor not less than 24 hours' notice of the Engineer's intention to attend the tests. If the Engineer does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Engineer's presence.

If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as

K-RIDE

	a result of a delay for which the Employer is responsible, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 4.1/SCC [Contractor's Claims] to: (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26.5/PCC [Extension of Time for Completion], and (b) payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with New--Clause 3.5/PCC [Determinations] to agree or determine these matters. The Contractor shall promptly forward to the Engineer duly certified reports of the tests. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Engineer has not attended the tests, he shall be deemed to have accepted the readings as accurate.
New Clause-5.5	**Rejection** If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract. If the Engineer requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Employer to incur additional costs, the Contractor shall subject to New-Clause 2.4/PCC [Employer's Claims] pay these costs to the Employer. The Contractor shall not be entitled to any extension of time on account of rectifying any Defect or retesting as specified in this Clause. No examination, inspection, measurement or testing of any Plant, Material, design or workmanship by the Authority's Engineer or its failure to convey its observations or to examine, inspect, measure or test shall relieve the Contractor of its obligations and liabilities under this Agreement in any manner nor shall the Authority be liable for the same in any manner
New Clause-5.6	**Remedial Work** Notwithstanding any previous test or certification, the Engineer may instruct the Contractor to: (a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract, (b) remove and re-execute any other work which is not in accordance with the Contract, and (c) Execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise. The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph I. If the Contractor fails to comply with the instruction, the Employer shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to New-Clause 2.4/PCC [Employer's Claims] pay to the Employer all costs arising from this failure.

K-RIDE

New Clause-5.7	**Ownership of Plant and Materials** Each item of Plant and Materials shall, to the extent consistent with the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances: (i) when it is delivered to the Site; (ii) when the Contractor is entitled to payment of the value of the Plant and Materials under Sub-Clause 26.11/PCC [Payment for Plant and Materials in Event of Suspension]. Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for: a) natural Materials obtained from outside the Site, and b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.
	6. Defect Liability
New Clause-6.1	**DEFECTS LIABILITY** **6.1 Defects Liability Period** 6.1.1 The Contractor shall be responsible for all the Defects and deficiencies, except usual wear and tear in the Railway Project or any part thereof, till the expiry of a period of 1 (one) year commencing from the completion date.
New Clause 6.2	6.2 **Remedy and rectification of Defects and deficiencies** 6.2.1 Without prejudice to the provisions of Clause 6.2.2, the Contractor shall repair or rectify all Defects and deficiencies observed by the Authority's Engineer during the Defects Liability Period within a period of 15 (fifteen) days from the date of notice issued by the Authority's Engineer in this behalf, or within such reasonable period as may be determined by the Authority's Engineer at the request of the Contractor, in accordance with Good Industry Practice. 6.2.2 During a period of 2 (two) months from the date of issuance of Completion Certificate, the Contractor shall retain sufficient staff and spares at Project for procuring prompt replacement, installation or re-installation of any defective parts.
New Clause 6.3	6.3 **Cost of remedying Defects** For the avoidance of doubt, any repair or rectification undertaken in accordance with the provisions of Clause 6.2, including any additional tests, shall be carried out by the Contractor at its own risk and cost, to the extent that such rectification or repair is attributable to: (a) the design of the Project; (b) Works, Plant, Materials or workmanship not being in accordance with this Agreement and the Specifications and Standards; (c) improper maintenance during construction of the Railway Project by the Contractor; or (d) failure by the Contractor to comply with any other obligation under this

K-RIDE

New Clause 6.4	Agreement. 6.4 **Contractor's failure to rectify Defects** In the event that the Contractor fails to repair or rectify such Defect or deficiency within the period specified in Clause 6.2, the Authority shall be entitled to get the same repaired, rectified or remedied at the Contractor's cost so as to make the Railway Project conform to the Specifications and Standards and the provisions of this Agreement. All costs consequent thereon shall, after due consultation with the Authority and the Contractor, be determined by the Authority's Engineer. The cost so determined, and an amount equal to 20% (twenty per cent) of such cost as Damages, shall be recoverable by the Authority from the Contractor and may be deducted by the Authority from any monies due to the Contractor.
New Clause-6.5	**Removal of Defective Work** If the defect or damage cannot be remedied expeditiously on the Site and the Employer gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.
New Clause-6.6	**Further Tests** If the work of remedying of any defect or damage may affect the performance of the Works, the Engineer may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 days after the defect or damage is remedied. These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under New-Clause 6.3/PCC [Cost of Remedying Defects], for the cost of the remedial work.
New Clause-6.7	**Right of Access** Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Employer's reasonable security restrictions.
New Clause-6.8	**Contractor to search cause** 6.8.1 The Authority's Engineer may instruct the Contractor to examine the cause of any Defect in the Works or part thereof before the expiry direction of the Defects Liability Period. 6.8.2 In the event any Defect identified under Clause 6.8.1 is attributable to the Contractor the Contractor shall rectify such Defect within the period specified by the Authority's Engineer and shall bear the cost of the examination and rectification of such Defect. 6.8.3 In the event such Defect is not attributable to the Contractor, the Authority's Engineer shall, after due consultation with the Authority and the Contractor, determine the costs incurred by the Contractor on such examination and notify the same to the Contractor, with a copy to the Authority, and the Contractor shall be entitled to payment of such costs by the Authority.
New Clause-6.9	**Performance Certificate** Performance of the Contractor's obligations shall not be considered to have been completed until the Employer has issued the Performance Certificate to the Contractor, stating the date

K-RIDE

	on which the Contractor completed his obligations under the Contract. The Employer shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. Only the Performance Certificate shall be deemed to constitute acceptance of the Works.
New Clause-6.10	**Unfulfilled Obligations** After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force. **Emergency defect rectification** If any defect or damage is one requiring immediate attention from safety, environmental or operational viewpoint, the Engineer has the authority to proceed with rectification in any manner suitable and deduct such sums from the Contract Price
New Clause-6.11	**Clearance of Site** Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site. If all these items have not been removed within 28 days after the Employer receives a copy of the Performance Certificate, the Employer may sell or otherwise dispose of any remaining items. The Employer shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site. Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.
New Clause-6.12	**Extension of Defects Liability Period** 6.12.1 The Defects Liability Period shall be deemed to be extended till the identified Defects under Clause 6.2 have been remedied. 6.12.2 Any Materials or Works with Defects identified under Clause 6.2 and replaced or repaired during the Defects Liability Period or the extended Defects Liability Period, as the case may be, would be further warranted for a period of twelve (12) months from the date of completion of such repair or replacement. 6.12.3 The Contractor shall upon termination or expiry of this Agreement or upon expiry of the Defects Liability Period, assign any outstanding benefit in respect of any subcontract or any warranty, to the Authority or to such other person as the Authority may direct.
	7.MEASURMENT AND EVALUATION
New Clause 7.1	**Works to be Measured** The Works shall be measured, and valued for payment, in accordance with this Clause. Whenever the Engineer requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

K-RIDE

	(a) promptly either attend or send another qualified representative to assist the Engineer in making the measurement, and (b) supply any particulars requested by the Engineer. If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Engineer shall be accepted as accurate. Except as otherwise stated in the Contract, wherever any Railway Electrification works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree the records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate. If the Contractor examines and disagrees the records, and/or does not sign them as agreed, then the Contractor shall give notice to the Engineer of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Engineer shall review the records and either confirm or vary them. If the Contractor does not so give notice to the Engineer within 14 days after being requested to examine the records, they shall be accepted as accurate.
New Clause 7.2	**Method of Measurement** Except as otherwise stated in the Contract and notwithstanding local practice: (a) measurement shall be made of the net actual quantity of each item of the Railway Electrification works and (b) the method of measurement shall be in accordance with the Price schedule or other applicable Schedules.
New Clause 7.3	**Omissions** Whenever the omission of any work form's part (or all) of a Variation, the value of which has not been agreed, if: a) the Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount; b) the omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and c) this cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Engineer accordingly, with supporting particulars. Upon receiving this notice, the Engineer shall proceed in accordance with New-Clause 3.5/PCC [Determinations] to agree or determine this cost, which shall be included in the Contract Price.
New Clause 8	**FORCE MAJEURE** If at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics, pandemics, strikes, lockouts or acts of God (hereinafter referred to 'events') provided, notice of the happening of any such event is given by either party to the other within 14 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages

K-RIDE

	against the other in respect of such non-performance of delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, provided further that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a continuous period exceeding 84 days, either party may at its option terminate the contract by giving notice to the other party. **Payment and Release in case of Optional Termination** Upon such termination, the Engineer shall determine the value of the work done and issue a Payment Certificate which shall include : a) The amounts payable for any work carried out for which a price is stated in the contract; b) The Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the contractor is liable to accept delivery; this Plant and materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, the Contractor shall place the same at the Employer's disposal; c) Other Costs or liabilities supported by necessary documentary evidence which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works as per mutually agreed programme. d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost).
New Clause-9	Defect liability period: 365 Days
New Clause-10	**Integrated testing and system commissioning** **Integrated Testing:** Tests on Completion shall also include Integrated Testing. The Contractor shall, following satisfactory completion of tests on his works, equipment, sub-systems or system, perform, at the direction of the Engineer, programme of tests to verify and confirm the compatibility and complete performance of his works, equipment, sub-systems or system with the works, equipment, sub-systems or system provided by others. **Compilation of Test Results:** The results of the Integrated Testing and Commissioning shall be compiled and evaluated by the Engineer and the Contractor **Retesting:** If the Works, or a part thereof, or a Section, fail to pass the Integrated Testing and Commissioning, the Engineer may order such failed tests to be repeated with the same terms and conditions. If such failure and retesting result from a default of the Contractor and cause the Employer to incur costs, the same shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any amount due, or to become due, to the Contractor. **Failure to Pass Test:** If the Works, or a part thereof, or a Section, fail to pass Integrated Testing and Commissioning and the Contractor in consequence proposes to make any adjustment or modification to the Works or a part thereof, or a section, the Engineer may, with the approval of the Employer, instruct the Contractor to carry out such adjustment or

K-RIDE

	modification, at his own cost and to satisfy the requirements of Integrated Testing and Commissioning within such time as the Employer / Engineer may deem to be reasonable. **Statutory Requirements:** The Contractor shall carry out all statutory tests and trials, under the supervision of the Engineer, necessary for obtaining sanction of the competent authority for opening the system for public carriage of passengers as mentioned in the Special Conditions of Contract.
New clause-11	**Conflict of Interest:** The Contractor shall carry out all statutory tests and trials, under the supervision of the Engineer, necessary for obtaining sanction of the competent authority for opening the system for public carriage of passengers as mentioned in the Special Conditions of Contract. **Conflict of Interest** The remuneration of the Tenderer shall constitute the Tenderer's sole remuneration in connection with this Contract or the Services and, the Tenderers shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations hereunder, and the Tenderers shall use their best efforts to ensure that any Personnel either of them, similarly shall not receive any such additional remuneration Neither the Tenderer nor the Personnel of either of them shall engage, either directly or indirectly, in any of the following activities: (a) during the term of this Contract, any business or professional activities in India which would conflict with the activities assigned to them under this Contract The tenderer shall not be one of the following: (i) A firm which has been engaged by the Employer to provide consulting services for the preparation related to procurement for or implementation of this project. (ii) Any association/affiliation (inclusive of parent firms) of a firm or an organization mentioned in para (i) above. (iii) A Tenderer who lends, or temporarily seconds its personnel to firms or organizations which were engaged in consulting services for the preparation related to procurement for or implementation of the project, if the personnel would be involved in any capacity on the same project. Jurisdiction of Court in case of dispute or differences arising on account of this tender: Any suit or application, arising out of any dispute or differences on account of this tender shall be filed in a competent court at Bangalore, Karnataka only and no other court or any other district of the country shall have any jurisdiction in the matter**.**
New Clause-12	**Special/Acceleration Advance** Employer at his sole discretion, may provide Interest bearing Special/Acceleration Advance based on the recommendation of the Engineer to expedite works or to bring forward the completion date(s) and on account of immediate additional mobilization to complete balance works as targeted. The maximum cumulative Special/Acceleration Advance shall be 10% of the Accepted contract amount, which shall be released in stages as and when deemed appropriate as decided by the Engineer/Employer. The advance released at a time shall not exceed 2.5% of the Accepted contract amount. The **Special Acceleration Advance shall be interest bearing and secured by BG equivalent to 105% of the advance amount.** Interest on Advance Payment: At the rate of SBI MCLR+2% interest per annum on reducing

K-RIDE

	balances. **. The Interest rate is applicable from the date of submission of IPC/ advance request by contractor.**
New Clause-13	**Deleted**
New Clause-14	**Ruling Language- English**
New Clause-15	**Language for communications- English**
New Clause-16	**Time for access to Site** Starting from the Date of Commencement, the section will be progressively handed over in 180 days.
New clause-17	**Employers' Bank details for Letter of Credit** **(a) Nodal Branch** Canara Bank, MG Road, Bangalore 560001 IFSC Code – CNRB0002636 A/c No - 0430201012110 **(b) Issuance/ reimbursing branch for LC** Shall be indicated later.
New clause-18	**18.1 Representations and warranties of the Contractor** The Contractor represents and warrants to the Authority that: a) it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby; b) it has taken all necessary corporate and other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement; c) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof; d) it is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder; e) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement; f) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and articles of association or any

K-RIDE

Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

g) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;

h) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

(i) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;

(j) no representation or warranty by it contained herein or in any other document furnished by it to the Authority or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;

(k) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the contract or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Authority in connection therewith;

(l) all information provided by the {selected bidder/ members of the Consortium/Joint Venture} in response to the tender or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and

(m) nothing contained in this Agreement shall create any contractual relationship or obligation between the Authority and any Sub-contractors, designers, consultants or agents of the Contractor.

18.2 Representations and warranties of the Employer.

The Employer represents and warrants to the Contractor that:

a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;

b) it has taken all necessary actions to authorise the execution, delivery and performance of this Agreement;

c) it has the financial standing and capacity to perform its obligations under this

K-RIDE

	Agreement; d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof; e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on the Authority's ability to perform its obligations under this Agreement; (f) it has complied with Applicable Laws in all material respects; (g) it has good and valid right to the Site. **18.3 Disclosure** In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any obligation of either Party under this Agreement.
New clause-19	**Disclaimer** 19.1 The Contractor acknowledges that prior to the execution of this Agreement, the Contractor has, after a complete and careful examination, made an independent evaluation of the Tender, Scope of the Project, Specifications and Standards, Site, local conditions, physical qualities of ground, subsoil and geology, traffic volumes, suitability and availability of access routes to the Site and all information provided by the Authority or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. Save as provided in New Clause 2.0/PCC and New Clause 18.2/PCC, the Authority makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumptions, statement or information provided by it and the Contractor confirms that it shall have no claim whatsoever against the Authority in this regard. 19.2 The Contractor acknowledges and hereby accepts to have satisfied itself as to the correctness and sufficiency of the Contract Price. 19.3 The Contractor acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 19.1/PCC above and hereby acknowledges and agrees that the Authority shall not be liable for the same in any manner whatsoever to the Contractor, or any person claiming through or under any of them, and shall not lead to any adjustment of Contract Price or Scheduled Completion Date. 19.4 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 19.1/PCC above shall not vitiate this Agreement, or render it voidable. 19.5 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 19.1/PCC above, that Party shall immediately notify the other Party, specifying the mistake or error.

K-RIDE

	19.6 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Contractor; and the Authority shall not be liable in any manner for such risks or the consequences thereof.
New Clause-20	**COMPLETION CERTIFICATE** 20.1 **Tests on completion** 20.1.1 No later than 30 (thirty) days prior to the likely completion of the Railway Project, the Contractor shall prepare and submit to the Authority's Engineer the documents required for seeking approval of the Commissioner of Railway Safety in accordance with the provisions of the Railways Opening for Public Carriage of Passenger Rules, the Indian Railway Permanent Way Manual or the Indian Railways Manual of A.C. Traction, as the case may be, and notify the Authority's Engineer of its intent to subject the Railway Project to Tests. After ensuring and procuring that the documents required to be submitted to the Commissioner for Railway Safety meet the requirements of Applicable Laws, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time of each of the Tests, and inform the Authority who may designate its representative to witness the Tests. The Contractor shall provide such assistance as the Authority's Engineer may reasonably require for conducting the Tests. 20.1.2 All Tests shall be conducted in accordance with as per relevant Schedule at the cost and expense of the Contractor; provided, however, that the trial running on railway track shall be undertaken at the cost and expense of the Authority. The Authority's Engineer shall observe, monitor and review the results of the Tests to determine compliance of the Railway Project with Specifications and Standards and if it is reasonably anticipated or determined by the Authority's Engineer during the course of any Test that the performance of the Railway Project or Section or any part thereof, does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Contractor to remedy and rectify any Defect or deficiency. Upon completion of each Test, the Authority's Engineer shall provide to the Contractor and the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, the Parties expressly agree that the Authority's Engineer may require the Contractor to carry out or cause to be carried out additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Railway Project thereof with the Specifications and Standards. 20.2 **Provisional Certificate** 20.2.1 Upon completion of Tests, the Authority's Engineer shall satisfy itself that the Tests have been successful and the Railway Project is fit for opening to traffic. Upon such determination, the Authority's Engineer shall issue to the Contractor and the Authority a certificate substantially in the form set forth in relevant Schedule (the "Provisional Certificate"). The Authority's Engineer may issue a Provisional Certificate even if certain works forming part of the Railway Project are not yet completed and in such an event, the Provisional Certificate shall have appended thereto a list of outstanding items signed jointly by the Authority's Engineer and the Contractor (the "Punch List"). For the avoidance of doubt and by way of illustration, the Punch List may include [fencing, tree plantation, rest areas]. 20.2.2 Upon issuance of the Provisional Certificate, the Authority's Engineer shall forward to the Authority (i) copies of all Test data including Test results, and (ii) the documents submitted by the Contractor for seeking approval of the Commissioner of Railway Safety

K-RIDE

in accordance with the provisions of the Railways Opening for Public Carriage of Passenger Rules, the Indian Railway Permanent Way Manual/ or the Indian Railways Manual of A.C. Traction, as the case may be, for obtaining authorisation from the Commissioner for Railway Safety.

20.2.3 The Contractor shall assist the Authority during inspection and tests to be conducted by the Commissioner of Railway Safety for determining compliance of the Railway Project with Applicable Laws and the provisions of this Agreement.

20.2.4 The Parties hereto expressly agree that the Authority's Engineer may, upon request of the Authority to this effect, issue a Provisional Certificate for part of the Railway Project and the provisions of above Clauses shall apply mutatis mutandis to such Provisional Certificate. The issuance of the provisional certificate will not absolve the contractor of its obligations to complete the remaining part of Railway Project.

20.2.5 The risk of loss or damage to any Materials, Plant or Works in the Railway Project or part thereof, as the case may be, and the care and custody thereof shall pass from the Contractor to the Authority upon issuance of Provisional Certificate for the Railway Project or part thereof.

20.3 Completion of Punch List items

All items in the Punch List shall be completed by the Contractor within 90 (ninety) days of the date of issuance of the Provisional Certificate and for any delay thereafter, other than for reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to recover Damages from the Contractor to be calculated and paid for each day of delay until all items are completed, at the lower of (a) 0.1% (zero point one per cent) of the Performance Security, and (b) 0.2% (zero point two per cent) of the cost of completing such items as estimated by the Authority's Engineer. Subject to payment of such Damages, the Contractor shall be entitled to a further period not exceeding 120 (one hundred and twenty) days for completion of the Punch List items. For the avoidance of doubt, it is agreed that if completion of any item in the Punch List is delayed for reasons attributable to the Authority or due to Force Majeure, the completion date thereof shall be determined by the Authority's Engineer in accordance with Good Industry Practice, and such completion date shall be deemed to be the date of issue of the Provisional Certificate for the purposes of Damages, if any, payable for such item under this Clause.

20.4 Completion Certificate

20.4.1 Upon completion of all items in the Punch List and issuance of authorisation by the Commissioner of Railway Safety, the Authority's Engineer shall issue forthwith to the Contractor and the Authority a completion certificate substantially in the form (the "Completion Certificate") separately for and in respect of each Provisional Certificate issued.

20.4.2 Upon receiving the Completion Certificate, the Contractor shall remove its equipment, materials, debris and temporary works from the Site within a period of 15 (fifteen) days thereof, failing which the Authority may remove or cause to be removed, such equipment, materials, debris and temporary works and recover from the Contractor an amount equal to 120% (one hundred and twenty per cent) of the actual cost of removal incurred by the Authority.

K-RIDE

	20.5 Rescheduling of Tests If the Authority's Engineer certifies to the Authority and the Contractor that it is unable to issue the Completion Certificate or Provisional Certificate, as the case may be, because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Contractor shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable.
New Clause -21	**TRAFFIC REGULATION** 21.1 Traffic regulation by the Contractor 21.1.1 The Contractor shall take all the required measures and make arrangements for the safety of any persons and vehicles on or about the Site during the construction of the Railway Project or a Section thereof in accordance with Good Industry Practice, and Applicable Laws. It shall provide, erect and maintain all such barricades, signs, markings, flags, and lights as may be required by Good Industry Practice for the safety of the traffic using any public roads or access along or across the Section under construction. 21.1.2 All works shall be carried out in a manner creating least interference to traffic passing along or across the Railway Project or a Section thereof. The Contractor shall ensure that proper passage is provided for the traffic. Where it is not possible or safe to allow traffic on the existing road or passage, a temporary diversion of proper specifications shall be constructed by the Contractor at its own cost. The Contractor shall take prior approval of the Authority's Engineer for any proposed arrangement for traffic regulation during Construction, which approval shall not be unreasonably withheld. 21.1.3 In the event any construction work is required to be executed in close proximity of an existing operating system of Railways, the Contractor shall make arrangements for the safety of such system in accordance with the provisions of the 'Compendium of Instructions on Safety at work Sites' issued by the Authority and Good Industry Practice.
New Clause -22	**LIABILITY AND INDEMNITY** **22.1 General indemnity** The Contractor will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Government owned and/or controlled entities/enterprises, (the "Authority Indemnified Persons") against any and all suits, proceedings, actions, demands and third party claims for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach by the Contractor of any of its obligations under this Agreement or from any negligence under the Agreement, including any errors or deficiencies in the design documents, or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Authority Indemnified Persons. **22.2 Indemnity by the Contractor** 22.2.1 Without limiting the generality of Clause 22.1, the Contractor shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from

K-RIDE

and against any and all loss and/or damages arising out of or with respect to:

(a) failure of the Contractor to comply with Applicable Laws and Applicable Permits;

(b) payment of taxes required to be made by the Contractor in respect of the income or other taxes of the Sub-contractors, suppliers and representatives; or

(c) non-payment of amounts due as a result of Materials or services furnished to the Contractor or any of its Sub-contractors which are payable by the Contractor or any of its Sub-contractors.

22.2.2 Without limiting the generality of the provisions of this LIABILITY AND INDEMNITY, the Contractor shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other Intellectual Property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Contractor or by the Sub-contractors in performing the Contractor's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Contractor shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Railway Project, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Contractor shall promptly make every reasonable effort to secure for the Authority a licence, at no cost to the Authority, authorising continued use of the infringing work. If the Contractor is unable to secure such licence within a reasonable time, the Contractor shall, at its own expense, and without impairing the Specifications and Standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

22.3 Notice and contest of claims

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Agreement (the "Indemnified Party") it shall notify the other Party (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

22.4 Defence of claims

22.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and

K-RIDE

expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to the full extent provided by this Agreement, the Indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.

22.4.2 If the Indemnifying Party has exercised its rights under Clause 22.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).

22.4.3 If the Indemnifying Party exercises its rights under Clause 22.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:

(a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party; or

(b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action; or

(c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or

(d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:

(i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or

(ii) that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement:

Provided that if Sub-clauses (b), (c) or (d) of this Clause 22.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

22.5 No consequential claims

Notwithstanding anything to the contrary contained in this new clause 22, the indemnities herein provided shall not include any claim or recovery in respect of any

K-RIDE

	cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement. **22.6 Survival on Termination** The provisions of this new clause 22 shall survive Termination.

K-RIDE

APPENDIX 1

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK

(The laws as current on the date of bid opening will apply)

a) **Employees Compensation Act 1923**: The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

b) **Payment of Gratuity Act 1972**: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

c) **Employees Provident Fund and Miscellaneous Provisions Act 1952 (since amended):** The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are :

(i) Pension or family pension on retirement or death, as the case may be.
(ii) Deposit linked insurance on the death in harness of the worker.
(iii) payment of P.F. accumulation on retirement/death etc.

d) **Maternity Benefit Act 1951**: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

e) **Contract Labour (Regulation & Abolition) Act 1970**: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.

f) **Minimum Wages Act 1948**: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.

g) **Payment of Wages Act 1936:** It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

h) **Equal Remuneration Act 1979**: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.

i) **Payment of Bonus Act 1965**: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.7000/-per month or the

K-RIDE

minimum wage as fixed by the appropriate government whichever is higher. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

j) **Industrial Disputes Act 1947**: The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

k) **Industrial Employment (Standing Orders) Act 1946**: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

l) **Trade Unions Act 1926:** The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.

m) **Child and Adolescent Labour (Prohibition & Regulation) Act 1986: The** Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.

n) **Inter-State Migrant Workmen's (Regulation of Employment & Conditions of Service) Act 1979:** The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.

o) **The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996:** All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

As per Central Government's Notification No.S.O.2899 dated 26.09.1996 under this act, the cess shall be levied @1% of cost of construction works which shall be deducted from each bill of the payment due to the contractor.

p) **Factories Act 1948**: The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave

K-RIDE

and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

q) **The Employees State Insurance Act, 1948 (Act No. 34 of 1948) (Provisions as extended from time to time):**An Act to provide for certain benefits to employees in case of sickness, maternity and 'employment injury' and to make provision for certain other matters in relation thereto.

--00--00--00--

K-RIDE

SECTION 8A

EMPLOYER'S REQUIREMENT – GENERAL INFORMATION AND SCOPE OF WORK

K-RIDE

INDEX

Table of Contents

Sl. No.	Description	Page No.
1	OBJECTIVE	188
2	RELEVANT DOCUMENTS	190
3	GENERAL	190
4	OBTAINING CLEARANCES/CERTIFICATES FROM AUTHORITIES	194
5	INTER COMMUNICATION FACILITIES	194
6	SITE INFORMATION	195
7	POWER AND TROFFIC BLOCK	203
8	GENERAL CLIMATIC CONDITIONS	204
9	WORK CONTENT	204
10	DAMAGE TO PROPERTY	214
11	DRAWINGS	215
12	TRAFFIC MANAGEMENT	219
13	LIGHTING AND FIRE PREVENTION	219
14	UTILITIES	220
15	BARRICADING OF SITE AND WORK AREAS	220
16	INTERFACE WORKS	220
17	RESPONSIBILITIES OF CONTRACTOR	220
18	ASSOCIATED WORKS DEEMED INCLUDED IN ITEM RATES OF PERMANENT WORKS	220
19	PENALTY FOR NON-COMPLIANCE	221
20	APPENDIX – 01	223
21	APPENDIX – 02	225
22	APPENDIX – 03	226
23	APPENDIX – 04	228
24	APPENDIX – 05	230
25	APPENDIX – 06	232
26	APPENDIX – 07	232
27	ANNEXURE	232

K-RIDE

SECTION 8A:

WORKS/EMPLOYER'S REQUIREMENTS

EPC TENDER.

GENERAL INFORMATION & SCOPE OF WORK

Brief Scope

Name of work:

"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required".

This work pertains to **Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required.**

K-RIDE

EMPLOYERS REQURIEMENT - SCOPE OF WORK

1. OBJECTIVE

The objective of the contract is :

I. Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment & Cut-in Connection etc. along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in open routes based the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, large span wire, ATD's and modifications of section insulator, slewing of equipment, Dismantling of Mast/Structure by cutting, breaking of foundations, Catenary and contact splicing, if any etc.

II. Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment etc. along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in Yards based the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, Large span wire, ATD's (including shifting on existing on Platforms) and modifications of section insulator, Slewing of equipment, Dismantling of Mast/Structure by cutting, Breaking of foundations, Catenary and contact splicing, if any etc.

III. Design, supply, erection, testing and commissioning of single phase, 25 KV, 50 Hz, AC Traction Sub Station(TSS), Switching Stations (SP/SSP) including Foundations, Structures and all ancillary equipment etc. along with (Earth work, retaining wall if required), Potential Transformers, Disconnector, Double pole Isolators, Lighting Arresters, Vacuum type Interrupters, Fencing Up rights and Internal Wiring with switch/fittings/ Equipments, Modification works(Busbars, Jumpers, Terminal connectors, Lighting Arresters, Gantry etc), Shifting of feeder wire under power block, All types of caution, warning, instruction, protection, location/Name and schematic diagram boards, earthing stations, Safety items

IV. Design, supply, erection, testing and commissioning of single-phase Auxiliary Transformer Station of different capacity complete with all structures and fittings etc. along with anti-climbing device and Dropout fuse switch & all types of caution, warning, Modification works, instruction, protection boards and location/Name boards, junction box, Dismantling of existing ATs

V. Supply, erection, testing and commissioning of Control and distribution panel for colour light signalling supply in 25 kV AC traction system of different capacity, complete with suitable cable termination box for terminating the LT cable of AT & local EB supply and outgoing cable for signal equipment at Cabin/Station building, necessary cable glands, fasteners, grouting bolts and clamps required for fixing/grouting of panel board and dismantling of existing CLS Panel.

VI. Preparation of all the drawings (including as erected) such as LOP, CSD, SED, Wiring Diagram Location plans of Switching Station, TSS feeder arrangements, Detailed Drawings of Modified Switching station & TSS etc. Preparation of Station Working Rule along with Station Working Rule Diagram. Drawings of Profiling of OHE for FOB, ROB, TUNNEL, POWER LINE CROSSINGS if any

Erection and removal of the Temporary Works and the rectification of defects by the contractor in the manner stipulated by the Contract. In full recognition of this objective, and with full acceptance of the obligations, liabilities and risks which may be involved, the Contractor shall undertake the execution of the Works. The general and specific requirements of the employer are detailed out in

K-RIDE

this document for understanding of the bidders and for mandatory compliance by the successful bidder/contractor. The Employer's requirements have been divided into different sections / sub-heads for convenience only. They do not restrict any cross-references. The Contractor shall take into account inter-relations between various parts of works. No claim shall be entertained on account of compartmental interpretations.

2. RELEVANT DOCUMENTS

The Engineer shall provide ESP, L-SECTION, Existing LOP to Contractor for the execution of works in accordance with the agreed terms and conditions of the Contract Agreement. The contractor has to do detailed site survey including the existing OHE work, in case of any discrepancy in the existing LOP K-RIDE shall not bear any responsibility and be accountable on this account. The contractor has to make necessary changes in the existing OHE to incorporate any required modification according to approved Engineering Scale Plan (ESP) and Signal Interlocking Plan (SIP) and incorporate all the details in the various drawings such as LOP, CSD, SED, Sectioning Diagram etc.

The following Documents shall be referred in conjunction with each other by the Contractor for construction work as these are mutually complimentary to each other:

a) ESP/L-Section Drawings issued by the Engineer
b) Existing LOP
c) Phase Plans of Yard
d) Employer's Requirements as part of Contract
e) Technical Specifications
f) Indian and International Standards referenced therein.
g) Indian Railway Schedule of dimensions, RDSO & CORE specification.
h) AC Traction Manual, OHE design manual Vol-I,II,III.
i) The schedules and any other documents forming part of the Contract.

The Contractor shall always seek advice from the Engineer in the event of conflicts among above cited documents. In case of conflict, Engineer's decision shall be final and binding.

3. GENERAL

The tendered work is part of the doubling with Electrification Project for Section Baiyyappanahalli Cabin A - Hosur of South Western Railway. The works are located on the alignment between Baiyyappanahalli Cabin A - Hosur

This Second line is covering following stations as mentioned below:

S.No	Station	State	Division	Railway
1.	Belandur Road	Karnataka	Bangalore	SWR
2.	Karmelaram	Karnataka	Bangalore	SWR
3.	Heelalige	Karnataka	Bangalore	SWR
4.	Uskur	Karnataka	Bangalore	SWR

K-RIDE

5.	Anekal Road	Karnataka	Bangalore	SWR
6.	Maranayakanahalli	Karnataka	Bangalore	SWR
7.	Hosur	Tamilnadu	Bangalore	SWR

The proposed work is in connection with Railway Electrification of proposed line between Baiyyappanahalli Cabin A – Hosur as provision of Doubling.

a) The proposed Railway Electrification will connect railway stations viz. Belandur Road, Karmelaram, Heelalige, Uskur, Anekal Road, Maranayakanahalli, Hosur.

b) Entire section is mostly plain and maximum ruling gradient is 1 in 100 compensated. This project site lies in the state of Karnataka and Tamil Nadu.

c) The section falls in the basic wind speed of 33 and 39 m/s classification given in IS 875-1987. Accordingly, the basic wind pressure of 73 and 105 kgf/m2 respectively is to be adopted. Increased wind pressure is also to be adopted on embankments more than 100 meters i.e., 150 kgf/m2. This conforms to the wind pressure adopted by State Electricity Boards for the design of their EHT transmission lines.

d) Electric Locomotives with chimney height not exceeding 4.232m (WAP with their pantographs in the locked down position) and diesel Locomotives with height of 4.42 (14 ft. 6 inch) would run on this section.

e) Details of Power Supply arrangements:

Locations of Sectioning and Sub- Sectioning stations are as under:

SSP -

i. Anekal Road SSP.
ii. Heelalige SSP.
iii. Karmelarm SSP
iv. Baiyyappanahalli SSP

SP -

i. Belandur SP

TSS -

i. Hosur TSS

Availability of Land:

K-RIDE

The major portion of the required land for the execution of works is available along the alignment. However, the contractor may have to take lease of the land temporarily for installation of his facilities like Site Work Shop etc. The bidders are advised to make detailed study and cater for such expenditure in the bid.

Likely handing over of formation from P-Way Section is

S.NO	Block Section	Chainage	Length of TKM(Approximately)	Likely Year & Month of Handing over of Formation.
1	Heelalige(Including yard section)-Karmelaram(Including yard section).	182/350-193/700	14.6 km	DEC-2021
2	Karmelaram-Belandur Road(Including yard section).	193/700-197/645	7.1 km	AUG-2022
3	Anekal Road(Including yard section)- Heelalige Station	171/600-182/350	12.23 km	SEP-2022
4	Maranayakana halli (Including yard section)- Anekal Road	165/400-171/600	10.12 km	DEC-2022
5	Hosur (Including yard section)-Maranayakana halli	157/300-165/400	8.7 km	JUN-2023
6	Belandur Road- BYPL A Cabin (Including CUT & CONNECTION)	197/645-205/500	9.0 km	JUL-2023

K-RIDE

Approaches to the project site:

The land acquired for the project caters for construction and operation of the proposed line. The contractor shall plan for approach roads to various sites of work conducting detailed survey and should include the cost of inputs for any such approach roads in his bid for the work.

Bidders should find out the capacity of the quarries and accordingly plan procurement of coarse/fine aggregates either from the existing quarries or establish their own quarries and crushing arrangements.

It is the responsibility of the contactor to thoroughly examine the site of work and all constraints before submitting the bid(s).

i. **DELETED**

ii. Any services affected by the works must be temporarily supported by the contractor. The work of temporarily supporting and protecting the public utility, services during execution of the works shall be deemed to be part of the contract

iii. The contractor shall take all precautions for safeguarding the environment during the course of the construction of the works. He shall abide by all laws, rules and regulations in force governing pollution and environmental protection that are applicable in the area where the works are situated. The contractor must take all necessary steps to fix specially dust nuisance during the construction of the works.

iv. The levels, measurements and other information concerning the existing site as shown on the drawings such as Engineer scale plan ESP/L Section are believed to be correct and indicative, but the contractor should verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any error or omission in the levels or strata turning out different during execution from what is shown on the drawings..

v. DELETED

vi. The preliminary works such as site clearance, barricading, trail trenching etc., wherever required, shall be taken up simultaneously along with mobilization activities.

vii. DELETED

viii. The contractor shall at all-time carryout the work on either side of existing IR tracks in a manner creating least interference to the flow of traffic. The contractor shall take prior approval of the Engineer and Indian Railways before commencing any work.

ix. DELETED

x. DELETED

xi. DELETED

xii. DELETED

xiii. DELETED

xiv. Tree cutting/Trimming shall be done by the contractor. No extra payment shall be made for this purpose. Permission for cutting/trimming will be arranged by Contractor at her/his own cost. **Contactor has to make sure that any branch of tree should be minimum 4 meters away from OHE.**

xv. DELETED

xvi. All disposable excavated material shall be collected and transported for disposal at contractors dumping yard which has to be approved by relevant authorities. Dumping yard area cannot be provided by the employer.

K-RIDE

xvii. DELETED

xviii. The CONSTRUCTION PROGRAMME AND PROJECT MONITORING is to be given as mentioned in General Conditions of Contract. The detailed programme has to be in the form of a quantified bar chart or MSP / Primavera activities from start to completion of the work.

xix. DELETED

xx. Maintaining and keeping the Existing Railway banks, structures and adjacent roads clean in the area of work and where construction machineries ply.

xxi. Measures to minimize water, air and noise pollution;

xxii. All aspects of quality assurance, including testing of materials and other components of the work, as specified and as directed;

xxiii. DELETED

xxiv. Maintenance of the completed Work during the maintenance period as directed;

xxv. Submission of completion (i.e., 'As-Erected') drawings and other related documents as specified; and

xxvi. The contractor shall not display any name-board for the works without the written permission of the engineer.

xxvii. DELETED

K-RIDE

4. OBTAINING CLEARANCES/CERTIFICATES FROM AUTHORITIES

The contractor shall arrange well in advance stage wise as may be required, submission of all the required documents and drawings for approval from other authorities and installation of the works and their inspection and obtain approval/completion certificates with respect to his work as required for use and connection of the utilities and occupation from the Statutory Authorities. The Contractor shall obtain and deliver to the Engineer, on completion of the works, the final Inspection Report and approval from the Authorities. The contractor shall prepare and submit Station working rule & diagram, EIG papers and CRS papers. Contractor shall do joint inspection of insulators, SED and Tower Car checking with Indian Railway. Contractor shall be responsible for getting EIG and CRS approvals, KRIDE shall assist the Contractor in getting the approvals.

5. INTER COMMUNICATION FACILITIES

Telephone and fax services are available at Bengaluru.

The contractor shall provide effective network communication facilities for carrying out the work during the period of contract by way of Radio trunking service working on UHF/VHF. 4 Nos of such equipment in activated condition shall exclusively be given to Engineer-in-charge at site, from the date the physical work start till 100 % physical works are completed from. The contractor is expected to provide such communication facilities for the total contractual period. The contractor shall apply to appropriate authority for allocations of radio frequencies.

6. SITE INFORMATION

a) Minor Bridge

The Site includes the following Minor bridges:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE
1	406	157/500-600	RCC pipe	1 x 0.90	RCC Box	1x1.20x1.20
2	407	157/800-900	RCC pipe	1x1.22	RCC Box	1x1.20x1.20
3	408	158/000-100	RCC pipe	1x1.22	RCC Box	1x1.20x1.20
4	409	158/300-400	RCC pipe	1x1.22	RCC Box	1x1.20x1.20
5	411	159/001	RCC PIPE	1X1.0 RCC PIPE	RCC BOX	1X1.20
6	413	160/555	2x0.90	RCC Pipe	RCC BOX	1x2.259
7	414	161/781	1 x 3.66	SLAB	RCC BOX	1X3.66X2.602
8	415	161/905	1 x 2.20	RCC SLAB	RCC BOX	1X 2.20 X3.60
9	416	162/015	1 x 0.90	PIPE	RCC BOX	1X1.20
10	417	162/121	1 X 1.825	RCC SLAB	RCC BOX	1X 1.825X1.80
11	418	162/696	1 x 3.660	RCC BOX	RCC BOX	1 x 3.660 X1.650
12	419	162/766	2 x 1.22	RCC PIPE.	RCC BOX	1 X 3.140X1.20
13	421	163/672	1 x 3.10	RCC SLAB	RCC BOX	1 X 3.0X 3.0
14	422	163/785	1 x 0.90	RCC PIPE	RCC BOX	1X 1.20 X 1.20
15	423	163/863	1 x 3.05	RCC SLAB	RCC BOX	1 x 3.05 X4.850
16	424	164/005	1 x 0.91	1 x 0.91	RCC BOX	1x1.20X1.20
17	425	164/456	1 x 4.57	RCC SLAB	RCC BOX	1X 4.57X4.27
18	426	164/769	1 X 1.80	RCC SLAB	RCC BOX	1 X 1.80X1.80
19	427	165/480	1 x 1.80	RCC SLAB	RCC BOX	1 x 1.80X1.860
20	428	165/700	1 x 3.60	RCC SLAB	RCC BOX	1 x 3.60 X2.0
21	429	166/260	1 x 3.0	RCC BOX	RCC BOX	1 x 3.0 X4.0
22	430	166/420	1 x 3.60	RCC SLAB	RCCBOX	1 x 3.60X3.20
23	431	166/500-400	RCC pipe	1x1.22	RCCBOX	1x1.20x1.20
24	432	166/700-800	1x0.90	RCC pipe	RCC Box	1x1.20x1.20
25	433	167/010	1 x 0.90	RCC PIPE	RCC Box	1x1.20x1.20
26	434	167/600-700	RCC Slab	1x1.83	RCC Box	1x2.0

K-RIDE

27	435	168/404.84	PSC Slab	1X4.50	RCC Box	1X4.50X4.50
28	436	169/280	RCC pipe	1x1.20	RCC Box	1x1.19X1.20
29	437	169/375.31	RCC pipe	1x0.70	RCC Box	1x1.20X1.20
30	438	169/408.21	PSC Slab	1x3.05	RCC Box	1x3.06X2.135
31	439	170/866	RCC Slab	1x1.80	RCC Box	1x2.1X2.15
32	440	170/899.5	RCC pipe	1x0.70	RCC Box	1x1.19X1.20
33	441	171/304.14	RCC pipe	1x1.0	RCC Box	1x1.20x1.19
34	442	171/300-400	RCC pipe	1x0.70	RCC Box	1x1.20X1.20
35	443	171/400-500	RCC pipe	1x0.80	RCC Box	1x1.20X1.20
36	444	171/477.71	RCC pipe	2x1.20	RCC Box	1x3.0X1.20
37	445	171/527.1	RCC pipe	1x1.00	RCC Box	1x1.20X1.20
38	446	171/605.3	RCC pipe	1x0.7	RCC Box	1x1.20X1.20
39	447	172/470	RCC pipe	1x0.90	RCC Box	1x1.20x1.19
40	448	172/560	PSC Slab	1x3.66	RCC Box	1x3.65X3.250
41	449	173/100	RCC pipe	1x0.91	RCC Box	1x1.20X1.20
42	450	173/210.2	PSC Slab	1x3.10	RCC Box	1x3.10X4.0
43	451	173/753.13	RCC pipe	2x1.20	RCC Box	1x3.14X1.20
44	452	174/238	RCC pipe	1x1.2	RCC Box	1x1.20X1.20
45	453	174/325.74	RCC pipe	1x1.2	RCC Box	1x1.20X1.20
46	454	175/271.17	PSC Slab	1x3.05	RCC Box	1x3.01X2.062
47	455	175/615	RCC pipe	1x1.0	RCC Box	1x1.20x1.19
48	457	176/951	RCC pipe	1x0.9	RCC Box	1x1.19X1.20
49	458	177/053.48	PSC Slab	1x4.57	RCC Box	1x4.56X3.660
50	459	177/200	RCC pipe	1X0.9	RCC Box	1x1.2X1.20
51	460	177/466.23	Slab	1x1.83	RCC Box	1x1.830X2.545
52	461	178/406.2	Slab	1x2.44	RCC Box	1x2.49X3.660
53	462	178/400-500	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
54	463	178/900-179/000	RCC Slab	1x1.83	RCC Box	1x2.0X1.20
55	464	179/100-200	RCC Slab	1x6.1	RCC Box	1X 6.1X4.50
56	465	180/200	RCC Slab	1x1.83	RCC Box	1x1.83X1.20
57	466	180/600-700	RCC Slab	1x3.66	RCC Box	1x3.66X4.20
58	468	181/400	RCC pipe	1x0.76	RCC Box	1x1.20x1.19
59	471	181/700	RCC pipe	1x0.76	RCC Box	1x1.20x1.20
60	472	181/800-900	RCC pipe	1x0.91	RCC Box	1x1.20x1.20
61	473	182/006	RCC pipe	1x1.22	RCC Box	1x1.20x1.20
62	475	182/300-400	RCC pipe	2x1.20	RCC Box	2x1.20X1.20
63	476	182/700-800	RCC Box	1x1.80	RCC BOX	1x1.79X1.20

K-RIDE

64	477	183719	RCC pipe	2x0.9	RCC Box	1x2.15X1.20
65	478	184/000-100	Rcc Pipe	1x1.20	RCC Box	1x1.20X1.20
66	479	184/100-200	PSC Slab	1x1.80	RCC Box	1x1.80X1.50
67	480	185/200-300	PSC Slab	1x3.05	RCC Box	1x3.05X3.95
68	481	185/400-500	PSC Slab	1x3.65	RCC Box	1x3.65X3.70
69	482	185/700-800	PSC Slab	1x3.03	RCC Box	1x3.03X2.80
70	483	186/400-500	Rcc Pipe	1x1.20	RCC Box	1x1.20X1.20
71	484	186/500-600	PSC Slab	1x6.10	RCC Box	1x6.1X3.560
72	485	186/600-700	RCC Pipe	1x1.0	RCC Box	1x1.20X1.20
73	486	186/700-800	RCC pipe	1x0.9	RCC Box	1x1.20X1.20
74	487	186/900 - 187/000	RCC pipe	1x0.9	RCC Box	1x1.20X1.20
75	488	187/300-400	RCC pipe	2x1.20	RCC Box	1x3.360X1.20
76	489	187/800-900	PSC Slab	1x3.66	RCC Box	1x3.66X2.16
77	490	188/200-300	RCC pipe	1x0.9	RCC Box	1x1.20X1.20
78	491	188/500-600	RCC pipe	1x1.20	RCC Box	1x1.19X1.20
79	492	188/700-800	PSC Slab	1x3.64	RCC Box	1x3.64X1.95
80	493	188/800-900	PSC Slab	1x4.57	RCC Box	1x4.60X1.90
81	494	189/100-200	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
82	495	189/500-600	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
83	496	189/800-900	PSC Slab	1x3.00	RCC Box	1x3.00X2.7
84	497	190/000-100	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
85	498	191/000-100	RCC Slab	1x3.55	RCC Box	1x3.55X3.44
86	499	191/100-200	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
87	500	191/800-900	RCC pipe	1x1.20	RCC Box	1x1.20X1.20
88	501	192/100-200	RCC pipe	1x0.9	RCC Box	1x1.50
89	504	194/000-200	RCC Slab	1x0.90	RCC Box	1x1.20X1.20
90	505	194/600-800	RCC Pipe	2 x 0.90	RCC Box	1x2.0
91	506	195/400-600	RCC Slab	1 x2.0	RCC Box	1 x1.83X3.485
92	507	196/000-200	RCC Slab	1 x 3.66	RCC Box	1 x 3.66X3.375
93	508	196/000-200	RCC Pipe	1 x 1.20	RCC Box	1x1.20X1.20
94	509	196/100-200	RCC Pipe	1 x 0.90	RCC Box	1x1.20x1.19
95	510	196/300-400	RCC Pipe	1 x 0.90	RCC Box	1X1.20X1.20
96	512	196/800-900	RCC Slab	1 x 3.66	PSC Slab	1x7.50X3.19
97	514	197/400-600	RCC Slab	1 x 6.10	RCC BOX	1x6.0X4.865
98	515	198/200-600	RCC Slab	1 x 6.10	PSC Slab	1x6.10
99	517	198/800-199000	RCC Slab	1 x 1.83	RCC Box	1x1.79

K-RIDE

100	518	199/000-200	RCC Slab	1 x 1.83	RCC Box	1x2.1
101	519	200/600-800	RCC Pipe	2 x 1.20	RCC BOx	2x1.2x1.7
102	520	201/400-600	PSC Slab	1 x 6.10	RCC Box	1x6.1
103	521	202/300-200	RCC Slab	1 x 2.44	RCC BOX	1x3.04
104	522	202/200-400	RCC Pipe	2 x 1.20	RCC BOX	1x2.1
105	523	202/600-800	RCC Pipe	2 x 1.20	RCC BOX	2 x 1.20
106	524	203/000-200	RCC Slab	1 x 3.66	RCC Box	1x4.1
107	525	203/800-20400	RCC Slab	1 x 3.66	RCC Box	1 x 3.66
108	526	204/000-200	RCC Pipe	2 x 0.90	RCC Box	1 x 1.80
109	527	204/200-400	RCC Pipe	2 x 0.75	RCC Box	1 x 1.80
110	528	204/400-600	RCC Slab	1 x 3.66	RCC Box	1 x 3.66
111	529	207/900-205/000	RCC Pipe	1 x 0.90	RCC Box	1 x 1.80
112	530	205/000-100	RCC Pipe	1 x 0.75	RCC Box	2x1.2x
113	532	205/200-400	RCC Slab	1 x 1.83	RCC Box	1 x 1.83

b) Major Bridges

The Site includes the following Major bridges:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE
1	412	159/700-800	Steel Girder	2x9.14	PSC Slab	2x9.14
2	456	175/800-900	PSC Slab	4x6.1	PSC Slab	4x6.9
3	474	182/100-200	Steel Girder	2x12.20	PSC Slab	2x12.19
4	513	197/100-200	Steel Girder	2 x 12.20	PSC Slab	2x12.2

c) OH Bridges

The Site includes the following OH bridges:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE
1	516A	198/700-800	Steel Girder	1x19.7+1x7.1	Steel Girder	1x30 + 1x19
2	518A	199/900-120000	Steel	1 x 21.20	Steel Girder	1x29

d) Road Under Bridges

The Site includes the following RUBS:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE

K-RIDE

1	409A	158/600-700	RCC Box	1x5.0	RCC Box	1x5.0
2	410	158/900-159/000	Steel Girder	1x12.20	Steel Girder	1x12.20
3	413A	161/638	RCC BOX	1x4.0x4.0	RCC BOX	1x4.0x4.0
4	420A	163/575	RCC Box	1X4.0X4.0	RCC Box	1X4.0X4.0
5	424A	164/080	RCC BOX	1x4.0x4.0	RCC BOX	1x4.0x4.0
6	427A	165/500	RCC BOX	1x5.x3.0	RCC BOX	1x5.1
7	435A	169/200-300	RCC Box	1x4x4	RCC Box	1x4x3.0
8	438A	170/635	RCC Box	1X4X4.4	RCC Box	1x4x4.39
9	451 A	173/900-174/000	RCC Box	1x5.0x4.50	RCC Box	1x5.1
10	454 A	175/300-400	RCC Box	1x4.0x4.65	RCC Box	1x4.0x4.1
11	467	181/300-400	Slab	1x3.66	RCC Box	1x3.66X4.60
12	475 A	182/300-400	RCC Box	2x6.0x5.0	RCC Box	2.x6.1
13	477A	184/000-100	RCC Box	1x4x3.60	Rcc Box	1x4.1
14	480A	185/300-400	RCC Box	1x4.0x4.0	Rcc Box	1x4.1
15	490A	188/500-600	RCC Box	1x5.0x4.3	Rcc Box	1x5.1
16	497A	190/100-200	RCC Box	1x4.0x3.6	Rcc Box	1x4.1
17	511	196/400-600	PSC slab	1 x 4.57	RCC Box	1x4.57
18	519 B	201/300-400	RCC Box	1x3.85x3.5	RCC Box	1x3
19	531	205/200-400	Steel Girder	2x14+2x7.5x5.5 RCC Box	PSC SLab	

e) Rail Over Rail:

The Site includes the following RORS:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE
1	420	163/000-200	PSC Slab	1x9.14	Box Pushing RCC Box	1x24.0
2	470	181/500-600	Steel Girder	2x15.87x5.50	U GIRDER	2x18.2
3	519 A	200/600-700	PSC Girder	1x30.0+1x28.0	PSC Girder	1x30+1x27

f) Road Over Bridges:

The Site includes the following ROBS:

Sl. No	Br. No.	Chainage	EXISTING		PROPOSED	
			TYPE	SIZE	TYPE	SIZE
1	476 A	183/460	Composite Girder	1x24	Pro . To be Retained	
2	502	192/700-800	Pipe Culvert	1x1.22	Not required	
3	516	198/600-800	PSC Girder	1x29.1+1x19.5	Pro. To be retained	

K-RIDE

4	524A	203/700-800	PSC Girder	1 x 60.00	RCC Box	Pro. To be Retained

g) **Tunnels :**

Sl. No	Block Section	Km from	Km to	Remarks
Nil	Nil	Nil	Nil	Nil

h) **Transmission Line Crossings:**

The Site includes the following Transmission Line Crossings:

S.No.	Block Section	Chainage	HT/LT (Specify KV)	OH/UG	Height above RL/ Depth below RL
1	HSRA-MNKH	159/850	220KV	OH	15.063
2	HSRA-MNKH	160/110	110KV	OH	15.467
3	AEK-HLE	175/50	66KV	OH	17.88
4	AEK-HLE	180/300	110KV	OH	14.312
5	AEK-HLE	181/140	66KV	OH	14.721
6	HLE-CRLM	190/850	400KV	OH	19.422
7	CRLM-BLRR	193/800	220KV	OH	10.448
8	CRLM-BLRR	195/450	220KV	OH	15.33
9	BLLR-BYPL	203/360	220KV	OH	11.27
10	BLLR-BYPL	203/430	220KV	OH	26.353

S.No.	Block Section	Chainage	HT/LT (Specify KV)	OH/UG
1	HSRA-AEK	158/900-159/000	11	UG
2	HSRA-AEK	170/500-600	11	UG
3	HSRA-AEK	172/200-300	11	UG
4	AEK-HLE	173/900-174/000	11	UG
5	AEK-HLE	177/000-100	11	UG
6	AEK-HLE	177/700-800	11	UG
7	AEK-HLE	177/800-900	11	UG
8	AEK-HLE	177/800-900	11	UG
9	AEK-HLE	180/200-300	11	UG
10	AEK-HLE	180/200-300	11	UG
11	AEK-HLE	180/300-400	11	UG

K-RIDE

12	AEK-HLE	181/400-500	11	UG
13	AEK-HLE	181/500-600	11	UG
14	AEK-HLE	182/400-500	11	UG(2*3*240)
15	HLE-CRLM	187/600-700	11	UG(2*3*240)
16	HLE-CRLM	187/700-800	11	UG(2*3*240)
17	HLE-CRLM	192/600-700	11	UG(2*3*240)
18	CRLM-BLRR	196/400-500	11	UG(2*3*240)
19	BLRR-BYPL	197/800-900	11	UG(2*3*240)
20	BYPL-BLRR (ISRO)	200/800-900	66	UG
21	BYPL-BLRR	200/800-900	66	UG
22	BYPL-BLRR	203/700-800	11	UG
23	BYPL-BLRR	203/700-800	66	UG
24	BYPL CABIN-BLRR	205/200-300	66	UG

i) Level Crossings:

The Site includes the following railway level crossings:

S. No.	Block Section	Chainage	LC No	TVUs	L C Classification	Remarks
1	HSRA -MNKH	160/00-100	104	2,97,250	Spl	
2	MNKH-AEK	167/500-600	109	50,270	B1	
3	MNKH-AEK	172/100-200	112	1,02,490	A	
4	AEK-HLE	177/800-900	116	73,290	A	
5	AEK-HLE	180/200-300	118	51,210	B1	
6	AEK-HLE	180/800-900	119	87,170	A	
7	AEK-HLE	185/600-700	125	56,330	A	
8	HLE-CRLM	187/100-200	126	32,380	C	
9	HLE-CRLM	187/600-700	127	49,110	A	
10	HLE-CRLM	191/600-700	130	50,560	A	
11	CRLM-BLRR	193/300-400	132	1,21,070	Spl	
12	BLRR-BYPL	197/800-900	133	1,06,120	Spl	
13	BLRR-BYPL	199/800-900	134	1,02,250	Spl	
14	BLRR-BYPL	203/100-200	136	2,42,640	Spl	

j) Railway Stations:

The Site includes the following Railway Stations as per Approved Conceptual Plan:

K-RIDE

S.No.	Station	C.L. km	Nos. of Lines	Nos. of P.F. & Length	Remarks(whether Jn. Station)
1	Hosur	158/407.00	5	2(610 m & 610 m)	
2	Maranayakanahalli	165/965.00	6	Nil	
3	Anekal Road	172/850.00	4	2(605 m & 600 m)	
4	Heelalige	182/950.00	4	3(605 m,605 m & 700 m)	
5	Uskur	188/000	4	Nil	
6	Karmelaram	193/228.00	2	2(600m & 600m)	
7	Belandur Road	196/750.00	5	2(600m & 600m)	
8.	Baiyyappanahalli Cabin A	206/500.00	2	Nil	

k) Foot Over Bridges:

The Site includes the following Foot Over Bridges

S.No.	Station	Chainage	Span/Nos. of Track	Remarks
1	Hosur	158/271.00	2 Nos of Track	
2	Anekal Road	172/921.00	3 Nos of Track	
3	Heelalige	182/910.00	3 Nos of Track	
4	Belandur Road	196/800.00	4 Nos of Track	

K-RIDE

To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Bid or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Bid as to all relevant matters, including (without limitation):

(a) the form and nature of the Site, including sub-surface conditions,
(b) the hydrological and climatic conditions,
(c) Required modification in existing system
(d) Line / Power block working
(e) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
(f) the Laws, procedures and labour practices of the Country, and
(g) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

(h) Data made available by the Employer in accordance with the preceding paragraph shall be deemed to include data listed elsewhere in the contract as open for inspection at the address stipulated in the Contract.

RESTRICTIONS IN WORKING : DELETED

7. Power & Traffic Block

It has to be noted by the Bidder that,

(i) Track Block may be granted at any time during day or night to suit convenience of traffic operations and will ordinarily be granted over a distance covered by one or two consecutive block sections. Contractor will normally be allowed to take advantage of block shadows. Normally the total durations of block on any section will be maximum of 1.5 to 2.5 hours in a day for all the tracks in the section taken together, the total of blocks on any track being limited to 1 or 2 hours in a day. Block provided may be utilized for one or more work utilizing track lorries or ladder trolleys or tower car to suit convenience of work.

Blocks will not ordinarily be given for laying the feeders except where crossing of track is involved, which will have to be laid manually in general.

(ii) Any Traffic/ power blocks, temporary speed restrictions and caution orders required in connection with execution of works by the contractor, shall be got sanctioned from the Railway authorities well in advance, through the Engineer. The Railways may sanction the same for specific sites within the overall recovery time available in the Railways time table. The contractor shall have to schedule his programme according to the convenience of the Railways. No claim from the contractor for any delay/inconvenience/loss on this account shall be entertained by the Employer/Engineer.

(iii) The contractor shall undertake the work involving Railway Track, Railway Electrification installations in co-ordination with the Engineer/ Employer and Railways in accordance with the programme of work. Where traffic/power blocks are involved, the contractor shall ensure that interruption to Railway operations, if any, is kept to the bare minimum level.

(iv) The contractor may use light ladder trolleys/ Rail cum Road vehicle on tracks for carrying out installation of dropper and adjustment of traction overhead equipment. On the existing track rail cum road vehicle will not permitted. The ladder trolleys shall not weight more than 200 kg and should be capable of beings removed from the track easily and quickly. The detailed drawing of these should be submitted within three months from the date of issue of letter of intent/acceptance of tender to enable the purchaser to obtain approval from the competent authorities for the use of such trolleys on track, if required.

(v) In order to minimize blocking the track for work, the contractor shall consider the working conditions on the sections and assess use of all alternative method of construction on a part or whole of the work. He should submit clear proposal along with financial implication, if any

K-RIDE

to the purchaser for such special method of saving of blocks that could be obtained along with reduction /redundancy of the facilities being provided by the Railway /KRIDE.

(vi) The protection required for block working i.e. flagmen, flags etc shall be provide by the contractor, Competency for the above shall, however, be given by the Railway authority. Protection of track by banner flags etc shall be done in accordance with General Rules of Indian Railway and Subsidiary Rules of the concerned Zonal Railway where work is being carried out. Contractor shall provide Safety helmet, Safety belt, retro reflective jackets and Safety shoes to their staff while working at site.

(vii) In case of theft/breakdown, the contractor shall restore the traffic in minimum possible time. Failure to do so shall attract suitable penalty.

(viii) The construction of activity will have to be planned in such a manner that they do not obstruct or interfere with the railways tracks and other utilities. Since the entire Alignment is coming in parallel to the existing IR track, the movement of trains is expected, wherever the stations / approaches to the stations may have to be planned in such a way that the erection shall be done from one end. Unless the competent authorities permit to execute such works using cranes and restricting the movement of the trains, the same may be planned to carry out during night Also, while working in the night hours' noise pollution should be kept to an acceptable level. The bidder should take all these facts into account while quoting rates and devise his methodology of working accordingly.

(ix) Where work is required to be carried out at locations adjacent to such Existing IR tracks, structures, monuments, religious structures, etc., suitable safety and protection arrangements will have to be ensured. Nothing extra will be payable on these accounts. It should also be ensured that no damage is caused to any such element and Engineer/ Employer shall be indemnified against such damage at no extra cost.

K-RIDE

8. GENERAL CLIMATIC CONDITIONS

Bengaluru is located in meridians of 12° N latitude and 77°3' E Longitude, spread over an area of 531 sqm km. located at an altitude of 900m, Bengaluru boasts of delightful weather around the year registering maximum temperature of 34° centigrade in summer and minimum temperature of 14° centigrade in winter. Bengaluru receives both the Southwest and Northeast Monsoons, getting an annual average rainfall of 760 mm, generally during the months of May to September/October. Bengaluru falls in Seismic Zone II

9. WORK CONTENT

I. The bidder shall be required to prepare the drawings such as Layout plans, Cross section drawings of foundations, structure erected drawings etc. as per extant instructions and get them approved from the Engineer/Employer. Contractor shall get soil testing done to verify soil bearing at a stretch of not more than 5 km of OHE foundations and at the location of new TSS/SWS and where ever soil strata changes. However, contractor shall verify the Soil bearing capacity as per guidelines.

II. The successful bidder shall obtain/possess a valid electrical license to handle power system installation electrical equipment, issued by any license issuing authority, in accordance with the relevant provision of Indian Electricity Rule and Amendments thereafter.

III. Supply of all materials, apparatus, plant, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop, staff, labor and the provision of proper and sufficient protective works, diversion, temporary fencing, lighting and watching required for the safety of the public and protection of works on adjoining land; first-aid equipment, accommodation and sanitation for the staff and workmen, effecting and maintenance of all insurances, the payment of all wages, salaries, provident fund, fees, royalties, duties or the other charges arising out of the erection of works and the regular clearance of rubbish, clearing up, leaving the site perfect and tidy on completion.

IV. The work content in this contract consists of, but not limited to, furnishing all labors, materials, equipment's, tools, plants and necessary machinery as required to completely execute all the works relating to Electrification of said section if and to the extent required etc. including viaduct for track supporting structures within the stations.

V. The work to be constructed and maintained as per Price Schedule, Technical Specification, relevant Codes, and specifications of RDSO, CORE drawings, best engineering practices and/or as directed by the Engineer.

9.1 The Scope of Railway Electrification Works

The scope of works shall, inter-alia, include the following but not be limited to:

a) Design, supply, system quality management, installation, testing including integrated testing and commissioning of the 25 KV AC and all associated works including preparation of all drawings.

b) Modifications to the existing OHE System in the open routes and yards based on the approved plans this includes shifting of existing PTFE, IOL, UIOL, Auxiliary transformer, CLS Panels, Gantry mast, Feeder wire mast, Anti creep wire if any etc.

c) Slewing and erection of OHE for RUB/ROB/FOB Works.

d) Presentations, PERT charts, reviews and audit support as specified in this Specification;

e) Interface management

f) Ground Investigation including, survey, design, identification of locations, soil bearing pressure and soil bearing resistivity reports and installation for foundations for trackside equipment.

g) Decommissioning, removal and/or responsible for disposal of Temporary Works;

K-RIDE

h) Prototype and Factory Acceptance Testing as per test plan.

i) Defects liability of Traction distribution 25 kV AC OHE work after commissioning as stipulated in the General Conditions (GC),

j) Assist in obtaining statutory clearances and submittal of information asked for by statutory bodies (e.g., Government of India, Ministry of Railways, Commissioner of Railway Safety, Electrical Inspector to Govt. of India (EIG) etc. as directed~~,~~ by Engineer) authorities to ensure energization of newly erected OHE, removal of existing overhead Line / conductors wherever required, Liaison with Karnataka state electricity supply

k) Provision of integration test plans for commissioning of the electrification works.

l) Modifications to existing Overhead Electrical Crossings if required by the Engineer. However, the contractor, shall ensure in advance and submit the details to the Engineer to comply the standards.

m) Water proofing of the Platform shelter where the mast has been provided under the cover over platform.

Document Submitted during Construction Stage by Contractor

1. Construction and Installation activity Plan;
2. RITES/ Factory acceptance test certificates for equipment;
3. Operation and maintenance manuals covering, installation, operation and maintenance instruction of all equipment;
4. Records and drawings of equipment to be installed;
5. Inter connection drawings;
6. Site test report of equipment;
7. Earthing and bonding plans;
8. Updated EMC control plan and certificates, Joint Inspection test report with the Indian Railways
9. Testing and commissioning documents, as required by the Engineer.
10. Drawings for Layout Plan (LOP), Cross Sectional Drawing (CSD), Structure Erection drawing (SED), sectioning diagram, General Power supply drawings, Station working rules and station working diagrams.
11. Contractor shall maintain site register, hindrance register, inspection register and to get certified from the engineer-in-charge.
12. Insurance certificate that stores has been insured
13. Labour insurance certificate.
14. Other documentation as required, by the Engineer.

K-RIDE

The drawings and documents to be submitted for each stage of construction shall be proposed to the Engineer for his approval and subsequently used for construction. The above is not an exhaustive list covering all the works to be done under this Tender. Major works only have been listed for guidance.

9.2 Some Special stipulations/features:

9.2.1 For supporting the OHE on the major bridges, the contractor shall provide special fabricated galvanized steel mast of suitable length to be erected on the bridge piers to maintain the required height the OHE. The drawing of OHE masts to be provided on bridges piers shall be got approved form the engineer/employer

9.2.2 In case the length of the bridge is more than 1 KM and anti-creep needs to be provided in the tension length of OHE, no anchoring arrangement may be possible in case the bridge is designed with concrete slabs, in such cases load calculations for OHE tensions anticipated on the masts of anti-creep terminations on the bridge piers shall be done by the contractor and submitted for approval of the Engineer prior to erection of masts and OHE.

9.3 Design & Drawings:

i. The contractor shall execute the work according to Standard Specifications of RDSO/CORE, ACTM & Traction Design Manual
ii. The design of OHE span shall be for basic wind speed of 33 and 39 m/sec and accordingly designed wind pressure 73 and 105 kg/m^2 respectively is to be adopted.
iii. The contractor shall furnish the details of soil test report for designs.
iv. Auto tensioning devices at Cross-overs, Turnouts, overlap type neutral sections and all other such locations having short tension lengths shall be provided with hexagonal tie-rods as per latest RDSO instructions
v. Porcelain and composite insulators shall be tested as per latest RDSO instructions.
vi. Normally use of Porcelain insulators only permitted. As per RDSO circular No.TI/OHE/INS/GEN/13 dated 19.06.2013 composite insulators of 1050 mm CD shall be used in stone pelting areas only with the approval of competent authority of K-Ride. The latest RDSO/ Railway Board guidelines shall be applicable, if any revised guidelines is being issued.
vii. Any calculations, designs, drawings, schedules information, data, progress charts, etc required by the Engineer in connection with the contract, shall be furnished by the contractor at his own expenses. The contractor will not be required to furnish drawings, designs and calculations etc for basic designs and employment schedule in case no modification/deviation is proposed by the contractor for particular basic design/employment schedule. In case of new developments in designs, comments on Research Designs and Standards Organization (here-in after called RDSO) basic drawings/designs/employment schedules, will be submitted by the

K-RIDE

contractor to the Engineer. If the RDSOs / drawings/ designs/equipments are not revised, contractor need not submit drawings /designs/employment schedules to the Engineer. In the event of the contractor suggesting any alternation/deviation in standard drawing, he shall submit the retracted drawings with full clarifications and justifications of the change to the Engineer. The Engineer, if convinced of the need of the alteration, shall approach RDSO for necessary approval.

viii. The contractor shall be solely responsible for the correctness of the positions, levels and dimensions of the works according to approved drawings, not withstanding that he may have been assisted by the Engineer or his men in setting out the same.

ix. If any dimension figured upon a drawing differs from that obtained by scaling the drawings the figured dimension should be normally taken as correct unless it is prima facie a mistake. But all such cases shall be brought to the notice of the Engineer and the discrepancy set right before execution.

x. All designs and drawings submitted by the contractor shall be based on a thorough study and shall be such that the contractor is satisfied about their suitability. The Engineer's approval will be based on these considerations. Not-withstanding approval communicated by the Engineer, during the progress of the contract for designs, and drawings prototype samples of components materials, and equipment after inspection of materials, after erection and adjustments to installations, the ultimate responsibility for correct design and execution of work shall rest with the contractor or unless the Engineer insists on adoption of his own designs inspite of the contractor not being agreeable to it.

xi. The contractor shall be responsible for and shall bear, and pay the costs for any alteration or works arising from any discrepancy, errors or omissions in the designs and drawings supplied by him, whether such designs and drawings have been approved by the Engineer or not.

xii. The contractor is forbidden to use any patents or registered drawings, process or patterns in fulfilling his contract without the previous consent in writing of the owner of such patent, drawing, pattern or trade mark, except where these are specified by the Engineer himself. Royalty, where payable, for the use of the patented processes, registered drawings or patterns shall be borne exclusively by the contractor, The contractor shall advise the Engineer of any proprietary rights that may exist on such process, drawings or patterns, which he may use of his own accord.

xiii. In the case of patents taken by the contractor of the drawings or patterns registered by him or of those patents, drawings, or patterns for which he holds a license, the signing of the contract automatically gives the Engineer the right to repair by himself the purchased articles covered by the patent or by any person or body chosen by him and to obtain from any sources he desires the component parts required by him in carrying out the repair work. In the event of infringement of any patent rights due to above action of the Engineer, he shall be entitled to claim damages from the contractor on the grounds of any loss of any nature, which he may suffer e.g. in the case of attachment because of counterfeiting.

