

AGREEMENT No. 05 of 2015-16



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

CIVIL WORKS CONTRACT

PACKAGE No. OSRP-CW-ICB-P04A2

For

Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)

under

Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Odisha Works Department, Government of Odisha

and

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road,
Jodhpur- 342006, Rajasthan, India
Tel : +91-291-2556877 , Fax : +91-291-2553861
E-mail: vccjodhpur@gmail.com

[VOLUME-I: Agreement]

Agreement Value: Rs. 97,89,97,903

*Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit – V, Bhubaneswar – 751 001*

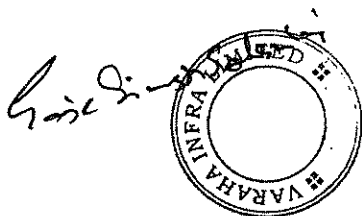
December 23, 2015

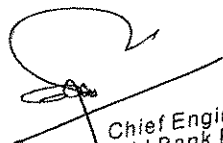
CONTENTS of CONTRACT

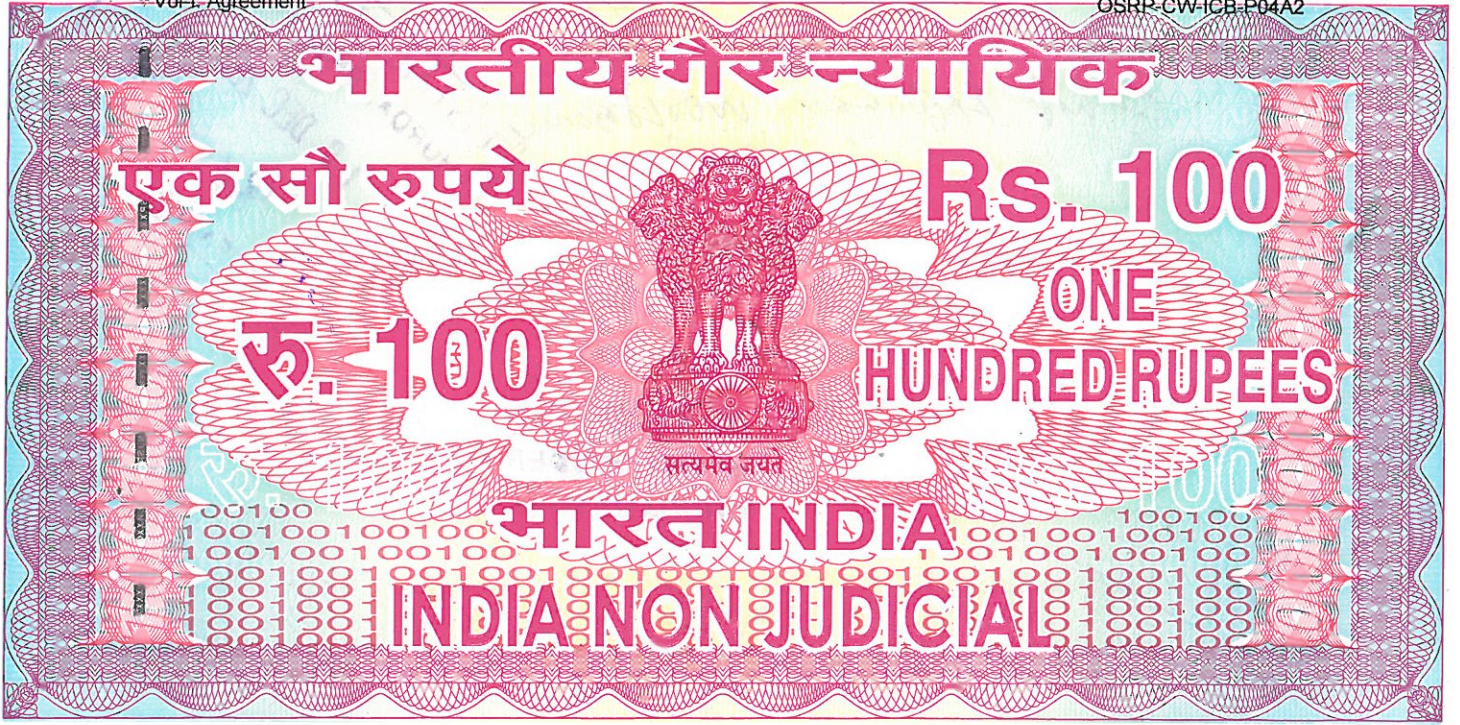
Volume – I	:	Letter of Acceptance, Letter of Bid and Addenda
Volume – II	:	Particular Conditions and the General Conditions;
Volume – II	:	Specifications
Volume – IV	:	Drawings
Volume – V	:	Completed Schedules

CONTENTS of VOLUME I

Sl.	Description	Page No.
1	Contract Agreement	1
2	No Objection of World Bank for Award	4
3	Approval of Government of Odisha for Award	5
4	Notification of Award	6
5	Letter of BID and Addenda	7 – 54
6	Form for Advance Payment Security	55
7	Form for Retention Money Security	57




Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR



ଓଡ଼ିଶା ओड़िशा ODISHA

G 914452

CIVIL WORKS CONTRACT

For

Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)

THIS AGREEMENT made the 23rd day of December, 2015, between the Chief Engineer, World Bank Projects, Odisha, office of the Engineer-in-Chief(Civil), Odisha, Nirman Soudh, Unit-V, Kesari Nagar, Bhubaneswar-751001, Odisha (India) on behalf of the Government of Odisha in Works Department, Odisha Secretariat, Bhubaneswar-751001 (hereinafter "the Employer"), of the one part, and M/s Varaha Infra Ltd., Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India, Tel : +91-291-2556877 , Fax : +91-291-2553861, E-mail: vccjodhpur@gmail.com , (hereinafter "the Contractor"), of the other part for an amount of Rs. 97,89,97,903 (Indian Rupees Ninety Seven Crore Eighty Nine Lakh Ninety Seven Thousand Nine Hundred and Three) only.

Varaha Infra Limited
Contractor



Page 1 of 58

Chief Engineer,
World Bank Projects, Odisha
Chief Engineer (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

WHEREAS the Employer desires that the Works known as "Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)" should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

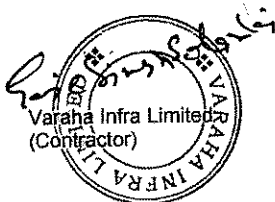
1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

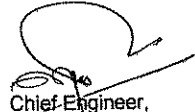
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

Volume - I	Volume - III
(i) the Letter of Acceptance	(vi) the Specifications
(ii) of the Letter Bid	Volume - IV
(iii) the addenda 1-58 Pages	(vii) the Drawings; and
Volume - II	Volume - V
(iv) the General Conditions	(viii) the Priced Schedules,
(v) the Particular Conditions;	

3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

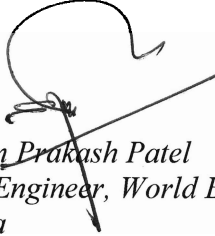
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.




Chief Engineer,
World Bank Projects, Odisha
Chief Engineer (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

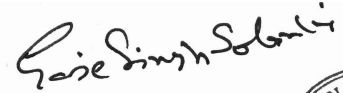
IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of INDIA on the day, month and year indicated above.

For and on behalf of Employer, i.e. Works Department, Government of Odisha



*Er. Om Prakash Patel
Chief Engineer, World Bank Projects,
Odisha*

For and on behalf of the authorized representative of the Bidder M/s Varaha Infra Ltd.



*Mr. Gaje Singh Solanki
Company Secretary, Varaha Infra Limited*



Witness :

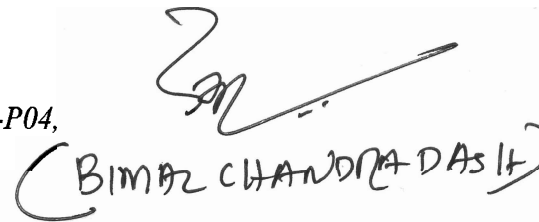
1. *Mr. Sudhansu Bhusan Jena, S/o- Bhagaban Jena,
At/Po- Palasinsha, Dist.-Kendrapara*



2. *Mr. Prabodha Kumar Das, S/o-Prafulla Kumar Das,
At- Gangeswar, Po-Bhutpatna, Cuttack*



3. *Er. Bimal Chandra Dash,
Superintending Engineer-cum-Employer's Representative-P04,
Cuttack (R&B) Circle, Cuttack, Odisha*



4. *Mr. Sibashis Dhal,
Financial Advisor, Project Management Unit,
Odisha State Roads Project*





*Chief Engineer,
World Bank Projects, Odisha
(Employer)*

*Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR*

NO OBJECTION OF THE WORLD BANK

Handwritten: G. H. R. Mukherjee
10/10/2015

Handwritten: 46



Chief Engineer World Bank Projects Odisha <pmuosrp@gmail.com>

Bid for the work "Widening & Strengthening of existing carriageway to 2-lane Road from Nischintakoili to Duhuria (Km. 25/00 to Km. 49/00 of MDR) (Balance Work)" - Package No- OSRP-CW-ICB-P04A2 - Submission of BID Evaluation Report

Rajesh Rohatgi <rohajgi@worldbank.org> Wed, Oct 21, 2015 at 12:10 PM
To: "Chief Engineer, World Bank Projects, Orissa" <pmuosrp@gmail.com>, Swayamsiddha Mohanty <smohanty1@worldbank.org>, PMU Works Department <pmuworksodisha@gmail.com>, Secretary Works Department <workssec@ori.nic.in>
Cc: Aruna Aysha Das <adas@worldbank.org>, "sujit.bulu1@gmail.com" <sujit.bulu1@gmail.com>

Dear Mr Patel

The Bid Evaluation Report for Package P04A2 "Widening & Strengthening of existing carriageway to 2-lane Road from Nischintakoili to Duhuria (Km. 25/00 to K. 49/00 of MDR) (Balance Work)", sent by your e-mail dated October 13, 2015; has been reviewed.

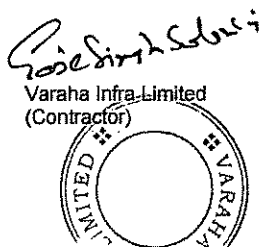
Based on the information provided in the BER, we have no objection to your recommendation for award of contract to the lowest responsive bidder, M/s. Varaha Infra Limited, Jodhpur, at a total contract amount of INR 97,90,88,119.00, subjected to OWD handing over encumbrance free mile stone 1 to the contractor.

Please send the copy of duly signed contract agreement along with copy of performance security and additional Bank Guarantee towards unbalanced items and prior-review checklist to enable us to issue WBR No. for this contract. Please also publish contract award details on UNDB and Project website within 15 days from Bank's no objection.

regards

Rajesh Rohatgi
Senior Transport Specialist

Transport & ICT Global Practice
The World Bank
Hindustan Times House Building, 18-20, Kasturba Gandhi Marg,
New Delhi - 110 001
India
Tel: 91-11-492 47773 (D); Cell: 91-9818457485



Handwritten signature
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

APPROVAL OF THE GOVERNMENT OF ODISHA

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

No. 13466 /W., Bhubaneswar, Dated, the 27th Nov. 2015
AC-1/ 0718040124-2015

From
Sri A. Mahalik,
FA-cum-Additional Secretary to Govt.

To
The Chief Engineer, World Bank Projects, Odisha,
Nirman Soudha, Bhubaneswar.

Sub:- Widening & Strengthening of existing carriageway to 2-lane Road from Nischintakoilli to Duburia(Km. 25/00 to Km. 49/00 of MDR) (Balance Works)- Package No.-OSRP-CW-ICB-P04A2.

Sir,
I am directed to invite a reference to your Letter No.43581 dated 28.10.2015 and convey the approval of State Cabinet for acceptance of the lowest responsive evaluated bid of **M/s Varaha Infra Ltd., Jodhpur, Rajasthan, India** amounting to ₹97,89,97,903.00 (Ninety Seven Crore eighty nine lakh ninety seven thousand nine hundred three) only which is 7.83% less than the corresponding estimated of cost of ₹106,21,94,018.00.

A copy of the proceedings of the Tender Committee meeting held on 30.10.2015 for the above work is enclosed for reference.

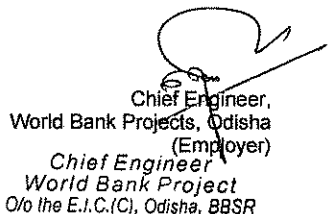
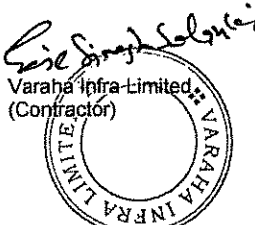
Tender documents received with your letter under reference are returned herewith, the receipt of which may please be acknowledged.

Yours faithfully,

S. A. Mahalik
FA-cum-Additional Secretary to Govt.

Memo No. 13467 /W., Dated, 27.11.15
Copy forwarded to Superintending Engineer, PMU, Works Department for information and appropriate action.

S. A. Mahalik
FA-cum-Additional Secretary to Govt.



NOTIFICATION OF AWARD

OFFICE OF THE ENGINEER-IN-CHIEF (CIVIL), ODISHA
NIRMAN SOUDHA, KESHARI NAGAR, UNIT - V, BHUBANESWAR - 751 001

Letter No. PMU-WB-115/2015- 48126

November 27, 2015

From

Er. Om Prakash Patel
Chief Engineer, World Bank Projects, Odisha
Tel.: + 91 - 674 - 239 6783 / Fax: + 91 674 - 239 0080
Email: pmuosrp@gmail.com

To

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme,
Paota B Road, Jodhpur-,
Rajasthan, India
E-mail: vcjodhpur@gmail.com

Sub: Civil Works ICB Package No- OSRP-CW-ICB-P04A2 under Odisha State Roads Project with World Bank Assistance

- Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakolli to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)

LETTER OF ACCEPTANCE

Ref: i. IFB No: PMU/WB/114/2015 - 32819 of August 07, 2015
ii. Your BID submitted on September 26, 2015

Sir,

This is to notify you that, your Bid dated September 26, 2015 for execution of the Civil Works ICB Package No- OSRP-CW-ICB-P04A2 under Odisha State Roads Project with World Bank Assistance for "Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakolli to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)" amounting to Indian Rs. 97,89,97,903 (Indian Rupees Ninety Seven Crore Eighty Nine Lakh Ninety Seven Thousand Nine Hundred and Three) only, as corrected and modified in accordance with the Instructions to Bidders, has been accepted by the Government of Odisha.

You are requested to furnish the Performance Security in shape of a unconditional Bank Guarantee in favour of the Chief Engineer, World Bank Projects, Odisha, Bhubaneswar on any Nationalized Bank located in India, valid till July 31, 2017 amounting not less than Indian Rs. 4,89,50,000/- (Indian Rupees Four Crore Eighty Nine Lakh Fifty Thousand) only within 28 days of issuance of this letter, in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section IX, Annexed to the Particular Conditions - Contract Forms, of the Bidding Document.

Upon submission of a satisfactory Performance Security as stated above, the formal Contract agreement shall be signed.

Yours sincerely,

[Signature]
Chief Engineer
World Bank Projects, Odisha



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

LETTER of BID & ADDENDA

Bid Submission Sheet

(Agreed & Modified as per the evaluated bid)

Date: .23.09.2015

ICB No.: P04A2

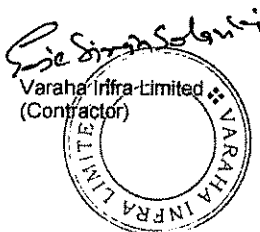
Invitation for Bid No.: PMU/ WB/114/2015-32819


To:
 Chief Engineer,
 World Bank Projects, Odisha
 O/o the E.I.C.(Civil), Odisha,
 Nirman Soudh, Unit- V,
 Keshari Nagar, Bhubaneswar, Odisha
 India
 Tel No: 91-674-2396783
 Fax No: 91-674-2390080
 E-mail: pmuosrp@gmail.com

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB)⁸ ;
- (b) We offer to execute in conformity with the Bidding Document the following Works: **“Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)”**
- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:

Rupees **108,82,28,457=10** (Rupees One Hundred Eight Crore Eighty Two Lakh Twenty Eight Thousand Four Hundred Fifty Seven and Paise Ten Only)
- (d) The discounts offered and the methodology for their application are:- 10.00% Submitted in separate envelope.
- (e) Our bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

- (g) We, including any subcontractors or suppliers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB 4.2;
- (h) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3;
- (i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.3, other than alternative offers submitted in accordance with ITB 13;
- (j) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the Bank, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;
- (k) We are not a government owned entity, but meet the requirements of ITB-4.5;6
- (l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:

Name of Recipient	Address	Reason	Amount
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-----NONE-----

(If none has been paid or is to be paid, indicate "none".)

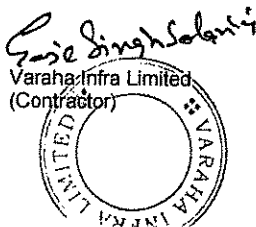
- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.


Name **Navratan Kansara** In the capacity of : Authorized Signatory

Signed **Sd/- (Navratan Kansara) & seal affixed**

Duly authorized to sign the bid for and on behalf of Varaha Infra Limited.

Dated on 23rd day of September, 2015




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

(Copy of Discount Letter)



VARAHA INFRA LTD

CH. NISCHINTAKOILI BUNGALOW, BBSR

REG. NO. 12700

Date: 26.09.2011

To:
Attention: Chief Engineer, World Bank Projects, Odisha
Street Address: NirmanSoudha
Floor/Room number: Ground Floor
City: Bhubaneswar
ZIP Code: 751001
Country: India

Sub : CONSTRUCTION FOR WIDENING & STRENGTHENING OF EXISTING CARRIAGEWAY TO 2-LANE ROAD FROM NISCHINTAKOILI TO DUHURIA (KM. 25/0 TO KM. 49/0 OF MDR) (BALANCE WORKS)

Ref: Invitation for Bids is : OSRP - CW - ICB - P04A2

Dear Sir,

In continuation to our Tender for the subject work, we offer a discount of (D % (Ten percent) over our item rate Tender price as a gesture of good will with your esteemed department.

We hope you will find our discount offer most reasonable and favour us with your valued orders to execute the work.

Thanking You

Yours sincerely

For Varaha Infra Ltd



Authorized Signatory

Handwritten signature and date: 26/9/11

Handwritten signature: Sachin Sobani
Varaha Infra Limited (Contractor)
Circular stamp: VARAHA INFRA LIMITED

Handwritten signature
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Appendix to Bid

Schedule of Adjustment Data

Table A. Local Currency

[In Tables A, B, and C, below, the Bidder shall (a) indicate its amount of local currency payment, (b) indicate its proposed source and base values of indices for the different foreign currency elements of cost, (c) derive its proposed weightings for local and foreign currency payment, and (d) list the exchange rates used in the currency conversion. In the case of very large and/or complex works contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved.]

Appendix to Bid

Schedule of Adjustment Data

Table A. Local Currency

Index code	Index description	Source of Index	Base value and date	Bidder's related currency amount	Bidder's proposed weighting
a	Nonadjustable	—	—	—	a: 0.15
b	Steel Rebars	Whole sale price index for Steel (rebars) as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			b:
c	Cement	Whole sale price index for Cement as published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			c:
d	Bitumen (VG-30)	Official retail price of bulk bitumen at ROC depot of Balda			d:
e	Labour	Minimum Wage notified by the Labour and Employee's State Insurance Department of Government of Odisha, India.			e:
f	POI	Official retail price of HSD at IOEL, HPCL/ BPCL Consumer pump depot at Jagatsipat, Cutack, Odisha.			f:
g	Other Materials	All India Whole sale price index (all commodities) as published by the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			g:
			Total		



Submitted Blank for items (b) to (g) below.

26/9/11
[Signature]



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer A
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

The Odisha Gazette

EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 1112, CUTTACK, FRIDAY, JULY 24, 2015/SRAVAN 02, 1937

LABOUR & E.S.I. DEPARTMENT

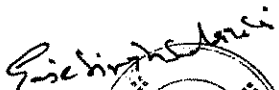
NOTIFICATION

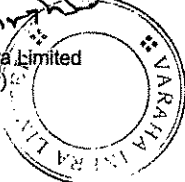
The 24th July, 2015

S.R.O. No. 323/2015— Whereas certain proposals to revise the minimum rates of wages payable to certain categories of employees employed in 88 employments were published as required under clause (b) of sub-section (1) of Section 5 of the Minimum Wages Act, 1948 (11 of 1948) in the Extraordinary issue No. 636 of the *Odisha Gazette* dated the 30th April, 2015 under the notification of the Government of Odisha in the Labour & Employees State Insurance Department No.3716-LL-I-(AR)1/15/LESI dated the 30th April, 2015 inviting objections and suggestions from all persons likely to be affected thereby within a period of two months from the date of publication of the said notification in the *Odisha Gazette*;

And, whereas, the representations containing objections and suggestions received within the specified period of two months in respect of the said draft have been duly considered by the State Government and the Advisory Board appointed under section 7 of the said Act, has also been consulted;

Now, therefore, in exercise of the powers conferred by clause(b) of sub-section (1) of Section 3 readwith Section 4 and sub-section (2) of Section 5 of the said Act and in supersession of all previous notifications issued in this regard, the State Government do hereby revise the minimum rates of wages payable to the Unskilled, Semi Skilled, Skilled, Highly Skilled categories of employees employed in 88 employments as mentioned in the Schedule to this notification in the whole State to Rs. 200.00, Rs.220.00, Rs.240.00 and Rs. 260.00 per day respectively with effect from the date of publication of this notification in the *Odisha Gazette*.


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

SCHEDULE

Sl. No. (1)	Name of the Employment (2)	Categories of Employees (3)	Revised minimum rates of wages per day (4)
1.	Agriculture		
2.	Agarbati and Candle making Worker's Establishments.		
3.	Automobile servicing, repairing garages and workshops.		
4.	Ayurvedic and Unani Pharmacy		
5.	Bakeries and Confectionaries including Biscuit making.		
6.	Bamboo Forest Establishment		
7.	Brass and Bell Metal Industry		
8.	Carpet Weaving Industry		
9.	Cashew processing establishments	Unskilled	Rs. 200.00
10.	Cement pipe making and allied products industry.	Semi-skilled	Rs. 220.00
11.	Ceramic and Pottery Industry	Skilled	Rs. 240.00
12.	Chemical Industry	Highly skilled	Rs. 260.00
13.	Cinema Industry and Film Production		
14.	Clay Pottery		
15.	Coal Industry		
16.	Collection of Sal Seeds		
17.	Construction or maintenance of Dams, Embankments, Irrigation Projects and sinking of wells and tanks.		
18.	Construction or maintenance of roads or in building operations.		
19.	Contingent and Casual Employees in Govt. and other establishments, Courier and Cargo Services		
20.	Cotton Ginning and Pressing Industry		
21.	Dispensary of Medical Practitioner in any Establishment of Medical Consultant or in any Chemical or Pathological Laboratory, Private Nursing Homes, Private Medical College Hospitals, Super Specialty Hospitals, Clinic, Laboratory etc..		



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

(1)	(2)	(3)	(4)
22.	Distilleries		
23.	Domestic Workers (shall be calculated as per hours of work).		
24.	Electricity transmission, generation and distribution.		
25.	Employment in Non Government Organisation and Voluntary Social Organization.		
26.	Employment in laying of underground Cables, Electric lines, Water supply lines and under Cable Operators.		
27.	Finishing Dying of yarn and fabrics, painting, knitting and embroidery.		
28.	Fisheries and Sea food Industry		
29.	Forest produce such as Genduli gum, Mahua making of coal and resin.		
30.	Foundry Industry with or without attached machine shop.	Unskilled	Rs. 200.00
31.	Glass Industries	Semi-skilled	Rs. 220.00
32.	Gold and Silver Ornaments and articles of artistic design.	Skilled	Rs. 240.00
33.	Graphite Industry including beneficiation	Highly skilled	Rs. 260.00
34.	Handloom and Hosiery		
35.	Hotels, Eating Houses and Restaurants		
36.	Ice Factory and Cold Storage		
37.	Jute Industry and Jute Twine Industry		
38.	Kendu Leaf Collection		
39.	Khadi Village Industries including manufacture of Khandasari and other products.		
40.	Laundry including dry-washing		
41.	Leather Industry		
42.	Liquefied Petroleum Gas manufacture and distribution.		

Rajesh Singh
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR


(1)	(2)	(3)	(4)
43.	Local Authority		
44.	Manufacture of brush and brooms		
45.	Manufacture of Coke and Burning Coals		
46.	Manufacture of Cold drinks, Soda and other allied products.		
47.	Manufacture of Electrical Bulbs and all allied electrical equipments.		
48.	Manufacture of matches, fireworks and explosives.		
49.	Manufacture of nails and pines		
50.	Manufacture of paints and varnishes		
51.	Manufacture of plastic products including toys		
52.	Manufacture of Radio by assembling with parts		
53.	Manufacture of ropes		
54.	Manufacture of Utensils including Aluminum and Hindalium products.	Unskilled	Rs. 200.00
55.	Metal Industry (except the cottage and village scale units).	Semi-skilled	Rs. 220.00
		Skilled	Rs. 240.00
56.	Major or Minor Engineering Industry including Sponge, Secondary Steel, Rolling Mills, Ferro Alloys, Metal Industries (employment less than 50 persons).	Highly skilled	Rs. 260.00
57.	Motor body building		
58.	Non-teaching staff of all private Educational Institutions including Industrial Training Institute and Training Institute Coaching Centre.		
59.	Oil Mill		
60.	Paper and Cardboard Industry		
61.	Petrol and Diesel Oil pumps		
62.	Pharmaceutical Industry		
63.	Power loom Industry		
64.	Printing Press, Desktop Publication Centre and Offset Printing Press		
65.	Private Road Transport		
66.	Private Security Agencies and Private Security Services.		



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

(1)	(2)	(3)	(4)
67.	Public Health Engineering		
68.	Public Motor Transport		
69.	Readymade Garments Industries including Mechanized Trade of Readymade Garment Industry.		
70.	Refractory Industry		
71.	Regulated markets, Marketing Societies, Co-operative Societies and Banks.		
72.	Rice Mill, Flour Mill or Dal Mill, Chuda Mill and Masala Mill.		
73.	Rubber and Rubber Products Industry		
74.	Salt Pans		
75.	Saw Mills		
76.	Shops, Commercial Establishments, Saloon, Beauty Parlour, Spa, Massaging Centre, Xerox Shop, Subscriber Trunk Dialing Booth, Tent House, Newspaper Hawkers and Newspaper Establishments.	Unskilled Semi-skilled Skilled	Rs. 200.00 Rs. 220.00 Rs. 240.00
77.	Siall leaf pluckers and Sal leaf pluckers	Highly skilled	Rs. 260.00
78.	Soap and Detergent Manufactory		
79.	Social Forestry		
80.	Spinning Mills		
81.	Stone breaking or Stone crushing		
82.	Tamarind collection		
83.	Tile and Brick Making		
84.	Timber Trading (excluding felling and sawing)		
85.	Timber Trading (including felling and sawing)		
86.	Tobacco (including Bidi making) Manufactory		
87.	Trunks, Suitcase and Bucket Manufactory		
88.	Wood works and Furniture Making Industries		




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Explanation:— for the purpose of this notification—

1. The minimum rates of wages are all inclusive rates including the basic rates, the cost of living allowances and the cash value of the concessional supply if any of essential commodities.
2. The daily minimum rates of wages shall be inclusive of wages payable for the weekly day of rest.
3. The minimum rates of wages are applicable to employees employed by contractors also.
4. The minimum rates of wages for disabled persons shall be same as payable to the workers of the appropriate category.
5. There shall not be any discrimination between male and female workers in the matters of payment of minimum wages in any category of employment.
6. (a) "Unskilled" work means work which involves simple operation requiring little or no skill or experience on the job.
 (b) "Semi-skilled" work means work which involves some degree of skill or competence acquired through experience on the job and which is capable of being performed under the supervision or guidance of a skilled employee and includes un-skilled supervisory work.
 (c) "Skilled" work means work which involves skill or competence acquired through experience on the job or through training as an apprentice or in a technical or vocational institute and the performance of which calls for initiative and judgment; and
 (d) "Highly Skilled" work means work which calls for a high degree of performance and full competence in the performance of certain tasks, acquired through intensive technical or professional training or practices, work experience for long years and also required for workers to assure full responsibility for the judgment or decisions involved in the execution of these tasks.
7. An adult employee shall work for 08 (eight) hours per day excluding half an hour of rest.

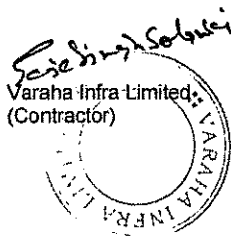
[No.6502-LL-I(AR)-1/15/LESI.]

By Order of the Governor

G. SRINIVAS

Principal Secretary to Government

Printed and published by the Director, Printing, Stationery and Publication, Odisha, Cuttack-10
 Ex. Gaz. 606-173+200





 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Table C. Summary of Payment Currencies

Table: Alternative A

For “(Construction for Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Works)”

Name of payment currency	A Amount of currency	B Rate of exchange (local currency per unit of foreign)	C Local currency equivalent $C = A \times B$	D Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local currency INR	100.00	1.00	100	$100 \times 100 / 100 = 100$ INR
Foreign currency #1				Not Applicable
Foreign currency #2				NA
Foreign currency #				NA
Net Bid Price				97,89,97,903.00
Provisional sums expressed in local currency	NIL			NIL
BID PRICE				108,82,28,457.00

Saib Singh Saha
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Excise Exemption Certificate

VARAHA INFRA LTD. ¹⁸⁵¹

CIN : U45201RJ2008PLC026344

ODISHA STATE ROADS PROJECT

Application regarding customs/excise duty exemption for materials to be purchased for consumption on works

Varaha Infra Limited
 "Smart" , 6 Jalam Vilas Scheme,
 Bhubaneswar Road, Jodhpur-342006

Chief Engineer,
 World Bank Projects, Odisha
 E.I.C (Civil), Odisha,
 Sector 5, Unit-V,
 Bhubaneswar Nagar, Bhubaneswar, Odisha

Phone No: 91-674-239 6783
 Fax No: 91-674-239 0086.
 Email: pnuosrp@gmail.com

Dear Sir,

1. Widening & strengthening of existing carriageway to 2-lane road from Nischintakozili to Duhuria (Km. 2510 to Km. 4910 of MDR)(Balance Works) – Certificate for Import/Procurement of Goods/Construction Equipment.

2. We confirm that we are solely responsible for obtaining customs/excise duty waivers which we have considered in our bid and in case of failure to receive such waivers for reasons whatsoever, the Employer will not compensate us.

3. We are furnishing below the information required by the Employer for issue of the necessary certificates in terms of the Government of India Central Excise Notification No. 06/95 along with all subsequent amendments including the amendment dt.01-03-2008 and Customs Notification No. 85/99.

3. The goods for which certificates are required is as under:

Items	Make/Brand Name /Class	Capacity [where applicable]	Quantity	Value	State whether it will be procured locally	Remarks regarding justification for the



Heic Singh Solanki
 Varaha Infra Limited
 (Contractor)

[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 Chief (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

				or imported [if so from which country]	quantity and their usage in works
on					
y					
o					
ectri					
s					
ers					

Note: The details in respect of said goods shall be provided once we declared as successful Bidder.

I agree that no modification to the above list is permitted after bids are opened.

I agree that the certificate will be issued only to the extent considered reasonable by the Employer for the work, based on the Bill of Quantities and the construction programme and methodology as furnished by us along with the bid.

I confirm that the above goods will be exclusively used for the construction of the above work. We are aware that exemption will be issued to only goods/material/equipment which form part of the work on permanent basis but not for the goods/material/equipment which are used by contractors for execution of project and after completion of the project, the goods remain the property of the contractors being owners of such goods for further deployment in other projects.

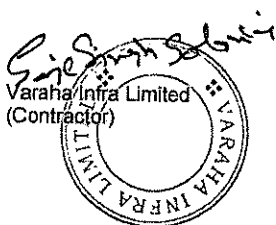
23.09.2015
Bhubaneswar


(Signature) 
(Printed Name) Navratna Kansara

(Designation) Assistant Manager

(Common Seal) _____

(Common Seal) _____




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's Legal Name	VARAHA INFRA LIMITED
Bidder's Country of constitution	INDIA
Bidder's Year of Constitution	2008
Bidder's Legal address in country of constitution	"Umesh Smiriti", 6 Jalam Vilas Scheme, Paota-B Road, Jodhpur-342006 Rajasthan-India
Bider's authorized representative (Name, Address, Telephone Numbers, Fax Numbers, E-Mail Address)	Navratan Kansara, Assistant Manager VARAHA INFRA LIMITED "Umesh Smariti", 6 Jalam Vilas Scheme, Paota-B Road, Jodhpur-342006 Tel No. +91 291 2556877 Mobile No. 9828723230 Email ID: cs@varahainfra.com

Seje Singh Solanki
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

SPECIFIC POWER OF ATTORNEY



राजस्थान RAJASTHAN

AA 565317

SPECIFIC POWER OF ATTORNEY

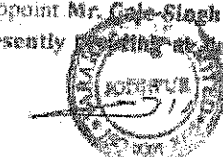
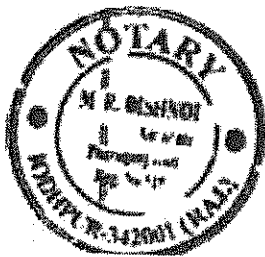
PROJECT

"Construction for Widening and Strengthening of existing carriageway to 2-lane road from Nischintakoili to Dhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance work)"

- Reference : 1) IFB No. PMU/WB/114/2015-32819; Dated 07.08.2015
 2) LOA Ref. No. PMU-WB-115/2015-48126; Dated 27.11.2015
 3) Bid submitted by Varaha Infra Limited on 26.09.2015

May it be known to all concerned that, I Jagdev Singh Rao, Director of Varaha Infra Limited presently residing at "Umesh Smartu", 6 Jalam Vilas Scheme, Panta "B" Road, Jodhpur-342006, Rajasthan, India, under the power vested in me by the Board of Directors of VARAHA INFRA LIMITED having its registered office at "Umesh Smartu", 6 Jalam Vilas Scheme, Panta "B" Road, Jodhpur-342006 Rajasthan India; do hereby constitute, nominate and appoint Mr. Gaj Singh Solanki, Company Secretary of Varaha Infra Limited presently residing at, Arvind Sharma Ice Cream Factory,

Gaj Singh Solanki



M. 22/12/15
 NOTARY JODHPUR

Gaj Singh Solanki
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 Chief Engineer (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Thana Road, Soorsagar, Jodhpur-342024, to do all or any of the following acts on behalf of the Company:

1. To represent the Company before World Bank Projects, Odisha O/o the E.I.C.(C), Odisha, Nirman Soudha, Unit V, Bhubaneswar - 751 001
2. To sign the contract agreement with World Bank Projects, Odisha, and any other subsidiary offices of World Bank Projects, Odisha
3. To receive written/ verbal instructions/ communications through Fax/Speed Post/ Regd. Post/ Email or any other recognized written communication method.

Signed and delivered on this 22nd Day of December, 2015

Place Jodhpur

FOR VARAHA INFRA LIMITED



JAGDEV SINGH RAO
Director
Varaha Infra Limited
"Umesh Smariti", 6 Jalam Vilas scheme, Paota-B Road,
Jodhpur-342006.

Accepted

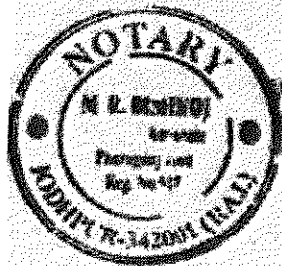
Gaje Singh Solanki

Gaje Singh Solanki
Authorised Signatory
Varaha Infra Limited
"Umesh Smariti", 6 Jalam Vilas scheme, Paota-B Road,
Jodhpur-342006.

Witnesses :

1. *DI V S L*
D. V. S. L. B S
Jalam Vilas Scheme
Paota-B Road, Jodhpur

2. *Rajendra*
Rajendra Gaur
Paota B Road
Jodhpur-342006



Ag. Inm before me by *JAGDEV SINGH RAO*
who is identified by *M. S. SOLANKI*
ATTESTED
M 22/12/15
NOTARY, JODHPUR

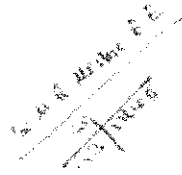
Gaje Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Engineer (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



ISO 9001:2008



VARAHA INFRA LTD.

CIN : U45001RJ1998PLC0295544

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF VARAHA INFRA LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 4th DECEMBER, 2015 AT 11.00 A.M.

Authority for signing of Agreement on Behalf of Company:


"RESOLVED THAT Mr. Jagdev Singh Rao, Director of the Company be and is hereby authorised to issue Power of Attorney in favour of Mr. Gaje Singh Solanki, Company Secretary of the Company to do all/or any of the following acts on behalf of the Company in respect of Project "Construction for Widening and Strengthening of existing carriageway to 2-lane road from Nischintakali to Dhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance work)"

1. To represent the Company before World Bank Projects, Odisha O/o the E.I.C.(Civil), Odisha, Nirman Soudha, Unit-V, Bhubaneswar - 751 001 and any of its subsidiary office.
2. To sign the contract agreement with World Bank Projects, Odisha, and any other subsidiary offices of World Bank Projects, Odisha.
3. To receive written/ verbal instructions/ communications through Fax/Speed Post/ Regd. Post/ E-mail or any other recognized written communication method.

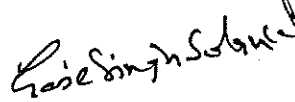
"RESOLVED FURTHER THAT a certified true copy of the said resolution be submitted with concerned party.


CERTIFIED TO BE TRUE.

For-VARAHA INFRA LIMITED


Mufat Singh Rao
Chairman




Varaha Infra Limited
(Contractor)


Chief Engineer,
World Bank Projects, Odisha
World Bank Project (Employer)
O/o the E.I.C.(C), Odisha, BSR

Certificate of Incorporation



सत्यमेव जयते

प्रारूप 1

पंजीकरण प्रमाण-पत्र

कार्पोरेट पहचान सं. U45201RJ2008PLC026344

2008-2009

मैं एतद्वारा प्रमाणित करता हूँ कि आज मेसर्स

VARAHA INFRA LIMITED

का पंजीकरण, कम्पनी अधिनियम, 1956 (1956 का 1) के अन्तर्गत आज किया जाता है और यह कम्पनी लिमिटेड है।

यह पंजीकरण-पत्र आज दिनांक ग्यारह अप्रैल दो हजार आठ को मेरे हस्ताक्षर से जयपुर में जारी किया जाता है।

Form 1

Certificate of Incorporation

Corporate Identity Number : U45201RJ2008PLC026344 2008-2009

I hereby certify that VARAHA INFRA LIMITED is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is Limited.

Given under my hand at JAIPUR this ELEVENTH day of APRIL TWO THOUSAND EIGHT.