K-RIDE

xiv. Minimum 120 m distance shall be available between stop signals and center line of insulated overlaps.
xv. Separate DJ close boards shall be provided for MEMU/EMU
xvi. Modified protective screen shall be provided at all FOBs/ROBs (ETI/C/0068(07/09) Rev. H) or latest.
xvii. Catenary wire shall be used in place of GI wire for anti-creep locations.
xviii. Catenary wire shall be used in Bridle wire for tramway OHE.
xix. Double eye distance rod shall be used as per RDSO drg. TI/MI/0008 Rev 0 or latest.
xx. Forged OHE fittings shall be used for Register arm book, Drop Bracket, Steady arm hook, Stay Sleeve, Register Arm Eye, Steady Arm Clamp, Mast fittings for hook insulators, 9 T Turn Buckle, 9 T Clevis, 18 mm Single Clevis & Clevis and Eye.

9.4 Provisional Acceptance

i) Immediately after completion of works/such part of works, the Contractor shall certify and advise the Engineer in writing that the works are (i) complete (ii) ready for satisfactory commercial service and (iii) ready to be handed over. He will also place at the disposal of the Engineer the required staff for checking it and putting it into operation.

ii) The test or tests as stipulated in approved Technical Specifications shall be carried out jointly by the Railway / Engineer and the contractor within a month after the receipt of the Contractor's notification as stated in sub-Para above.

iii) The provisions contained in the relevant GCC clause shall be followed for taking over of the installations.

9.5 Use of Rejected/Sub Standard Items/ Equipment

In the event of such rejection as aforesaid, the Engineer shall, without prejudice to his other rights and remedies and in particular without prejudice to his rights under the clause just preceding, be entitled to the use of the rejected/substandard equipment/item for a time reasonably sufficient to enable him to obtain other replacement. During such period, if the rejected/substandard equipment/item is used commercially the Contractor shall not be entitled to the payment on energization until such rejected equipment is rectified and/or replaced, but the Engineer shall not be entitled to claim any damages arising out of rejected/ substandard equipment/item in respect of such period.

9.6 Guarantee

(i) The Contractor shall guarantee satisfactory working of the installations erected by him, for a period of 12 (Twelve) months from the date of commercial operation or from the date of Provisional Acceptance by the Engineer whichever is earlier. The guarantee for spares (if any) should be coincident with the guarantee for erected equipment.
The provisions contained in the relevant GCC clause shall be followed for rectification of defects

(ii) During the defect liability period the Contractor shall keep available an experienced engineer and necessary equipment to attend to any defective installations resulting from defective

K-RIDE

erection and / or defects in the equipment supplied by the Contractor. The Contractor shall bear the cost of all modifications, additions or substitutions that may be considered necessary due to faulty materials, design or workmanship for the satisfactory working of the equipment. The final decision shall rest with the Engineer/Employer.

(iii) During the defect liability period the Contractor shall be liable for the replacement at site of any parts which may be found defective in the equipment whether such equipment be of his own manufacture or those of his sub-contractor whether arising from faulty design, materials, workmanship or negligence in any manner on the part of the Contractor provided always that such defective parts as are not repairable at site are promptly returned to the contractor if so required by him at his (Contractor's) own expenses. In case of type defects in Contractor's equipment and components detected during guarantee period, Contractor should replace all such items irrespective of the fact

whether all such items have failed or not. The contractor shall bear the cost of repairs carried out on his behalf by the Engineer at site. In such a case, the Contractor shall be informed about the works proposed to be carried out by the Engineer/Employer.

(iv) If it becomes necessary for the Contractor to replace or renew any defective portion of the equipment under the Para aforesaid then the provision of the said Para shall also apply to the portions of the equipment so replaced or renewed until the expiration of six months from the date of such replacement or renewal or until the end of the above-mentioned period whichever is later. Such extension shall not apply in case of defects of a minor nature, the decision of the Engineer or his nominee being final in the matter. If any defect be not remedied within a reasonable time during the aforesaid period, the Engineer may proceed to do work at the Contractor's risk and expense, but without prejudice to any other rights and remedies which the Engineer may have against the Contractor in respect of such defects or faults.

(v) The repaired or renewed parts shall be delivered and erected on site free of charge to the satisfaction of Engineer/Employer.

9.6.1 Accountably and disposal of released materials

(i) The Contractor shall liaison with the Engineer to finalize the procedure for taking over of the whole or part of the section and for disposal of the released materials.

(ii) All released materials shall be handed over to the authorized Railway Representative through the Engineer at the nearest OHE/PSI depot or places nominated by Railway/K-RIDE.

(iii) The material released on account of modifications/alterations shall be accounted by the contractor in the presence of the Engineer and the Railway Representative, except for the material permitted to be re-used by the Engineer. For this material, only erection cost shall be paid, under the appropriate item of the Schedule.

(iv) If any shortfall of released material is noticed at the time of completion of the work, the contractor shall be liable to pay for the shortfall as per the prevailing rates or the same shall be recovered from the final bill of the contractor as per the extant policy of K-RIDE.

K-RIDE

9.7 Codes and specifications

The works shall be carried out as per Standard Specifications of Indian Railways/South Western Railway/ K- RIDE (as detailed by K- RIDE), which can be obtained on payment. Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished and work performed or tested the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards which ensure an equal or higher quality than the standards and codes specified will be accepted subject to the Engineer's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Engineer at least 28 days prior to the date when the Contractor desires the Engineer's approval. In the event the Engineer determines that such proposed deviations do not ensure equal or higher quality, the Contractor shall comply with the standards specified in the documents.

All goods and materials to be incorporated in the goods be new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided for otherwise in the contract.

(a) The Standard Specifications of Indian Railways/South Western Railway/K- RIDE and the list of codes and manuals given in the annexure thereof shall be prime governing.

(b) Where there is conflict between provisions in IRS & IS specifications, provisions in IRS specifications shall prevail.

(c) Where there is no provision of specifications in IRS, provisions in IS specifications should be adopted. Where there are no provisions in IRS and IS Specifications, provisions in IRC Specifications should be followed.

(d) For items not covered in IRS/IS/IRC specifications, BS-5400 Part 1 to 10 may also be considered.

(e) The decision of Engineer shall be final and binding in the interpretation of the clause of the codes of practice and specifications of this tender and no claim whatsoever shall be entertained on this account from the Contractor.

9.8 Survey and fixing working bench marks and alignment markers

9.8.1 The work of conducting survey and fixing bench marks and alignment markers before the start of any work on this tender is included in the works covered by the present Tender.

9.9 Bench marks

9.9.1 All along the length of the proposed double line benchmarks have been set up by the Employer at intervals of about a kilometer. The details of these bench marks along with their reduced levels have

K-RIDE

been marked on the design drawings indicating the plan and 'L' section which form a part of the tender. The contractor along with the Engineer should verify the details of these bench marks in the first instance, soon after taking possession of the site. If any mistakes are detected in these details of these bench marks the same should be indicated to the Engineer. The mistakes detected should be corrected in consultation with the Engineer. These corrections should be got approved by the Engineer before starting of any other work.

9.9.2 The contractor shall then in presence of the Engineer establish working bench marks at short intervals, adequately connecting them to the reference bench marks set up by the Employer in the Project length. The working bench mark levels should be got approved from the Engineer. An up-to-date record of all bench marks including approved corrections if any, shall be maintained by the contractor and also the Engineer.

9.9.3 All levels taken for making out the longitudinal section and cross section should be related only to these working bench marks.

9.9.4 While doing the above-mentioned work, the fact that similar work will have to be done once again on the completed earth work in formation for fixing up the longitudinal levels of the installed P. Way should be kept in view.

9.10 Alignment

9.10.1 All along the length of the proposed double line at a interval of about half a kilometer, alignment reference pillars have been set up the Employer; in addition five reference pillars have been erected for each of the curves to indicate the start & end of the overall length of the curve and its circular portion and apex, by the Employer. In the design drawings showing the plan and 'L' section, which forms part of the tender, the co-ordinates for these pillars have also been given. This has been done to facilitate setting of the alignment of the proposed line. The contractor along with the Engineer should verify the details of these alignment pillars, soon after taking possession of the site. If any mistakes are detected in these details, the same should be indicated to the Engineer before starting any other work. These detected mistakes should be corrected by the Contractor in consultation with the Engineer. These corrections should be got approved from the Engineer.

9.10.2 The contractor shall then, in presence of the Engineer, establish working alignment reference markers at shorter intervals, adequately connecting them to the reference pillars set up by the Employer in the Project length. The location of these subsidiary alignment markers should be got approved from the Engineer. An up-to-date record of all alignment pillars, and corrections, if any done, shall be maintained by the contractor and also the Engineer.

9.10.3 The alignment for the double line should be related only to these working bench marks.

9.10.4 While doing the above-mentioned work, the fact that similar work will have to be done once again on the completed earth work in formation for fixing up the alignment of the installed P. Way should be kept in view.

9.10.5 After the formation has been constructed, the center line of track both in Block Sections and Yards should be re-fixed taking guidance from already set up alignment references. Similarly, the rail levels

of track both in the block sections and the yards should also be fixed with reference markers. These will be used for installation of track.

9.11 Responsibility for establishing and maintaining working bench marks and alignment markers

~~9.11.2~~9.11.1 The Engineer~~,~~ when necessary, will provide the contractor with the data necessary for setting out of the centerline. All dimensions and levels shown on the drawing or mentioned in the documents forming part of or issued under the contract shall be verified by the contractor on the site; he shall immediately inform the Engineer of any apparent errors or discrepancies noticed in such dimensions or levels. In consultation with the Engineer, the noticed mistakes should be corrected. These corrections should have the approval of the Engineer.

~~9.11.3~~9.11.2 The contractor will be entirely responsible for accurate setting out of the works and safeguarding all survey monuments, bench marks, alignment references etc. The work of setting out shall be deemed to be a part of the general works preparatory to the execution of work and no separate payment shall be made for the same.

~~9.11.4~~9.11.3 The above-mentioned points have been repeated in the respective sections dealing with specifications for different works for laying emphasis on these items.

~~9.11.5~~9.11.4 The contractor will be entirely responsible for accurate setting out of the works and safeguarding all survey monuments, bench marks, alignment references etc. The work of setting out shall be deemed to be a part of the general works preparatory to the execution of work and no separate payment shall be made for the same.

9.12 Issue of materials by Employer

9.12.1 The issue of materials by the Employer to contractor shall be governed by the following change.

9.12.1 The materials to be issued by the Employer to Contractor will be handed over at any convenient locations within Railway Land in the contract section. The contractor should collect the same from these locations and transport them to the work site as found necessary. He shall use only mechanical means for handling in all stages of work to avoid any damages.

9.13 Interfacing and Integrations of Works

9.13.1 The contractor shall take full responsibility in terms of organizing, managing, coordinating and administrating the interfacing of all components of works including all issues related to and arising out of such tasks and responsibility. The contractor shall interface with all concerned authorities and other contractors as required to complete the work satisfactorily within the stipulated period.

9.13.2 Under consideration and application of the above clause, the contractor shall and has also the obligation to liaise with the other contractors and Authorities to obtain all necessary technical information, all necessary information concerning organization of works, coordinating the works etc. which are necessary to assess, mitigate, take care of contractual obligations, risks, liabilities and whatsoever arising out of interfacing, engineering issues, organization of the works etc. The

K-RIDE

employer/engineer shall not be held liable in any way, throughout the preparation of the offer and/or execution of the works and/or maintenance period and/or defects liability period for any omissions, misunderstanding, negligence etc. arising out of interfacing, coordinating, organizing etc. of the works. The employer will not entertain any claim arising out of misunderstanding, miscommunication, omission, withholding of necessary/required information or whatsoever between the concerned contractors/Authorities concerning interfacing, organizing etc. of works. In case of any claim arising from any of the contractors, as aforesaid, referring to interfacing and/or interfacing related issues; the Employer will hold the concerned contractors liable for not taking care of their contractual obligation concerning interfacing, organizing, co-ordination etc. of the related works.

9.13.3 Needless to say, that commissioning of this double line project requires close coordination among various agencies executing the works in this section, Engineer, Employer and the Railway authorities. The contractor shall therefore plan all his works requiring interfacing, like works in mid-section, station yards, with other agencies, meticulously, in consultation and coordination with all concerned parties, in advance, for expeditious execution, without causing any delay either to his works or those of others.

9.13.4 If, in the opinion of Engineer, any delay in execution of any part of the Project requiring interfacing is attributable to the failures of the contractor to take adequate steps for smooth execution of such works, then the Engineer shall have the right to take necessary steps to organize and streamline such works, including excluding the requisite portion of work from the scope of the Contractor and getting the same executed by other agencies, at the risk and cost of the contractor.

~~11.~~10. DAMAGE TO PROPERTY

The contractor shall organize all his activities so as not to cause any damage to the property of Railway or that of other agencies or any third party. In spite of taking all precautions, in the unfortunate event of any damage to the property, then the contractor shall not only indemnify the Employer of the claims made by the affected parties but also settle the matters with the affected parties as per law. If the nature of damage is one of that affecting the train movements or causing a safety hazard to the public, then the situation will be treated as an emergency and the Engineer reserves the right to take all necessary steps as deemed necessary to restore train operations or to remove the hazardous situation or to mitigate the damage, at the risk and cost of the contractor.

~~10.3~~10.1 Survey Equipment

The contractor should provide the survey equipment and other accessories as per the instructions of Engineer as and when required. He should also provide all necessary help as required by the Engineer for checking the works, whenever required.

10.2 All power requirements for execution of works shall be arranged by the Contractor from his own resources. Subject to availability of power, the Employer/Engineer will recommend to the Railway Authorities for providing power connection. The Contractor shall bear the cost of installation and payment of necessary charges for providing such power connections as per the Terms and Conditions of the Railway.

K-RIDE

10.3 Structural elements, shape and form: **DELETED**

10.4 Stability of the elements: DELETED

10.5 Stability of the Structure: DELETED

10.6 Temporary Works

Traffic barricade with reflective tapes and other necessary traffic signages should be provided wherever required so that safety is ensured during day and night continuously.
The actual scope of temporary works shall be as specified in the concerned document and/or as specified or directed by the Engineer.

10.7 Design for Temporary Works

a) The Design should cover all the items pertaining to all temporary works, traffic diversion scheme, form work, casting and Sand core Grouting, launching scheme for Masts / Portal Structure / beams and/or transportation scheme for various structural elements and materials to be transported to and from site during construction period.

b) The Contractor shall himself formulate a practical and viable scheme for design/ fabrication of shuttering, casting, curing, testing and launching/erection of Masts / Portal Structure / beams/ and all other structures. The bidder should, along with the bid, specify the scheme that he proposes to adopt for carrying out all the works including fabrication, transportation, stacking and erection of steel structure and casting, curing, stressing, testing and launching/erection of Masts / Portal Structure / beams.

c) The contractor shall formulate the erection scheme, design the staging, including all necessary temporary structure, prepare fabrication drawings in accordance with relevant provision of applicable IRC standards and submit the same to the Engineer for approval with third party certificates. These works will be executed only after the approval has been obtained from Engineer.

11. Drawings:

11.1 Requirement.

The LOP/SED/CSD requirement shall be submitted to engineer in Advance by the contractor based on his Three-month Casting Programme.The work shall start after the approval of drawings by engineer in charge.

11.2 Errors, Omissions and Discrepancies in Specifications and Drawings:

K-RIDE

a. It shall be the responsibility of the Contractor to promptly bring to the notice of Engineer any error, omission fault, defects or discrepancy in the contract documents, specifications and drawings for the work which are discovered while reviewing the contract documents or in the process of execution of the works and obtain his orders thereon. In case any feature of the work is not fully described and set forth in the drawings and specifications, the Contractor shall forthwith apply to the Engineer for further instructions, drawings or specifications.

b. Only stated dimensions are to be taken and not those obtained from scaling drawings.

c. In case of errors, omissions, faults, defects and/or disagreement on the drawings or between the drawings and specifications the following principles shall be followed

i. As between the written description or written dimensions on the drawing and the corresponding one in the specifications, the former shall apply.
ii. The drawings on a large scale shall take precedence over those on a smaller scale; and
iii. Drawings approved from time to time shall supersede corresponding drawings previously approved.
Decision by K- RIDE shall be final on this matter.

11.2 Meaning and intent of specifications and Drawings:

If any ambiguity arises as to the meaning and intent of any portion of the specifications and drawing or as to execution or quality of any work or material, or as to the measurement of the works, the decision of the Engineer thereon shall be final subject to the appeal (within 7 days of such decision being intimated to the Contractor) to Engineer/Employer who shall have the power to correct any errors, omissions, or discrepancies in the specifications, drawings, classifications of works or materials and whose decision in the matter in dispute or doubt shall be final and conclusive.

11.3 Responsibility for Specifications, Design and Drawings

a) Specifications

RDSO/ CORE specification / other Specifications / Codes viz. IS, IRS, IRC, DSR etc. shall be procured by the Contractor from the market. One set of these specifications shall always be kept at contractor's site office for reference.

Standards guaranteeing a level of quality or performance equivalent or superior to those indicated will also be accepted. Reference to trademarks or other specific designations that is necessary to explain the nature of the products required means that any other product of equal or superior quality or performance is also acceptable, subject to prior approval of the ENGINEER to be obtained in writing for adopting the new standards which are not provided in the contract.

K-RIDE

b) Drawings for Electrification Works:

(a) Based on ESP/L-Section drawings issued by the Contractor, the Contractor shall prepare Lay out plan, Cross Section Drawing, structure erected drawings to scale as specified, indicating the required details. The Cross Section drawings shall be prepared before execution of work, after taking actual site dimensions and all existing and proposed services/structures etc.

(b) LOP/SED/CSD drawings submitted by the Contractor shall be in sufficient detail to indicate the type of Foundation, Mast, Chainage, Span, Mast Length required, the dimensions required for installation and interconnections with other equipment and materials, clearances and spaces required between various portions and any other information specifically called for.

a) All drawings shall show the following particulars in the lower right-hand corner in addition to the Contractor's name.

i. Project Title
ii. Name of the Employer
iii. Name of Consultant
iv. Contract No.
v. Title of Drawing.
vi. Scale
vii. Date of Drawing.
viii. Contractor's Drawing Number.
ix. Space for the Engineer's drawing number.
x. Name of the Engineer.
xi. Name of Review Consultant.
xii. This drawing is based on Drawing No. (s).
xiii. Further detail is given on Drawing No. (s).

K-RIDE

b) Each drawing shall carry a revision number, date of revision and brief details of revisions carried out. Whenever any revision is carried out, the revision number must be updated. The revisions carried out on the drawing shall be clearly marked by clouding and each cloud revision numbered by marking the revision number in triangle.

c) All dimensions on drawings shall be meters, unless otherwise specified.

~~e)~~d) A template with the above information shall be got approved from K-RIDE before start of the work.

~~f)~~e) All LOP/SED/CSD drawings shall be prepared on CAD using AUTO-CAD Version 2010 or higher.

Cross Section drawings & SED shall be prepared for the followings:

i. Location Number
ii. Type of Mast

iii. Mast Length
iv. Soil Pressure
v. Type of Foundation
vi. Wind Pressure
vii. Span
viii. Track Centre
ix. Nature of Soil.

~~g)~~f) Drawing Management at Site

i. The Contractor shall ensure that all drawings (to be laminated at contractors' cost) meant for further engineering, fabrication, erection and field work are issued to his personnel in a controlled manner - a proper record shall be maintained to show to whom the drawing is issued and to ensure that the latest revisions of the drawing is being followed for further work. All superseded drawings shall be promptly withdrawn from the personnel to whom they are issued and stamped "SUPERSEDED" in RED. The Contractor shall maintain a register of drawings, with their revision/issue number, as received from the Engineer and a record of their distribution to the designated personnel within their organization. A certificate to that effect along with list of drawings withdrawn during the month will be incorporated in the monthly progress report.

ii. The Contractor shall maintain at Site a set of the drawings issued by the Engineer on which changes shall be progressively marked and initialed by the Engineer so that "As-Erected" drawings can be made correctly and expeditiously at the end of their Work at Site.

iii. Revision of Approved Drawings if, at any time before the completion of the Work, changes are made necessitating revision of approved drawings. The Contractor shall make such revisions and proceed in the same manner and observe procedure for obtaining approval of the Engineer as for the approval of the original drawings.

iv. Documents by Contractor

The contractor shall submit to the Engineer, for approval, Quality Assurance plans, design calculations, material specifications for each item and system, samples, as may be called for in the Specifications or as the Engineer may reasonably require. Wherever necessary the Contractor shall provide as built dimensions to facilitate proper Layout Plan drawings being prepared for various construction detailing.

v. Number of Copies of Drawings

All drawings / Documents, Schedules etc. shall be submitted by the Contractor to the Engineer in 6 copies. Copies required in excess of' these shall also be borne by the Contractor at his own cost.

c) Design, Drawings and Specifications for Temporary/ Ancillary works.

K-RIDE

The contractor would design all the Ancillary and Temporary works Like Temporary mast supporting, temporary OHE supports, false work, etc. and will submit the same and related working drawings to the Engineer for approval, designer.

d) Completion Drawings

On completion of the work in all respects the contractor shall submit the following

i. Six sets of "As Erected Drawings" in the standard sizes of Plotter paper-A4 Roll each containing complete set of drawings for every component of work on approved scale indicating the work "As Erected ". Each set shall also contain technical literature.
ii. These drawings shall be prepared on CAD using Auto-Cad version (latest/as directed by Engineer) and shall be recorded on writable CDs and one set of these CDs shall also be submitted.
iii. **DELETED**
iv. The Contractor shall also submit one set of original "As Erected" drawings on polyester film or as directed by Engineer of quality as approved by Engineer/ Engineer's Representative.

The Certificate of Completion of Works as per the provisions in the General Conditions of Contract shall not be issued by the Engineer in the event of Contractor's failure to furnish aforesaid "As Erected " drawings for the entire works.

K-RIDE

e) Plans and Drawings for Layout of OHE Store Office and Equipment

The Contractor shall submit the following information, in triplicate, to the Engineer, for approval, within the time stipulated against each item given below:

i. A general layout plan for construction OHE Store office and equipment required for execution of work, within thirty days from the date of issue of "Letter of Acceptance".

ii. Drawings or prints showing the locations of major facilities which he proposes to put up at site, at least fourteen days prior to the commencement of the respective work; and

iii. Any other details and drawings as required under the contract, within the time as specified in the contract.

Cost of all the above activities shall be deemed to be included in the quoted rates of various items of the Price schedule and nothing extra shall be paid for on this account.

~~13.~~12. TRAFFIC MANAGEMENT : DELETED

13. LIGHTING AND FIRE PREVENTION

a) Wherever night working is carried out by Contractor, temporary lighting arrangements as per approved layout shall be provided, installed, maintained for the duration of the contract and removed after completion of work by and at the expense of the Contractor.

b) DELETED

c) Contractor shall provide and maintain adequate firefighting equipment and take adequate fire precautions for the safety of all personnel, plant, and material including temporary and permanent works and shall take action to prevent damage to or destruction by fire of trees, shrubs and grasses.

d) No extra payment will be made for the provision of temporary lighting, flashing lights and fire prevention measures and entire cost of all such work shall be deemed to have been included in the quoted rates.

14 UTILITIES : DELETED

14.1 Damage to Utilities

The contractor shall be responsible for any theft, damage and / or protection of all the existing utilities within the site of work during currency of the Contract. In case of any theft/ damage occurring to these utilities while working or otherwise, the contractor shall immediately inform the Engineer's representative as well the utility owning agency and restore the same immediately to the entire satisfaction of the utility owning agency. Any damage due to working / negligence / fault of the Contractor (decision of Engineer in this regard shall be final and binding), the same shall be repaired / made good by the Contractor at his own cost. Any damage/ compensation / penalty etc. if charged by the utility owning agency in this regard shall also be payable by the Contractor and no claim in this regard shall be entertained by the Employer. Contractor shall always keep indemnified the Engineer / Employer against this.

15.BARRICADING OF SITE AND WORK AREAS

The contractor shall provide temporary barricade during construction at site, work areas (i.e., Construction Depot, store, site office, casting yard etc.)

16.INTERFACE WORKS : DELETED

17.RESPONSIBILITIES OF CONTRACTOR : DELETED

18.ASSOCIATED WORKS DEEMED INCLUDED IN LUMPSUM COST OF OHE WORKS

18.1 **Contractor's Organization and Plant & Equipment**

K-RIDE

Project Organization Plan

1. The Contractor's Personnel shall be deployed & maintained in consultation with Engineer and as per the requirements. The Contractor's Superintendence shall be also properly deployed and maintained to carry out the construction activities as described in the relevant General Conditions of Contract (GCC) clause.

2. The Contractor shall submit an updated Project Organization Plan which includes complete project organization chart during the Construction Phase adding functions and personnel necessary to perform the Works during the Construction Phase in accordance with the conditions of the Contract. This plan shall be updated and resubmitted whenever there are changes to the staff and / or the organizational structure. The plan shall show the management structure and state clearly the duties, responsibilities and authority of key staff member.

3. The contractor shall deploy the key personnel of requisite qualification and experiences. In case Engineer instructs (in writing) the Contractor to remove a person of his work force stating the reasons, the Contractor shall ensure that the person leaves the Work Area within seven days and shall have no further connection with the Works in the Contract. The Engineer shall also seek prior consent of the Employer in this regard.

4. During the Construction Phase, the Contractor shall maintain the Design Team in his organization independent of the Construction Team to deal with temporary works design and working drawings.

5. The minimum requirements for man-power are attached as **Appendix 4 [Organization charts and key positions]** to the Employer's Requirement.

Plant and Equipment

a) The minimum Plant and equipment as shall be maintained in consultation with Engineer and as per the requirements.

b) The minimum requirements for plant & equipment are attached as **Appendix 5** [Plant and Equipment] to the Employer's Requirement.

19.PENALTY FOR NON-COMPLIANCE

Notwithstanding the provisions elsewhere in the bid documents, the Contractor shall be penalized as detailed below:

a) Correction of Defects

K-RIDE

If the Engineer determines that any item or part of it was constructed with bad workmanship and / or using ————sub-standard construction materials,

Sl. No.	Nature of Defects(Indicative only)	Penalty (Rs.)
1.	Not adhering safety guidelines as mentioned in the tender document	10,000/- each case
2.	Usage of unapproved / sub-standard materials/quality	25,000/- each case

The above said penalty is envisaged to act as deterrent against bad workmanship and usage of sub-standard construction materials by the Contractor and shall be imposed for every occurrence. These penalties are non-refundable.

K-RIDE

Appendix 01

1. PROGRAMME REQUIREMENTS

The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice [Commencement of Works]. The program shall include the physical and Financial Progress vis-à-vis program and forecast cash flow adopting Project Management Software Primavera/Sure Track/MS Project or as mutually agreed. The program must identify the milestones, interface requirements and program reporting elements. The Contractor shall supply, free of cost one set of authorized software to the Engineer and the soft copy of structured program for the project. This shall be updated every month. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include

a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,

b) each of these stages for work by each nominated Subcontractor [Nominated Subcontractors]

c) the sequence and timing of inspections and tests specified in the Contract, and

d) a supporting report which includes:

   i. a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

   ii. details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances

K-RIDE

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer within 15 days in accordance with this Sub-Clause.

K-RIDE

Appendix-02

METHOD OF MEASUREMENTS FOR RAILWAY ELECTRIFICATION WORKS

DELETED

K-RIDE

Appendix-03

Quality Assurance Materials

(a)All the equipments, materials, fittings and components will be subject to quality control programme of the manufacturer, being part of the quality Assurance programme of the Contractor. The materials may also be inspected by the Purchaser or his representative either at the manufacturer works or at the Contractor's depot. The Purchaser or his representative shall have the right to be present during all the stages of manufacture and shall be accorded free of charge all reasonable facilities for inspection and testing as well as to examine the stage inspection report of the manufacturer in addition to the quality audit which the Contractor may institute as a part of his programme so as to satisfy himself that the materials are in accordance with specifications, approved drawings and designs and Purchaser's prescribed quality Assurance Standards.

(b) **Erection**

All erection work will also be subjected to the Quality Assurance Programme including inspection by the Purchaser or his representative to ensure that the work is done in accordance with the specifications and approved drawings and designs and Purchaser's prescribed Quality Assurance Standards.

(c) **Expenses of Purchaser's Representative**

All the expenses of Purchaser's representative shall be borne by the Purchaser whether the inspected material is finally utilized in work or not drawings, specification, the contractor shall adopt a suitable quality assurance.

(d) The decision of the Purchaser or his representative shall be final in respect of acceptability or otherwise of any material, fittings, components or equipment's required for the work.

(e) **Quality Assurance Programme**

For proper control of quality and to ensure that the materials, equipment's and fittings are manufactured according to specification and the erection is according to approved instructions, ensure quality at all necessary points, whether at manufacturer's works, or in his depot or at work site as well as during erection. Such quality assurance programme shall also meet the requirement of the Purchaser's Prescribed Quality Assurance Standards. This programme of the Contractor shall generally cover the following:-

1. The organization to manage and implement the Quality Assurance programme.
2. The documentation control system: -
   i) Basic control system.
   ii) Adopted at manufacturer's works.
   iii) Adopted at the Contractor's Depot and work site.
3. Procedure adopted for :-
   i) Source Inspection.
   ii) Incoming raw material inspection.

K-RIDE

iii) Verification of materials purchased.
iv) Fabrication controls.
v) Site erection controls.

4. Inspection and Test Procedure for :-
   i) Manufacture and quality control procedure.
   ii) Field activities.
5. System of handling and storage.
6. System of quality audit.
7. System of maintenance of records.
8. For the purpose of obtaining ` On Account Payment ' the Contractor shall submit along with the invoice, the documents indicated in the Prescribed Quality Assurance Standard which should inter-alia cover the following as may be applicable in each case.
   i) Material test reports on raw materials used.
   ii) Material type and routine test report on components specification.
   iii) Inspection plan with reports of the Inspection plan check points.
   iv) Routine test report.
   v) Factory test results as required under the specification.
   vi) Quality audit report including test check report of Purchaser's representative if any.

K-RIDE

Appendix-04

ORGANISATION CHART AND KEY POSITIONS

The Contractor shall provide the following organization chart for the Works as follows:

Head office Organization Chart

One organization chart shall be provided for the Contractor head office indicating the management and staff structure, with responsible personnel/departments described for all aspects of the work.

Site organization Chart

The Contractor shall provide the proposed site organization indicating the proposed structure, staff partners and positions necessary to adequately manage and control the Works.

The Contractor shall have a competent team of Managers, Engineers, Technical staff etc. so as to complete the work satisfactorily as per various requirements of the contract.

The Key Positions not limited to and corresponding qualification and experience are as under:

Sl. No.	Designation	Qualification	Experience level (For similar works)	Min. No. Required
1	Project Manager (Team Leader)	Bachelor's Degree/Post Graduate Degree in Electrical Engineering	Minimum 10 years total experience and 5-year experience in the role of Project Manager in the execution of similar type of work	1
2	Design manager	Post Graduate Degree/ Bachelor's Degree in Electrical Engineering	Minimum 10 years total experience and 07-year experience in the role of Design Manager in the execution of similar type of work	As reqd.
3	QA & QC Supervisor	Bachelor's Degree in Civil Engineering	Minimum 5 years total experience and 2-year experience in the role of QA & QC Supervisor in the execution of similar type of work	1
4	Chief Safety and Health officer	Bachelor's Degree / Diploma in Safety Course.	Minimum 5 years total experience and 3-year experience in the role of Chief Safety and Health officer in the execution of similar type of work.	As reqd.
5	Traffic Coordinator	Diploma in Electrical / Transportation Engineering	Minimum 5 years total experience and 3-year experience in the role of Traffic Coordinator in the execution of similar type of work.	2

K-RIDE

Sl. No.	Designation	Qualification	Experience level (For similar works)	Min. No. Required
6	OHE Engineer	Bachelor's Degree/Diploma in Electrical Engineering	Minimum 3 Years for graduate & 5 years for Diploma in relevant field.	3
7	Draftsman	Bachelor's Degree/Diploma in Electrical Engineering	Minimum 1 Years for graduate & 3 years for Diploma in relevant field.	1

NOTES:

1. The above categories of key positions shall be minimum required for successful completion of the work which shall be deployed at different points of time as per the progress and requirement of work and may not be required to deploy simultaneously and continuously. However, these personnel shall be deployed at site in advance as per requirement and as directed by the Engineer and the decision of Engineer in this regard shall be final and binding.

2. The Contractor shall submit the CVs of the above key positions to Engineer for his approval within 28 days of issue of letter of Acceptance (LOA).

~~4.~~3. The contractor shall deploy resources as per the above-mentioned minimum requirement and also confirm to deploy manpower over and above the minimum numbers indicated above, if the work requires so.

~~5.~~4. The performance of project personnel deployed will be evaluated periodically by Employer during the contract period. ~~—~~In case the performance of any of the project personnel is not satisfactory, the Contractor shall replace them with better or equivalent personnel immediately as per directions of the Engineer.

~~6.~~5. Tenderer may propose any number of names of Personnel for each Key Position. Any of the proposed personnel as approved by the Employer for each key position have to be mandatorily deployed in case of award of work.

~~7.~~6. Non-deployment of the Key personnel sl.no 1,2,4,5 & 6 leads to imposition of Penalty of Rs 25,000 /- Per Key personnel per month.

~~8.~~7. The proposed Key personnel are not to be changed till the completion of the work. Under emergent circumstances, in case they are required to be changed, the new incumbent should have similar or better experience and qualification than as required above. These changes are permitted only with the approval of the Employer.

~~9.~~8. All Key Personnel must be permanently stationed at Bangalore till the completion of the work.

~~10.~~9. The penalties imposed are non-refundable.

K-RIDE

Appendix-05

PLANT AND EQUIPMENT

Sl No.	Type of Equipment required for the work	Proposed to be Deployed for execution of project (Minimum)	Remarks
1.	Tirfor 3/1.5 T Cap	6 Nos	
2.	Pull lift 3/1.5 T Cap	6 Nos	
3.	Come along clamp	6 Nos	
4.	Chain Pulley Block	10 Nos	
5.	"D" Shackle	20 No.	
6.	Tripod	3 No.	
7.	Derrick	3 No.	
8.	Mandrill (50cm dia.)	6 No.	
9.	Ladder Extension Type (20' x 36')	3 No.	
10.	Ladder trolly P/F type	3 No.	
11.	Drum lifting jacks	2 Sets	
12.	Gas cutter	2 No.	
13.	Grinder	1 No.	
14.	Power Hacksaw	2 No.	
15.	Dropper making jig & Fixture	3 No.	
16.	Megger 2.5 KV	2 No.	
17	Megger 5 KV	2 No.	
18.	Earth Tester	2 No.	
19.	Bonding Jig	3 No.	
20.	Vibrator for foundations	2 No.	
21.	Emergency lighting arrangement for night work.	1 Set	
22	Manila rope	10 m x 10 Nos.	
23	Spanners	8 Sets	

K-RIDE

24.	Hammers 1.5 Lbs.	2 No.	
25.	Hammers 3.0 Lbs	2 No.	
26.	Discharge rod	10 No.	
27.	D O operating rod	2 No.	
28.	Rail Jumper	10 No.	
29.	Aero plane Jack	5 No.	
30.	Mixer machine	2 nos	
31	Drilling machine	3 Nos	

NOTES:

1. The above type of plant and equipment (but not limited to) may be required for execution of the work. The contractor shall submit the details of plant & equipment to be deployed in the above table within 28 days of issue of LOA to the Engineer for approval.
2. Plant and Equipment indicated above is minimum to be deployed at appropriate stage of the work. However, depending on the requirement to complete the work in the stipulated completion period, the tenderer should deploy additional machinery as circumstances warrant at no extra cost.
3. Plant and equipment to be mobilized for the work shall be in good serviceable condition.

K-RIDE

Appendix-06

OFFICE ACCOMMODATION, EQUIPMENT AND TRANSPORT

DELETED

APPENDIX 7: DOCUMENT SUBMISSION AND RESPONSE –PROCEDURE

DELETED

ANNEXURE 1

The Contractor shall prepare and submit his detailed Programme of Work so as to achieve key dates of various activities on time. The Contractor shall complete the work in a phased manner by fixing priorities to different stretches of work to give access to the other interfacing contractors as per the requirement of project from time to time and as per the key dates (mile stones) indicated below: **DELETED**

K-RIDE

SECTION-8B

TECHNICAL SPECIFICATIONS

Section 8B
TECHNICAL SPECIFICATIONS

Sl. No.	Section No.	Description	Page No.
1	CHAPTER- 01	GENERAL	235-240
2	CHAPTER- 02	FOUNDATION	241-250
3	CHAPTER- 03	STRUCTURES	251-263
4	CHAPTER- 04	EQUIPMENTS,COMPONENTS AND MATERIALS	264-278
5	CHAPTER- 05	DESIGNS AND DRAWINGS	279-299
6	CHAPTER- 06	ERECTION AND INSTALLATION OF EQUIPMENT	300-317
7	CHAPTER- 07	INSPECTIONS AND TESTING	318-322
8	CHAPTER- 08	SAFETY AND SECURITY AT WORK	323-341
9	CHAPTER- 09	ANNEXURES	342-365

K-RIDE

CHAPTER – 1

GENERAL

K-RIDE

1. GENERAL

1.1 General

1.1.1 These Specifications contained herein shall be read in conjunction with other tender documents.

1.1.2 The Work shall be carried out in accordance with the "Good for Construction" drawings and designs as would be submitted by the contractor and approved by the Engineer duly signed and stamped or issued to the Contractor by the Engineer duly signed and stamped by him as the case may be. The Contractor shall not take cognisance of any drawings, designs, specifications, etc. not bearing Engineer's signature and stamp. Similarly, the Contractor shall not take cognisance of instructions given by any other Authority except the instructions given by the Engineer in writing.

1.1.3 **Measurements and arithmetic conventions:** All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.1.4 Absence of terms such as providing, supplying, laying, installing, fixing etc. in the descriptions does not even remotely suggest that the Contractor is absolved of such providing, supplying etc. unless an explicit stipulation is made in this contract.

1.1.5 The specifications have been divided into different sections / sub-heads for convenience only. They do not restrict any cross-references. The Contractor shall take into account inter-relations between various parts of works/trades. No claim shall be entertained on the basis of compartmental interpretations.

1.1.6 The classification of various items of works for purposes of measurements and payments shall be as per Schedule.

1.1.7 Reference to the Standard Codes of Practice. **DELETED**

1.1.8 Other Publications: DELETED

1.1.9 Contractor to Provide

Note: All the equipments and apparatus shall be calibrated at the time of setting up and at specified intervals by NABL accredited agency.

K-RIDE

1.1.10 Quality Assurance & Quality Control

1. The work shall conform to high standards of design and workmanship, shall be structurally sound and aesthetically pleasing. The Contractor shall conform to the Quality standards prescribed, which shall form the backbone for the Quality Assurance and Quality Control system.
2. At the site, the Contractor shall arrange the materials, their stacking/storage in as per proper manner to ensure the quality. The Contractor shall provide all the necessary equipment and qualified manpower to test the quality of materials, assemblies etc., as directed by the Engineer. The tests shall be conducted at specified intervals and the results of tests properly documented. The cost of all such testing shall be included in the quoted rates and nothing extra shall be paid for in this regard. In addition, the Contractor shall keep appropriate tools and equipment for checking alignments, levels, slopes and evenness of the surfaces.

3. (a) The Engineer shall be free to carry out such tests as may be decided by him at his sole discretion, from time to time, in addition to those specified in this document as per provisions of General Conditions of Contract. The Contractor shall provide the samples and labour for collecting the samples. Nothing extra shall be payable to the Contractor for samples, or for the collection of the samples. The test shall be conducted at the Site laboratory that may be established by the Contractor or at any other Standard Laboratory having NABL certification.

   (b) The test shall be conducted at the Site laboratory that may (to) be established by the Contractor at his cost or at any other Standard Laboratory selected by the Engineer.

   (c)The Contractor shall transport the samples to the laboratory for which nothing extra shall be payable. In the event of the Contractor failing to arrange transportation of the samples in proper time the Engineer shall have them transported and recover two times the actual cost from the Contractor's bills.

   (d) All testing shall be performed in the presence of Engineer or his authorised representative. Testing may be witnessed by the Contractor or his authorised representative if permitted by the Test House. Whether witnessed by the Contractor or not, the test results shall be binding on the Contractor.

4. The Engineer shall have the right at all times to inspect all operations including the sources of materials, procurement, its transportation, layout and storage of materials, all equipment including the concrete batching and mixing equipment, and the quality control system. Such an inspection shall be arranged and the Engineer's approval obtained prior to starting of the particular item of work. This shall however, not relieve the Contractor of his responsibilities.

K-RIDE

5. All materials which do not conform to these specifications shall be rejected. In the event of contractor not being able to arrange the material conforming to these specifications or in the event of failure of the contractor to get the sources approved within the agreed schedule submitted by contractor, the Engineer shall have the powers to cause the Contractors to purchase and use such materials from any particular source, as may, in the Engineer's opinion, be necessary for the proper execution of work.

1.1.11 Dimensions

1. Figured dimensions on drawings shall only be followed and drawings to a large scale shall take precedence over those to a smaller scale. Special dimensions or directions in the specifications shall supersede all others. All dimensions shall be checked on site prior to execution.

2. The dimensions where stated do not allow for waste, laps, joints, etc. but the Contractor shall provide at his own cost sufficient labour and materials to cover such waste, laps, joints, etc.

3. The levels, measurements and other information concerning the existing site as shown on the drawings are believed to be correct, but the Contractor should verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any errors or omissions in the levels or the description of the ground levels or strata turning out different from what was expected or shown on the drawings.

K-RIDE

1.1.12 Setting out of Works DELETED

1.1.13 Materials

1. Source of Materials

It shall be the responsibility of the contractor to procure all the materials required for construction and completion of the contract. The contractor shall indicate in writing the source of materials well in advance to the Engineer, after the award of the work and get it approved from the Engineer before commencing the work. If the material from any source is found to be unacceptable at any time, it shall be rejected by the Engineer.

2. Quality

All materials used in the works shall be of the best quality of their respective kinds as specified herein, obtained from sources and suppliers approved by the RDSO/CORE and shall comply strictly with the tests prescribed hereafter, or where tests are not laid down in the specifications, with the requirements of the latest issues of the relevant Indian & other Standards.

3. Sampling and Testing

All materials used in the works shall be subjected to inspection and test in addition to test certificates.

Samples provided to the Engineer for their retention are to be labeled in boxes suitable for storage.

Materials shall be tested before leaving the manufacturer's premises, quarry or source,.Materials shall also be tested at site and they may be rejected if not found suitable or in accordance with the specifications, notwithstanding the results of the tests at the manufacturer's works or elsewhere or test certificates or any approval given earlier.

The contractor will bear all expenses for sampling and testing, whether at the manufacturer's premises at source, at site or at any testing laboratory or institution as directed by the Engineer subject to the provisions of No extra payment shall be made on this account.

4. Dispatch of materials

Materials shall not be dispatched from the manufacturer's works to the site without written authority from the Engineer.

5. Test certificates

All manufacturer's certificates of test, proof sheets, etc showing that the materials have been tested in accordance with the requirement of these specifications and of the appropriate Indian Standards are to be supplied free of charge to the Engineer.

6. Rejection

Any materials that have not been found to conform to the specifications or otherwise not acceptable to the Engineer will be rejected forthwith and shall be removed from the site by the Contractor at his own cost within three days or as instructed by the Engineer.

1.1.14 Storing of Materials at site

All materials used in the works shall be stored on racks, supports, in bins, silos, go-downs, under cover etc. as appropriate to prevent deterioration or damage from any cause whatsoever to the entire satisfaction of the Engineer.

The storage of materials shall be in accordance with IS 4082 "Recommendation on stacking and storage or construction materials on site" and as per IS 7969 "Safety code for handling and storage of building materials".

K-RIDE

The materials shall be stored in a proper manner at places at site approved by the Engineer. Should the place, where material is stored by the Contractor, be required by the Employer for any other purpose, the Contractor shall forthwith remove the material from that place at his own cost and clear the place for the use of the Employer within the time as communicated by the Engineer and at no extra cost to the Employer.

1.1.15 Water

1. Water from approved source:

Potable water only shall be used for the works. Contractor shall have his own source of water duly tested and approved by Engineer. The water shall be free from any deleterious matter in solution or in suspension and be obtained from an approved source. The quality of water shall conform to IS 456.

2. Storage:

The Contractor shall make his own arrangements for storing water, if necessary, in drums or tanks or cisterns, to the approval of the Engineer. Care shall be exercised to see that water is not contaminated in any way.

3. Testing:

Before starting any concreting work and wherever the source of water changes, the water shall be tested for its chemical and other impurities to ascertain its suitability for use in concrete for approval of the Engineer. No water shall be used until tested and found satisfactory. Cost of all such Tests shall be borne by the contractor.

K-RIDE

1.1.16 Workmanship

1. All works shall be true to level, plumb and square and the corners, edges and rises in all cases shall be unbroken and neat.

2. Any work not to the satisfaction of the Engineer or his representative will be rejected and the same shall be rectified, or removed and replaced with work of the required standard of workmanship at no extra cost.

1.1.17 Load Testing On Completed Structures DELETED

CHAPTER – 2
FOUNDATIONS

K-RIDE

DESIGN OF FOUNDATION:

(a) SOIL PRESSURE

For design of foundations for traction structures carrying overhead equipment, the Contractor shall determine the type and allowable bearing pressure of soil at suitable intervals and adopt the type and size of foundations, suitable for particular locations with the help of the approved employment schedules. In cases of particularly weak soil, the bearing pressure may have to be determined for each location where so advised by the Purchaser. Soil bearing pressure, using SPT (falling weight equipment) should be determined generally for every 5 kilometer interval or less wherever change of soil is encountered. In general IS code of practice (IS 6403:1981) should be followed. In addition, at every 250 m the soil bearing pressure should be determined by dial gauge type penetrometers. Dial gauge type penetrometers shall also be made available by the Contractor at each foundation site so as to facilitate cross check at each individual location.

For design of foundation for masts and gantries at switching stations and booster stations, the Contractor shall determine the type and allowable bearing pressure of soil at the locations of such stations and shall prepare designs for the foundations suitable for each location to suit the bearing pressure of the soil in consultation with the Purchaser.

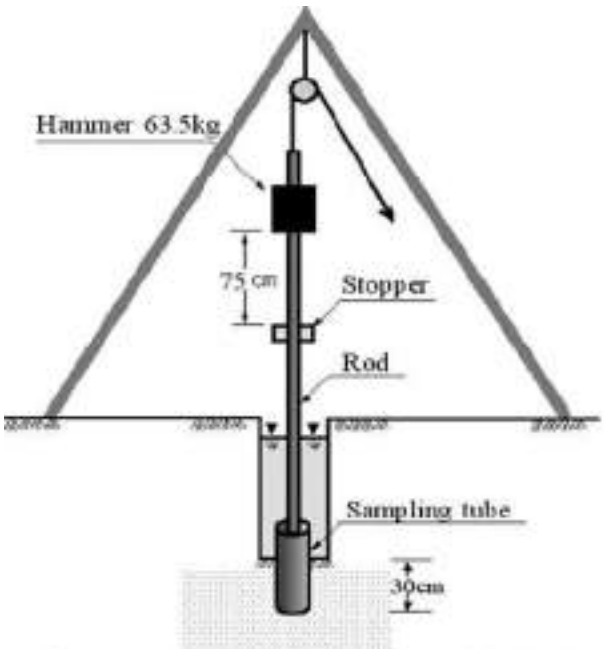
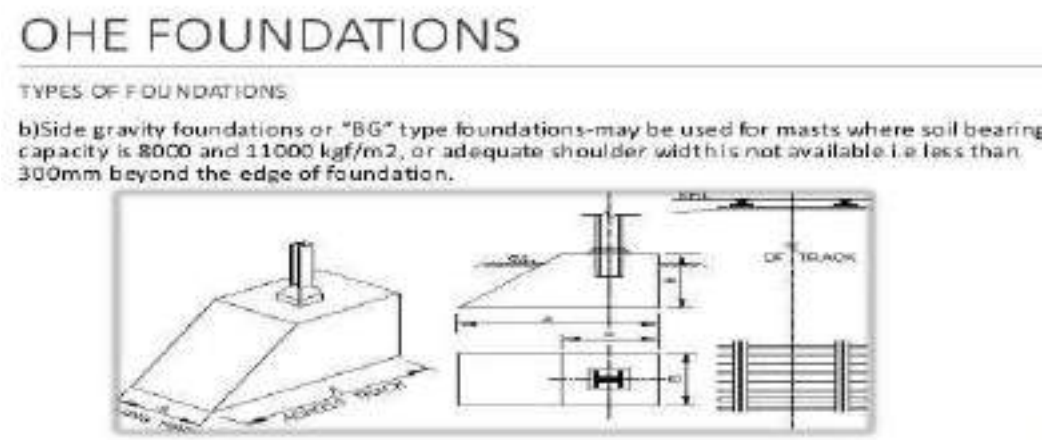


Figure 3: Standard Penetration Test (SPT)

(b) STRUCTURES CARRYING OVER-HEAD EQUIPMENT

Foundations for traction structures carrying overhead equipment shall be either of the side bearing side gravity or new pure gravity type according to their location, formation of the sub-grade and bearing pressure of the soil. In new filled up soil or cinder formation, pure gravity sand-filled core foundations, or foundations

with cast-in-site reinforced concrete piles, or cantilever types foundation with counter-weights or guyed foundations may be adopted.



(c) ON BRIDGE PIERS

Complete design of foundations for traction structure on bridges to suit different locations and local conditions will be furnished by the Purchaser.

(d) MASTS & FABRICATED STRUCTURES AT SWITCHING STATIONS/TSS

Foundations for the masts of gantries at switching stations and TSS shall be of the pure gravity type, the base of which shall rest on consolidated soil.

e) FENCING POSTS

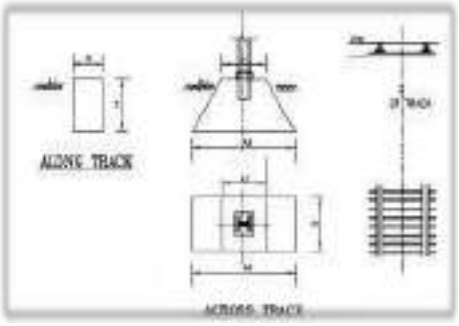
Foundation for fencing posts shall rest on consolidated soil if the depth of unconsolidated soil is less than 1.5 m below the datum level and shall be rectangular parallel piped in shape. If the depth of unconsolidated soil is more than 1.5 m the foundation block shall rest on reinforced concrete piles cast-in-site or reinforced concrete foundation may be adopted as desired by the Purchaser.

(f) TYPICAL DESIGN

Typical design and drawings of side bearing and new pure gravity and side gravity type foundations are included in the drawings listed in Annexure-1. Employment schedules for standard foundations for traction structures for various locations and types are also included in the drawings listed in Annexure-1, Part E.

TYPES OF FOUNDATIONS

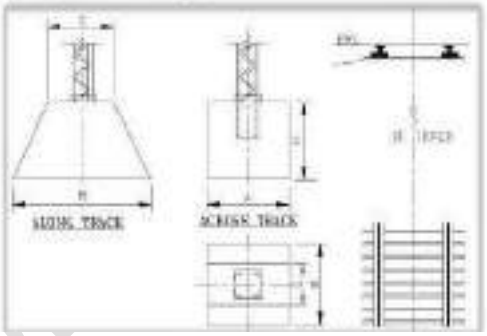
d)New pure gravity foundations or "MG" type foundations may be used for masts where soil bearing capacity is 5400, 8800 and 11000 kgf/m2 or where adequate shoulder width is not available. In such cases, it should be ensured that foundation is not exposed.



OHE FOUNDATIONS

TYPES OF FOUNDATIONS

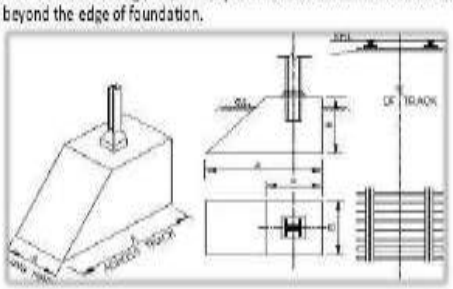
d)Pure gravity foundations or "P" type foundations - are used for portals and are designed for soil bearing capacity of 8000 and 11000 kgf/m2



OHE FOUNDATIONS

TYPES OF FOUNDATIONS

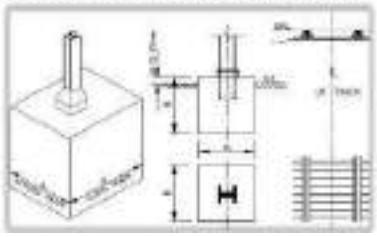
b)Side gravity foundations or "BG" type foundations-may be used for masts where soil bearing capacity is 8000 and 11000 kgf/m2, or adequate shoulder width is not available i.e less than 300mm beyond the edge of foundation.



OHE FOUNDATIONS

TYPES OF FOUNDATIONS

a)Side bearing foundations or "B" type foundations - are used for masts where earth is normal and fully consolidated, the soil bearing capacity is 11,000 or 21,600 kgf/m2 and 300mm wide shoulder is available beyond the outer edge on the foundation as banks.



(g) SPECIAL FOUNDATIONS

In the case of foundations at locations not covered by the employment schedules furnished by the Purchaser, the Contractor shall prepare special designs and furnish full design calculations justifying the choice of the type of foundations for such locations. In black cotton soil especially pile foundations of under reamed type as per RDSO'S standard designs (Reference RDSO'S Drawings No. ETI/C/0062 MOD-B or latest) or any other approved design may have to be cast at limited locations for trial purpose. The tenderer may furnish the technical details of alternative design, construction methods proposed to be adopted and their previous background/experience if any.

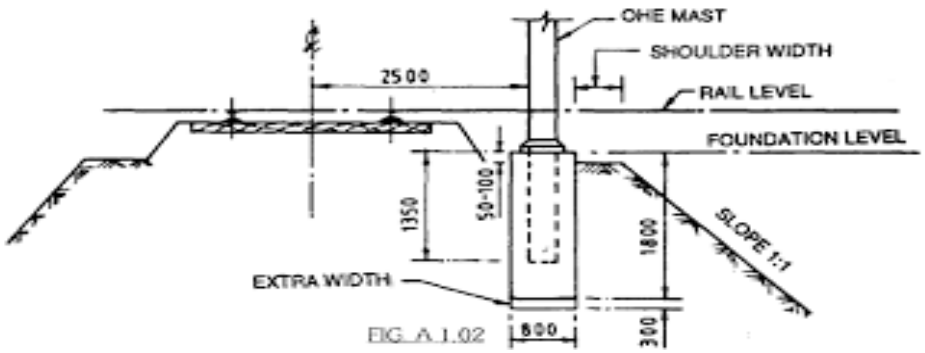


FIG. A.1.02

(i) **Foundation in Contact/Buried under Non-aggressive Soil/Ground Water :**

The Foundation Concrete shall be of M-15 Grade. The Core concrete shall be M-20 Grade. It shall be adopted in the areas where concrete is in contact/buried under non-aggressive soil/Ground water as per IS: 456-2000.

(iii) **Foundation in Coastal Areas:**

The Foundation Concrete shall be of M-20 Grade. The Core concrete shall also be M-20 Grade.
It shall be followed in the areas where concrete is exposed to Coastal Environment as per IS: 456-2000.

(iv) For casting the OHE foundation in Soft Rock and Hard Rock, RDSO drawings mentioned at SI. No. - 123 of LIST OF STANDARD DRAWINGS AND SPECIFICATIONS (ANNEXURE - 1 of Part E) of tender Document.

The decision of the Purchaser with regard to feasibility and suitability of adoption of the alternative design for each type of foundation will be final.

(h) EQUIPMENT PEDESTALS

Pedestals for interrupters and L.T. supply transformers where required, shall be of mass concrete with the base resting on consolidated soil. Pedestal for Power transformers shall be made of mass concrete with base resting on consolidated soil. Foundation for circuit breakers supported on steel structures and for other items of equipments such as isolator, instruments transformers, bus bar support insulators etc. shall be of the pure gravity type, the base of which shall rest on consolidated soil, and shall be left with core holes into which the legs of the supporting structures shall be suitably fixed by grouting.

(j) CABLE TRENCHES

The cable trench shall rest on original ground if the depth of unconsolidated soil is less than 0.5 m. If the depth of the unconsolidated soil is more than 0.5 m., the cable trench shall be made of reinforced cement concrete of approved design supported at suitable intervals on concrete pillars.

BEARING PRESSURE:

(a) GUIDING INFORMATION

Subject to above para, the following allowable bearing pressures may generally be expected for various kinds of soil. The information is given for general guidance only.

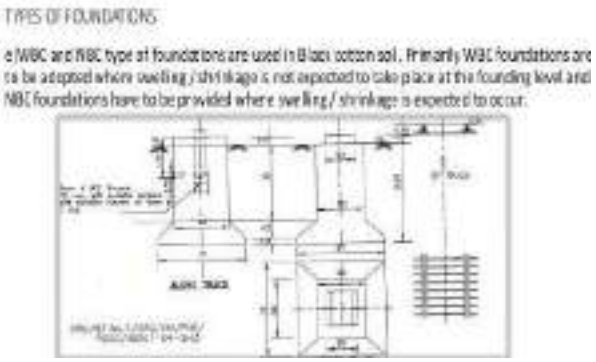
(i) Average good soil in banks and cutting ... 11,000 kg/sq.m.

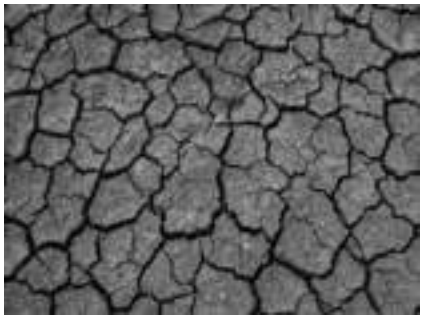
(ii) Moorum soil in cutting ... 22,000 kg/sq.m

(iii) New banks & bad soils in banks and cutting ... 5,500 kg/sq.m.

(iv) Black cotton soil-pure gravity foundation shall normally be adopted. However, under reamed pile foundations may be adopted at the option of the Purchaser in limited locations for trial purpose. In the case of dry black cotton soil, the soil should be subjected to a bearing pressure as close as possible but not exceeding 16,500 kg/sq.m. the depth of the foundation block being not less than 2.8m. In the case of wet black cotton soil, the soil should be subjected to a bearing pressure as close as possible but not exceeding 8,000 kg/sq.m.

In the case of hard rock, a hole should be blasted in the rock, or by means of any other drilling and pneumatic method and the mast sealed into it with concrete.





CONCRETE:

Concrete for foundations shall be nominal mix / Ready mix of grade M 15 obtained by mixing cement, coarse aggregate, fine aggregate and water in accordance with proportions given vide Table 3 of IS:456 (Latest version as indicated in Annexure-1) reproduced below. For grouting, muffing, embedding of structures in foundations and for cable trenches at switching stations, nominal mix concrete M 20 obtained by mixing materials in proportions as indicated in Table-3 of IS:456 (Latest version as indicated in Annexure-1) shall be used. Volume batching may be adopted vide clause 9.2.2. of IS:456 (Latest version as indicated in Annexure-1) reproduced below :-

IS: 456-2000 (latest version)

TABLE 3: PROPORTIONS FOR NOMINAL MIX / READY MIX CONCRETE

(Clause 9.3 and 9.3.1)

Grade of concrete	Total quantity of dry aggregate by mass per 50 kg of cement, to be taken as the sum of the individual masses of the fine and coarse aggregates kg max.	Proportion of fine aggregate of coarse aggregate (by mass)	Quantity of water per 50 kg of cement (max. Liters)
1	2	3	4
M 5	800	Generally 1:2 but subject to an upper limit of 1 : 1.5 and a lower limit of 1 : 2.5	60
M 7.5	625		45
M 10	480		34
M 15	350		32
M 20	250		30

K-RIDE

***NOTE*:** (i) The proportions of the fine to coarse aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer and the maximum size of coarse aggregate becomes larger. Graded coarse aggregate shall be used.

(ii) Minimum grade of concrete shall be not less than M - 20 in reinforced concrete work.

* Specification for coarse and fine aggregates from natural sources for concrete (second revision).

"Volume batching may be allowed only where weigh-batching is not practical and provided accurate bulk densities of materials to be actually used in concrete have earlier been established. Allowance for bulking shall be made in accordance with IS: 2386 (Part-3) (Latest version as indicated in Annexure-1). The mass volume relationship should be checked as frequently as necessary, the frequency of the given job being determined by Engineer – In charge to ensure that the specified grading is maintained."

In judging the acceptability of the materials, quality of concrete and the method of work, the Purchaser will generally observe the provisions of the "Indian Standard code of Practice for Plain and Reinforced Concrete, IS:456 (Latest version as indicated in Annexure-1). The crushing strength of concrete shall not be less than the limits given below:-

Specified characteristic Compressive strength of 15 cm cubes at 28 days.

Grade of Concrete	At 28 days age
(a) M. 10	10 N/mm^2
(b) M. 15	15 N/mm^2
(c) M 20	20 N/mm^2

K-RIDE

NOTE: *(a)* Test specimen of works tests shall be taken at the site of work from mixture of concrete ready for pouring into the foundation hole. All tests shall be carried out in accordance with IS: 516 (Latest version as indicated in Annexure-1) . The sample of concrete from which test specimens are made shall be representative of the entire batch.

(a) Age is reckoned from the day of casting.

SIZE AND GRADING OF AGGREGATES :

The graded coarse aggregate 20 mm nominal size (table 2 of IS: 383 (Latest version as indicated in Annexure-1)) shall be used for foundation. A coarse aggregate for grouting muffs and embedding shall be of 20 mm graded nominal size (specification for coarse and fine aggregate from natural sources for concrete).

Fine aggregate shall be graded from 10 mm downwards. The maximum size of aggregate for under reamed pile foundation shall be 20 mm graded nominal size.

Size of Aggeregate for different Grade of concrete

Grade of Concrete	Mix of (Cement:Sand:Aggregate)	Size of Coarse Aggregates
M20	1:1.5:3	20 mm
M15	1:2:4	12.5 mm,20 mm,
M10	1:3:6	20 mm, 40 mm,
M7.5	1:4:8	40 mm, 63 mm
M5	1:5:10	40 mm, 63 mm
Low Grade	1:6:12	40 mm, 63 mm

SAND CORED FOUNDATIONS :

After erection of masts in sand-cored foundations, the core hole of the foundation blocks shall be filled with dried sand and covered with a layer of bitumen of 80 mm thickness below 30 mm from top level of the block.. A hemispherical shaped muff shall be provided on such foundations in lieu of standard type.

SINKING OF CONCRETE SHELLS:

Where the water-table is high, one or more sections of reinforced concrete shells may have to be sunk before casting concrete. The size of each of shell shall be 1,200 mm outside dia x 50 mm thick x 600 mm high reinforced with 6 mm (1/4") dia rods spaced 150 mm apart, both longitudinally and circumferentially, the concrete shall be of grade M.20 as per provisions of para 2.2.4.

TYPE OF FOUNDATION IN BLACK COTTON SOIL :

The foundations in dry black cotton soil should be of type BC or NBC or any other type as approved by the Purchaser.

CEMENT:

The cement to be used in the construction of PCC / RCC structures should be of Ordinary Portland Cement to IS:269 (Latest version as indicated in Annexure-1) or Portland Pozzolana cement (fly ash based) as per IS: 1489 Pt-I (Latest version as indicated in Annexure-1).

K-RIDE

SECTION- 03
STRUCTURES

TYPES :

Structures and gantries may consist of any or more of the following types :-

(i) Broad flange beams.
(ii) Rolled steel joists (I section).
(iii) Fabricated steel Structures (welded/bolted).

Structure/uprights shall generally be embedded in concrete foundation blocks in special cases Structures may be secured by means of holding down bolts. Limited quantity (approx. 700 nos.) of circular spun prestressed concrete masts may also be used at the sole discretion of the Purchaser.

DESIGN :

FOR OHE :

(a) STEEL STRUCTURES

Designs for steel Structures shall, except where otherwise Provided, comply with the Indian standard code of practice for use of structural steel in General Building Construction IS: 800 (Latest version as indicated in Annexure-1). The thickness of smallest steel sections used shall be 5 mm for galvanized members.

(b) All the steel Structures and small part steel for carrying overhead equipment are to be fully galvanized after drilling and fabrication as per specification **ETI/OHE/13 (4/84)** (Latest version as indicated in Annexure-1) and no painted structures are to be used.

FOR TSS :

(a) GENERAL

The steel structures may be of riveted, bolted or welded construction as convenient for installation. The thickness of smallest steel section used shall not be less than 6 mm (or 1/4"). Legs of gantry structures/portals and supporting steel work and uprights or busbar supports shall generally be embedded in concrete foundation blocks and for equipment and in special cases secured by means of holding down bolts.

(b) DESIGN

a) All the steel structures like gantries/portals, other supporting members, small part steel work etc. shall be galvanized after fabrication with a minimum value of average mass of zinc coating being not less than 610 g/m^2 as per RDSO's specification No.ETI/OHE/13 (4/84) with Amendment No.1,2 & 3.

b) All designs for special steel work shall be furnished by the Contractor, for approval of the Purchaser. Designs for steel structures shall except where otherwise provided, comply with the "Indian Standard Code of Practice for use of Structural steel in General Building Construction" - IS : 800 - 1984, other relevant IS Specifications and statutory regulations.

c) For purposes of design, all possible loads which may occur in the worst combination shall be considered.

d) **Steel Structures**

For calculation of wind load on structures, conductors and equipment, the basic wind pressure shall be taken as 112.5 Kg/sq.m.

e) For purposes of design of gantries, the tension in the 220 kV incoming/outgoing lines shall be taken as 200 kg. at 4 degree C (without wind) in each conductor and 150 kg. at 4 ^oC (without wind) in the earthwire. The tension in the 66 kV strung busbars and earth screen wire at 66/25 kV sub-stations shall not exceed 200 kg. at 4 ^oC (without wind).

K-RIDE

f) **Uprights and fencing posts**.

Uprights carrying equipment such as potential transformers, current transformers, lightning arrestors, busbar support insulators, shall be made from standard metric steel sections viz. channels, angles or small joists, either single or fabricated.

g) Notwithstanding the provisions contained in I.S. and other regulations above regarding permissible deflection, the following should apply.

The deflection at the top of the mast or structure shall be limited to one eightieth (1/80) of its height above foundation.

h) The torsional rotation of the mast due to permanent loads shall not exceed 0.1 radian.

CANTILEVER MASTS:

(a) LOAD

For purposes of design the worst possible combination of all loads that may occur shall be considered.

The load shall include the following (weights to be assumed for design of Structures are shown against important items).

(i) Weight of overhead equipment (1.60 kg/metre for each conventional and 1.32 kg/metre for each composite OHE).

(ii) Weight of bracket supporting the overhead equipment (60 kg/normal bracket)

(iii) Weight of a man (60 kg)

(iv) Weight of an earth wire (0.32 kg/metre).

(v) Weight of feeder, return conductor or other special equipment wherever they occur.

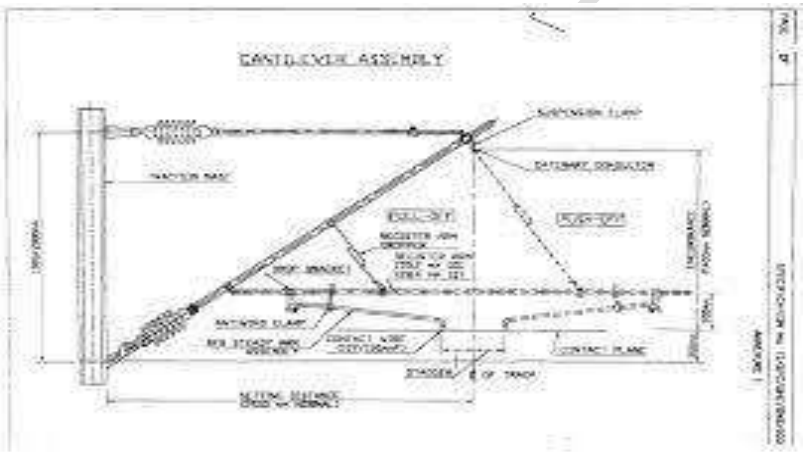
(vi) The effect of eccentricity of vertical and horizontal loads on the bracket due to variation in temperature.

(vii) Wind loads perpendicular and parallel to the track. The wind pressure adopted shall be taken as that indicated in part-III.

(viii) Radial forces on the mast, due to stagger, curvature, anchorage etc.

(ix) Weight of the mast itself.

(x) Any other load or loads that may occur due to special location of the Structures.



(b) DEFLECTION

Notwithstanding the provisions contained in IS:800 (Latest version as indicated in Annexure-1) referred to in para above regarding permissible deflection, the following shall apply.

(i) The deflection at the top of the mast due to permanent loads shall not exceed 8 cm and the mast shall be so erected that it becomes reasonably vertical after application of permanent loads.

(ii) The additional deflection under maximum wind pressure shall not exceed 8 cm at the level of the contact wire.