Sd/-
(KUMAR SATYA PRAKASH)

कम्पनी रजिस्ट्रार
Registrar of Companies
राजस्थान
Rajasthan

कम्पनी रजिस्ट्रार के कार्यालय अभिलेख में सफलता पत्रधार का पता :

Mailing Address as per record available in Registrar of Companies

VARAHAINFRALIMITED

UMESH SMRATI, 6, JALAM VILAS SCHEME, PAOTA B ROAD

JODHPUR-342001

Rajasthan, INDIA



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Technical Proposal

- Site Organization
- Method Statement
- Mobilization Schedule
- Construction Schedule
- Equipment
- Others

Sisanku Sabui
Varaha Infra Limited
(Contractor)

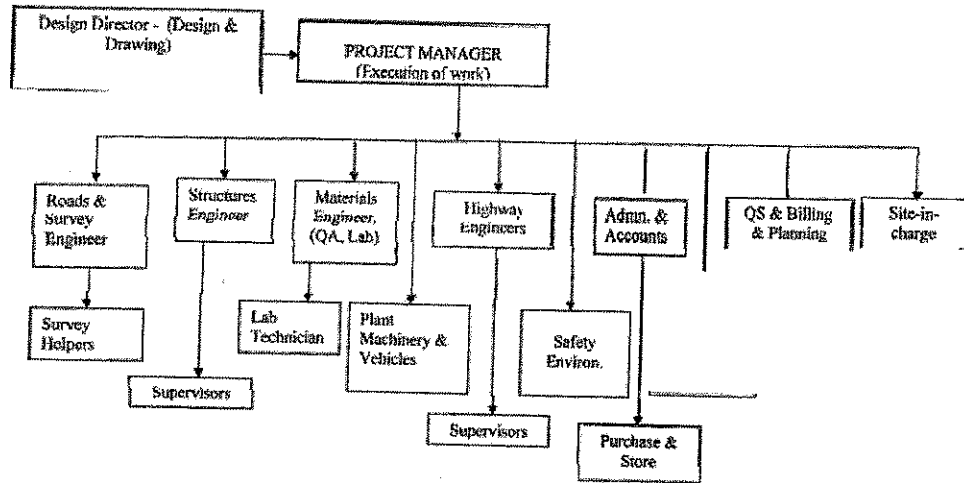


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Site Organization

SITE ORGANISATION CHART :



Saidin Singh Saloni
Varaha Infra Limited
(Contractor)



Saidin Singh Saloni
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR


Method Statement

All the items of work shall be executed as per the Conditions, Technical Specifications & drawings provided in Volume II , III & IV of the Contract.

Environment Management Plan

The EMP guidelines provided in the Technical Specification shall be followed. The detail EMP shall be rolled out as the work progresses, keeping all the activities as per schedule.

Sanjay Singh Babari
Varaha Infra Limited
(Contractor)



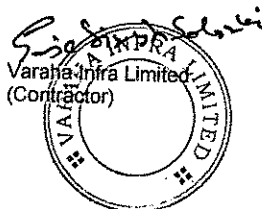
[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Mobilization Schedule

MOBILISATION PLAN

Name of work: Construction for Widening & Strengthening of Existing Carriageway to 2-lane road from Nischintakoilli to Duhuria (Km. 25/0 to Km. 49/0 of MDR)(Balance Works).

Sl. no	Particulars	Time in Days from appointed Date
1	Appointment of contractor representative	15
2	Appointment of Design Director	20
3	Set up of site office	30
4	Set up of Base camp	60
5	Fixing & Deployment of Survey Team	30
6	Appointment of Contractual Key Persons	50
7	Set up of laboratories	60
8	Deployment of machinery like Excavators, Rollers, Graders, Tippers etc. as per requirement.	60
9	Setting up of GSB/WMM plant	80
10	Set up of Hot Mix plant	150
11	Set up of concrete Batching plant	120
12	Deployment of paver and other equipments of Bituminous work	160



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

Construction Schedule

CONSTRUCTION FOR WIDENING & STRENGTHENING OF EXISTING CARRIAGEWAY TO 2-LANE ROAD FROM NISCHINTAKOLI - DUHURIA
(KM. 25/0 TO KM. 49/0 OF MDR) [BALANCE WORKS].

Sl No	Task Name	Qtr-1	Qtr-2	Qtr-3	Qtr-4	Qtr-4	Qtr-5	Qtr-6	
1	Mobilisation and plant set up	[Shaded]							
2	Construction of site office & laboratory	[Shaded]							
3	Identification of Quarries	[Shaded]							
4	Establishment of Centreline and Benchmark	[Shaded]							
5	Remedial work, Repair and Restoration work	[Shaded]							
6	Clearing & Grubbing	[Shaded]							
7	Recording Levels	[Shaded]							
8	Culverts and Bridges	[Shaded]							
9	Earthwork	[Shaded]							
10	Granular subbase		[Shaded]						
11	Wet mix Macadam		[Shaded]						
12	Bituminous Items			[Shaded]					
13	Completion of Project	[Shaded]							



S. K. Saha
Varaha Infra Limited
 (Contractor)

[Signature]
Chief Engineer,
 World Bank Projects, Odisha
 Chief Engineer (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Schedule of Key Equipments as per requirement of Bidding Document

No.	Equipment Type and Characteristics	Minimum Number required
1	Mechanical Bitumen Sensor Paver - 100 TPH	01
2	Motor Grader - 200 cum/Hr	02
3	Hydraulic Excavator - 60 cum/Hr	02
4	Vibratory Roller (Tandem) - 8 T [100 cum/Hr]	03
5	Pneumatic Tyred Roller - 25 cum/Hr	01
6	Hot Mix Plant (Batch Mix only) - 100 TPH	01
7	Concrete Batch-mix Plant - 75 Cum/Hr	01
8	Transit Mixer - 6 cum	05
9	Front End Loader	03
10	Dozer - 150 cum/Hr	01
11	Tipper (of different capacities)	30
12	Cone Crushing Unit - 200 TPH	01
13	Bitumen Sprayer - 1750 sqm/hour	01
14	Earth Compactor - 8-10 ton	03
15	Water Tanker - 10 KL	05
16	Mechanical Paver - 100 TPH	01
17	WMM Plant - 175 TPH	01
18	Concrete Pump - 20 cum/hour	02
19	Concrete Fixed Form Paver - 100 TPH	01



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

**PLANTS AND EQUIPMENTS OWNED AND PROPOSED FOR THE PROJECT
BY M/s VARAHA INFRA LIMITED, JODHPUR**

1.

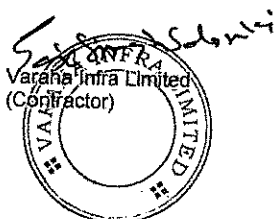
Item of equipment:- MECHANICAL BITUMEN SENSOR PAVER -1 No.		
Equipment information	Name of manufacturer: Vogele	Model and power rating Super 1800-2
	Capacity More than 100 TPH	Year of manufacture 2012
Current status	Current location Rajasthan (India)	
	Details of current commitments : NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	


2.

Item of equipment: MOTOR GRADER – 2 Nos.		
Equipment information	Name of manufacturer Tractors India	Model and power rating Model 12K
	Capacity More than 200 CUM/Hr	Year of manufacture 2011
Current status	Current location : Rajasthan (India)	
	Details of current commitments : NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

3.

Item of equipment: Hydraulic Excavators - 2 Nos		
Equipment information	Name of manufacturer KOBELCO	Model and power rating SK 3501c-8
	Capacity More than 60 CUM/Hr	Year of manufacture 2011
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

4.

Item of equipment: Vibratory Roller (Tendom) - 3 Nos		
Equipment information	Name of manufacturer WIRTGEN INDIA	Model and power rating: WGHW_H181
	Capacity More than 100 CUM/Hr	Year of manufacture 2012
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

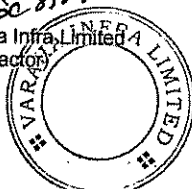
5.

Item of equipment: Pnumatic Tyred Roller - 1 Nos		
Equipment information	Name of manufacturer WIRTGEN INDIA	Model and power rating WGHW_H190
	Capacity More than 25 CUM/Hr	Year of manufacture 2012
Current status	Current location Rajasthan (india)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

6.

Item of equipment: Hot Mix Plant – 1 No		
Equipment information	Name of manufacturer IPS-LINTEC	Model and power rating CSD 3000
	Capacity 240 TPH	Year of manufacture 2012
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Varaha Infra, Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

7.

Item of equipment: Concrete Batch Mix Plant – 1 No.		
Equipment information	Name of manufacturer KYB-CONMAT P LTD	Model and power rating CRP-1200
	Capacity More than 75 CUM/Hr	Year of manufacture 2013
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

8.


Item of equipment: TRANSIT MIXER – 5 NOS		
Equipment information	Name of manufacturer MAN FORCE TRUCK P LTD	Model and power rating 64-00031-0008
	Capacity 10 CUM	Year of manufacture 2011
Current status	Current location Rajasthan (INDIA)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

9.

Item of equipment: FRONT END LOADER – 3 NO		
Equipment information	Name of manufacturer Tractors India	Model and power rating 2021 Z
	Capacity -	Year of manufacture 2005
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Seje Singh Solanki
 Varaha Infra Limited
 (Contractor)




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

10.

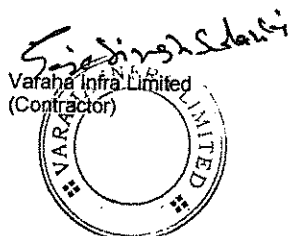
Item of equipment: DOZER - 1 NO.		
Equipment information	Name of manufacturer LIUGONE	Model and power rating CLGB230
	Capacity More than 150 CUM/Hr	Year of manufacture 2009
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

11.

Item of equipment: TIPPER – 30 NOS		
Equipment information	Name of manufacturer TATA MOTORS	Model and power rating LPK 2518 TC/38
	Capacity -	Year of manufacture 2009-2010
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

12.

Item of equipment: CONE CRUSHING- 1 NO.		
Equipment information	Name of manufacturer METSO	Model and power rating LT300 HP
	Capacity 250 TPH	Year of manufacture 2011
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	



Sudhanshu Saha

Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

13.

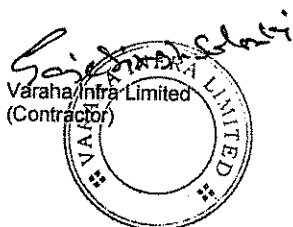
Item of equipment: BITUMEN SPRAYER- 1 Nos.		
Equipment information	Name of manufacturer JAGDISH INDUSTRIES	Model and power rating -
	Capacity 1750 Sqm/Hr	Year of manufacture 2013
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

14.

Item of equipment: EARTH COMPACTOR - 03 Nos		
Equipment information	Name of manufacturer CARTER PILLAR	Model and power rating 140K2
	Capacity More than 10 Ton	Year of manufacture 2011
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

15

Item of equipment: WATER TANKER - 5 NOS		
Equipment information	Name of manufacturer TATA ENGG	Model and power rating LPK/2516/TC/38
	Capacity More than 10 KL	Year of manufacture 2011
Current status	Current location Rajasthan India	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

16.

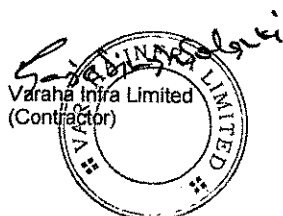
Item of equipment: MECHANICAL PAVER - 1 No		
Equipment information	Name of manufacturer ASHIRVAD PRODUCTS	Model and power rating -
	Capacity More than 100 TPH	Year of manufacture 1995
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

17.

Item of equipment: WMM MIXING PLANT – 1 No		
Equipment information	Name of manufacturer MAXMECH EQUIPMENTS P LTD	Model and power rating WMM-350-L
	Capacity 350 TPH	Year of manufacture 2013
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

18.

Item of equipment: CONCRETE PUMPS – 02 NOS		
Equipment information	Name of manufacturer PUTZMEISTER CONCRETE MACHINES P LTD	Model and power rating BSF-42-09H
	Capacity More than 20 Cum/Hr.	Year of manufacture 2011
Current status	Current location Rajasthan (India)	
	Details of current commitments NIL	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	




Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

19.

Item of equipment: CONCRETE FIXED FORM PAVER – 01 NOS		
Equipment information	Name of manufacturer AWERSA ENGICON INDIA P LTD	Model and power rating SF 2700
	Capacity More than 20 CUM/Hr	Year of manufacture 2013
Current status	Current location Rajasthan (India)	
	Details of current commitments	NIL
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Sandeep Kumar Solanki
 Varaha Infra Limited
 (Contractor)

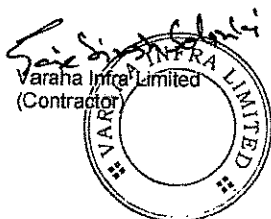


[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Man-Power Schedule as per requirement of Biding Document

No.	Position	Total Work Experience (years)	In Similar Works Experience (years)	Educational Qualification
1	Project Manager – 1 No	10	5	Degree/Diploma in Civil Engg.
2	Highway Engineer – 1 No	5	3	Degree/ Diploma in Civil Engg.
3	Bridge Engineer – 1 No	5	3	Degree/ Diploma in Civil Engg.
4	Material Engineer – 1 No	5	3	Degree/ Diploma in Civil Engg.
5	Quantity Surveyor – 1 No	5	3	Degree/ Diploma in Civil Engg.
6	Equipment Maintenance Engineer – 1 No	5	3	Diploma in Mech. Engg.
7	Environment and Safety Manager – 1 No	3	1	Graduate with skill and experience in handling the Health, Environment, Safety issues




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Form PER – 1: PROPOSED PERSONNELBY M/S VARAHA INFRA LIMITED

1.	Title of position* PROJECT MANAGER	Name – Mr. Jitendra Singh
2.	Title of position* HIGHWAY ENGINEER	Name –Mr. Naresh Kumar
3.	Title of position* BRIDGE ENGINEER	Name-Mr. RS Shukla
4.	Title of position* MATERIAL ENGINEER	Name-Mr. Ashok Kumar Belle
5.	Title of position* QUANTITY SURVEYOR	Name-Mr. Pravin Rathi
6.	Title of position* EQUIPMENT MAINTENANCE ENGINEER	Name-Mr. Jitendra Suthar
7.	Title of position* ENVIRONMENT AND SAFETY MANAGER	Name-Mr. Ram Karan Mali

Sujeet Singh Solanki
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR


Resume of Proposed Personnel-1

Position-	PROJECT MANAGER	
Personnel information	Name - Mr. JITENDRA SINGH	Date of birth-10.10.1970 Nationality : Indian
	Professional qualifications- Bachelor of Civil Engineering	
Present employment	Name of employer- M/S VARAHA INFRA LIMITED	
	Address of employer – Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India	
	Tel : +91-291-2556877	Contact (manager / personnel officer) HR Manager 09571044999
	Fax : +91-291-2553861	E-mail: vccjodhpur@gmail.com
	Job title:-Project Manager	Years with present employer: 07 Years

From	To	Company / Project / Position / Relevant technical and management experience
		Construction of Widening of 6 lane and Strengthening of existing 2-lane carriageway of Jalandhar-Amritsar section of NH-1 from 387.100 to 407.100 on EPC basis. Total capital value of project is 431.72 Cr.
		Construction of 2 laning of Ludhiana-Talwandi Section of NH-95 from Km. 92.000 to 170.000 in the State of Punjab on DBFOT basis.Total Value of Project is 735.43 Cr.


 Jitendra Singh
 Varaha Infra Limited
 (Contractor)




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR


Resume of Proposed Personnel-2

Position- HIGHWAY ENGINEER	
Personnel information	Name – Mr. NARESH KUMAR Date of birth- 21/06/1969
	Professional qualifications:- Bachelor of Civil Engineering
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer- Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877 Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861 E-mail: vccjodhpur@gmail.com
	Job title:- Highway Manager Years with present employer: 5 Years

From	To	Company / Project / Position / Relevant technical and management experience
May 2013	January 2014	Ludhiana – Talwandi in the State of Punjab Project Cost is 700 Cr.
Sept' 2010	April 2013	Construction of Existing 2- Lane Highway to 4- lane Carriageway from Km. 363.300 to Km. 445.800 Rohtak to Rewari NH-71 in the State of Haryana. Project cost in 850 Cr.


 Varaha Infra Limited
 (Contractor)




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Resume of Proposed Personnel-3

Position- : <u>BRIDGE ENGINEER</u>	
Personnel information	Name- MR. RS SHUKLA
	Date of birth-12/08/1982
Professional qualifications- : Diploma in Civil Engineering	
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer : Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877
	Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861
Job title: Bridge Engineer	E-mail: vccjodhpur@gmail.com
	Years with present employer: 04 Years

From	To	Company / Project / Position / Relevant technical and management experience
Jan-2014	Till Date	Strengthening Raising and cement concrete payment work on Kota Dharnawada Road SH-51 from Km. 16/500 to Km. 101/000 (Package no.1 and 2) RSRDC Project cost is 197 Cr.
Dec-2012	Transfer	Four laning of Rohtak Bawal Section NH-71 from Km. 363.300 to Km. 445.853 in the State of Haryana and Project cost is 827 Cr.

Rishi Singh Solanki
 Varaha Infra Limited
 (Contractor)



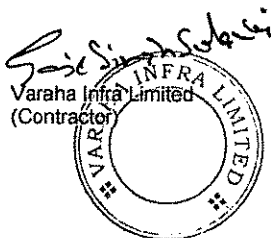
[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employee)

Chief Engineer
 World Bank Project
 O/o the E.C.C. (C) Odisha, RSR

Resume of Proposed Personnel-4

Position- : MATERIAL ENGINEER	
Personnel information	Name –Mr. ASHOK KUMAR BELLE Date of birth:-
	Professional qualifications- Bachelor of Civil Engineering
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer : Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877 Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861 E-mail: vccjodhpur@gmail.com
	Job title: Material Engineer Years with present employer: 04 Years

From	To	Company / Project / Position / Relevant technical and management experience
Sept-2014	Till date	NH-9, VIL-EPC for Construction of Road from Solapur to Yenegur on DBFOT mode

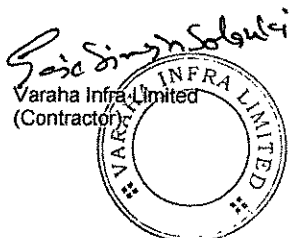


[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer,
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Resume of Proposed Personnel-5

Position- : QUANTITY SURVEYOR	
Personnel information	Name – Mr. PRAVIN RATHI Date of birth:-12/01/1977
	Professional qualifications -Diploma in Civil Engineering,
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer : Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877 Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861 E-mail: vccjodhpur@gmail.com
	Job title: Quantity Surveyor Years with present employer: 06 Years

From	To	Company / Project / Position / Relevant technical and management experience
Jan'2011	Till date	Four laning of Rohtak Bawal Section NH-71 from Km. 363.300 to Km. 445.800 in the State of Haryana and Project cost is 618 Cr.
Apr-2007	Dec-2010	Construction of Mega Highway, Rajasthan and Madhya Pradesh and Project cost is 120 Cr.
Oct-2006	Mar-2007	Rehabilitaion of Jabrin – Bisiya – Al Habbi Road Project cost is 215 Cr.