(c) TORSION

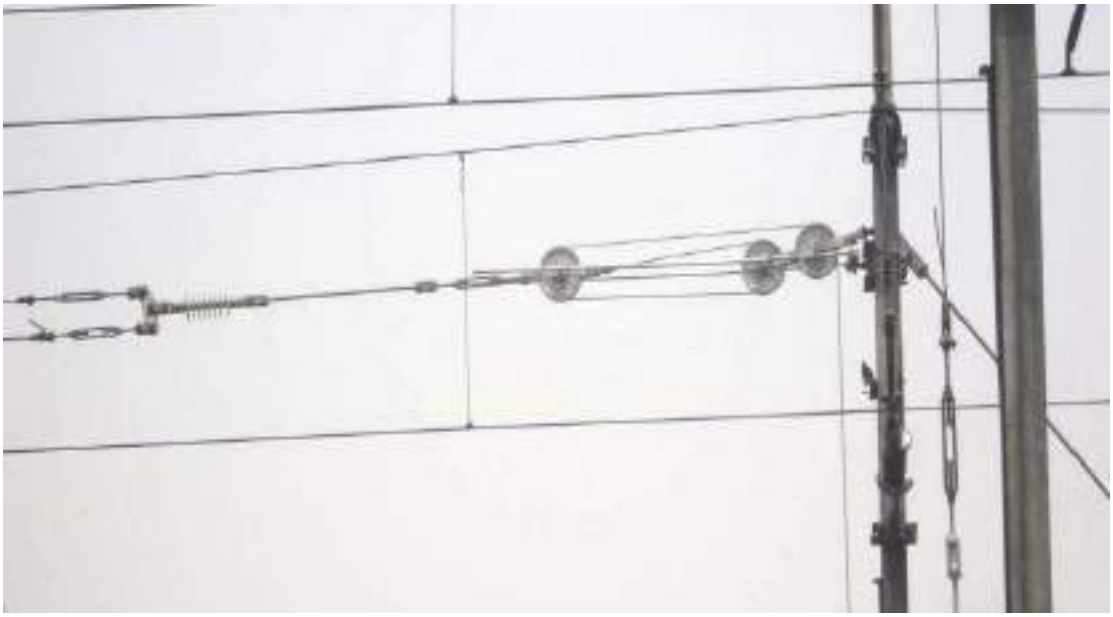
The torsional rotation of the mast due to permanent loads shall not exceed 0.1 radian.

(d) TYPICAL DESIGN

The typical design of a traction mast is included in the set of standard drawings listed in Annexure-1. Employment schedules for standard masts for various locations and types are included in the standard drawings listed in Annexure-1, to enable selection of suitable type for different locations and local conditions.

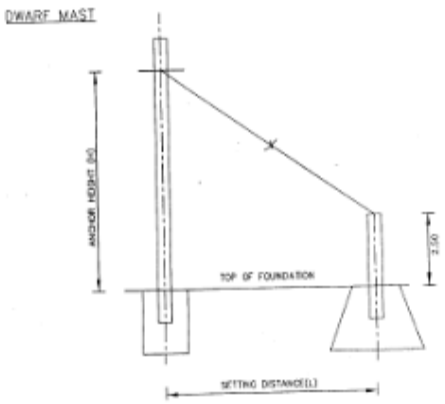
ANCHOR MASTS:

(a) Masts at which overhead equipment will be anchored shall also normally be of the same type as those in other locations. Anchor masts shall normally be provided with suitable guys but struts may be permitted in special cases.



(b) DWARF MASTS

At certain locations where due to local conditions it is not feasible to anchor the guy rod on a foundation block in the ground, a dwarf mast shall be used in accordance with approved designs.



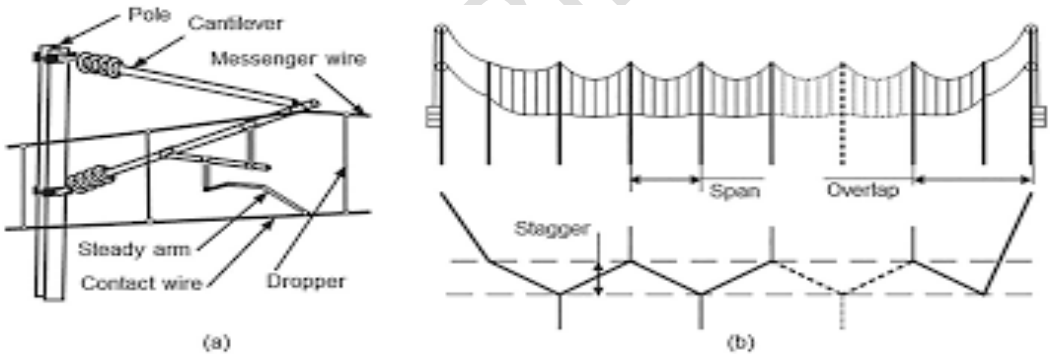
HEAD SPANS :

(a) LOAD

The loads to be considered shall be as detailed in para above as far as applicable and at their worst combination.

(b) SAG FOR HEAD SPAN WIRE

The sag of the head span wire shall be approx. one-tenth (1/10) of the span.



(c) MINIMUM TENSION IN CROSS SPAN & STEADY SPAN WIRES -

For purpose of design, a minimum tension of 200 kg, shall be ensured in the span wires for worst combination of temperature and wind load.

(d) DEFLECTION OF MAST

Deflection at the top of the mast or Structure shall be limited to one-eightieth (1/80th) of its height above foundation.

(e) TYPICAL DESIGN

Typical design for head span mast carrying overhead equipment for 4 tracks will be furnished to the contractor.

PORTALS :

(a) GENERAL

Portals shall be of fabricated steel of standard types of purchaser's designs. The most important designs are covered by Drawings listed in Annexure-1.

(b) LOAD

The load shall be as detailed in para above as applicable.

STRUCTURES ON BRIDGES:

(a) The structure may be either cantilever masts or portals (hinged or fixed at base) depending on the type and condition of bridge pier capping. As far as possible cantilever masts grouted in foundations blocks on pier will be used. Where this is not possible cantilever masts with holding down bolts or suitable portals (hinged or fixed at the base) may be adopted.

(b) Designs of structures on bridges to suit different locations and local conditions will be furnished to the contractor by the Purchaser.

SPECIAL STRUCTURES :

In the case of structures at locations not covered by the employment schedules furnished by the Purchaser, the contractor shall furnish complete design calculations justifying the choice of the type of structures for such locations.

SETTING OF STRUCTURES:

(a) The setting is the distance from the Central line of the track, on straight or curve to the face of the mast/structure of fitting located on the mast.

(b) On straight and outside of curve, the standard setting shall be as per the relevant drawing included in Annexure-1. Minimum setting of structures shall be 2.8 M plus curve allowance as required. Whenever this distance can not be provided, specific approval of Purchaser shall be obtained before erection. Setting of portal upright overlap/ turn-out structures, anchoring structures and other masts carrying more than one OHE will be 3.0 m wherever possible.

(c) EXTRA CLEARANCE ON CURVES

The minimum setting of structures on curves shall be determined by adding to the above minimum figures an extra clearance indicated in the table included in the set of standard drawings listed in Annexure-1.

(d) STRUCTURES WITH COUNTER WEIGHTS

In case of structures carrying counter-weight assemblies, the term "setting" shall refer to the minimum distance of the counter-weight from the track center under the worst conditions of wind.

(e) STRUCTURES ON PLATFORM

K-RIDE

The setting of structures on platform shall be not less than 4.75 m

(f) STRUCTURES NEAR SIGNALS

In the vicinity of signals, structures shall be located in a manner which shall ensure good visibility where necessary, the setting shall be increased as per the relevant drawing included in Annexure 1

(g) SETTING OF STRUCTURES

The value of setting of masts/structures shall be painted on each mast/ structure. The figure shall be 25 mm in size in black colour with yellow colour background. In addition, the track level shall also be marked on the mast/structure by a horizontal red painted stroke.

NUMBERING OF STRUCTURES CARRYING OVERHEAD EQUIPMENT :

All structures shall be numbered in accordance with the numbering given in the approved overhead equipment layout plans. Enameled/Retro-Reflective number plate shall be provided on each mast or structure as per approved designs (See Annexure-1).

STEEL WORK FOR SWITCHING STATIONS AND GANTRIES:

(a) HORIZONTAL MEMBERS OF GANTRY

Horizontal member of main as well as auxiliary gantry carrying isolator switches, insulators, potential transformers etc. shall be made from steel sections viz. channels, angles and small joists, single or fabricated. They shall preferably be attached to masts by means of clamps to avoid drilling of masts sections.

(b) For purpose of design, all possible loads which may occur in the worst combination shall be considered. The loads shall include the followings:-

(i) Weight of insulators, instrument transformers, isolator switches, busbars, and their accessories.

(ii) Loads caused by feeders, along and across tracks, return feeders etc.

(iii) Loads caused by anchorage due to guying of anchored masts (where applicable).

(iv) Pull or Push on the structures due to anchorage and radial tension (where applicable).

(v) Wind load on the different structures, conductors and equipment. The wind pressure shall be taken as indicated.

(vi) Weight of men working on the structures.

(vii) Weight of structure itself.

(viii) Erection loads.

(ix) Any other load or loads which may occur due to special equipment wherever they occur.

K-RIDE

(c) TENSION OF CONDUCTORS

For purpose of designs, the maximum tension of different conductors, without wind load, shall normally be as under:-

(i) Maximum tension in the cross feeders at switching stations under worst conditions:-

(1) For spans less than 18 m ... 100 kgf.

(2) For spans more than 18 m ... 200 kgf.

(ii) Maximum tension in longitudinal feeders running parallel to the track at the switching stations under worst conditions.1500 kgf.

(iii) Tension in anchored overhead equipment in case of sectioning and paralleling stations 2,000 kgf.

(d) DEFLECTION OF GANTRY MASTS

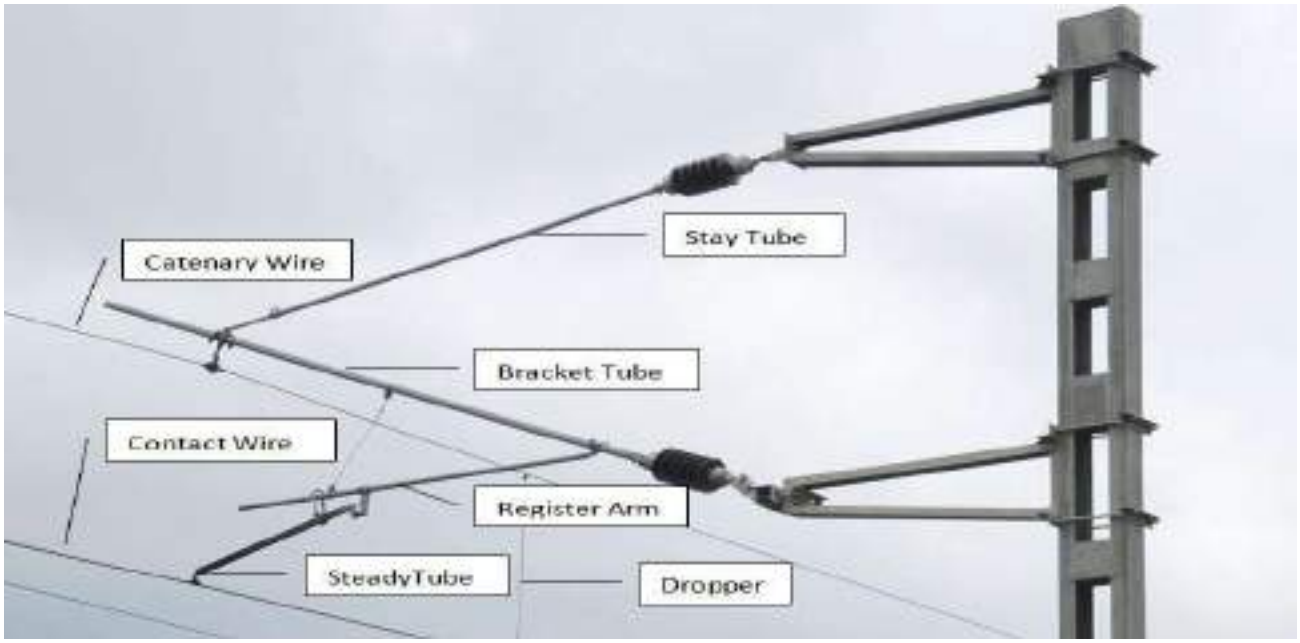
Deflection under the permanent loads (at an average temperature of 35°C without wind) at the top of the fabricated structures of mast shall be limited to one eightieth (1/80) of its height above foundation.

(e) Masts of the gantry at which feeder or overhead equipment will be anchored at the switching stations shall normally be provided with suitable guys, but struts shall not be permitted.

(f) CHAIRS AND BRACKETS

Chairs, brackets and supporting steel work carrying potential transformers, lighting arrestors, insulators, etc, shall be made of fabricated steel and be mounted on the main auxiliary gantry preferably by means of clamps to avoid drilling of mast sections.

K-RIDE



(g) UPRIGHTS AND FENCING

Uprights carrying operating handles of isolators and fencing posts shall be made from steel sections, viz. channels, angles or small joists, either single or fabricated.

STEEL:

Steel conforming to IS: 2062 (Latest version as indicated in Anexure-1) shall be used for all fabricated steel work.

K-RIDE

CHAPTER- 04

EQUIPMENTS, COMPONENTS AND MATERIALS

COMPLIANCE WITH STANDARD SPECIFICATION :

In the technical specifications of equipments, components and materials, references are made to the following standard specifications:

(i) International Electro Technical Commission (abbreviated as IEC) publications.

(ii) British Standards (abbreviated as BS)

(iii) Bureau of Indian Standards (abbreviated as IS)

Tenderers may, however, offer equipment in accordance with the appropriate national standard specifications of the country of manufacture, but such offers will be treated as deviations, in that case firm should submit English rendering of the text and illustrations of the national standard specifications and British or Bureau of Indian Standards in question, in the relevant Annexures. In case of doubt, the Purchaser shall decide the clause and specification applicable and the contents of the specification and standard mentioned above shall guide such decisions.

PROTO TYPE TESTS :

(a) FITTINGS, COMPONENTS AND MATERIALS

All the fittings, components and materials to be supplied by the contractor, in terms of this contract, the requisite number of prototypes of components shall be supplied free of cost to the Purchaser for tests and approval. The tests will be conducted in a laboratory selected by the Purchaser.

K-RIDE

(b) EQUIPMENTS

This comprises inspection and tests conducted on the first equipment of a specified manufacturer, which the Purchaser considers sufficient to prove that the design is in conformity with the specification at the manufacturer's factory. The type tests shall be conducted on each equipments, in the presence of the Purchaser's representative. The contractor shall arrange to get these tests conducted at his own cost.

(c) RESPONSIBILITY

Any testing and approval by the Purchaser of prototype shall in no way absolve the contractor of his responsibility under the terms of the contract for the equipment supplied and erected.

(d) EXEMPTION FROM PROTOTYPE TESTS

If prototype samples of equipments, components or fittings of any manufacturer have already been approved in connection with the electrification of other sections of Indian Railways, on the 25 KV 50 HZ single phase A.C. system prototype samples of such equipments, components or fittings will be exempted from the tests.

Supply of bulk quantities shall, however, be effected only after the Purchaser's prior approval is obtained in writing.

(e) The results of prototype tests will be communicated to the Contractor as expeditiously as possible. Any delay in this respect will be ground for extension of time for completion .

INSPECTION AND TESTS:

These comprise inspection and tests conducted at the manufacturer's factory for ensuring quality of manufactured items as part of the quality Assurance Programme.

TEST CERTIFICATES:

Three copies of the test certificates of successful prototype tests carried out at the manufacturer's factory on all equipments shall be furnished to the Purchaser within a month after completion of the prototype tests. Three copies of the routine tests carried out on each equipment shall also be furnished, after the equipment is passed by the Purchaser's representative for inspection

BULK MANUFACTURE:

Bulk manufacturer may be undertaken only after specific written approval of the Purchaser or his representative has been obtained indicating that tests on the prototypes are satisfactory. Where prototypes have already been approved in connection with it manufacturer may proceed after exemption from prototype tests is received from the Purchaser in writing.

K-RIDE

INTER CHANGEABILITY :

All equipments, components and fittings shall be inter-changeable and supplies shall be in accordance with the Purchaser's designs unless otherwise specifically approved by him. Components such as fuses, indication lamps etc. should be replaceable with substitutes available indigenously, as far as possible.

TECHNICAL SPECIFICATIONS:

Please see at **Anexure-1**). List of standard RDSO drawings, RDSO specifications and IS specifications for important materials, components and equipments [As per version available as on date of opening of tender).

NOMENCLATURE AND MARKING :

(a) All components and fittings supplied by the Contractor's shall bear the respective identification number and a mark to identify the source of supply except in the case of galvanized tubes, bolts and nuts and/or any other fittings as may be agreed to by the Purchaser.

(b) In case of insulators, galvanized steel tubes, stainless steel wire rope and conductors, name of manufacturer shall be specified in "As Erected" drawings for identification.

STEEL WORK AND PROTECTION AGAINST RUST :

(a) **GALVANISING**

All ferrous materials and fittings shall be hot dip galvanized according to the specification ETI/ OHE/13 (4/84) (Latest version as indicated in Anexure-1).

(b) PAINTING

Some components or parts may, with the approval of the Purchaser, be protected only by paint and parts so protected shall be given two coats of composite Aluminium primer and two coats of Aluminium paints. The second coat of Aluminium paint shall be applied after erection.

(c) RECTIFICATION AT SITE

In case of modifications which would damage the protective coat, repairs to such damage would be allowed only in exceptional circumstances. The part damaged shall be protected in accordance with the method indicated in specification **ETI/OHE/13 (4/84)** (Latest version as indicated in Annexure-1) or any other method approved by the Purchaser. The Contractor shall in all such cases obtain prior permission from the Purchaser before carrying out repairs.

BRACKET ASSEMBLY COMPONENTS :

(a) ARRANGEMENT FOR NORMAL OHE

The arrangement of the different fittings and structural components of bracket assemblies are shown in drawings listed in Annexure-1. The employment schedule of bracket will be furnished to the Contractor.

(b) BRACKET

Bracket tubes shall be of seamless cold drawn or electric resistance weld steel complying with **ETI/OHE/11 (5/89)** (Latest version as indicated in Annexure-1) with an insulator near the support. The length of the tubes shall be such that their is a free length of about 200 mm beyond the catenary suspension bracket. To facilitate adjustment during track maintenance.

(c) TUBULAR STAY ARM

Steel tubes with adjustable steel rods shall be used for tubular stay arm of all bracket assemblies.

K-RIDE

(d) REGISTER ARM

The register arm shall also be electrical resistance weld or cold drawn steel tubes or proper dimensions duly formed. It shall be suspended by a dropper from the catenary suspension clamp/bracket tube. A hook and eye arrangement shall be used at the bracket end to permit free movement in every directions.

(e) STEADY ARM

Steady arm shall normally be fitted in all assemblies for overhead equipment in running. The steady arm shall be of light alloy BFB section arranged to work always in tension in accordance with **ETI/OHE/21(9/74)** (Latest version as indicated in Anexure-1). Steady arms of secondary tracks may be off solid galvanized steel rodding. The contact wire shall be fixed by a simple swivel clip without threaded parts. Steady arms shall normally be 1.0 m long but for special locations such as turnouts, diamond crossing etc. Steady arms shall be longer as indicated in the relevant drawings listed in Annexure-1.

K-RIDE

Bent steady arms of aluminum alloy tube conforming to Spec. ETI **/OHE/21 (9/74**) (Latest version as indicated in Annexure-1) shall be used for neutral section overlap and in the central mast of a 4 span insulated overlap.

(f) BRACKET FOR UNREGULATED TRAMWAY TYPE EQUIPMENT

Brackets provided on cantilever masts for tramway type unregulated equipment shall normally span two tracks and the contact wires carried on V-type clamps suspended from a span wire. The span wire shall be provided with a turn buckle at only one end.

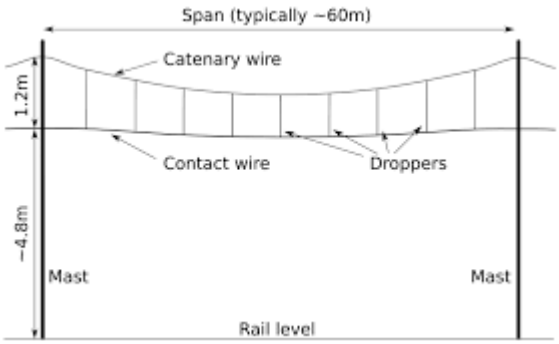
DROPPERS :

(a) GENERAL DESIGNS

The droppers shall generally be designed as shown in standard drawings and made of copper wire about 5 mm diameter conforming to **IS:282** (Latest version as indicated in Annexure-1) and shall be attached to the catenary wire by a copper dropper clip. The contact wire shall be held by a clip of aluminum bronze as shown in the standard drawings. The distribution of dropper shall be in accordance with standard designs.

(b) LOADING

The droppers shall be able to withstand a vertical load of 200 kg at the point of attachment to the contact wire and the clip shall not slide under a horizontal load of 120 Kgf.



(c) The permissible tolerance in the over all length of a dropper will be ± 5 mm.

INSULATORS :

(a) All insulators except those on return conductors and earth wires shall be of the solid core type. Disc insulators shall be used on return conductors and earth wires or other locations as desired by the Purchaser. All solid core insulators shall conform to TI/SPC/OHE/INS/0070 (Latest version as indicated in Annexure-1) or Specification No.TI/SPC/OHE/INSCOM/0991 (Latest version as indicated in Annexure-1) is for Composite Insulators wherever applicable.

(b) INTER-CHANGEABILITY

For free inter-changeability only the following types of insulators shall be used. While the shapes of the insulators may vary slightly from those shown in the drawings, the essential dimension of the galvanized malleable cast iron caps as given in standard drawings shall be adopted.

(i) **Stay arm Insulators**: These insulators will be used in conjunction with The tubular stay arm of all bracket assemblies.

(ii) **Bracket Insulators:** These will be used at the base of each bracket assembly in conjunction with bracket tubes.

(iii) **9-Tonne Insulators:** These will be used at all places for cut-in and Terminal insulation including those in return conductors, but excluding those in earth wire.

iv) **Solid core post insulators :** These will be used at all places for supporting isolators mechanisms,-bus-bars,-jumpers etc. of 25 kV.

(v) **Disc insulators 255 mm :** Clevis type 255 mm disc insulators will be used for return conductor suspension and for earth wire cut-in insulator.

(vi) **11 kV post insulators :** These will be used at all places for supporting bus-bars, jumpers etc. In conjunction with return conductor/return feeders.

(c) The pedestal insulators for service voltage of 220/132/110 kV shall be of Solid Core type conforming to specification as indicated in Annexure-1. The pedestal insulators for service voltage of 25 kV shall be of the solid core type conforming to specification as indicated in Annexure-1.

ENDING FITTINGS AND SPLICES:

(a) GENERAL DESIGNS

(a) Terminating or ending fittings and splices on copper conductor shall be of the cone type clamping on both the inner and outer strands of conductor except for contact wire ending clamps which may be of wedge type. The arrangement shall be easy to install and also be such as would apply the clamping pressure gradually without shock (See **TI/SPC/OHE/Fittings/0130))** (Latest version as indicated in Annexure-1)**.** For Aluminum Alloy/conductor, the end fittings shall be either cone type, strain clamp type or any other type as approved by the Purchaser.

(b) LOADING

All the parts shall be capable of withstanding without damage, a load greater than the ultimate strength of the wires to which they are fitted. In the case of thread no damage shall occur when they are subjected to a load equal to two third of the ultimate strength of the wires.

(c) RESTRICTED USE OF SPLICES

The use of splices shall generally be avoided and their use shall be restricted to the minimum necessary. Over main tracks, there shall be no splice in the contact wire on first erection. Elsewhere, not more than one splice be used in any tension length (i.e. anchor to anchor) for which prior approval shall be taken from the Purchaser. Additional splices may, however, be provided to enable retention of conductors which are found defective during and/or after erection. Splices may also be permitted for repair of damage due to thefts or Railway accidents.

(d) STRENGTH OF ASSEMBLED FITTINGS

The strength of fittings assembled with appropriate conductors or wires shall be not less than that of the conductor or wire itself.

(e) ADDITIONAL TERMINATING WIRES

Cadmium copper stranded wire of 65 sq. mm nominal section or 37/2.1 mm (as used in head span construction). may be used as additional terminating wires for extending single and double conductors respectively, if termination at the nearest structure is not feasible.

ELECTRICAL CONNECTIONS FOR OHE:

(a) GENERAL DESIGNS

All electrical connections between conductors shall be made by parallel clamps. The general arrangements of connections are shown in the standard drawings, listed in Annexure-1.

(b) JUMPERS

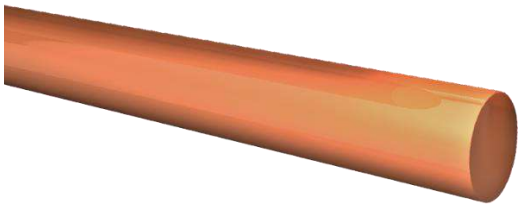
Copper jumpers shall be of any of the followings:

(i) Large jumpers of annealed copper in accordance with specification **ETI/OHE/3 (2/94)** (Latest version as indicated in Annexure-1).

(ii) Small jumper of annealed copper in accordance with the specification **IS:9968 (PT.2)** (Latest version as indicated in Annexure-1).

(c) BUSBARS

Bus-bars or rigid jumpers of copper where used shall be of 18mm dia copper rod in accordance with RE/30/OHE/5(11/60) (Latest version as indicated in Annexure-1). Aluminium bus-bars wherever used shall be of 36/28 mm tubing (See 2.4.22). Aluminium tubular bus-bars shall be made of Al. Alloy grade 63401 (WP condition) to IS:5082 (Latest version as indicated in Annexure-1). The tolerance on diameter and thickness shall be as per class I, IS:2673 (Latest version as indicated in Annexure-1



(d) FEEDERS

Feeders shall be of 150 sq.mm Copper conductor.

(e) RETURN CONDUCTOR

The return conductor shall be of 150 sq.mm Copper Conductor. The arrangement of return conductor carried on traction structures is shown in a drawings listed in Annexure-1, Part E.

(f) The general characteristics of all wires and conductors is included in a drawings listed in Annexure-1, Part E.

(g) Earth wire shall be of steel reinforced Aluminium conductor 7/4.09 mm (RACCOON) conforming to **IS:398-(part-II)** (Latest version as indicated in Annexure-1).

TERMINAL CONNECTORS FOR EQUIPMENTS:

Booster Transformer along with the terminal connectors suitable for taking jumpers/ bus bar as required shall be supplied by the Purchaser.

However, Power Transformer, Circuit Breaker, and L.T. supply Transformer shall be supplied by the Contractor along with the terminal connectors suitable for taking jumper/bus-bar as required including Al-Cu strips for bimetallic connections wherever required. The Al-Cu strips required for the connection of Booster Transformers shall also be provided by the Contractor if following equipment will be under the scope of Supply as per Annexure-4, otherwise Tenderer shall make its own arrangement to provide.

K-RIDE

REGULATING EQUIPMENT :

(a) GENERAL

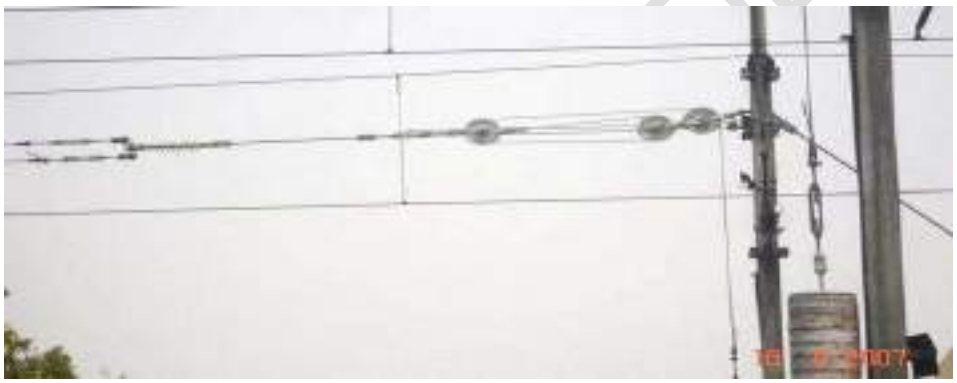
A general arrangement is shown in the standard drawings listed in Annexure-1. The regulating equipment should have a minimum adjustment range of 950 mm. Stainless steel wire rope in accordance with TI/SPC/OHE/WR/1060 (Latest version as indicated in Anexure-1) shall be used in these equipments and these shall be sufficiently flexible for the purpose.

(b) COUNTER WEIGHT

Counter weights and arrangements used shall be such that these could be accommodated within 330 mm (13 inches) measured transverse to the track under the worst conditions of wind. The vertical upward movement shall be limited with a fixed top.

(c) REDUCTION RATIO

Reduction ratio in the arrangement used shall be five for winch type and three in case of three pulley type.



HEADSPAN CONSTRUCTION:

(a) SIZE AND FACTOR OF SAFETY

All span wires used in head-span construction shall be of stranded cadmium copper conductor 65 sq. mm or 130 sq. mm cross section. All the wires shall be designed with a factor of safety of not less than 4 under the most unfavorable conditions.

(b) TURN BUCKLES

Each span wire shall be equipped with a turn buckle at each end of the span.

(c) ADDITIONAL INSULATORS

Additional insulators shall be provided as necessary in head span, cross span and steady span, wires to ensure electrical independence between the equipment in different elementary electrical sections.

ISOLATORS:

25 kV Isolator switches shall comply with Railway specifications.

INSULATION LEVEL :

(a) Interrupters, Potential Transformers line indication type, 42kV Lightning Arrestors and other equipments shall be suitable for insulation levels indicated in the relevant specifications.
(b) All equipment including insulators to be used at the traction sub-stations, feeding station and shunt capacitor banks shall be suitable for the insulation level specified below:-

		SERVICE VOLTAGE				
		220 kV	132 kV	110 kV	66 kV	25 kV
i)	Power frequency 1 min. wet withstand test-kV (rms)	460 kV	275 kV	230 kV	275 kV	100 kV
ii)	Impulse (1.2/5o microsecond) withstand test positive and negative polarity(crest value) -KV (peak)	1050 kV	650 kV	550 kV	650 kV	250 kV

K-RIDE

BUSBARS:

(i) ACSR Conductors used as bus-bar or bus-bar connections shall be of ZEBRA ACSR size 61/3.18mm (28.62 mm dia) at 220 or 132 or 110/25 kV Traction Sub-station.

(ii) Aluminum tubes used as bus-bars or bus-bar connections shall be of dia 50X39 mm for Traction sub-station and Shunt Capacitor banks and of size 36/28 mm for Feeding Stations. Aluminum tubular bus-bars shall be made of Al. Alloy grade 63401 (WP condition) to IS:5082 and IS: 6051-1970 (Latest version as indicated in Anexure-1). The tolerance on diameter and thickness shall be as per class I, **IS: 2673** (Latest version as indicated in Annexure-1)**.**

(iii) Bus-bar junctions and connectors shall be made with aluminum allow Grade 4600 M to IS: 617-1994 or equivalent. The bus-bar shall be clean, smooth mechanically sound and free from surface and other defects. No splices will be allowed in the bus-bar unless the length of bus-bar exceeds 6m. The ends of the tubular bus-bar shall be covered with suitable end caps. The joints in bus-bars where unavoidable, shall be mechanically and electrically sound so that the temperature rise under normal working conditions does not exceed 40 degree centigrade for a max. ambient temp. of 45 degree centigrade.

CABLING:

(a) CABLE FOR L.T. SUPPLY

240 V A.C. supply from L.T. supply transformer at switching stations shall be brought and terminated on the L.T. A.C. distribution board in the remote control cubicles at the switching stations by 1100 Volt 25 sq.mm aluminum two-core PVC insulated PVC sheathed and steel armoured heavy duty cable conforming to IS:1554(part-I) (Latest version as indicated in Anexure-1).

(b) CONTROL AND INDICATIONS CIRCUITS

All other cables for control and indication at switching stations shall be 1100-V grade PVC insulated and sheathed un-armoured (heavy duty) complying with IS: 1554(part-I (Latest version as indicated in Anexure-1). The cables shall be provided as indicated in the Table below:-

PURPOSE	RUN	CIRCUIT VOLTAGE	CORE SIZE & MATERIAL	NO OF CORES
FOR SWS:				
Control & indication of interrupters	From each Interrupter to terminal board	110 V/D.C.	2.5 sq.mm copper	7
Catenary indication	From each P.T. line indication type to terminal board	110 V/A.C.	2.5 sq.mm copper	2
Heater supply for interrupters control mechanism cabinet	i) From interrupter to interrupter	240 V A.C.	4.0 sq.mm Aluminium	2
	ii) From each interrupter to fuse box.	-do-	-do-	-do-
	iii) From fuse box. to distribution board.	-do-	-do-	-do-
Battery supply	i) 110V battery charger to 110V battery	110 V/D.C.	2.5 sq.mm copper	-do-
	ii) 110V battery to 15A, DC fuse box.	110 V/D.C.	2.5 sq.mm copper	-do-
	ii) 15A, DC fuse box to terminal board.	-do-	-do-	-do-
FOR TSS:				
Control and indication of circuit breakers	From each circuit breaker to control board.	110 V DC	7x2.5	Three cables to be used.
Transformer alarm/trip circuits & tap changer control	From each transformer to control board.	110 V DC	10x2.5	Five cables to be used.
Transformer protection (bushing	From each transformer to control	110 V DC	4x4.0	One cable for each bushing CT to be used.

K-RIDE

transformer to current transformer connections)	board.			
Current transformer & neutral connections	From each current transformer to control board.	110 V DC	2x4.0	One cable for each core of CT/Neutral CT
Potential transformer connections	From each potential transformer to control board.	110 V DC	2x2.5	One cable to be used
110V DC supply	(i) Connection between battery chargers & DC distribution board.	110 V DC	4x4.0	One cable to be used with two core connected in parallel
	(ii) Connection between batteries & DC distribution board.	110 V DC	4x4.0	One cable to be used with two core connected in parallel
	(iii) Connection from DC distribution board to control board.	110 V DC	4x4.0	Two cables to be used with each circuit breaker and one cable for DC supply to control boards.
Control & indication of bus coupler interrupter	From interrupter to control board.	110 V DC	7x2.5	Two cables to be used.
240V AC supply	Connection from AC distribution board to control board.	240 V AC	2x2.5	One cable to be used

K-RIDE

c) **Cables for heater circuits**.

The 240 V AC supply to space heaters provided in control cabinets of various equipments shall be provided by means of 4 sq.mm. 2-core aluminum PVC insulated (heavy duty) cables complying with IS: 1554 (Part-I)-1988. Three circuits shall be provided on the LT A.C. distribution board for this purposes, one for the heaters in the control cabinets of 220/132/110 KV circuit breakers, the second for the heaters in the control cabinets of 25 KV circuit breakers and bridging Interrupters and the third for heaters in marshalling box of traction transformers. Each circuit shall be provided with a fuse of approved type and suitable rating in the LT A.C. distribution Board.

d) **Cables for battery charger**.

240 V A.C. supply to each of the battery chargers in the Control Room shall be provided by means of 4 sq.mm. 2 core PVC insulated, PVC sheathed (heavy duty) copper cables complying with IS: 1554 (Part-I)-1988. Two circuits each with a fuse of approved type and suitable rating in the LT A.C. distribution board shall be provided for the two battery chargers in the Control Room. The 240 V A.C. supply to Control Board from A.C.. distribution board shall be provided by means of 2.5 sq.mm. 2- core PVC insulated PVC sheathed (heavy duty) copper cable complying with IS:1554(Part-I)-1988.

e) **Cables for blower fans**.

240 V A.C. supply to blower fans fixed on the traction transformer shall be provided by means of 2 core 25 sq.mm. aluminum conductor cables. The cables shall be PVC insulated, PVC sheathed and armored cables of 1100 V grade complying with IS:1554(Part-I)-1988. Separate cables shall be laid from the L.T. A.C. distribution board in the control room to marshalling box of each traction transformer. Individual circuits from the LT A.C. distribution board shall be provided for this purpose with each circuit protected by a fuse of suitable rating.

f) The cable shall be resistant to decay, mechanical abrasion, acids, alkaline and other corrosive materials.

NOTE: *(i) In case of feeding stations which are located within the traction sub-station premises, the cables shall be run from individual equipment and terminated inside the sub-station control room.*
(ii) Notwithstanding the sizes of cables given above, the Tenderer shall assure himself that various cables would suit the ratings of equipments offered by him.

(g) SPECIFICATION

The cables shall be resistant to decay, abrasion, acids, alkalies and other corrosive materials. All indoor wiring on walls shall be clamped neatly on teak wood battens fixed to the wall by means of wall plugs/wooden pegs. The cable run layout at a typical switching stations is shown in the relevant drawing already included in Annexure-1.

LITERATURE FOR EQUIPMENT:

The Contractor shall, within six months of issue of Letter of Acceptance of Tender, supply 5 copies of booklets containing manufacturer's instructions for operation and maintenance of each of the items of equipments the supply of which is, Herded by the contract. In addition, 25 copies of detailed schedule of components, catalogues and drawing of all parts of the equipment shall also be supplied.

K-RIDE

CHAPTER- 05
DESIGNS AND DRAWINGS

CONTRACTOR'S DRAWINGS :

(a) The Contractor shall submit to the Purchaser for approval except where otherwise specified below, all detailed designs and drawings which are necessary to ensure correct supply of equipments, components and materials and to enable correct and complete erection of overhead equipment, switching stations, booster transformer stations and L.T. Supply transformer stations and complete supply and erection of Traction Sub-Stations in an expeditious and economic manner.

(b) RESPONSIBILITY

It is to be clearly understood that all original designs and drawings shall be based on a thorough study. General designs and dimensions shall be such that the Contractor is satisfied about the suitability of the designs for the purpose. The Purchaser's approval will be based on these considerations and notwithstanding the Purchaser's acceptance; the ultimate responsibility for the correct design and execution of the work shall rest with the Contractor in terms of the conditions of Contract.

STANDARDS FOR DRAWINGS :

All designs, legends notes on drawings and schedules of materials shall be in English and shall be prepared in the metric system. All designs and drawings shall conform to specification RE/OHE/ 25 and ETI/PSI/31(5/76)(Latest version as indicated in Annexure-1).

K-RIDE

BASIC DESIGNS :

(a) STANDARD DESIGNS

Where the Contractor adopts designs and drawings conforming to the standard designs, drawings, and specifications of the Research, Designs and Standards Organisation. Manak Nagar, Lucknow-226 011 (RDSO) for basic arrangements, equipments, components and fittings of traction overhead equipment, switching stations booster transformer stations and LT supply transformer stations and TSS adopts employment schedules furnished by the Purchaser , he shall verify such designs, drawings and employment schedules and satisfy himself that these are correct before use. Within two months of the issue of letter of Acceptance of Tender the contractor shall indicate to the Purchaser, the list of standard basic arrangements, components and fittings drawings and employment schedules, which he will adopt for the purpose of the work. The contractor for his use and reference shall obtain copy each of such standard basic arrangement, component and fittings drawings and employment schedules from GM/Electrical/K-RIDE office.

(b) DEVIATIONS

Normally deviations from the standard drawings of the Purchaser will not be accepted. However, in exceptional cases where the Contractor desires to suggest improvements as a results of his experience or other development, he shall justify his proposals with supporting explanatory notes.

SPECIAL DESIGNS :

(a) In cases where standard designs, drawings or employment schedules do not cover requirement of special locations or site conditions, the Contractor shall submit his own designs or drawings along with supporting calculations and notes for scrutiny and approval of the Purchaser.

(b) Such special designs shall generally by in conformity with basic designs furnished by the Purchaser and in accordance with the specifications. If the Contractor wishes to adopt special designs which do not conform to the general basic designs of the Purchaser, he shall submit alternative designs and drawings justifying his proposals.

PARTICULAR DESIGNS & WORKING DRAWINGS:

FOR OHE:

(a) PURCHASER'S PEGGING PLANS

The pegging plans for sections to be equipped indicating the type of overhead equipment, locations of masts and other general particulars prepared on the basis of the latest survey will be furnished by the Purchaser. The Contractor shall verify and check these plans at site.

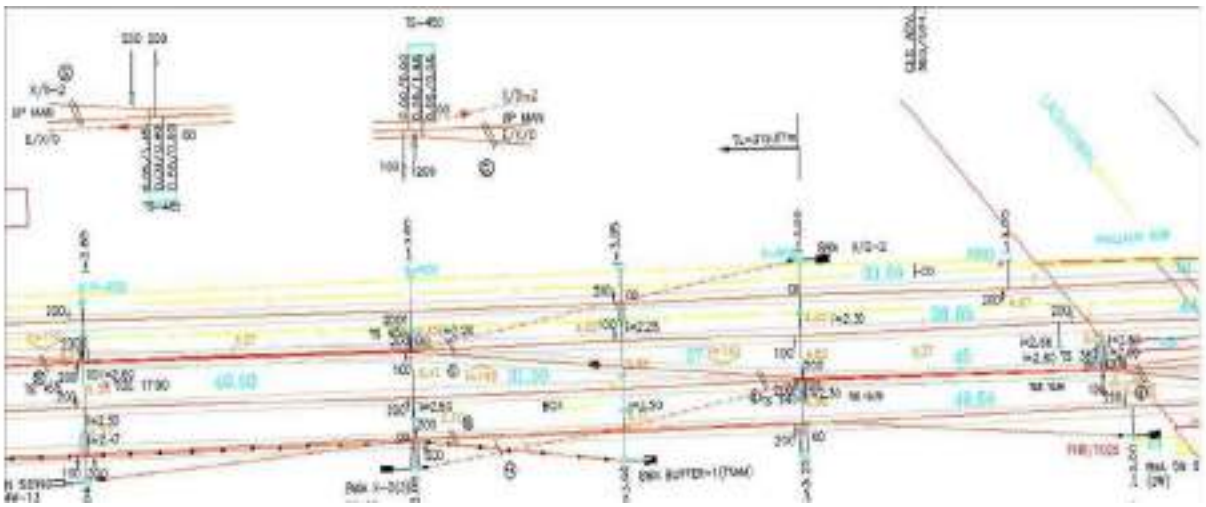
K-RIDE

(b) CONTRACTOR'S PEGGING PLANS

If the Contractor is called upon to carryout survey and prepare overhead equipment pegging plans, he shall submit such plans for approval after checking their feasibility at site.

(c) PRINCIPLES OF LAYOUT

The Contractor shall in all cases ensure that the final pegging plans are in conformity with the latest 'Principles of preparation and checking of OHE layout plans and sectioning diagram' issued by RDSO.



(d) PROVISIONAL LAYOUT PLANS

The Contractor shall prepare and submit overhead equipment layout plans incorporating the following in formations:-

(i) The run of wires in different thickness or colour in special cases and termination.

(ii) The run of wires for future wiring indicated to the Contractor, in dotted lines.

(iii) Exact position of all cut-in-insulators, including section insulators.

(iv) Direction and value of stagger at each traction structure location.

(v) Clearance of live conductors to Structures in the vicinity including bridges, signals gantries etc.

(vi) Layout of feeders.

(vii) Jumper connections and connection to switches and switching stations.

(viii) List of infringements.
(ix) Kilometer numbers and type of Structures.
(x) Location and numbers of switches.

(xi) Schematic sectioning diagram drawn to convenient scale showing section insulator, number of switches, elementary sections and connections to switches and switching stations.

(xii) Table giving references of approved profile drawings, feeder layout plans and other relevant drawings.

K-RIDE

(e) OHE PROFILE DRAWINGS

After completion of the overhead equipment layout plans, the Contractor shall prepare an overhead equipment profile drawings showing the actual height of the contact wire under each overline Structure the gradient and height of the contact wire on either side of the Structure and the encumbrances at Structures until normal height of contact wire and encumbrances are restored.

(f) CROSS SECTION DRAWINGS

While the layout plans are being finalized, the Contractor shall submit for approval, in-so-far as yards between outer most points and crossing are concerned, cross-section drawings for each Structure showing guy rods, if any, indicating the cross-section of the formation, height and nature of soil, type of foundation block, structure proposed, reverse deflection of the Structure and all necessary particulars for erection of the foundation and the Structures. In the preparation of drawings, care shall be taken to show all obstructions

such as signal wires, points rods and their correct location in references to track/tracks as well as underground obstructions like pipes cables, etc. after collecting such information from the site.

In open line sections, cross-sections shall be submitted in the following proforma, separately for each Railway line for special foundation drawings with all necessary details shall be submitted to the Purchaser. In case of side bearing foundation with extra depth, formation details at such location and necessary details of anchor foundation will be submitted.

CROSS SECTION FOR THE OPEN ROUTE SECTION ----------Km. ---------- to ----------

Sl. No.		1 2 3 4 5 6 7 8 10 11 12 13 14 15
LOCATION No.		
CHAINAGE		
DETAILS	SETTING DISTANCE IN `m'	
	STEP DISTANCE IN 'm'	
	F.B.M. CODE	
	SOIL TYPE & PRESSURE	
	FOUNDATION TYPE AND SIZE	
	MAST SIZE & LENGTH IN 'm'	
	MAST EMBEDDED LENGTH 'M'	
	REVERSE DEF LECTION in cm	
	SUPER MAST LENGTH (m)	
	CROSS ARM LENGTH (m)	
	ANY OBSTRUC TION	

K-RIDE

(g) FINAL LAYOUT PLANS

After all the cross section drawings in a section covered by the layout plan are finalized and foundations are cast, the Contractor shall revise the layout plans to take into account any modifications to the locations of Structures during the process of casting of foundations.

(h) STRUCTURE ERECTION DRAWINGS

The Contractors shall then submit Structure erection drawings for each structure incorporating all the details included in the cross section drawing for the structure and as erected at site and the details or the bracket assembly, mast extensions, isolator mounting frame and anchorage of overhead equipment, feeder or return conductors proposed for each structure together with all particulars necessary for the correct erection of overhead equipment at the structure. For structure with isolators, the details of electrical connections shall also be incorporated. In open line sections the Contractor shall submit structure erection particulars in the typical proforma as given below separately for each main line track in addition to particular details as indicated in the proforma for cross-

section drawings. Modification to this proforma is found necessary will be finalised at time of structure erection drawings.

Sl.No.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
LOCATION No.	
CHAINAGE	
1. ENCUMBRANCE	
2. CONTACT WIRE HEIGHT.	
3. STAGGER i) CATENARY ii) CONTACT	
4. STAY ARM i) (a) ii) CODE	
5. BRACKET i) (b) M ii) CODE	
6. REGISTER : i) C/D (M) ii) CODE	
7. STD/BENT CODE	
8. IDENTIFICATION MARK (SEE PARA 2.5.11)	
OTHER REFERENCES/CODES FOR MISC. ITEMS LIKE STEEL WORK FOR STAY/BRACKET ATTACHMENT MISC. SINGLE/DOUBLE CAT. ETC. WILL BE INDICATED. ITEMS :-	

K-RIDE

Tolerances to be adopted while Erection of Bracket Assembly, conducting SED checking & Tower Wagon checking:

Sl. No.	Item	Limits/Tolerances
(i)	Register Arm Tube Projection	150 - 200 mm in case of Push off locations. For Pull off locations, it shall project over Contact Wire Plane.
(ii)	Bracket Tube Projection	150 - 200 mm
(iii)	Dip between Register Arm Tube & Steady Arm	200 - 250 mm on Tangent Track. (BFB Steady Arm). 250 - 320 mm on Curves. (BFB Steady Arm & Bend Tubular Steady Arm).
(iv)	Encumbrance	± 50 mm
(v)	Length of 'A' Dropper (1st Dropper	± 5 mm

	from Support)	
(vi)	Spacing of 'A' Dropper (1st Dropper from Support)	± 30 mm
(vii)	Length of Other Droppers	± 5 mm
(viii)	Spacing of Other Droppers	± 50 mm
(ix)	Stagger of Catenary Wire	± 30 mm
(x)	Height of Catenary Wire	± 50 mm
(xi)	Stagger of Contact Wire	± 10 mm
(xii)	Position of Compensation Plate	It shall be in vertical plane.
(xiii)	Difference between mainline Contact wire and the Crossover Contact Wire at Support.	50 mm (minimum)

NOTE: *The proforma for SED at individual locations shall be as per standard proforma already circulated and to be adopted in consultation with Purchasers.*

FOR TSS:

a) **Purchaser's location plans**

(A) **FOR TRACTION SUB-STATIONS**

The location plans and schematic diagram of connections for each of the traction sub-stations will be furnished by the Purchaser to the Contractor. These will indicate.

i) Position of incoming lines on the gantries to be erected inside the traction sub-station.

ii) Location of switching station gantry showing where the 25kV outgoing feeders will be terminated.

iii) Schematic diagram of connections of Transformers, Circuit breakers Isolators etc.

iv) Position of the control room with respect to the traction sub-station.

v) Fencing outline with gates.

(B) **FOR FEEDING STATIONS**

The location plans and schematic diagrams of connections for all the feeding stations will be furnished by the Purchaser to the Contractor. These will indicate the following as applicable:-

i) Overhead equipment layout in the vicinity of feeding stations.

K-RIDE

ii) Location of main masts.

iii) Arrangement of cross feeders and longitudinal feeders to be anchored on the gantry if any, including jumper connections to the overhead equipment.

iv) Scheme of connections of interrupters.

v) Position of the remote control cubicle with respect to the feeding stations.

C) **SHUNT CAPACITOR BANK**

The location plans and schematic diagram of connections for capacitor bank installation at each of the traction sub-stations will be furnished by the Purchaser to the Contractor. These will indicate.

i) Schematic diagram of connections of circuit breakers, isolators, L.As etc.

ii) Position of the control room with respect of the traction sub-station.

iii) Fencing outline with gates.

b) Contractor's responsibility.

The Contractor shall satisfy himself about the correctness and applicability of the location plans given by the Purchaser before adopting them for detailed designs.

K-RIDE

PARTICULAR DESIGNS & WORKING DRAWINGS FOR SWITCHING STATIONS & BOOSTER STATIONS:

(a) PURCHASER'S LOCATION PLAN ETC.

The location plans and schematic diagrams of connections for all the switching stations, booster transformer stations and L.T. supply transformer stations will be furnished by the Purchaser to the Contractor. These will indicate the following as applicable:-

i) Overhead equipment layout in the vicinity of switching or other stations.

ii) Location of main masts.

iii) Arrangement of cross feeders and longitudinal feeders to be anchored on the gantry if any, including jumper connections to the overhead equipment.

iv) Scheme of connections of interrupters.

v) Position of the remote control cubicle with respect to the switching stations.

vi) Fencing outline at the switching stations.

The Contractor shall satisfy himself about the correctness and applicability of the location plans given by the Purchaser before adopting them for detailed designs.

(b) DETAILED DRAWINGS

(A) OHE WORKS :

The Contractor shall submit for approval of the Purchaser the following drawings:-

(i) Cross-section drawings for each switching stations indicating the cross section of the formation transverse to the track at each location of main mast and longitudinal section parallel to the track along the center line of the interrupters. These drawings shall be prepared after an accurate survey at site and shall indicate the nature of the soil, its bearing capacity, compactness and in case of loose soil, transverse section of the parent soil. In the preparation of the drawings care shall be taken to show all obstructions to be removes, such as signal wires, rods and their correct location with reference to the track/s as well as under-ground constructions like pipes, cables etc. after collections such information from the site.

(ii) **GENERAL ARRANGEMENT DRAWINGS**

General arrangement drawings for switching stations indicating the general arrangement of all equipments, run of bus bars, position of pedestal insulators, steel frame work and fencing. The drawings shall also give a schematic connection/diagram and an isometric view of busbars and connections. The drawings shall include an elevation view of the switching stations from behind a transverse cross section and plan sectional views at the level of feeder anchors insulator beams, potential transformer beams and ground. Each drawing shall have a schedule of all equipments required at the switching station along with drawing references of details of these equipments.

(iii) STRUCTURAL DRAWINGS

Structural assembly drawing for switching stations indicating the steel frame work assembly. The drawings shall include one elevation view of the steel frame work assembly from behind, a transverse cross-section and plan views at various levels such as at the level of feeder anchors, insulator beams/and ground. In the assembly each component member shall be marked with its reference number. The drawing shall also have a schedule of component members alongwith drawing reference various members. The weight of the component members shall be indicated in a separate weight schedule. The drawings shall be prepared for the various structural components. An individual drawing shall be made for each component and this shall include all fixing bolts, nuts and washers whose sizes will be mentioned on the drawings. Unit isolator beams, potential transformer beams weight of the component shall also be given in the drawings.

(iv) FOUNDATION LAYOUT AND CROSS-SECTION DRAWINGS

K-RIDE

Foundation layout & cross-section drawings for each switching station indicating layout of all foundations in plan, transverse cross-section of various foundations through center line of main masts, interrupters, fencing uprights and L.T. supply transformers, if any, and longitudinal sections parallel to tracks through the center line of the cable trench. All foundations shall be marked serially on the drawing and listed in a schedule on the drawing indicating the volume of concrete for each foundation block.

(v) FENCING LAYOUT DRAWINGS

Fencing layout drawings for each switching station indicating the layout of the entire fencing and anti-climbing device in plan. Each upright, fencing panel and fixture on the upright shall be indicated on the drawing by its reference number. A schedule of components viz. Uprights, panel's fixer, and barbed wire shall be included in the drawings indicating the drawing references of components. An individual drawing shall be made for each type panel, fencing post and fixture for mounting the anti-climbing device. The drawing of each fencing post shall indicate the unit weight of the fencing post.

(vi) EARTHING LAYOUT DRAWINGS

Earthing layout drawing for each switching station indicating the layout of full earthing system in plan. The drawing shall show the location of earth electrodes and mark the runs of earthing strips and connections to each equipment, mast, fencing post and fencing panel. All components shall be marked with their reference numbers, for further details of the run of conductors and connections, separate drawings which may be common to all switching stations may be made and references to these drawings marked on the layout. A schedule of components shall be made out in the drawing giving drawing references of components.

K-RIDE

(vii) CABLE RUN LAYOUT.

Cable run layout of each switching station indicating inter-connection between various equipments, indoor and outdoor, along with schematic arrangements and physical disposition of equipments, colour coding or code number and the index scheme adopted for terminals. The drawings shall also indicate the cable size and grades of insulation. The quantity of various cables required shall be indicated on the drawings.

(viii) EQUIPMENT DRAWINGS

Equipment drawings applicable to all switching station except the ones for the equipments to be supplied by the Purchaser. Drawings should be dimensioned and should indicate:-

1. Fixing or mounting hole dimensions and arrangement:
2. Net weight of the equipment.

3. Characteristic and rating of equipment

4. Circuit diagrams;

5. Overall dimensions and other important dimensions;

6. Height and vertical and horizontal dimensions of all exposed live parts; and

7. Notes explaining the operation of the equipment

(ix) MISCELLANEOUS DRAWINGS

Miscellaneous drawings applicable to all switching stations. These drawings shall include drawings or sketches made for study of clearances, isolator alignment details, scheme of interlocks, number plates of various equipments and "U" bolts for cable mounting, caution or instruction boards, outriggers for busbar supports and non-standard busbar connectors.

(x) EMPLOYMENT SCHEDULES AND CHARTS

Employment schedules and charts applicable to all switching stations. These will include:

1. Employment schedule for pure gravity type of foundations for main masts for various direct loads and bending moments;

2. Employment schedule for all other foundations for various depths of parent soil from the datum level.

3. Sag tension charts for cross feeders for various spans and tensions.

(B) FOR TSS WORKS:

Contractor shall submit for approval the following drawings.

a) **Cross section drawings**.

Cross section drawings for each traction sub-station, indicating the transverse and longitudinal cross-section of the soil along the center line of the equipments, busbar supports and cable trenches. These drawings shall be prepared after an accurate survey at site and shall indicate the nature of the soil, its bearing capacity, compactness and in case of loose soil, cross-section of the parent soil. In the preparation of the drawings, care shall be taken to show all obstructions to be removed, such as telegraph posts, underground pipes, cables etc. after collection of such information from the site.

b) **General arrangement drawings**.

General arrangement drawings for each traction sub-station shall indicate the general arrangement of all equipments, run of busbars, position of pedestal insulators and steel frame work. The drawings shall also give a schematic connection diagram and an isometric view of busbars and connections wherever required. The drawings shall include an elevation view of the traction sub-station, transverse cross section and plan views. The drawings shall have a schedule of all equipments required at the traction sub-station alongwith drawing references of the details of these equipments.

K-RIDE

c) **Structural drawings**

Structural drawings for each supporting steel frame work of pedestal. The drawing shall include one elevation view of the steel frame work assembly from behind, a transverse cross section and plan view. In the assembly each component member shall be marked with its reference number. The drawing shall also have a schedule of components members along with drawing references of various members. The weight of the component members shall also be indicated. The drawings shall be prepared for the various structural components. An individual drawing shall be made for each component and this shall include all fixing bolts, nuts and washers whose sizes will be mentioned on the drawing. Unit weight of the components shall also be given in the drawing.

d) **Foundation layout and cross section drawings**.

Foundation layout and cross section drawings for each traction sub-station indicating layout of all foundations in plan, longitudinal and transverse cross-sections of various foundations through centre line of gantry/portal legs, various equipment busbar supports, fencing uprights and cable trenches. All foundations shall be marked serially on the drawing indicating the volume of concrete for each foundation block.

e) **Earthing layout drawings**.

Earthing layout drawing for each traction sub-station indicating the layout of full earthing system in plan. The drawing shall show the location of earth electrodes and mark the runs of earthing leads and connections to equipment, gantry/portal columns, fencing uprights, structural supports etc. All components shall be marked with their reference numbers. For further details of the run of conductors and connections, separate drawings which may be common to all traction sub-stations may be made and references to these drawings marked on the layout. A schedule of components shall be made out in the drawing giving drawing references of components. These drawings shall be prepared duly taking into account the actual soil resistivity of the respective traction sub-station area, measured in the presence of the Purchaser's representative in accordance with the procedure laid down in IS:3043 -1966. The necessary design calculations for the proposed earthing system of the traction sub-station shall also be submitted by the Contractor for Purchaser's approval.

f) **Cabling & Wiring drawings**.

Cabling and wiring diagrams for each traction sub-station indicating the schematic arrangement and physical disposition of equipment, run of cables and wires for inter-connections between various equipments indoor and outdoor, colour coding and the index scheme adopted for terminals. The drawings shall also indicate the sizes of wires and grades of insulation. The quantity of various cables required shall be indicated on the drawings.

g) **Fencing layout drawings**.

Fencing layout drawings for each traction sub-station indicating the layout of entire fencing and anticlimbing device in plan. Each upright, fencing panel and fixture on the upright shall be indicated on the drawing by its

K-RIDE

reference number. A schedule of components viz. uprights, gates, panels fixtures and barbed wires shall be included in the drawing indicating the drawing reference of the components. Type drawings shall be prepared for the various fencing components. An individual drawing shall be made for each type of panel, fencing post, gate and fixture for mounting the anticlimbing device. The drawing of each fencing post shall indicate the unit weight of the fencing post.

h) Equipment drawings applicable to all traction sub-stations complete with drawings of components parts except the ones for the equipment to be supplied by the Purchaser. The Contractor shall submit 6 copies for distribution to field office and one transparent print for the equipments to be supplied by Contractor. Drawings should be dimensioned and should indicate.

1) Fixing or mounting hole dimensions & arrangement.
2) Net weight of the equipment.
3) Characteristics and ratings including those of motors and resistors etc.
4) Schematic and detailed circuit diagrams.
5) Overall dimensions and other important dimensions.
6) Height and disposition of all exposed live parts, height of the bottom most point of all bushings and insulators.
7) Notes explaining the operation of the equipment.

For equipment to be supplied by the Purchaser, drawings showing the above particulars will be furnished to the Contractor to enable him to carry out the installation, wiring and commissioning of such equipment.

i) **General Drawings**.

General drawings applicable to all traction sub-station. These drawings shall include the drawings or sketches made for study of clearances, Isolator alignment details, number plates of various equipments, caution or instruction boards, non-standard busbar connectors, clamps and U-bolts for cable mounting etc.

j) **Schedule of quantities**.

On receipt of approval of relevant drawings for each traction sub-station, the following schedules of quantities relating to each traction sub-station shall be submitted within a fortnight of receipt of approval.

i) Schedule of foundations, showing volume of each type and total volume.
ii) Schedule of steel work, types, weights of each member and total weight.
iii) Schedule of quantities of various items of work

(C) FOR FEEDING STATIONS

The Contractor shall submit for approval of the Purchaser the following drawings:-

a) **CROSS SECTION DRAWINGS**

K-RIDE

Cross-section drawings for each feeding stations indicating the cross section of the formation transverse to the track at each location of main mast and longitudinal section parallel to the track along the center line of the interrupters. These drawings shall be prepared after an accurate survey at site and shall indicate the nature of the soil, its bearing capacity, compactness and in case of loose soil, transverse section of the parent soil. In the preparation of the drawings care shall be taken to show all obstructions to be removes, such as signal wires, rods and their correct location with reference to the track/s as well as under-ground constructions like pipes, cables etc. after collections such information from the site.

(b) **GENERAL ARRANGEMENT DRAWINGS**

General arrangement drawings for feeding stations indicating the general arrangement of all equipments, run of bus bars, position of pedestal insulators, steel frame work and fencing. The drawings shall also give a schematic connection/diagram and an isometric view of busbars and connections. The drawings shall include an elevation view of the feeding stations from behind a transverse cross section and plan sectional views at the level of feeder anchors insulator beams, potential transformer beams and ground. Each drawing shall have a schedule of all equipments required at the feeding station alongwith drawing references of details of these equipments.

(c) **STRUCTURAL DRAWINGS**

Structural assembly drawing for feeding stations indicating the steel frame work assembly. The drawings shall include one elevation view of the steel frame work assembly from behind, a transverse cross-section and plan views at various levels such as at the level of feeder anchors, insulator beams/and ground. In the assembly each component member shall be marked with its reference number. The drawing shall also have a schedule of component members along with drawing reference various members. The weight of the component members shall be indicated in a separate weight schedule. The drawings shall be prepared for the various structural components. An individual drawing shall be made for each component and this shall include all fixing bolts, nuts and washers whose sizes will be mentioned on the drawings. Unit isolator beams, potential transformer beams weight of the component shall also be given in the drawings.

(d) **FOUNDATION LAYOUT AND CROSS-SECTION DRAWINGS**

Foundation layout & cross-section drawings for each feeding station indicating layout of all foundations in plan, transverse cross-section of various foundations through center line of main masts, interrupters, fencing uprights and L.T. supply transformers, if any, and longitudinal sections parallel to tracks through the center line of the cable trench. All foundations shall be marked serially on the drawing and listed in a schedule on the drawing indicating the volume of concrete for each foundation block.

(e) **EARTHING LAYOUT DRAWINGS**

Earthing layout drawing for each feeding station indicating the layout of full earthing system in plan. The drawing shall show the location of earth electrodes and mark the runs of earthing strips and connections to each equipment, mast, fencing post and fencing panel. All components shall be marked with their reference numbers, for further details of the run of conductors and connections, separate

K-RIDE

drawings which may be common to all feeding stations may be made and references to these drawings marked on the layout. A schedule of components shall be made out in the drawing giving drawing references of components.

(f) **CABLE RUN LAYOUT**

Cable run layout of each feeding station indicating inter-connection between various equipments, indoor and outdoor, along with schematic arrangements and physical disposition of equipments, colour coding or code number and the index scheme adopted for terminals. The drawings shall also indicate the cable size and grades of insulation. he quantity of various cables required shall be indicated on the drawings.

(g) **EQUIPMENT DRAWINGS**

Equipment drawings applicable to all feeding station except the ones for the equipments to be supplied by the Purchaser. Drawings should be dimensioned and should indicate:-

1. Fixing or mounting hole dimensions and arrangement
2. Net weight of the equipment.
3. Characteristic and rating of equipment
4. Circuit diagrams
5. Overall dimensions and other important dimensions
6. Height and vertical and horizontal dimensions of all exposed live parts
7. Notes explaining the operation of the equipment

K-RIDE

(h) **MISCELLANEOUS DRAWINGS**

Miscellaneous drawings applicable to all feeding stations. These drawings shall include drawings or sketches made for study of clearances, isolator alignment details, scheme of interlocks, number plates of various equipments and "U" bolts for cable mounting, caution or instruction boards, outriggers for busbar supports and non-standard busbar connectors.

(i) **EMPLOYMENT SCHEDULES AND CHARTS**

Employment schedules and charts applicable to all feeding stations. These will include:

1. Employment schedule for pure gravity type of foundations for main masts for various direct loads and bending moments;

2. Employment schedule for all other foundations for various depths of parent soil from the datum level. 3. Sag tension charts for cross feeders for various spans and tensions.

(j) **SCHEDULE OF QUANTITIES**

Within a fortnight of receipt of approval of relevant drawings for each feeding station, the following schedules of quantities shall be submitted.

i) Schedule of number of foundations, types, volume of different foundation and total volume. foundations will be treated as one foundation;

ii) Schedule of number of masts, types, weight of different masts, and the total weight of masts of each gantry.

iii) Schedule of steel work, types, weight of each member and total weight; and

iv) Schedule of quantities of various items of work

(D) FOR SHUNT CAPACITOR BANK

Contractor shall submit for approval of the following drawings:-

a) **Cross section drawings**

Cross section drawings for each capacitor bank installation indicating the transverse and longitudinal cross-section of the soil along the centre line of the equipments, busbar supports and cable trenches. These drawings shall be prepared after an accurate survey at site and shall indicate the nature of the soil, its bearing capacity, compactness and in case of loose soil, cross section of the parent soil. In the preparation of the drawings, case shall be taken to show all obstructions to be removed, such as telegraph posts, underground pipes, cables etc. after collection of such information form the site.

b) **General arrangement drawings**

General arrangement drawings for each capacitor bank installation indicating the general arrangement of all equipments run of busbars, position of pedestal insulators and steel framework. The drawings shall also give a schematic connection diagram and an isometric view of busbars and connections wherever required. The drawings shall include an elevation view of the capacitor bank installation transverse cross section and plan views. The drawings shall have a schedule of all equipments required at the sub-station along with drawing references of the details of these equipments.

c) **Structural drawings**

Structural drawings for each supporting steel framework of pedestal. The drawing shall include one elevation view of the steel framework assembly from behind, a transverse cross section and plan view. In the assembly each component member shall be marked with its reference number. The drawing shall also have a schedule of components members along with drawing references of various members. The weight of the component shall also be indicated. The drawings shall be prepared for the various structural components. An individual drawing shall be made for each component and this shall include all fixing bolts, nuts and washers whose sizes will be mentioned on the drawing. Unit weight of the components shall also be given in the drawing.

d) **Foundation layout and cross-section Drawings**

K-RIDE

Foundation layout and cross section drawings for each capacitor bank installation indicating layout of all foundations in plan, longitudinal and transverse cross-sections of various foundations through centre line of various equipment busbar supports, and cable trenches. All foundations shall be marked serially on the drawing indicating the volume of concrete for each foundation block.

e) **Earthing layout drawings**

Earthing layout drawing for each capacitor bank installation indicating the layout of full earthing system in plan. The drawing shall show the location of earth electrodes and mark the runs of earthing leads and connections to equipment, structural supports etc. All components shall be marked with their reference numbers. For further details of the run of conductors and connections, separate drawings which may be common to all traction sub-stations may be made and references to these drawings marked on the layout. A schedule of components shall be made out in the drawing giving drawing references of components. These drawings shall be prepared duly taking into account the actual soil resistivity of the respective traction sub-station area, measured in the presence of the Purchaser's representative in accordance with the procedure laid down in IS:3043 -1966. The necessary design calculations for the proposed earthing system of the traction sub-station shall also be submitted by the Contractor for Purchaser's approval.

f) Cabling and Wiring drawings

Cabling and Wiring diagrams for each traction sub-station indicating the schematic arrangement and physical disposition of equipment, run of cables and wires for inter connections between various equipments indoor and outdoor, colour coding and the index scheme adopted for terminals. The drawings shall also indicate the sizes of wires and grades of insulation. The quantity of various cables required shall be indicated on the drawings.

g) Equipment drawings applicable to all traction sub-stations complete with drawings of components parts except the ones for the equipment to be supplied by the Purchaser. Drawings should be dimensioned and should indicate:

i) Fixing or mounting hole dimensions and arrangement
ii) Net weight of the equipment.
iii) Characteristics and ratings including those of motors and resistors, etc.
iv) Schematic and detailed circuit diagrams.
v) Overall dimensions and other important dimensions.
vi) Height and disposition of all exposed live parts, height of the bottom most point of all bushings and insulators.
vii) Notes explaining the operation of the equipment.

For equipment to be supplied by the Purchaser, drawings showing the above particulars will be furnished to the Contractor to enable him to carry out the installation, wiring and commissioning of such equipment.

h) **General drawings**

General drawings shall be applicable to all capacitor bank installation. These drawings shall include the drawings of sketches made for study of clearances, isolator alignment details, number plates of various equipments, caution or instruction boards, non standard busbar connectors, clamps and U-bolts for cable mounting etc.

K-RIDE

BOOSTER & L.T. SUPPLY TRANSFORMER STATIONS DRAWINGS:

The Contractor shall submit for approval to the purchaser L.T. supply transformer stations, similar to those detailed for switching stations. The following drawings may, however, be combined together:

(i) Cross-section and foundation layout drawings;

(ii) General arrangement, structural and earthing layout drawings.

SCHEDULE OF QUANTITIES:

(a) Within five months of issue of Letter of Acceptance of Tender, the Contractor shall assess the quantities of various items of work including various components and fittings as covered in Schedule 1 and submit Schedule 1 (Assess.1) along with the corresponding quantity of various fittings and components included in Schedule 3 for approval of the Purchaser. Such an assessment shall be revised at suitable intervals after the first assessment is approved till the work is completed. Such re-assessments denominated as Schedule 1 (Assess. 2) (Assess. 3) etc., shall also be submitted for approval of the purchaser. On receipt of approval of each final layout plan from the Purchaser, the followings Schedules of quantities relating to each layout plan shall be submitted within a fortnight.

i) Schedules of number of masts, types, weight of different masts and total weight of masts;

ii) Schedules of number of foundation, types, volume of different foundations and total volume;

iii) Schedule of quantities of various items of work other than masts and foundation

iv) Schedule of net tension lengths of contact, catenary and feeder wires and lengths required to be ordered;

v) Schedule of lengths of other wires and conductors required to be ordered;

and

vi) Schedules of small parts steel work to be supplied; either by the Contractor or the Purchaser.