[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the F.I.C.(C), Odisha, BBSR

Resume of Proposed Personnel-6

Position- : EQUIPMENT MAINTENANCE ENGINEER	
Personnel information	Name – Mr. JITENDRA SUTHAR Date of birth:-
	Professional qualifications - Mechanical Engineering
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer : Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877 Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861 E-mail: vccjodhpur@gmail.com
	Job title: Equipment Maintenance Engineer Years with present employer: 03 Years

From	To	Company / Project / Position / Relevant technical and management experience

Saidin Solati
 Varaha Infra Limited
 (Contractor)



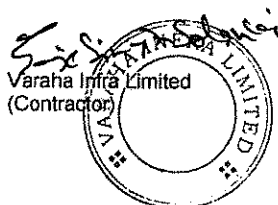
[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)


Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Resume of Proposed Personnel-7

Position- : ENVIRONMENT & SAFETY MANAGER	
Personnel information	Name – Mr. RAM KARAN MALI Date of birth:- 04.06.1969
	Professional qualifications - : Diploma in Civil Engineering
Present employment	Name of employer- M/S VARAHA INFRA LIMITED
	Address of employer : Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road, Jodhpur- 342006, Rajasthan, India
	Telephone: +91-291-2556877 Contact (manager / personnel officer): HR Manager 09571044999
	Fax No: +91-291-2553861 E-mail: vccjodhpur@gmail.com
	Job title: Environment & Safety Manager Years with present employer: 04 Years

From	To	Company / Project / Position / Relevant technical and management experience




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the F.I.C.(C), Odisha, BBSR

Performance Bank Guarantee



VARAHA INFRA LTD.

Ref: PMU-WB/2015-16/WB/6

CIN: U45207OR1000010000 Date: 22-12-15

To
The Chief Engineer
World Bank Projects
Nirman Soudha,
Keshari Nagar,
Bhubaneswar.

*S.A/PMS
E.I.C.(P.W.)
22/12/15*

Sub: Submission of Performance Bank Guarantee for Project " Widening and Strengthening of existing carriageway to 2 -lane road from Nischintakoili to Duhuria (Km. 25/0 to Km 49/0 of MDR) (Balance work)" - Package No- OSRP-CW-ICB-P04A2).

Ref: Your letter No. PMU-WB-115/2015-48126; Dated 27.11.2015.

Dear Sir,

This has reference to above captioned subject and Reference letter, we do hereby submitted Performance Bank Guarantee and Specific Power of Attorney & Board Resolution in favour of Mr. Gaje Singh Solanki to sign the Agreement in respect of above subject Project.

Details of Bank Guarantee

Name of Bank	Type Bank Guarantee	Bank	Bank Guarantee No.	Date	Amount
State Bank of India	Performance	ET	0950113200000872	22-12-2015	Rs. 4,89,50,000/-

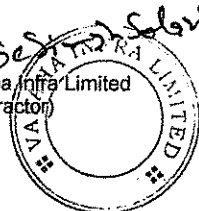
We kindly request you to take the above said Bank Guarantee in your records and acknowledge the receipt of same.


Thanking you and assuring you of our best services at all times.

Yours sincerely

For Varaha Infra Ltd

Navratna K. Khanna
Authorized Signatory

Sri Gaje Singh Solanki

Varaha Infra Limited
(Contractor)


Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

INDIA
COMMERCIAL FINANCE BANK LIMITED
INDIA BRANCH AT VISAKHAPATNAM
PO BOX 25374667
VIJAYAPURAM - 511001

TEL NO:011 23713354, 25374667
FAX NO:011 23713354
MAILING ADDRESS
PO BOX 25374667

27-04-13

CHIEF ENGINEER, WORLD BANK PROJECTS
O/o THE E.I.C.(C), VISAKHAPATNAM
VISAKHAPATNAM - 511001

DEAR SIR(S),

GARANTEE NUMBER : 0000100000000075
DATE OF ISSUE : 22-06-12
GUARANTEED AMOUNT : INR 1.50,00,000.00
DATE OF EXPIRY : 31-01-13
DATE OF CLAIM : 31-01-13
APPLICANT NAME : VARAHA INFRA LIMITED

We confirm having issued / Extended the captioned Bank Guarantee in your favour on behalf of our above named Head Office and the same signed by the officers of the Bank.

YOURS FAITHFULLY,

AUTHORIZED SIGNATORY.

The Beneficiaries are advised in their own interest to verify the genuineness of the Guarantee with the HC Issuing Branch.

PLEASE CONTACT BRANCH FOR STRATEGICAL FACILITY-INTERNET ACCESS TO TRADE FINANCE.

Left window stamp: Chief Engineer, World Bank Projects, Odisha
Right window stamp: Chief Engineer, World Bank Projects, Odisha
Handwritten signatures and dates are present over the stamps.

Signature: *Sandeep Solanki*
Circular stamp: VARAHA INFRA LIMITED (Contractor)

Signature: *Sandeep Solanki*
Chief Engineer, World Bank Projects, Odisha (Employer)
Chief Eng. Project World Bank Project O/o the E.I.C.(C), Odisha, BBSR



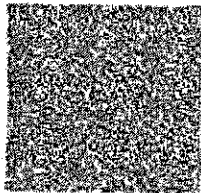
सत्यमेव जयते

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

Certificate No. : IN-DL94722161764831N
 Certificate issued Date : 21-Dec-2015 01:29 PM
 Account Reference : UMPADD (IV) 01791003/ DELHI/ DI-DLH
 Unique Doc. Reference : SUBIN-DL/DL79100367666496853296N
 Purchased by : STATE BANK OF INDIA
 Description of Document : Article Bank Guarantee
 Property Description : Not Applicable
 Consideration Price (Rs.) : 0
 (Zero)
 First Party : STATE BANK OF INDIA
 Second Party : Not Applicable
 Stamp Duty Paid By : STATE BANK OF INDIA
 Stamp Duty Amount(Rs.) : 100
 (One Hundred only)



Please write or type below this line

INSTRUMENT REGISTRATION NO. 142
 D.G.A.P. S., 00001162000000
 22 DEC 2015
 S.R. No. 1, Block No. 4, Sector
 14, E. 1, Tagore Park, New Delhi

DR. V.K. SINGH
 D.S. RAWAT
 P-10938
 SURESH KUMAR SHARMA
 S.P. 9400

Statutory Alert:
 1. The authenticity of the Stamp Certificate shall be verified at www.stampcert.gov.in. Any discrepancy in the details on the Certificate and its availability on the website renders it invalid.
 2. The price of creating the Certificate is on the users of the certificate.
 3. In case of any discrepancy, please inform the Competent Authority.

Sudhakar Singh
 Varaha Infra Limited
 (Contractor)

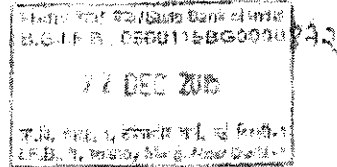


Sudhakar Singh
 Chief Engineer,
 World Bank Projects, Odisha
 Chief Engineer (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Performance Security
(Demand Guarantee)

State Bank of India, 15th Floor, Industrial Finance Branch, Jawahar Vyapar Bhawan, I,
Toshay Marg, New Delhi 110001

Beneficiary : Chief Engineer,
World Bank Projects, Odisha
(on behalf of Works Department,
Government of Odisha)
O/o the E.I.C.(Civil), Odisha,
Nirman Soudha, Unit-V
Bhubaneswar - 751 001



Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that M/s Varaha Infra Ltd., having Registered Office at :
"Umesh Smriti", 6 Jalan Vilas Scheme, Post 'B' Road, Jodhpur - 342 006,
Rajasthan (hereinafter called 'the Contractor') has entered into Contract No. PMU-WB-
115/2015-48126 dated 27.11.2015 with you, for the execution of "Construction for
Widening & Strengthening of Existing Carriageway to 2 lane road from
Machintakoll to Duhuria (Km. 25/0 to Km. 49/0 of MDR)(Balance Works)"
hereinafter called 'The Contract'.

Furthermore, we understand that, according to the conditions of the Contract, a
performance guarantee is required.

At the request of the Contractor, we State Bank of India, having our registered office at
"State Bank Bhawan, Corporate Center, Madame Cama Marg, Mumbai Maharashtra-
400021" through our branch at 15th Floor, Industrial Finance Branch, Jawahar Vyapar
Bhawan, I, Toshay Marg, New Delhi-110001 hereby irrevocably undertake to pay you
any sum or sums not exceeding in total an amount of Rs. 4,89,50,000/- (Rupees
Four Crore Eighty Nine Lakhs Fifty Thousand Only) such sum being payable in the
types and proportions of currencies in which the Contract Price is payable, upon
receipt by us of your first demand in writing accompanied by a written statement
stating that the Contractor is in breach of its obligation(s) under the Contract, without
your needing to prove or to show grounds for your demand or the sum specified
therein.

This guarantee shall expire, no later than the 31st Day of July, 2017, and any
demand for payment under it must be received by us at this office on or before that
date.

S. P. R. R. R.
D. S. RAWAT
R-10980

SHRI P. R. R.
ANNEK SINGH BHATIA
R/B-6432



Chief Engineer,
World Bank Projects, Odisha
Chief Employer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

22 DEC 2017

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 except that sub-paragraph (a) of Subarticle 20(a) is hereby excluded.

Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this guarantee shall not be assignable or transferable by the beneficiary. Notice or invocation by any person such as assignee, transferee or agent of beneficiary shall not be entertained by the bank. Any invocation of guarantee can be made only by the beneficiary directly

Notwithstanding anything contained herein before.

- (a) Our bank liability under this guarantee shall not exceed **Rs. 4,89,50,000/- (Rupees Four Crore Eighty Nine Lakhs Fifty Thousand Only)**
- (b) This Guarantee valid up to **31.07.2017**
- (c) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you advise upon us a written claim or demand on or before **31.07.2017**.

ST. Y. SINGH
 D. S. RAJWAT
 R-10930

Varaha Infra Limited
 (Contractor)



Chief Engineer,
 World Bank Projects, Odisha
 Chief (Employer)
 World Bank Project
 O/o the E.J.C.(C), Odisha, BBSR

Form FIN – 3:



VARAHA INFRA LTD.

CIN : U45201RJ2008PLC026344

Form FIN – 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III (Evaluation and Qualification Criteria)

Financial Resources		
No.	Source of financing	Amount (US\$ equivalent)
1	Axis Bank, Corporate Banking Branch, 2 nd Floor, 3 rd EYE One Building, Near Panchwati Circle C G Road, Ahmedabad.	22,00,00,000/-

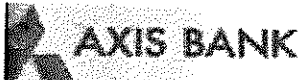
Dem



Sandeep Singh Solanki
 Varaha Infra Limited
 (Contractor)

[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Bank Certificate



AXISB/CBB/AHD/VIL/2015-16/

Date: 12-10-2015

BANK CERTIFICATE

This is to certify that M/s. VARAHA INFRA LIMITED is a reputed company with a good financial standing.

If the contract for the work, namely "Widening & Strengthening of existing carriageway to 2-lane road from Nischintakoilli to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance Work)" - (Package No. OSRP-CW-ICB-P04A2) is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. 22,00,00,000 (Rs. Twenty Two Crore Only) to meet their working capital requirements for executing the above contract during the contract period.

This certificate has been issued at the specific request of M/s Varaha Infra Limited

Signature



Name of Bank -

Axis Bank Limited

Name of Official:

Ratan Lal Gurjar

Designation of Official: Asstt. Vice President and Head Credit Admin

Address of the Bank - Corporate Banking Branch, 2nd Floor, 3rd Eye One Building, Near Panchwati Circle C G Road, Ahmedabad - 380009

Corporate Banking Branch, 2nd Floor, 3rd Eye One, Near Panchwati Cross Roads, C. G. Road, Ahmedabad - 380009
Tel No. 079 - 26447100 Fax No. 079 - 66147105
REGISTERED OFFICE: "Trishul" - 3rd Floor Opp Samarlhegwar Temple, Near Law Garden, Ellisbridge, Ahmedabad - 380006
Telephone No. 079-26409322 Fax No. - 079-26409321 CIN: L65110GJ1693PLC620769 Website - www.axisbank.com

Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR


Annexure-1

Details of Year wise Quantity executed by Varaha Infra Limited in respect of Project "Four Laning of Rohtak to Bawal Section of NH-71 from Km. 363.300 to Km. 450.800 and design Km. 360.30 to 445.853 in the State of Haryana under NHDP Phase-III".

Particular	Year-2011	Year-2012	Year-2013	Total
Earth Work	20,55,630 Cum	29,65,639 Cum	10,74,342 Cum	60,95,611 Cum
ISB	1,55,642 Cum	1,69,163 Cum	77,252 Cum	4,02,057 Cum
W.M.M.	1,40,597 Cum	1,37,444 Cum	1,44,092 Cum	4,22,133 Cum
D.B.M.	44,799 Cum	100,523 Cum	68972 Cum	2,14,294 Cum
R.C.	0	36,595 Cum	36779 Cum	73,374 Cum
P.O.C.	0	18,560 Cum	23,529 Cum	42,089 Cum
RCC/PSC	0	92650 Cum	87,350 Cum	1,80,000 Cum



Varaha Infra Limited
 Varaha Infra Limited
 (Contractor)



Chief Engineer
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 Chief Engineer
 World Bank Project
 Of the F.I.C.I.C. Odisha, BBSR

Advance Payment Security

Demand Guarantee

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works] (hereinafter called "the Contract").

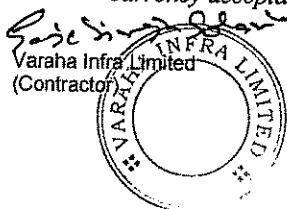
Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ [amount in figures] (_____) [amount in words] is to be made against an advance payment guarantee.

At the request of the Contractor, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures] (_____) [amount in words] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number _____ at _____ [name and address of Bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ____ day of _____.

1. The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

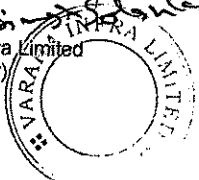
2____, ² whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date..

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

² *Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

Sandeep Kumar
Varaha Infra Limited
(Contractor)


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

Retention Money Security

Demand Guarantee

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

RETENTION MONEY GUARANTEE No.: _____

We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works] (hereinafter called "the Contract").

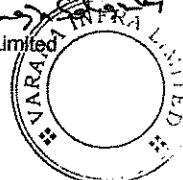
Furthermore, we understand that, according to the conditions of the Contract, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment, payment of [insert the second half of the Retention Money or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security] is to be made against a Retention Money guarantee.

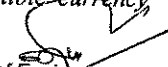
At the request of the Contractor, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures] (_____ [amount in words])¹ upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the payment of the second half of the Retention Money referred to above must have been received by the Contractor on its account number _____ at _____ [name and address of Bank].

¹ The Guarantor shall insert an amount representing the amount of the second half of the Retention Money or or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security and denominated either in the currency(ies) of the second half of the Retention Money as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

Varaha Infra Limited
(Contractor)



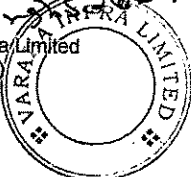

 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer,
 World Bank Project
 O/n the F.I.C.(C), Odisha, BBSR

This guarantee shall expire, at the latest, 21 days after the date when the Employer has received a copy of the Performance Certificate issued by the Engineer. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Sanjay Kumar
Varaha Infra Limited
(Contractor)


[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Engir (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

AGREEMENT No. **05** of 2015-16



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

PACKAGE No. OSRP-CW-ICB-P04A2

For
Construction for Widening & Strengthening of existing carriageway to 2-lane
road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance
Works)
under

Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Odisha Works Department, Government of Odisha

and

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road,
Jodhpur- 342006, Rajasthan, India
Tel : +91-291-2556877 , Fax : +91-291-2553861
E-mail: vccjodhpur@gmail.com

[VOLUME-II: Conditions of Contract]

Agreement Value: Rs. 97,89,97,903

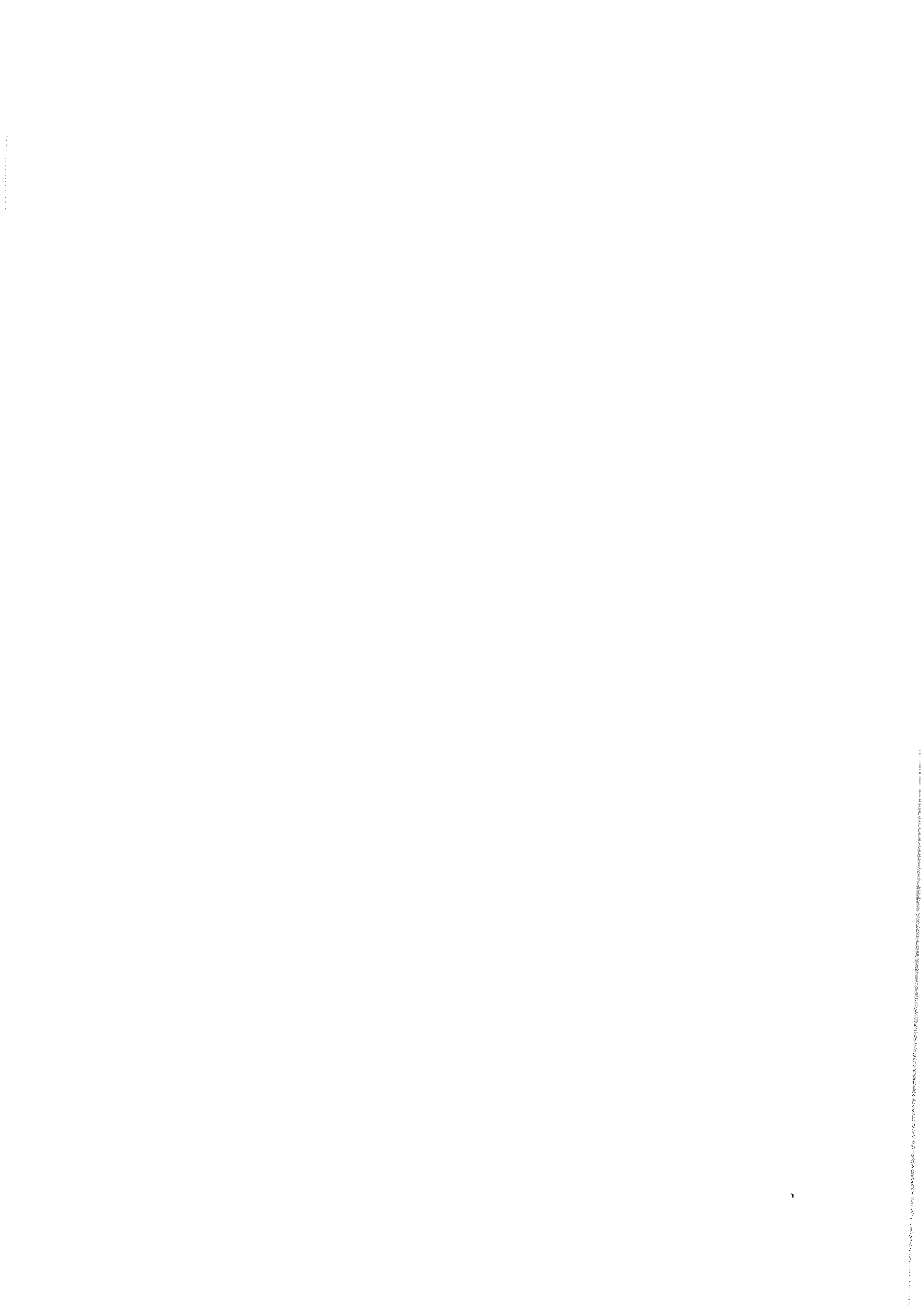
Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit - V, Bhubaneswar - 751 001

December 23, 2015

Contents

Section-VII	General Conditions (GC)	Page	1
Section-VIII	Particular Conditions (PC)		119
	Part A – Contract Data		120
	Part B – Specific Provisions		125
	Annexure – A I Labour Laws		132
	Annexure – A II Safety & Welfare Provisions		135
Section- IX	Contract Forms		141