(b) SWITCHING/BOOSTER STATIONS

Within a fortnight of receipt of approval of relevant drawings for each switching/ booster station, the following schedules of quantities shall be submitted.

i) Schedule of number of foundations, types, volume of different foundation and total volume. Overlapping foundations will be treated as one foundation;

ii) Schedule of number of masts, types, weight of different masts, and the total weight of masts of each gantry;

iii) Schedule of steel work, types, weight of each member and total weight; and

K-RIDE

iv) Schedule of quantities of various items of work of schedule1 not included in Item (i), (ii), and (iii) above.

(c) TRACTION Sub-Stations:

On receipt of approval of relevant drawings for each Traction Sub-Station, the following schedules of quantities relating to each Traction Sub-Station, shall be submitted within a fortnight of receipt of approval.

i) Schedule of foundations, showing volume of each type and total volume.
ii) Schedule of steel work, types, weights of each member and total weight.
iii) Schedule of quantities of various items of work not included in item (i) and (ii) above.

SUBMISSION OF DRAWINGS & SCHEDULES:

(a) The submission of designs and drawings for approval shall be done in the manner indicated in this tender . In case Contractor wish to deviate from standard drawings he should submit to the purchaser revised drawings with full details of deviation sought explaining the necessity of deviation, calculations and other supporting documents. The purchaser, if satisfy about the necessity and adequacy of deviations, shall refer the matter to RDSO for necessary approval. In case of deviations on working drawings¬ decision shall be communicated by the purchaser to the Contractor. The numbers of copies of drawings which shall be submitted are indicated in the following sub-paras. The purchaser will return one copy of the drawings either with approval subject to modification where necessary or with comments. The purchaser shall endeavor to return this copy within a period of fifteen days from the date of receipt and shall normally return the copy within a month. Where drawings are returned with comments or approval subject to modifications, the Contractor shall submit to the purchaser within fifteen days of receipt of such advice revised drawings for approval taking into account the comments or modifications. Also the Contractor shall as far as possible avoid correspondence on such comments and shall endeavor to settle any difference of opinion on the comments by discussions with the purchaser's Engineers. No drawings shall be resubmitted without incorporating the modifications required by the comments of the purchaser, unless the purchaser has agreed to the deletion of such comments.

(b) DEVIATION FROM STANDARD DESIGN

In case of deviation from standard designs and drawings, copies of correspondence and drawings shall be sent in duplicate to the GM/Electrical/K-RIDE or his successor/nominee (whose address will be intimated in due course). In the particular case of deviations in the design of fittings the drawings submitted by the Contractor shall be actual manufacturing drawings complete with tolerances and full specifications of the materials used. In addition, four samples of the modified fittings shall also be submitted, after the drawings are approved.

(c) SPECIAL DESIGNS

Special designs to meet the requirement of particular locations and local conditions shall be submitted in due time in duplicate for approval.

(d) PURCHASER'S PEGGING PLANS

K-RIDE

Two copies of the purchaser's pegging plans shall be sent back after verification if found correct. If modifications are required, fresh pegging plans incorporating the modifications shall be submitted in two copies for approval.

(e) CONTRACTOR'S PEGGING PLANS

When the Contractor is called upon to survey and prepare pegging Plans, he shall send three copies of such plans, while submitting them for approval.

(f) CROSS-SECTION DRAWINGS

Cross-section drawings shall be submitted for approval in two copies for a convenient section at a time separately for sections within station limits and section outside station limits. Such drawings shall be submitted progressively and as far as possible without gaps.

(g) OHE LAYOUT PLANS AND PROFILE DRAWINGS

Overhead equipment layout plans, provisional and final and profile drawings shall be submitted for approval in three copies.

(h) STRUCTURE ERECTION DRAWINGS

Structure erection drawings shall be submitted for approval in two copies for a section at a time separately for sections within station limits and sections outside station limits, progressively and without gaps.

(j) SCHEDULE OF QUANTITIES

Schedules of quantities for each approved layout plan/switching station shall be submitted for approval in two copies.

(k) All drawings for switching stations, booster transformer stations and L. T. supply transformer stations shall be submitted for approval in three copies.

(l) DISTRIBUTION COPIES

On receipt of purchaser's unqualified approval to the Contractor's Drawings, Schedule of quantities, the Contractor shall submit original tracings of those drawings and schedules for the signature of the purchaser in token of approval within seven days of the receipt of approval and the purchaser shall as far as possible return the same to the Contractor within 7 working days thereafter. On receipt of these tracings from the purchaser, the Contractor shall submit copies for distribution to field officers and other departments as indicated below within 7 days of receipt of approved tracings:

i) Standard designs including fittings drawings)	8 copies
ii) Special designs	8 copies
iii) Final peggings plans	6 copies
iv) Structure Cross-section drawings	6 copies

K-RIDE

v) OHE layout plans	6 copies
vi) OHE profile drawings	6 copies
vii) Structure erection drawings	6 copies
viii) Stations Rules Diagrams	20 copies
ix) Stations working Instructions	20 copies
x) Drawings for switching stations, booster transformer stations & L.T. transformer stations.	6 copies
xi) Schedule of quantities	3 copies

COMPLETION DRAWINGS & SCHEDULES:

After completion of works, all drawings and designs submitted by the Contractor for OHE, TSS & SCADA works and approved by the purchaser shall be made upto date incorporation actual supply and erection particulars including the name and make of insulators, galvanised steel tubes, stainless steel wire rope, Transformers, Circuit Breakers, ATs, CTs, PTs, Interrupters, RTUs etc. The mark of conductors shall be specified in the "As erected" OHE layout plans, SED and other relevant drawings for identification. Such drawings and schedules shall then be verified and corrected, if necessary, by the Contractor jointly with the purchaser's representatives. The verified and corrected drawings shall be supplied in four sets, one of which shall be transparencies of linen or film reproduction or any other durable material approved by the purchaser. In addition, the contractor shall also supply the soft copy of approved drawings. The soft copy shall be in Auto Cad, Coral draw or any other similar format as mutually agreed between the contractor and the purchaser.

K-RIDE

CHAPTER- 06
ERECTION AND INSTALLATION OF EQUIPMENT

PRINCIPLES

METHODS OF ERECTION :

All work shall be done in accordance with methods of erection and installation of equipment approved by the Purchaser. In the case of switching station, booster transformer stations, L.T. supply transformer stations and Traction Sub-Stations, standard methods adopted for erection and installation of electrical equipment shall be adopted.

SECTIONING

The entire equipment shall be erected in accordance with the finally adopted sectioning diagram and in such a way so as to facilitate sectioning which may be required in future and which will be indicated by the purchaser.

INSPECTION

All erection and installation work shall be subject to inspection by the purchaser to ensure that the work is done in accordance with the specification, approved designs and drawings and is of the best quality suitable for the purpose.

K-RIDE

MEASUREMENTS

All measurements for location of structures and foundations shall be made with the aid of steel tapes. On curves, these measurements shall be taken on the outer rail of the middle track in the case of odd number of tracks and on the inner rail of the first outer track from the centre of the formation in the case of an even number of tracks, structures on curves shall be located in the radial offset of the location as determined.

BOLTS, NUTS ETC .

All bolts, nuts, locknuts, screws, locking plates & split cotter pins etc. shall be properly tightened and secured. Contractor shall carry out systematic inspection of this aspect of work after all adjustments to overhead equipment/installation are completed and prior to offering completed sections of equipment/Sub-Station to the purchaser for inspection and testing. No bolts may project more than 10mm beyond the nut/locknut after full tightening.

DAMAGE TO GALVANISING PAINTING :

In loading, transport and erection, all galvanized/ painted materials shall be handled with care to avoid damage to galvanising/painting. If galvanising/painting is damaged inspite of all care taken, the damaged part of component shall be put up for inspection, to obtain permission from the purchaser to carry out repairs.

FOUNDATIONS :

(a) The Contractor shall carry out soil pressure tests in accordance with methods approved by the purchaser to determine permissible bearing pressure of various representative types of soils in the presence of the purchaser's representative during the pegging out of site inspection. He shall adopt only those values as accepted by the purchaser for the design of foundations.

(b) LOCATION

The location of each foundation or anchor block shall be set out correctly in accordance with approved structure cross-section drawings or foundations layout drawings, as the case may be, in the presence of the Purchaser's representative.

(c) METHOD OF INSTALLATION

As per provision in Clause 10.3 of IS: 456/2000, only mechanical mixers are to be used for mixing of concrete required anywhere in Electrification works including concrete for OHE foundation.

In exceptional circumstances, such as mechanical breakdown of mixer, work in remote areas or power breakdown and when the quantity of concrete work is very small, hand mixing may be done with the specific prior permission of the Engineer in writing subject to adding 10% extra cement. When hand mixing is permitted, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the concrete is uniform in colour and consistency.

He may erect traction masts or structures in the same operation as casting of foundations or erect them subsequently in cored holes left in foundation blocks and grout them separately. In any case, the method of casting of foundation blocks and erection of masts or structures shall be subject to the approval of the purchaser.

(d) EXCAVATION

Normally, excavation of soil for foundations or anchor blocks along side the tracks may be done upto length of 1 to 1.2 m and depth of 0.8 to 1 m without shoring, provided the excavated hole is concreted immediately and not left overnight. Shoring shall otherwise be done unless the hole is re-filled with soil and temped. In case the length of excavation is 1 to 1.2 m and depth of excavation for foundations and anchor blocks alongside the tracks is more than 0.8 to 1 m, the excavation may be undertaken only after certification by the purchaser's representative to be safe and concrete is cast on the same day. Shoring shall be done to the satisfaction of the purchaser's representative, if the excavated hole is left overnight. All water logged locations will come under the purview of this para. In poor soil or ash banks, no excavation shall be done without adequate shoring and piling. For large foundations and water logged locations shoring shall be done in accordance with drawings submitted by the Contractor and approved by the purchaser. Shoring/ shuttering of the pits should be provided effectively to the satisfaction of the purchaser. Core hole covers should be provided promptly on casting of foundation (within 48 hours) and their edges cemented to the foundation blocks. Prior to doing so, water should be filled in the core hole so as to assist in curing. The date

K-RIDE

of casting should be inscribed on the foundation block. In case of platform areas and Level crossings, the core holes should be filled with sand before provision of core hole covers so as to prevent any injury to rail users even if the core hole cover gets damaged or is displaced. The track ballast should be restored to its original from promptly after casting of the foundation block. The excavated earth should be removed well clear of the area so as to avoid any mixing up with the track ballast or any obstruction to the track drains. In case of cuttings, the earth should be thrown well away from the shoulders so that there is no risk of its flowing back to the drain during the rains.

(e) CONCRETING

All concreting or grouting shall be done in accordance with above para (Foundations) with ballast graded for the purpose specified. The concrete shall be poured and temped properly in accordance with the method approved by the purchaser. The Contractor shall arrange to provide concrete testing samples for tests once every week or as and when required by the Purchaser, to determine crushing strength after 7 days or 28 days curing as required. Testing shall be arranged by the Purchaser at his own cost.

(f) MUFFS

(i) FOR OHE:

All anchor blocks and foundations of structures carrying overhead equipment shall be provided with concrete muffs. The top of these muffs shall be above the level of ground of the track formation and of adequate height of not less than 15 cm to afford reasonable protection during rainy weather. Muffs may be installed at the same time masts are grouted or after the mast/structure is loaded with equipment. The foundations of structures for switching stations need not, however, be provided with muffs. The top of such foundations shall be given a slope of 1 in 50 towards the edge to ensure that water does not collect at the base of the structure of the frame work of the equipment.

(ii) FOR Foundation Level of TSS:

The top of all foundations and anchor blocks shall always be above the level of the ground and of adequate height, not less than 15 cm. to afford reasonable protection during rainy season. The top of foundation shall be finished to make a smooth surface sloping 1/20 outwards to drain rain water.

(g) Suitable grooves or niches shall be provided in the foundation blocks, wherever required, at the time of casting, to enable embedment of earth strips etc. to avoid the necessity of chipping of concrete.

(h) Conduits for cables should be embedded in the foundation blocks, wherever required, to avoid subsequent chipping off and breaking of the foundation blocks.

(i) All foundations will be cast in the presence of the Purchaser's representative with regard to fixed datum level.

MASTS AND STRUCTURES

(a) ERECTION

In case traction masts or structures are erected in cored foundations, till such time they are grouted, they shall be properly wedged to prevent them leaning towards the track and endanger safety of moving vehicles. In case traction masts or structures are erected simultaneously with the casting of the foundations, the Contractor shall provide suitable temporary supports approved by the Purchaser. The masts/structure shall be embedded in the foundation blocks for the correct length specified in approved drawings.

K-RIDE

NOTE: *Mast/uprights should be grouted on the same day they are dropped in the foundations.*

(b) REVERSE DEFLECTION

All traction masts and structures shall be erected with the correct reverse deflection so that they become reasonably vertical after they are loaded. The method of erection of masts with the correct reverse deflection shall be submitted to the Purchaser for approval.

(c) INFRINGEMENT TO STANDARD DIMENSIONS

In erection, care shall be taken to ensure that no part of the traction mast, structure or any fitting located on such mast or structure infringe the Schedule of Dimensions mentioned in Para - 2.1.1 (c)
" Indian Railways Schedule of Dimensions".

(d) ALINGMENT OF MAST AT GANTRIES

The main masts of gantries shall be carefully aligned to enable easy and good assembly of fabricated steel work.

OVERHEAD EQUIPMENT :

(a) A suggested method for erection of traction overhead equipment would ensure good speed and quality erection. The Contractor may, however, follow other methods which they consider would speed up and ensure good quality work, subject to the approval of the Purchaser. Any wiring method should take into consideration appreciable stretch of the catenary and contact wires in the initial days after they are strung and put under tension.

(b) BRACKET TUBES

In the erection of bracket assemblies, it shall be ensured that the free length of the bracket tube beyond the catenary suspension bracket is at least 200mm to facilitate adjustment during maintenance.

(c) STAY ARMS

The choice of stay arms shall be such that their adjuster are capable of adjustments of minimum of 90 mm in either direction except as otherwise relaxed.

(d) INSULATORS

Before insulators are used in bracket assemblies or dispatched to work site for erection from Contractor's Stores Depot, they shall be tested as specified for routine mechanical test. NO chipped or cracked insulators shall be installed. All insulators shall be cleaned before offering complete sections of equipment for inspection and testing.
For testing of all types of Insulators, RDSO's Guidelines No. TI/MI/0011 (05/01) Rev.1 & TI/MI/ 0042 (12/2008) Rev. 0 or latest are to be followed.

K-RIDE

(e) STRINGING CATENARY

Care shall be taken to avoid kinking or bird caging of the catenary wire in stringing and subsequent operations. While stringing the wire shall be suspended from pulley blocks hung from the

suspension clamp eye of bracket assemblies. The pulleys shall be fitted with ball bearing and shall be of the swivelling type to permit free movement in all directions to prevent damage to the strands of the wire. The design shall also be such that it will prevent slipping off of the wire during stringing operations. The designs of the pulley shall be submitted to the Purchaser for approval. After initial stringing of the catenary, it shall be maintained at the 'no load tension' for a minimum duration of 48 hours before the pulley blocks are removed and the catenary is clamped to suspension clamps of bracket assemblies. Shorter periods may, however, be allowed by the Purchaser.

(f) STRINGING CONTACT WIRE

Care shall be taken to avoid formation of kinks, twists and damage to contact wire in stringing and subsequent operations. While stringing the contact wire, it shall be suspended from pulleys hung from droppers fitted to the catenary in their final position. In curves, the contact wire shall be run in pulleys located at traction masts or supports, corresponding to the approximate final position of the wire.

K-RIDE

(g) LOCATION OF DROPPERS

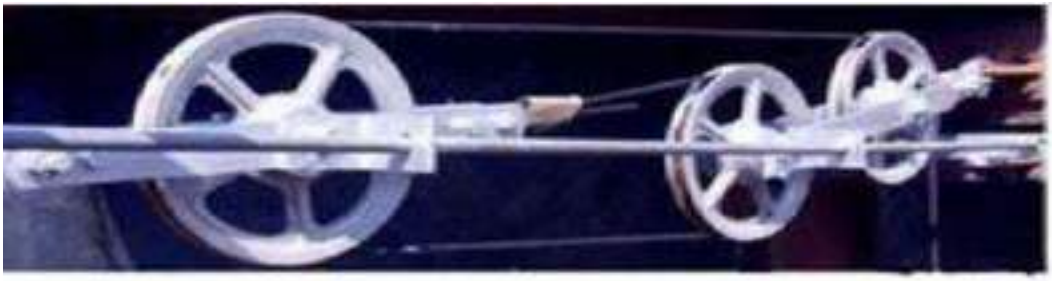
Droppers shall be correctly positioned in each span to ensure correct level of contact wire as per dropper chart applicable to the span.

(h) CLIPPING DROPPERS

The dropper shall be clipped on the contact wire only after a minimum duration of 48 hours from the time the automatic tensioning device is brought into action. Shorter periods may, however, be allowed by the Purchaser.

(j) AUTO TENSIONING DEVICE

The auto-tensioning device shall be erected with the correct height of the counter-weight above rail level with corresponding distance between the pulleys of the device for a temperature of 35° C before it is connected to the overhead equipment and put into action. The installation of the device shall be such as to permit free, easy and unobstructed movement of counter-weight. RDSO's Guidelines No. TI/MI/0035 (09/01) Rev. 1 shall be followed at crossovers and short tension length ATDs.



(k) CUT-IN-INSULATORS

All insulators in out of run shall be so positioned that they are away from the swept zone of the pantographs and will not foul with them. The live parts of these insulators shall also be so located that they are at least 2 m away from Structures other than those supporting traction overhead equipment.

(l) SECTION INSULATORS

All section, insulators shall be so located that they are beyond the swept zone of the pantograph running on adjacent tracks and there is no unusual sag due to the same. Where section insulators are installed, the

contact plane of the runners of the insulators as well as those of overhead equipment connected to it shall be parallel to the track plane.

(m) ANTI -WIND CLAMP

Anti-wind clamp shall be provided as shown in drawing (Annexure-1).

(n) CONNECTIONS

All jumper connections including anti-theft jumpers shall be made properly with parallel clamps and finished neatly without any loose wire or cables. The length of flexible jumpers shall be adequate to avoid any disturbance to overhead equipment or restraint in the relative movement of conductors, but the jumpers should not be excessively long. The ends of jumpers shall be tinned, including the portion inside the first parallel clamp.

(o) SEPARATION BETWEEN OHE

In erection, the physical separation required between overhead equipments and bracket assemblies on the same Structure at insulated overlaps shall be ensured.

(p) GRADIENT OF CONTACT WIRE

The gradient of the contact wire on either side of overline Structures with restricted clearances shall be correctly adjusted and adequate clearance maintained between the overline Structure and live equipment.

(q) ADJUSTMENT AT TURNOUTS ETC

Careful adjustment of equipment shall be made on equipments at Turnouts, cross overs, diamond crossings, overlaps and special Locations, for position of bracket assemblies, stay arms and height of contact wire to ensure that pantographs of electric rolling stock on the run will not foul with any parts of the bracket assemblies and change over of the contact wire is effected smoothly.

(r) For wiring in large Yards, the Contractor shall, prior to the execution of works, submit to the Purchaser's Engineer for the approval the sequence of stringing of catenary and contact wires to arrange for proper crossing of wires. Endeavor will be made to arrange for traffic blocks to suit approved sequence of wiring.

ISOLATORS :

Isolator switches shall normally be so mounted that when the switches are operated, the operator faces the directions of the motion of trains. The operating handles and contact blades shall be correctly aligned for easy operation.

BUS BARS AND CONNECTIONS :

a) The busbar connections on the incoming side, shall be as tight as possible, all similar connections in adjacent bays being uniformly shaped and bent to give a good appearance. The tubular Aluminium busbars shall be supported at a uniform height throughout. Wherever tubular busbars are required to be bent, the radius of the bend shall not be less than 375 mm.

b) All Aluminium busbar joints shall be made carefully. The contact surfaces of the busbars and the connectors shall be cleaned vigorously either by hand with a dry coarse emery cloth or by power driven wire wheel brush. The surfaces shall be smeared with a suitable corrosion inhibiting joint compound approved by the Purchaser. The joint closed-up as soon as possible thereafter and a final light application of joint compound shall be made. Similar procedure shall be followed while connecting the equipment terminals to be busbar by means of bi-metallic connectors.

EARTHING :

FOR OHE:

The copper earth strips or MS flats used for earthing shall be bent and shaped neatly before connection to the structure or frame work of equipment. The connection of MS flats to steel work shall be made at a height not exceeding 15 cm from the datum level of a switching station. Before making earth connections the ends shall be cleaned thoroughly and tinned for copper strips. All junctions shall be properly secured to avoid loose contact. Portions of copper earth strips which remain visible above the ground level should be painted with suitable paint to make them inconspicuous.

FOR TSS:

K-RIDE

Typical clamping arrangement of M.S Flat inside Control Room is shown in the relevant drawing in Annexure-1. The joints on mild steel flats shall be welded type. The welds shall be treated with barium chromate before painting the welded surfaces. The connections to the various items of equipments shall be made with galvanised steel bolts (16mm dia), nuts with locknuts or spring washers as required. The earth connections to the structural members shall be made at height not exceeding 150 mm from the ground level. The steel flats shall be bent and shaped neatly before connection to the structures or frame work of equipment. The earth flats to run along the structures for connections of equipments to earth mat shall be properly supported on the structures with galvanised steel bolts (12mm dia), nuts with lock-nuts or spring washers, as required, at suitable intervals.

TOLERANCE :

The permissible tolerance in dimensions for erections from those included in the appropriate drawings or schedules for different items are given below :-

(a) MEASUREMENTS

The span length shall not vary more than ± 50 mm as measured along the appropriate rail

The cumulative error of measurement of all spans in a kilometer shall be not more than 1000 mm.

(b) SETTING OF STRUCTURES

The setting of structures shall be not less than that included in the appropriate cross section drawings, especially those with the minimum setting of 2.36m. A tolerance of ± 20 mm will be permitted subject to minimum specified value, if the structure is not located in between tracks.

K-RIDE

(c) HEIGHT OF CONTACT WIRE

± 20 mm will be permitted on the height of contact wire at points of supports as shown in the relevant structure erection drawings, except under over line structures where no tolerance will be permitted.

(d) STAGGER : Generally ± 200 mm will be permitted for stagger.

(e) DROPPER LENGTHS : ± 5mm will be permitted for dropper lengths.

(f) DROPPER LOCATION : ± 100 mm will be permitted for dropper locations.

SUPPLEMENTARY INSTRUCTIONS :

Further working instructions will be issued if considered necessary by the Purchaser should be considered that the standard of work of the Contractor requires to be improved.

EQUIPMENT :

The installation of the equipment shall be carried out strictly in accordance with the instructions issued by the Manufacturer. The equipment shall be leveled carefully before being fixed finally in position. The bushings of insulators shall be protected adequately during erection of equipment to avoid chipping or damage to the porcelain. The following methods shall be adopted for mounting the various equipments.

	Equipment	Method of mounting.
i)	Main Power transformer	On two 90 lb/yd flat-footed rails laid on concrete foundations with a spacing of 1676 mm between the inner face of the rails
ii)	220/132/110 kV Circuit breaker	On steel supports mounted on concrete foundation with operating mechanism kiosk on concrete pedestal where necessary
iii)	25kV Circuit breakers and interrupters	On fabricated steel supports erected on concrete foundations
iv)	Isolators, potential transformers, Current transformer L.T supply transformers, 25 kV fuse Switches & Lightning arrestors.	On steel supports mounted on concrete foundations
The Circuit breakers, interrupters and Isolators shall be mounted in such a way that they can be manually operated conveniently by a person standing on the ground or on a concrete pedestal of suitable height.		
v)	Shunt capacitor bank & series reactor	On steel racks which in turn shall be mounted on a concrete plinth with suitable base frame.

K-RIDE

CABLING :

a) Laying of cables.

All PVC cables provided out-door shall be either laid in trenches or neatly clamped to the structures as approved by the Purchaser. If it becomes necessary to take the cable connections along the steel supports for the equipment, the cables shall be laid through bent or shaped G.I. pipes embedded in concrete while the foundations are being cast. All cables in the cable trenches and along the structures shall be neatly secured with proper clamping arrangement at suitable intervals. Each cable in the cable trench/on the structure shall also be provided at suitable intervals with identification labels of durable material bearing indelible engraved or punched markings to facilitate easy identification.

b) Termination of cables.

The cables shall be terminated neatly and the cores arranged and dressed properly. Suitable terminal strips and ferrules made of PVC or other durable materials shall be provided on terminals and wire ends respectively

to facilitate identification. The marking on the terminals strips and ferrules shall be either engraved or punched so as to be indelible.

c) Indoor wiring.

As far as possible all cables shall be laid in the trenches/ pipes provided for the purpose in the Control Room. Wherever necessary indoor wiring on walls shall be clamped neatly on teak wood battens/M.S flats fixed to the wall by means of rag bolts grouted in the wall. The typical clamping arrangement is shown in the relevant drawing in Annexure-1.

WIRING PROCEDURE

The following procedure for erection of overhead equipment has been formulated with a view to ensure that

(i) Bracket assemblies (brackets) and regulating equipment are correctly installed in their final position.

(ii) The conductors are correctly tensioned, and

(iii) The need for final adjustments of overhead equipment immediately before energisation and commissioning is virtually eliminated.

GENERAL :

In the case of regulated overhead equipment when the regulating equipments are in action, the tension in the conductors should remain constant, irrespective of variations in the ambient temperature. As the regulating equipments are brought into action a few days after the stringing of conductors the equipments is unregulated in the intervening period. Any of the following two procedure may be followed for tensioning and clamping of conductors of regulated overhead equipment during stringing operations, i.e. before the regulating equipments are brought into action.

(i) The catenary is tensioned to 1,000 kgf, the stipulated tension at the mean temperature of 35° C, whatever may be the ambient temperature during the stringing operations. In this case, at the time of clamping the catenary to the bracket, the brackets should be placed at angular positions corresponding to temperature at the time of clamping, and proportionate to their distance from the anti-creep.

(ii) The aluminum alloy catenary is tensioned at the calculated tension to correspond to 1000 kgf, the stipulated tension at the mean temperature of 35°C whatever may be the ambient temperature during the stringing operations.

iii) The catenary is strained to a stringing tension corresponding to the ambient temperature for the equipment span of the tension length. In this case, the brackets are placed in the mean position, i.e. at right angles to the track, when the catenary is clamped or the regulating equipment commissioned.

The advantage of the second method is that once the catenary is strung at the proper tension, there would be no necessity to adjust each bracket separately at the time of clamping the catenary or commissioning the

K-RIDE

regulating equipment. The erection work is, thus considerably simplified and the possibility of errors greatly reduced. This is also applicable to erection of unregulated overhead equipment.

ERECTION OF BRACKETS :

After the brackets are fabricated correctly in the Contractor's Depot, in accordance with the approved structure erection drawings, and provided with indelible labels or/painted marking indicating the intended locations for each bracket, they are removed to the site of work and erected on traction masts or supports. The brackets are swiveled to a position at the right angles to the track and secured in that position by means of steel wires tied to similar brackets located on the opposite side of the track or other suitable means.

ANTICREEP :

The anti-creep of the tension length is then installed in its final positions.

LOCKING THE REGULATING EQUIPMENT :

In the case of regulated overhead equipment, the regulating equipments are erected on the terminal masts or structures and their movement locked by suitable means in the middle position, with the distance between the pulleys of the regulating equipment corresponding to 35 degree centigrade.

TEMPORARY ARRANGEMENT :

A pulley approximately 30 cm. dia. is attached to the overhead equipment and of the regulating equipment by means of temporary accommodation fittings at both ends of the tension length to be wired. Over this pulley a flexible stranded wire is passed over. At each end of the wire two ending clamps, one for catenary and one contact wire, are attached. The wire is also clipped in the middle by `U' clamps. The length of this temporary arrangement from the regulating equipment to the extremities of the stranded wire passing over the temporary pulley shall be a little longer than the distance between the regulating equipment and the ends of the catenary and contact wires in their final position, to permit easy clamping of terminal fittings during the final termination of the wire.

STRINGING CATENARY :

The catenary is initially terminated in the ending clamp of the temporary arrangement at one end of the tension length. The catenary is then paid out from the reel of the wiring train and run on pulley blocks hung from the suspension clamp eyes of brackets until the terminating point at the other end of the tension length in reached.

TENSIONING OF CATENARY :

The catenary is strained up to the `Stringing tension' corresponding to the `equivalent' span of the tension length and the ambient temperature at the time of stringing with the aid of a dynamometer, and terminated at the tension. For this purpose, the ambient temperature shall be deemed to be the temperature registered by a thermometer tied to a length of catenary wire 3 to 4 meters long, laid flat on the top platform, on one of the wagons of the wiring train. Subsequently, the tension in the wire is checked by measurement of sag with the help of leveling the attached to suspension points and to the catenary at midspan by a ladder working party. The sag shall be measured in two spans, each preferably greater than 54 meters, and situated on either side of anti-creep approximately midway between the anti-creep and the termination points. The value of sag measured by this method should be within ± 5% of the theoretical value for the corresponding stringing tension, and the temperature at the time of this measurement. In case the discrepancy is more, the tension should be adjusted again and sag re-checked as above (see note 1). After the sag is checked the catenary is terminated at the ending fitting of the temporary arrangement at the terminating point.

In order to restrict the duration of traffic blocks to the minimum, into first block, the catenary is strained to the stringing tension with the aid of dynamometers and the catenary is terminated. In a subsequent block, the sag is checked and the tension readjusted with ladders, if necessary.

K-RIDE

CLAMPING THE CATENARY :

The catenary is clamped on the brackets placed at right angles to the track ¨

DROPPERING :

Droppers are fitted to the catenary at the correct locations. At the contact wire ends these droppers may be provided with small pulleys or hooks to act as temporary supports when the contact wire is strung.

Hooks made of scrap contact wire, suspended from the catenary Wire, may also be used as temporary supports.

STRINGING CONTACT WIRE :

The contact wire is initially terminated in the contact wire ending clamp of the temporary arrangement at one end of the tension length. The wire is then paid out from the reel wagon of the wiring train and supported on the pulleys hung from droppers or on hooks until the terminating point at the other end of the tension length is reached. In curves, the contact wire shall be registered on pulleys located at traction masts or

supports corresponding to the approximate final position of the wire. The axes of these pulleys should be more or less vertical.

TENSIONING OF CONTACT WIRE :

The contact wire is strained to a tension on approximately 1.2 times the tension corresponding to the ambient temperature and terminated in the ending clamp of the temporary arrangement.

REGULATING EQUIPMENT IN ACTION :

The regulating equipment is put into action with the counter weight at the correct height above rail level and with distance between pulleys or the regulating equipment corresponding to a temperature of 35ºC. The regulating equipment is then released and brought into action. The `U' clamp connecting the flexible stranded wire passing round the temporary pulley is also removed.

FINAL ADJUSTMENT :

The entire installation is left in this condition as long as it is possible, preferably for a period not less than 15 days The temporary pulleys are removed and the conductors terminated in the permanent ending fittings, compensating plates, insulators and turn buckles . The equalizer plate is kept vertical or at a slightly inclined position (by 2 or 3 cm the contact wire being shorter than the catenary) and the position of the regulating equipment is checked in relation to, the temperature at the time. The contact wire is clipped on to the droppers (in the vertical position) and on the steady arms. Contact wire height at the bracket is adjusted as also the stagger and register arm clearance.

K-RIDE

CONCLUDING REMARKS :

If the above method is followed with care no further adjustment may be needed.

NOTE:

*(*1) It should be ensured that sagging is done carefully and accurately. The adjustment of tension in the catenary after checking of sag, if required, would be easy if a temporary, turn buckle is inserted in the temporary termination.

The use of leveling lathes is recommended for the following reasons:

(i) The accuracy of adjustment is greater than that with a dynamometer.

(ii) No traffic block is required for this operation.

(iii) It obviates the necessity initial tensioning of the catenary accurately thus permitting a deduction in the period of traffic block required for the wiring train.

(2) If feasible, without any hindrance to progress of works, the catenary may be maintained at stringing tension for a period of 48 hours before checking sag and clamping it to the brackets. This would ensure equalisation of tension in the different spans.

Before clamping the catenary to the brackets, the sag should however, be checked in two spans

(3) If it is difficult to obtain a separate traffic block for stringing contact wire, the wire may be paid out at the same time, as the catenary, with the following precaution.

(i) The contact wire is run and suspended from independent pulleys hooked on to the brackets, separately from the catenary pulleys, to avoid twisting together of the two conductors a special hook designed for this purpose.

(ii) The contact wire should not be suspended from the catenary until the latter is clamped on to the brackets.

(iii) The tension in the contact wire before termination should be about 1,500 kgf. This will ensure that sag is not excessive.

(iv) The adjustment of tension and checking of sag of the catenary wire is carried out as if the contact wire had not been strung. Only after adjustment of tension and checking of sag is completed, the contact wire is transferred to the pulleys attached to the droppers or to hooks suspended from the catenary and the tension is adjusted .

K-RIDE

(4) When the contact wire is under tension, creep takes place which results in a increase in the length of wire and, consequently, the droppers and the equaliser plates would become oblique.

Though creep may continue for a long time, about a year, the bulk of it would occur during the days following stringing. If sufficient period of time is allowed the contact wire may be clipped to the droppers and the equaliser plates, all in the vertical position, and the necessity for any further adjustments before energisation and commissioning of the OHE may be reduced to a great extent. If this precaution is not taken, at the time of energisation of the OHE, the droppers may not all be vertical and staff would have to be detailed for shifting the dropper clips which is attendant with risk of damage to the contact wire.

(5) Before the temporary arrangement is removed a reference mark should be made on each conductor. After final termination of the conductors, It should be ensure that two marks are in the same relative longitudinal position as they were before the removal of the temporary arrangement.

CHAPTER- 07

INSPECTIONS AND TESTING

OVERALL PERFORMANCE :

The overall performance of the overhead equipment should be such as would permit collection of current by electric rolling stock with full load at speeds, upto and including the maximum specified for the design of overhead equipment, smoothly, without mechanical shocks or prejudicial sparks and without undue heating in the case of other equipments.

RESPONSIBILITY

The general tests of overall performance stipulated below are only supplementary to other tests on structures, foundations, equipment, components and fittings as specified in the tender document. Any testing and acceptance by the Purchaser of overall performance shall be subject to the general terms of guarantee which shall continue to be valid as provided.

TESTS OF OHE :

(a) GENERAL

As soon as a section is ready for inspection and testing, the Contractor shall advise the Purchaser in writing. Tests to be carried out by the Purchaser will be done in the presence of the Contractor's representative and shall include the following apart from other reasonable tests that the Purchaser may like to conduct with a view to ensure, himself of the soundness of the equipments and their erection in strict compliance with the specifications.

K-RIDE

(b) INSULATION

The strength of the insulation and the dielectric strength of the entire equipment as installed shall be tested with a 2500V Megger.

(c) CONTINUITY

The electrical continuity of the line and the existance of bad Contacts, if any, will be tested with a Megger.

(d) ELECTRICAL INDEPENDENCE

The electrical independence of individual elementary sections in relation to one another shall also be tested with a Megger.

(e) SWITCHES

All isolators shall be tested for smooth and trouble free operation.

(f) TENSION DEVICES

All automatic Tensioning devices installed shall be tested for sensitive functioning and adjustment.

(g) STAGGER AND HEIGHT

The stagger and height of contact wire over the entire section of completed overhead equipment and the clearances available shall be measured and the measurement shall be checked against approved drawings. These measurements shall be carried out at low speed with a vehicle or device to be arranged

by the Purchaser, the movement of which will follow the track levels as closely as possible. Tolerance that will be permitted on the dimensions indicated in the approved drawings

The actual position of the two contact wires, relative to each other, at overlaps and turnouts shall also be checked. Special attention shall be paid to a smooth movement of Pantographs over section insulators, particularly those which are likely to be frequently traversed.

(h) MECHANICAL BEHAVIOR

The mechanical behavior of the entire equipment shall be tested at various speeds under normal pantographs pressure without energising the overhead equipment.

(i) ENERGISING

If the overhead equipment, after being subjected to the above tests in an un-energised condition, is found to be satisfactory, it will be energised with the normal 25 KV A.C. supply.

(j) Tests shall then be conducted to check if the power collection performance of the overhead equipment is satisfactory after ensuring that the contact wire is adequately clean. For this purpose, an observation car shall be attached next to the electric locomotive. The behavior of the overhead equipment will be watched at various speeds. Power collection shall be considered unsatisfactory if a long blue flash is observed, indicating that the contact between the contact wire and the pantograph is not continuous.

INSPECTION AND TESTING OF SWITCHING STATIONS ETC.:

(a) GENERAL

As soon as a switching station, booster transformer station or LT supply transformer station and Traction Sub-Station is ready for inspection and testing, the Contractor shall advise the Purchaser in writing. Testing will be carried out by the Purchaser at his cost jointly with the Contractor. These shall include the tests which the Purchaser may like to conduct with a view to assure himself of the soundness of the equipments and their erection in compliance with these specification. However, testing equipments such as those indicated below and staff required for the tests shall be provided by the Contractor free of charge.

(i) Oil testing equipment.
(ii) 5000V/2500 V & 500 V meggers.
(iii) Earth megger and accessories.
(iv) Continuity test apparatus.
(v) Avometer
(vi) Relay testing kit.
(vii) Primary injection test set.

The Contractor shall take full responsibility for these tests inter-alia his other responsibilities.

(b) VISUAL INSPECTION

K-RIDE

Visual inspection which shall include check for satisfactory workmanship shall cover all connections, Painting, Plastering, Cleanliness of all insulators etc. and compliance with Indian Electricity Rules.

(c) OPERATIONS TEST

This tests will be conducted on every individual items of equipment such as interrupters, isolators, relays etc. to ensure that the equipment as a whole is functioning properly and is mechanically sound, i.e. in the particular case of isolators the fixed contact and knife blade have been correctly aligned and operations does not cause undue strain on the equipment. The operation tests will be carried out with the high tension installation dis-connected from the supply, but by actuating power devices where such are provided. Continuity test of high tension connections after setting such interrupter and isolator in their respective positions shall also be conducted as part of the operation test.

(d) INSULATION

The strength of insulation of the various items of equipment and of the entire installation as a whole shall be tested with a 5000V/2500 V/500 V megger, as required.

(e) DI-ELECTRIC STRENGTH OF OIL

The di-electric strength of the oil of the Instrument Transformers (except if they are of sealed construction), Booster transformer Circuit Breaker & LT supply transformer, at each station shall be tested before commissioning in accordance with IS:335 (Latest version as indicated in Annexure-1) should this be found not correct, the Contractor shall arrange at his own expenses to have it rectified.

K-RIDE

(f) ISOLATORS

All isolators will be tested for smooth and trouble free operation. Correct functioning of interlocking device shall be checked.

(g) INTERRUPTORS

Operation of trip and close coils for interrupters shall be tested for satisfactory performance with the respective equipments de-energised.

(h) Instrument transformer

Tests shall be conducted to check the polarity of current and potential transformers.

(i) Ammeter and Voltmeter

The Calibration of ammeters and voltmeters provided on the control board shall be checked.

(j) Protective relays

The Contractor, shall arrange for all protective relays to be tested and calibrated in a recognised test laboratory at his own cost, just prior to installation on the control board, and shall submit six copies of the test certificates to the Purchaser.

(k) Primary & secondary injection tests

Operation of all protective relays, auxiliary relays and trip and close coils for circuit breakers shall be tested for satisfactory performance with the respective equipments de-energised. Correct functioning of all electrical interlocks inter- tripping etc. shall also be checked during these tests.

(I) Performance tests

To verify the performance of the complete capacitor bank, tests as specified in respective clause of RDSO specification No. TI/SPC/PSI/FC & SR/0100 (01/2010) shall be carried out at site after installation.

EARTHING :

(a) Earth wires will be checked for continuity and electrical isolation every 1000 m approx.

(b) Clearances between earth wires and out-of-run wires of overhead equipment and signals shall be checked.

(c) Earth resistance shall be measured separately for each earth electrode. In the case of interconnected earth electrodes, the nett resistance of the inter-connected electrodes shall also be measured.

(d) Earth resistance will be measured separately for each earth electrode and when they are connected together and to the equipment at each sub-station, feeding station and shunt capacitor bank.

DETAILS PROCEDURE FOR TESTS :

The detailed procedure for inspection and testing will be furnished to the contractor. The contractor shall submit the results of tests in the proforma which will be furnished by the Purchaser, in quadruplicate.

K-RIDE

CHAPTER-8

SAFETY AND SECURITY AT WORK

1.1 The works included in this contract are to be carried out close to the running tracks and public utilities, therefore, safety of running trains and the public is paramount. Therefore, all activities undertaken by the Contractor/his Sub-contractors shall ensure safety at all times. The contractor shall comply with the instructions issued by the Railway/ Engineer/Employer from time to time to ensure safe running of trains while carrying out works. The rates quoted by the Contractor shall be deemed to include all expenditure incurred in compliance with the same.

1.2 Before starting any excavation work adjacent to existing track, the contractor shall ensure that necessary permissions has been obtained and required precautions have been taken for doing such work in terms Joint Procedure Order (JPO). The penalties mentioned in the following JPO shall be levied on the contractor if such event occur. The JPO is reproduced below:

"JOINT PROCEDURE ORDER FOR UNDERTAKING DIGGING WORK IN THE VICINITY OF UNDERGROUND SIGNALING, ELECTRICAL AND TELECOMMUNICATION CABLES"

(A) A Number of Engineering works in connection with gauge conversion/doubling/third line are in progress on various railways, which require extensive digging work near the running track, in close vicinity of the working S&T cables carrying vital safety circuits as well as electrical cables feeding the power supply to cabins. ASM room, RRI Cabin, Intermediate Block Huts (IBH) etc. Similarly, S&T organization under open line or construction units under CAO/C, are executing various Signaling and Telecom works requiring digging of earth for laying of cables or casting of foundations for the erection of signal posts etc. Rail-Tel is also executing the work of laying of quad cable and OFC on various Railways as a part of sanctioned works for exclusive use of Railways for carrying voice and data i.e. administrative and control communication, PRS, FOIS etc. or shared by RailTel Corporation of India Ltd. On certain sections, digging is also required for laying of electrical cable and casting of foundation for the erection of OHE masts by Electrical Dept. Generally, these works are executed by contractors employed by these organizations.

K-RIDE

(B) However, while carrying out these works in the vicinity of working signaling, telecommunication and electrical cables, at times, cable cuts take place due to JCB machines working along the track or during the digging work being done by contractors carrying out the Civil Engineering Works. Similarly, such cable cut are also resulting due to works undertaken by S&T or Electrical departments. Such cable faults results in the failure of vital signaling and telecommunication circuits & electrical installations.

(C) Henceforth, the following joint procedure shall be followed by Engineering, Electrical and S&T (and Rail Tel organization, wherever such works are being done by them) officers of the respective divisions and by the construction organization, while carrying out any digging work near to existing signaling & telecommunication and electrical cables, so that the instances of cable cut dueto execution of works, can be controlled and minimized.

1. S&T Department (and Rail Tel, where they have laid the cables) and Electrical department shall provide a detailed cable route plan showing exact location of cable at an interval of 200m or wherever there is change in alignment so that the same is located easily by the Engineering official/contractor. In addition, S&T department and Electrical department shall also provide cable markers along the alignment of the cable. These cable route plans shall be made available to the Sr.DEN/DEN or Dy. CE/C, as the case may be, by

Sr. DSTE/DSTE or Sr. DEE/DEE of the divisions or Dy. CSTE/C or Dy.CEE/C within 15 days in duplicate. Sr.DEN/DEN or Dy. CE/C will send copies to their field unit i.e. AEN/SE/P. Way & Works.

2. Before taking up any digging activity on a particular work by any agency, Sr. DSTE/DSTE or Sr.DEE/DEE of the section shall be approached in writing by the concerned Engg. or S&T or Electrical officer for permitting to undertake the work. Sr. DSTE/DSTE or Sr.DEE/DEE, after ensuring that the concerned executing agencies including the contractor have fully understood the S&T and Electrical cable route plan shall permit the work in writing within 7 days of the request by concerned department.

3. After getting the permission from S&T or Electrical department as the case may be, the relevant portion of the cable route plan shall be attached to the letter through which permission is issued to the contractor by concerned Engg. official for commencement or work and ensuring that the contractors have fully understood the cable route plan and precautions to be taken to prevent damage to the underground cables. The contractor shall be asked to study the cable plan and follow it meticulously to ensure that the safety of the cable is not endangered. Such a provision, including any penalty for default, should form part of agreement also. It is advisable that a suitable post of SE/Sig or SE/Tele or SE/Electrical(TRD or G) shall be created chargeable to the estimates of doubling/gauge conversion, who can help Engg. agencies in the execution of the work. However basic responsibility will be of the department executing the work and the Contractor. Creation of posts is not mandatory.

4 The SE/P. Way or SE/Works shall pass on the information to the concerned SE/Sig SE/Tele or SE/Electrical(TRD or G) about the works being taken up by the contractors in their sections at least 3 days in advance of the day of the work. In addition Engineering control shall also be informed by SE/P. Way or SE/Works, who in turn shall pass on the information to the test room/network operation centre of Rail Tel/TPC/Electrical control.

5. On receiving the above information, SE/Sig or SE/Tele or SE/Electrical (TRD or G) shall visit the site on or before the date of taking up the work and issue permission to the contractor to commence the work after checking that adequate precautions have been taken to avoid the damage to the cables. The permission shall be granted within 3 days of submission of such requests.

6. The name of the contractor, his contact telephone number, the nature of the work shall be notified in the Engineering control as soon as the concerned Engineering officials issue the letter authorizing commencement of work to the contractor. Test room shall be given copies. Test room shall collect any further details from the Engineering Control and shall pass it on to S&T/Rail Tel & Electrical officials regularly. In case the supervisors of concerned departments do not turn up on the day as advised in terms of Para 4 and 5 above, the works of contractor should not be stopped on this account.

7. In case of works being taken up by the State Government, National Highway Authority etc., the details of the permission given i.e. the nature the work, kilometer etc. be given to the Engineering control including the contact person's number so that the work can be done in a planned manner. The permission letter shall indicate the contact numbers of Test room/network Operating Centre of Rail Tel/TPC/Elect. Control.

8. Where the nature of the work taken up by the Engineering department is such that the OFC or other S&T

K-RIDE

cables or Electrical cables is to be shifted and relocated, notice of minimum one week shall be given so that the Division/Rail Tel/Construction can plan the works properly for shifting. Such shifting works shall in addition, for security and integrity of the cables, be supervised by S&T supervisors/Rail Tel supervisors/Electrical Supervisors.

9. The concerned SE/P.Way/SE/Works/SE/Sig/SE/Tele/SE/Electrical (TRD or G) or Rail Tel supervisors supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged in view of their importance in providing communication during accident/emergency.

10. In case of minor nature of works where shifting of cable is not required, in order to prevent damage to the cable, the Engineering contractor shall take out the S&T or optical fiber cable or Electrical cable carefully from the trench and place it properly alongside at a safe location before starting the earthwork under the supervision of SE/Sig or SE/Tele or SE/Electrical(TRD or G). The cable shall be reburied soon after completion of excavation with proper care including placement of the brick over the cable under the supervision of S&T or Electrical supervisors. However, the work will be charged to the concerned engineering works. The responsibility for ensuring availability of SE (Signal), SE (Electrical) as per Para 4 and 5 above lies with the respective department. The contractor will go ahead with the shifting of cables as per the program decided and he will not be held responsible for any cable cut.

11. In all the sections where major project are to be taken up/going on Rail Tel/S&T department shall deploy their official to take preventive/corrective action at site of work. As regards Electrical Department, the official may be deputed on need basis.

12. No new OFC or quad cable shall be laid close to existing track. It shall be laid close to the Railway boundary on one side of the Railway track to the extent possible to avoid any interference with the future works (doubling etc.). It shall be ensured in the new works of cable laying that the cable route is properly identified with electronic or concrete markers. Wherever multiple cables are laid in a trench, RFID markers may be provided for easy identification of the cable. Henceforth, wherever cable laying is planned, before undertaking the cable laying work, the cable route plan of the same shall be prepared by the Dy. CSTE/A or Dy.CEE/C and shall be got approved from the concerned Sr. DSTE/DSTE or Sr.DEE/DEE and also from the concerned Dy. CE/C for new lines and from the concerned Sr.DEN for all other projects including GC etc., to avoid possible damages in future. Such approvals shall be granted within 15 days of the submission of the request.

13. The works of excavating the trench and laying of the cable should proceed in quick succession, leaving a minimum time between the two activities.

14. In case damage caused to OFC/Quad cable or Electrical cable during execution of the work, the contractor is liable to pay a penalty for damaging the cable. Penalty shall not be levied in case of the following:-

    i. Detailed cable route plan as per clause C-1 not provided by concerned department or cable is not protected as per laid down procedures.

    ii. The alignment of the cable does not tally with the information provided to the contractor.

    iii. The cable depth is found to be less than 800 mm from normal ground level.

K-RIDE

iv. No representative of S&T department/Rail Tel was available at site guarding the cables on the fixed pre determined date and time.

15. Penalty to be imposed for damages to cable shall be as under:-

Cable damaged	Penalty per location
Only Quad cable or Signaling cable	Rs.1.0 Lakh
Only OFC	Rs.1.25 Lakh
Both OFC & Quad	Rs.1.5 Lakh
Electrical Cable	Rs.1.0 Lakh

Necessary debit in this regard shall be raised on the department undertaking the work who shall in turn levy the penalty on the defaulting contractor. S&T department shall raise the debits in case of damage to OFC or Quad or Signaling cable and Electrical department shall raise the debits in case of damage to Electrical cable.

16. Railways will not lodge FIR with RPF in case of works being executed by authorized contractors of Railways who have been duly permitted to execute the works in accordance with this JPO. Joint note by the supervisors of the concerned department shall be prepared and the responsibility of the cable cut should be decided without involving RPF. The joint note deciding the fact whether the contactor should be penalized shall be completed in a day's time from the occurrence of cable cut. In all other cases, when the cable is cut by an agency that was not permitted to execute any work, FIR should be lodged with RPF.

17. While giving permission for taking up the works, concerned departments may note that earthwork by engineering contractors will normally be done by machines except in a few isolated locations where the quantity of earth work is very less.

I. Railways shall make necessary correction in their future contract so that this JPO can also be enforced contractually.

II. In case of damages to OFC, Rail Tel should be paid 5/6th of the penalty recovered. Rail Tel shall raise demands on the S&T department in this regard.

III. All types of signaling & OHE bonds i.e. rail bond, cross bond and structure bond shall be restored by the contractor with a view to keep rail voltage low to ensure safety of personnel.

18. Above joint circular shall be applicable for construction as well as open line organization of Engineering, S&T and Electrical.

19. S&T cable and electrical cable route plan should be prepared by the concerned S&T and Electrical officers respectively and got approved as stipulated in Para C-12 before undertaking the work. The completion cable route plan should be finalized block section by block section as soon as the work is completed.

20. All cable laying works shall be executed as per laid down technical specifications, such as protection measures/protective cover, compaction of refilled material etc.

1.3. Working near running line

K-RIDE

1.3.1 The contractor shall not allow any road vehicle belonging to him or his suppliers etc. to ply in railway land next to the running line. If for execution of certain works viz. earth work for parallel railway line and supply of ballast for new or existing rail line, gauge conversion etc, road vehicles are necessary to be used in railway land next to the railway line, the contractor shall apply to the Engineer for permission giving the type & no. of individual vehicles, names & license particulars of the drivers, location, duration & timings for such work/movement. The Railways/Employer/Engineer or his authorized representative will personally counsel, examine & certify, the road vehicle drivers, contractor's flag men & supervisor and will give written permission giving names of road vehicle drivers, contractor's flag men and supervisor to be deployed on the work, location, period and timing of the work. This permission will be subject to the following obligatory conditions:

1.3.2 Road vehicles can ply along the track after suitable cordoning of track with minimum distance of 6 meters from the centre of the nearest track. For working of machinery close to the running tracks or plying of road vehicles during night hours, the contractor shall apply to the Engineer in writing for permission, duly indicating the site details in a neat sketch and safety measures proposed to be taken. Subject to the approval of concerned Railway authorities, the Engineer or his authorized representative will communicate permission to the contractor/contractor's representative. The contractor and his men shall strictly adhere to the instructions given along with such permissions.

1.3.3 Nominated vehicles and drivers shall be utilized for work in the presence of at least one flag man and one supervisor certified for such work. In order to monitor the activities during night hours, additional staff may have to be posted based on the need of the individual site.

1.3.4. The Contractor' machinery, equipment and vehicles shall normally operate 6 m clear of track. Any movement/work at less than 6m and upto a minimum of 3.5m clear of track centre, shall be carried out only in the presence of a person (including any railway employee) authorized by the Engineer. No part of the road vehicle shall be allowed at less than 3.5m from track centre.

1.3.5 The Contractor's machinery and equipment are required to operate close to the existing line carrying traffic. Contractor is fully responsible for operating these machineries without endangering the safety of the running line and traffic.

a) The "look out and whistle" caution orders shall be issued to the trains and speed restrictions imposed where considered necessary. Suitable flag men/detonators shall be provided where necessary for protection of trains.
b) The supervisors/workmen should be counseled about safety measures. A competency certificate to the contractor's supervisor as per proforma annexed shall be issued by Manager/Electrical which will be valid only for the work for which it has been issued.
c) The unloaded masts, portals, copper drums, cement/ sand bags, cut pieces of steel and other such materials after unloading along track should be kept clear off moving dimensions and stacked as per the specified heights and distance from the running track.
d) Supplementary site-specific instructions, wherever considered necessary, shall be issued by the Engineer.

K-RIDE

COMPETENCY CERTIFICATE

"Certified that Shri_____ TRD supervisor of M/S_____ _____has been examined regarding OHE working on_____ work. His knowledge has been found satisfactory and he is capable of supervising the work safely.

_____

Authorized Representative / South Western Railway

1.4 The contractor shall provide at site at his own cost, all protection measures including exhibition and lighting of all Temporary Engineering Signals as per Railway rules, instructions and norms. All lights provided by the contractor shall be screened so as not to interfere with any signal light on the Railways or with any traffic or signal lights of any local or other authority.

1.5 Ancillary and Temporary works

a) The Contractor's proposals for erection of all ancillary and temporary works shall be in conformity with the proposals submitted along with the tender and modifications thereto as approved by the Engineer.

b) The Contractor shall submit drawings, supporting design calculations where called for by the Engineer and other relevant details of all such works to the Engineer for approval at least one month before he desires to commence such works. Approval by the Engineer of any such proposal shall not relieve the contractor of his responsibility for the sufficiency of such works.

c) The contractor shall, at his own cost, design and provide any temporary arrangements including modifications required in connection with the above said works and remove the old lines/masts/portals etc., when no longer required. These arrangements shall conform to Railway norms. The contractor shall obtain all necessary approvals and sanctions of the concerned Railway / K RIDE authorities including Commissioner of Railway Safety through the Engineer/ Employer in advance and well in time.

d) *The contractor shall ensure and be entirely responsible for proper design, fabrication, provision and upkeep of all temporary arrangements and all associated activities so as not to endanger safety of any assets, running track, traffic and traveling public*

e) Not withstanding the above, the contractor shall not, however, be relieved of his responsibility and obligation as aforesaid.

f) Save as provided in Para 1.5(e) above, the contractor shall bear the cost of complying with all safety requirements. No extra payment will be made for complying with the safety provisions under this chapter and the cost of all such elements to meet the safety requirements shall be deemed to be included in the price schedule.

g) The contractor remains fully responsible for ensuring safety. In case of any accident, the Contractor shall bear cost of all damages to his equipment and men and also damages to Railway and its passengers.

K-RIDE

As OHE voltage is 25 KV, following precautions should be taken by staff while working on OHE.

1. No work shall be done above or with in a distance of 2 meters from the live OHE without a "Permit to Work".
2. Inductive effects occur on large metallic structures such as fencings, structural steel of platforms running parallel to the track. They will have to be earthed suitably to afford safety.
3. Each working party shall be protected by at least two independent earths, one on each side of a working party.
4. If the distance between the working parties exceeds 100 meters, intermediate earth shall be provided in such a manner as to ensure that the distance between earths does not exceed 100 meters.
5. Men shall be posted on both sides of the site of work to warn the working party of any approaching train on the same track and adjacent track.
6. For providing earth on the OHE, fix the earthing clamp securely to a mast at least one span away after making sure that the mast to earth rail bond of this mast is intact.
7. Earthing clamps should always be fixed to the traction rail or mast first and then the top clamp should be hooked to the OHE to be earthed.
8. For removing the earthing, first remove the hook on the OHE and then the clamp fixed to the rail or mast
9. Two sections of conductors or ends of conductors which may have snapped should be separately earthed at two points after switching off supply to both parts of the OHE. This precaution should also be observed when working or in the vicinity of a sectioning point and cut in insulators.
10. Neutral sections should be treated as live equipment and earthed separately at two points on either side of the work party before commencing work.
11. When work is to be carried out on an isolator, both sides of the isolator should be earthed at two points.
12. No fallen wires shall be touched unless power is switched off and the wire suitably earthed.
13. In electrified track, steel tape or metallic tape or tape with woven metal reinforcement should not be used.
14. Ropes, come along clamps, tirfor should be tested once in a month in the presence of K-Ride/Reprensentative
15. All the staff should wear helmets to protect their heads against any tools or equipment which may drop down accidentally.
16. Staff should protect themselves against an inadvertent fall by wearing a safety belt for supporting themselves by a rope sling.
17. Ropes used with ladders should be cotton or jute. Use of metallic ropes is prohibited. A ladder should be held by one person on the ground to prevent slipping, while the top end should be tied to the supporting structure or conductor to keep it in position and prevent it sliding away.
18. Ladders should never be allowed to fall on or rest against the contact wire.
19. More than one person shall not normally be allowed on a ladder as far as possible.
20. Climbing on a ladder with wet or slippery foot wear is forbidden.
21. A rope should be used to pass tools or any equipment to the men working on a ladder.

K-RIDE

22. No one should stand directly below a work spot under a ladder.
23. The strength of the anchoring rope should not be less than of the cable to be anchored.
24. It is important that staff who ask for power block should know the correct method of identifying and describing any section of OHE where shutdown is required.
25. Whenever there is a doubt in the description, the person asking for power block shall state clearly the track and OHE structure numbers between which work is to be done.
26. All messages relating to shut down and restoration of power supply, permits to work, etc. issued over the telephone shall invariably be supported by exchange of private numbers and repeated twice.
27. Do not tie the rope on rail without taking traffic block.
28. It is necessary to take traffic block while working on tunnel or bridge

ntative

K-RIDE

SAFETY RULES FOR 25KV, 50HZ, OVER HEAD EQUIPMENT.

1.Staff Should neither sit nor stand under the **ATD** Balance weight.

2. Ropes, Pulleys, Pull-Lifts, come along clamps 'D' shakels and tirfors etc. should be tested once in six months and keep record.

3. No fallen wires shall be touched unless power is switched off and the wire suitably earthed

4. Do not wear loose cloths such as kurta pazama, lungi, safi etc. while working.

5.Do not stand on bracket tube insulator, while maintenance of OHE

The following rules are supplementary to the General and Subsidiary Rules.

1. Printed boards containing instructions regarding treatment of persons suffering from electric shock should be exhibited in every OHE maintenance depot, equipment room, switching station, cabin, OHE Inspection Car shed, loco shed, OHE Inspection Car and wiring train and also in offices of SM, ASM, CYM, AYM and HTXR.

2. . First Aid Boxes should be kept at every switching station, maintenance depot, in OHE Inspection Car, breakdown vehicle and wiring train.

3. Ropes, come-along clamps, Tirfor etc. should be tested once in six months at least, in the presence of an Kride reprentative, and record of such tests maintained in each depot

K-RIDE

Permit to Work

1.Before commencing work on any part of the dead OHE or within 2m of live OHE, a permit-to-work shall be obtained from TPC or other authorized person.

Protection of Staff against Traffic Movements and Protection of Trains

1.The supervisory official in-charge of work on OHE shall observe relevant provisions of GR and SR for protection of trains before work on OHE is commenced and for the whole time the work is in progress.

2.Measures shall be observed by all concerned to prevent accidental energization of the section under power block on account of electric train movements.

Earthing before Commencement of Work .

1.All metallic parts within reach (either directly or through tools etc.) shall be earthed, after they are made dead.

2.Each working party shall be protected by at least two independent earths, one on each side of a working party.

3.If the distance between the working parties exceeds 1000m intermediate earths shall be provided in such a manner as to ensure that the distance between earths does not exceed 1000m.

4.Even when earthing is provided by isolator switches with earthing heels, additional temporary earths as above shall also be provided.

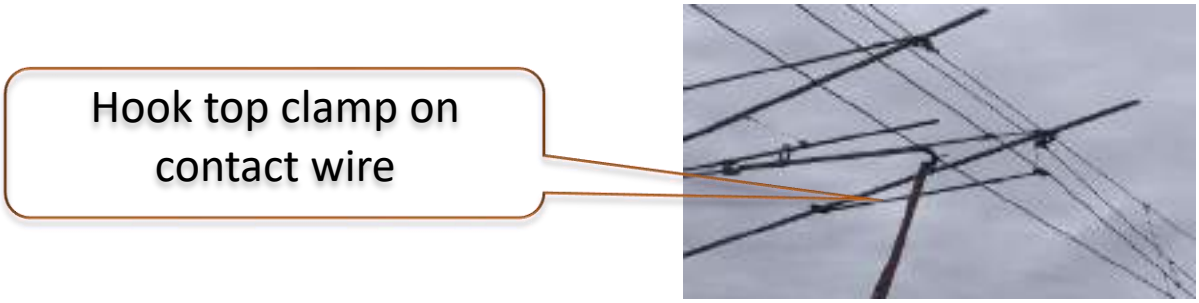
Procedure for Providing Temporary Earths

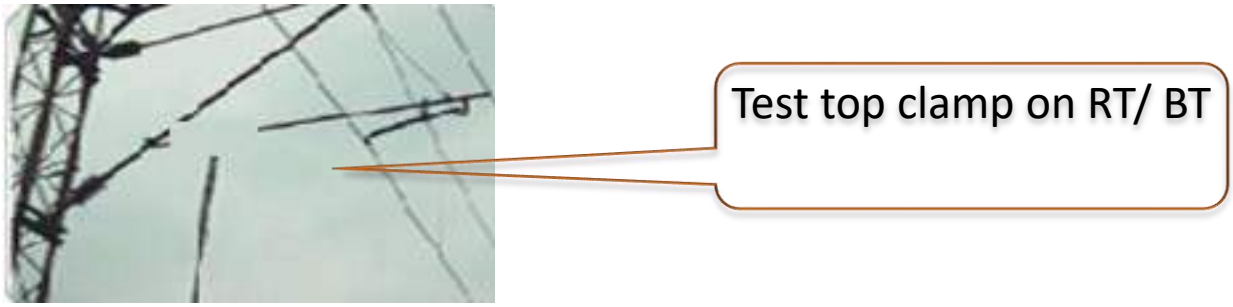
The following sequence of operations shall be carried out while providing temporary earths on OHE.

1.Men shall be posted on both sides of the site of work to warn the working party of any approaching train on the same track and adjacent track(s).

2.The permit-to-work shall be obtained prior to commencing work to make sure that power supply has been switched off.

K-RIDE





3.For providing temporary earth on the OHE or other equipment after it has been made dead, only discharge/ earthing pole assembly specially designed for this purpose alone should be used. The cable shall be flexible and should have adequate cross-section (40 sq.mm) to be able to withstand short circuit currents.

4.Fix the earthing-clamp securely to a mast at least one span away on one side of the work site after making sure that the mast-to-earth rail bond of this mast is intact. Alternatively, the clamp may be fixed to the bottom flange of one of the traction rails, taking the cable under the rails.

- In single-rail track-circuited sections, the earthing clamp should be fixed to the traction rail i.e. non-track-circuit rail; on double-rail track-circuited sections the earthing clamp should be fixed to the mast.
- The mast-end or rail-end clamp of the discharge /earthing pole assembly should be checked for tightness just before connecting the top clamp on to the OHE as the earthing clamp fixed to the rail or mast in advance could have worked loose.

5. Hook securely with a snap action the top clamp of discharge/ earthing pole assembly to the OHE conductor close to the mast/structure and tie the earthing pole to the mast/structure. Never hook on the top hook of the earthing cable to the OHE, till the other end has been first connected to earth.

6.The earthing clamps should always be fixed to the traction rail or mast / structure first and then the top clamp should be hooked to the OHE to be earthed.

7. Repeat operations 4 and 5 for the second temporary earth on the other side of the working party.

8.After temporary earths have been fixed on the OHE on both sides of the work site, staff may proceed with the maintenance work.

9. After work is completed and men, materials and tools have been removed and the OHE is clear, the above earthing rods may be removed in the reverse order i.e., first remove the hook on the OHE and then the clamp fixed to the rail or mast/ structure. After warning all staff that supply will be restored and that they should keep away from live equipment, the permit-to-work may be returned and supply restored.

Precautions in Regard to Discharge/ Earthing Pole Assembly

1.The continuity of the cable connection between the top clamp and the earthing clamp should be checked once a fortnight.

- Cable should be renewed if more than 20% strands are broken. During use, cable should be continually examined for fraying and breakage of strands.

K-RIDE

- Discharge/Earthing pole assembly should be inspected by K-Ride/reprentative once a month.

2.During accidents when slewing the OHE and in similar circumstances, the discharge/ earthing pole assembly should be provided at a location where it is not likely to be interfered with during crane working or due to work on the permanent way.

Work on OHE or any Conductor having a Sectioning Point

When work is to be carried out on OHE or conductors, which are not electrically bonded, following additional precautions are required.

- The two sections of conductors or ends of conductor which may have snapped may be at different potentials. Each end should, therefore, be separately earthed at two points after switching off supply to both parts of the OHE or conductor.
- This precaution should also be observed when working on or in the vicinity of a sectioning point and cut-in insulators.
- Neutral Sections should be treated as live equipment and earthed separately at two points on either side of the work party before commencing work.
- When work is to be carried out on an isolator, both sides of the isolator should be earthed at two points or more conveniently, isolator jumpered temporarily.

Even when earthing is provided by isolator switches with earthing heels, additional temporary earths shall also be provided on both side of the isolator.

K-RIDE

Protective Helmets

1.At the work-site, staff are advised to wear helmets to protect their heads against any tools or equipment **which may** drop down accidentally, as well as to minimize head injury in case of accidental fall from a height.

Always Use Safety Belt and Helmet

2.WEAR HELMET NOT ONLY WHILE WORKING ABOVE GROUND LEVEL.BUT WEAR HELMET WHILE WORKING AT GROUND LEVEL AS WELL

Safety Belt:

1.Staff working on structures or a ladder are advised to protect themselves against an inadvertent fall by wearing a safety belt for supporting themselves by a rope sling.

Rules for Use of Ladders

- It shall be the responsibility of the supervisor to ensure that ladders are stored in a protected enclosure, properly maintained and reconditioned as often as required.
- A ladder should never be in such a position so as to likely to fall on a live part.

- Ladder should be held by one person on the ground, while the top end should be tied with the supporting structure/ rope.

- Ropes used with ladders should be of cotton or jute. Use of metallic ropes is prohibited. A ladder should be held by one person on the ground to prevent slipping, while the top end should be tied to the supporting structure or conductor to keep it in position and prevent it sliding away.

- Ladders should never be allowed to fall on or rest against the contact wire.

Always provide 20/16 dia G.I. bolt in step of ladder which is used for pull lift and extension step.

- If the nature of the work involves risk of the conductor breaking into two parts (due to opening out of sleeves or splices) the ladder shall not be rested against the conductor. Trolley ladders shall be used in such cases.
- More than one person shall not normally be allowed on a ladder as far as possible.
- Climbing on a ladder with wet or slippery foot-wear is forbidden
- Ladders should not be used for transporting materials.
- A rope should be used to pass tools or any equipment to the men working on a ladder.
- No one should stand directly below a work spot under a ladder.

Other Important Precautions to be Taken While Carrying out Works on OHE

1.The useful cross section of a conductor shall not he reduced while making joints.
2.Any contact with conductors, which are not specifically earthed, is forbidden.
3.The strength of the anchoring rope should be not less than that of the cable to be anchored.

4.Temporary anchoring of conductors should only be done by using stranded flexible steel cable at least of the same tensile strength as the cable to be anchored.
5.Use of two cables of different strengths joined together is prohibited. Use of cotton, jute or other non-metallic ropes for anchoring is forbidden.
6.Structure bonds and cable connections of the structure to earth shall be maintained in proper condition. No heavy materials should be stacked on the rail bonds; transverse bonds between two rails of the same track as well as rails of different tracks shall also be maintained in proper condition.
7.Where rails to which structures are connected are replaced, the structure shall be connected to the new rail immediately after it has been laid.

Procedure for Effecting Shut-Down for Work on Auxiliary transformers

1.Power supply to auxiliary transformers is effected through fuse-switches on the 25 kV side and the LT Side is controlled through fuses or double-pole iron-clad switch-fuses. Isolating fuse switches should be opened out and fuses removed both on the HT and LT sides and the transformer earthed before starting work.

Work on Overhead Lines Running Parallel to Electrified Tracks

No work on any span of any overhead line (LT power line or other line) running parallel to an electrified track where the minimum distance between the nearest conductor of the overhead line and the centre-line of the nearest electrified track is less than 8m, should be done without switching off power from the 25 kV traction line. (In addition to making dead and earthing the overhead line on which work is to be carried out in the normal manner).

Except for the following specific items for work :

1.Replacement of lamps, if below line.
2.Painting of structures / poles upto a distance of 2m from the live wires of the power line.
3.Reinforcement of foundations where such reinforcement does not involve any prior weakening of the foundation at any time during the work.
4. Replacement of aerial fuses.

K-RIDE

Isolation of Booster Transformers

To isolate a booster transformer for maintenance or other work, the following sequence of operations should be carried out

1. Where no isolator is provided a permit-to-work should be obtained for both the elementary sections, the BT should be disconnected from the OHE and the OHE made through by jumpering.
2. When an isolator is provided to disconnect the BT primary winding from 25 kV lines, power must be switched off from both the elementary sections to which the BT is connected after which the isolator should be opened to disconnect the BT from the OHE and to make the OHE through.
3. The secondary winding of the BT should be disconnected from the return conductor and the return conductor made through by jumpering.
4. The return conductor should be earthed at the location where the BT has been disconnected; and the midpoint rail links on both sides of the BT should be opened so that booster cells on either side will extend over a longer section temporarily.
5. With the OHE and return conductors made through, 25 kV power supply may be restored

It should be noted that during the period when a BT has been disconnected from service, the interference on adjacent communication circuits will be enhanced. In view of this the defective BT should be replaced with a good BT with the least possible delay

Isolators

- Isolating Switches on the 25 kV system shall not be opened or closed when current is passing through them. Normally, isolators should only be opened or closed, after power supply to the section has been switched off by opening the appropriate interruptor

Petroleum Sidings

The following arrangements/precautions would be necessary:

Arrangements

I).An equipotential link between the petroleum sidings installation earth and the track via a switch
II).Setting up of neutral zones (insulating joints) in the track to avoid any risk of propagating stray current.
III).Setting up of neutral zones/sections in the contact wire similar to loco inspection pits.
iv) The tracks must be provided with longitudinal bonds on both the rails as well as transverse bond (30 m intervals). All masts and metallic structures in the vicinity of the track/ sidings should be provided with structure bonds. Copper rivets should be used for bonding.
v)10 ohm earths must be connected to the petroleum siding on each side at the insulated joint.

Precautions

i).No oil tanker is. permitted to stable under live OHE for inspection purpose.
ii) Fuelling to be done by side filling arrangement only.
iii)Pipe lines in the vicinity of the track should be properly earthed
iv).Minimum 2 m electrical clearance from live OHE of the adjacent track or only other structure nearby must be maintained.
v) During filling/loading and unloading of petroleum products the isolators at the neutral section of OHE should be kept open to ensure that the OHE is dead and earthed

K-RIDE

CHAPTER-9

ANNEXURES

ANNEXURE - 1

ANNEXURE-I

LIST OF STANDARD DRAWINGS AND SPECIFICATIONS

This Annexure contains reference to drawing numbers, charts, Schedules, Specifications and other data referred to in various paragraphs of this Tender Paper.

All references to drawings, charts, schedules, specifications, IS etc. given in this Annexure or elsewhere in the tender document shall be taken to be the latest versions including all amendments. All other items not covered under the Drawing/Specification shall be referred to as per relevant IS and Railway practice in force.

The Drawing and RDSO specification can be purchased from the office of TI Directorate of RDSO, Lucknow on payment basis.

For drawings of fittings/equipments See Form-7: Part V.

(A) **LIST OF STANDARD DRAWINGS FOR "OHE"**

SI. No	Brief Description	Drawing		Mod. No.
		Series	Number	
1	**2**	**3**	**4**	**5**
1.	Extra allowance for setting of structures on curves (1676 mm Broad gauge)	ETI/OHE/G	00111 Sh-1	C
2.	Standard setting of structures in the vicinity of signals (broad gauge)	-do-	00112	D
3.	Typical design of side bearing foundation.	-do-	00131	-
4.	Typical design of cantilever mast.	RE/33/G	00141 Sh.3	-
5.	Standard drilling schedule of OHE masts 9.5 m long RSJ and BFB	ETI/OHE/G	00144 Sh.3	C
6.	Span and stagger chart for (conventional OHE, Cad. Cu catenary & Cu cont. wire) wind pressure 75,112.5 & l50kgf/m².	ETI/OHE/G	00202	-
7.	Employment schedule for Cantilever mast Regulated OHE without return conductor and without Earth wire (WP- 112.5 kgf/m² (Cd- 65/Cu, Cont. 107/Cu)	ETI/OHE/G	00153 Sh.1	F
8.	Employment schedule for Cantilever mast Regulated OHE without return conductor and with Earth wire (WP- 112.5 kgf/m² (Cd- 65/Cu, Cont. 107/Cu)	ETI/OHE/G	00153 Sh.2	F
9.	Employment schedule for Cantilever masts Regulated OHE with return conductor and without Earth wire (WP- 112.5 kgf/m² (Cd- 65/Cu Cont. 107/Cu)	-do-	00153 Sh.3	F
10.	Employment schedule for Cantilever masts Regulated OHE with return conductor and with Earth wire (WP- 112.5 kgf/m² (Cd- 65/Cu, Cont. 107/Cu)	-do-	00153 Sh.4	E
11.	Employment schedule for Cantilever masts unregulated OHE without return conductor and without Earth wire (WP- 112.5 kgf/m² at 35°C and 28kgf/m² at 4°C (Cat- 65/Cu, Cont. 107/Cu)	-do-	00154	D
12.	Employment schedule of bracket tubes Conventional OHE (Cad Cu Caty & Cu contact wire 1000 kgf tension each) WP-75 Kgf/ m²	ETI/OHE/G	00158 sh.1 of 3	-

K-RIDE

1	2	3	4	5
13.	Employment schedule of bracket tubes Regulated Conventional OHE (Cad. Cu Cat & Cu contact wire 1000 kgf tension in each) WP-112.5 Kgf/ m²	ETI/OHE/G	00158 sh.2 of 3	-
14.	Employment schedule of bracket tubes Regulated Conventional OHE (Cad Cu Caty & Cu contact wire 1000 kgf tension in each) WP-150 Kgf/ m²	ETI/OHE/G	00158 sh.3 of 3	-
15.	Dropper schedule for uninsulated Overlap spans	-do	00169	A
16.	Dropper schedule for insulated Overlap spans	-do	00170	A
17.	Dropper schedule for conventional regulated OHE. With Zero presag (1400/1400)	-do	00177	A
18.	Adjustment chart of Regulating equipment 3 Pulley Type (3:1 ratio)	-do	00195	A
19.	Schematic arrangement of regulated OHE	-do	02101	A
20.	Schematic arrangement of uninsulated overlap (3 & 4 span overlaps)	-do	02121 Sh.4	A
21.	Schematic arrangement of insulated overlap	ETI/OHE/G	02131 Sh.3	A
22.	Standard termination of tramway type OHE (Regulated) with Pulley type regulating equipment (3:1 ratio).	ETI/OHE/G	04212	B
23.	General distribution of droppers	ETI/OHE/G	00161	-
24.	Outline of Pantograph (Broad gauge and metre gauge).	RE/33/G	00181	A
25.	General formation of single track in Embankments and cutting (Broad gauge.)	RE/33/G	01101 Sh.1	A
26.	General formation of double track in embankments and cutting (Broad gauge).	-do-	01102 Sh.1	A
27.	General formation of multiple tracks (1676 mm gauge).	-do-	01103 Sh.1	A
28.	Standard anchor arrangement	-do-	01401	E
29.	Anchor arrangement with dwarf mast.	ETI/OHE/G	01402	B
30.	Schedule of anchor block for B.G. track.	-do-	01403 Sh.1	E
31.	Schedule of anchor block for B.G. track.	-do-	01403 Sh.2	D
32.	Schedule of anchor block for B.G. track (Black cotton soil)	-do-	01403 Sh.3	D
33.	Standard guide tube arrangement on a mast and structures.	ETI/OHE/G	01505	-
34.	Trapezoidal counter weight arrangement on OHE structures.	ETI/OHE/G	01502	-
35.	Arrangement of 3KV & 25 KV Pedestal Insulator supports on OHE masts and portals.	-do-	01601	-
36.	Standard arrangements for mounting of number plate on OHE Structures.	ETI/OHE/G	01701	A
37.	Schematic arrangement of regulated overhead equipment.	-do-	02101	A
38.	Typical arrangements of OHE on cantilever masts for double track section.	-do-	02102	-
39.	Typical arrangement for fixing of bracket assembly on 9.5 m mast and Structure to suit raising of tracks (in future)	-do	02102 Sh.3	-
40.	Mast on platforms (Metre Gauge)	RE/33/G	02104 Sh.2	A
41.	Details of bracket arrangement on tangent and curved tracks	ETI/OHE/G	02106 Sh.1	A

K-RIDE

1	2	3	4	5
42.	Details of bracket arrangement for OHE	-do-	02106 Sh.3	C
43.	Single bracket assembly on Structures and dropped arms.	RE/33/G	02107	D
44.	Box type cantilever Arrangement.	ETI/OHE/G	02108	A
45.	Arrangement at anticreep.	TI/DRG/OHE/ GENL/RDSO/	00001/12/0	0
46.	Standard cantilever arrangement for boom anchor anticreep location.	ETI/OHE/G	02113	-
47.	Schematic arrangement of uninsulated over Lap (type-I) (3 & 4 Span overlaps)	RE/33/G	02121 Sh.1	F
48.	Schematic arrangement of insulated overlap.	ETI/OHE/G	02131 Sh.1	
49.	General arrangement of regulated OHE at turn-outs (overlap & crossed type).	ETI/OHE/G	02141	C
50.	General arrangement of regulated OHE at cross over(overlap & crossed type).	-do	02151	-
51.	Arrangement of neutral section	-do-	02161 Sh.1	C
52.	Arrangement of neutral section assembly (PTFE Type) at SWS.	-do	02162	-
53.	Arrangement of short neutral section.	-do	02161 Sh.2	-
54.	Schematic arrangement of unregulated overhead equipment.	-do	03101	-
55	Standard termination of OHE (Regulated & un-regulated).	ETI/OHE/G	03121 Pt 1 of 3	E
56	-do-	-do	03121 Pt 2 of 3	E
57	-do-	-do	03121 Pt 3 of 3	E
58.	General arrangement of Unregulated OHE at turnouts (crossed & overlap type).	-do	03151	-
59.	General arrangement of unregulated OHE at crossovers and diamond crossings (overlap and crossed type).	-do	03152 Sh.1	-
60.	General arrangement of unregulated OHE at diamond crossing.	-do	03152 Sh.2	-
61.	General arrangement of pull off	-do-	03301	A
62.	General arrangement of Head span	-do	03201	-
63.	In span jumper connection between catenary & contact wire.	-do-	05101	-
64.	Continuity jumper connection at un-insulated overlap turnouts and cross overs	-do	05102	C
65.	Anti- theft jumper	-do	05107	A
66.	Connections at turnouts	-do	05103	B
67.	Potential equalizer connection at insulated overlap and neutral section	-do-	05104	-
68.	Connections at diamond crossing.	-do-	05106	A
69.	General arrangement of connections to OHE by copper cross feeder (150).	-do	05121 Sh.1	C
70.	General arrangement of connections at switching station on double track section by copper cross feeder	ETI/OHE/G	05122 Sh.1	C
71.	General arrangement of connections at switching station on multiple track section by copper cross feeder	-do-	05123 Sh.1	C
72.	Suspension of 25kV feeder(Spider)on 25KV OHE masts	ETI/OHE/G	05143	B

K-RIDE

1	2	3	4	5
73.	Termination of feeder, return conductor & return feeder(copper & aluminum).	ETI/OHE/G	05145-1	A
74.	Arrangement of suspension of double spider 25 KV feeder and return feeder between sub-station and feeding station	RE/33/G	05152	C
75.	Assembly of section insulators	RE/33/G	05181	C
76.	General arrangement of earth wire on OHE mast	ETI/OHE/G	05201	A
77.	General arrangement of earth wire on OHE mast	ETI/OHE/G	05201-1	-
78.	Arrangement of transverse bonds	ETI/OHE/G	05251	A
79.	Connection of return conductor to track	-do-	05306	F
80.	Suspension arrangement of aluminum return conductor (spider) on traction Structures	-do-	05307	B
81.	Suspension of return conductor (spider) from boom of Structures (with clevis type disc insulators)	-do-	05312	A
82.	Connections between OHE and aluminum return conductor at booster stations	ETI/OHE/G	05413	B
83.	Mounting of 25kv Isolators on OHE Structures (General arrangement)	ETI/OHE/G	05513 Sh.1	A
84.	Details of small part steel work for supporting 25kv Isolator on new T.T.C. boom	-do-	05513 Sh.2	A
85	Connection from Isolator to OHE	-do-	05516	A
86	Characteristics of conductors/ bus-bar for 25kv AC traction	-do-	05600	A
87	Mounting arrangement of Auxiliary Transformer on OHE masts	ETI/OHE/G	05522	-
88	Employment Schedule for Cantilever Mast regulated OHE without return conductor & without earthwire (WP- 75 kgf/ m².) (Cat. 65/Cu & Cont. 107/Cu)	ETI/C	0702 (Sh.1)	B
89	Employment Schedule for Cantilever Mast regulated OHE with earth wire but without return conductor (WP- 75 kgf/ m²) (Caty. 65/Cu & Cont. 107/Cu)	-do-	0702 (Sh.2)	B
90	Employment Schedule for Cantilever Mast regulated OHE with return conductor but without earth wire (WP- 75 kgf/ m²) (Caty. 65/Cu & Cont. 107/Cu)	-do-	0702 (Sh.3)	B
91	Employment Schedule for Cantilever Mast regulated OHE with return conductor with earth wire (WP- 75 kgf/ m²) (Caty. 65/Cu & Cont. 107/Cu)	-do-	0702 (Sh.4)	B
92	Employment Schedule for Tramway type regulated OHE RC & EW (WP- 75 kgf/m²)	-do-	0704	B
93	Employment Schedule for 8"x 8"x35 lbs BFB (9.5 M. long)(WP-112.5 kgf/m² Caty. 65/Cu & Cont. 107/Cu.	-do-	0708	B
94	Employment Schedule for OHE mast (9.5m) overlap central location with 3.0 m implantation WP-75 kgf/m² Caty. 65/Cu & Cont. 107/Cu.	-do-	0709	A
95	Employment schedule for OHE mast (9.5M) overlap central with 3.0 M implantation WP-112.5 kgf/m² (Caty 65/cu and Cont.107/Cu)	ETI/C	0710	A

K-RIDE

1	2	3	4	5
96	Employment Schedule for OHE mast (9.5m) overlap inter with 3.0 m implantation. WP-75 kgf/ m² Caty. 65/Cu & Cont. 107/Cu.	-do-	0711	A
97	Employment schedule for OHE mast (9.5M) overlap inter with 3.0 M implantations. WP-112.5kgf/m² Caty.65/Cu and cont.107/Cu	-do-	0712	A
98	Employment Schedule for 9.5 m 200x200x49.9 kg mast WP-75 kgf/m² (Caty. 65/Cu & Cont. 107/Cu.)	-do-	0713	B
99.	Employment schedule for 9.5 m long 200x200x49.9 kg mast WP-112.5 Kgf/ m² (Caty. 65/Cu and Cont.107/Cu)	-do-	0714	B
100	Employment Schedule for OHE mast (9.5m) WP-75 kgf/ m² overlap Anchor location with 3.0 m implantation (Copper OHE)	-do-	0715	A
101	Employment schedule for OHE mast (9.5M) WP 112.5 kgf/ m² overlap anchor location with 3.0 M implantations. (Copper OHE)	-do-	0716	A
102	Employment Schedule for pre-stressed span concrete mast (PC 42) - 9.5 M long conventional OHE, normal location (WP-150),112.5 &75kgf/ m²)	ETI/C	0725	A
103	STD portals (N,O,P,R,G & Double BFB types)	-do-	0064	-
104	Volume chart and equivalent chart of foundations (Side bearing, Side gravity and W.B.C.)	TI/DRG/CIV/ FND/RDSO	00001/04/0 SH-1	B
105	Volume chart and equivalent chart of foundations (Side bearing, Side gravity and W.B.C.)	TI/CIV/FND/ RDSO	00001/12/0 SH-1	A
106	Volume chart and equivalent chart of foundations (NG type)	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-2	B
107	Volume chart and equivalent chart of foundations (NG type)	TI/CIV/FND/ RDSO	00001/12/0 SH-2	A
108	Volume and equivalent chart of foundations for Dry black cotton soil (NBC type) (For 16500 & 11000kgf/ m²)	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-3	B
109	Volume and equivalent chart of foundations for Dry black cotton soil (NBC type) (For 16500 & 11000kgf/ m²)	TI/CIV/FND/ RDSO	00001/12/0 SH-3	A
110	Volume chart and equivalent chart of New pure gravity foundations (500 mm exposed)	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-4	B
111	Volume chart and equivalent chart of New pure gravity foundations (500 mm exposed)	TI/CIV/FND/ RDSO	00001/12/0 SH-4	A
112	Volume and equivalent chart of New foundations for Dry black cotton soil only (8000 kg/m²)(NBC type) 2.5 M depth	TI/DRG/CIV/ FND/RDSO/	00001/04/0 SH-5	B
113	Volume and equivalent chart of foundations for Dry black cotton soil only (8000 kg/m²) NBC type 2.5 m depth	TI/CIV/FND/ RDSO	00001/12/0 SH-5	A
114	Volume and equivalent chart of foundations (For 8000 kg/m² Direct load)	ETI/C	0058 Sh.6	B
115	Special BFB portal for 5 tracks (General arrangement)	-do-	0026 Sh.1	C
116	Protective screen of foot-over bridge and road over-bridge.	-do-	0068	H

K-RIDE

1	2	3	4	5
117	Chart for portal foundation	-do-	0005/68	
118	Muff for OHE structures	-do-	0007/68	E
119	Structures muff for sand cored foundations	-do-	0012/69	E
120	9.5 m Standard traction mast (fabricated `K' series)	-do-	0018-2	D
121	Remote Control Cubicle at Stn, Foundation, RCC slab, Building plant & Steel door	-do-	0067	B
122	9.5 m long standard traction mast (fabricated with bottom plates `B' series)	ETI/C	0071	E
123 (a)	Details of OHE foundation in soft rock (Bearing capacity 45,000 Kgf/m²).	ETI/C	0059	C
123 (b)	Details of OHE foundation in Hard rock (Bearing capacity 90,000 Kgf/m²).	ETI/C	0060	D
124	Details of foundation for fencing upright	-do-	0032	B
125	Employment schedule for switching and booster station main masts	ETI/C	0185	B
126	Drilling schedule for S-1 mast	ETI/C	0030	F
127	Drilling schedule for S-2 mast	-do-	0031	D
128	Drilling schedule for S-3 mast (length 11. 4 m)	-do-	0180	C
129	Drilling schedule for 8" x 6" x 35 1bs. RSJ mast 8.0 m long for booster transformer station Type S-4	-do-	0036	E
130	Drilling schedule for S-5 mast (11.4m long)	-do-	0042	E
131	Drilling schedule for S-6 mast (length 12.4m)	-do-	0181	C
132	Drilling schedule for S-7 mast (length 12.4m)	-do-	0182	C
133	Drilling schedule for S-8 mast (length 12.4m)	-do-	0183	C
134	Drilling schedule for S-9 mast (length 12.4m)	-do-	0184	C
135	General arrangement & details of fencing panels & gate for switching station	-do-	0186 Sh.1	E
136	Details of fencing uprights and anti-climbing device for switching station	-do-	0186 Sh.2	E
137	S-100 fabricated mast for mounting LT supply transformer and drop out fuse switch at switching station	-do-	0043	B
138	S-101 details of mast for supporting Isolator inside switching station	ETI/C	0044	A
139	Details of anchor beam or SP, SSP, & FP	-do-	0033	D
140	Details of small part steel for switching station	ETI/C	0034 Sh.1	K
141	Details of bracing for switching & B.T. masts	ETI/C	0034 Sh.2	B
142	Details of small parts steel of out rigger for switching stations and booster transformer stations	ETI/C	0037	C
143	Details of small parts steel for booster transformer stations	ETI/C	0040	E
144	Details of pre-cast cable trench for switching station	-do-	0038	E
145	Standard 'R' type portal rod laced general arrangement	-do-	0011/69 Sh.1	C
146	'G' type portal special upright and end piece	-do-	0056	C
147	Short bored pile foundation for traction mast (permissible BM & volume)	-do-	0062	B
148	Chart for portal foundations in dry black cotton soil safe bearing capacity 16500 Kg/ M²	-do-	0063	B

K-RIDE

1	2	3	4	5
149	Dwarf mast foundation on wet & dry black cotton soil	CORE/ALD/OHE/SK/C	02	-
150	Typical design of new pure gravity foundation.	ETI/SK/C	131	A
151	Typical design of side gravity foundation (Soil pressure=8,000 Kg/ M²)	-do-	142	A
152	Rock Anchor for B.G. Track. –	ETI/SK/C	208	-
153	Bracket fitting for PSC Mast (cap 4200 Kgm) general arrangement and SPS details	ETI/SK/C	214 Sh.1of 2	E
154	SPS details for Earth wire clamp on PSC mast	ETI/SK/C	214 Sh. 2 of 2	A
155	Special arrangement of OHE under over line structure	ETI/OHE/SK	529	--
156	Earthing and bonding of PSC mast.	ETI/OHE/SK	537 Sh.1 of 2	D
157	Typical Earthing arrangement in SPUN PSC Mast with 18mm dia rod.	-do-	537 Sh.2 of 2	B
158	Arrangement of overlap	ETI/OHE/SK	566	-
159	Catenary dropper assembly	ETI/OHE/P	1190	B
160	Parallel clamp (20/20)	ETI/OHE/P	1550	E
161	Standard guide tube assembly.	ETI/OHE/P	5060-2	C
161 A	Counter weight assembly for Regulating Equipment (3:1 Ratio)	ETI/OHE/P	5090-5	E
161 B	Trapezoidal weight assembly for Regulating Equipment (3:1 Ratio)	TI/DRG/OHE/ ATD/RDSO/	00004/00/2	-
161 C	Trapezoidal weight assembly	ETI/OHE/P/	5090-1	G
161 D	Counter weight assembly	ETI/OHE/P/	5090	F
162	Standard anti-wind clamp	-do-	2550-1/2	L
163	Multiple cantilever cross arm assembly.	RE/33/P	3120	H
164	Anchor fitting assembly on rolled sections	ETI/OHE/P	3230	C
165	Anchor fitting assembly on 'K' series, TCC masts and 'P' type portal upright.	-do-	3240	D
166	Anchor assembly on 'N' and `O' type portal upright	-do-	3250	D
167	Structure bonds	-do-	7000	F
168	Earthing station	-do-	7020	B
169	Longitudinal rail bond	-do-	7030	F
170	Short super mast assembly	ETI/C/P	8010	G
171	Long super mast assembly	-do-	8020	C
172	Bracket attachment assembly on portal upright (N,O,R,P,G &BFB Type)	-do-	8030	B
173	Super mast assembly on portals	-do-	8050	C
174	Medium super mast assembly	ETI/OHE/P	8060	C
175	Compensating plate	-do-	5191-1/2	D
176	Suspension clamp	RE/33/P	1160	J
177	Double suspension clamp	-do-	1170	K
178	Double suspension lock plate.	-do-	1172	C
179	Catenary splice (65)	ETI/OHE/P	1090	-
180	Typical location & schematic connection diagram for a three interrupter switching station	ETI/PSI	003	C
181	Typical general arrangement of a three interrupter switching station	-do-	004	F
182	Typical location plan & general arrangement for sectioning & paralleling station	-do-	005	F

K-RIDE

183	Typical location plan and general arrangement for a feeding station	-do	006	E

1	2	3	4	5
184	Typical general arrangement at a Booster transformer station (with 4 cross feeder) Type III	-do-	013	B
185	General arrangement of 280 KVA Booster Transformer station Type III (with 4 cross feeder)	-do-	018	A
186	Typical general arrangement at a booster transformer station (without cross feeder) Type-I	ETI/PSI	011	C
187	Typical number plate for Auxiliary Transformer	ETI/PSI/P	7525	-
188	Typical fencing and anti-climbing arrangement at switching stations	ETI/PSI	104	E
189	Typical earthing layout of sub-sectioning and paralleling station	-do-	201	B
190	Typical earthing layout of a sectioning and paralleling station	-do-	202	B
191	Typical earthing layout of a feeding station	-do-	203	B
192	Earthing details for interrupter L.T. supply transformer 25 KV Lightning Arrestors P.T. Type-I (S-100 masts, S-101 mast, fencing upright and main mast)	-do-	204	C
193	Typical earthing layout at a booster transformer stations	-do-	211-1	A
194	Typical cable run layout of a sub-sectioning & paralleling station	-do-	301	C
195	Typical cable run layout of a sectioning and paralleling station	-do-	302	C
196	Typical cable run layout of a feeding station	-do-	303	B
197	Typical earthing layout at a booster transformer station (with 4 cross feeder for Type III,IV and V	ETI/PSI	212	B
198	Typical drawing for a terminal board	-do-	501	C
199	36 mm Aluminum Bus terminal for 25kv Isolator (Rigid type)	ETI/PSI/P	6480	C
200	36 mm Aluminum Bus splices	-do-	6490	B
201	36 mm Aluminum Bus Tee connector	-do-	6500	C
202	36 mm Aluminum Bus Tee terminal	-do-	6510	D
203	36/15 mm Top connector	-do-	6520	B
204	36mm Aluminum flexible bus splice	-do-	6550	B
205	36 mm Aluminum bus splice cum tee connector	-do-	6560	B
206	Typical number plate for interrupter and double pole isolator	-do-	7520	B
207	Typical number plate for potential transformer Type	-do-	7521	B
208	Typical number plate for booster transformer	-do-	7522	B
209	Caution plate 25 KV AC	ETI/OHE/P	7531	C
210	General Caution notice at entrance to railway Station (Hindi ,English & Regional language)	RE/33/P	7551	C
211	Typical details of pressed steel door, window and ventilator	RE/Civil/S	129/ 2001	R2
212	Bolted base connection for portals located in drains	ETI/C	0010	C
213	Details of base plate for mast on drains in station yards	-do-	0002/68	A
214	Height gauge for level crossings (for clear span upto 7.3 mtr) details of structure and foundation	TI/DRG/CIV/ HGAUGE/RD SO	00001/05/0	--

K-RIDE

215	Height gauge for level crossings (for clear span above 7.3 mtr up to 12.2 mtr) details of structure and foundation	TI/DRG/CIV/ HGAUGE/RD SO	00002/05/0	--
216	Standard plan details of Height gauge for span 7.3 M to 10.0 M with rail Type	RE/CIVIL/S	146/2008	R3

1	2	3	4	5
217	Arrangement for false catenary under over line structure	ETI/OHE/SK	446	--
218	Typical arrangement of OHE with insulated copper catenary under over line structure	ETI/OHE/SK	570	--
218A	Anti Climbing Arrangement	TI/SK/OHE/AN TIMON/RDSO	00001/08/0	--
218B	Anti Climbing Arrangement	TI/SK/OHE/AN TIMON/RDSO	00001/09/0	--
218C	GSSW Assembly	TI/DRG/OHE/G SSW	0002/09/0	--
218D	18 mm Lug (Forged) (Compression type)	TI/DRG/OHE/G TBLUG/RDSO	00001/04/0	--

(B) LIST OF STANDARD DRAWINGS FOR TRAMWAY TYPE OHE (REGULATED)

1	2	3	4	5
219	Span and stagger chart for Tramway type OHE (Regulated)	ETI/OHE/G	04201	-
220	Drilling schedule of OHE mast 8.5m & 9m ling RSJ and BFB for Tramway OHE (Regulated) respectively.	ETI/OHE/G	04202 Sh.1 Sh.2	C C
221	Schematic arrangement of tramway type OHE (regulated).	-do-	04203	C
222	Arrangement of bracket assembly for Tramway Type OHE (regulated)	-do-	04204	B
223	Arrangement of anti-creep for Tramway Type OHE (Regulated)	ETI/OHE/G	04205	B
224	Arrangement of anticreep (alternative arrangement) for Tramway OHE (Regulated)	-do-	04206	B
225	Arrangement of section Insulator for Tramway Type OHE (Regulated)	-do-	04207 Sh.1	B
226	Small parts steel for supporting section insulator assembly for (regulated Tramway Type OHE)	-do-	04207 Sh.2	B
227	General arrangement of turnouts for Tramway type OHE (Regulated)	ETI/OHE/G	04208	-
228	Adjustment chart for Tramway type OHE (Regulated)	ETI/OHE/G	04209	-
229	Bridle wire clamp (6 mm) with two bolts	ETI/OHE/P	1070-1	B
230	Large suspension clamp 20mm (with Armour rod)	ETI/OHE/P	1580 Sh-2	-
231	Hook Bracket	ETI/OHE/P	2380	C
232	BFB Steady arm assembly for Tramway OHE (Regulated)	ETI/OHE/P	2540-1	-
233	Anti wind clamp for tramway OHE (Regulated)	-do-	2550-3	E
234	Counter weight assembly (light)	ETI/OHE/P	5090-3	I
235	Counter weight assembly	-do-	5090-6	D
236	Employment schedule for tramway type regulated OHE without R.C. and E.W. (W.P.112.5 kgf/sq.m)	ETI/C	0705	B
237	Protective screen at FOB/ROBs	ETI/C	0068	H

K-RIDE

(C) STANDARD TYPICAL AND PARTICULAR DRAWINGS FOR TSS AND SHUNT CAPACITOR BANKS.

1	2	3	4	5
238	Typical layout of Remote Control cubicle at a switching station	ETI/PSI	0010	E
239	Typical layout of 132 /27kv Traction sub-station (Type-I)	TI/DRG/PSI/TSSLO/RDSO/	00001/01	0
240	Typical layout of 132 /27kv Traction sub-station (Type-II)	TI/DRG/PSI/TSSLO/RDSO/	00002/01/0	-
241	Typical layout of 132 /27kv Traction sub-station (Type-III)	TI/DRG/PSI/TSSLO/RDSO/	00003/02	0
242	Typical layout of 132/27kv Traction Sub-station (Type IV) (with outgoing feeders and metering Facilities)	TI/DRG/PSI/TSSLO/RDSO/	00004/02	0
243	Typical layout of 132/27kv Traction Sub-station (Type V)	TI/DRG/PSI/TSSLO/RDSO/	00005/02	0
244	Typical layout of 132/27kV traction sub-station (Type VI)	TI/DRG/PSI/TSSLO/RDSO/	00006/02	0
245	Typical layout of 132/27kV traction sub-station (Type VII)	TI/DRG/PSI/TSSLO/RDSO/	00007/02	0
246	Typical layout of 132/27kV traction sub-station (Type-VIII)	TI/DRG/PSI/TSSLO/RDSO/	000008/02	-
247	Typical layout of 132/27kV traction sub station with single transformer (Type -IX)	TI/DRG/PSI/TSSLO/RDSO/	00009/02	0
248	Typical layout of 132/27kv Traction Sub-station with 132kv Switching Station (Type x)	TI/DRG/PSI/TSSLO/RDSO/	00010/02	0
249	Typical layout of Control Room at traction sub-station.	TI/DRG/PSI/CPROOM/RDSO/	00001/01	0
250	Standard plan of control room at traction sub-station (General arrangement and RCC details)	RE/Civil/	S-144/06	0
251	Typical return current connection to buried rail at 132/25kv Traction sub-station	ETI/PSI	0212-1	Nil
252	Typical general arrangement of earth screen wire termination at Traction substation	ETI/PSI	0225	C
253	Typical termination arrangement for strung bus "Spider" (AAC) conductor at TSS.	ETI/PSI	0226	B
254	General arrangement & terminal connection for 25kV PT Type-II at TSS	ETI/PSI	0227	A
255	General arrangement and terminal connection for 25kV Potential Transformer at TSS (220kV)	ETI/PSI	0227-1	Nil
256	Typical layout of 220/27kV traction sub station (Type -I)	ETI/PSI	0240-1	Nil
257	Typical return current connection to buried rail at 220/25kV TSS.	ETI/PSI	0242	A
258	Typical termination arrangement for strung bus (ZEBRA ACSR) conductor at TSS (220kV)	ETI/PSI	0243	A
259	Typical general arrangement of earth screen wire termination at 220/25kV traction sub-station.	ETI/PSI	0244	Nil
260	Mounting arrangement of 100KVA 25kv/240V LT supply transformer at TSS	ETI/PSI	0312	B
261	25kv D.O. Fuse switch assembly	ETI/PSI	032	D
262	Typical fencing layout at traction Sub-station (Details of fencing panel, door, anticlimbing device etc.)	ETI/PSI	121	F
263	Typical arrangement of an earth electrode	ETI/PSI	222-1	Nil
264	Typical earthing, cable trench & foundation layout of 132/25kv TSS	ETI/PSI	224	E

K-RIDE

265	Typical earthing arrangement for equipment/ structure at TSS	ETI/PSI	228	A

1	2	3	4	5
266	Typical earthing cable trench and foundation layout of 132/25kV traction sub-station with Shunt Capacitor bay	ETI/PSI	229	Nil
267	Typical details of cable run at a two transformer TSS	ETI/PSI	323	E
268	Part Plan for Details of position of feeder Bus coupling interrupter at TSS	ETI/PSI/SK	272	Nil
269	Terminal connector for 220kV equipments (Typical drawing)	ETI/PSI/SK	324	Nil
270	Typical schematic diagram of protection for double Transformer traction sub station	ETI/PSI	024-1	Nil
271	Typical layout for 25kv Shunt capacitor with series reactor to be installed at 132/25kv TSS	ETI/PSI	0223	E
272	High speed auto reclosing scheme for feeder circuit breaker at 25kV A.C TSS	ETI/PSI	0231-1	A
273	Typical details of cable run at a two transformer TSS with Shunt Capacitor	ETI/PSI	325	Nil
274	Typical details of cable run at two transformers Traction Sub-station with Shunt capacitor (220kV)	ETI/PSI	326	Nil
275	General Scheme of supply for 25kV, 50 Hz single phase traction system	ETI/PSI	702-1	D
276	Standard Post Insulator for clean area (Creepage path 850mm min)	ETI/OHE/P	6090-1	C
277	Typical number plate for circuit breaker	ETI/PSI/P	7523	Nil
278	Typical number plate for Auxiliary Transformer	ETI/PSI/P	7525	Nil
279	Typical number plate for Power transformer at TSS	ETI/PSI/P	7526	Nil
280	Typical number plate for PT at TSS	ETI/PSI/P	7527	A
281	Typical number plate for CT at TSS	ETI/PSI/P	7528	A
282	Typical number plate for Isolators at TSS	ETI/PSI/P	7529	A
283	Bimetallic terminal connector to suit 'ZEBRA' ACSR conductor and 30 dia Cu stud of CT/CB/traction power transformer.	ETI/PSI/P	11010	C
284	220kV system bimetallic terminal connector to suit 'ZEBRA' (28.58 Dia) ACSR conductor & Al./Cu. pad of Isolator /CT/CB.	ETI/PSI/P	11030	C
285	220kV system tee connector to suit 'ZEBRA' (28.58 dia) ACSR conductor on both ways.	ETI/PSI/P	11040	C
286	220kV system rigid connector on SI to suit ZEBRA (28.58 dia) ACSR conductor	ETI/PSI/P	11050	C
287	Details of expansion type terminal connector to suit 50 dia Al. tubular busbar to terminal pad of 25kv CT/ Isolator/ CB and Interrupter	ETI/PSI/P	11060 Sh.2 of 2	E
288	Detail of rigid type bimetallic terminal connector suitable for 50 dia Al. tubular busbar to 30 dia Cu. Stud of 25kV CT.	ETI/PSI/P	11070	B
289	Rigid bimetallic terminal connector suitable for 50 dia Al. tubular busbar to terminal pad of 25kv Isolator/ CT	ETI/PSI/P	11090	C
290	Rigid through connector to suit 50 dia Al. Tubular bus bar and 'SPIDER' AAC conductor for 25kv PT Type-II	ETI/PSI/P	11110	C

K-RIDE

291	Details of Rigid terminal connector suitable for 20 dia Al. Conductor to terminal pad of 25kv PT Type I & II	ETI/PSI/P	11120	C

1	2	3	4	5
292	25kv system tee connector to suit 50 O/D Al. Tube and 'SPIDER' 'AAC' conductor	ETI/PSI/P	11140	B
293	25 K.V system Tee connector to suit 50. O/D AL. tubular busbar to 50. O/D AL. tubular busbar	ETI/PSI/P	11150	B
294	25Kv System Rigid bus splice connector to suit 50 O/D Al. tube on both ways	ETI/PSI/P	11180	B
295	25 kV System Sliding clamp for 50mm O/D Aluminium Bus bar	ETI/PSI/P	11190	C
296	25Kv System Rigid connector on S.I to suit 50 mm O/D Al. Bus bar	ETI/PSI/P	11200	C
297	25kv system expansion bus coupler on SI to suit 50 O/D Al. tube.	ETI/PSI/P	11210	D
298	Typical fencing , door and anticlimbing device details of traction sub-station	CORE/ALD/PSI	01	D
299	Structural layout of 132/25 KV traction sub-stations	ETI/C	0200, SH.No.-1	H
300	Structural layouts of 132/25kv traction sub-stations	ETI/C	0200, SH.No.-2	D
301	Details of Beam B/1 for 132/25 KV TSS	ETI/C	0201	D
302	Details of Tower T 1 for 132/25 KV TSS	ETI/C	0202	H
303	Details of Tower T 2 for 132/25 KV TSS	ETI/C	0203	G
304	Details of beam B/2 and column C/1 for 132/25kV traction sub-station.	ETI/C	0208	E
305	Typical cable trench and foundation lay out of 132/25kv TSS	ETI/C	0210	F
306	Details of baffle wall at TSS(WP-112.5kg/sq.m) and WP (75kg/sq.m)	ETI/C	0213	D
307	Details of RCC baffle Wall at TSS(WP-150kg/sq.m)	ETI/C	0214	B
308	Transformer oil drainage arrangement at sub-stations	ETI/C	0216	B
309	Line Diagram of Structural layouts of 220/25kV Traction sub-station	ETI/C	0222	Nil
310	Structural layout of 220/27kV traction sub-station (Type-I)	ETI/C	0222-1	Nil
311	Control Room for Traction substation	ETI/C	0225 Sheet-1	Nil
312	Control Room for Traction Sub-station(RCC details)	ETI/C	0225 Sheet-2	Nil
313	Details of structure for 132kv double pole Isolator	ETI/C	0310	G
314	Details of structure for 132kv support insulators	ETI/C	0320	E
315	Details of structure for 132kv Current transformer	ETI/C	0330	F
316	Details of structure for 120kv Lightning Arrestor	ETI/C	0340	F
317	Details of structure for 25kv Current transformer	ETI/C	0360	F
318	Details of structure for 42kv ,10KA LA & 25kv support insulator	ETI/C	0370 Sheet-1	J
319	Black Weight of Structure for 42kv,10KA LA & 25kv support insulator.	ETI/C	0370 Sheet-2	Nil

K-RIDE

320	Details of structure for 25kv Single Pole isolator	ETI/C	0380	F

1	2	3	4	5
321	Details of structure for 25kv Potential transformer	ETI/C	0390	E
322	S-100 Fabricated Mast for mounting LT supply transformer and DO fuse switch at switching station	ETI/C	0043	B
323	Details of structure and foundation for 25kV DP Isolator at TSS	ETI/SK/C	0180	C
324	Gillsans Letters and Figures	RE/33	527	A
325	Typical schematic diagram of protection for single transformer traction sub-station	ETI/PSI	0228-1	Nil
326	25 kV drop out fuse switch details	ETI/PSI	038	C
327	Operating pole for 25kV drop out fuse switch	ETI/PSI	039	B
328	Typical schematic diagram for TSS, FP, SSP and SP with 21.6 MVA or 30 MVA transformer for three lines.	TI/DRG/PSI/3L-TSS/RDSO	00001/07	1
329	Scheme of locking /Interlocking arrangement of 132 kV Isolator at Traction Sub-Station.	ETI/PSI	5212	B
330	Typical return current connection to buried rail at 132 kV/25 kV Traction Sub-Station.	ETI/PSI	0212-1	Nil
331	Typical arrangement of an earth electrode.	ETI/PSI	222-1	Nil
332	Flexible connector for 25 kV circuit breaker 25kV Interrupter & 25 kV side of 13.5/20 MVA traction transformer.	ETI/PSI/P	6570	F
333	Scheme of Interlocking arrangement for 25kV circuit breakers at Traction Sub-Station	ETI/PSI	5214	B
334	Expansion type terminal connector for 25 kV, 60mm dia terminal for traction power transformer.	ETI/PSI/P	11220	D

K-RIDE

(D) STANDARD TYPICAL AND PARTICULAR DRAWINGS FOR SCADA WORKS

The annexure contains reference to standard, typical and particular drawings & specification referred to in various paragraph of tender specification and particular specification.

1	2	3	4	5
335	General scheme of supply for 25 kV 50 Hz Single Phase AC	ETI/PSI	702-1	D
336	Typical layout of control room at TSS	TI/DRG/PSI/CPROOM /RDSO	00001/01	0
337	Typical layout of remote control cubicle at switching stations.	ETI/PSI	0010	E
338	Schematic inter connection diagram for remote control of power gear & supervision equipments at TSS.	ETI/PSI	644	C
339	Schematic inter connection diagram for remote control of power gear and supervision equipments at controlled station (SP & SSP)	ETI/PSI	645	C
340	High speed Auto reclosing Scheme for feeder Circuit Breaker at 25 kV A.C. Traction Sub-station.	ETI/PSI	0231-I	A

341	Control desk arrangement for 2 work stations of SCADA system.	ETI/PSI/SK	337	Nil
342	Setting up earthing station at switching posts (SSP & SP) with conventional earthing as per Special Maintenance No. TI/SMI/0032 Rev-1	-	-	-

(E) (a) LIST OF STANDARD DRAWING FOR HIGH RISE OHE

S.N.	Brief Description	Drawing		Mod No.
		Series	Number	
343	Design handout for Overhead equipment for running double stack containers under electrified routes (High Rise OHE) with speed potential of 140 Kmph based on revised wind zone.	TI/DESIGNS/OHE/2013/00001 (July'13)	-	-
344	Terms of reference for consultancy contract for high speed OHE and high rise OHE.	RDSO Letter No. TI/Traction policy/2013 dated 25.04.2013	-	-
345	OHE span in view of changes in wind zones in country.	RDSO Letter No. TI/OHE/GA/2013 dated 25/30.04.2013	-	-
346	SPECIAL BFB PORTAL FOR 5 TRACKS (GENERAL ARRANGEMENT)	TI/DRG/CIV/BFB-POTAL	00001/13/0	Sh No. 1
347	SPECIAL BFB PORTAL DETAILS OF UPRIGHT	TI/DRG/CIV/BFB-PORTAL	00001/13/0	Sh No. 2
348	G-TYPE PORTAL DETAILS SPECIAL UPRIGHT AND END PIECE	TI/DRG/CIV/G-PORTAL	00001/13/0	-
349	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 178 kgf/m^2) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET- 1
350	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 155 kgf/m^2) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET- 2
351	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 136 kgf/m^2) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET- 3
352	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 105 kgf/m^2) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET- 4
353	HIGH RISE OHE Employment Schedule Mast (11.4 m) (Wind Pressure 73 kgf/m^2) (Basic Wind Speed 33 m/s) (Without Return Conductor and Without Earth Wire)	TI/DRG/CIV/ES/	00001/13/0	SHEET- 5
354	TWO TRACK CANTILEVER STRUCTURE (TTC) GENERAL ARRANGEMENT	TI/DRG/CIV/TTC/	00001/13/0	SHEET- 1
355	TWO TRACK CANTILEVER STRUCTURE (TTC) DETAILS OF UPRIGHT	TI/DRG/CIV/TTC/	00001/13/0	SHEET- 2
356	11.4 M Long Standard Traction Mast "B" Series (B-150, B-175, B-200, B-225 & B-250 type Fabricated with Batten Plates)	TI/DRG/CIV/B- Mast/	00001/13/0	-
357	Volume Charts & Equivalent Charts of Foundations (Side Bearing, Side Gravity & WBC)	TI/DRG/CIV/FND/	00001/13/0	Sheet- 1

K-RIDE

358	Volume Charts & Equivalent Charts of Foundations (NG Type)	TI/DRG/CIV/FND/	00001/13/0	Sheet- 2
359	Volume Charts & Equivalent Charts of Foundations for Dry Black Cotton Soil (NBC Type, 3.0 metre Depth)	TI/DRG/CIV/FND/	00001/13/0	Sheet- 3

360	Volume Charts & Equivalent Charts of New Pure Gravity Foundations (500 mm exposed)	TI/DRG/CIV/FND/	00001/13/0	Sheet- 4
361	Volume Charts & Equivalent Charts of Foundations for Dry Black Cotton Soil (NBC Type, 2.5 metre Depth)	TI/DRG/CIV/FND/	00001/13/0	Sheet- 5
362	Employment Schedule OHE Mast (11.4 metre) Wind Pressure 155 kgf/m^2	TI/DRG/CIV/ES/	00001/13/0	Sheet- 1
363	Employment Schedule OHE Mast (11.4 metre) Wind Pressure 136 kgf/m^2	TI/DRG/CIV/ES/	00001/13/0	Sheet- 2
364	Employment Schedule OHE Mast (11.4 metre) Wind Pressure 105 kgf/m^2	TI/DRG/CIV/ES/	00001/13/0	Sheet- 3
365	Schedule Anchor Blocks for BG Tracks	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet- 1
366	Double Guy Rod Arrangement with Anchor Block for BG Tracks	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet- 2
367	Schedule Anchor Blocks for BG Track Black Cotton Soil	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet- 3
368	Guy Rod Ø 25 mm	TI/DRG/OHE/GUYHR/	00001/13/0	Sheet- 4
368A	Dropper Schedule Encumbrance 1.4m/1.4m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00001/10/1	Rev-1
368B	Dropper Schedule Encumbrance 1.4m/0.9m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00002/10/1	Rev-1
368C	Dropper Schedule Encumbrance 1.4m/0.75m (For 25 kV AC Regulated OHE) (65 and 107 SQ. MM)	TI/DRG/OHE/DROP/	00003/10/1	Rev-1
368D	Arrangement of mounting of 25kV/240V, 50kVA LT Supply Transformer for High Rise OHE (On separate mast)	ETI/OHE/HR/AT/G/	05522 Sheet-2	-
368E	Mounting Arrangement of Auxiliary Transformer on High Rise OHE mast	ETI/OHE/HR/AT/G/	05522 Sheet-1	-
368 F	Anchor Arrangement with Dwarf Mast for conventional and High Rise OHE	ETI/OHE/HR/ G/	01402	-
368G	Standard Arrangement of Drop Arm for supporting Cantilevers on the Booms of Portals and TTC (For Normal as well as High Rise OHE)	ETI/C/HR/	0076	-
368H	Drilling schedule for S-6H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0181	-
368 J	Drilling schedule for S-7H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0182	-
368 K	Drilling schedule for S-8H mast (length 13.0 m) (for High Rise OHE)	ETI/C/HR/	0183	-
368 L	'P' Type Portal General Arrangement and details of upright & End Pieces (High Rise OHE)	TI/DRG/CIV/P-Portal/	00001/13/0	-

K-RIDE

(E) (b) LIST OF STANDARD DRAWING AS PER NEW WIND ZONES

369	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 178 kgf/m^2) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire)	ETI/C/	0758 Sheet-1	A
370	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 155 kgf/m^2) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire)	ETI/C/	0758 Sheet-2	A
371	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 136 kgf/m^2) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire)	ETI/C/	0758 Sheet-3	A
372	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 105 kgf/m^2) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire)	ETI/C/	0758 Sheet-4	B
373	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 73 kgf/m^2) (Basic Wind Speed 33 m/s) (Without Return Conductor and Without Earth Wire)	ETI/C/	0758 Sheet-5	A
374	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 178 kgf/m^2) (Basic Wind Speed 50 m/s) (Without Return Conductor and Without Earth Wire)(1100+1100) kgf tension CAT-65 mm^2, CONT-107 mm^2.	ETI/C/	0759 Sheet-1	-
375	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 155 kgf/m^2) (Basic Wind Speed 47 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm2, CONT-107 mm2.	ETI/C/	0759 Sheet-2	-
376	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 136 kgf/m^2) (Basic Wind Speed 44 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm2, CONT-107 mm2.	ETI/C/	0759 Sheet-3	-
377	Normal OHE Employment Schedule Mast (9.5 m) (Wind Pressure 105 kgf/m^2) (Basic Wind Speed 39 m/s) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm2, CONT-107 mm2.	ETI/C/	0759 Sheet-4	-
378	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m2) (Without Return Conductor and Without Earth Wire) (1100+1100) kgf tension CAT-65 mm2, CONT-107 mm2.	ETI/C/	0759 Sheet-5	-
379	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m^2 (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm^2 1000 kgf tension in CONT. 107mm^2	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-1/5		-
380	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-2/5		-

K-RIDE

381	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-3/5	-
382	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm2, 1000 kgf tension in CONT-107 mm2.	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-4/5	-
383	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2	TI/DRG/CIV/ES/RDSO/00001/18/0 Sheet-5/5	-
384	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m^2 (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm^2 1000 kgf tension in CONT. 107mm^2 (with implantation more than 2.8 m & upto 3.8 m)	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-5/5	-
385	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with implantation more than 2.8 m & upto 3.8 m)	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-4/5	-
386	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with implantation more than 2.8 m & upto 3.8 m)	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-3/5	-
387	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm2, 1000 kgf tension in CONT-107 mm2. (with implantation more than 2.8 m & upto 3.8 m)	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-2/5	-
388	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with implantation more than 2.8 m & upto 3.8 m)	TI/DRG/CIV/ES/RDSO/00002/18/0 Sheet-1/5	-
389	Normal OHE Employment Schedule Mast (9.5 m) Basic Wind Speed 50 m/s Wind Pressure 178 kgf/m^2 (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm^2 1000 kgf tension in CONT. 107mm^2 (with implantation more than 3.8 m & upto 4.85 m)	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-5/5	
390	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 47 m/s) (Wind Pressure 155 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with implantation more than 3.8 m & upto 4.85 m)	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-4/5	
391	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 44 m/s) (Wind Pressure 136 kgf/m2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-3/5	

K-RIDE

	implantation more than 3.8 m & upto 4.85 m)		
392	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 39 m/s) (Wind Pressure 105 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension CAT-65 mm2, 1000 kgf tension in CONT-107 mm2. (with implantation more than 3.8 m & upto 4.85 m)	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-2/5	
393	Normal OHE Employment Schedule Mast (9.5 m) (Basic Wind Speed 33 m/s) (Wind Pressure 73 kgf/m^2) (Without Return Conductor and Without Earth Wire) 1000 kgf tension in CAT. 65mm2 1000 kgf tension in CONT. 107mm2 (with implantation more than 3.8 m & upto 4.85 m)	TI/DRG/CIV/ES/RDSO/00003/18/0 Sheet-1/5	

Note: New wind pressures/speeds as per RDSO letter No TI/CIV/MS/14 dated 14.07.2014 & IS: 875 Part-III, 1987, Reaffirmed during 1997 are:

Sl No.	Design Wind Pressure (Kg/m^2)	Basic Wind Speed	
		metre / second	Km / hour
i	178	50	180.0
Ii	155	47	169.2
Iii	136	44	158.4
Iv	105	39	140.4
v	73	33	118.8

K-RIDE

(F) LIST OF STANDARD RDSO's SPECIFICATIONS FOR OHE, TSS AND SCADA

SI.NO.	TITLE OF SPECIFICATION	SPECIFICATION NO
1	2	3
1.	Annealed stranded copper conductor for jumper wire.	ETI/OHE/3(2/94) with A&C slip No.1of (4/95)
2.	Copper busbar	RE/30/OHE/5 (11/60)
3.	Structural Steel tubes.	ETI/OHE/11 (5/89)
4.	Hot dip zinc galvanisation of steel masts (Rolled and Fabricated) tube and fittings used on 25 KV AC OHE.	ETI/OHE/13(4/84) with A&C slip No. 1of (5/86),2 of (4/90) & 3 of (4/90)
5.	Stainless steel wire ropes	TI/SPC/OHE/WR/1060 with A&C slip No 1 of (11/06) & 2 of (05/07)
6.	Solid core porcelain insulators for 25 KV 50 Hz single phase over head lines	TI/SPC/OHE/INS/0070 (04/2007)
7.	25 KV single and double pole isolators.	ETI/OHE/16(1/94) with A&C slip No.1 of (06/2000) & 2 of (3/2004)
8.	Steel fasteners & Stainless Steel fasteners	TI/SPC/OHE/Fasteners/0120
9.	Aluminum alloy section and tubes	ETI/OHE/21(9/74)
10.	Standard for drawings for Traction Overhead equipment	ETI/OHE/25(3/66)
11.	Light Weight Section Insulators assembly. OR Section Insulator assembly without sectioning insulator.	TI/SPC/OHE/LWTSI/0060 (8/2006) OR ETI/OHE/27(8/84) with A&C slip No.1 of (10/92)
12.	Enameled steel plates	ETI/OHE/33(8/85)
	Retro-reflective Structure Number Plates & Caution/Warning Boards	ETI/OHE/33A(12/97) Rev-8 (11/12)
13.	Galvanised steel wire	ETI/OHE/36(12/73) with A&C Slip No.1 of (5/98)
14.	3 pulley Type Regulating Equipment	TI/SPC/OHE/ATD/0060 (8/2006) with A&C Slip No1 of (10/2006), 2 of (5/2007) & 3 of (01/13)
15.	Fitting for 25 kV 50 Hz AC Overhead equipment.	TI/SPC/OHE/Fitting/0130(10/13) {Old ETI/OHE/49 (9/95) with A&C}
16.	Cadmium copper conductor for overhead Railway Traction	ETI/OHE/50 (6/97) with A&C slip No.1 to 3 (04/09).
17.	Principles of OHE layout plans and sectioning diagrams for 25 KV AC traction.	ETI/OHE/53(6/88) with A&C slip no.1 of (12/88), 2 of (8/89), 3 of (6/90), 4 of (8/92) & 5 of (11/2006)
18.	19/2.79mm All Aluminum alloy stranded catenary wire.	ETI/OHE/54(2/85) with A&C slip No. 1 of (11/89) &2 of (10/92)
19.	Bimetallic (Al-cu) strip	ETI/OHE/55(4/90)
20.	Short Neutral Section Assembly (Phase Break)	TI/SPC/OHE/SNS/0000 of (2/2000) with A&C slip No. 1
21.	Code for bonding and earthing for 25 KV, AC single phase, 50 Hz traction system.	ETI/OHE/71(11/90) with A&C slip no. 1 of (8/91) & 2 of (3/93)
22.	Insulated Cadmium copper catenary 19/2.10 mm dia for provision under overline structures in the 25 KV AC Electric Traction.	TI/SPC/OHE/INSCAT/0000 of (4/2000)
23.	Battery charger for 110 V battery, 40 AH.	ETI/PSI/1(6/81)
24.	Lightning arrestor- 7.5 KV	ETI/PSI/3(8/75) with A&C slip No.1 of (2/91)
1	2	3
25.	220 KV or 132 KV or 110 KV or 66 KV or	TI/SPC/PSI/PTs/0990 with A&C slip No.1 to 5

K-RIDE

	25 kV Potential transformers	(01/09)
26.	25 KV Dropout fuse switch & operating pole for use with 10 KVA and 100 kVA 25 kV/ 230 V L.T. Supply transformer.	ETI/PSI/14(1/86) with A&C slip no 1 of (4/87)
27.	25 kV/240 V, 5 kVA,10 kVA, 25 kVA & 50 kVA, 50 Hz single phase oil filled Auxiliary Transformers.	ETI/PSI/15(8/03)
28.	Low maintenance Lead Acid 40AH & 200 AH cells.	RDSO/PE/SPEC/TL/0040-2003(Rev-0) with A&C slip no 1 of (9/2005)
29.	150 KVA, 25 KV, single phase, 50 Hz. Dry type Cast resin Booster Transformers	ETI/PSI/97(6/87) with A&C slip No.1 of (9/88)
30.	100 KVA & 150 KVA, 25 KV, single phase, 50 Hz, oil filled Booster Transformers	ETI/PSI/98(8/92) with A&C slip No.1 of (9/92), 2 of (1/94) & 3 of (6/94)
31(a)	25 KV AC Single Pole, Double Pole mounted, Out Door Vacuum Circuit Breaker (VCB) and Vacuum Interrupter (BM).	TI/SPC/PSI/LVCBIN/0120 (December'2013) Revision-0)
31(b)	220 kV/132 kV/110 kV/100 kV/66 kV Double Pole, Triple Pole, Out Door SF6 Circuit Breakers.	TI/SPC/PSI/HVCB/0120 (June'2014) with A&C slip No.1(March-16)
32	Hard drawn grooved copper Contact wire	ETI/OHE/76(6/97) with A&C slip No.1 of (4/01), 3 of (03/05) , 4 of (12/06), 5 of (7/09), 6 of (5/12) & 7 of (12/13)
33	Metal Oxide Gapless type Lightning Arrestor for use on 25kV side of Rly. traction sub stations & switching stations	TI/SPC/PSI/MOGTLA/0100(07/10)
34	Technical Specification for Silicon Composite Insulators for 25 kV A.C. 50 Hz single phase over head traction lines.	TI/SPC/OHE/INSCOM/1070 (01/07) OR TI/SPC/OHE/INSCOM/1071 (04/13)
35	Specification for solid core porcelain cylindrical post insulator for systems with nominal voltage of 66kV, 110kV, 132kV & 220kV.	TI/SPC/OHE/POST/0100(01/2010)
36	25kv/240V L.T. supply Transformer, 100 KVA	ETI/PSI/15 A (7/82) with A&C Slip No.1(9/89)
37	Battery charger for 110V Battery, 200 AH	ETI/PSI/24(6/81)
38	Low tension Distribution panels for Rly. A.C traction sub-stations	ETI/PSI/29 (12/79)With A&C Slip No.1 (2/93)
39	Standard for drawings for power supply Installations.	ETI/PSI/31 (5/76)
40	Low tension distribution panels.	ETI/PSI/63(7/82)
41	Technical specification for control and relay panel for 25kV ac TSS including specification for numerical type protection relays for traction transformer, 25kV shunt capacitor bank and transmission line for 25kV ac TSS on Indian Railways.	TI/SPC/PSI/PROTCT/6071
42	Technical specification for shunt capacitor & series reactor equipment for traction sub-station	TI/SPC/PSI/FC&SR/0100(01/10)
43	Technical specification for 25kV ac, 50 Hz, single phase, oil filled, current transformer with CT ratio of I-1000-500/5A (for general purpose), II-1500-	ETI/PSI/90 (6/95) with A&C Slip No.1, 2,3,4,5,6,7 (08/2007) & 8 (April 2009).

K-RIDE

	750/5A (for heavy haul duties) for Railway ac traction sub station.	
44	Technical specification for two zone static relay for distance protection for 25kV ac single phase 50 Hz traction overhead equipment.	ETI/PSI/101 (8/87) with A&C Slip No.1 (09/87)
1	**2**	**3**
45	Technical specification for current transformers. I. 220kV. 200-100/5A, II. 132kV. 400-200/5A, III. 110kV. 400-200/5A, IV. 66kV. 800-400/5A for Railway A.C traction substations.	ETI/PSI/117 (7/88) with A&C Slip No.1 (11/88), 2 (3/89), 3 (12/89), 4 (4/90), 5 (6/90), 6 (9/92), 7 (8/05), 8 (08/2007) & 9 (July 2008).
46	Specification for 21.6 MVA single phase, 50 Hz. i) 220/27kV ii) 132/27kV iii) 110/27kV, iv), 66/27kV traction power transformer for Railway A.C traction sub- station.	ETI/PSI/118 (10/93) with A&C Slip No.1 to 9 & A&C slip No.10 (08/12) or latest
47	Code of practice for earthing of power supply installations for 25kV A.C., 50 Hz, single phase traction system.	ETI/PSI/120 (2/91) with A&C Slip No1 (10/93)
48	Technical specification for i) 245 kV, (ii) 145 kV, (iii) 123 kV, (iv) 72.5 kV double pole & triple pole Isolator for Railway traction sub stations.	ETI/PSI/122 (3/89) with A&C Slip No.1(4/90)
49	Specification for Metal Oxide gapless type lightning arrestors (combined) for use on 220/132/110/66 kV side of Railway A.C. traction sub station.	ETI/PSI/137 (8/89) with A&C Slip No.1,2,3 (Embodying) A&C slip No. 4(8/94) 5(04/01), 6 (9/05) & 7(07/2007)
50	Technical specification for 220 kV or 132 kV or 110 kV or 66kV or 25 kV potential transformer.	TI/SPC/PSI/PT_S/0990 with A&C Slip No.1,2,3,4,& 5 (April 09)
51	Delta I type High resistive fault selective Relay for 25 kV AC Single phase 50 Hz traction system.	TI/SPC/PSI/PROTCT/1982(12/2003) with A&C slip No.1(10/13)
52	Panto flashover protection relay for 25 kV A.C. single phase 50 Hz traction system.	TI/SPC/PSI/PROTCT/2983 (09/2001)
53	Technical Specification of SCADA system for 25kV, AC Single phase Traction supply on Indian Railway.	TI/SPC/RCC/SCADA/0130(04/2014)
54	Technical Specification for Galvanised Steel Stranded Wire for Traction Masts	TI/SPC/OHE/GSSW/0090 (10/2009)
55	Technical specification for galvanized steel stranded wire for traction bonds	TI/SPC/OHE/GALSTB/0040(09/04) Rev. 1 (08/05)
56	Setting up Earthing Station at switching posts (SSP & SP) with conventional Earthing.	Special Maintenance Instruction No. TI/SMI/0032 Rev-1
57	Design handout for Overhead equipment for running double stack containers under electrified routes (High Rise OHE) with speed potential of 140 Kmph based on revised wind zone.	TI/DESIGN/OHE/2013/00001 (July'13)
58	OHE span in view of changes in wind zones in country	TI/OHE/GA/2013 DATED 25/30.04.2013

K-RIDE

(G) LIST OF IS SPECIFICATION

S No.	IS Code No.	Descriptions
1	IS:210-1993	Grey iron castings
2	IS:269-1989	Specification for 33 grade ordinary Portland cement (4th Rev)
3	IS:282-1982	Dropper Wire
4	IS:306-1983	Tin bronze castings
5	IS:335-1993	New Insulating oil (4th Rev) Reaffirmed 2000
6	IS:371-1999	Ceiling rose spec.((3rd Rev)
7	IS: 383-1970	Specification for coarse & fine aggregates from natural sources for concrete
8	IS:398(PT.I)-1996	All Aluminum conductor
9	IS:398 Pt.II-1996	Al. conductor for overhead transmission purposes
10	IS:398(Part-III) 1976.	Aluminum conductors galvanized steel reinforced
11	IS: 432 Pt.1-1982	Specification for mild steel & medium tensile steel bars and hard drawn steel wires for concrete reinforcement
12	IS: 456-2000	Plain & Reinforced concrete Code of practice (3rd Rev)
13	IS: 516-1959	Method of tests for strength of concrete
14	IS:617-1994	Aluminum castings
15	IS:694:1990	Al. Jumper wire
16	IS:702-1988	Specification for industrial bitumen (2nd Rev) reaffirmed 1999
17	IS:731-1971	Porcelain Insulator for overhead power lines with a nominal voltage greater than 1000V
18	IS:732-1989	Code of practice for electrical wiring installation (3rd Rev)
19	IS:800-1984	Code of practice for general construction in steel (2nd Rev)
20	IS:808-1989	Dimensions for hot rolled steel beam, column, channel & angle sections
21	IS:816-1969	Welding
22	IS:875 (Part-3) 1987 (Reaffirmed)	Code of practice for design loads (other than earthquakes) for building and structures – Part 3: Wind loads second revision.
23	IS:1293-2005	Plugs & socket outlets of rated voltage upto and including 250V and rated current up to 16 Amp(3rd Rev)
24	IS:1387-1993	General requirements for the supply of metals and metal products
25	IS: 1489 Pt. I 1991	Specification for Portland-Pozzalana cement Pt .I Fly ash based (3rd Rev)
26	IS:1554(Part-I) 1988	PVC insulated cables
27	IS:1608-1995	Mechanical testing of metal- tensile testing
28	IS:1731-1971	Dimensions for steel flats for structural & general engineering purpose
29	IS:1777-1978	Industrial Luminaries with metal reflectors (1st Rev)
30	IS:1786-1985	Specification for high strength deformed steel bars and wires for concrete reinforcement
31	IS:1897-1983	Copper strip for formed fittings
32	IS:2004-1991	Carbon steel forgings for general engineering purpose
33	IS:2062-2011	Steel for general structural purpose
34	IS: 2074-1992	Ready mix Paint, air drying, Red oxide, Zinc chrome
35	IS:2121-1981	Aluminum and steel cored Aluminum conductors for (Part I & II) overhead power lines.
36	IS:2141-2000	Galvanised stay strand
37	IS:2312-1967	Propeller type AC ventilating fans (1st Rev)
38	IS: 2386 Pt.III-1963	Method of tests for aggregates for concrete Pt. III Specific gravity, density voids, absorption & buckling
39	IS:2673-2002	Dimensions for Aluminum Tubular Busbar.
40	IS:2675-1983	Enclosed distribution fuse boards ad cut-outs for voltage not exceeding 1000V AC & 1200V DC (2nd Rev)
41	IS:3043-1987	Code of practice for earthing (1st Rev)
42	IS:3091-1999	Aluminum bronze castings

K-RIDE

S No.	IS Code No.	Descriptions
43	IS:3188-1980	Characteristics of string insulator units
44	IS:3837-1976	Accessories for Rigid steel conduit for electrical wiring
45	IS:3854-1997	Switches for domestic & similar purposes(2nd Rev)
46	IS:4826-1979	Specification for hot dipped for galvaised coatings on round steel wires (1st Rev)
47	IS:5082-1998	Material for Aluminum tubular busbar.
48	IS: 6403-1981	Code of practice for determination bearing capacity of shallow foundations (1st Rev)
49	IS:7098 (Part I) 1988	LT XLPE cables
50	IS:7098 (Part II) 1985	HT XLPE cables
51	IS: 8130-1984	Conductor for Insulated electric cables & flexible cords (1st Rev)
52	IS:9537 Pt-I-1980	Conduits for electrical installations
53	IS:9968(Pt.2)-2002	Annealed Copper Jumper Wire
54	IS:13947 Pt. III 1993	Specification for low voltage switchgear & control gear Pt.-3, disconectors & fuse combination unit
55	IS:14329-1995	Malleable iron castings

K-RIDE

SECTION-8C

Safety, Health and Environment (SHE) Manual

A: Safety, Health, Environment (SHE) and Social Obligations of the Contractor

1: Safety, Health, Environment (SHE) and Social Obligations of the Contractor

1.1 Governing Law:

The contract compliance documents shall be governed by the laws and byelaws of the Union of India, the Karnataka Government and the subject local bodies. The competent courts of jurisdiction as mentioned in the Special Conditions of Contract shall have exclusive jurisdiction in all matters in connection with this contract.

1.2 Statutory Compliance:

The Contractor agrees to abide by all the existing laws of all the statutory authorities and bodies and further agrees that the prices quoted include all the costs for liabilities under the existing laws and acts, unless otherwise mentioned. All such laws may or may not have been explicitly stated in this contract document.

The Contractor shall be aware of all laws, ordinance, codes, rules and regulations in any manner affecting those employed on the Works or the materials used in the Works or in any way affecting the conduct of the Works and of all orders and declarations of bodies or tribunals having any jurisdiction or authority over the Work.

- The Contractor shall at all times himself give all notices, observe and comply with and shall require all his its supervisors employees, subcontractors, to observe and comply with all such applicable laws, ordinances, rules, regulations, orders and decrees in effect or which may become effective before completion and acceptance of the Works, and shall protect and indemnify the Authority against any claim of liability arising from or based upon the violation of any such law, ordinance, code, rule, regulation, order or declaration, whether by himself, his its employees or his its subcontractors or any other person or organization employed for or upon the Work.

- In case the Contractor observes that any requirement of the contract documents varies with such laws, ordinances, codes, rules, regulations, orders or declarations, he shall promptly notify the Authority in writing and shall not proceed with any Work affected by such variance without written instructions;
- The contractor shall prepare a register of applicable requirement and status of EHS legal compliances considering proposed construction activities and site-specific conditions before commencement of activity (ies) for necessary actions to comply with.

1.3 Permits and fees:

Unless otherwise provided in the contract documents, the Contractor shall secure and pay for all permits, government fees, and licenses necessary for the execution and completion of the Works and requisite certificates. The required permits will be secured by the Contractor prior to commencing the works and a copy of all such documents shall be submitted to the Authority.