CONDITIONS OF CONTRACT



Section VII. General Conditions (GC)

1.	General Provisions	6
1.1	Definitions.....	6
1.2	Interpretation.....	12
1.3	Communications	12
1.4	Law and Language.....	13
1.5	Priority of Documents.....	13
1.6	Contract Agreement.....	14
1.7	Assignment	14
1.8	Care and Supply of Documents	14
1.9	Delayed Drawings or Instructions	15
1.10	Employer's Use of Contractor's Documents	15
1.11	Contractor's Use of Employer's Documents	16
1.12	Confidential Details	16
1.13	Compliance with Laws	16
1.14	Joint and Several Liability	17
1.15	Inspections and Audit by the Bank	17
2	The Employer	18
2.1	Right of Access to the Site.....	18
2.2	Permits, Licences or Approvals	18
2.3	Employer's Personnel	19
2.4	Employer's Financial Arrangements	19
2.5	Employer's Claims.....	19
3	The Engineer	20
3.1	Engineer's Duties and Authority	20
3.2	Delegation by the Engineer.....	22
3.3	Instructions of the Engineer	23
3.4	Replacement of the Engineer	23
3.5	Determinations.....	24
4	The Contractor	24
4.1	Contractor's General Obligations	24
4.2	Performance Security.....	26
4.3	Contractor's Representative.....	27
4.4	Subcontractors.....	27
4.5	Assignment of Benefit of Subcontract	28
4.6	Co-operation	28
4.7	Setting Out.....	29
4.8	Safety Procedures.....	29
4.9	Quality Assurance.....	30

Rajesh Singh Solanki
Varaha Infra Limited
(Contractor)

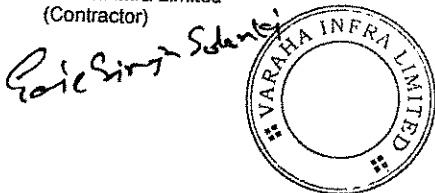


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

4.10	Site Data.....	30
4.11	Sufficiency of the Accepted Contract Amount.....	31
4.12	Unforeseeable Physical Conditions.....	31
4.13	Rights of Way and Facilities.....	33
4.14	Avoidance of Interference.....	33
4.15	Access Route.....	33
4.16	Transport of Goods.....	34
4.18	Protection of the Environment.....	34
4.19	Electricity, Water and Gas.....	34
4.22	Security of the Site.....	37
4.23	Contractor's Operations on Site.....	37
4.24	Fossils.....	37
5	Nominated Subcontractors.....	38
5.1	Definition of "nominated Subcontractor".....	38
5.2	Objection to Nomination.....	38
5.3	Payments to nominated Subcontractors.....	39
5.4	Evidence of Payments.....	39
6.	Staff and Labour.....	40
6.1	Engagement of Staff and Labour.....	40
6.2	Rates of Wages and Conditions of Labour.....	40
6.3	Persons in the Service of Employer.....	40
6.4	Labour Laws.....	40
6.5	Working Hours.....	41
6.6	Facilities for Staff and Labour.....	41
6.7	Health and Safety.....	41
6.8	Contractor's Superintendence.....	43
6.9	Contractor's Personnel.....	43
6.10	Records of Contractor's Personnel and Equipment.....	43
6.11	Disorderly Conduct.....	43
6.12	Foreign Personnel.....	43
6.13	Supply of Foodstuffs.....	44
6.14	Supply of Water.....	44
6.15	Measures against Insect and Pest Nuisance.....	44
6.16	Alcoholic Liquor or Drugs.....	44
6.17	Arms and Ammunition.....	44
6.18	Festivals and Religious Customs.....	44
6.19	Funeral Arrangements.....	44
6.20	Prohibition of Forced or Compulsory Labour.....	45
6.21	Prohibition of Harmful Child Labour.....	45
6.22	Employment Records of Workers.....	45
7.	Plant, Materials and Workmanship.....	46
7.1	Manner of Execution.....	46
7.2	Samples.....	46
7.3	Inspection.....	46
7.4	Testing.....	47

Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

7.5	Rejection	48
7.6	Remedial Work	48
7.7	Ownership of Plant and Materials	49
7.8	Royalties	49
8.	Commencement, Delays and Suspension	49
8.1	Commencement of Works	49
8.2	Time for Completion	50
8.3	Programme	50
8.4	Extension of Time for Completion	51
8.5	Delays Caused by Authorities	52
8.6	Rate of Progress	52
8.7	Delay Damages	53
8.8	Suspension of Work	53
8.9	Consequences of Suspension	54
8.10	Payment for Plant and Materials in Event of Suspension	54
8.11	Prolonged Suspension	54
8.12	Resumption of Work	55
9.	Tests on Completion	55
9.1	Contractor's Obligations	55
9.2	Delayed Tests	55
9.3	Retesting	56
9.4	Failure to Pass Tests on Completion	56
10.	Employer's Taking Over	56
10.1	Taking Over of the Works and Sections	56
10.2	Taking Over of Parts of the Works	57
10.3	Interference with Tests on Completion	58
11.	Defects Liability	59
11.1	Completion of Outstanding Work and Remedying Defects	59
11.2	Cost of Remedying Defects	59
11.3	Extension of Defects Notification Period	60
11.4	Failure to Remedy Defects	60
11.5	Removal of Defective Work	61
11.6	Further Tests	61
11.7	Right of Access	61
11.8	Contractor to Search	61
11.9	Performance Certificate	61
11.10	Unfulfilled Obligations	62
11.11	Clearance of Site	62
12.	Measurement and Evaluation	62
12.1	Works to be Measured	62
12.2	Method of Measurement	63
12.3	Evaluation	63
12.4	Omissions	65

Varaha Infra Limited
 Varaha Infra Limited
 (Contractor)



Chief Engineer
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

13.	Variations and Adjustments	65
13.1	Right to Vary.....	65
13.2	Value Engineering	66
13.3	Variation Procedure	67
13.4	Payment in Applicable Currencies.....	67
13.5	Provisional Sums	67
13.6	Daywork.....	68
13.7	Adjustments for Changes in Legislation.....	69
13.8	Adjustments for Changes in Cost	69
14.	Contract Price and Payment.....	71
14.1	The Contract Price	71
14.2	Advance Payment	72
14.3	Application for Interim Payment Certificates.....	73
14.4	Schedule of Payments.....	74
14.5	Plant and Materials intended for the Works	75
14.6	Issue of Interim Payment Certificates.....	76
14.7	Payment.....	77
14.8	Delayed Payment	78
14.9	Payment of Retention Money	78
14.10	Statement at Completion.....	79
14.11	Application for Final Payment Certificate.....	80
14.12	Discharge	80
14.13	Issue of Final Payment Certificate.....	81
14.14	Cessation of Employer's Liability	81
14.15	Currencies of Payment.....	81
15.	Termination by Employer.....	82
15.1	Notice to Correct.....	82
15.2	Termination by Employer.....	82
15.3	Valuation at Date of Termination	84
15.4	Payment after Termination	84
15.5	Employer's Entitlement to Termination for Convenience.....	85
15.6	Corrupt or Fraudulent Practices	85
16.	Suspension and Termination by Contractor	86
16.1	Contractor's Entitlement to Suspend Work	86
16.2	Termination by Contractor.....	87
16.3	Cessation of Work and Removal of Contractor's Equipment	89
16.4	Payment on Termination.....	89
17.	Risk and Responsibility	89
17.1	Indemnities.....	89
17.2	Contractor's Care of the Works	90
17.3	Employer's Risks.....	91
17.4	Consequences of Employer's Risks.....	91
17.5	Intellectual and Industrial Property Rights	92
17.6	Limitation of Liability.....	93

Goje Singh Solanki
 Varaha Infra Limited
 (Contractor)

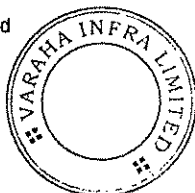


[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

17.7	Use of Employer's Accomodation/Facilities	94
18.	Insurance	94
18.1	General Requirements for Insurances	94
18.2	Insurance for Works and Contractor's Equipment	96
18.3	Insurance against Injury to Persons and Damage to Property	98
18.4	Insurance for Contractor's Personnel.....	98
19.	Force Majeure	99
19.1	Definition of Force Majeure	99
19.3	Duty to Minimise Delay.....	100
19.4	Consequences of Force Majeure.....	100
19.5	Force Majeure Affecting Subcontractor	101
19.6	Optional Termination, Payment and Release.....	101
19.7	Release from Performance.....	102
20.	Claims, Disputes and Arbitration.....	102
20.1	Contractor's Claims	102
20.2	Appointment of the Dispute Board	104
20.3	Failure to Agree on the Composition of the Dispute Board	105
20.4	Obtaining Dispute Board's Decision	106
20.5	Amicable Settlement.....	107
20.6	Arbitration.....	107
20.7	Failure to Comply with Dispute Board's Decision.....	108
20.8	Expiry of Dispute Board's Appointment	108

Raj Singh Solanki

Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

General Conditions

I. General Provisions

1.1 Definitions

In the Conditions of Contract (“these Conditions”), which include Particular Conditions, Parts A and B, and these General Conditions, the following words and expressions shall have the meanings stated. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

1.1.1 The Contract

1.1.1.1 “Contract” means the Contract Agreement, the Letter of Acceptance, the Letter of Tender, these Conditions, the Specification, the Drawings, the Schedules, and the further documents (if any) which are listed in the Contract Agreement or in the Letter of Acceptance.

1.1.1.2 “Contract Agreement” means the contract agreement referred to in Sub-Clause 1.6 [Contract Agreement].

1.1.1.3 “Letter of Acceptance” means the letter of formal acceptance, signed by the Employer, of the Letter of Tender, 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.

1.1.1.4 “Letter of Tender” means the document entitled letter of tender or letter of bid, which was completed by the Contractor and includes the signed offer to the Employer for the Works.

1.1.1.5 “Specification” means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.

1.1.1.6 “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.

1.1.1.7 “Schedules” means the document(s) entitled schedules, completed by the Contractor and

Rajeev Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

submitted with the Letter of Tender, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices.

1.1.1.8 "Tender" means the Letter of Tender and all other documents which the Contractor submitted with the Letter of Tender, as included in the Contract.

1.1.1.9 "Bill of Quantities", "Daywork Schedule" and "Schedule of Payment Currencies" mean the documents so named (if any) which are comprised in the Schedules.

1.1.1.10 "Contract Data" means the pages completed by the Employer entitled contract data which constitute Part A of the Particular Conditions.

1.1.2 Parties and Persons

1.1.2.1 "Party" means the Employer or the Contractor, as the context requires.

1.1.2.2 "Employer" means the person named as employer in the Contract Data and the legal successors in title to this person.

1.1.2.3 "Contractor" means the person(s) named as contractor in the Letter of Tender accepted by the Employer and the legal successors in title to this person(s).

1.1.2.4 "Engineer" means the person appointed 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 Sub-Clause 3.4 [Replacement of the Engineer].

1.1.2.5 "Contractor's Representative" means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-Clause 4.3 [Contractor's Representative], who acts on behalf of the Contractor.

1.1.2.6 "Employer's Personnel" means the Engineer, the assistants referred to in Sub-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

Sanjay Kumar Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Employer or the Engineer, as Employer's Personnel.

1.1.2.7 "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.

1.1.2.8 "Subcontractor" means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.

1.1.2.9 "DB" means the person or three persons appointed under Sub-Clause 20.2 [Appointment of the Dispute Board] or Sub-Clause 20.3 [Failure to Agree on the Composition of the Dispute Board]

1.1.2.10 "FIDIC" means the Fédération Internationale des Ingénieurs-Conseils, the international federation of consulting engineers.

1.1.2.11 "Bank" means the financing institution (if any) named in the Contract Data.

1.1.2.12 "Borrower" means the person (if any) named as the borrower in the Contract Data.

1.1.3 Dates, Tests, Periods and Completion

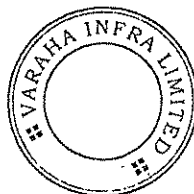
1.1.3.1 "Base Date" means the date 28 days prior to the latest date for submission of the Tender.

1.1.3.2 "Commencement Date" means the date notified under Sub-Clause 8.1 [Commencement of Works].

1.1.3.3 "Time for Completion" means the time for completing the Works or a Section (as the case may be) under Sub-Clause 8.2 [Time for Completion], as stated in the Contract Data (with any extension under Sub-Clause 8.4 [Extension of Time for Completion]), calculated from the Commencement Date.

1.1.3.4 "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 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Employer.

P. Singh Subramani
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

- 1.1.3.5 "Taking-Over Certificate" means a certificate issued under Clause 10 [Employer's Taking Over].
- 1.1.3.6 "Tests after Completion" means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.7 "Defects Notification Period" means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], which extends over twelve months except if otherwise stated in the Contract Data (with any extension under Sub-Clause 11.3 [Extension of Defects Notification Period]), calculated from the date on which the Works or Section is completed as certified under Sub-Clause 10.1 [Taking Over of the Works and Sections].
- 1.1.3.8 "Performance Certificate" means the certificate issued under Sub-Clause 11.9 [Performance Certificate].
- 1.1.3.9 "day" means a calendar day and "year" means 365 days.

1.1.4 Money and Payments

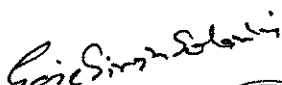
- 1.1.4.1 "Accepted Contract Amount" means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
- 1.1.4.2 "Contract Price" means the price defined in Sub-Clause 14.1 [The Contract Price], and includes adjustments in accordance with the Contract.
- 1.1.4.3 "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.
- 1.1.4.4 "Final Payment Certificate" means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].
- 1.1.4.5 "Final Statement" means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].

P. Singh Sobani
Varaha Infra Limited
(Contractor)

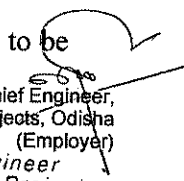


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

- 1.1.4.6 "Foreign Currency" means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency.
- 1.1.4.7 "Interim Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.
- 1.1.4.8 "Local Currency" means the currency of the Country.
- 1.1.4.9 "Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment].
- 1.1.4.10 "Provisional Sum" means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].
- 1.1.4.11 "Retention Money" means the accumulated retention moneys which the Employer retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].
- 1.1.4.12 "Statement" means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.
- 1.1.5 Works and Goods**
- 1.1.5.1 "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 Permanent Works.
- 1.1.5.2 "Goods" means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.
- 1.1.5.3 "Materials" means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
- 1.1.5.4 "Permanent Works" means the permanent works to be


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

executed by the Contractor under the Contract.

1.1.5.5 "Plant" means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Employer and relating to the construction or operation of the Works.

1.1.5.6 "Section" means a part of the Works specified in the Contract Data as a Section (if any).

1.1.5.7 "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.

1.1.5.8 "Works" mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.1.6 Other Definitions

1.1.6.1 "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.

1.1.6.2 "Country" means the country in which the Site (or most of it) is located, where the Permanent Works are to be executed.

1.1.6.3 "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.

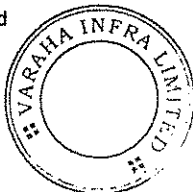
1.1.6.4 "Force Majeure" is defined in Clause 19 [Force Majeure].

1.1.6.5 "Laws" means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.

1.1.6.6 "Performance Security" means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].

1.1.6.7 "Site" means the places where the Permanent Works are to be executed including storage and working

Sandeep Kumar Sankar
Varaha Infra Limited
(Contractor)



S. S. S.
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

areas 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.

1.1.6.8 "Unforeseeable" means not reasonably foreseeable by an experienced contractor by the Base Date.

1.1.6.9 "Variation" means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

1.2 Interpretation

In the Contract, except where the context requires otherwise:

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word "agree," "agreed" or "agreement" require the agreement to be record in writing;
- (d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and
- (e) the word "tender" is synonymous with "bid", and "tenderer" with "bidder" and the words "tender documents" with "bidding documents"

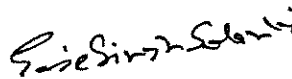
The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

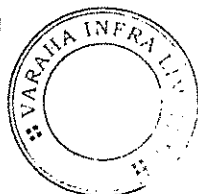
In these Conditions, provisions including the expression "Cost plus profit" require this profit to be one-twentieth (5%) of this Cost unless otherwise indicated in the Contract Data.


1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) 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
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Data. However:

- (i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
- (ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Engineer or the other Party, as the case may be.

1.4 Law and Language The Contract shall be governed by the law of the country or other jurisdiction stated in the Contract Data.

The ruling language of the Contract shall be that stated in the Contract Data.

The language for communications shall be that stated in the Contract Data. If no language is stated there, the language for communications shall be the ruling language of the Contract.

1.5 Priority of Documents 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:

- (a) the Contract Agreement (if any),
- (b) the Letter of Acceptance,
- (c) the Tender,
- (d) the Particular Conditions – Part A,
- (e) the Particular Conditions – Part B
- (f) these General Conditions
- (g) the Specification,
- (h) the Drawings, and
- (i) the Schedules and any other documents forming part of the Contract.

Sanjiv Kumar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employee)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction.

1.6 Contract Agreement

The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless the Particular Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Particular Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Employer.

1.7 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:

- (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and
- (b) 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.

1.8 Care and Supply of Documents

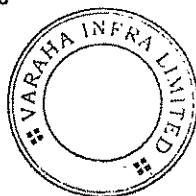
The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

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.

Savitri Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Eng (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

1.9 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 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 Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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

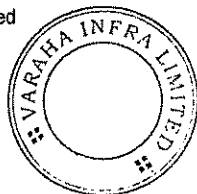
1.10 Employer's Use of Contractor's Documents

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 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

Ganesh Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Eng (Employer)
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

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.

1.11 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.

1.12 Confidential Details

The Contractor's and the Employer's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify the Contractor's compliance with the Contract and allow its proper implementation.

Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. 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.

1.13 Compliance with Laws

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Particular Conditions:

Geetanjali Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Chief Engineer)
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

- (a) the Employer shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specification as having been (or to be) 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 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, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

1.14 Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a joint venture or other unincorporated grouping of two or more persons:

- (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.

1.15 Inspections and Audit by the Bank

The Contractor shall permit, and shall cause its Subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and all accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 15.6 [Corrupt or Fraudulent Practices] which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 1.15 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).

Gajendra Kumar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

2. The Employer

2.1 Right of Access to the Site

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 required to enable the Contractor to proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

If the Contractor suffers delay and/or incurs Cost 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 subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.


After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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, Cost or profit.


2.2 Permits, Licences or Approvals

The Employer shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

- (a) copies of the Laws of the Country which are relevant to the Contract but are not readily available, and
- (b) any permits, licences or approvals required by the Laws


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

of the Country:

- (i) which the Contractor is required to obtain under Sub-Clause 1.13 [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.

2.3 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 Sub-Clause 4.6 [Co-operation], and
- (b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

2.4 Employer's Financial Arrangements

The Employer shall submit, before the Commencement Date and thereafter within 28 days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment]. Before the Employer makes any material change to his financial arrangements, the Employer shall give notice to the Contractor with detailed particulars.

In addition, if the Bank has notified to the Borrower that the Bank has suspended disbursements under its loan, which finances in whole or in part the execution of the Works, the Employer shall give notice of such suspension to the Contractor with detailed particulars, including the date of such notification, with a copy to the Engineer, within 7 days of the Borrower having received the suspension notification from the Bank. If alternative funds will be available in appropriate currencies to the Employer to continue making payments to the Contractor beyond a date 60 days after the date of Bank notification of the suspension, the Employer shall provide reasonable evidence in such notice of the extent to which such funds will be available.

2.5 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

Genic Singh Solanki
Varaha Infra Limited
(Contractor)



Genic Singh Solanki
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

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 Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Employer's Equipment and Free-Issue Material], or for other services requested by the Contractor.

The notice shall be given as soon as practicable and no longer than 28 days 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 Sub-Clause 3.5 [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 Sub-Clause 11.3 [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

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. If the Engineer is required to obtain the approval of the Employer before exercising a specified authority, the requirements shall be as stated in the Particular Conditions. The Employer shall promptly inform the Contractor of any change to

Sandeep Kumar Saha
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

the authority attributed to the Engineer.

However, whenever the Engineer exercises a specified authority for which the Employer's approval is required, then (for the purposes of the Contract) the Employer shall be deemed to have given approval.

Except as otherwise stated in these Conditions:

- (a) whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall be deemed to act for the Employer;
- (b) the Engineer has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract; and
- (c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.
- (d) Any act by the Engineer in response to a Contractor's request except otherwise expressly specified shall be notified in writing to the Contractor within 28 days of receipt.

The following provisions shall apply:

The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions:

- (a) Sub-Clause 4.12 [Unforeseeable Physical Conditions]: Agreeing or determining an extension of time and/or additional cost.
- (b) Sub-Clause 13.1 [Right to Vary]: Instructing a Variation, except;
 - (i) in an emergency situation as determined by the Engineer, or
 - (ii) if such a Variation would increase the Accepted Contract Amount by less than the percentage

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specified in the Contract Data.

- (c) Sub-Clause 13.3 [Variation Procedure]: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 [Right to Vary] or 13.2 [Value Engineering].
- (d) Sub-Clause 13.4 [Payment in Applicable Currencies]: Specifying the amount payable in each of the applicable currencies

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 13 [Variations and Adjustments] and shall notify the Contractor accordingly, with a copy to the Employer.

3.2 Delegation by the Engineer

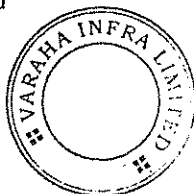
The Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation 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 Sub-Clause 3.5 [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 1.4 [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

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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.

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, Clause 13 [Variations and Adjustments] shall apply.

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:

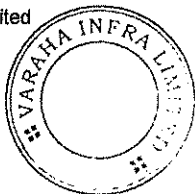
- (a) gives an oral instruction,
- (b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
- (c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,

then the confirmation shall constitute the written instruction of the Engineer or delegated assistant (as the case may be).

3.4 Replacement of the Engineer

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 intended replacement Engineer. If the Contractor considers the intended replacement Engineer to be unsuitable, he has the right to raise objection against him by notice to the Employer, with supporting particulars, and the Employer shall give full and fair consideration to this objection.

Geje Din...
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3.5 Determinations

Whenever these Conditions provide that the Engineer shall proceed in accordance with this Sub-Clause 3.5 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 within 28 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

4. The Contractor

4.1 Contractor's General Obligations

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.

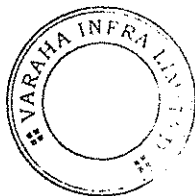
The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country as defined by the Bank.

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 Contractor's 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 Permanent Works.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

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If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Particular Conditions:

- (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 1.4 [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, if applicable, 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 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

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4.2 Performance Security

The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount and currencies 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 to the Employer within 28 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The 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 annexed to the Particular Conditions or in another form approved by the Employer.

The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the 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 extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.

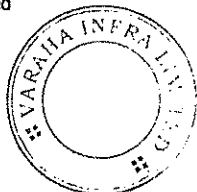
The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract.

The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.

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 increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

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4.3 Contractor's Representative

The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract.

Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.

The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Engineer's prior consent, and the Engineer shall be notified accordingly.

The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].

The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Engineer has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

4.4 Subcontractors

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

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Particular Conditions:

- (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;
- (b) the prior consent of the Engineer shall be obtained to other proposed Subcontractors;
- (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 of such work on the Site; and
- (d) each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Employer].

The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [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.

4.5 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.

4.6 Co-operation

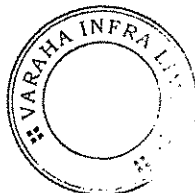
The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

- (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

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extent that it causes the Contractor to suffer delays and/or 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.

4.7 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.

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.

If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.8 Safety Procedures The Contractor shall:

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- (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 10 [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.

4.9 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 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.

4.10 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 Tender or

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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 Tender 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.

4.11 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 Sub-Clause 4.10 [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.

4.12 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.

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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 13 [Variations and Adjustments] shall apply.

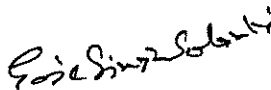
If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

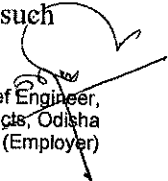
Upon receiving such notice and inspecting and/or investigating these physical conditions, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described 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 Tender. If and to the extent that these more favourable conditions were encountered, the Engineer may proceed in accordance with Sub-Clause 3.5 [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 shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such


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evidence.

4.13 Rights of Way and Facilities

Unless otherwise specified in the Contract the Employer shall provide access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.

4.14 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.

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.

4.15 Access Route

The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. 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;
- (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

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by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Particular Conditions:

- (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.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractor's 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.

4.18 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.

4.19 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 for his construction activities and to the extent defined in the Specifications, for the tests.

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

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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 Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

4.20 Employer's Equipment and Free-Issue Materials

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 Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [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 Specification. 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.

After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Employer of liability for any shortage, defect or default not apparent from a visual inspection.

Seje Singh
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
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4.21 Progress Reports

Unless otherwise stated in the Particular Conditions, 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:

- (a) 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 5 [Nominated Subcontractors]),
- (b) photographs showing the status of manufacture and of progress on the Site;
- (c) 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,
 - (ii) Contractor's inspections,
 - (iii) tests, and
 - (iv) shipment and arrival at the Site;
- (d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- (e) copies of quality assurance documents, test results and certificates of Materials;
- (f) list of notices given under Sub-Clause 2.5 [Employer's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];
- (g) safety statistics, including details of any hazardous

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incidents and activities relating to environmental aspects and public relations; and

- (h) comparisons of actual and planned progress, 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.

4.22 Security of the Site

Unless otherwise stated in the Particular Conditions:

- (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.

4.23 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 additional 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 fulfil obligations under the Contract.

4.24 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

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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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [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 Sub-Clause 3.5 [Determinations] to agree or determine these matters.

5. Nominated Subcontractors

5.1 Definition of "nominated Subcontractor"

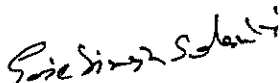
In the Contract, "nominated Subcontractor" means a Subcontractor:

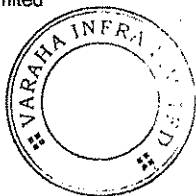
- (a) who is stated in the Contract as being a nominated Subcontractor, or
- (b) whom the Engineer, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

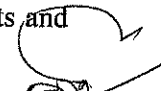
5.2 Objection to Nomination

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 in writing 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 nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and


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Chief Engineer
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employees; or

- (c) the nominated Subcontractor does not accept to enter into a subcontract which specifies 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;
 - (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; and
 - (iii) be paid only if and when the Contractor has received from the Employer payments for sums due under the Subcontract referred to under Sub-Clause 5.3 [Payment to nominated Subcontractors].

5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor 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 sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 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 all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- (a) submits this reasonable evidence to the Engineer, or
- (b)
 - (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

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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.

6. Staff and Labour

6.1 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, feeding, transport, and, when appropriate, housing.

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from sources within the Country.

6.2 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.

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 tax 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.

6.3 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer's Personnel.

6.4 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.

Sujeet Kumar Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

6.5 Working Hours

No work shall be carried out on the Site on locally recognised 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.

6.6 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.

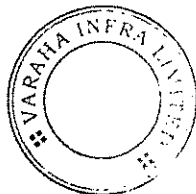
6.7 Health and Safety

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 ambulance service are available 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.

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. The Contractor shall maintain records and make reports concerning

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health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

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.

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 labour (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 labour 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 labour.

The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 8.3 [Programme] 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.

Sanjiv Kumar Saha
Varaha Infra Limited
(Contractor)



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- 6.8 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 1.4 [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.
- 6.9 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 appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.
- 6.10 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.
- 6.11 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.
- 6.12 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, if

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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 responsible for making the appropriate arrangements for their return or burial.

6.13 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.

6.14 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.

6.15 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.

6.16 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.

6.17 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.

6.18 Festivals and Religious Customs

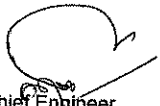
The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs.

6.19 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.

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(Contractor)




Chief Engineer,
World Bank Projects, Odisha
Chief Engineer
World Bank Project
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- 6.20 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.
- 6.21 Prohibition of Harmful Child Labour** 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.
- 6.22 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 submitted to the Engineer, and these records shall be available for inspection by Auditors during normal working hours. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].
- 6.23 Workers' Organisations** In countries where the relevant labour laws recognise workers' rights to form and to join workers' organisations of their choosing without interference and to bargain collectively, the Contractor shall comply with such laws. Where the relevant labour laws substantially restrict workers' organisations, the Contractor shall enable alternative means for the Contractor's Personnel to express their grievances and protect their rights regarding working conditions and terms of employment. In either case described above, and where the relevant labour laws are silent, the Contractor shall not discourage the Contractor's Personnel from forming or joining workers' organisations of their choosing or from bargaining collectively, and shall not discriminate or retaliate against the Contractor's Personnel who participate, or seek to participate, in such organisations and bargain collectively. The Contractor shall engage with such workers' representatives. Workers' organisations are expected to fairly represent the workers in the workforce.

Euse Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
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6.24 Non-Discrimination and Equal Opportunity

The Contractor shall not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline. In countries where the relevant labour laws provide for non discrimination in employment, the Contractor shall comply with such laws. When the relevant labour laws are silent on nondiscrimination in employment, the Contractor shall meet this Sub-Clause's requirements. Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination.

7. Plant, Materials and Workmanship

7.1 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.

7.2 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
- (b) additional samples instructed by the Engineer as a Variation.

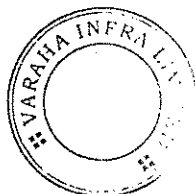
Each sample shall be labelled as to origin and intended use in the Works.

7.3 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

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(Contractor)



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(Employer)
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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.

7.4 Testing

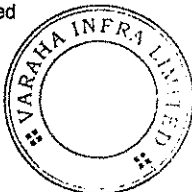
This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

Except as otherwise specified in the Contract, 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 13 [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.

Rajeev Singh Solanki
Varaha Infra Limited
(Contractor)



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Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
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If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as 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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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.

7.5 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 Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer.

7.6 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

Saradindu Subudhi

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(Contractor)

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Chief Engineer (Employer)
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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 subparagraph (c).

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 Sub-Clause 2.5 [Employer's Claims] pay to the Employer all costs arising from this failure.

7.7 Ownership of Plant and Materials

Except otherwise specified in the Contract, 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:

- (a) when it is incorporated in the Works;
- (b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties

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.

8. Commencement, Delays and Suspension

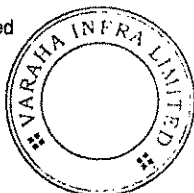
8.1 Commencement of Works

Except otherwise specified in the Particular Conditions, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Engineer's instruction recording the agreement of both Parties on such fulfilment and instructing to commence the Works is received by the Contractor:

- (a) signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant

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authorities in the Country;

- (b) delivery to the Contractor of reasonable evidence of the Employer's Financial arrangements (under Sub-Clause 2.4 [Employer's Financial Arrangements])
- (c) except if otherwise specified in the Contract Data, possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works; and
- (d) receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.
- (e) If the said Engineer's instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].

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.

8.2 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 the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

8.3 Programme

The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. 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

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- 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 5 [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.

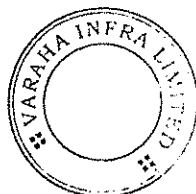
The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price, or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

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 in accordance with this Sub-Clause.

8.4 Extension of Time for Completion

The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking-Over of the Works and Sections] is

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or will be delayed by any of the following causes:

- (a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
- (b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
- (c) exceptionally adverse climatic conditions,
- (d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
- (e) 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 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities

If the following conditions apply, namely:

- (a) the Contractor has diligently followed the procedures laid down by the relevant legally 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 8.4 [Extension of Time for Completion].

8.6 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 8.3 [Programme],

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other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Engineer may instruct the Contractor to submit, under Sub-Clause 8.3 [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 notice under Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer, in addition to delay damages (if any) under Sub-Clause 8.7 [Delay Damages] below.

Additional costs of revised methods, including acceleration measures, instructed by the Engineer to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Employer, without generating, however, any other additional payment benefit to the Contractor.

8.7 Delay Damages

If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall be subject to notice under Sub-Clause 2.5 [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.

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 15.2 [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.

8.8 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.

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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 8.9 [Consequences of Suspension], 8.10 [Payment for Plant and Materials in Event of Suspension] and 8.11 [Prolonged Suspension] shall not apply.

8.9 Consequences of Suspension

If the Contractor suffers delay and/or incurs Cost from complying with the Engineer's instructions under Sub-Clause 8.8 [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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [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 Sub-Clause 3.5 [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 8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials which have not been delivered to Site, if:

- (a) the work on Plant or delivery of Plant and/or Materials has been suspended for more than 28 days, and
- (b) the Contractor has marked the Plant and/or Materials as the Employer's property in accordance with the Engineer's instructions.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [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 13 [Variations and

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Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

8.12 Resumption of Work

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 after receiving from the Engineer an instruction to this effect under Clause 13 [Variations and Adjustments].

9. Tests on Completion

9.1 Contractor's Obligations

The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [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.

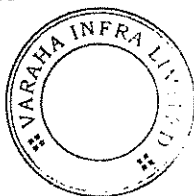
9.2 Delayed Tests

If the Tests on Completion are being unduly delayed by the Employer, Sub-Clause 7.4 [Testing] (fifth paragraph) and/or Sub-Clause 10.3 [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,

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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.

9.3 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [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.

9.4 Failure to Pass Tests on Completion

If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Engineer shall be entitled to:

- (a) order further repetition of Tests on Completion under Sub-Clause 9.3;
- (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 Sub-Clause 11.4 [Failure to Remedy Defects]; or
- (c) issue a Taking-Over Certificate, if the Employer so requests.

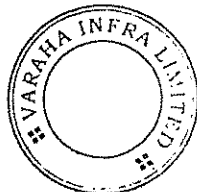
In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure. Unless the relevant reduction 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 Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations].

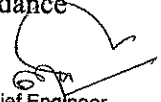
10. Employer's Taking Over

10.1 Taking Over of the Works and Sections

Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Employer when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [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


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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.

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.

10.2 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 Permanent 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

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(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 20.1 [Contractor's Claims] to payment of any such Cost plus profit, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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 Sub-Clause 3.5 [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 8.7 [Delay Damages], and shall not affect the maximum amount of these damages.

10.3 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 is 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

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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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

10.4 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.

11. Defects Liability

11.1 Completion of Outstanding Work and Remedying Defects

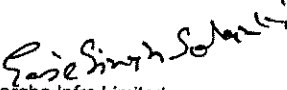
In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:

- (a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
- (b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Employer on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).


If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Employer.

11.2 Cost of Remedying Defects

All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:


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- (a) any design for which the Contractor is responsible,
- (b) Plant, Materials or workmanship not being in accordance with the Contract, or
- (c) failure by the Contractor to comply with any other obligation.

If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Employer and Sub-Clause 13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

The Employer shall be entitled subject to Sub-Clause 2.5 [Employer's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of a damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.

If delivery and/or erection of Plant and/or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Employer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Employer may (at his option):

- (a) carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer the costs reasonably incurred by the Employer in remedying the defect or damage;
- (b) require the Engineer to agree or determine a reasonable

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reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or

- (c) if the defect or damage deprives the Employer of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Employer shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 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.

11.6 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 Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

11.7 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.


11.8 Contractor to Search

The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Engineer in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

11.9 Performance

Performance of the Contractor's obligations shall not be

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Certificate

considered to have been completed until the Engineer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

The Engineer 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. A copy of the Performance Certificate shall be issued to the Employer.

Only the Performance Certificate shall be deemed to constitute acceptance of the Works.

11.10 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.

11.11 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 receipt by the Contractor 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.

12. Measurement and Evaluation

12.1 Works to be Measured

The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement at Completion], and 14.11 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

Whenever the Engineer requires any part of the Works to be

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measured, reasonable notice shall be given to the Contractor's Representative, who shall:

- (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 Permanent 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 and certify the payment of the undisputed part. 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.

12.2 Method of Measurement

Except as otherwise stated in the Contract and notwithstanding local practice:

measurement shall be made of the net actual quantity of each item of the Permanent Works, and

the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

12.3 Evaluation

Except as otherwise stated in the Contract, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the Contract Price by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 [Works to be Measured] and 12.2 [Method of Measurement] and the appropriate rate or price for the item.

For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contract

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or, if there is no such item, specified for similar work.

Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

However, a new rate or price shall be appropriate for an item of work if:

(a)

- (i) the measured quantity of the item is changed by more than 25% from the quantity of this item in the Bill of Quantities or other Schedule,
- (ii) this change in quantity multiplied by such specified rate for this item exceeds 0.25% of the Accepted Contract Amount,
- (iii) this change in quantity directly changes the Cost per unit quantity of this item by more than 1%, and
- (iv) this item is not specified in the Contract as a "fixed rate item";

or

(b)

- (i) the work is instructed under Clause 13 [Variations and Adjustments],
- (ii) no rate or price is specified in the Contract for this item, and
- (iii) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.

Each new rate or price shall be derived from any relevant rates or prices in the Contract, with reasonable adjustments to take account of the matters described in sub-paragraph (a) and/or (b), as applicable. If no rates or prices are relevant for the derivation of a new rate or price, it shall be derived from the reasonable Cost of executing the work, together with profit, taking account of any other relevant matters.

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Until such time as an appropriate rate or price is agreed or determined, the Engineer shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned Works commences.

12.4 Omissions

Whenever the omission of any work forms 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 Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13. Variations and Adjustments

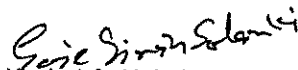
13.1 Right to Vary

Variations may be initiated by the Engineer at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal.

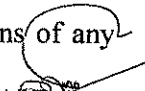
The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Engineer stating ~~(with supporting particulars)~~ that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Engineer shall cancel, confirm or vary the instruction.

Each Variation may include:

- (a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
- (b) changes to the quality and other characteristics of any item of work,
- (c) changes to the levels, positions and/or dimensions of any


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part of the Works,

- (d) omission of any work unless it is to be carried out by others,
- (e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- (f) changes to the sequence or timing of the execution of the Works.

The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Engineer instructs or approves a Variation.

13.2 Value Engineering

The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer.

The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

- (a) the Contractor shall design this part,
- (b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
- (c) if this change results in a reduction in the contract value of this part, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
 - (i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and

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- (ii) the reduction (if any) in the value to the Employer of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.

However, if amount (i) is less than amount (ii), there shall not be a fee.

13.3 Variation Procedure

If the Engineer requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

- (a) a description of the proposed work to be performed and a programme for its execution,
- (b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
- (c) the Contractor's proposal for evaluation of the Variation.

The Engineer shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Engineer to the Contractor, who shall acknowledge receipt.

Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Engineer instructs or approves otherwise in accordance with this Clause.

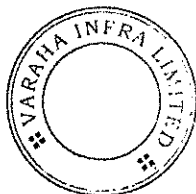
13.4 Payment in Applicable Currencies

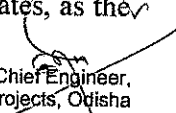
If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.5 Provisional Sums

Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the


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Engineer shall have instructed. For each Provisional Sum, the Engineer may instruct:

- (a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or
- (b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:
 - (i) the actual amounts paid (or due to be paid) by the Contractor, and
 - (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Contract Data shall be applied.