1.4 Safety, Health and Environment (SHE)

1. The contractor shall, throughout the duration of the contract, be responsible for management of safety, health and environment (SHE) and deploy qualified personnel and management committee to manage these aspects;

2. The Contractor shall at all timescomply with provisions of the EHS management plan (EMP) which includes the following but not limited to;

a) All the workers must use adequate personal protective equipment's (PPEs) such as safety helmet, safety shoes, safety glasses, safety harness and gloves etc. as required for different construction activities.
b) Tool-box talks should be undertaken daily before starting the routine construction activities. A suitable format for recording the tool-box talk should be filled and maintained at a construction site by the site safety in-charge or site manager.
c) Areas being used for activities such as welding, bar cutting, bending, excavated areas and material stacking areas should be barricaded with a barricading tape.
d) Adequate safety signages indicating use of PPEs, different hazards etc. should be conspicuously displayed in local language (hindi) at adequate locations within a construction site.
e) Walking pathways for the workers and the drive-ways for the construction vehicles should be kept separate and properly marked.
f) At areas in a construction site, where work such as welding, cutting is carried out with aid of electrical power, proper care should be taken so that electrical wire with open joints are not spread on ground in haywire condition posing risk of electrocution and trip hazard to workers.
g) Vehicle parking areas should be maintained outside the areas of construction activities and should be conspicuously marked.
h) Adequate lighting arrangements should be made within the construction area if construction activities are undertaken after sun set or in absence of day light.
i) Heavy equipment's or other earthmover equipment's must be equipped with alert siren for reverse gear.
j) Flammable materials such as diesel if stored in bulk quantities should not exceed 900 liters. Drums used for diesel storage should not be placed on unpaved area and open to sky condition. Smoking, lighting or burning activities must be completely prohibited within the radius of 25 m from the location of diesel storage or other highly flammable materials;
k) CO2fire extinguishers and buckets filled with dry sand should be maintained at appropriate locations at a construction site.
l) At least 2 first aid kits should be maintained at any construction site and workers should be made aware of whom to contact in case of injuries requiring first aid. First aid kit should be kept in charge of a responsible person who shall be readily available during the working hours. Supervisors at site should have obtained a formal first aid training.
m) The contractor shall prepare an emergency response plan and train all workers on the appropriate actions to be undertaken during emergency situations (e.g. earthquake, fire)
n) A site-specific emergency contact numbers which should include, nearest police station, hospital, fire station and the site in-charge should be conspicuously displayed.
o) An ambulance van or an arrangement with a nearby hospital should be made for transportation of serious cases of accidents or sickness of any worker/s.
p) Relevant documents should be maintained by the site managers at a construction site as required under Building and other Construction Workers (Regulation of Employment and Conditions of Services) Act, 1996.
q) No worker employed at a construction site shall be required or allowed to work continuously for more than fifteen hours a day inclusive of intervals of rest or sixty hours in a week.

r) No worker shall be required or allowed to work for more than fourteen consecutive days unless a rest of twenty-four hours is given for rest to such worker.
s) Standard operating/working procedures with respect to safety should be implementing for undertaking works such as working in confined spaces, working at heights, lifting of heavy parts with cranes and other lifting equipment's.
t) Lifting equipment's (like cranes, slings etc) should be inspected thoroughly as per standard inspection procedures. Copy of such inspection records should be kept readily available for review with the respective equipment's.
u) In addition to the aforementioned construction activities, adequate safety measures, as required, during different phases of project development shall be implemented;
v) Conduct safety audit at periodic intervals and submit the report to the Authority. The report shall outline key findings and corrective actions (if any);
w) Ensure that hazardous material (paints, lubricants and oils etc) which are brought to the Project site and hazardous wastes (used/waste/left over paint, paint and oil soaked rags/material, empty oil/paint drums/carbuoys, filters, batteries, used hydraulic oil etc.) generated at site (both during construction and operation) are: stored under segregation and containment; handled/used with appropriate care and personal protective equipment; and disposed off through entities authorized to handle and dispose hazardous wastes;
x) Where applicable and relevant implement the condition for Forest Clearance (FC), NOC from National Board for Wild Life (NBWL), respective CRZ management authority and respective State Pollution Control Board, permission of tree(s) removal from non forest area and other provisions of the environment management plan (EMP) which includes the following but not limited to: (a) provision of slope protection of open and excavated areas; (b) provision of storm water runoff drainage; (c) stockpiling of construction materials shall not impact or obstruct the water drainage; (d) stockpiles shall be covered/protected to prevent dust generation and erosion; (e) construction activities near sensitive receptors shall be limited during daytime; (h) provided dust suppression system in applicable areas;(f) ensure that all equipment, vehicles and other sources of fuels and lubricants will be collected and contained to avoid groundwater contamination; (g) source construction and domestic water requirement from third party, if the available sources will result to water competition with nearby communities.
y) Contractor shall conduct environment monitoring (ambient air, noise etc) on periodic basis.
z) The contractor will put in place a grievance management system to address any community grievances/concerns linked to the project and construction activities. This will be documented on the site.

1.5 Accident/Incident Reporting for SHE: The contractor shall inform the Authority in writing, immediately and no later than 24 (twenty four) hours of an incident (including any major environmental hazards) or accident occurring (including, without limitation, any fatality, lost time incident, medical treatment case, first aid case etc) in anyway connected with the Work. The contractor shall also maintain and submit a monthly report of all such incidents/accidents. In addition to this, the contractor shall promptly conduct incident investigations on all fatalities and major accidents/incidents and submit a report with findings/recommendations and actions taken/planned within 15 days from the date of occurrence of the accident/incident. The authority shall be entitled to join the contractor in its investigation or carry out its own.

1.41.6 Labour Laws:

- During continuation of the contract, the Contractor and his sub- contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and byelaws of State /Central Government or local authorities and any other labour law (including rules), regulations, bye-laws that may passed or notified under any labour law by the state / central government or the local authorities during execution of the Work. The Contractor shall keep the company indemnified in case any action is taken against the Authority by the competent authority on account of contravention of any of the provisions of any act or rules made under these regulations or notifications including amendments;
- In case the Authority is caused to pay or reimburse such amounts as may be necessary to cause or observe or for non-observance of the provisions stipulated in the notifications/bye-laws/acts/rules/regulations including amendments, if any, on the part of the Contractor, the Authority shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Authority;
- The Contractor shall carry out its activities consistent with the intent of ensuring legally permissible equal opportunity, fair treatment and non-discrimination in relation to recruitment and hiring, compensation, working conditions and terms of employment for its workers (including prohibiting any form of discrimination against women during hiring and providing equal work for equal pay for men and women) and minimizing potential labor retrenchment;
- The Contractor shall not restrict its workers from developing a legally permissible means of expressing their grievances and protecting their rights regarding working conditions and terms of employment.
- The Contractor shall engage contractors and other providers of goods and services a) who do not employ child labour, defined as employment of children whose age is below the statutory minimum age of employment; and b) who do not employ forced labour defined as all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty; c) who have appropriate management systems that will allow them to operate in a manner which is consistent with the intent of (a) ensuring legally permissible equal opportunity and fair treatment and non-discrimination for their workers, and (b) not restricting their workers from developing a legally permissible means of expressing their grievances and protecting their rights regarding working conditions and terms of employment.

1.7 Labour Camps:

1. Labour camp should be adequately fenced and isolated from a construction area and should be livable (sufficient space, lighting, toilets, electricity, cooking area etc)
2. Sufficient supply of drinking water should be maintained at a labour camp.
3. In case of construction sites where 100 or more workers are likely to work for 6 months then an adequate canteen consisting of at least a dining hall, kitchen, store room, pantry and washing places separately for workers and utensils should be maintained.
4. To avoid spread of infections and diseases, proliferation of mosquitoes, flies, rodents and other pests, wastewater generated from domestic activities such as bathing, and washing should not be allowed to flow in open and should be channelized to the nearest municipality drain. In absence of municipality drain, a septic tank and a soak pit system of adequate capacity should be constructed.
5. Containers for collection of food waste, kitchen waste should be provided in labour camp. These containers should be emptied on regular basis.

1.8 Penalty Clause

SN	Item	Penalty
1	Violation of any of the SHE condition(s) and social obligations of the contractor given under the heading Safety, Health, Environment (SHE) and Social Obligations of the Contractor	Rs.5,000/- for single violation, compounded to a maximum of Rs.25,000/- at any single instance
2	Fatal Accident at the work site of the contractor due to negligence of contractor or its personnel.	Rs.5,00,000/- for first fatality & Rs.10,00,000/- for subsequent fatality.
3	Grievous Injury Accident at the work site of the contractor due to negligence of contractor or its personnel	Rs.1,00,000/- for first grievously injured person and Rs.2,00,000/- for every subsequent grievously injured person

SECTION – 9

PRICE SCHEDULES

(FINANCIAL BID)

EPC TENDER

K-RIDE

CONTENTS

Section 9: Price Schedules (Financial Bid)

Sl No.	Description	Page No.
1.	PREAMBLE.	374-375
2.	SUMMARY OF PRICE SCHEDULE.	376-379
3.	SCHEDULE – A TO SCHEDULE - G	380-386
4.	APPORTIONMENT OF CONTRACT PRICE & WEIGHTAGES OF COMPONENTS FOR INTERIM PAYMENTS.	387-405

K-RIDE

DOUBLING PROJECT (DL)

PRICE SCHEDULES (FINANCIAL BID)

EPC TENDER.

Tender No: KRIDE/DL/17/2021

"Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Railway Electrification of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

1. The Price Schedule shall be read in conjunction with the Instructions to Tenderers, Conditions of Contract, Notice Inviting Tender, Technical Specifications, Tender Drawings, Schedule, Annexures and Addendums.

2. The Amount are to be quoted in each sections of the Price Schedule (i.e. Schedule-A: Overhead Equipment Work-(Open Section-39 TKM), Schedule-B: Overhead Equipment Work-(Yard Section-23 TKM), Schedule-C: Modificaton in Feeder Post/SP/SSP(1TSS+4SSP+1SP), Schedule-D: Auxiliary Transformer stations & CLS Panel, Schedule-E: Tools & Plants, Schedule-F: Emergency mast, Schedule-G consists of Lump sum provision to be operated for incidental and unforeseen items likely to require while execution of work. These items will **be executed under schedule of rates 2019-20 or latest, published by Government Departments KPTCL/BESCOM/KPWD/USSOR/CPWD/ BWSSB).** The cost under this Schedule (Schedule-G) will stand fixed as Rs 25,00,000/- and this amount of Rs. Twenty Five Lakhs already provided as fixed amount in the summary of Financial Bid/Price Schedule.

   I. The Contractor should quote Lumpsum price for each schedule.
   Schedule -A : Lumpsum price for Total TKM of Open Route
   Schedule -B : Lumpsum price for Total TKM of Yard Section
   Schedule -C : Lumpsum price for Total No. of Modifications in Feeder Post/SP/SSP
   Schedule -D : Lumpsum price for Total No. of Auxiliary Transformer stations & CLS Panel
   Schedule -E : Lumpsum price for all Tools & Plants(as per Annexure - a)
   Schedule -F : Lumpsum price for Emergency mast(as per Annexure - b)

   II. The quoted Amount are for completed and finished items of work and complete in all respects. Which shall be inclusive of constructional plant, tools, machinery, labour, supervision, materials, fuel, oil, consumables, electric power, water, transportation, all leads and lifts, dewatering, all temporary works and false works, construction of temporary stores and buildings, fencing, watering, lighting, erection maintenance, night working, inspection facilities, safety measures at work sites/casting yard for workmen and road users, preparation of design and drawings etc. establishment and overhead charges, labour camps, insurance costs for labour and works, contractor's profit, all taxes, royalties, duties, cess, octroi, GST and other levies and other charges together with all general risks, liabilities and obligations set out or implied in the contract and including remedy of any defects during the Defect Liability Period, unless otherwise provided in Price Schedule.

KRIDE

3. Providing concrete for all works deemed to be inclusive of the cost towards production of concrete by batching plant, transit mixer, transportation of concrete with all leads and lifts, form work, shuttering including staging as required, pouring of concrete by pump/tower crane to all heights /depths, compaction by vibrators, curing by approved means such as water, steam or curing compound and all labour, tools, plants, machinery required for execution of work complete in all respects including deshuttering after completion of work.

4. The amount for various Schedules and Summary of Price Schedule shall be quoted in Indian Rupees both in figures and in words.

5. The whole cost of complying with the provisions of the Contract shall be deemed to have been included in the quoted Amount.

6. All columns in the "Summary of Price Schedule"- shall be filled in ink or typewritten and the total tender amount shown in the bottom. The person authorized to sign on behalf of the Tenderer shall digitally sign on E-proc.

7. General directions and description of works and materials are not necessarily repeated or summarized in the Price Schedule.

8. The method of measurement of completed work for payment shall be in accordance with the requirements as stated in the individual sections of the Technical Specifications and Conditions of Contract.

9. Shuttering required for concrete work shall be of steel except wherever there are site constraints as decided by Engineer.

10. In the defined grade of concrete mix, the first figure defines the strength of concrete and second figure defines the maximum size of coarse aggregates to be used for production of particular concrete mix, E.g. M 15/20 means "M-15" is the grade of concrete and "20" is the maximum size of coarse aggregate in mm to be used.

11. Tenderer may please note that to perform this contract, nothing extra shall be payable on account of field constraints, availability of front, preparation of detailed scheme for taking necessary clearance and approval from the concerned authority and other local bodies etc.

12. If work is stopped due to non-shifting of utilities, no claim shall be entertained on this account.

13. The Tenderer's offer shall be inclusive of all taxes and duties payable by them. Income Tax and any other statutory taxes to be deducted at source, if any, will be deducted by the Employer in accordance with the Income Tax Act and any other acts in force and in accordance with instructions issued by the Authorities on this behalf, from time to time.

14. The Tenderer is required to furnish the PAN for all members of Group.

Important Notice:

THE TENDERER SHOULD QUOTE HIS AMOUNT AGAINST EACH SCHEDULE OF PRICE SCHEDULE.

K-RIDE

SUMMARY OF PRICE SCHEDULE.

EPC TENDER

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - A	**Overhead Equipment Work (Open Section)** Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment & Cut-in Connection etc. along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in open routes based the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, large span wire, ATD's and modifications of section insulator, slewing of equipment, Dismantling of Mast/Structure by cutting, breaking of foundations, Catenary and contact splicing, if any etc.		
2	Schedule - B	**Overhead Equipment Work (Yard Section)** Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment etc. along with PTFE neutral section, false		

K-RIDE

		catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in Yards based the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, Large span wire, ATD's (including shifting on existing on Platforms) and modifications of section insulator, Slewing of equipment, Dismantling of Mast/Structure by cutting, Breaking of foundations, Catenary and contact splicing, if any etc.		
3	**Schedule -C**	**25 KV Traction Sub Station (TSS), Sectioning post (SP) and sub-sectioning post (SSP)** Design, supply, erection, testing and commissioning of single phase, 25 KV, 50 Hz, AC Traction Sub Station(TSS), Switching Stations (SP/SSP) including Foundations, Structures and all ancillary equipment etc. along with (Earth work, retaining wall if required), Potential Transformers, Disconnector, Double pole Isolators, Lighting Arresters, Vacuum type Interrupters, Fencing Up rights and Internal Wiring with switch/fittings/ Equipments, Modification works(Busbars, Jumpers, Terminal connectors, Lighting Arresters, Gantry etc), Shifting of feeder wire under power block, All types of caution, warning, instruction, protection, location/Name and schematic diagram boards, earthing stations, Safety items		
4	**Schedule -D**	**I. Auxiliary transformer stations** Design, supply, erection, testing and commissioning of single-phase Auxiliary Transformer Station of different capacity complete with all structures and fittings etc. along with anti-climbing device and Dropout fuse switch & all types of caution, warning, Modification works, instruction, protection boards and location/Name boards, junction box, Dismantling of existing ATs II. **CLS Panel** Supply, erection, testing and commissioning of Control and distribution panel for colour light		

K-RIDE

		signalling supply in 25 kV AC traction system of different capacity, complete with suitable cable termination box for terminating the LT cable of AT & local EB supply and outgoing cable for signal equipment at Cabin/Station building, necessary cable glands, fasteners, grouting bolts and clamps required for fixing/grouting of panel board and dismantling of existing CLS Panel.		
5	**Schedule -E**	Tools and Plants (OHE & PSI).		
6	**Schedule -F**	Emergency Mast		
7	**Schedule -G**	Miscellaneous Items for works which are not covered in Schedule A - F. (Items not covered in Schedule A - F are to be executed under schedule of rates 2019-20 or latest, published by Government Departments KPWD/USSOR/CPWD/ BWSSB/BESCOM/KPTCL).	25,00,000/-	Twenty Five lakhs

K-RIDE

Note:-

1) **Work Done under Power Block : The above quoted cost for schedule A to D covers working under Line and Power Block, no extra payment shall be given for work done under blocks. Contractor to take this cost into account while quoting. The rates quoted for schedule A to D is including works done under Power & Line Block.**

2) **The above quoted cost covers all items of the work as detailed in the "Employer's Requirement" contained in Section 8A as well as conforming to all Technical Specifications in Section 8B and stipulations laid down in the Bid Document including all addenda/corrigenda thereof till the date of submission of Bids.**

3) **It is inclusive of all costs on Design, Drawings, Reports, Survey, Site Facilities, Construction, Equipment, Plants, Instruments, Labour, Supervision, Materials, Supply, Erection, Testing, Commissioning, Modification, Maintenance, Temporary Works, Site Access, Safety, Security, Defect Rectification, Insurance, Profit duties, Taxes, Levies, Royalties as per applicable law together with all general risks, liabilities and obligations set out or implied in the contract.**

4) **Schedule-G consists of Lump sum provision to be operated for incidental and unforeseen items likely to require while execution of work. These items will be executed under schedule of rates 2019-20 or latest, published by Government Departments KPWD/USSOR/CPWD/ BWSSB/BESCOM/KPTCL). The**

cost under this Schedule (Schedule-G) will stand fixed as Rs 25,00,000/- and this amount of Rs. Twenty Five Lakhs already provided as fixed amount in the summary of financial bid.

5) **Total section length is 62 Tkm (approximate)**

6) **Schedule for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Price Schedule (refer: ITB Clause 11.2 and CC Clause 37.2).**

7) **Lumpsum Amount shall be quoted by the Tenderer in Indian Rupees.**

8) **Where there is a discrepancy between the rate in figures and words, the lower of the two will govern. [ITT Clause 24.1]**

9) **No Tower Car, BRN Wagon, Crane etc, shall be provided for Mast Erection, Wiring & Adjustment of OHE. Tower Car shall provided for only joint checking with Railway Officials.**

K-RIDE

PRICE SCHEDULE

SCHEDULE-A

NAME OF WORK: "Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - A	Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment & Cut-in Connection etc. along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in open routes based on the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, large span wire, ATD's and modifications of section insulator, slewing of equipment, Dismantling of Mast/Structure by cutting, breaking of foundations, Catenary and contact splicing, if any etc.		

K-RIDE

PRICE SCHEDULE

SCHEDULE-B

NAME OF WORK: "Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - B	Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment etc. along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in Yards based on the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, Large span wire, ATD's (including shifting on existing on Platforms) and modifications of section insulator, Slewing of equipment, Dismantling of Mast/Structure by cutting, Breaking of foundations, Catenary and contact splicing, if any etc.		

K-RIDE

PRICE SCHEDULE

SCHEDULE-C

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - C	Design, supply, erection, testing and commissioning of single phase, 25 KV, 50 Hz, AC Traction Sub Station(TSS), Switching Stations (SP/SSP) including Foundations, Structures and all ancillary equipment etc., (Earth work, retaining wall if required) Potential Transformers, Disconnector, Double pole Isolators, Lighting Arresters, Vacuum type Interrupters, Fencing Up rights and Internal Wiring with switch/fittings/Equipments, Modification works(Busbars, Jumpers, Terminal connectors, Lighting Arresters, Gantry etc), shifting of feeder wire under power block, All types of caution, warning, instruction, protection, location/Name and schematic diagram boards, earthing stations, Safety items		

K-RIDE

PRICE SCHEDULE

SCHEDULE-D

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - D	i. **Auxiliary transformer stations** Design, supply, erection, testing and commissioning of single-phase Auxiliary Transformer Station of different capacity, complete with all structures and fittings etc. along with anti-climbing device and Dropout fuse switch & all types of caution, warning, Modification works, instruction, protection boards and location/Name boards, junction box, dismantling of existing ATs ii. **CLS Panel** Supply, erection, testing and commissioning of Control and distribution panel for colour light signalling supply in 25 kV AC traction system of different capacity, complete with suitable cable termination box for terminating the LT cable of AT & local EB supply and outgoing cable for signal equipment at Cabin/Station building, necessary cable glands, fasteners, grouting bolts and clamps required for fixing/grouting of panel board and dismantling of existing CLS Panel.		

K-RIDE

PRICE SCHEDULE

SCHEDULE-E

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - E	Tools and Plants (OHE & PSI).		

K-RIDE

PRICE SCHEDULE

SCHEDULE-F

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule - F	Emergency Mast		

K-RIDE

PRICE SCHEDULE

SCHEDULE-G

NAME OF WORK: Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase , Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required."

Tender no: K-RIDE/DL/17/2021 Date --19.10.2021

Sl. No.	Schedule	Description	Quoted by Tenderer	
			Quoted Amount in INR (Lumpsum Cost)	
			In Figures	In Words
1	2	3	4	5
1	Schedule -G	**Miscellaneous Items for works which are not covered in Schedule A - F. (Items not covered in Schedule A - F are to be executed under schedule of rates 2019-20 or latest, published by Government Departments KPWD/USSOR/CPWD/ BWSSB/BESCOM/KPTCL).** **Note:** If the same item is available in all schedule of rates given above, then the priority of schedule of rates is as follows: a) BESCOM/SR b) KPTCL/SR c) KPWD d) USSOR e) CPWD. If SR rate 2019-20 is not available, then the previous SR rates are to be adopted.	25,00,000/-	Twenty Five Lakhs.

K-RIDE

DETAILS OF THE SCHEDULES

SCHEDULE -A & B

ITEM NO 1 & 2: Overhead Equipment Work (Open Section & Yard Section).

Design, supply, erection, testing and commissioning of 25 KV, 50 Hz, AC Overhead equipment including Foundations, Auxiliary Transformer Foundations, Masts, AT Masts, Structures and all ancillary equipment & Cut-in Connection etc. as per following details along with PTFE neutral section, false catenary wire under over line structure, Protective screens on over line structure, Structure arrangement on bridge piers, feeder wire, all types of caution, warning, instruction and protection boards at required locations, anti-theft charging arrangement, Traction Station Working Rule along with sectioning diagram at required locations (TPC, Traffic control, OHE Depot, AEE office etc.), Modification works in the existing OHE work in open routes and Yards based the approved plans. This includes Power blocks works and NI works, shifting of exiting PTFE, IOL, UIOL, FTA, Feeder wire Mast, Anticreep wire, large span wire, ATD's(including shifting on existing on Platforms) and modifications of section insulator, slewing of equipment, Dismantling of Mast/Structure by cutting, breaking of foundations, Catenary and contact splicing, if any etc.

Safety items (i.e. key box, First aid box, shock treatment chart, Collar ring, men at work board etc) at required locations, construction of contractor's depot & sidings and all necessary documentation for EIG sanction and CRS Inspection. Breakdown attention till CRS inspection.

Regulated conventional type OHE with Normal contact wire height 5.80 Metre for open Route

S.NO	From Station to Station	km to km	Total Track km	Remarks
1	Hosur(Incl.) – Baiyyappanahalli Cabin A(Excl.)	**159/000.00-205/500.00**	**62**	**I. Open Route-39 km** **II. Yard-23 km**

Regulated Tramway type OHE with normal contact wire height 5.80 metre

Station	km to km	Total Track km	Remarks
NIL	NIL	NIL	NIL

NOTE: For schedule A &B.

1. For all foundation works in OHE/Feeder/PSI works – M-15 concrete shall be used and for core – M – 20 concrete shall be used with 20mm ballast for both the concrete.

2. For every 50 m3 of concrete casted, three samples of test cubes of size 15x15x15 cm shall be made and tested for crushing strength after 28 days at any government approved agency/colleges. If any sample test cube fails, the performance of the foundations will be observed for a period of one year from the date of casting for any crack or disintegration; if found satisfactory, payment for that batch will be made after the observation period.

3. Muffing of OHE mast/structures should be done along with grouting in order to ensure homogeneous bonding between Muffing and grouting concretes.

4. All bolts and nuts below 14 mm dia on current carrying parts of OHE shall be stainless steel.

5. All type of insulators shall be tested at site for Mechanical Proven test in the presence of TRD Staff before execution of work.

K-RIDE

6. Proper soldering should be required both sides of the jumper ends (H, G, C, F, Anti theft jumpers) etc.

7. Contractor should be provide **PACKING SADDLE** each and every Cantiliver.

8. The contractor shall provide composite insulator in the vandal prone area/polluted areas instead of porcelain insulator as directed by engineer in-charge.

9. While doing power block works proper bonding is required for OHE structure.

10. The Contractor should provide heat shrinkable PVC sleeve of minimum length of 40cm for structure bond under track circuited rail.

11. The OHE traction bonds should be fixed to the rail and connected in such a way that they do not interfere with tamping machine during tamping.

12. Drilling of holes in the rails shall be done only with prior approval of authorized Railway official and drilling should be done in the presence of nominated Railway official.

13. All the released equipment, fittings, SPS Steel works shall be returned to the OHE Depot.

14. While releasing OHE Structures (Masts, Boom, Up-Rights, TTU's, Gantry mast etc.) proper care shall be taken.

K-RIDE

SCHEDULE -C

ITEM NO 3: 25 KV Traction Sub Station(TSS), Sectioning post (SP) and sub-sectioning post (SSP)

Design, supply, erection, testing and commissioning of single phase, 25 KV, 50 Hz, AC Traction Sub Station(TSS), Switching Stations (SP/SSP) including Foundations, Structures and all ancillary equipment etc. as per following details along with (Earth work, retaining wall if required), Potential Transformers, Double pole Isolators, Lighting Arresters, Vacuum type Interrupters, Fencing Up rights and Internal Wiring with switch/fittings/ Equipments, Modification works(Busbars, Jumpers, Terminal connectors, Lighting Arresters, Gantry etc), Shifting of feeder wire under power block, All types of caution, warning, instruction, protection, location/Name and schematic diagram boards, earthing stations, Safety items, and all necessary documentation for EIG sanction and CRS Inspection, breakdown maintenance till CRS inspection.

A). Details of Vacuum of Vacuum type 25kV Interrupter to be provided:

S.NO	Location	Chainage	Type of Switching Post	Number of Interrupters	Remarks
1	Hosur Station	158/600-700	TSS	02	
2	Anekal Road	173/837-854	SSP	02	
3	Heelalige	183/620-637	SSP	02	
4	Karmelaram	194/300-318	SSP	02	
5	Belandur Road	198/700-721	SP	03	
6	BYPL A- Cabin	205/50	SSP	02	

B). Details of 25 kV potential transformer to be provided:

S.NO	Location	Chainage	Type of Switching Post	Number of potential transformer	Remarks
1	Hosur Station	158/600-700	TSS	02	
2	Anekal Road	173/837-854	SSP	01	
3	Heelalige	183/620-637	SSP	01	
4	Karmelaram	194/300-318	SSP	01	
5	Belandur Road	198/700-721	SP	02	
6	BYPL A- Cabin	205/50	SSP	01	

C). Details of 42 kV lightning arrestor to be provided.

S.NO	Location	Chainage	Type of Switching Post	Number of lightning arrestor	Remarks
1	Hosur Station	158/600-700	TSS	02	
2	Anekal Road	173/837-854	SSP	02	
3	Heelalige	183/620-637	SSP	02	
4	Karmelaram	194/300-318	SSP	02	
5	Belandur Road	198/700-721	SP	02	
6	BYPL A- Cabin	205/50	SSP	01	

K-RIDE

Note for Schedule C

1. This includes dismantling of old interrupter, Potential Transformers, Busbar, Pedestal Insulator, Gantries, Double pole Isolator small parts steel if any, Fencing Up rights and Fencing panels from outside the SSP Building and also include releasing of Electrical equipments, Battery chargers, old wirings etc from inside the Released SSP/ SP. All the released equipments are to be handed over to the purchaser as decided.

2. If in any SSP/SP and TSS (feeder gantry) There is less ballast spread then 20 cm the top up of ballast to the extent of 20 cm depth has to be done by the contractor.

K-RIDE

SCHEDULE -D

ITEM NO 4: A). Auxiliary transformer stations

Design, supply, erection, testing and commissioning of single-phase Auxiliary Transformer Station of different capacity as per below details, complete with all structures and fittings etc. along with anti-climbing device and Dropout fuse switch & all types of caution, warning, Modification works, instruction, protection boards and location/Name boards, junction box, Dismantling of existing ATs and all necessary documentation for EIG sanction and CRS Inspection. Breakdown attention till CRS inspection.

5 KVA AT for LC gate

S.NO	LC NO.	CHAINAGE	Quantity	Remarks
1	104	160/00-100	01	
2	109	167/500-600	02	
3	116	177/800-900	01	
4	118	180/200-300	01	
5	119	180/800-900	01	
6	125	185/600-700	01	
7	126	187/100-200	02	
8	127	187/600-700	01	
9	130	191/600-700	01	
10	133	197/800-900	01	
11	134	199/800-900	01	

5 KVA AT for IB's.

S.NO	Location	CHAINAGE	Quantity	Remarks
1	IBs B/w BYPL - BLRR	201/300	02	
2	IBS @ CRLM	193/241	01	
2	IBs B/w HLE - AEK	177/500	02	
3	IBs B/w HEB - BAND	213/470	02	

10 KVA AT for Station Buildings:

S.NO	Location	Building Chainage	Quantity	Remarks
1	Hosur	158/407	01	
2	Maranayakana halli	165/965	01	
3	Anekal Road	172/850	01	
4	Heelalige	182/791	01	
5	Uskur	188/000	02	
6	Belandur Road	196/750	02	

K-RIDE

Extension of LT power supply for CLS Work

i).For LC Gates.

S.NO	LC NO.	CHAINAGE	Current Capacity/Size of Conductor	Remarks
1	104	160/00-100	2*25 sqm	
2	109	167/500-600	2*25 sqm	
3	116	177/800-900	2*25 sqm	
4	118	180/200-300	2*25 sqm	
5	119	180/800-900	2*25 sqm	
6	125	185/600-700	2*25 sqm	
7	126	187/100-200	2*25 sqm	
8	127	187/600-700	2*25 sqm	
9	130	191/600-700	2*25 sqm	
10	133	197/800-900	2*25 sqm	
11	134	199/800-900	2*25 sqm	

ii).For IB's.

S.NO	Location	CHAINAGE	Current Capacity/Size of Conductor	Remarks
1	IBs B/w BYPL - BLRR	201/300	2*25 sqm	
2	IBS @ CRLM	193/241	2*25 sqm	
2	IBs B/w HLE - AEK	177/500	2*25 sqm	
3	IBs B/w HEB - BAND	213/470	2*25 sqm	

iii). For Station Buildings.

S.NO	Location	Building Chainage	Current Capacity/Size of Conductor	Remarks
1	Hosur	158/407	2*70 sqm	
2	Maranayakana halli	165/965	2*70 sqm	
3	Anekal Road	172/850	2*70 sqm	
4	Heelalige	182/791	2*70 sqm	
5	Uskur	188/000	2*70 sqm	
6	Belandur Road	196/750	2*70 sqm	

K-RIDE

B). CLS Panels

Supply, erection, testing and commissioning of Control and distribution panel for colour light signalling supply in 25 kV AC traction system of different capacity as per below details, complete with suitable cable termination box for terminating the LT cable of AT & local EB supply and outgoing cable for signal equipment at Cabin/Station building, necessary cable glands, fasteners, grouting bolts and clamps required for fixing/grouting of panel board and dismantling of existing CLS Panel if any.

5 KVA CLS Panel for LC's: As per RDSO technical specifications No. TI/SPC/PSI/CLS/0020 (07/10) with A&C slips No.1 to 4 or latest, connections as required. - For 5 KVA AT.

S.NO	LC NO.	CHAINAGE	Quantity	Remarks
1	104	160/00-100	01	
2	109	167/500-600	01	
3	116	177/800-900	01	
4	125	185/600-700	01	
5	126	187/100-200	01	
6	130	191/600-700	01	
7	134	199/800-900	01	

5 KVA CLS Panel for IB's: As per RDSO specification No. TI/SPC/PSI/CLS/0020 with A & C Slip No. 4 (7/2010).

S.NO	Location	CHAINAGE	Quantity	Remarks
1	IBs B/w BYPL - BLRR	201/300	01	
2	IBS @ CRLM	193/241	01	
3	IBs B/w HLE - AEK	177/500	01	
4	IBs B/w HEB - BAND	213/470	01	

10 KVA CLS Panel for Station Buildings:

S.NO	Location	Building Chainage	Quantity	Remarks
1	Maranayakana halli	165/965	01	
2	Anekal Road	172/850	01	
3	Heelalige	182/791	01	
4	Uskur	188/000	01	
5	Belandur Road	196/750	01	

K-RIDE

SCHEDULE - E

ITEM NO 5: Tools and Plants (OHE & PSI).

Annexure - a

Schedule - E			
Tools & Plants (OHE & PSI)			
Item No	**Description**	**Unit**	**Qty**
1	Tirfor 2.5T/1.5T	Nos	5
2	Tirfor 5T/3T	Nos	5
3	Pull lift 3 T	Nos	5
4	Pull lift 3/4 T	Nos	6
5	Aluminium / Light weight metal conduit Platform ladder trolley	Nos	5
6	Earthing discharge rod complete	Nos	5
7	Aluminium Straight ladder extensive (11 M)	Nos	2
8	Portable Electric Drill 21mm, single phase, 230V (for drilling) Ralli Wolf, Hitachi, Black & Decker makes only	Nos	2
9	First aid box filled with medicines as per standard	Nos	3
10	Two Fold Strecther Made of high quality aluminium alloy tubes.	Nos	2
11	Fire bucket (10 Ltrs) capacity with one stand and cover for set of 4/6 buckets at each switching station/TSS	Nos	3
12	Portable fire extinghuisher powder type	Nos	3
13	D' Shackles set of on each (1", 3/4", 5/8", 1/2")	Set	24
14	Set of Steel sling 19mm Dia with Eye each end of 1M, 2 M, 3 M,4M & 10 M	Set	24
15	Walkie Talkie Sets (2W output)	Nos	9
16	Drop out fuse pull rod	Nos	12
17	1/2" square drive socket set containing 22 sockets with 5 attachments	Set	3
18	Transformer oil Acidity testing Kit	Nos	1
19	Pocket size clip on Tong tester	Nos	3
20	Digital time interval meter 15 - 1000 seconds	Nos	3
21	Insulation tester 2.5 KV	Nos	3
22	Insulation Megger 500 V Megger make or equivalentas approved by Engineer	Nos	3
23	Load cell tester suitable for 40 AH and 200 AH battery	Nos	3
24	Emergency Telephone	Nos	15
25	Spanner set double ended, 24 size 12 pieces set (6mm to 42mm) Gedore or Tapraia make with ISI Mark	Set	5
26	Cogex or Similar 52 pieces socket set (box spanners)	Set	3

K-RIDE

27	Rail jumpers set with clamps at both ends along with RITES inspection certificate. Set consisting of: (a) 13 Mtrs Long one Number, (b) 5 Mtrs Long One Number and © 3 Mtrs. Long Two Nos. as per RDSO Drg. No: RE/DNR/EL/TP/07.		
	(a) 3 Mtrs Length	Nos	45
	(b) 5 Mtrs Length	Nos	10
	(b) 13 Mtrs Length	Nos	6
28	Come-along clamps for Catenary suitable for 19/2.65 mm conductor	Set	6
29	Come-along clamps for contact wire 107 mm	Set	6
30	Come-along clamps for Aluminium "SPIDER" Conductor (20 mm)	Set	6
31	Come-along clamps for earth wire (19/2.5 mm) Galvanised steel	Set	3
32	Contact Wire cutter 36"	Nos	3
33	Dropper Wire Cutter 12"	Nos	6
34	Single Sheave Pulley Block 3 1/2"x1/2" Groove Steel	Nos	12
35	Single sheave Pulley Block 3 1/2"x1/2" Groove Fiber for drawal of Contact Catenary wire	Nos	12
36	Single Sheave Pulley Block 6"x1"Groove Steel	Nos	8
37	Contact Wire twist-cum-bender 6"	Nos	3
38	Portable electric drilling machine 13 mm	Nos	1
39	Mobile aluminium ladder 36'	Nos	3
40	Aluminium Straight ladder (8 m) with hook on top	Nos	6
41	Crimping tool up to 6 mm^2 size	Nos	6
42	Chain pulley block 3.0 ton cap	Nos	3
43	Safety electrical Rubber Hand Gloves 33 Kv	Pairs	60
44	Supply and commissioning of OLIVIR-G Plus system (Overhead line inspection with video recording and GPS making system for current collection test) as per RDSO specification No. TI/SPC/OHE/OLIVIR/0051 or latest	Each	1
45	Thermal Infra Red Vision Camera CEM Model DT-9885 or similar	Each	1

K-RIDE

SCHEDULE - F

ITEM NO 6: Emergency masts

Annexure-b

	SCHEDULE - F		
	Emergency Mast		
Si.No	Description	Unit	Qty
1	Fabrication and supply of heavy duty emergency OHE mast made of MS Raw materials complete as per SCR/SC Sketch No. TRD/SC/SO14289(Section weight Approx weight (1 set 650 kgs x6 sets=3900 kgs) with enclosed Drawing Accepted Offer . As above, Make/Brand OEM.	nos	2

K-RIDE

Name of the work: "EPC Tender for Design, Supply, Erection, Testing & Commissioning of 25 KV, AC, 50 Hz, Single Phase, Traction Over Head Equipment for Doubling of Baiyyappanahalli Cabin A (km 205.5) (Excluding) – Hosur (km 159) (Including) Section (62 Track Kilometer approximately) of Bangalore division including any Modification in Existing Overhead Equipment if required.

1.Proportions of the Contract Price for different stages of Railway Electrification work shall be as specified below:

SL No	Item Description	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage	Payment Procedure
			Schedule – A		
1	**Overhead Equipment Work (Open Section)**	54.57%	1.1 Completion of Design & drawing and Foundation work including block sections.	8.95%	Payment for each stage shall be made after completion of a previous stage for a Section, measured in track kilometer (TKM) pro rata with reference to the total TKM.
			1.2 Supply of steel and Completion of Steel erection (Mast & Portal) & grouting with painting of location Numbers.	22.55%	
			1.3Completion of erection of Bracket, Guy Rod, anticreep (Complete pre wiring activity), protection screen, Provision of wire and & Bonding.	16.13%	
			1.4Supply of Contact & Catenary wire and Completion of wiring along with erection of balance weight, dropping & clipping including antitheft charging &	47.37%	

K-RIDE

			Power block works. 1.5 commissioning.	5.0%	For item No. 1.5 Stage payment will be released on completion of work under item no. 3.2 and item 4.3 & 5.1,6.1.
			Total	**100 %**	

K-RIDE

SL No	Item Description	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage	Payment Procedure
			Schedule - B		
2	**Overhead Equipment Work (Yard Section including Modification Works)**	39.75%	2.1 Completion of Design & drawing and Foundation work for block sections including stations and yards	7.6%	Payment for each stage shall be made after completion of a previous stage for a Yard Section, measured in track kilo metre(TKM) pro rata with reference to the total TKM.
			2.2 Supply of steel and Completion of Steel erection (Mast & Portal) & grouting with painting of location Numbers	30.62%	
			2.3 Completion of erection of Bracket, Guy Rod, anticreep (Complete pre wiring activity), protection screen, Provision of wire and Bonding.	13.90%	
			2.4 Supply of Contact & Catenary and Completion of wiring along with erection of balance weight, dropping & clipping including antitheft charging and Modification of Yard works.	42.88%	
			2.5 Commissioning	5.0%	For item No. 2.5 Stage payment will be released on completion of

K-RIDE

					work under item no. 3.2 and item 4.3 & 5.1,6.1.
			Total	**100 %**	

Note:

i) Payment will be made on certification of the Engineer for various items.

ii) ESP, L-section, SIP etc. shown in indicative plan (Tender Drawings) are indicative which may change as per design and Employer's requirements. However, stage payment shall be made as per approved drawings such as LOP, CSD, SED etc.

K-RIDE

SL No	Item Description	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage	Payment Procedure
Schedule - C					
3	**Switching Posts /Traction Sub Station**.	3.6%	3.1 Completion of all Works 3.2 Commissioning and charging at 25kv.	90.0% 10.0%	Payment shall be made for this stage after completion of each switching post work measured in number of switching posts on pro rata basis with reference to the total switching posts for the Railway Project
			Total	**100 %**	

K-RIDE

Weightage of Each Switching Post for interim payments is as mentioned below.

Sl. No.	Description	Percentage breakup(weightages)
1	Hosur -TSS	17.00%
2	Anekal Road - SSP	16.00%
3	Heelalige - SSP	16.00%
4	Karmelaram - SSP	16.00%
5	Belandur Road- SP	20.00%
6	Baiyyappanahalli Cabin A - SSP	15.00%

SL No	Item Description	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage	Payment Procedure
			Schedule - D		
4	**Auxiliary Transformers & CLS Panels**	2.08%	4.1 Completion of Auxiliary Transformer works including testing.	50.0%	Payment shall be made for each stage after completion of each auxiliary transformer, and related work on pro rata basis with reference to the total of the auxiliary transformer stations for the Railway Project.
			4.2 Completion of CLS Panels works.	40.0%	Payment shall be made for each stage after completion of each CLS panel and related work on pro rata basis with reference to the total of the CLS Panels for the Railway Project.
			4.3 Commissioning	10.0%	
			Total	**100 %**	

K-RIDE

Weightage of Each Location for interim payments is as mentioned below.

S.NO	LOCATION	Percentage breakup(weightages)
1	Hosur	3.62%
2	Maranayakanahalli	4.62%
3	Anekal Road	4.62%
4	Heelalige	4.62%
5	Uskur	8.62%
6	Belandur Road	8.62%
7	IBS B/W BYPL-BLRR	6.62%
8	IBS @ CRLM	3.62%
9	IBS B/W HLE-AEK	6.62%
10	IBS B/W HEB-BAND	6.62%
11	LC 104	3.62%
12	LC 109	6.62%
13	LC 116	3.62%
14	LC 118	2.62%
15	LC 119	2.62%
16	LC 125	3.62%
17	LC 126	6.62%
18	LC 127	2.62%
19	LC 130	3.62%
20	LC 133	2.62%

K-RIDE

Schedule – E					
SL No	**Item Description**	**Weightage in percentage to the Contract Price**	**Stage for Payment**	**Percentage weightage**	**Payment Procedure**
5	**Tools and Plants As per Annexure-a**	Lump sum	5.1 All tools and Plants to be handed over to TRD	100%	Payment shall be made after complete hand over of all TRD related tools and Plants.
			Total	**100 %**	

K-RIDE

Schedule - F					
SL No	**Item Description**	**Weightage in percentage to the Contract Price**	**Stage for Payment**	**Percentage weightage**	**Payment Procedure**
6	**Emergency masts – 02 nos As per Annexure-b**	Lumpsum	6.1 All tools and Plants to be handed over to TRD	100%	Payment shall be made after complete hand over of mast in good condition. Note: The emergency mast (2 nos) shall be used by the contractor till the completion of the project and then shall be handed over to TRD in good condition
			Total	**100 %**	

K-RIDE

SECTION-10

FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT ETC.,

K-RIDE

INDEX

Table of Forms

SL. NO	DESCRIPTION	PAGE NO
1	FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT	1177
2	FORM OF BANK GUARANTEE FOR PERFORMANCE SECURITY	1178
3	FORM OF BANK GUARANTEE FOR ADDITIONAL PERFORMANCE SECURITY	1181
4	ADVANCE PAYMENT SECURITY	1184
5	INDEMNITY BOND FOR THE SAFE CUSTODY OF THE MATERIALS SUPPLIED BY THE CONTRACTOR	1188

NOTE: *This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.*

All italicized text is for guidance how to prepare the various forms and shall be deleted from the final documents.

K-RIDE

FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT

To,……(Name of the Employer)
……..(Address of the Employer).

Whereas ……(Name and Address of the contractor) (herein after called the Contractor) has undertaken, in pursuance of contract no…….. Dated:……(Name of the contract and brief description of the work) (herein after called the Contract)

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs._____*[amount of guarantee]*
Rupees_____*[in words]*, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until 28 days from the date of expiry of the Defects Liability Period.

Signature and seal of the guarantor _____
Name of Bank _____
Address _____
Date _____

K-RIDE

FORM OF BANK GURANTEE FOR PERFORMANCE SECURITY

(On non-judicial stamp paper of the appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank).

From:
Name and Address of the Bank…..
……..
To:
The Managing Director,
Rail Infrastructure Development Company (Karnataka) Limited,
"Samparka Soudha" , 1st Floor,
B.E.P Premises (Opp. Orion Mall),
Dr. Rajkumar Road,
Rajajinagar 1st Block,
Bangalore - 560 010

WHEREAS**,** Rail Infrastructure Development Company (Karnataka) Limited, hereinafter called the **Employer,** acting through ***[Insert Designation and address of the Employer's Representative]***, has accepted the bid of ***[Insert Name and address of the Contractor]***, hereinafter called the **Contractor,** for the work of ***[Insert Name of Work]***, vide Notification of Award No ***(Insert Notification of Award No…***) **AND**

WHEREAS, the contractor is required to furnish Performance Security for the sum of ***[Insert Value of Performance Security required]***, in the form of bank guarantee, being a condition precedent to the signing of the contract agreement.

WHEREAS, ***[Insert Name of the Bank]***, with its Branch ***[Address]*** having its Headquarters office at ***[Address]***, hereinafter called the **Bank,** acting through ***[Designation(s) of the authorised person of the Bank]***, have, at the request of the *[Insert name of the JV partner]* , a JV partner on behalf of the contractor, agreed to give guarantee for performance security and additional performance security as hereinafter contained:

1 KNOW ALL MEN by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank],***being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay the Employer the full amount in the sum of ***[Insert Value of Performance Security required]*** as above stated.

2 The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal not withstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Employer of Bank.

3 On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.

4 The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.

5. The Bank Guarantee shall be unconditional and irrevocable.

6 The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.

7 The Bank agrees that no change, addition, modifications to the terms of the Contract Agreement or to any documents, which have been or may be made between the Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.

8 This guarantee is valid and effective from the date of its issue, which is ***[insert date of issue]***. The guarantee and our obligations under it will expire on [***Insert the date twenty-eight days after the expected end of defect liability period]***. All demands for payment under the guarantee must be received by us on or before that date.

9 The Bank agrees that the Employers right to demand payment of aforementioned full amount in one instance or demand payments in parts totaling up to the aforementioned full amount in several instances will be valid until either the aforementioned full amount is paid to the Employer or the guarantee is released by Employer before the Expiry date.

10 The Bank agrees that its obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.

11 The expressions Bank and Employer herein before used shall include their respective successors and assigns.

12 The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

13 The Guarantee shall be in addition to and without prejudice to any other security Guarantee (s) of the contractor in favour of the Employer available with the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

14. This guarantee shall be valid for 28days from the date of expiry of defect liability period.

Date ……. ……

Place……. [*Signature of Authorized person of Bank/Guarantor]*

……

[Name in Block letters]

K-RIDE

……...
[Designation]

……..……
[P/Attorney] No.

……..
Bank's Name and Seal

[P/Attorney] No.……

Witness:

1. *Signature*
   Name & Address & Seal

2. *Signature*
   Name & address & Seal

K-RIDE

Note :

1. *All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.*

2. *In case the guarantee is issued by a foreign Bank, which does not have operations in India, the said bank shall have to provide a counter-guarantee by State Bank of India.*

3. *In case the Contractor is a JV, the Performance Security is required to be furnished on behalf of the JV in favour of the Employer by the JV Partners in proportion of of their respective percentage share specified in the JV Agreement. The percentage share of M/s [**Insert Name of the JV Partner**] in the JV is [**Fill share % in the JV**] percent. All the Bank Guarantee of JV Partners are liable to be encashed cumulatively.*

FORM OF BANK GUARANTEE FOR ADDITIONAL PERFORMANCE SECURITY

(On non-judicial stamp paper of the appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank)

From:

Name and Address of the Bank…..
……..

To:
The Managing Director,
Rail Infrastructure Development Company (Karnataka) Limited,
"Samparka Soudha" , 1st Floor,
B.E.P Premises (Opp. Orion Mall),
Dr. Rajkumar Road,
Rajajinagar 1st Block,
Bangalore - 560 010

WHEREAS**,** Rail Infrastructure Development Company (Karnataka) Limited, hereinafter called the **Employer,** acting through ***[Insert Designation and address of the Employer's Representative]***, has accepted the bid of ***[Insert Name and address of the Contractor]***, hereinafter called the **Contractor,** for the work of ***[Insert Name of Work]***, vide Notification of Award No.***[Insert Notification of Award No.]***.
AND

WHEREAS, the contractor is required to furnish Performance Security for the sum of ***[Insert Value of Performance Security required]***, in the form of bank guarantee, being a condition precedent to the signing of the contract agreement.

WHEREAS, ***[Insert Name of the Bank]***, with its Branch ***[Address]*** having its Headquarters office at ***[Address]***, hereinafter called the **Bank,** acting through ***[Designation(s) of the authorised person of the Bank]***, have, at the request of the *[Insert name of the JV partner]* , a JV partner on behalf of the contractor, agreed to give guarantee for performance security and additional performance security as hereinafter contained:

1 KNOW ALL MEN by these present that I/We the undersigned ***[Insert name(s) of authorized representatives of the Bank],***being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay the Employer the full amount in the sum of ***[Insert Value of Performance Security required]*** as above stated.

2 The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Employer of Bank..

3 On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.

4 The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.

5. The Bank Guarantee shall be unconditional and irrevocable.

6 The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Contractor.

7 The Bank agrees that no change, addition, modifications to the terms of the Contract Agreement or to any documents, which have been or may be made between the Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.

8 This guarantee is valid and effective from the date of its issue, which is ***[insert date of issue]***. The guarantee and our obligations under it will expire on [***Insert the date twenty-eight days after the expected end of defect liability period]***. All demands for payment under the guarantee must be received by us on or before that date.

9 The Bank agrees that the Employers right to demand payment of aforementioned full amount in one instance or demand payments in parts totaling up to the aforementioned full amount in several instances will be valid until either the aforementioned full amount is paid to the Employer or the guarantee is released by Employer before the Expiry date.

10 The Bank agrees that its obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.

11 The expressions Bank and Employer herein before used shall include their respective successors and assigns.

12 The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

13 The Guarantee shall be in addition to and without prejudice to any other security Guarantee (s) of the contractor in favour of the Employer available with the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

Date …… ……

Place……. [*Signature of Authorised person of Bank]*

K-RIDE

……

[Name in Block letters]

……..
[Designation]

……..……

[P/Attorney] No.

……..
Bank's Seal

[P/Attorney] No…….
Witness:

3. *Signature*
   Name & Address & Seal

4. *Signature*
   Name & address & Seal

Note :

1 *All italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.*

2 *In case the guarantee is issued by a foreign Bank, which does not have operations in India, the said bank shall have to provide a counter-guarantee by State Bank of India.*

3 *In case the Contractor is a JV, the Performance Security is required to be furnished on behalf of the JV in favour of the Employer by the JV Partners in proportion of of their respective percentage share specified in the JV Agreement. The percentage share of M/s [**Insert Name of the JV Partner**] in the JV is [**Fill share % in the JV**] percent. All the Bank Guarantee of JV Partners are liable to be encashed cumulatively.*

K-RIDE

ADVANCE PAYMENT SECURITY

(On non-judicial stamp paper of appropriate value in accordance with stamp Act. The stamp paper to be in the name of Executing Bank)

From
[Name and Address of the Bank]

To
The Managing Director,
Rail Infrastructure Development Company (Karnataka) Limited,
"Samparka Soudha" , 1st Floor,
B.E.P Premises (Opp. Orion Mall),
Dr. Rajkumar Road,
Rajajinagar 1st Block,
Bangalore - 560 010

Beneficiary/Employer: Rail Infrastructure Development Company (Karnataka) Limited.

Guarantee No.: *[…..reference number of the guarantee….]***Dated:** *[……..]*

WHEREAS, Rail Infrastructure Development Company (Karnataka) Limited**(hereinafter called the Employer)** has entered into Contract No. [….*reference number of the Contract….]*dated *[……..]* for the execution of *[name of the contract]* **(hereinafter called the Contract)** with*[….name of the Contractor….]***(hereinafter called the Contractor)**.

WHEREAS, according to the Conditions of the Contract, an advance payment is admissible to the contractor against submission of bank guarantee(s).

At the request of the Contractor, we *[….name of the Bank….]* with our branch at*[….address….],*having our Head Office at *[….address….]* **(hereinafter called the Bank)** have, at the request of *[.....Insert name of the JV partner.....]*, a JV partner on behalf of the Contractor, agreed to give the said guarantee as hereinafter contained:

1. KNOW ALL MEN by these present that I/We the undersigned *[….Insert name(s) of authorized representative(s) of the Bank….],* being fully authorized to sign and incur obligations for and on behalf of the Bank**,** confirm that the Bank, hereby, unconditionally and irrevocably guarantees

   to pay the Employer the sum of Rs.*[….value in figure….]*(Rupees [….*value in words….] only***(hereinafter called the Full Amount)**.

2. The Bank undertakes to immediately pay to the Employer, without any demur, reservation or recourse, any amount up to and including aforementioned full amount upon first written demand/demands from the Employer.

3. On payment of any amount less than aforementioned full amount, as per demand of the Employer, the guarantee shall remain valid for the balance amount i.e. the aforementioned full amount less the payment made to the Employer.

4. The Bank shall pay the amount so demanded without any reference to the contractor and without the Employer being required to show grounds or give reasons for its demand or the amount demanded.

5. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank, the Contractor or the Employer.

6. The Bank agrees that no change, addition, modification to the terms of the Contract Agreement or to any document, which have been or may be made between the Employer and the Contractor, will in any way release us from the liability under this guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.

7. This guarantee is valid and effective from the date of it's issue, which is *[….date of issue….]*. The guarantee and our obligations under it will expire on dated ……..*[….Please refer note 4 & 5….]*. All demands for payment under the guarantee must be received by us on or before that date.

K-RIDE

8. The Bank agrees that the Employer's right to demand payment of aforementioned full amount in one instance or demand payments in parts totaling up to the aforementioned full amount in several instances will continue until either the aforementioned full amount is paid to the Employer or the guarantee validity period expires.

9. The Bank agrees that it's obligation to pay any amount demanded by the Employer before the expiry of this guarantee will continue until the amount demanded has been paid in full.

10. The expressions Bank and Employer herein before used shall include their respective successors and assigns.

11. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

Dated[.....]

Place[.....]

…….....
(Signature of the Authorized Person of the Bank)

.....
(Name in Block Letters)

.....
(Designation)

.....
(Bank's Seal)

.....
(Authorization No.)

Witness:

.....
1. *Signature, Name & Address*

.....
2. *Signature, Name & Address*

K-RIDE

Note:

1. *All italicized text in brackets [….text….] is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.*

2. *In case the guarantee is issued by a foreign Bank, the said bank shall have operations in India and should be issued by Indian operations branch of the said bank.*

3. ***Mobilization Advance***

(a) For Single Entity

For each Installment of Advance, two Bank Guarantees of equal amounts (each equal to half of the first installment of advance plus 10%) shall be furnished. Each Bank Guarantee shall be valid for the stipulated completion period of the contract.

OR

(b) For JV/Consortium

*For each Installment of Advance, individual JV/*Consortium *partner shall furnish Bank Guarantee equal to his share in the installment of Advance plus 10%. Each Bank Guarantee shall be valid for the stipulated completion period of the contract.*

4. ***Advance against Plant and Machinery***

(a) For Single Entity

For each Installment of Advance, a Bank Guarantee equal to the installment of advance plus 10% shall be furnished. The Bank Guarantee shall be valid for the stipulated completion period of the contract.

OR

(b) For JV/Consortium

*For each Installment of Advance, individual JV/*Consortium *partner shall furnish a Bank Guarantee equal to his share in the installment of advance plus 10%. Each Bank Guarantee shall be valid for the stipulated completion period of the contract.*

K-RIDE

INDEMNITY BOND FOR THE SAFE CUSTODY OF THE MATERIALS SUPPLIED BY THE CONTRACTOR

(To be executed on Non-Judicial Stamp Paper of Appropriate Value and notarized)

THIS INDEMNITY BOND made on this _____ day of _____ 20___ by _____(*insert the name of the Contractor and its registered address*) (hereinafter called "the Contractor") which expression shall where the context do admits or implies be deemed to include its executors, administrators and assigns, in favour of the Rail Infrastructure Development Company (Karnataka) Limited, Samparka Soudha" ,
1st Floor, B.E.P Premises (Opp. Orion Mall),Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore - 560 010 (hereinafter called "K RIDE") on the other part.

WHEREAS by an Agreement/Letter of Acceptance No._____dated _____ (hereinafter called "the said agreement"), the Contractor has agreed to execute the _____(*Name of Work*) (hereinafter called "the Works") .

AND WHEREAS the Contractor has submitted to K RIDE/ the Engineer for payment on materials procured by him and brought to the site of the Works or his workshop for use in the Works.

AND WHEREAS K RIDE/ the Engineer has agreed to make advance/stage payment to the Contractor the total sum of Rs._____ (*in Figures*) [Rupees _____ (*in Words*) in Interim Payment Certificate (IPC) No._____, the quantities and other particulars of which are detailed in this IPC for the said works signed by the Contractor on _____ for the Materials brought by the Contractor to site of the works. Brief details are also mentioned in schedule 1 appended hereto.

NOW THIS INDEMNITY BOND WITNESS that in pursuance of the said agreement and in consideration of the sum of Rs. _____ (*in Figures*) _____ (*in Words*) on or before the execution of these presents to be paid to the Contractor by K RIDE so aforesaid, the Contractor doth hereby covenant and agree with K RIDE and declare as follows: -

1. That the said sum of Rs. _____ (*In Figures*) _____ (*in Words*) to be paid by K RIDE to the Contractor as aforesaid shall be utilized by the Contractor in or towards the execution of the said works and for no other purpose whatsoever.
2. That the Materials detailed in the said IPC which have been offered to and accepted by K RIDE/ the Engineer, are absolutely the Contractor's own property and free from encumbrances of any kind and the Contractor will not make any application for or receive any further payment on the Materials which are not absolutely his own property and free from encumbrances of any kind, the Contractor indemnifies the K RIDE against all claims on any Materials in respect of which payment is to be made to him as aforesaid.
3. That the Contractor undertakes that the Materials shall be used exclusively for the performance /

execution of the Contract strictly in accordance with the terms and conditions of the Contract and no part of the Materials shall be utilized for any other work or purpose whatsoever.

4. That the Contractor is obliged and shall remain absolutely responsible for the safe transit / protection and custody of the Materials against all risks whatsoever including acts of the God till the Materials are duly incorporated in the works, commissioned and are taken over by K RIDE/Railway (including surplus Materials, if required as instructed by K RIDE/ the Engineer) in accordance with the terms of the Contract. The Contractor undertakes to keep K RIDE harmless against any loss or damage that may be caused to the Materials.

5. That the said Materials shall not on any account be removed from the site of the works except with the written permission of K RIDE/ the Engineer. Further, K RIDE/ the Engineer shall always be free at all times to take possession of the materials in whatever form the materials may be in, if in its opinion, the Materials are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds himself and undertakes to comply with the directions of demand of K RIDE to return the Materials without any demur or reservation.

6. That the said materials shall, at all times, be open to inspection by K RIDE/ the Engineer or any authorized representative. In the event of the said material or any part thereof at any time being found to be in lesser quantity than for which payment has been released or the same has been stolen, destroyed or damaged or becoming deteriorated, the Contractor will forthwith replace the same or repair and make good the same as required by K RIDE/ the Engineer.

7. That making payment does not mean that Materials are of required specifications and quality or that whole of the quantity brought to site by Contractor will be used in the work. The Contractor is fully responsible for the materials to conform to required quality and specification and if at any time K RIDE/ the Engineer do not find the material satisfactory, the Contractor at his own cost would replace these. K RIDE/ the Engineer would be at liberty to recover cost of these from any dues of the Contractor. Also any Materials which are in excess of what is finally required under the contract would be the Contractor's property without any liability on K RIDE/ the Engineer who would recover the cost of this from the Contractor.

8. That this INDEMNITY BOND is irrevocable. If at any time, any loss or damage occurs to the Materials or the same or any part thereof is mis-utilized in any manner whatsoever, then the Contractor hereby agrees that the decision of K RIDE/ the Engineer as to assessment of loss or damage to the Materials shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Materials at its own cost and/or shall pay the amount of loss to K RIDE without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to K RIDE/ the Engineer against the Contractor under the Contract or under this Indemnity Bond

9. That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of those presents, the total amount

of the payment shall immediately on the happening of such default be recovered by K RIDE/ the Engineer from any dues of Contractor. It is also clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal / penal consequences.

10. IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorized representative, the day, month and year first above mentioned.

11. SCHEDULE 1

Particulars of the Materials	**Quantity**	**Value of the Materials**

Signed, Sealed and Delivered by the said Contractor

(Contractor's Name)

Dated: …….. (AUTHORISED SIGNATORY)

Place: …….. SEAL OF COMPANY

K-RIDE

IN THE PRESENCE OF:

WITNESS: SIGNATURE _____

NAME: _____

ADDRESS : _____

Note:

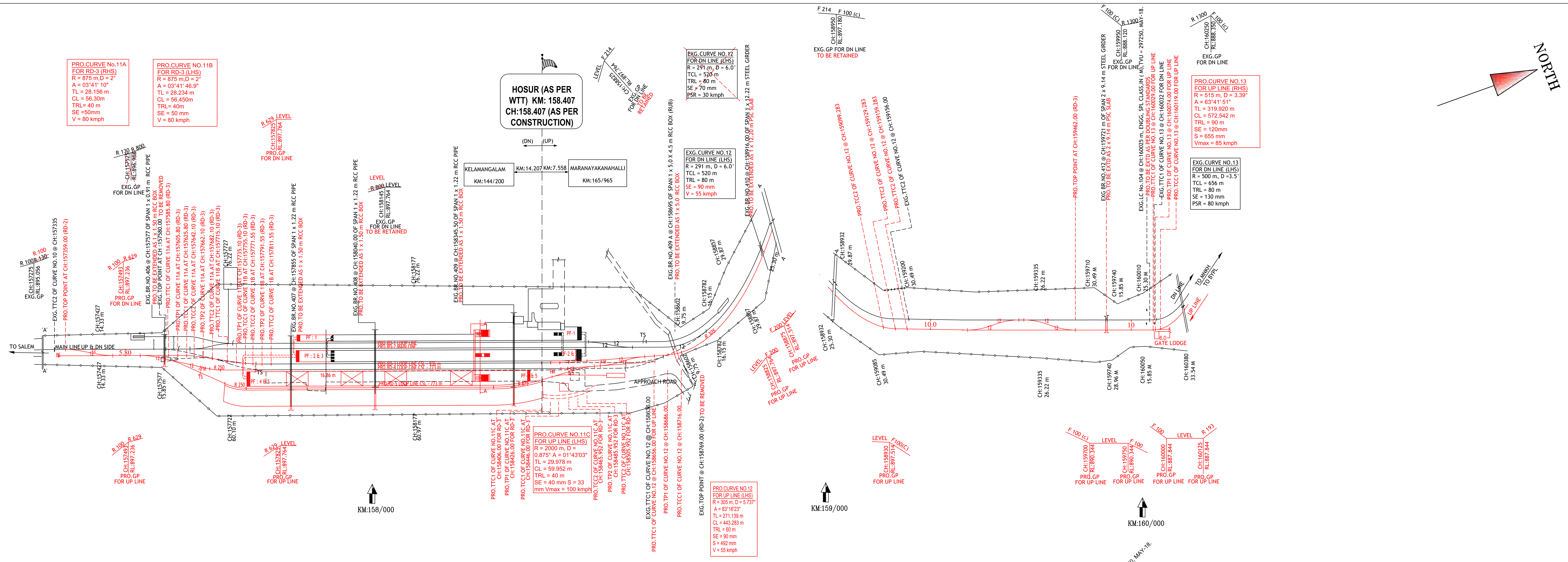
The contractor has the option to submit the INDEMNITY BOND *to cover all the items and quantities of Materials of stage payment or to submit* INDEMNITY BOND *each time the stage payment is to be taken or Materials advance is to be taken.*

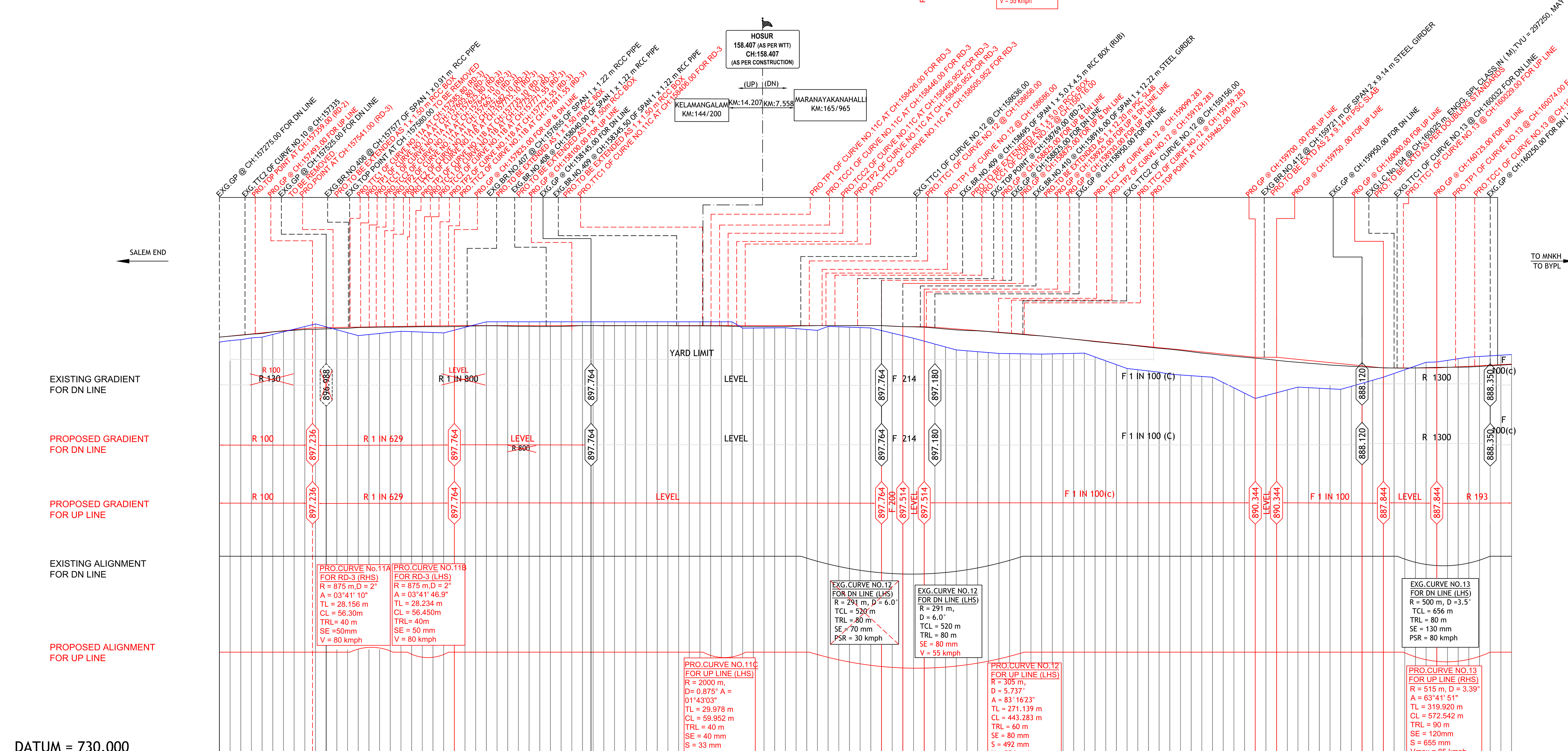
Office of the……

No. Date:……...