The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.6 Daywork

For work of a minor or incidental nature, the Engineer may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this Sub-Clause shall not apply.

Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Engineer accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:

- (a) the names, occupations and time of Contractor's Personnel,
- (b) the identification, type and time of Contractor's Equipment and Temporary Works, and

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- (c) the quantities and types of Plant and Materials used.

One copy of each statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.7 Adjustments for Changes in Legislation

The 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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [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 Sub-Clause 3.5 [Determinations] to agree or determine these matters.

Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time 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 13.8 [Adjustments for Changes in Cost] .

13.8 Adjustments for Changes in Cost

In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

If this Sub-Clause applies, the amounts payable to the

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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.

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 for each of the currencies 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 general type:

$$P_n = a + b L_n / L_o + c E_n / E_o + d M_n / M_o + \dots \text{ where:}$$

“P_n” is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period “n”, this period being a month unless otherwise stated in the Contract Data ;

“a” is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;

“b”, “c”, “d”, ... are coefficients representing the estimated proportion of each cost element related to the execution of the Works, as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;

“L_n”, “E_n”, “M_n”, ... are the current cost indices or reference prices for period “n”, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period (to which the particular Payment Certificate relates); and

“L_o”, “E_o”, “M_o”, ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.

The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in

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the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

In cases where the "currency of index" (stated in the table) is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the central bank of the Country, of this relevant currency on the above date for which the index is required to be applicable.

Until such time as each current cost index is available, the Engineer shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price: whichever is more favourable to the Employer.

The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.

14. Contract Price and Payment

14.1 The Contract Price

Unless otherwise stated in the Particular Conditions:

- (a) the Contract Price shall be agreed or determined under Sub-Clause 12.3 [Evaluation] 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 13.7 [Adjustments for Changes in Legislation];
- (c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:
 - (i) of the Works which the Contractor is required to

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execute, or

- (ii) for the purposes of Clause 12 [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. The Engineer may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.
- (e) Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefor, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation.

14.2 Advance Payment The Employer shall make an advance payment, as an interest-free loan for mobilisation and cash flow support, 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 deliver to the Employer and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by an entity and from within a country (or other jurisdiction) approved by the Employer, and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer.

The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall 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

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guarantee until the advance payment has been repaid.

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 14.6 [Issue of Interim Payment Certificates], as 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 and deductions and repayments of retention) exceeds 30 percent(30%) of the Accepted Contract Amount less Provisional Sums; and
- (b) deductions shall be made at the amortisation rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 per cent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

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 15 [Termination by Employer], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Employer] and Sub-Clause 19.6 [Optional Termination, Payment and Release], payable by the Contractor to the Employer.

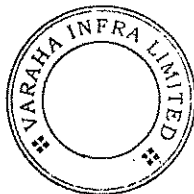
14.3 Application for Interim Payment Certificates

The Contractor shall submit a Statement in six copies to 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 Sub-Clause 4.21 [Progress Reports].

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

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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 cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [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 for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
- (e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and 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 20 [Claims, Disputes and Arbitration]; and
- (g) the deduction of amounts certified in all previous Payment Certificates.

14.4 Schedule of Payments

If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- (a) the instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- (b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- (c) if these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to

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which progress is less or more than that on which the instalments 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.

14.5 Plant and Materials intended for the Works

If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules, this Sub-Clause shall not apply.

The Engineer shall determine and certify each addition if the following conditions are satisfied:

(a) the Contractor has:

- (i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
- (ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

(b) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when shipped,
- (ii) have been shipped to the Country, en route to the Site, in accordance with the Contract; and
- (iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Engineer together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form

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and issued by an entity approved by the Employer in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration;

or

- (c) the relevant Plant and Materials:
- (i) are those listed in the Schedules for payment when delivered to the Site, and
 - (ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.

The additional amount to be certified shall be the equivalent of eighty percent of the Engineer's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

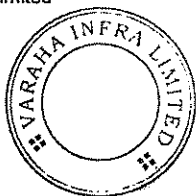
The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

14.6 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 28 days after receiving a Statement and supporting documents, deliver to the Employer and to the Contractor an Interim Payment Certificate which shall state the amount which the Engineer fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Engineer on the Statement if any.

However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue an 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

Sachin Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
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Contractor accordingly.

An Interim Payment Certificate shall not be withheld for any other reason, although:

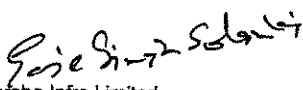
- (a) if any thing supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- (b) if the Contractor was or is failing to perform any work or obligation in accordance 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.

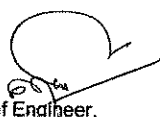
14.7 Payment

The Employer shall pay to the Contractor:

- (a) the first instalment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub-Clause 14.2 [Advance Payment], whichever is later;
- (b) the amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents or, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the amount shown on any statement submitted by the Contractor, within 14 days after such statement is submitted, any discrepancy being 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, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the undisputed amount shown in the Final Statement, within 56 days after the date of notification of the suspension in accordance with Sub-Clause 16.2.


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.

14.8 Delayed Payment

If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges 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 14.7 [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 Particular Conditions, these financing charges shall be calculated at the annual rate of three percentage points above the discount rate of the central bank in the country of the currency of payment, or if not available, the interbank offered rate, and shall be paid in such currency.

The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy.

14.9 Payment of Retention Money

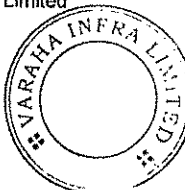
When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a

Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

However, if any work remains to be executed under Clause 11 [Defects Liability], the Engineer shall be entitled to withhold certification of the estimated cost of this work until it has been

Sandeep Kumar
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Chief Engineer
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executed.

When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost].

Unless otherwise stated in the Particular Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a guarantee, in the form annexed to the Particular Conditions or in another form approved by the Employer and provided by an entity approved by the Employer, for the second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security in Sub-Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the second half of the Retention Money. The release of the second half of the Retention Money against a guarantee shall then be in lieu of the release under the second paragraph of this Sub-Clause. The Employer shall return the guarantee to the Contractor within 21 days after receiving a copy of the Performance Certificate.

If the Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under it when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security.

14.10 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 14.3 [Application for Interim Payment Certificates], showing:

- (a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the

Serie Singh Sankar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
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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 14.6 [Issue of Interim Payment Certificates].

14.11 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 with supporting documents 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, the Contractor shall submit such further information as the Engineer may reasonably require within 28 days from receipt of the said draft 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 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Employer (with a copy to the Engineer) a Final Statement.

14.12 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

Saje Singh Solanki
Varaha Infra Limited
(Contractor)



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Chief Engineer,
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(Employer)
Chief Engineer
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Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.13 Issue of Final Payment Certificate

Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall deliver to the Employer and to the Contractor, 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 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [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.

14.14 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 14.10 [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.

14.15 Currencies of Payment

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- (a) if the Accepted Contract Amount was expressed in Local Currency only:

Sanje Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
Chief Engineer
World Bank Project
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- (i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
 - (ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
 - (iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a)(i) above;
- (b) payment of the damages specified in the Contract Data, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
 - (c) other payments to the Employer by the Contractor shall be made in the currency in which the sum was expended by the Employer, or in such currency as may be agreed by both Parties;
 - (d) if any amount payable by the Contractor to the Employer in a particular currency exceeds the sum payable by the Employer to the Contractor in that currency, the Employer may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
 - (e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the central bank of the Country.

15. Termination by Employer

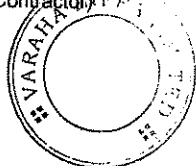
15.1 Notice to Correct

If the Contractor fails to carry out any obligation under the Contract, the Engineer may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.

15.2 Termination by Employer

The Employer shall be entitled to terminate the Contract if the Contractor:

Varaha Infra Limited
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
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- (a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
- (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:
 - (i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
 - (ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 28 days after receiving it,
- (d) subcontracts the whole of the Works or assigns the Contract without the required agreement,
- (e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against 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 Laws) has a similar effect to any of these acts or events, or
- (f) 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 (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination.

In any of these events or circumstances, the Employer may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f), the Employer may by notice terminate the Contract immediately.

Genie Singh Solanki
Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

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 then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (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.

The Employer shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Employer, these items may be sold by the Employer in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

15.3 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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.

15.4 Payment after Termination

After a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Employer may:

- (a) proceed in accordance with Sub-Clause 2.5 [Employer's Claims],
- (b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Employer, have been established, and/or
- (c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to

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Chief Engineer,
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(Employer)
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the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.

15.5 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 under Sub-Clause 16.2 [Termination by Contractor].

After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

15.6 Corrupt or Fraudulent Practices

If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, subconsultants, services providers, suppliers and/or their employees has engaged in corrupt, fraudulent, collusive coercive, or obstructive 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 15 shall apply as if such expulsion had been made under Sub-Clause 15.2 [Termination by Employer].

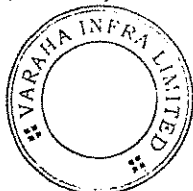
Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Sub-Clause 6.9 [Contractor's Personnel].

For the purposes of this Sub-Clause:

- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party¹;

¹ "Another party" refers to a public official acting in relation to the procurement process or contract execution]. In this context, "public official" includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

Sujeet Singh Solanki
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(Employer)
Chief Engineer
World Bank Project
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- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation²;
- (iii) “collusive practice” is an arrangement between two or more parties³ designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party⁴ or the property of the party to influence improperly the actions of a party;
- (v) “obstructive practice” is
 - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under Sub-Clause 1.15 [Inspections and Audits by the Bank].

16. Suspension and Termination by Contractor

16.1 Contractor’s Entitlement to Suspend Work

If the Engineer fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Employer fails to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements] or Sub-Clause 14.7 [Payment], the Contractor may, after giving not less than 21 days’ notice to the Employer, suspend work (or reduce

² “Party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

³ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁴ “Party” refers to a participant in the procurement process or contract execution.

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the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

Notwithstanding the above, if the Bank has suspended disbursements under the loan or credit from which payments to the Contractor are being made, in whole or in part, for the execution of the Works, and no alternative funds are available as provided for in Sub-Clause 2.4 [Employer's Financial Arrangements], the Contractor may by notice suspend work or reduce the rate of work at any time, but not less than 7 days after the Borrower having received the suspension notification from the Bank.

The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].

If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

16.2 Termination by Contractor

The Contractor shall be entitled to terminate the Contract if:

- i) the Contractor does not receive the reasonable evidence within 42 days after giving notice under Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause 2.4 [Employer's

Sajid Hussain
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(Employer)
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Financial Arrangements],

- ii) the Engineer fails, within 56 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
- iii) the Contractor does not receive the amount due under an Interim Payment Certificate within 42 days after the expiry of the time stated in Sub-Clause 14.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Employer's Claims]),
- iv) the Employer substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,
- v) the Employer fails to comply with Sub-Clause 1.6 [Contract Agreement] or Sub-Clause 1.7 [Assignment],
- vi) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension], or
- vii) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against 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 Laws) has a similar effect to any of these acts or events.
- viii) In the event the Bank suspends the loan or credit from which part of the payments to the Contractor are being made, if the Contractor has not received the sums due to him upon expiration of the 14 days referred to in Sub-Clause 14.7 [Payment] for payments under Interim Payment certificates, the Contractor may, without prejudice to the Contractor's entitlement to financing charges under Sub-Clause 14.8 [Delayed Payment], take one of the following actions, namely (i) suspend work or reduce the rate of work, or (ii) terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer, such termination to take effect 14 days after the giving of the notice.
- ix) the Contractor does not receive the Engineer's instruction recording the agreement of both Parties on the fulfilment

Eric Simons
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World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
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of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

16.3 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clause 15.5 [Employer's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- (a) cease all further work, except for such work as may have been instructed by the Engineer for the protection of life or property or for the safety of the Works,
- (b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and
- (c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

16.4 Payment on Termination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Employer shall promptly:

- (a) return the Performance Security to the Contractor,
- (b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
- (c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

17. Risk and Responsibility

17.1 Indemnities

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, 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

Soje Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
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(Employer)
Chief Engineer
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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

- (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 18.3 [Insurance Against Injury to Persons and Damage to Property].

17.2 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 10.1 [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

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for their care, from any cause not listed in Sub-Clause 17.3 [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.

17.3 Employer's Risks

The risks referred to in Sub-Clause 17.4 [Consequences of Employer's Risks] below, insofar 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 Permanent 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, and
- (h) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.

17.4 Consequences of Employer's Risks

If and to the extent that any of the risks listed in Sub-Clause 17.3 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

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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 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (f) and (g) of Sub-Clause 17.3 [Employer's Risks], Cost plus profit shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

17.5 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 any thing not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the

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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.

17.6 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, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4 (b) [Consequences of Employer's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].

The total liability of the Contractor to the Employer, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Employer's Equipment and Free-Issue Material], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in the Contract Data, or (if such multiplier or other sum is not so stated), 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.

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17.7 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.

18. Insurance

18.1 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 acceptable to 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.

Wherever the Employer is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. 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.

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the

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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 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

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 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

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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 Sub-Clause 2.5 [Employer's Claims] or Sub-Clause 20.1 [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 18) with insurers from any eligible source country.

18.2 Insurance for Works and Contractor's Equipment

The insuring Party shall insure the Works, Plant, Materials 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. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [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 Clause 11 [Defects Liability]).

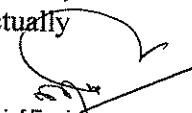
The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

Unless otherwise stated in the Particular Conditions, 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 to the Party actually


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bearing the costs of rectifying the loss or damage,

- (c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Employer's Risks],
- (d) shall also cover, to the extent specifically required in the bidding documents of the Contract, 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 17.3 [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) a 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 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) Goods while they are not in the Country, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

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 Sub-Clause 2.5 [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,

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unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property

The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [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.

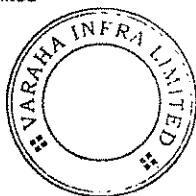
This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data, with no limit on the number of occurrences. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

Unless otherwise stated in the Particular Conditions, 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 (except things insured under Sub-Clause 18.2) 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 17.3 [Employer's Risks], except to the extent that cover is available at commercially reasonable terms.

18.4 Insurance for Contractor's

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The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including

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legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.

The insurance shall cover the Employer and the Engineer against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, 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.

19. Force Majeure

19.1 Definition of Force Majeure

In this Clause, "Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control,
- (b) which such Party could not reasonably have provided against before entering into the Contract,
- (c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
- (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,
- (iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except

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as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and

- (v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

19.3 Duty to Minimise Delay

Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.

A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

19.4 Consequences of Force Majeure

If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in the case of sub-paragraphs (ii) to (iv), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [Insurance (for

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Works and Contractor's Equipment].

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

19.5 Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

19.6 Optional Termination, Payment and Release

If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

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, and the Contractor shall place the same at the Employer's disposal;
- (c) other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;
- (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); and

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- (e) the Cost of repatriation of the Contractor's staff and labour employed wholly in connection with the Works at the date of termination.

19.7 Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- (b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

20. Claims, Disputes and Arbitration

20.1 Contractor's Claims

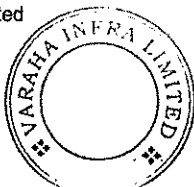
If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving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

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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 further contemporary records. The Contractor shall permit the Engineer to inspect all these records, and shall (if instructed) submit copies to the Engineer.

Within 42 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 42 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 the above defined time period.

Within the above defined period of 42 days, the Engineer shall proceed in accordance with Sub-Clause 3.5 [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 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

Each Payment Certificate shall include such additional payment for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until

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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.

If the Engineer does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Engineer and any of the Parties may refer it to the Dispute Board in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision].

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.

20.2 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision]. The Parties shall appoint a DB by the date stated in the Contract Data.

The DB shall comprise, as stated in the Contract Data, either one or three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of construction involved in the Works and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons.

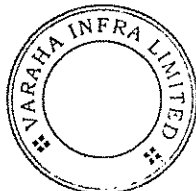
If the Parties have not jointly appointed the DB 21 days before the date stated in the Contract Data and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

However, if a list of potential members has been agreed by the Parties and is included in the Contract, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the

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Varaha Infra Limited
(Contractor)



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Chief Engineer,
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General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

If at any time the Parties so agree, they may jointly refer a matter to the DB for it to give its opinion. Neither Party shall consult the DB on any matter without the agreement of the other Party.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the discharge referred to in Sub-Clause 14.12 [Discharge] shall have become effective.

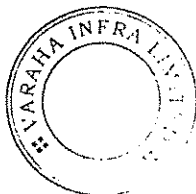
20.3 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of Sub-Clause 20.2, [Appointment of the Dispute Board],
- (b) either Party fails to nominate a member (for approval by the other Party), or fails to approve a member nominated by the other Party, of a DB of three persons by such date,
- (c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (d) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official named in the Contract Data shall, upon the request of either or both of the Parties and after

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**20.4 Obtaining
Dispute Board's
Decision**

due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Engineer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Engineer. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

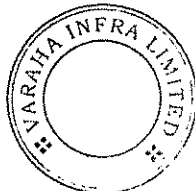
Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in Sub-Clause 20.7 [Failure to Comply with Dispute Board's Decision] and Sub-Clause 20.8 [Expiry of Dispute Board's

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Appointment], neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

20.5 Amicable Settlement

Where notice of dissatisfaction has been given under Sub-Clause 20.4 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth day after 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.

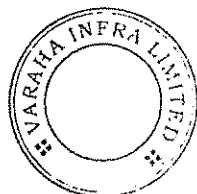
20.6 Arbitration

Unless indicated otherwise in the Particular Conditions, any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties:

- (a) For contracts with foreign contractors, international arbitration with proceedings administered by the institution appointed in the Contract Data, conducted in accordance with the rules of arbitration of the appointed institution, if any, or in accordance with UNCITRAL arbitration rules, at the choice of the appointed institution,
- (b) the place of arbitration shall be the city where the headquarters of the appointed arbitration institution is located,
- (c) the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language], and
- (d) For contracts with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.

The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, and any decision of the DB, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Engineer from being called as a witness and

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giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Engineer and the DB shall not be altered by reason of any arbitration being conducted during the progress of the Works.

20.7 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a final and binding DB decision, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.6 [Arbitration]. Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply to this reference.

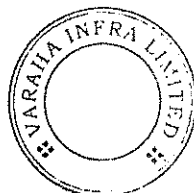
20.8 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply, and
- (b) the dispute may be referred directly to arbitration under Sub-Clause 20.6 [Arbitration].

Sri Srinivas Solanki

Varaha Infra Limited
(Contractor)



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APPENDIX

A General Conditions of Dispute Board Agreement

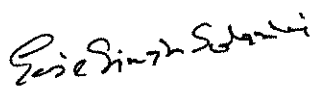
- 1. Definitions** Each "Dispute Board Agreement" is a tripartite agreement by and between:
- (a) the "Employer";
 - (b) the "Contractor"; and
 - (c) the "Member" who is defined in the Dispute Board Agreement as being:
 - (i) the sole member of the "DB" and, where this is the case, all references to the "Other Members" do not apply, or
 - (ii) one of the three persons who are jointly called the "DB" (or "Dispute Board") and, where this is the case, the other two persons are called the "Other Members."

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

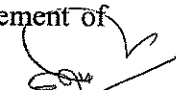
- 2. General Provisions** Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:
- (a) the Commencement Date defined in the Contract,
 - (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
 - (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Agreement shall terminate upon the expiry of this period.