--00--00--00--

K-RIDE





CHAINAGE	TRACK CENTRE	DIFFRENCE OF RL (= PRL - ERL)	PRO. RAIL LEVEL FOR UP LINE	EXG. RAIL LEVEL FOR DN LINE	BANK / CUTTING	EXG. FORMATION LEVEL FOR DN LINE	PRO. FORMATION LEVEL FOR UP LINE	GROUND LEVEL
157275	-	0.006	895.056	895.050	0.428	0.000	894.318	893.890
157300	-	0.017	895.306	895.289	0.318	0.000	894.568	894.250
157325	-	0.049	895.556	895.507	0.350	894.769	894.818	894.468
157350	5.800	0.064	895.806	895.742	0.193	895.004	895.068	894.875
157375	5.800	0.149	896.056	895.907	0.268	895.169	895.318	895.050
157400	5.800	0.019	896.306	896.287	-0.112	895.549	895.568	895.680
157425	5.800	0.067	896.556	896.489	-0.480	895.751	895.818	896.298
157450	5.800	0.139	896.806	896.667	-0.847	895.929	896.068	896.915
157475	5.800	0.223	897.056	896.833	-1.215	896.095	896.318	897.533
157500	5.800	0.350	897.247	896.897	-1.641	896.159	896.509	898.150
157525	5.800	0.299	897.287	896.988	-0.919	896.250	896.549	897.468
157550	5.800	0.238	897.327	897.089	-0.196	896.351	896.589	896.785
157575	5.800	0.248	897.366	897.118	0.525	896.380	896.628	896.103
157600	5.977	0.096	897.406	897.310	1.248	896.572	896.668	895.420
157625	6.838	0.104	897.446	897.342	1.035	896.604	896.708	895.673
157650	8.339	0.082	897.486	897.404	0.821	896.666	896.748	895.927
157675	9.946	0.111	897.525	897.414	0.607	896.676	896.787	896.180
157700	11.553	0.146	897.565	897.419	0.394	896.681	896.827	896.433
157725	12.785	0.154	897.605	897.451	0.530	896.713	896.867	896.337
157750	13.235	0.149	897.645	897.496	0.665	896.758	896.907	896.242
157775	13.570	0.175	897.684	897.509	0.800	896.771	896.946	896.146
157800	13.860	0.224	897.724	897.500	0.936	896.762	896.986	896.050
157825	13.860	0.235	897.764	897.529	0.326	896.791	897.026	896.700
157850	13.860	0.169	897.764	897.595	-0.324	896.857	897.026	897.350
157875	13.860	0.075	897.764	897.689	-0.974	896.951	897.026	898.000
157900	13.860	0.039	897.764	897.725	-1.624	896.987	897.026	898.650
157925	13.860	0.059	897.764	897.705	-1.624	896.967	897.026	898.650
157950	13.860	0.120	897.764	897.644	-1.624	896.906	897.026	898.650
157975	13.860	0.179	897.764	897.585	-1.624	896.847	897.026	898.650
158000	13.860	0.179	897.764	897.585	-1.624	896.847	897.026	898.650
158025	13.860	0.234	897.764	897.530	-1.624	896.792	897.026	898.650
158050	13.860	0.221	897.764	897.543	-1.624	896.805	897.026	898.650
158075	13.860	0.189	897.764	897.575	-1.624	896.837	897.026	898.650
158100	13.860	0.117	897.764	897.647	-1.624	896.909	897.026	898.650
158125	13.860	0.002	897.764	897.762	-1.624	897.024	897.026	898.650
158150	13.860	0.000	897.764	897.764	-1.624	897.026	897.026	898.650
158175	13.860	0.040	897.764	897.724	-1.624	896.986	897.026	898.650
158200	13.860	0.029	897.764	897.735	-1.624	896.997	897.026	898.650
158225	13.860	0.025	897.764	897.739	-1.624	897.001	897.026	898.650
158250	13.860	0.020	897.764	897.744	-1.624	897.006	897.026	898.650
158275	13.860	0.036	897.764	897.728	-1.624	896.990	897.026	898.650
158300	13.860	0.024	897.764	897.740	-1.624	897.002	897.026	898.650
158325	13.860	0.024	897.764	897.740	-1.624	897.002	897.026	898.650
158350	13.860	0.071	897.764	897.693	-1.624	896.955	897.026	898.650
158375	13.860	0.067	897.764	897.697	-1.624	896.959	897.026	898.650
158400	13.860	0.070	897.764	897.694	-1.624	896.956	897.026	898.650
158425	13.860	0.076	897.764	897.688	-1.624	896.950	897.026	898.650
158450	13.490	0.092	897.764	897.672	-1.624	896.934	897.026	898.650
158475	13.130	0.155	897.764	897.609	-1.624	896.871	897.026	898.650
158500	12.707	0.234	897.764	897.530	-0.144	896.792	897.026	897.170
158525	11.955	0.234	897.764	897.530	-0.164	896.792	897.026	897.190
158550	11.203	0.244	897.764	897.520	-0.184	896.782	897.026	897.210
158575	10.450	0.234	897.764	897.530	-0.204	896.792	897.026	897.230
158600	9.698	0.204	897.764	897.560	-0.224	896.822	897.026	897.250
158625	8.946	0.104	897.764	897.660	-0.020	896.922	897.026	897.046
158650	8.194	0.054	897.764	897.710	0.184	896.972	897.026	896.842
158675	7.441	0.014	897.764	897.750	0.389	897.012	897.026	896.637
158700	7.150	0.004	897.764	897.760	-0.544	897.022	897.026	897.570
158725	7.024	0.009	897.764	897.755	-0.454	897.017	897.026	897.480
158750	6.938	0.006	897.764	897.758	-0.364	897.020	897.026	897.390
158775	6.895	0.019	897.764	897.745	-0.274	897.007	897.026	897.300
158800	6.893	0.012	897.764	897.752	-0.184	897.014	897.026	897.210
158825	7.014	0.000	897.764	897.764	0.418	897.026	897.026	896.608
158850	7.136	0.019	897.639	897.620	0.896	896.882	896.901	896.005
158875	6.845	0.004	897.514	897.510	1.373	896.772	896.776	895.403
158900	7.452	0.044	897.514	897.470	1.976	896.732	896.776	894.800
158925	7.658	0.124	897.514	897.390	2.661	896.652	896.776	894.115
158950	7.901	0.180	897.360	897.180	3.192	896.442	896.622	893.430
158975	8.178	0.208	897.168	896.960	3.685	896.222	896.430	892.745
159000	8.488	0.225	896.975	896.750	4.177	896.012	896.237	892.060
159025	8.828	0.173	896.783	896.610	4.190	895.872	896.045	891.855
159050	9.197	0.051	896.591	896.540	4.203	895.802	895.853	891.650
159075	9.591	0.038	896.398	896.360	4.215	895.622	895.660	891.445
159100	9.993	0.076	896.206	896.130	4.228	895.392	895.468	891.240
159125	10.000	0.084	896.014	895.930	4.076	895.192	895.276	891.200
159150	10.000	0.102	895.822	895.720	3.924	894.982	895.084	891.160
159175	10.000	0.094	895.594	895.500	3.736	894.762	894.856	891.120
159200	10.000	0.004	895.344	895.340	3.526	894.602	894.606	891.080
159225	10.000	0.004	895.094	895.090	3.218	894.352	894.356	891.138
159250	10.000	0.000	894.844	894.844	2.911	894.106	894.106	891.195
159275	10.000	0.024	894.594	894.570	2.603	893.832	893.856	891.253
159300	10.000	0.044	894.344	894.300	2.296	893.562	893.606	891.310
159325	10.000	0.084	894.094	894.010	2.946	893.272	893.356	890.410
159350	10.000	0.074	893.844	893.770	3.596	893.032	893.106	889.510
159375	10.000	0.084	893.594	893.510	4.246	892.772	892.856	888.610
159400	10.000	0.054	893.344	893.290	4.896	892.552	892.606	887.710
159425	10.000	0.104	893.094	892.990	4.928	892.252	892.356	887.428
159450	10.000	0.144	892.844	892.700	4.961	891.962	892.106	887.145
159475	10.000	0.164	892.594	892.430	4.993	891.692	891.856	886.863
159500	10.000	0.104	892.344	892.240	5.226	891.502	891.606	886.380
159525	10.000	0.134	892.094	891.960	5.153	891.222	891.356	886.203
159550	10.000	0.194	891.844	891.650	5.081	890.912	891.106	886.025
159575	10.000	0.264	891.594	891.330	5.008	890.592	890.856	885.848
159600	10.000	0.274	891.344	891.070	4.936	890.332	890.606	885.670
159625	10.000	0.294	891.094	890.800	5.928	890.062	890.356	884.428
159650	10.000	0.264	890.844	890.580	6.921	889.842	890.106	883.185
159675	10.000	0.224	890.594	890.370	7.913	889.632	889.856	881.943
159700	10.000	0.204	890.344	890.140	8.906	889.402	889.606	880.700
159725	10.000	0.434	890.344	889.910	8.241	889.172	889.606	881.365
159750	10.000	0.704	890.344	889.640	7.576	888.902	889.606	882.030
159775	10.000	0.734	890.094	889.360	6.661	888.622	889.356	882.695
159800	10.000	0.684	889.844	889.160	5.746	888.422	889.106	883.360
159825	10.000	0.644	889.594	888.950	5.631	888.212	888.856	883.225
159850	10.000	0.584	889.344	888.760	5.516	888.022	888.606	883.090
159875	10.000	0.574	889.094	888.520	5.401	887.782	888.356	882.955
159900	10.000	0.464	888.844	888.380	5.286	887.642	888.106	882.820
159925	10.000	0.364	888.594	888.230	4.321	887.492	887.856	883.535
159950	10.000	0.224	888.344	888.120	3.356	887.382	887.606	884.250
159975	10.000	0.094	888.094	888.000	2.391	887.262	887.356	884.965
160000	10.000	-0.026	887.844	887.870	1.426	887.132	887.106	885.680
160025	10.000	0.024	887.844	887.820	0.556	887.082	887.106	886.550
160050	10.000	0.044	887.844	887.800	-0.314	887.062	887.106	887.420
160075	9.953	0.004	887.844	887.840	-1.184	887.102	887.106	888.290
160100	9.797	-0.066	887.844	887.910	-2.054	887.172	887.106	889.160
160125	9.526	-0.126	887.844	887.970	-2.134	887.232	887.106	889.240
160150	9.210	-0.026	887.974	888.000	-2.384	887.262	887.236	889.620
160175	9.005	0.083	888.103	888.020	-2.635	887.282	887.365	890.000
160200	8.741	0.183	888.233	888.050	-2.885	887.312	887.495	890.380
160225	8.562	0.172	888.362	888.190	-2.906	887.452	887.624	890.530
160250	8.388	0.142	888.492	888.350	-2.926	887.612	887.754	890.680
160275	8.192	0.121	888.621	888.500	-2.947	887.762	887.883	890.830
160300	8.030	0.101	888.751	888.650	-2.967	887.912	888.013	890.980

NOTE:
1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERNCE	REMARKS
104	160025	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	297250 MAY.18	0.024	PRO. TO BE EXTENDED

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — **RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED**

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS

WORKING PLAN & WORKING SECTION

FROM CH:157400 TO 160250

SCALE	HOR:1:5000 VER:1:500	SHEET NO : 01 OF 10

DRG.NO:KRIDE/DL/BH/017 - 2020

NORTH

KM:160/000

KM:161/000

KM:162/000

KM:163/000

KM:164/000

KM:165/000

TO YSRA

TO HWKH

TO BYPL

GATE LODGE

DN LINE

UP LINE

SA END

YARD LIMIT

EXISTING GRADIENT FOR DN LINE

PROPOSED GRADIENT FOR UP LINE

EXISTING ALIGNMENT FOR DN LINE

PROPOSED ALIGNMENT FOR UP LINE

DATUM = 730.000

NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE , FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30 m TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERENCE	REMARKS
104	160025	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	297250 MAY.18	0.024	PRO. TO BE EXTENDED

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		AGM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN

BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS

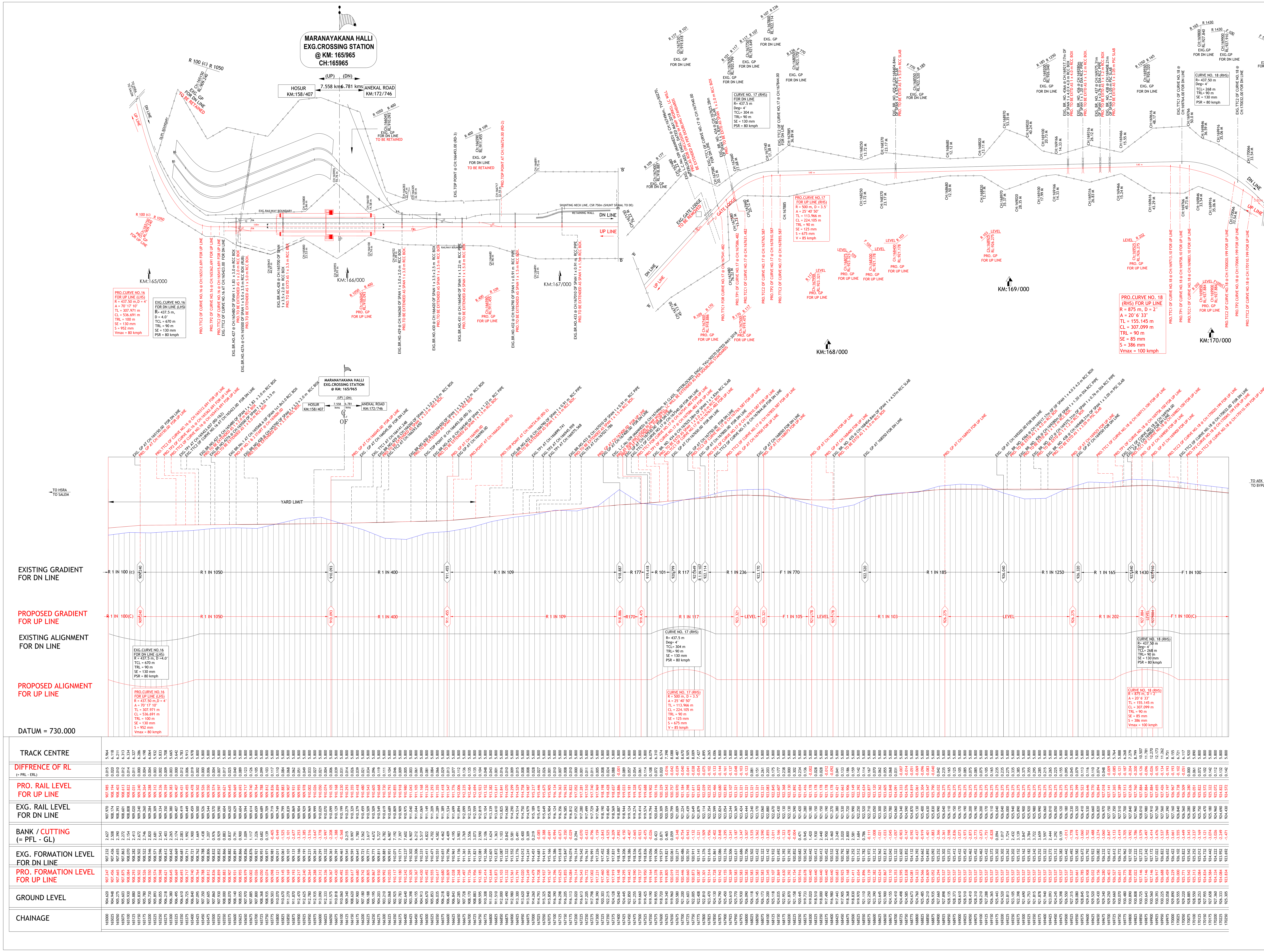
WORKING PLAN & WORKING SECTION

FROM CH:160000 TO 165250

SCALE HOR:1:5000 VER:1:500

SHEET NO : 02 OF 10

DRG.NO:KRIDE/DL/BH/018- 2020



NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	CLASS	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERNCE	REMARKS
109	167496	B1	MANNED	ENGINEERING	INTERLOCKED	50270 MAY.18	0.061	PRO.AS ROB (INCLUSION IN PWP WORKS)

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS

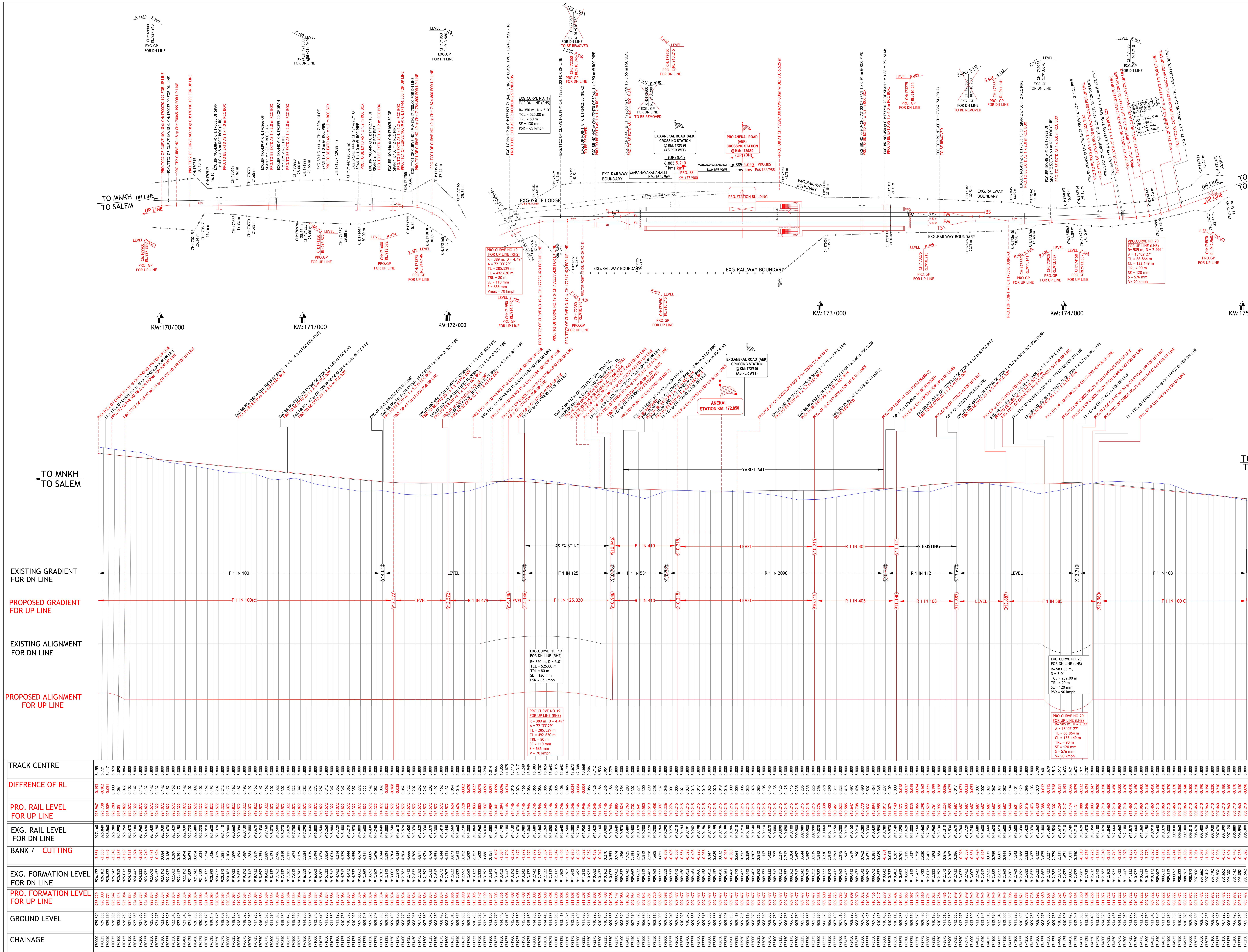
WORKING PLAN & WORKING SECTION

FROM CH:165000 TO 170250

SCALE HOR:1:5000 VER:1:500

SHEET NO : 03 OF 10

DRG.NO:KRIDE/DL/BH/019 - 2020



NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERNCE	REMARKS
112	172193.74	MANNED	TRAFFIC	'A' CLASS	INTERLOCKED	102490 MAY.18	0.045	PRO.AS ROB (INCLUSION IN PWP WORKS)

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:170000 TO 175250

SCALE HOR:1:5000 VER:1:500

SHEET NO : 04 OF 10

DRG.NO:KRIDE/DL/BH/020 - 2020

NORTH

TO AEK
SA END

TO HLE
TO BYPL

EXISTING GRADIENT FOR DN LINE

PROPOSED GRADIENT FOR UP LINE

EXISTING ALIGNMENT FOR DN LINE

PROPOSED ALIGNMENT FOR UP LINE

F 1 IN 100 | LEVEL | F 1 IN 200 | LEVEL | R 1 IN 120 | LEVEL | R 1 IN 100 | LEVEL | R 1 IN 150 | LEVEL | F 1 IN 110 | LEVEL | R 1 IN 110 | LEVEL | F 1 IN 150 | F 1 IN 120

F 1 IN 100(-) | LEVEL | F 1 IN 100 | LEVEL | R 1 IN 100 | LEVEL | R 1 IN 140 | R 1 IN 100 | LEVEL | F 1 IN 100 | LEVEL | R 1 IN 104 | LEVEL | F 1 IN 100

TRACK CENTRE
DIFFRENCE OF RL (= PRL - ERL)
PRO. RAIL LEVEL FOR UP LINE
EXG. RAIL LEVEL FOR DN LINE
BANK /CUTTING (= PFL - GL)
EXG. FORMATION LEVEL FOR DN LINE
PRO. FORMATION LEVEL FOR UP LINE
GROUND LEVEL
CHAINAGE

NOTE:
1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERENCE	REMARKS
116	177807.06	MANNED	ENGINEERING	'A' CLASS	INTERLOCKED	73290 MAY-18	0.048	PRO.AS ROB (INCLUSION IN PWP WORKS)

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		AGM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

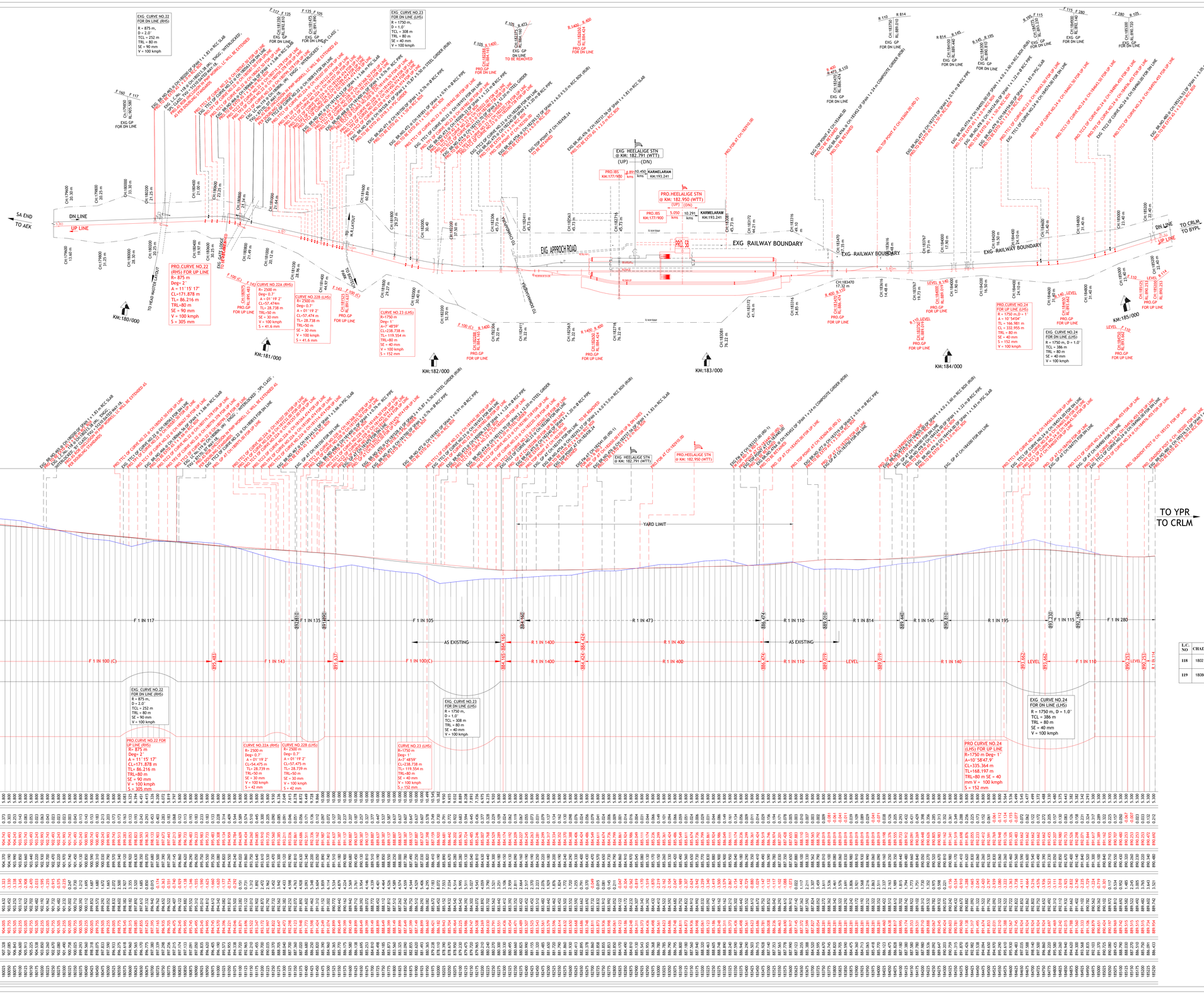
BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:175000 TO 180250

SCALE	HOR:1:5000 VER:1:500	SHEET NO : 05 OF 10

DRG.NO:KRIDE/DL/BH/021 - 2020



NOTE:
1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) EXG. CRS SANCTION No:SR/060/2018-19 dt:17.10.18
13) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
14) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERENCE	REMARKS
118	180213.38	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	51210 DATED MAY-18	0.043	PROS.AS ROB (INCLUSION IN PWP WORKS)
119	180806	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	87170 DATED MAY-18	0.091	PROS.AS ROB (INCLUSION IN PWP WORKS)

HQ /SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

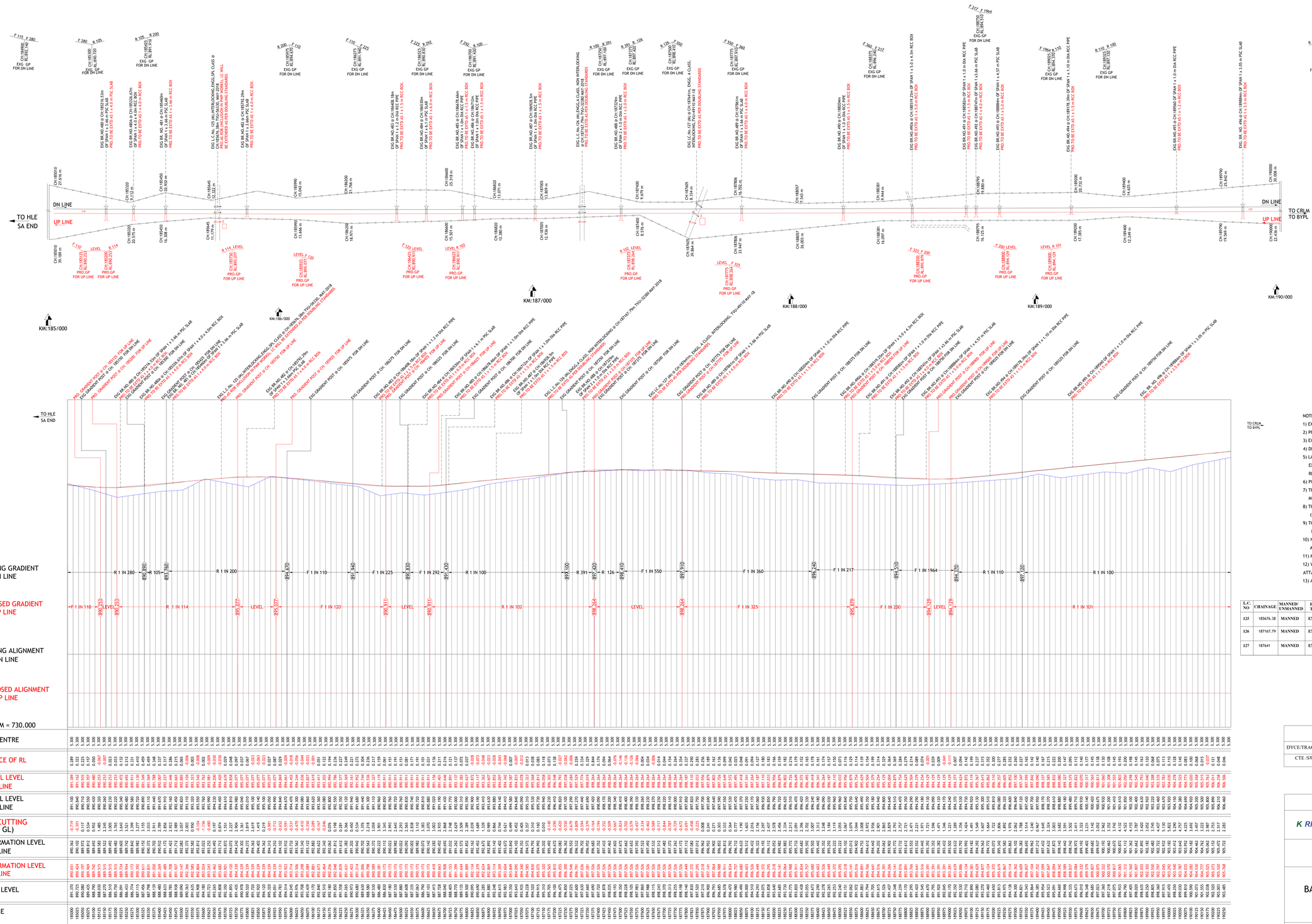
SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:180000 TO 185250

SCALE - HOR 1:5000 , VER 1:500

SHEET NO : 06 OF 10

DRG.NO:KRIDE/DL/BH/022 - 2020



L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. KL DIFFERENCE	REMARKS
125	185676.38	MANNED	ENGINEERING	'SPL' CLASS	INTERLOCKED	56330 MAY-18	-0.030	PRO.AS ROB (INCLUSION IN PWP WORKS)
126	187167.79	MANNED	ENGINEERING	'A' CLASS	NON-INTERLOCKED	32380 MAY-18	0.073	PRO. TO BE EXTENDED
127	187641	MANNED	ENGINEERING	'A' CLASS	INTERLOCKED	49110 MAY-18	-0.006	PRO. TO BE EXTENDED

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

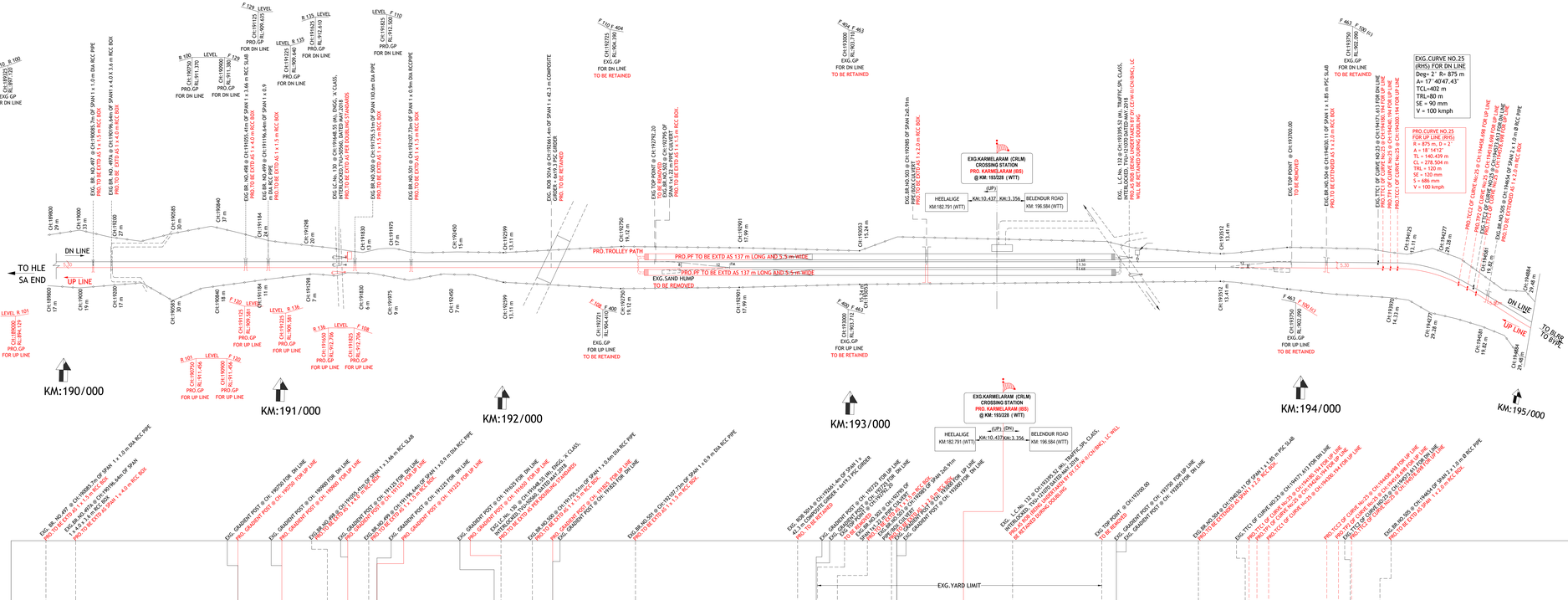
SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:185000 TO 190250

SCALE - VER 1:500, HOR 1:5000

SHEET NO : 07 OF 10

DRG.NO:KRIDE/DL/BH/023 - 2020



NOR TH

NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS

5) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
6) PINK BOOK ITEM NO.30 OF 2018/19.
7) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
8) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
9) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
10) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
11) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
12) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Das AS ATTACHMENTS.
13) ALL THE YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERNCE	REMARKS
130	191648.55	MANNED	ENGINEERING	'SPL' CLASS	INTERLOCKED	50560 DATED MAY-18	0.016	PRO. TO BE EXTENDED
132	193395.52	MANNED	TRAFFIC	'SPL' CLASS	INTERLOCKED	124370 DATED 13.07.18	0.008	PRO. TO BE EXTENDED

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE

RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

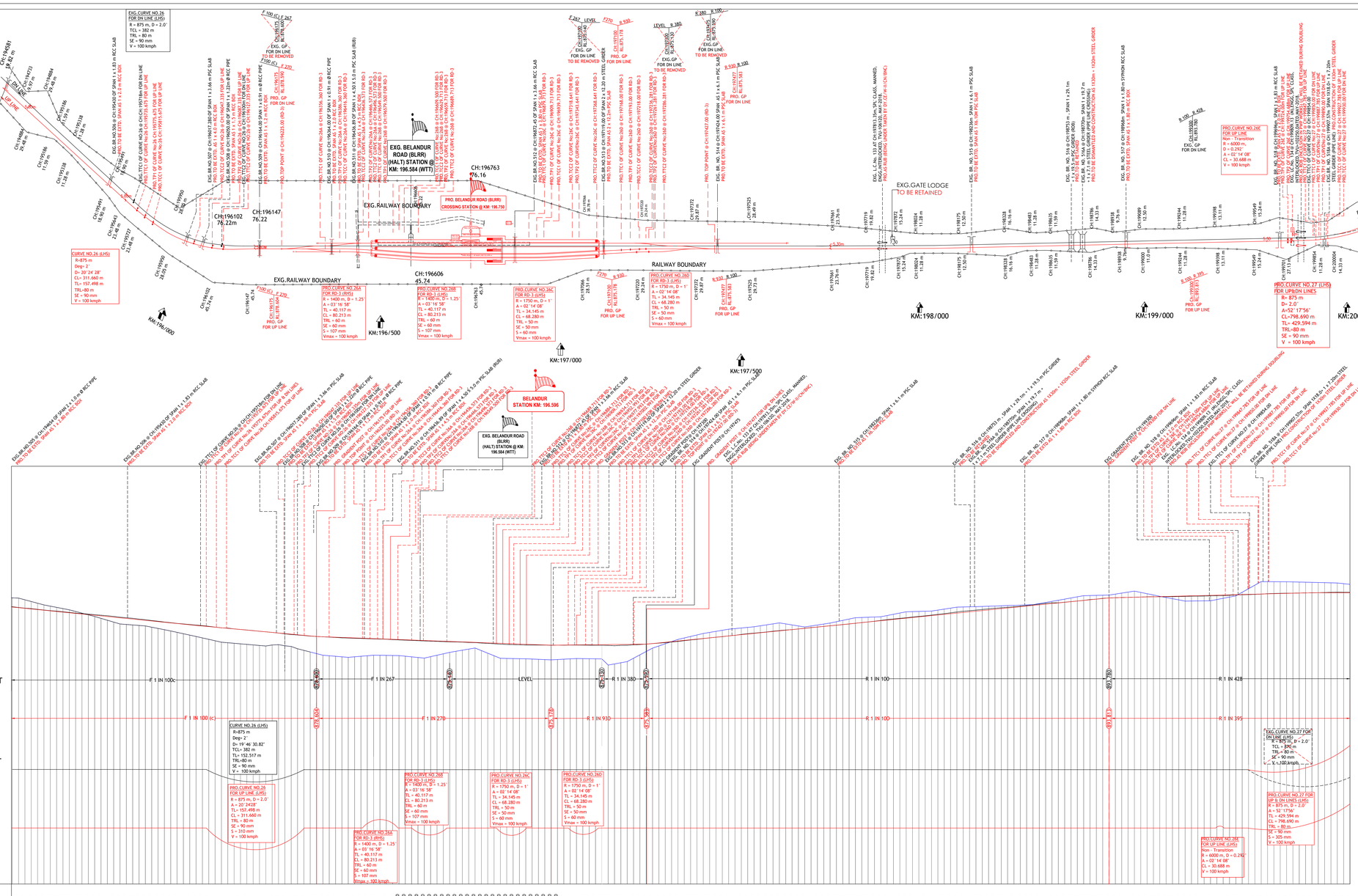
SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:190000 TO 195250

SCALE - HOR:1:5000, VER:1:500

SHEET NO : 08 OF 10

DRG.NO:KRIDE/DL/BH/024 - 2020



NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) ALL THE LEVELS ARE CONNECTED WITH GTS BENCH MARK
6) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
7) PINK BOOK ITEM NO.30 OF 2018/19.
8) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
9) THE FORMATION WORK IS EXECUTED AS PER THE SPECIFICATIONS CONTAINED IN GE-14
10) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
11) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
12) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
13) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
14) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTED IN E-Oas AS ATTACHMENTS.
15) ALL YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERENCE	REMARKS
133	197813.35	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	106120 MAY-2018.	0.023	PRO. AS RUB
134	199809.13	MANNED	ENGINEERING	'SPL' CLASS	INTERLOCKED	102250 MAY-2018.	0.07	PRO. AS ROB IN PWP WORKS

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

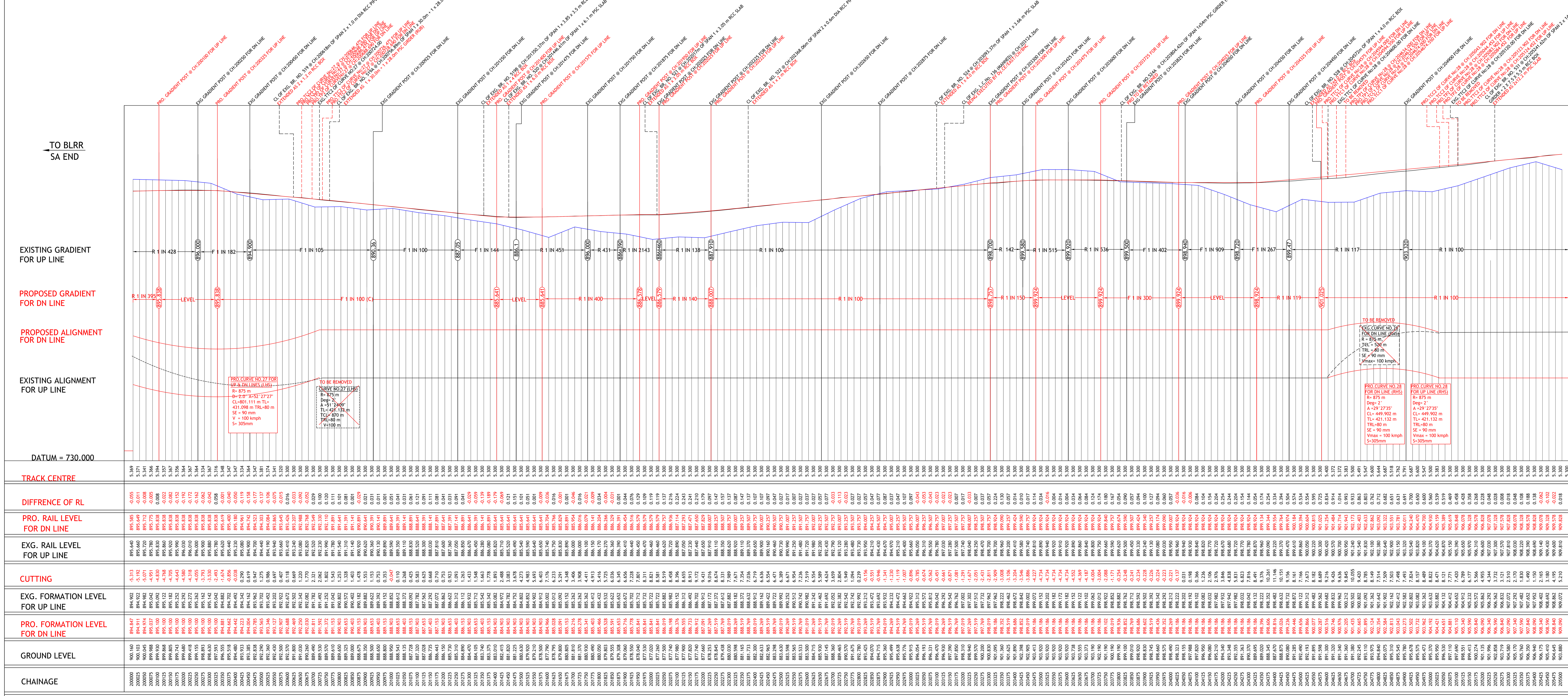
BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:195000 TO 200250

SCALE - HOR 1:5000, VER 1:500 | SHEET NO : 09 OF 10

DRG.NO:KRIDE/DL/BH/025 - 2020



NOTE:

1) EXISTING RAIL LEVEL:
2) PRO. RAIL LEVEL:
3) EXISTING GROUND LEVEL
4) DISMANTLED SHOWN AS
5) ALL THE LEVELS ARE CONNECTED WITH GTS BENCH MARK
6) LAND BOUNDARY DISTANCE IN PLAN ARE THE PERPENDICULAR OFFSET FROM THE EXISTING MAIN LINE AND ARE ONLY INDICATIVE . FOR ACCURATE MEASUREMENT RESPECTIVE LAND PLAN TO BE VERIFIED .
7) PINK BOOK ITEM NO.30 OF 2018/19.
8) THE CHAINAGE AND EXISTING LEVELS GIVEN IN THE WORKING SECTION ARE ACTUALLY MEASURED AND VERIFIED AT SITE.
9) THE FORMATION WORK IS EXECUTED AS PER THE SPECIFICATIONS CONTAINED IN GE-14
10) THE CLASS OF ROUTE IS GROUP 'D', THE PROPOSAL SPEED OF SECTION IS 100KMPH. (SUBJECT TO SPEED RESTRICTIONS)
11) TOP WIDTH OF FORMATION IS ENSURED AS 3.925M FROM THE CENTER LINE OF NEAREST TRACK.
12) NECESSARY DRAINAGE ARRANGEMENTS TO SUIT SITE CONDITIONS WILL BE PROVIDED AS PER STANDARD BY ENGINEER- IN -CHARGE.
13) MINIMUM 5.30M TRACK CENTER SHOULD BE ENSURED (AFTER CURVES ALLOWANCES AND SLEW).
14) VERTICAL CURVES & SPEED POTENTIAL DETAILS OF BYPL-HSRA SECTION ARE SUBMITTTED IN E-Das AS ATTACHMENTS.
15) ALL YARD PLANS (BYPL-HSRA SECTION) WILL BE SUBMITTED TO CPDE-SWR FOR APPROVAL.

L.C. NO	CHAINAGE	MANNED/ UNMANNED	ENGINEERING/ TRAFFIC	CLASS OF LC	INTERLOCKED/ NON-INTERLOCKED	TVU	EXG/PRO. RL DIFFERNCE	REMARKS
136	203124.26	MANNED	ENGINEERING	SPL CLASS	INTERLOCKED	242640 MAY-2018.	0.023	PRO. TO BE EXTENDED

HQ./SWR/UBL		K RIDE	
DYCE/TRACK/HQ		AGM/CIVIL	
CTE /SWR		GM/CIVIL	

SOUTH WESTERN RAILWAY

K RIDE — RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

PROPOSED DOUBLING OF TRACK BETWEEN
BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
WORKING PLAN & WORKING SECTION
FROM CH:200000 TO 205500

SCALE - HOR:1:5000, VER:1:500 | SHEET NO : 10 OF 10

DRG.NO:KRIDE/DL/BH/026 - 2020

HOSUR STATION
KM: 158 / 407

SOUTH WESTERN RAILWAY

K RIDE | RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - BAIYAPPANAHALLI SECTION

DOUBLING OF BG TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
PROPOSED YARD ARRANGEMENTS AT

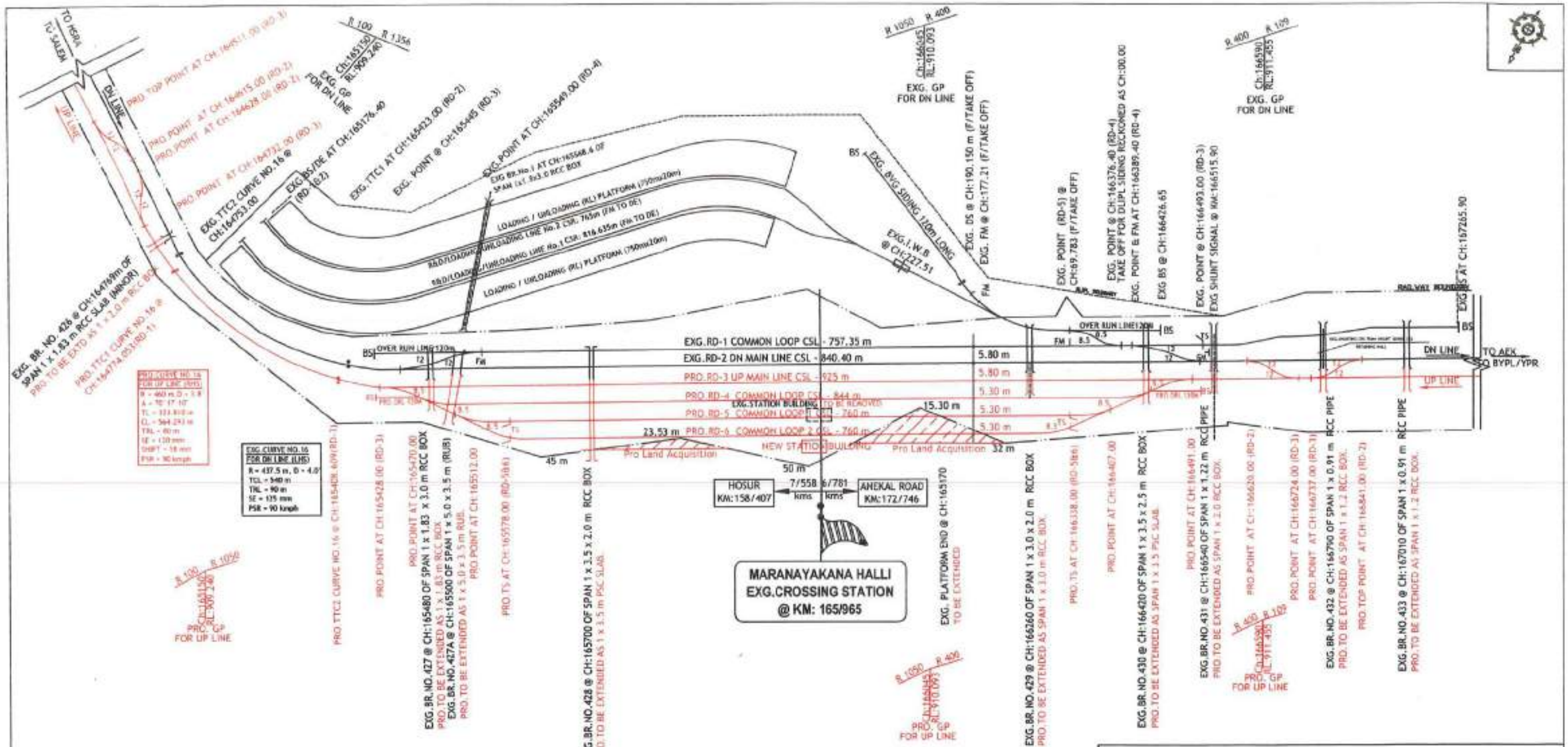
HOSUR

CONCEPTUAL PLAN

(NOT TO SCALE)

CTPM / SWR / UBL

CPDE / SWR / UBL



[H.M.DINESH]
11/8/21
CTPM / SWR / UBL

[H.GUL-ASHFAQUE MOHD.]
13/8/21
CPDE / SWR / UBL

SOUTH WESTERN RAILWAY

K RIDE | **RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED**

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

DOUBLING OF BG TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS PROPOSED YARD ARRANGEMENTS AT

MARANAYAKANAHALLI

CONCEPTUAL PLAN

(NOT TO SCALE)

EXG. CURVE NO. 19
FOR DN LINE (RHS)
R= 350 m, D = 5.0°
TCL = 555.00 m
TRL = 100 m
SE = 130 mm
PSR = 65 kmph

EXG.ANEKAL ROAD CROSSING STATION @ KM: 172/746 (AS PER WTT)

PRO.ANEKAL ROAD CROSSING STATION @ KM: 172/850

#NKH KM:165/965 | 6/885 9/941 KMS | HLE KM:182/791

EXG. STN BUILDING TO BE DISMANTLED

PRO. STN BDG

EXG. HL PASSENGER PLATFORM NO. 1, 270 m LONG

EXG. RAILWAY BOUNDARY

TO BYPL / TO HLE

SALEM / NMKH

DN LINE

UP LINE

SOUTH WESTERN RAILWAY

K RIDE | RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

SALEM - YESVANTPUR SECTION

DOUBLING OF BG TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
PROPOSED YARD ARRANGEMENTS AT

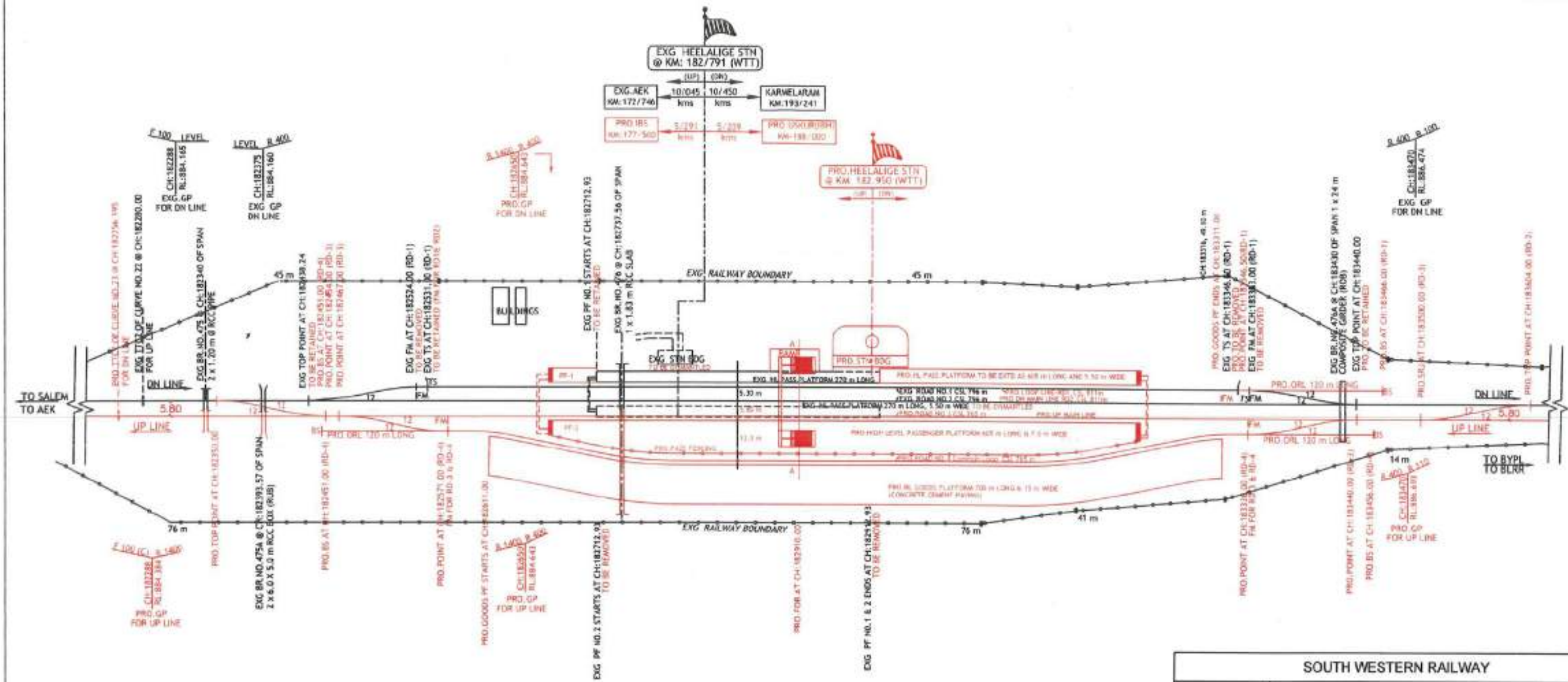
ANEKAL ROAD

CONCEPTUAL PLAN

(NOT TO SCALE)

11/8/21
(H.M.DINESH)
CTPM / SWR / UBL

13/8/21
(H.GUL ASHFAQUE MOHD.)
CPDE / SWR / UBL



11/8/21
(H.M.DINESH)
CTPM / SWR / UBL

13/8/21
(H.GULAMTAQUE MOHD.)
CPDE / SWR / UBL

SOUTH WESTERN RAILWAY

K RIDE | RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

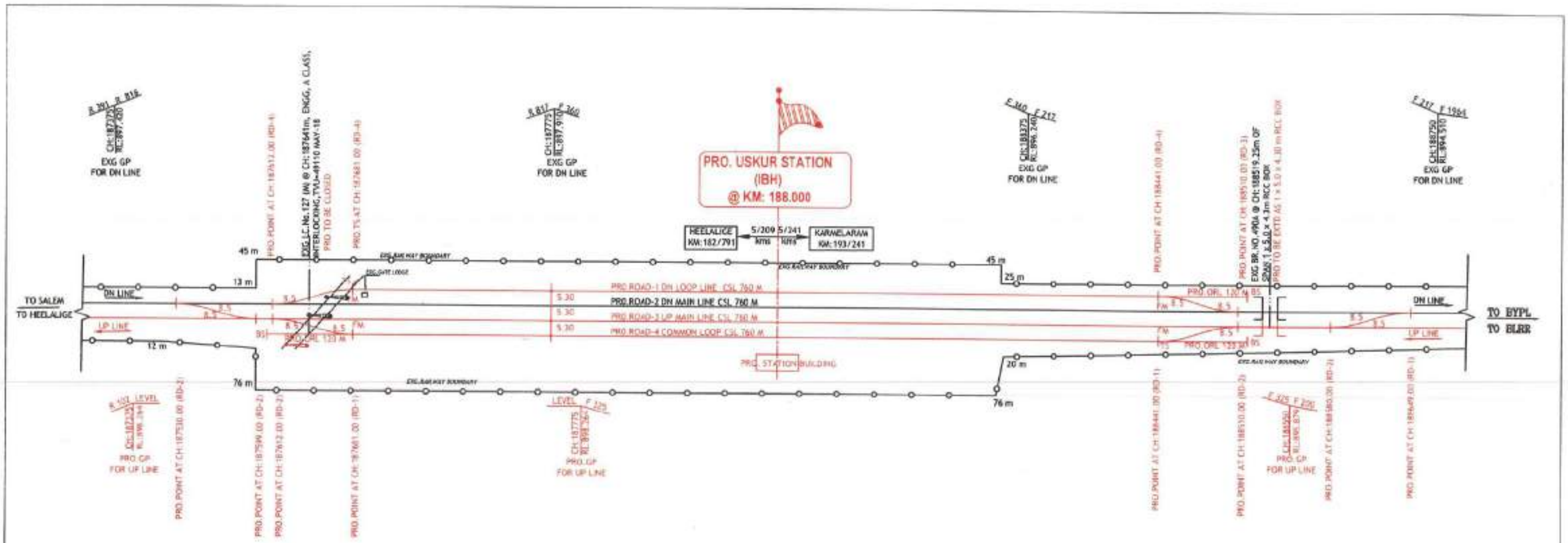
SALEM - YESVANTPUR SECTION

DOUBLING OF BG TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
PROPOSED YARD ARRANGEMENTS AT

HEELALIGE

CONCEPTUAL PLAN

(NOT TO SCALE)



11/8/21
(H.M.DINESH)
CTPM / SWR / UBL

13/8/21
(H.GULAMTAQUE MOHD.)
CPDE / SWR / UBL

SOUTH WESTERN RAILWAY

K RIDE | RAIL INFRASTRUCTURE DEVELOPMENT COMPANY (KARNATAKA) LIMITED

BENGALURU DIVISION

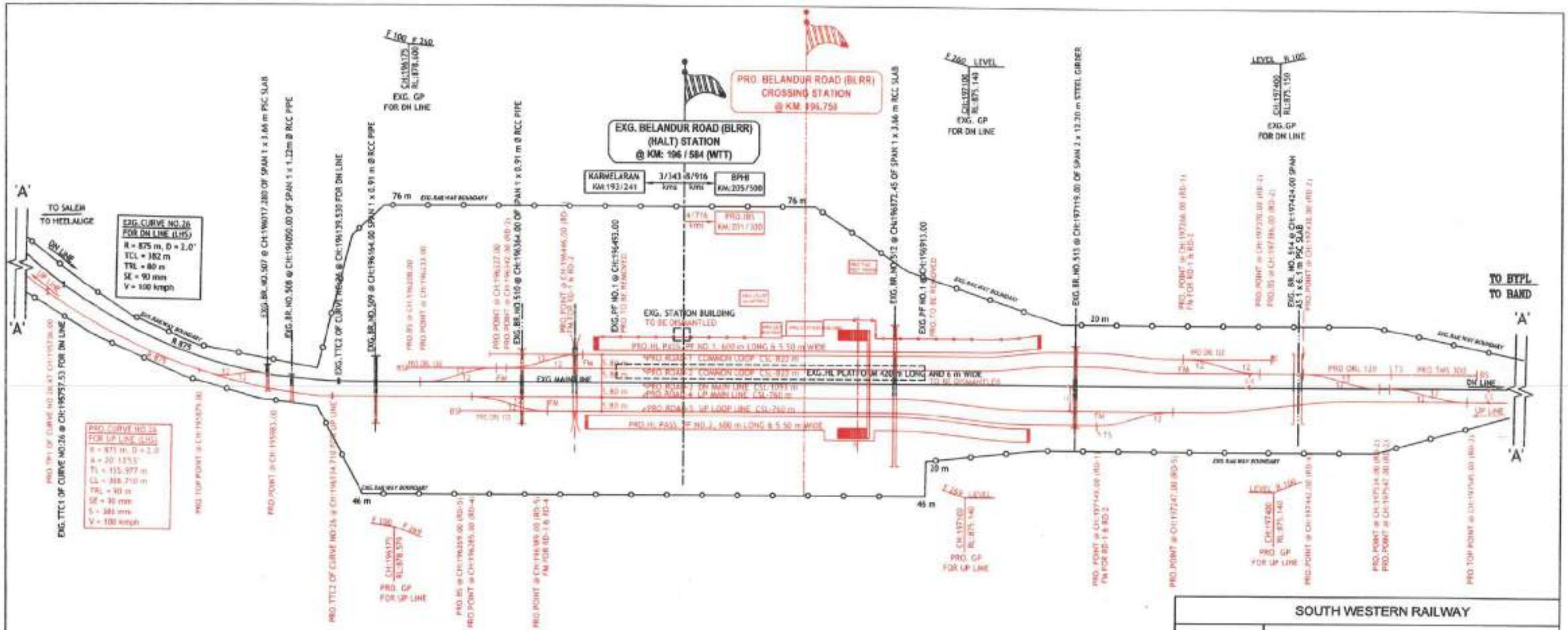
SALEM - YESVANTPUR SECTION

DOUBLING OF BG TRACK BETWEEN BAIYAPPANAHALLI 'A' PANEL AND HOSUR STATIONS
PROPOSED YARD ARRANGEMENTS AT

USKUR

CONCEPTUAL PLAN

(NOT TO SCALE)


PRO. BELANDUR ROAD (BLRR) CROSSING STATION @ KM: 196.750
EXG. BELANDUR ROAD (BLRR) (HALT) STATION @ KM: 196 / 584 (WTT)
KARMELARAM KM:193/241
3/343 i8/916
BPHI KM:205/500
EXG. CURVE NO.26 FOR DN LINE (LH5)
R = 875 m, D = 2.0°
TCL = 382 m
TRL = 80 m
SE = 90 mm
V = 100 kmph
PRO. CURVE NO.25 FOR UP LINE (LH5)
R = 871 m, D = 2.0
Δ = 20° 13'53"
TL = 155.977 m
CL = 368.710 m
TRL = 90 m
SE = 90 mm
S = 386 mm
V = 100 kmph
EXG. STATION BUILDING TO BE DISMANTLED
EXG.CHL PLATFORM 420 m LONG AND 6 m WIDE TO BE DISMANTLED
EXG. MAIN LINE
DN LINE
UP LINE
EXG. RAILWAY BOUNDARY
TO SALEM
TO HOSUR
TO BTPL
TO BAND
'A'
'A'
76 m
46 m
20 m
EXG. GP FOR DN LINE
PRO. GP FOR UP LINE
EXG. GP FOR DN LINE
EXG. GP FOR DN LINE
EXG. BR. NO.507 @ CH:196017.280 OF SPAN 1 x 3.66 m PSC SLAB
EXG. BR. NO.508 @ CH:196050.00 OF SPAN 1 x 1.22m Ø RCC PIPE
EXG. BR. NO.509 @ CH:196194.00 SPAN 1 x 0.91 m Ø RCC PIPE
EXG. BR. NO.510 @ CH:196364.00 OF SPAN 1 x 0.91 m Ø RCC PIPE
EXG. BR. NO.512 @ CH:196872.45 OF SPAN 1 x 3.66 m RCC SLAB
EXG. BR. NO.513 @ CH:197119.00 OF SPAN 2 x 12.20 m STEEL GIRDER
EXG. BR. NO.514 @ CH:197424.00 SPAN 4 x 6.1 m PSC SLAB
EXG. TTC1 OF CURVE NO.26 @ CH:196139.530 FOR DN LINE
EXG. TTC1 OF CURVE NO.26 @ CH:195757.53 FOR DN LINE
PRO. TTC2 OF CURVE NO.26 @ CH:196114.710 FOR UP LINE
PRO. TTC1 OF CURVE NO.25 @ CH:195983.00 FOR UP LINE
EXG. PF NO.1 @ CH:196453.00 PRO. TO BE REMOVED
EXG. PF NO.1 @ CH:196913.00 PRO. TO BE REMOVED
PRO. BR. NO.511 @ CH:196846.00 (RD-1) FM FOR RD-1 & RD-2
PRO. POINT @ CH:196142.36 (RD-2) PRO. POINT @ CH:196142.36 (RD-1) PRO. POINT @ CH:196127.00
PRO. POINT @ CH:196259.00 (RD-5) PRO. POINT @ CH:196245.00 (RD-4)
PRO. POINT @ CH:196189.00 (RD-5) FM FOR RD-1 & RD-4
PRO. POINT @ CH:197149.00 (RD-1) FM FOR RD-1 & RD-2
PRO. POINT @ CH:197370.00 (RD-2) PRO. POINT @ CH:197386.00 (RD-2)
PRO. POINT @ CH:197247.00 (RD-5)
PRO. POINT @ CH:197442.00 (RD-4)
PRO. POINT @ CH:197534.00 (RD-2) PRO. POINT @ CH:197547.00 (RD-1)
PRO. TOP POINT @ CH:197545.00 (RD-1)
PRO. TOP POINT @ CH:196142.36 (RD-2)
PRO. PF NO.1 @ CH:196872.45 (RD-1)
PRO. PF NO.2 @ CH:197424.00 (RD-2)
PRO. PF NO.3 @ CH:197424.00 (RD-1)
PRO. PF NO.4 @ CH:197424.00 (RD-1)
PRO. PF NO.5 @ CH:197424.00 (RD-2)
PRO. PF NO.6 @ CH:197424.00 (RD-2)
PRO. PF NO.7 @ CH:197424.00 (RD-1)
PRO. PF NO.8 @ CH:197424.00 (RD-1)
PRO. PF NO.9 @ CH:197424.00 (RD-2)
PRO. PF NO.10 @ CH:197424.00 (RD-2)
PRO. PF NO.11 @ CH:197424.00 (RD-1)
PRO. PF NO.12 @ CH:197424.00 (RD-1)
PRO. PF NO.13 @ CH:197424.00 (RD-2)
PRO. PF

EXG.BR. NO. 531 @ CH:205241.00 SPAN 1 x 12.20
STEEL GIRDER+ 2 X 7.5 X 5.5 m RCC BOX (RUB)
PRO. TO BE EXTD AS SPAN 1 x 12.20m STEEL GIRDER
+ 2 x 7.50 x 5.50 RCC BOX

EXG. CURVE No 29
FOR SBC LEG
R = 194 m
D = 9.02°
TCL = 304 m
TRL = 80 m
SE = 40 mm

PRO LAQ
PRO MAIN LINE (SBC)
PRO.CRL 120M BS
TO BENGALURU CIT
TO BYPL RRI
PRO MAIN LINE (SBC)
EXG MAIN LINE (SBC)
TO BE REMOVED
CH:205550, EXG.ROR NO.533 SPAN 6 x 6.10 m PSC SLAB
PRO. TO BE EXTENDED AS 6 x 6.10 m PSC SLAB
TO YESVANTPUR
TO BANASWADI
EXG CABIN
TO BE RETAINED
EXG RAILWAY BOUNDARY
EXG RAILWAY BOUNDARY
PRO DN MAIN LINE
EXG UP MAIN LINE
TO JOLERPET
TO KR PURAM
TO DHARMAVARAM
TO CSDR
TO SALEM
TO BLRR

EXG.CURVE NO.28
FOR UP LINE (RHS)
R = 875 m
TCL = 530 m
TRL = 80 m
SE = 90 mm
Vmax = 100 kmph

R 100 R 480
CH:205500
R.L:909.810
EXG.GP
FOR UP LINE

R 175 R 100
CH:204575
R.L:900.300
EXG.GP
FOR UP LINE

12m
5.30m
10m
30m
11m
8.5

(H.M.DINESH)
CTPM / SWR / UBL

(H.GUL ASHFAQUE MOHAMMED)
CPDE / SWR / UBL

SOUTH WESTERN RAILWAY

BENGALURU DIVISION

YESVANTPUR - BYPL CABIN SECTION

DOUBLING OF BG TRACK BETWEEN
YESVANTPUR AND CHANNASANDRA STATIONS
PROPOSED YARD ARRANGEMENTS AT

BAIYYAPANAHALLI 'A' CABIN

CONCEPTUAL PLAN

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMAR

SUMMARY OF MASTS

KM	TTC 8.00	TTC 5.50	B-150 (9.50)	B-175 (9.50)	S-6 (12.40)	OU (10.61)	RU (10.66)	NU (10.51)	TOTAL
157	15	–	10	10	–	–	–	–	35
158	36	–	09	03	06	–	–	–	54
TOTAL	51	–	19	13	06	–	–	–	89

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	CONTACT 107 Sqmm	LS WIRE 130 Sqmm
1	156/06	148.00	157/24	491.00	1345.50	1345.50	–
2	157/18	333.50	157/42	873.50	540.00	540.00	–
3	157/26	536.00	158/40	840.60	1309.50	1309.50	–
4	157/28	563.00	158/42	863.10	1305.00	1305.00	–
5	157/30	599.00	158/32	737.10	1143.00	1143.00	–
6	HSRA/1001	635.00	HSRA/1017	80.10	400.50	400.50	–
7	158/12	332.10	158/26	647.10	315.00	315.00	–
8	158/22	588.60	159/30	805.80	1219.50	1219.50	–
9	HSRA/1027	318.60	HSRA/1045	728.10	409.50	409.50	–

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	158/02	57.60	158/12	332.10	274.50
2	158/06	174.60	158/10	269.10	94.50
3	HSRA/1019	71.10	HSRA/1027	318.60	247.50
4	HSRA/1021	120.60	HSRA/1025	251.10	130.50

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	DOUBLE	TRIPLE	NO OF ANCHORS BWA	FTA	ACA	NO OF JUMPERS G	H	ATJ	F	UIOL	IOL	SI	ISO	AT	PTFE
157	34	08	02	06	01	00	04	06	21	02	01	01	03	03	01	00
158	55	15	00	06	01	08	04	08	15	02	00	01	03	02	00	00
TOTAL	89	23	02	12	02	08	08	14	36	04	01	02	06	05	01	00

BRIGHT - TEXMACO - JV
3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-14
SECTION : BYPL(Excl)-OMALUR(Excl)
DATE : 30/11/2018

PROPOSED WORK SHOWN IN RED
FUTURE WORK SHOWN IN BLUE
EXISTING WORK SHOWN IN BLACK

R.K.M	T.K.M.
2.007	5.488

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

OHE LAYOUT PLAN
FROM KM:157.00
TO KM:158.00
SECTION: HOSUR STATION

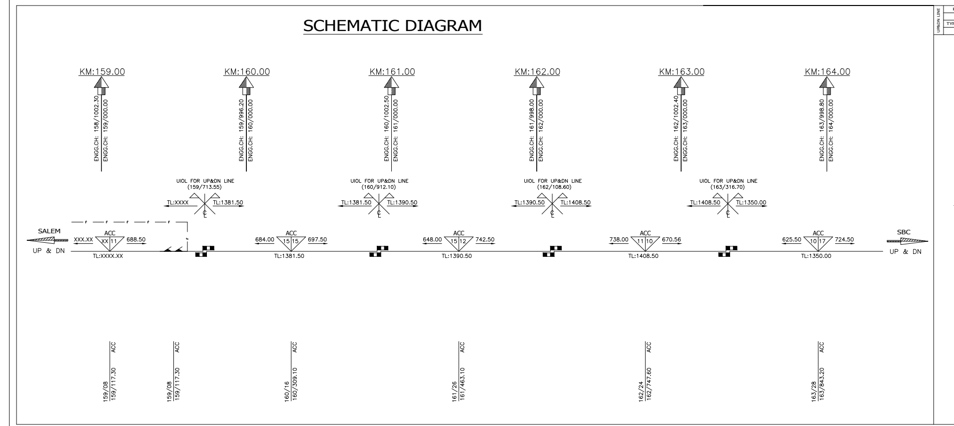
APPROVED IN PRINCIPLE
GM/ELECT/RVNL/SBC
RE/PMC/HSRA
FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION
SOUTH WESTERN RAILWAY
REF: TI/DRG/CIV/ES/RDSO/00001/18/0
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)
SCALE : 1:1000
REVISION 0
IR

SCHEMATIC DIAGRAM



SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMER

SUMMARY OF MASTS

KM	BFB 6X6 (9.50)	B-150 (9.50)	B-175 (9.50)	B-200	TTC-5.5	TOTAL
159	00	17	02	00	00	19
160	00	21	01	00	00	22
161	00	20	01	00	00	21
162	00	13	02	00	00	15
163	00	16	02	00	00	18
TOTAL	00	87	08	00	00	95

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	159/24	621.30	161/02	4.10	1381.50	1381.50
2	160/40	817.60	162/08	207.60	1390.50	1390.50
3	162/02	9.60	163/14	415.70	1408.50	1408.50
4	163/08	217.70	164/26	567.90	1350.00	1350.00

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	159/06	76.80	159/10	166.80	90.00
2	160/14	273.10	160/18	345.10	72.00
3	161/24	427.10	161/28	499.10	72.00
4	162/22	680.10	162/26	815.10	135.00
5	163/26	802.70	163/30	883.70	81.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
159	17	02	-	02	-	02	01	03	06	-	01	-	-	-	-	01
160	20	02	-	01	-	02	01	02	06	-	01	-	-	-	-	-
161	21	00	-	01	-	02	-	03	-	-	00	-	-	-	-	-
162	13	02	-	02	-	02	01	02	06	-	01	-	-	-	-	-
163	16	02	-	02	-	02	01	03	06	-	01	-	-	-	-	-
TOTAL	87	08	-	08	-	10	04	13	24	00	04	00	-	-	-	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m^2
DRG. No. : BPPIPL/BYPL-OML-13
SECTION : HSRA- AEK
DATE : 23/09/2018

EXISTING WORK SHOWN IN BLACK
DISMENTLE WORK SHOWN IN GREEN
PROPOSED WORK SHOWN IN RED

R.K.M	T.K.M.
4.99	4.99

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

OHE LAYOUT PLAN
FROM KM:159.00
TO KM:164.00
SECTION:HSRA–AEK

APPROVED IN PRINCIPLE
APPROVED
GM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

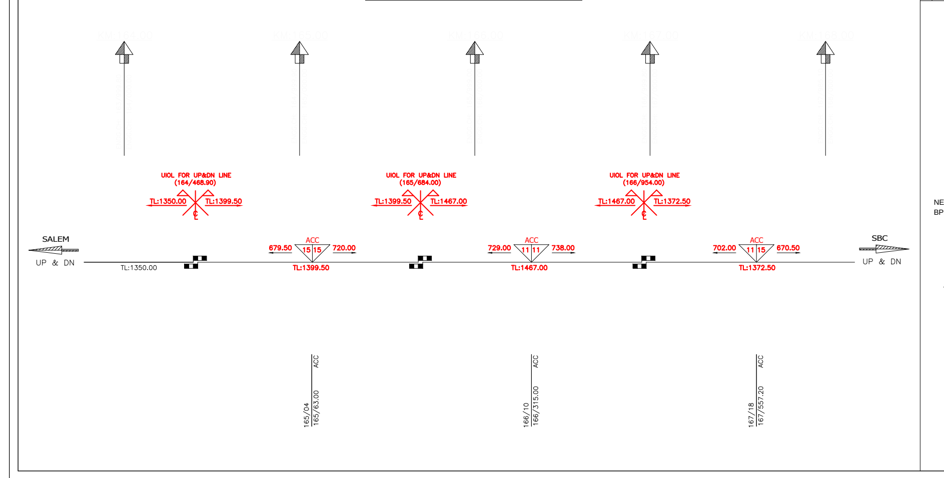
BENGALURU DIVISION
SOUTH WESTERN RAILWAY
REF: TI/DRG/CIV/ES/RDSO/00001/18/0
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0
IR

SCHEMATIC DIAGRAM



SL.No.	DESCRIPTION	SYMBOL
1.	SIGNAL	
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY	
3.	TWO TRACK CANTILEVER WITH DROP ARM	
4.	PORTAL WITH DROP ARM	
5.	CUT IN INSULATOR / TERMINATION INSULATOR	
6.	OUT OF RUN OHE (CATENARY & CONTACT)	
7.	FEEDER	
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION	BWA
9.	SECTION INSULATOR	
10.	ANCHOR MAST WITH FIXED TERMINATION	FTA
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED	
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL	
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL	
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)	F ATJ
15.	INSPAN JUMPER (50)	H
16.	CONTINUITY JUMPER (105)	G
17.	BOOSTER TRANSFORMER	BT
18.	SECTIONING AND PARALLELING POST	SP
19.	SUB SECTIONING AND PARALLELING POST	SSP
20.	FEEDING POST	FP
21.	ANTICREEP CENTRE	ACC
22.	UN-INSULATED OVERLAP	
23.	INSULATED OVERLAP	
24.	WIRED TRACK	
25.	UN-WIRED TRACK	
26.	NEUTRAL SECTION(PTFE)	
27.	AUXILARRY TRANSFORMAR	

SUMMARY OF MASTS

KM	B-200 (9.50)	B-150 (9.50)	B-175 (9.50)	BR.MAST	TOTAL
164	00	21	02	00	23
165	00	18	02	00	20
166	00	14	01	00	15
167	00	19	01	00	20
TOTAL	00	72	06	00	78

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	164/20	383.40	165/34	783.80	1399.50	1399.50
2	165/28	585.00	167/02	53.20	1467.00	1467.00
3	166/26	855.00	168/08	242.30	1372.50	1372.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	165/02	27.00	165/06	99.00	72.00
2	166/08	247.50	166/12	382.50	135.00
3	167/16	516.70	167/20	597.70	81.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
164	21	02	-	02	-	00	01	02	06	-	01	-	-	-	-	-
165	18	02	-	02	-	02	01	03	06	-	01	-	-	-	-	-
166	13	02	-	01	-	02	01	02	03	-	01	-	-	-	-	-
167	20	-	-	01	-	02	-	03	03	-	-	-	-	-	-	-
TOTAL	72	06	-	06	-	06	03	10	18	-	03	-	-	-	-	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m^2
DRG. No. : BPPIPL/BYPL-OML-12
SECTION : HSRA- AEK
DATE : 23/09/2018

EXISTING WORK SHOWN IN BLACK
DISMENTLE WORK SHOWN IN GREEN
PROPOSED WORK SHOWN IN RED

R.K.M	T.K.M.
3.99	3.99

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

OHE LAYOUT PLAN
FROM KM:164.00
TO KM:167.00
SECTION:HSRA–AEK

APPROVED IN PRINCIPLE

APPROVED

GM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000

REVISION 0

IR

SCHEMATIC DIAGRAM

SL.No.	DESCRIPTION	SYMBOL
1.	SIGNAL	
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY	
3.	TWO TRACK CANTILEVER WITH DROP ARM	
4.	PORTAL WITH DROP ARM	
5.	CUT IN INSULATOR / TERMINATION INSULATOR	
6.	OUT OF RUN OHE (CATENARY & CONTACT)	
7.	FEEDER	
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION	BWA
9.	SECTION INSULATOR	
10.	ANCHOR MAST WITH FIXED TERMINATION	FTA
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED	
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL	
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL	
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)	ATJ
15.	INSPAN JUMPER (50)	
16.	CONTINUITY JUMPER (105)	
17.	BOOSTER TRANSFORMER	BT
18.	SECTIONING AND PARALLELING POST	SP
19.	SUB SECTIONING AND PARALLELING POST	SSP
20.	FEEDING POST	FP
21.	ANTICREEP CENTRE	ACC
22.	UN-INSULATED OVERLAP	
23.	INSULATED OVERLAP	
24.	WIRED TRACK	
25.	UN-WIRED TRACK	
26.	NEUTRAL SECTION(PTFE)	
27.	AUXILIARY TRANSFORMER	

SUMMARY OF MASTS

KM	B-200 (9.50)	B-150 (9.50)	B-175 (9.50)	TTC-5.50	TOTAL
168	00	04	11	00	15
169	00	10	08	00	18
170	00	09	06	00	15
171	00	10	02	08	20
TOTAL	00	33	27	08	68

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	TENSION LENGTH CONTACT 107 Sqmm
1	168/02	44.30	169/14	453.50	1404.00	1404.00
2	169/08	255.50	170/14	446.30	1201.50	1201.50
3	170/08	248.30	171/22	702.80	1444.50	1444.50
4	171/16	518.30	172/38	647.30	1125.00	1125.00

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	168/22	714.80	168/26	845.30	130.50
2	169/25	813.50	169/30	885.50	72.00
3	170/25	905.30	171/02	45.80	130.50

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	NO OF BKTS DOUBLE	NO OF BKTS TRIPLE	NO OF ANCHORS BWA	NO OF ANCHORS FTA	NO OF ANCHORS ACA	NO OF JUMPERS G	NO OF JUMPERS H	NO OF JUMPERS ATJ	NO OF JUMPERS F	UIOL	IOL	SI	ISO	AT	PTFE
168	13	02	-	02	-	02	01	02	06	-	01	-	-	-	-	-
169	16	02	-	02	-	02	01	03	06	-	01	-	-	-	-	-
170	13	02	-	02	-	01	01	03	06	-	01	-	-	-	-	-
171	18	02	-	02	-	01	01	02	06	-	01	-	-	-	-	-
TOTAL	60	08	-	08	-	06	04	10	24	-	04	-	-	-	-	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-13
SECTION : HSRA- AEK
DATE : 10/01/2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
3.99	3.99

OHE LAYOUT PLAN
FROM
KM:168/000.00
TO
KM:172/000.00
SECTION:HSRA–AEK

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0

IR

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16..	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILIARY TRANSFORMER

SUMMARY OF MASTS

KM	TTC 8.00	TTC 5.50	B-150 (9.50)	B-175 (9.50)	T-150	S-6 (12.40)	TOTAL
172	11	10	01	03	01	00	25
173	09	00	12	08	00	03	33
TOTAL	20	10	13	11	01	03	58

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	TENSION LENGTH CONTACT 107 Sqmm
1	171/16	516.30	172/38	647.30	1125.00	1125.00
2	172/22	332.30	173/26	497.80	1165.50	1165.50
3	172/24	381.80	173/24	461.80	1080.00	1080.00
4	173/08	160.30	173/42	947.80	787.50	787.50
5	173/36	763.30	174/12	360.60	598.50	598.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	172/06	75.80	172/10	129.80	54.00
2	172/46	876.80	173/02	2.80	126.00
3	172/44	813.80	173/04	56.80	243.00
4	173/28	547.30	173/32	641.80	94.50

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	NO OF BKTS DOUBLE	NO OF BKTS TRIPLE	NO OF ANCHORS BWA	NO OF ANCHORS FTA	NO OF ANCHORS ACA	NO OF JUMPERS G	NO OF JUMPERS H	NO OF JUMPERS ATJ	NO OF JUMPERS F	UIOL	IOL	SI	ISO	AT	PTFE
172	29	05	01	03	-	04	01	05	-	02	-	01	01	02	01	-
173	22	07	02	04	01	04	02	01	12	04	-	02	01	01	-	-
TOTAL	51	12	03	07	01	08	03	06	18	06	-	03	02	03	01	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI - 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-12
SECTION : AEK STATION
DATE : 08/01/2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
2.001	3.003

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

OHE LAYOUT PLAN
FROM
KM:172/000.00
TO
KM:174/000.00

SECTION: ANEKAL ROAD STATION

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

CROSS REF: - ETI/C/0702 SH.1

DATE	MOD NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:500
REVISION 0

IR

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMAR

SUMMARY OF MASTS

KM	B-200 (9.50)	B-150 (9.50)	B-175 (9.50)	AT MAST T-150	TOTAL
174	00	11	06	00	17
175	00	10	05	00	15
176	00	14	02	00	16
177	00	15	01	01	17
TOTAL	00	50	14	01	65

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	174/06	194.10	175/20	659.40	1462.50	1462.50
2	175/14	461.40	176/28	874.10	1408.50	1408.50
3	176/22	694.10	178/04	109.50	1408.50	1408.50
4	177/30	908.00	179/10	314.00	1399.50	1399.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	174/30	851.10	174/34	986.10	135.00
2	176/04	95.60	176/08	226.10	130.50
3	177/12	314.00	177/16	449.00	135.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
174	15	02	-	02	-	02	01	02	06	-	01	-	-	-	-	-
175	13	02	-	02	-	00	01	02	06	-	01	-	-	-	-	-
176	14	02	-	02	-	02	01	02	06	-	01	-	-	-	-	-
177	15	01	-	01	-	02	01	03	03	-	00	-	-	-	01	-
TOTAL	57	07	-	07	-	06	04	09	21	-	03	-	-	-	01	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m
DRG. No. : BPPIPL/BYPL-OML-11
SECTION : HLE-AEK
DATE : 05/01/2020

R.K.M	T.K.M.
3.999	3.999

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

OHE LAYOUT PLAN
FROM
KM:174/000.00
TO
KM:178/0.000
SECTION:HLE–AEK

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

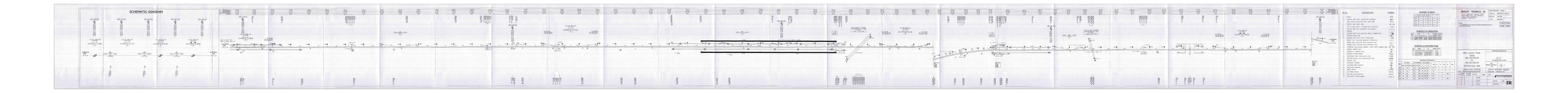
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0

IR


SCHEMATIC DIAGRAM
DESCRIPTION
SCHEDULE OF DIRECTION
SCHEDULE OF MOTORWAY KMS
BRIGHT - TEHRACO - IV
ISSUED FOR CONSTRUCTION
NEW LAYOUT PLAN
CHAINAGE 0.000 TO 7.000
DRAWING NO. : 1
REVISION NO. : 0
DATE : 21.04.2021
SCALE : 1:1000
HORIZONTAL 1:1000
VERTICAL 1:100
APPROVED BY
DESIGNED BY
DRAWN BY
CHECKED BY
REVISION HISTORY
DESIGN CONSULTANT
IR

SCHEMATIC DIAGRAM

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION (BWA)
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION (FTA)
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50) (ATJ)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER (BT)
18.	SECTIONING AND PARALLELING POST (SP)
19.	SUB SECTIONING AND PARALLELING POST (SSP)
20.	FEEDING POST (FP)
21.	ANTICREEP CENTRE (ACC)
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMAR

SUMMARY OF MASTS

KM	B-150	B-175	S-6	TC-8.00	TC-5.50	T-150	TOTAL
182	05	05	00	10	00	01	21
183	05	04	01	09	04	00	23
TOTAL	10	09	01	19	04	01	44

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	181/22	607.70	182/32	702.60	1098.00	1098.00
2	182/16	365.10	183/26	533.10	1170.00	1170.00
3	182/18	414.60	183/24	497.10	1084.50	1084.50
4	183/08	173.10	183/34	740.10	567.00	567.00
5	183/28	587.50	184/12	312.40	724.10	724.10

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	182/06	86.10	182/12	248.10	162.00
2	182/36	815.10	183/04	65.10	252.00
3	182/38	873.60	183/02	2.10	130.50

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
182	22	07	01	03	-	04	01	05	00	02	-	01	01	02	01	-
183	20	09	02	03	02	02	01	03	06	04	-	02	01	02	-	-
TOTAL	42	16	03	06	02	06	02	08	06	06	-	03	02	04	01	-

BRIGHT - TEXMACO - JV
3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-09
SECTION : HEELALIGE STATION
DATE : 08-01-2020

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
2.001	3.004

OHE LAYOUT PLAN
FROM
KM:182/000.00
TO
KM:184/000.00
SECTION: HEELALIGE STATION
BENGALURU DIVISION

APPROVED AS ERECTED
Sr.DGM/ELECT/RVNL/SBC
FOR BRIGHT-TEXMACO (JV)
SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)
SCALE : 1:500
REVISION 0
IR

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMAR

SUMMARY OF MASTS

KM	B-200 (9.50)	B-150 (9.50)	B-175 (9.50)	TTC-5.50	T-150	TOTAL
184	00	13	04	00	00	17
185	00	10	04	02	01	16
186	00	12	04	00	00	16
187	00	11	04	00	01	15
TOTAL	00	46	16	02	02	64

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	184/06	136.90	185/20	576.80	1435.50	1435.50
2	185/14	379.80	186/26	803.80	1422.00	1422.00
3	186/20	614.80	187/28	905.10	1287.00	1287.00
4	187/22	720.60	188/30	960.90	1237.50	1237.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	184/28	775.90	184/32	892.90	117.00
2	186/02	20.80	186/06	155.80	135.00
3	187/06	194.10	187/10	329.10	135.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
184	15	02	-	02	-	02	01	02	06	-	01	-	-	-	-	-
185	14	02	-	02	-	00	01	02	06	-	01	-	-	-	01	-
186	14	02	-	02	-	02	01	03	06	-	01	-	-	-	-	-
187	13	02	-	02	-	02	01	02	06	-	01	-	-	-	01	-
TOTAL	56	08	-	08	-	06	04	09	24	-	04	-	-	-	02	-

BRIGHT - TEXMACO - JV
3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-08
SECTION : CRLM-HLE
DATE : 08-01-2020

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
3.987	3.987

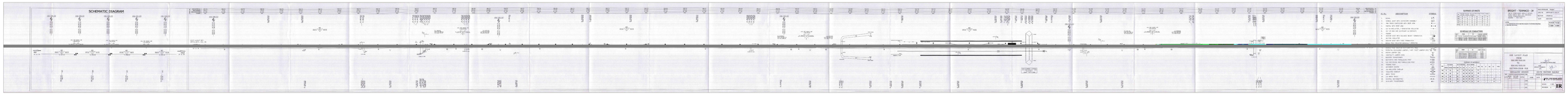
OHE LAYOUT PLAN
FROM
KM:184/000.00
TO
KM:188/000.00
SECTION:CRLM–HLE
BENGALURU DIVISION

APPROVED AS ERECTED
Sr.DGM/ELECT/RVNL/SBC
FOR BRIGHT-TEXMACO (JV)
SOUTH WESTERN RAILWAY

REF: TI/DRG/CIVIES/RDSO/00001/18/0
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)
SCALE : 1:1000
REVISION
IR


SCHEMATIC DIAGRAM
SUMMARY OF PARTS
SUMMARY OF CONNECTORS
SUMMARY OF WIRES
BRIGHT - TECHNICO - IX
THE LAYOUT PLAN
SECTIONAL VIEW - I
SECTIONAL VIEW - II
SECTIONAL VIEW - III
SECTIONAL VIEW - IV
SECTIONAL VIEW - V
SECTIONAL VIEW - VI
SECTIONAL VIEW - VII
SECTIONAL VIEW - VIII
SECTIONAL VIEW - IX
SECTIONAL VIEW - X
SECTIONAL VIEW - XI
SECTIONAL VIEW - XII
SECTIONAL VIEW - XIII
SECTIONAL VIEW - XIV
SECTIONAL VIEW - XV
SECTIONAL VIEW - XVI
SECTIONAL VIEW - XVII
SECTIONAL VIEW - XVIII
SECTIONAL VIEW - XIX
SECTIONAL VIEW - XX
SECTIONAL VIEW - XXI
SECTIONAL VIEW - XXII
SECTIONAL VIEW - XXIII
SECTIONAL VIEW - XXIV
SECTIONAL VIEW - XXV
SECTIONAL VIEW - XXVI
SECTIONAL VIEW - XXVII
SECTIONAL VIEW - XXVIII
SECTIONAL VIEW - XXIX
SECTIONAL VIEW - XXX
SECTIONAL VIEW - XXXI
SECTIONAL VIEW - XXXII
SECTIONAL VIEW - XXXIII
SECTIONAL VIEW - XXXIV
SECTIONAL VIEW - XXXV
SECTIONAL VIEW - XXXVI
SECTIONAL VIEW - XXXVII
SECTIONAL VIEW - XXXVIII
SECTIONAL VIEW - XXXIX
SECTIONAL VIEW - XL
SECTIONAL VIEW - XLI
SECTIONAL VIEW - XLII
SECTIONAL VIEW - XLIII
SECTIONAL VIEW - XLIV
SECTIONAL VIEW - XLV
SECTIONAL VIEW - XLVI
SECTIONAL VIEW - XLVII
SECTIONAL VIEW - XLVIII
SECTIONAL VIEW - XLIX
SECTIONAL VIEW - L
SECTIONAL VIEW - LI
SECTIONAL VIEW - LII
SECTIONAL VIEW - LIII
SECTIONAL VIEW - LIV
SECTIONAL VIEW - LV
SECTIONAL VIEW - LVI
SECTIONAL VIEW - LVII
SECTIONAL VIEW - LVIII
SECTIONAL VIEW - LIX
SECTIONAL VIEW - LX
SECTIONAL VIEW - LXI
SECTIONAL VIEW - LXII
SECTIONAL VIEW - LXIII
SECTIONAL VIEW - LXIV
SECTIONAL VIEW - LXV
SECTIONAL VIEW - LXVI
SECTIONAL VIEW - LXVII
SECTIONAL VIEW - LXVIII
SECTIONAL VIEW - LXIX
SECTIONAL VIEW - LXX
SECTIONAL VIEW - LXXI
SECTIONAL VIEW - LXXII
SECTIONAL VIEW - LXXIII
SECTIONAL VIEW - LXXIV
SECTIONAL VIEW - LXXV
SECTIONAL VIEW - LXXVI
SECTIONAL VIEW - LXXVII
SECTIONAL VIEW - LXXVIII
SECTIONAL VIEW - LXXIX
SECTIONAL VIEW - LXXX
SECTIONAL VIEW - LXXXI
SECTIONAL VIEW - LXXXII
SECTIONAL VIEW - LXXXIII
SECTIONAL VIEW - LXXXIV
SECTIONAL VIEW - LXXXV
SECTIONAL VIEW - LXXXVI
SECTIONAL VIEW - LXXXVII
SECTIONAL VIEW - LXXXVIII
SECTIONAL VIEW - LXXXIX
SECTIONAL VIEW - XC
SECTIONAL VIEW - XCI
SECTIONAL VIEW - XCII
SECTIONAL VIEW - XCIII
SECTIONAL VIEW - XCIV
SECTIONAL VIEW - XCV
SECTIONAL VIEW - XCVI
SECTIONAL VIEW - XCVII
SECTIONAL VIEW - XCVIII
SECTIONAL VIEW - XCIX
SECTIONAL VIEW - C
SECTIONAL VIEW - CI
SECTIONAL VIEW - CII
SECTIONAL VIEW - CIII
SECTIONAL VIEW - CIV
SECTIONAL VIEW - CV
SECTIONAL VIEW - CVI
SECTIONAL VIEW - CVII
SECTIONAL VIEW - CVIII
SECTIONAL VIEW - CIX
SECTIONAL VIEW - CX
SECTIONAL VIEW - CXI
SECTIONAL VIEW - CXII
SECTIONAL VIEW - CXIII
SECTIONAL VIEW - CXIV
SECTIONAL VIEW - CXV
SECTIONAL VIEW - CXVI
SECTIONAL VIEW - CXVII
SECTIONAL VIEW - CXVIII
SECTIONAL VIEW - CXIX
SECTIONAL VIEW - CXX
SECTIONAL VIEW - CXXI
SECTIONAL VIEW - CXXII
SECTIONAL VIEW - CXXIII
SECTIONAL VIEW - CXXIV
SECTIONAL VIEW - CXXV
SECTIONAL VIEW - CXXVI
SECTIONAL VIEW - CXXVII
SECTIONAL VIEW - CXXVIII
SECTIONAL VIEW - CXXIX
SECTIONAL VIEW - CXXX
SECTIONAL VIEW - CXXXI
SECTIONAL VIEW - CXXXII
SECTIONAL VIEW - CXXXIII
SECTIONAL VIEW - CXXXIV
SECTIONAL VIEW - CXXXV
SECTIONAL VIEW - CXXXVI
SECTIONAL VIEW - CXXXVII
SECTIONAL VIEW - CXXXVIII
SECTIONAL VIEW - CXXXIX
SECTIONAL VIEW - CXL
SECTIONAL VIEW - CXLI
SECTIONAL VIEW - CXLII
SECTIONAL VIEW - CXLIII
SECTIONAL VIEW - CXLIV
SECTIONAL VIEW - CXLV
SECTIONAL VIEW - CXLVI
SECTIONAL VIEW - CXLVII
SECTIONAL VIEW - CXLVIII
SECTIONAL VIEW - CXLIX
SECTIONAL VIEW - CL
SECTIONAL VIEW - CLI
SECTIONAL VIEW - CLII
SECTIONAL VIEW - CLIII
SECTIONAL VIEW - CLIV
SECTIONAL VIEW - CLV
SECTIONAL VIEW - CLVI
SECTIONAL VIEW - CLVII
SECTIONAL VIEW - CLVIII
SECTIONAL VIEW - CLIX
SECTIONAL VIEW - CLX
SECTIONAL VIEW - CLXI
SECTIONAL VIEW - CLXII
SECTIONAL VIEW - CLXIII
SECTIONAL VIEW - CLXIV
SECTIONAL VIEW - CLXV
SECTIONAL VIEW - CLXVI
SECTIONAL VIEW - CLXVII
SECTIONAL VIEW - CLXVIII
SECTIONAL VIEW - CLXIX
SECTIONAL VIEW - CLXX
SECTIONAL VIEW - CLXXI
SECTIONAL VIEW - CLXXII
SECTIONAL VIEW - CLXXIII
SECTIONAL VIEW - CLXXIV
SECTIONAL VIEW - CLXXV
SECTIONAL VIEW - CLXXVI
SECTIONAL VIEW - CLXXVII
SECTIONAL VIEW - CLXXVIII
SECTIONAL VIEW - CLXXIX
SECTIONAL VIEW - CLXXX
SECTIONAL VIEW - CLXXXI
SECTIONAL VIEW - CLXXXII
SECTIONAL VIEW - CLXXXIII
SECTIONAL VIEW - CLXXXIV
SECTIONAL VIEW - CLXXXV
SECTIONAL VIEW - CLXXXVI
SECTIONAL VIEW - CLXXXVII
SECTIONAL VIEW - CLXXXVIII
SECTIONAL VIEW - CLXXXIX
SECTIONAL VIEW - CXC
SECTIONAL VIEW - CXCI
SECTIONAL VIEW - CXCII
SECTIONAL VIEW - CXCIII
SECTIONAL VIEW - CXCIV
SECTIONAL VIEW - CXCV
SECTIONAL VIEW - CXCVI
SECTIONAL VIEW - CXCVII
SECTIONAL VIEW - CXCVIII
SECTIONAL VIEW - CXCIX
SECTIONAL VIEW - CC
SECTIONAL VIEW - CCI
SECTIONAL VIEW - CCII
SECTIONAL VIEW - CCIII
SECTIONAL VIEW - CCIV
SECTIONAL VIEW - CCV
SECTIONAL VIEW - CCVI
SECTIONAL VIEW - CCVII
SECTIONAL VIEW - CCVIII
SECTIONAL VIEW - CCIX
SECTIONAL VIEW - CCX
SECTIONAL VIEW - CCXI
SECTIONAL VIEW - CCXII
SECTIONAL VIEW - CCXIII
SECTIONAL VIEW - CCXIV
SECTIONAL VIEW - CCXV
SECTIONAL VIEW - CCXVI
SECTIONAL VIEW - CCXVII
SECTIONAL VIEW - CCXVIII
SECTIONAL VIEW - CCXIX
SECTIONAL VIEW - CCXX
SECTIONAL VIEW - CCXXI
SECTIONAL VIEW - CCXXII
SECTIONAL VIEW - CCXXIII
SECTIONAL VIEW - CCXXIV
SECTIONAL VIEW - CCXXV
SECTIONAL VIEW - CCXXVI
SECTIONAL VIEW - CCXXVII
SECTIONAL VIEW - CCXXVIII
SECTIONAL VIEW - CCXXIX
SECTIONAL VIEW - CCXXX
SECTIONAL VIEW - CCXXXI
SECTIONAL VIEW - CCXXXII
SECTIONAL VIEW - CCXXXIII
SECTIONAL VIEW - CCXXXIV
SECTIONAL VIEW - CCXXXV
SECTIONAL VIEW - CCXXXVI
SECTIONAL VIEW - CCXXXVII
SECTIONAL VIEW - CCXXXVIII
SECTIONAL VIEW - CCXXXIX
SECTIONAL VIEW - CCXL
SECTIONAL VIEW - CCXLI
SECTIONAL VIEW - CCXLII
SECTIONAL VIEW - CCXLIII
SECTIONAL VIEW - CCXLIV
SECTIONAL VIEW - CCXLV
SECTIONAL VIEW - CCXLVI
SECTIONAL VIEW - CCXLVII
SECTIONAL VIEW - CCXLVIII
SECTIONAL VIEW - CCXLIX
SECTIONAL VIEW - CCL
SECTIONAL VIEW - CCLI
SECTIONAL VIEW - CCLII
SECTIONAL VIEW - CCLIII
SECTIONAL VIEW - CCLIV
SECTIONAL VIEW - CCLV
SECTIONAL VIEW - CCLVI
SECTIONAL VIEW - CCLVII
SECTIONAL VIEW - CCLVIII
SECTIONAL VIEW - CCLIX
SECTIONAL VIEW - CCLX
SECTIONAL VIEW - CCLXI
SECTIONAL VIEW - CCLXII
SECTIONAL VIEW - CCLXIII
SECTIONAL VIEW - CCLXIV
SECTIONAL VIEW - CCLXV
SECTIONAL VIEW - CCLXVI
SECTIONAL VIEW - CCLXVII
SECTIONAL VIEW - CCLXVIII
SECTIONAL VIEW - CCLXIX
SECTIONAL VIEW - CCLXX
SECTIONAL VIEW - CCLXXI
SECTIONAL VIEW - CCLXXII
SECTIONAL VIEW - CCLXXIII
SECTIONAL VIEW - CCLXXIV
SECTIONAL VIEW - CCLXXV
SECTIONAL VIEW - CCLXXVI
SECTIONAL VIEW - CCLXXVII
SECTIONAL VIEW - CCLXXVIII
SECTIONAL VIEW - CCLXXIX
SECTIONAL VIEW - CCLXXX
SECTIONAL VIEW - CCLXXXI
SECTIONAL VIEW - CCLXXXII
SECTIONAL VIEW - CCLXXXIII
SECTIONAL VIEW - CCLXXXIV
SECTIONAL VIEW - CCLXXXV
SECTIONAL VIEW - CCLXXXVI
SECTIONAL VIEW - CCLXXXVII
SECTIONAL VIEW - CCLXXXVIII
SECTIONAL VIEW - CCLXXXIX
SECTIONAL VIEW - CCXC
SECTIONAL VIEW - CCXCI
SECTIONAL VIEW - CCXCII
SECTIONAL VIEW - CCXCIII
SECTIONAL VIEW - CCXCIV
SECTIONAL VIEW - CCXCV
SECTIONAL VIEW - CCXCVI
SECTIONAL VIEW - CCXCVII
SECTIONAL VIEW - CCXCVIII
SECTIONAL VIEW - CCXCIX
SECTIONAL VIEW - CCC
SECTIONAL VIEW - CCCI
SECTIONAL VIEW - CCCII
SECTIONAL VIEW - CCCIII
SECTIONAL VIEW - CCCIV
SECTIONAL VIEW - CCCV
SECTIONAL VIEW - CCCVI
SECTIONAL VIEW - CCCVII
SECTIONAL VIEW - CCCVIII
SECTIONAL VIEW - CCCIX
SECTIONAL VIEW - CCCX
SECTIONAL VIEW - CCCXI
SECTIONAL VIEW - CCCXII
SECTIONAL VIEW - CCCXIII
SECTIONAL VIEW - CCCXIV
SECTIONAL VIEW - CCCXV
SECTIONAL VIEW - CCCXVI
SECTIONAL VIEW - CCCXVII
SECTIONAL VIEW - CCCXVIII
SECTIONAL VIEW - CCCXIX
SECTIONAL VIEW - CCCXX
SECTIONAL VIEW - CCCXXI
SECTIONAL VIEW - CCCXXII
SECTIONAL VIEW - CCCXXIII
SECTIONAL VIEW - CCCXXIV
SECTIONAL VIEW - CCCXXV
SECTIONAL VIEW - CCCXXVI
SECTIONAL VIEW - CCCXXVII
SECTIONAL VIEW - CCCXXVIII
SECTIONAL VIEW - CCCXXIX
SECTIONAL VIEW - CCCXXX
SECTIONAL VIEW - CCCXXXI
SECTIONAL VIEW - CCCXXXII
SECTIONAL VIEW - CCCXXXIII
SECTIONAL VIEW - CCCXXXIV
SECTIONAL VIEW - CCCXXXV
SECTIONAL VIEW - CCCXXXVI
SECTIONAL VIEW - CCCXXXVII
SECTIONAL VIEW - CCCXXXVIII
SECTIONAL VIEW - CCCXXXIX
SECTIONAL VIEW - CCCXL
SECTIONAL VIEW - CCCXLI
SECTIONAL VIEW - CCCXLII
SECTIONAL VIEW - CCCXLIII
SECTIONAL VIEW - CCCXLIV
SECTIONAL VIEW - CCCXLV
SECTIONAL VIEW - CCCXLVI
SECTIONAL VIEW - CCCXLVII
SECTIONAL VIEW - CCCXLVIII
SECTIONAL VIEW - CCCXLIX
SECTIONAL VIEW - CCCL
SECTIONAL VIEW - CCCLI
SECTIONAL VIEW - CCCLII
SECTIONAL VIEW - CCCLIII
SECTIONAL VIEW - CCCLIV
SECTIONAL VIEW - CCCLV
SECTIONAL VIEW - CCCLVI
SECTIONAL VIEW - CCCLVII
SECTIONAL VIEW - CCCLVIII
SECTIONAL VIEW - CCCLIX
SECTIONAL VIEW - CCCLX
SECTIONAL VIEW - CCCLXI
SECTIONAL VIEW - CCCLXII
SECTIONAL VIEW - CCCLXIII
SECTIONAL VIEW - CCCLXIV
SECTIONAL VIEW - CCCLXV
SECTIONAL VIEW - CCCLXVI
SECTIONAL VIEW - CCCLXVII
SECTIONAL VIEW - CCCLXVIII
SECTIONAL VIEW - CCCLXIX
SECTIONAL VIEW - CCCLXX
SECTIONAL VIEW - CCCLXXI
SECTIONAL VIEW - CCCLXXII
SECTIONAL VIEW - CCCLXXIII
SECTIONAL VIEW - CCCLXXIV
SECTIONAL VIEW - CCCLXXV
SECTIONAL VIEW - CCCLXXVI
SECTIONAL VIEW - CCCLXXVII
SECTIONAL VIEW - CCCLXXVIII
SECTIONAL VIEW - CCCLXXIX
SECTIONAL VIEW - CCCLXXX
SECTIONAL VIEW - CCCLXXXI
SECTIONAL VIEW - CCCLXXXII
SECTIONAL VIEW - CCCLXXXIII
SECTIONAL VIEW - CCCLXXXIV
SECTIONAL VIEW - CCCLXXXV
SECTIONAL VIEW - CCCLXXXVI
SECTIONAL VIEW - CCCLXXXVII
SECTIONAL VIEW - CCCLXXXVIII
SECTIONAL VIEW - CCCLXXXIX
SECTIONAL VIEW - CCCXC
SECTIONAL VIEW - CCCXCI
SECTIONAL VIEW - CCCXCII
SECTIONAL VIEW - CCCXCIII
SECTIONAL VIEW - CCCXCIV
SECTIONAL VIEW - CCCXCV
SECTIONAL VIEW - CCCXCVI
SECTIONAL VIEW - CCCXCVII
SECTIONAL VIEW - CCCXCVIII
SECTIONAL VIEW - CCCXCIX
SECTIONAL VIEW - CD
SECTIONAL VIEW - CDI
SECTIONAL VIEW - CDII
SECTIONAL VIEW - CDIII
SECTIONAL VIEW - CDIV
SECTIONAL VIEW - CDV
SECTIONAL VIEW - CDVI
SECTIONAL VIEW - CDVII
SECTIONAL VIEW - CDVIII
SECTIONAL VIEW - CDIX
SECTIONAL VIEW - CDX
SECTIONAL VIEW - CDXI
SECTIONAL VIEW - CDXII
SECTIONAL VIEW - CDXIII
SECTIONAL VIEW - CDXIV
SECTIONAL VIEW - CDXV
SECTIONAL VIEW - CDXVI
SECTIONAL VIEW - CDXVII
SECTIONAL VIEW - CDXVIII
SECTIONAL VIEW - CDXIX
SECTIONAL VIEW - CDXX
SECTIONAL VIEW - CDXXI
SECTIONAL VIEW - CDXXII
SECTIONAL VIEW - CDXXIII
SECTIONAL VIEW - CDXXIV
SECTIONAL VIEW - CDXXV
SECTIONAL VIEW - CDXXVI
SECTIONAL VIEW - CDXXVII
SECTIONAL VIEW - CDXXVIII
SECTIONAL VIEW - CDXXIX
SECTIONAL VIEW - CDXXX
SECTIONAL VIEW - CDXXXI
SECTIONAL VIEW - CDXXXII
SECTIONAL VIEW - CDXXXIII
SECTIONAL VIEW - CDXXXIV
SECTIONAL VIEW - CDXXXV
SECTIONAL VIEW - CDXXXVI
SECTIONAL VIEW - CDXXXVII
SECTIONAL VIEW - CDXXXVIII
SECTIONAL VIEW - CDXXXIX
SECTIONAL VIEW - CDXL
SECTIONAL VIEW - CDXLI
SECTIONAL VIEW - CDXLII
SECTIONAL VIEW - CDXLIII
SECTIONAL VIEW - CDXLIV
SECTIONAL VIEW - CDXLV
SECTIONAL VIEW - CDXLVI
SECTIONAL VIEW - CDXLVII
SECTIONAL VIEW - CDXLVIII
SECTIONAL VIEW - CDXLIX
SECTIONAL VIEW - CDL
SECTIONAL VIEW - CDLI
SECTIONAL VIEW - CDLII
SECTIONAL VIEW - CDLIII
SECTIONAL VIEW - CDLIV
SECTIONAL VIEW - CDLV
SECTIONAL VIEW - CDLVI
SECTIONAL VIEW - CDLVII
SECTIONAL VIEW - CDLVIII
SECTIONAL VIEW - CDLIX
SECTIONAL VIEW - CDLX
SECTIONAL VIEW - CDLXI
SECTIONAL VIEW - CDLXII
SECTIONAL VIEW - CDLXIII
SECTIONAL VIEW - CDLXIV
SECTIONAL VIEW - CDLXV
SECTIONAL VIEW - CDLXVI
SECTIONAL VIEW - CDLXVII
SECTIONAL VIEW - CDLXVIII
SECTIONAL VIEW - CDLXIX
SECTIONAL VIEW - CDLXX
SECTIONAL VIEW - CDLXXI
SECTIONAL VIEW - CDLXXII
SECTIONAL VIEW - CDLXXIII
SECTIONAL VIEW - CDLXXIV
SECTIONAL VIEW - CDLXXV
SECTIONAL VIEW - CDLXXVI
SECTIONAL VIEW - CDLXXVII
SECTIONAL VIEW - CDLXXVIII
SECTIONAL VIEW - CDLXXIX
SECTIONAL VIEW - CDLXXX
SECTIONAL VIEW - CDLXXXI
SECTIONAL VIEW - CDLXXXII
SECTIONAL VIEW - CDLXXXIII
SECTIONAL VIEW - CDLXXXIV
SECTIONAL VIEW - CDLXXXV
SECTIONAL VIEW - CDLXXXVI
SECTIONAL VIEW - CDLXXXVII
SECTIONAL VIEW - CDLXXXVIII
SECTIONAL VIEW - CDLXXXIX
SECTIONAL VIEW - CDXC
SECTIONAL VIEW - CDXCI
SECTIONAL VIEW - CDXCII
SECTIONAL VIEW - CDXCIII
SECTIONAL VIEW - CDXCIV
SECTIONAL VIEW - CDXCV
SECTIONAL VIEW - CDXCVI
SECTIONAL VIEW - CDXCVII
SECTIONAL VIEW - CDXCVIII
SECTIONAL VIEW - CDXCIX
SECTIONAL VIEW - D
SECTIONAL VIEW - DI
SECTIONAL VIEW - DII
SECTIONAL VIEW - DIII
SECTIONAL VIEW - DIV
SECTIONAL VIEW - DV
SECTIONAL VIEW - DVI
SECTIONAL VIEW - DVII
SECTIONAL VIEW - DVIII
SECTIONAL VIEW - DIX
SECTIONAL VIEW - DX
SECTIONAL VIEW - DXI
SECTIONAL VIEW - DXII
SECTIONAL VIEW - DXIII
SECTIONAL VIEW - DXIV
SECTIONAL VIEW - DXV
SECTIONAL VIEW - DXVI
SECTIONAL VIEW - DXVII
SECTIONAL VIEW - DXVIII
SECTIONAL VIEW - DXIX
SECTIONAL VIEW - DXX
SECTIONAL VIEW - DXXI
SECTIONAL VIEW - DXXII
SECTIONAL VIEW - DXXIII
SECTIONAL VIEW - DXXIV
SECTIONAL VIEW - DXXV
SECTIONAL VIEW - DXXVI
SECTIONAL VIEW - DXXVII
SECTIONAL VIEW - DXXVIII
SECTIONAL VIEW - DXXIX
SECTIONAL VIEW - DXXX
SECTIONAL VIEW - DXXXI
SECTIONAL VIEW - DXXXII
SECTIONAL VIEW - DXXXIII
SECTIONAL VIEW - DXXXIV
SECTIONAL VIEW - DXXXV
SECTIONAL VIEW - DXXXVI
SECTIONAL VIEW - DXXXVII
SECTIONAL VIEW - DXXXVIII
SECTIONAL VIEW - DXXXIX
SECTIONAL VIEW - DXL
SECTIONAL VIEW - DXLI
SECTIONAL VIEW - DXLII
SECTIONAL VIEW - DXLIII
SECTIONAL VIEW - DXLIV
SECTIONAL VIEW - DXLV
SECTIONAL VIEW - DXLVI
SECTIONAL VIEW - DXLVII
SECTIONAL VIEW - DXLVIII
SECTIONAL VIEW - DXLIX
SECTIONAL VIEW - DL
SECTIONAL VIEW - DLI
SECTIONAL VIEW - DLII
SECTIONAL VIEW - DLIII
SECTIONAL VIEW - DLIV
SECTIONAL VIEW - DLV
SECTIONAL VIEW - DLVI
SECTIONAL VIEW - DLVII
SECTIONAL VIEW - DLVIII
SECTIONAL VIEW - DLIX
SECTIONAL VIEW - DLX
SECTIONAL VIEW - DLXI
SECTIONAL VIEW - DLXII
SECTIONAL VIEW - DLXIII
SECTIONAL VIEW - DLXIV
SECTIONAL VIEW - DLXV
SECTIONAL VIEW - DLXVI
SECTIONAL VIEW - DLXVII
SECTIONAL VIEW - DLXVIII
SECTIONAL VIEW - DLXIX
SECTIONAL VIEW - DLXX
SECTIONAL VIEW - DLXXI
SECTIONAL VIEW - DLXXII
SECTIONAL VIEW - DLXXIII
SECTIONAL VIEW - DLXXIV
SECTIONAL VIEW - DLXXV
SECTIONAL VIEW - DLXXVI
SECTIONAL VIEW - DLXXVII
SECTIONAL VIEW - DLXXVIII
SECTIONAL VIEW - DLXXIX
SECTIONAL VIEW - DLXXX
SECTIONAL VIEW - DLXXXI
SECTIONAL VIEW - DLXXXII
SECTIONAL VIEW - DLXXXIII
SECTIONAL VIEW - DLXXXIV
SECTIONAL VIEW - DLXXXV
SECTIONAL VIEW - DLXXXVI
SECTIONAL VIEW - DLXXXVII
SECTIONAL VIEW - DLXXXVIII
SECTIONAL VIEW - DLXXXIX
SECTIONAL VIEW - DXC
SECTIONAL VIEW - DXCI
SECTIONAL VIEW - DXCII
SECTIONAL VIEW - DXCIII
SECTIONAL VIEW - DXCIV
SECTIONAL VIEW - DXCV
SECTIONAL VIEW - DXCVI
SECTIONAL VIEW - DXCVII
SECTIONAL VIEW - DXCVIII
SECTIONAL VIEW - DXCIX
SECTIONAL VIEW - DC
SECTIONAL VIEW - DCI
SECTIONAL VIEW - DCII
SECTIONAL VIEW - DCIII
SECTIONAL VIEW - DCIV
SECTIONAL VIEW - DCV
SECTIONAL VIEW - DCVI
SECTIONAL VIEW - DCVII
SECTIONAL VIEW - DCVIII
SECTIONAL VIEW - DCIX
SECTIONAL VIEW - DCX
SECTIONAL VIEW - DCXI
SECTIONAL VIEW - DCXII
SECTIONAL VIEW - DCXIII
SECTIONAL VIEW - DCXIV
SECTIONAL VIEW - DCXV
SECTIONAL VIEW - DCXVI
SECTIONAL VIEW - DCXVII
SECTIONAL VIEW - DCXVIII
SECTIONAL VIEW - DCXIX
SECTIONAL VIEW - DCXX
SECTIONAL VIEW - DCXXI
SECTIONAL VIEW - DCXXII
SECTIONAL VIEW - DCXXIII
SECTIONAL VIEW - DCXXIV
SECTIONAL VIEW - DCXXV
SECTIONAL VIEW - DCXXVI
SECTIONAL VIEW - DCXXVII
SECTIONAL VIEW - DCXXVIII
SECTIONAL VIEW - DCXXIX
SECTIONAL VIEW - DCXXX
SECTIONAL VIEW - DCXXXI
SECTIONAL VIEW - DCXXXII
SECTIONAL VIEW - DCXXXIII
SECTIONAL VIEW - DCXXXIV
SECTIONAL VIEW - DCXXXV
SECTIONAL VIEW - DCXXXVI
SECTIONAL VIEW - DCXXXVII
SECTIONAL VIEW - DCXXXVIII
SECTIONAL VIEW - DCXXXIX
SECTIONAL VIEW - DCXL
SECTIONAL VIEW - DCXLI
SECTIONAL VIEW - DCXLII
SECTIONAL VIEW - DCXLIII
SECTIONAL VIEW - DCXLIV
SECTIONAL VIEW - DCXLV
SECTIONAL VIEW - DCXLVI
SECTIONAL VIEW - DCXLVII
SECTIONAL VIEW - DCXLVIII
SECTIONAL VIEW - DCXLIX
SECTIONAL VIEW - DCL
SECTIONAL VIEW - DCLI
SECTIONAL VIEW - DCLII
SECTIONAL VIEW - DCLIII
SECTIONAL VIEW - DCLIV
SECTIONAL VIEW - DCLV
SECTIONAL VIEW - DCLVI
SECTIONAL VIEW - DCLVII
SECTIONAL VIEW - DCLVIII
SECTIONAL VIEW - DCLIX
SECTIONAL VIEW - DCLX
SECTIONAL VIEW - DCLXI
SECTIONAL VIEW - DCLXII
SECTIONAL VIEW - DCLXIII
SECTIONAL VIEW - DCLXIV
SECTIONAL VIEW - DCLXV
SECTIONAL VIEW - DCLXVI
SECTIONAL VIEW - DCLXVII
SECTIONAL VIEW - DCLXVIII
SECTIONAL VIEW - DCLXIX
SECTIONAL VIEW - DCLXX
SECTIONAL VIEW - DCLXXI
SECTIONAL VIEW - DCLXXII
SECTIONAL VIEW - DCLXXIII
SECTIONAL VIEW - DCLXXIV
SECTIONAL VIEW - DCLXXV
SECTIONAL VIEW - DCLXXVI
SECTIONAL VIEW - DCLXXVII
SECTIONAL VIEW - DCLXXVIII
SECTIONAL VIEW - DCLXXIX
SECTIONAL VIEW - DCLXXX
SECTIONAL VIEW - DCLXXXI
SECTIONAL VIEW - DCLXXXII
SECTIONAL VIEW - DCLXXXIII
SECTIONAL VIEW - DCLXXXIV
SECTIONAL VIEW - DCLXXXV
SECTIONAL VIEW - DCLXXXVI
SECTIONAL VIEW - DCLXXXVII
SECTIONAL VIEW - DCLXXXVIII
SECTIONAL VIEW - DCLXXXIX
SECTIONAL VIEW - DCXC
SECTIONAL VIEW - DCXCI
SECTIONAL VIEW - DCXCII
SECTIONAL VIEW - DCXCIII
SECTIONAL VIEW - DCXCIV
SECTIONAL VIEW - DCXCV
SECTIONAL VIEW - DCXCVI
SECTIONAL VIEW - DCXCVII
SECTIONAL VIEW - DCXCVIII
SECTIONAL VIEW - DCXCIX
SECTIONAL VIEW - DCC
SECTIONAL VIEW - DCCI
SECTIONAL VIEW - DCCII
SECTIONAL VIEW - DCCIII
SECTIONAL VIEW - DCCIV
SECTIONAL VIEW - DCCV
SECTIONAL VIEW - DCCVI
SECTIONAL VIEW - DCCVII
SECTIONAL VIEW - DCCVIII
SECTIONAL VIEW - DCCIX
SECTIONAL VIEW - DCCX
SECTIONAL VIEW - DCCXI
SECTIONAL VIEW - DCCXII
SECTIONAL VIEW - DCCXIII
SECTIONAL VIEW - DCCXIV
SECTIONAL VIEW - DCCXV
SECTIONAL VIEW - DCCXVI
SECTIONAL VIEW - DCCXVII
SECTIONAL VIEW - DCCXVIII
SECTIONAL VIEW - DCCXIX
SECTIONAL VIEW - DCCXX
SECTIONAL VIEW - DCCXXI
SECTIONAL VIEW - DCCXXII
SECTIONAL VIEW - DCCXXIII
SECTIONAL VIEW - DCCXXIV
SECTIONAL VIEW - DCCXXV
SECTIONAL VIEW - DCCXXVI
SECTIONAL VIEW - DCCXXVII
SECTIONAL VIEW - DCCXXVIII
SECTIONAL VIEW - DCCXXIX
SECTIONAL VIEW - DCCXXX
SECTIONAL VIEW - DCCXXXI
SECTIONAL VIEW - DCCXXXII
SECTIONAL VIEW - DCCXXXIII
SECTIONAL VIEW - DCCXXXIV
SECTIONAL VIEW - DCCXXXV
SECTIONAL VIEW - DCCXXXVI
SECTIONAL VIEW - DCCXXXVII
SECTIONAL VIEW - DCCXXXVIII
SECTIONAL VIEW - DCCXXXIX
SECTIONAL VIEW - DCCXL
SECTIONAL VIEW - DCCXLI
SECTIONAL VIEW - DCCXLII
SECTIONAL VIEW - DCCXLIII
SECTIONAL VIEW - DCCXLIV
SECTIONAL VIEW - DCCXLV
SECTIONAL VIEW - DCCXLVI
SECTIONAL VIEW - DCCXLVII
SECTIONAL VIEW - DCCXLVIII
SECTIONAL VIEW - DCCXLIX
SECTIONAL VIEW - DCCL
SECTIONAL VIEW - DCCLI
SECTIONAL VIEW - DCCLII
SECTIONAL VIEW - DCCLIII
SECTIONAL VIEW - DCCLIV
SECTIONAL VIEW - DCCLV
SECTIONAL VIEW - DCCLVI
SECTIONAL VIEW - DCCLVII
SECTIONAL VIEW - DCCLVIII
SECTIONAL VIEW - DCCLIX
SECTIONAL VIEW - DCCLX
SECTIONAL VIEW - DCCLXI
SECTIONAL VIEW - DCCLXII
SECTIONAL VIEW - DCCLXIII
SECTIONAL VIEW - DCCLXIV
SECTIONAL VIEW - DCCLXV
SECTIONAL VIEW - DCCLXVI
SECTIONAL VIEW - DCCLXVII
SECTIONAL VIEW - DCCLXVIII
SECTIONAL VIEW - DCCLXIX
SECTIONAL VIEW - DCCLXX
SECTIONAL VIEW - DCCLXXI
SECTIONAL VIEW - DCCLXXII
SECTIONAL VIEW - DCCLXXIII
SECTIONAL VIEW - DCCLXXIV
SECTIONAL VIEW - DCCLXXV
SECTIONAL VIEW - DCCLXXVI
SECTIONAL VIEW - DCCLXXVII
SECTIONAL VIEW - DCCLXXVIII
SECTIONAL VIEW - DCCLXXIX
SECTIONAL VIEW - DCCLXXX
SECTIONAL VIEW - DCCLXXXI
SECTIONAL VIEW - DCCLXXXII
SECTIONAL VIEW - DCCLXXXIII
SECTIONAL VIEW - DCCLXXXIV
SECTIONAL VIEW - DCCLXXXV
SECTIONAL VIEW - DCCLXXXVI
SECTIONAL VIEW - DCCLXXXVII
SECTIONAL VIEW - DCCLXXXVIII
SECTIONAL VIEW - DCCLXXXIX
SECTIONAL VIEW - DCCXC
SECTIONAL VIEW - DCCXCI
SECTIONAL VIEW - DCCXCII
SECTIONAL VIEW - DCCXCIII
SECTIONAL VIEW - DCCXCIV
SECTIONAL VIEW - DCCXCV
SECTIONAL VIEW - DCCXCVI
SECTIONAL VIEW - DCCXCVII
SECTIONAL VIEW - DCCXCVIII
SECTIONAL VIEW - DCCXCIX
SECTIONAL VIEW - DCCC
SECTIONAL VIEW - DCCCI
SECTIONAL VIEW - DCCCII
SECTIONAL VIEW - DCCCIII
SECTIONAL VIEW - DCCCIV
SECTIONAL VIEW - DCCCV
SECTIONAL VIEW - DCCCVI
SECTIONAL VIEW - DCCCVII
SECTIONAL VIEW - DCCCVIII
SECTIONAL VIEW - DCCCIX
SECTIONAL VIEW - DCCCX
SECTIONAL VIEW - DCCCXI
SECTIONAL VIEW - DCCCXII
SECTIONAL VIEW - DCCCXIII
SECTIONAL VIEW - DCCCXIV
SECTIONAL VIEW - DCCCXV
SECTIONAL VIEW - DCCCXVI
SECTIONAL VIEW - DCCCXVII
SECTIONAL VIEW - DCCCXVIII
SECTIONAL VIEW - DCCCXIX
SECTIONAL VIEW - DCCCXX
SECTIONAL VIEW - DCCCXXI
SECTIONAL VIEW - DCCCXXII
SECTIONAL VIEW - DCCCXXIII
SECTIONAL VIEW - DCCCXXIV
SECTIONAL VIEW - DCCCXXV
SECTIONAL VIEW - DCCCXXVI
SECTIONAL VIEW - DCCCXXVII
SECTIONAL VIEW - DCCCXXVIII
SECTIONAL VIEW - DCCCXXIX
SECTIONAL VIEW - DCCCXXX
SECTIONAL VIEW - DCCCXXXI
SECTIONAL VIEW - DCCCXXXII
SECTIONAL VIEW - DCCCXXXIII
SECTIONAL VIEW - DCCCXXXIV
SECTIONAL VIEW - DCCCXXXV
SECTIONAL VIEW - DCCCXXXVI
SECTIONAL VIEW - DCCCXXXVII
SECTIONAL VIEW - DCCCXXXVIII
SECTIONAL VIEW - DCCCXXXIX
SECTIONAL VIEW - DCCCXL
SECTIONAL VIEW - DCCCXLI
SECTIONAL VIEW - DCCCXLII
SECTIONAL VIEW - DCCCXLIII
SECTIONAL VIEW - DCCCXLIV
SECTIONAL VIEW - DCCCXLV
SECTIONAL VIEW - DCCCXLVI
SECTIONAL VIEW - DCCCXLVII
SECTIONAL VIEW - DCCCXLVIII
SECTIONAL VIEW - DCCCXLIX
SECTIONAL VIEW - DCCCL
SECTIONAL VIEW - DCCCLI
SECTIONAL VIEW - DCCCLII
SECTIONAL VIEW - DCCCLIII
SECTIONAL VIEW - DCCCLIV
SECTIONAL VIEW - DCCCLV
SECTIONAL VIEW - DCCCLVI
SECTIONAL VIEW - DCCCLVII
SECTIONAL VIEW - DCCCLVIII
SECTION

Sl. No.	DESCRIPTION	SYMBOL
1.	SIGNAL	
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY	
3.	TWO TRACK CANTILEVER WITH DROP ARM	
4.	PORTAL WITH DROP ARM	
5.	CUT IN INSULATOR / TERMINATION INSULATOR	
6.	OUT OF RUN OHE (CATENARY & CONTACT)	
7.	FEEDER	
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION	BWA
9.	SECTION INSULATOR	
10.	ANCHOR MAST WITH FIXED TERMINATION	FTA
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED	
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL	
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL	
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)	ATJ
15.	INSPAN JUMPER (50)	
16.	CONTINUITY JUMPER (105)	
17.	BOOSTER TRANSFORMER	BT
18.	SECTIONING AND PARALLELING POST	SP
19.	SUB SECTIONING AND PARALLELING POST	SSP
20.	FEEDING POST	FP
21.	ANTICREEP CENTRE	ACC
22.	UN-INSULATED OVERLAP	
23.	INSULATED OVERLAP	
24.	WIRED TRACK	
25.	UN-WIRED TRACK	
26.	NEUTRAL SECTION(PTFE)	
27.	AUXILIARY TRANSFORMER	

SUMMARY OF MASTS

KM	B-150	B-175	TTC-5.50	TTC-8.00	T-150	TOTAL
192	08	07	00	04	01	20
193	02	00	04	12	00	18
TOTAL	10	07	04	16	01	38

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	TENSION LENGTH CONTACT 107 Sqmm
1	192/16	459.40	192/36	927.40	468.00	468.00
2	192/28	774.40	193/28	719.80	958.50	958.50
3	193/18	481.30	194/18	445.10	954.00	954.00
4	192/26	733.90	193/30	773.80	1053.00	1053.00
5	191/08	191.20	192/22	625.90	1431.00	1431.00

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	193/08	202.30	193/12	310.30	108.00
2	193/06	152.80	193/20	548.80	396.00
3	193/34	904.30	194/02	41.10	126.00

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	NO OF BKTS DOUBLE	NO OF BKTS TRIPLE	NO OF ANCHORS BWA	NO OF ANCHORS FTA	NO OF ANCHORS ACA	NO OF JUMPERS G	NO OF JUMPERS H	NO OF JUMPERS ATJ	NO OF JUMPERS F	UIOL	IOL	SI	ISO	AT	PTFE
192	17	05	01	04	01	00	02	03	12	04	01	01	01	02	01	-
193	24	05	01	03	-	05	01	05	06	02	00	01	01	02	-	-
TOTAL	41	10	02	07	01	05	03	08	18	06	01	02	02	04	01	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-06
SECTION : KARMELARAM STATION
DATE : 08/01/2020

NOTES:
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
2.002	2.915

OHE LAYOUT PLAN
FROM
KM:192/000.00
TO
KM:194/000.00
SECTION:
KARMELARAM STATION

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:500
REVISION 0

IR

SL.No.	DESCRIPTION	SYMBOL
1.	SIGNAL	
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY	
3.	TWO TRACK CANTILEVER WITH DROP ARM	
4.	PORTAL WITH DROP ARM	
5.	CUT IN INSULATOR / TERMINATION INSULATOR	
6.	OUT OF RUN OHE (CATENARY & CONTACT)	
7.	FEEDER	
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION	BWA
9.	SECTION INSULATOR	
10.	ANCHOR MAST WITH FIXED TERMINATION	FTA
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED	
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL	
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL	
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)	ATJ
15.	INSPAN JUMPER (50)	
16.	CONTINUITY JUMPER (105)	
17.	BOOSTER TRANSFORMER	BT
18.	SECTIONING AND PARALLELING POST	SP
19.	SUB SECTIONING AND PARALLELING POST	SSP
20.	FEEDING POST	FP
21.	ANTICREEP CENTRE	ACC
22.	UN-INSULATED OVERLAP	UIOL
23.	INSULATED OVERLAP	IOL
24.	WIRED TRACK	
25.	UN-WIRED TRACK	
26.	NEUTRAL SECTION(PTFE)	
27.	AUXILIARY TRANSFORMAR	

SUMMARY OF MASTS

KM.	B-150 (9.50)	B-175 (9.50)	TTC-5.50	S-6	TOTAL
194	05	12	00	03	20
195	14	04	00	00	18
TOTAL	19	16	00	03	38

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	194/10	248.10	194/34	932.10	684.00	684.00
2	194/28	729.60	196/08	193.00	1462.50	1462.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	195/14	403.00	195/18	524.50	121.50

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
194	12	05	-	03	01	01	01	01	12	02	01	01	-	-	-	-
195	18	00	-	00	-	02	00	03	00	-	00	00	-	-	-	-
TOTAL	30	05	-	03	01	03	01	04	12	02	02	-	-	-	-	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI - 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-05
SECTION : BYPL-CRLM
DATE : 07/01/2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
1.994	1.994

OHE LAYOUT PLAN
FROM
KM:194/000.00
TO
KM:196/000.00
SECTION:BYPL-CRLM

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

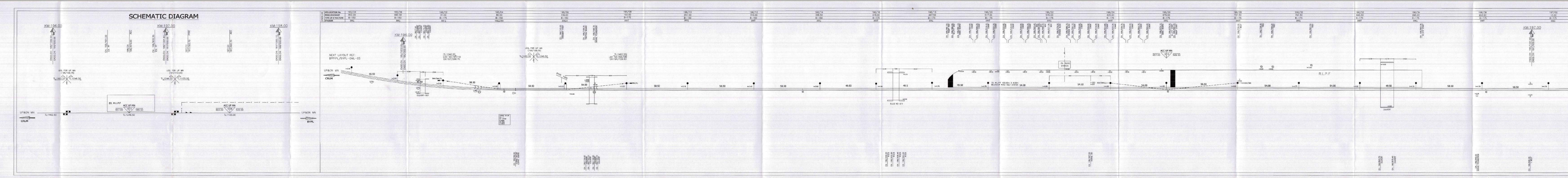
CROSS REF:ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0

IR



SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILARRY TRANSFORMAR

SUMMARY OF MASTS

KM	B-150 (9.50)	B-175 (9.50)	S6	TOTAL
196	05	13	00	18
197	09	09	01	19
TOTAL	14	22	01	37

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	TENSION LENGTH CONTACT 107 Sqmm
1	196/02	31.00	197/10	266.70	1246.50	1246.50
2	197/04	77.70	198/08	202.60	1125.00	1125.00

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	196/24	625.00	196/28	737.50	112.50
2	197/22	626.70	197/26	734.70	108.00

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	NO OF BKTS DOUBLE	NO OF BKTS TRIPLE	NO OF ANCHORS BWA	NO OF ANCHORS FTA	NO OF ANCHORS ACA	NO OF JUMPERS G	NO OF JUMPERS H	NO OF JUMPERS ATJ	NO OF JUMPERS F	UIOL	IOL	SI	ISO	AT	PTFE
196	16	02	-	02	-	02	01	03	06	-	01	-	-	-	-	-
197	15	02	-	02	-	02	01	02	06	-	01	-	-	-	-	01
TOTAL	31	04	-	04	-	04	02	05	12	-	02	-	-	-	-	01

BRIGHT - TEXMACO - JV
3B,32 CORPORATE AVENUE ESTATE, NEAR PAPER BOX, OFF MAHAKALI CAVES ROAD,ANDHERI(E), MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-04
SECTION : BELANDUR ROAD
DATE : 06-01-2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
2.002	2.002

OHE LAYOUT PLAN
FROM
KM:196/000.00
TO
KM:198/000.00
SECTION: BELANDUR ROAD

APPROVED AS ERECTED
Sr.DGM/ELECT/RVNL/SBC
FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION — SOUTH WESTERN RAILWAY
REF: TI/DRG/CIV/ES/RDSO/00001/18/0 — CROSS REF:ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)
SCALE : 1:500
REVISION 0
IR

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILIARY TRANSFORMAR

SUMMARY OF MASTS

KM	TTC-5.50	B-150 (9.50)	B-175 (9.50)	BR.MAST	TOTAL
198	11	00	05	00	16
199	02	01	13	00	16
200	01	09	10	00	20
201	00	12	04	00	16
TOTAL	14	22	32	00	66

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY	CONTACT
1	198/02	9.10	199/02	62.10	1048.50	1048.50
2	198/28	859.60	200/14	320.90	1453.50	1453.50
3	200/06	122.10	201/20	615.10	1489.00	1489.00
4	201/14	426.10	202/24	775.50	1354.50	1354.50

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	198/14	405.10	198/18	535.60	135.00
2	199/16	525.60	199/20	660.60	135.00
3	200/36	885.40	200/40	977.90	112.50
4	201/32	993.10	202/04	114.00	126.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
198	12	04	-	03	-	02	02	02	09	-	02	-	-	-	-	-
199	16	00	-	01	-	02	00	03	03	-	00	-	-	-	01	-
200	17	03	-	02	-	02	01	02	06	-	01	-	-	-	-	-
201	14	02	-	02	-	01	01	02	06	-	01	-	-	-	-	-
TOTAL	59	09	-	08	-	07	04	09	24	-	04	-	-	-	01	-

BRIGHT - TEXMACO - JV

38,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-03
SECTION : BYPL-CRLM
DATE : 08/01/2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
3.995	3.995

OHE LAYOUT PLAN
FROM
KM:198/000.00
TO
KM:202/000.00
SECTION:BYPL–CRLM

APPROVED AS ERECTED
Sr.DGM/ELECT/RVNL/SBC
FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION
SOUTH WESTERN RAILWAY
REF: TI/DRG/CIV/ES/RDSO/00001/18/0
CROSS REF: - ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)
SCALE: 1:1000
REVISION 0
IR

SCHEMATIC DIAGRAM

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILIARY TRANSFORMER

SUMMARY OF MASTS

KM	B-150 (9.50)	B-175 (9.50)	TTC-5.50	TOTAL
202	13	02	00	15
203	11	06	00	17
TOTAL	24	08	00	32

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM		TO		TENSION LENGTH	
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	CATENARY 65 Sqmm	CONTACT 107 Sqmm
1	202/18	586.50	203/34	993.70	1404.00	1404.00
2	203/28	831.80	205/10	272.00	1440.00	1440.00

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM		TO		WIRE LENGTH
	LOC.NO.	CHAINAGE	LOC.NO.	CHAINAGE	AC WIRE
1	201/32	993.10	202/02	114.00	126.00
2	203/08	197.30	203/12	305.30	108.00

SUMMARY OF MATERIALS

KM	NO OF BKTS			NO OF ANCHORS			NO OF JUMPERS				UIOL	IOL	SI	ISO	AT	PTFE
	SINGLE	DOUBLE	TRIPLE	BWA	FTA	ACA	G	H	ATJ	F						
202	13	02	-	02	-	01	01	02	06	-	01	-	-	-	-	-
203	15	02	-	02	-	02	01	02	06	-	01	-	-	-	01	-
TOTAL	28	04	-	04	-	03	02	04	12	-	02	-	-	-	01	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-02
SECTION : BYPL-CRLM
DATE : 08-01-2020

R.K.M	T.K.M.
1.993	1.993

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

OHE LAYOUT PLAN
FROM
KM:202/000.00
TO
KM:204/000.00
SECTION:BYPL-CRLM

BENGALURU DIVISION

SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0

CROSS REF: ETI/C/0702 SH.1

DATE	MOD. NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED
(A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0

IR

SCHEMATIC DIAGRAM

SL.No.	DESCRIPTION
1.	SIGNAL
2.	NORMAL MAST WITH CANTILEVER ASSEMBLY
3.	TWO TRACK CANTILEVER WITH DROP ARM
4.	PORTAL WITH DROP ARM
5.	CUT IN INSULATOR / TERMINATION INSULATOR
6.	OUT OF RUN OHE (CATENARY & CONTACT)
7.	FEEDER
8.	ANCHOR MAST WITH BALANCE WEIGHT TERMINATION
9.	SECTION INSULATOR
10.	ANCHOR MAST WITH FIXED TERMINATION
11.	SINGLE POLE ISOLATOR MANUALLY OPERATED
12.	SINGLE POLE ISOLATOR WITH EARTHING HEEL
13.	DOUBLE POLE ISOLATOR WITH EARTHING HEEL
14.	POTENTIAL EQUALIZING JUMPER / ANTI-THEFT JUMPER (50)
15.	INSPAN JUMPER (50)
16.	CONTINUITY JUMPER (105)
17.	BOOSTER TRANSFORMER
18.	SECTIONING AND PARALLELING POST
19.	SUB SECTIONING AND PARALLELING POST
20.	FEEDING POST
21.	ANTICREEP CENTRE
22.	UN-INSULATED OVERLAP
23.	INSULATED OVERLAP
24.	WIRED TRACK
25.	UN-WIRED TRACK
26.	NEUTRAL SECTION(PTFE)
27.	AUXILIARY TRANSFORMER

SUMMARY OF MASTS

KM	B-200 (9.50)	B-150 (9.50)	B-175 (9.50)	TTC-5.50	TTC-8.00	S-6	TOTAL
204	--	11	07	--	--	--	18
205	--	11	12	--	02	--	25
206	--	--	03	--	02	--	05
343	--	--	--	--	01	--	01
TOTAL	--	22	22	--	05	--	49

SCHEDULE OF CONDUCTORS

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	TENSION LENGTH CATENARY 65 Sqmm	TENSION LENGTH CONTACT 107 Sqmm
1	203/28	831.80	205/10	272.00	1440.00	1440.00
2	205/02	38.00	205/48	780.50	742.50	742.50
3	205/42	641.00	206/08	203.60	403.30	403.30

SCHEDULE OF ANTICREEP WIRE

WIRE RUN NO.	FROM LOC.NO.	FROM CHAINAGE	TO LOC.NO.	TO CHAINAGE	WIRE LENGTH AC WIRE
1	204/16	496.60	204/20	609.10	112.50

SUMMARY OF MATERIALS

KM	NO OF BKTS SINGLE	NO OF BKTS DOUBLE	NO OF BKTS TRIPLE	NO OF ANCHORS BWA	NO OF ANCHORS FTA	NO OF ANCHORS ACA	NO OF JUMPERS G	NO OF JUMPERS H	NO OF JUMPERS ATJ	NO OF JUMPERS F	UIOL	IOL	SI	ISO	AT	PTFE
204	18	-	-	-	-	02	-	03	-	-	-	-	-	-	-	-
205	20	04	-	03	01	00	-	01	09	04	-	02	-	02	-	-
206	03	02	-	-	01	-	01	-	-	-	-	-	-	-	-	-
343	01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	42	06	-	03	02	02	01	04	09	04	-	02	-	02	-	-

BRIGHT - TEXMACO - JV

3B,32 CORPORATE AVENUE ESTATE,
NEAR PAPER BOX, OFF MAHAKALI
CAVES ROAD,ANDHERI(E),
MUMBAI – 400 093.

WIND PRESSURE : 73Kgf/m²
DRG. No. : BPPIPL/BYPL-OML-01
SECTION : BYPL-CRLM
DATE : 08-01-2020

NOTES:
1. ALL DIMENSIONS ARE IN METRE UNLESS OTHERWISE SPECIFIED.
2. VERSINE ARE IN mm.

R.K.M	T.K.M.
2.049	2.049

OHE LAYOUT PLAN FROM KM:204/000.00 TO KM:206/203.60

SECTION:BYPL-CRLM

APPROVED AS ERECTED

Sr.DGM/ELECT/RVNL/SBC

FOR BRIGHT-TEXMACO (JV)

BENGALURU DIVISION — SOUTH WESTERN RAILWAY

REF: TI/DRG/CIV/ES/RDSO/00001/18/0 — CROSS REF: ETI/C/0702 SH.1

DATE	MOD NO.	NATURE OF MOD	INITIAL		NAME	DATE
				DWN		
				CHD		
				APD		

RAIL VIKAS NIGAM LIMITED (A GOVT. OF INDIA ENTERPRISE)

SCALE : 1:1000
REVISION 0

IR