- 3. Warranties** The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of


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impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

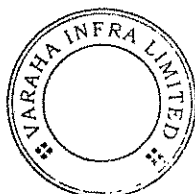
- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

4. General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or Engineer, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with Sub-Clause 20.4 of the Conditions of Contract;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer

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regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;

- (h) ensure his/her availability for all site visits and hearings as are necessary;
- (i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding

Sudhanshu Solanki
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paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under Sub-Clause 20.4 of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

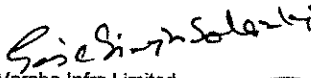
The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

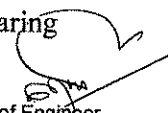
The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
 - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on Site visits, hearings or preparing


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decisions; and

- (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the parties fail to agree on the retainer fee or the daily fee, the appointing entity or official named in the Contract Data shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-

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half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.8 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity

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thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

Gaie Singh Solanki
Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
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PROCEDURAL RULES

Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.

The timing of and agenda for each site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.

Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.

The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.

If any dispute is referred to the DB in accordance with Sub-Clause 20.4 of the Conditions of Contract, the DB shall proceed in accordance with Sub-Clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:

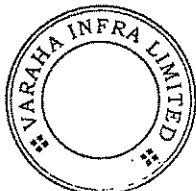
- (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
- (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.

The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.

Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.

The Employer and the Contractor empower the DB, among other things, to:

Sandeep Singh Solanki
Varaha Infra Limited
(Contractor)




[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

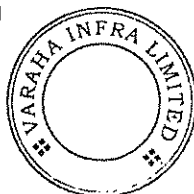
Chief Engineer
World Bank Project
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- (a) establish the procedure to be applied in deciding a dispute,
- (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
- (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules,
- (d) take the initiative in ascertaining the facts and matters required for a decision,
- (e) make use of its own specialist knowledge, if any,
- (f) decide upon the payment of financing charges in accordance with the Contract,
- (g) decide upon any provisional relief such as interim or conservatory measures, and
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.

The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with Sub-Clause 20.4, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:

- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members not to make a decision.


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

BLANK.

Richish Sengupta

Varaha Infra Limited
(Contractor)



[Signature]

Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Section VIII. Particular Conditions (PC)

The following Particular Conditions shall supplement the GC. Whenever there is a conflict, the provisions herein shall prevail over those in the GC.

Sai Singh Solanki

Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Part A - Contract Data

Conditions	Sub-Clause	Data
Employer's name and address	1.1.2.2 & 1.3	Chief Engineer, World Bank Projects, Odisha, O/o the E.I.C(Civil), Odisha, NirmanSoudha, Unit-V Bhubaneswar – 751 001
Engineer's name and address	1.1.2.4 & 1.3	Resident Engineer, LEA Associates South Asia Pvt. Ltd., Jagatpur-Chandbali Road Project, Near Underpass, NH-5A At:- Duhuria, P.O. Pandiri Dist-Kendrapara-754211 Phone: 06727-220077 Email:- laskendrapara@lasindia.com
Bank's name	1.1.2.11	International Bank for Reconstruction and Development, (The World Bank)
Borrower's name	1.1.2.12	Government of Odisha through Government of India
Time for Completion	1.1.3.3	<u>18 Months</u> <i>For achievement of Milestones, Refer to Summary of Sections at the end of this table</i>
Defects Notification Period	1.1.3.7	365 days.
Sections	1.1.5.6	<i>Refer to Table: Summary of Sections below</i>
Electronic transmission systems	1.3	Fax No- +91 674 239 0080 Email: pmuosrp@gmail.com
Governing Law	1.4	Law in force in the Union of India.
Ruling language	1.4	English
Language for communications	1.4	English
Time for the Parties entering into a Contract Agreement	1.6	28 days
Time for access to the Site	2.1	<u>Section-I</u> Km 35/000 to Km 49/000shall be handed over for execution prior to issuance of advance payments under Clause 14.2.

Rajeev Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Conditions	Sub-Clause	Data
		<p><u>Section-II</u> Km 25/000 to Km 35/000 shall be handed over for execution within <u>3 months</u> of date of commencement of work.</p> <p>Within two weeks of handing over of each stretch, the contractor needs to examine and provide acceptance of receiving encumbrance free land or inform the employer, with details of encumbrances if any.</p> <p>The Employer may reschedule the above Sections before the handing over time mentioned above considering the ground conditions. However, it shall be ensured to maintain the length of the Sections as far as possible.</p>
Engineer's Duties and Authority	3.1(b)(ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of <u>2%</u> shall require approval of the Employer in aggregate subject to restrictions imposed pursuant to Sub-Clause 3.1 of Particular Conditions
Performance Security	4.2	<p>The performance security will be in the form of an unconditional Bank Guarantee and in the same currency(ies). If the Bank Guarantee is issued by a financial institution located outside India, such financial institution shall have a correspondent financial institution located in India.</p> <p>The performance security shall be for an amount as stated below.</p> <ul style="list-style-type: none"> (a) 5 percent of the Accepted Contract Amount (b) Additional Performance Security of 5% of the accepted contract amount in case the contractor is a Joint Venture and (c) Additional Security for unbalanced bids determined in accordance with the Cl.34.5 of ITB

Gaie Singh Saini
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Conditions	Sub-Clause	Data
Normal working hours	6.5	08:00 Hours to 18:00 Hours (Except otherwise stipulated by the Government of Odisha in exceptional climatic conditions.)
Commencement of Works	8.1 (c)	Possessions of sites shall be given as mentioned in Sub-Clause 2.1 above.
	8.1 (d)	Deleted
Delay damages for the Works	8.7 & 14.15(b)	Refer to Table: Summary of Sections below
Maximum amount of delay damages	8.7	10 % of the final Contract Price.
Provisional Sums	13.5.(b)(ii)	NIL
Adjustments for Changes in Cost	13.8	Period "n" applicable to the adjustment multiplier "Pn": 3 months
Total advance payment	14.2	<p>5% Percentage of the Accepted Contract Amount payable in two equal installments in the currencies and proportions in which the Accepted Contract Amount is payable against Bank Guarantee.</p> <p>The first instalment shall be paid after due acceptance of encumbrance free land of Section-I mentioned in Sub-Clause 2.1 and after establishment of construction camp site by the contractor.</p> <p>The second instalment shall be paid after mobilization of 75% of the construction equipment and machinery at site as proposed by the contractor to be deployed in the works as per the work programme for the first six months.</p> <p>The Bank Guarantee(s) shall be for the amount equal to the advance to be paid to the contractor.</p> <p>The advance payment shall not be an interest bearing advance.</p>

Sai Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Conditions	Sub-Clause	Data
Repayment amortization rate of advance payment	14.2(b)	10 % Repayment will begin when amount of work certified by the Engineer attains 30% of the Contract Price or six months whichever is earlier.
Percentage of Retention	14.3	10 %
Limit of Retention Money	14.3	5 % of the Accepted Contract Amount
Plant and Materials	14.5(b)(i)	Not Applicable
	14.5(c)(i)	Not Applicable
	14.5(c)(ii)	On the following materials, subject to maximum of 2% of the accepted contract amount against Bank Guarantee of equal value, at any point of time, as required for utilization in the permanent works subject to maximum of 35% of the contract amount. 1. Reinforced Steel 2. Processed Aggregates complying with the relevant specifications.
Minimum Amount of Interim Payment Certificates	14.6	(i) Minimum INR 10 Million for the first three months. (ii) Minimum INR 30 Million from 4 th to 6 th month . (iii) Minimum INR 75 Million from 7 th and onwards. The contractor's work programme shall be in commensurate with the above stipulations.
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	These financing charges shall be calculated at 1% over the PLR rate fixed by Reserve Bank of India to Commercial Banks for payment in local currencies (INR) and at 2% over the 3 month's London Inter Bank Offer Rate (LIBOR) for foreign currencies.
Maximum total liability of the Contractor to the Employer	17.6	The accepted contract amount
Periods for submission of insurance:	18.1	

Sudhir Solanki
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(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Conditions	Sub-Clause	Data
a. evidence of insurance. b. relevant policies		14 days 28 days
Maximum amount of deductibles for insurance of the Employer's risks	18.2(d)	<i>US\$ 5000 or Rs. 250,000 per occurrence</i>
Minimum amount of third party insurance	18.3	<i>Rs. 50,00,000 per occurrence with unlimited number of occurrences</i>
Date by which the DB shall be appointed	20.2	90days after the Commencement date
The DB shall be comprised of	20.2	Three Members from IRC panel
List of potential DB sole members	20.2	<i>None</i>
Appointment (if not agreed) to be made by	20.3	<i>Secretary General of Indian Roads Congress.</i>
Rules of arbitration	20.6(a)	<i>Rules and Procedures laid out for Arbitration & Reconciliation Act, 1996 of Government of India or any amendment thereof.</i>

Summary of Sections

The following table shows the time for completion and amount of delay damages to be paid by the Contractor for delaying completion of different sections. Such delay damage shall be recovered from the Contractor from the Interim Payment Certificates, in case the contractor fails to pay the delay damage due. In case the Contractor delays in achieving any of the milestone/milestones but completes the total work within total completion period, then the delay damages for delay in completion of a particular section paid by the Contractor/ recovered from the IPCs of the Contractor and withheld shall be refunded back to the Contractor.

Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 8.7)
Section-I: 14Kms as mentioned in Cl. 2.1	14(Fourteen) Months from Commencement of Works	<u>INR. 316,000 per day</u>
Section-II: 10.00 Kms as mentioned in Cl. 2.1	18(Seventeen) Months from Commencement of Works	<u>INR. 226,000 per day</u>

Rajeev Singh Sankar
Varaha Infra Limited
(Contractor)

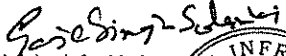




[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Part B - Specific Provisions

<p>Clause 1.5 Priority of Documents</p>	<p>Delete sub paragraphs (a) to (i) in Sub-Clause 1.5 and substitute with the following:</p> <ul style="list-style-type: none"> a. the Contract Agreement (if any), b. the Letter of Acceptance, c. the record of pre-award clarifications (if any), d. the letter of Tenderthe addenda e. the Particular Conditions- Part-A-Contract Data f. the Particular Conditions-Part-B-Specific Provisions, g. the General Conditions h. Works Requirement (a) Part-I General Specifications (b) Part-II-Supplimentary Technical Specifications including additional Technical Specifications. (c) Part-III-Technical Specifications for Building Work <ul style="list-style-type: none"> i. the Drawings (j) the Priced Bill of Quantities (k) the Environment Management Plan (EMP) and (l) any other documents forming part of the Contract
<p>Sub-Clause 4.1 Contractor's General Obligations</p>	<p>Add the following at the end of 5th Paragraph.</p> <p>Working Drawings / fabrication drawings for temporary works (such as form work, staging, centering, scaffolding, specialized construction, handling and launching facilities and the like), material list for structural fabrication as well as detailed drawings for anchorage and temporary support details for pre-stressing cables as well as bar bending and cutting schedules for reinforcement etc. shall be prepared by the Contractor at his own cost and forwarded in triplicate to the Engineer at least four weeks in advance of actual constructional requirements. The Engineer will scrutinize and return one copy of the same for the Contractor's use with amendments, if any, noted in red ink within two weeks of submission. Such approval shall not relieve the Contractor of any of his responsibilities in connection with temporary works. The Contractor will supply six copies of the approved drawings for the Engineer's use.</p> <p>The cost of preparing all such items of work shall be deemed to have been included in the respective rates/prices quoted by the Contractor in the Bill of Quantities.</p>


 Gajendra Singh
 Varaha Infra Limited
 (Contractor)
 


 Chief Engineer,
 World Bank Projects, Odisha
 Chief (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

	The Contractor shall ensure that his representative or Senior Site Representative attends all the periodic review meetings notified by the Engineer / Employer / Employer's Representative.
Clause 4.2 Performance Security	Substitute the words 'an entity and from within a country(or other jurisdiction)' starting in the 4th line of 2nd paragraph of Sub-Clause 4.2 with 'any Nationalized/ Scheduled Commercial Bank located in India or a Foreign Bank with counter guarantee from a Nationalized/ Scheduled Commercial Bank located in India'
Clause 4.4 Sub-Contractors	Replace the words 'the whole of Works' with 'more than 30% of the Works in terms of value including the Work subcontracted to'
Clause 4.7 Setting Out	Add the following paragraph after 1st paragraph of sub-Clause "The Contractor shall give to the Engineer not less than 48 (forty eight) hours notice of his intention to set out or give levels for any part of the Works so that timely arrangement may be made for checking or issuing instructions."
Clause 4.14 Avoidance of Interference	Add the following paras (c), (d) and (e) after para (b) as follows: (c) In case, any operation connected with traffic necessitated diversion, obstruction or closure of any road, railway or any other Right of Way, the approval of the Engineer or the Engineer's Representative and the concerned authorities shall be obtained well in advance by the Contractor. (d) The Contractor shall so conduct his operations as to have under construction no greater length or amount of work than he can carry out efficiently with due regard to the convenience of the public. (e) The Contractor shall maintain the existing road in its normal condition suitable for the season of the year, from the time he commences the work on Site until the completion of the works. The Contractor's obligations shall be limited to the portions/ stretches/ structures handed over to him by the Employer. Other stretches not handed over to him shall be maintained by the Employer till handing over.
Sub-Clause 6.4 Staff and Labour	Add the following at end of Sub-Clause 6.4: The employees of the Contractor and the Sub-contractor shall in

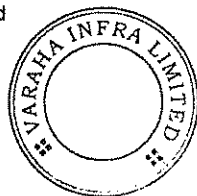
Sandeep Singh Solanki
Varaha Infra Limited
(Contractor)



Sandeep Singh Solanki
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

	<p>no case be treated as the employees of the Employer at any point of time.</p> <p>Salient features of some major Labour Laws applicable to establishments engaged in Construction of Civil Works are given in Annexure A-1 for reference purpose.</p> <p>The contractor and sub contractor shall comply with the safety and welfare provisions as detailed in Annexure A-II</p>
<p>Sub-Clause 7.3 Inspection</p>	<p>Amend the first line of last para as follows: The Contractor shall give “not less than 48 (forty eight) hours” notice to the Engineer whenever any...</p>
<p>Clause 8.3 Programme</p>	<p>Insert the words ‘for his consent in five hard copies and 2 versions on compact discs’ after ‘Engineer’ in the 1st sentence of Sub-Clause 8.3.</p> <p>Delete sub paragraph (a) of Sub Clause 8.3 and replace with the following:</p> <p>(a) the order in which the Contractor intends to carry out the works including;</p> <ul style="list-style-type: none"> i) A detailed works programme indicating the anticipated timing of each stage of construction. ii) A detailed mobilization programme with all principal mobilization events including the anticipated timing of procurement, delivery to site, construction, erection and commissioning, provision of facilities for the Employer’s and Engineer’s personnel, mobilization of key personnel, etc. This programme will provide the basis for the stage release of advance payments as prescribed under Clause 14.2.
<p>Clause 10.1 Taking Over of Works and Sections</p>	<p>Add the following additional paragraph after second paragraph of Sub-Clause 10.1:</p> <p>‘Before the Works are taken over in accordance with this Clause 10, the Contractor shall supply all drawings as appropriate of the Work as-built. Unless otherwise agreed, the Work shall not be considered to be completed for the purpose of Taking Over until such drawings have been approved by the Engineer and submitted to the Employer.’</p>
<p>Clause 12.3 Evaluation</p>	<p>Replace ‘0.25%’ with ‘1%’ in sub-para (a) (ii) of Sub-Clause 12.3.</p>

S. S. Singh
Varaha Infra Limited
(Contractor)



S. S. Singh
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

	<p>Add the following after sub-para (a) (iv):</p> <p>(a) (v) No change in the rate for any item contained in the BOQ shall be considered in case of any decrease in the actual quantity of work executed.</p>
<p>Sub-Clause 14.1 The Contract Price</p>	<p><i>Add</i></p> <p>(e) Notwithstanding the provisions of subparagraph (b), 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 customs 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, the Contractor shall prepare, for approval by the customs authorities, an assessment of the residual value of the Contractor's Equipment and spare part 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 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.</p>
<p>Clause 14.13 Issue of Final Payment Certificate</p>	<p>Replace the word '28' with '42' in the 1st sentence of 1st paragraph of Sub-Clause 14.13</p> <p>Replace the word '28' with '42' in the last paragraph of Sub-</p>

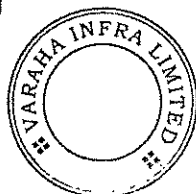
Geeta Singh Sahu
 Waraha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
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 World Bank Project
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	Clause 14.13
Clause 14.15 Currencies of Payment	<p>Replace sub paragraph (e) of sub-Clause 14.15 with the following:</p> <p>'if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and shall be average buying and average selling rate of the foreign currency determined by the Reserve bank of India.</p>
17.2 Contractor's Care of the Works	<p>Add the following after end of para:</p> <p>(A) <u>Failure to Maintain the Road during construction</u></p> <p>The contractor's obligations for maintenance of the road stretches shall be limited to the portions/ stretches/ structures handed over to him by the Employer. Other stretches not handed over to him shall be maintained by the Employer till handing over.</p> <p>In case of failure to execute the same, the following amount shall be deducted from the payment certificates of the contractor.</p> <ol style="list-style-type: none"> 1. Road Surface : In case of failure to maintain the road surface pot hole free, a penalty shall be levied at the rate Rs.1500/- per km per day. 2. Shoulders : In case of failure to maintain the shoulders , a penalty shall be levied at the rate Rs.500/- per km per day. <p>(B) <u>Failure to take up Road Safety measures during construction</u></p> <p>The Contractor has to follow all traffic safety measures as defined in the Technical Specifications. In case of failure to execute the same, the work shall be taken up by the department through other agency, and the following amount shall be deducted from the payment certificates of the contractor.</p> <p>Deduction for non-performance</p> <p>1.Diversion:- (a) Rs. 1,20,000/- per location plus Rs.1500/- per day per location towards maintenance from the date of installation till removal of the diversion (b) A penalty of Rs.5000/- per day per location shall be imposed from the date of occurrence till installation of the safety</p>

Gajendra Kumar
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(Employer)
Chief Engineer
World Bank Project
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	<p>items.</p> <p>2.Part Road Barricading:- (a) Rs. 75,000/- per location of 250 mtr. or less plus Rs.1500/- per day per location towards maintenance from the date of installation till completion of the stretch (b) A penalty of Rs.5000/- per day per location shall be imposed from the date of occurrence till installation of the safety items.</p> <p>(C) <u>Failure to adhere to Environmental Mitigation Measures during construction</u></p> <p>The Contractor has to follow all Environmental Mitigation Measures as defined in the Technical Specifications . A penalty shall be levied at the rate indicated below for non-conformity of the following items.</p> <ol style="list-style-type: none"> 1. Not filling up of the post of Environment and Safety Officer- Penalty @ Rs. 50,000/- per month 2. No proper sanitation & waste disposal arrangements at the labour camp site- Penalty @ Rs. 10,000/- per single violation compounded to Rs. 50,000/- at any single instance 3. No dust control measures at site- Penalty @ Rs. 5,000/- per location per single violation compounded to Rs. 50,000/- at any single instance 4. No pollution and / or noise control of crusher, hot mix plant, batch mix plant- Penalty @ Rs. 10,000/- per single violation compounded to Rs. 50,000/- at any single instance 5. Improper disposal of debris/ residues- Penalty @ Rs. 10,000/- per single violation compounded to Rs. 50,000/- at any single instance 6. Spillage of oil at camp site not arrested- Penalty @ Rs. 10,000/- per single violation compounded to Rs. 50,000/- at any single instance 7. Persons not using Personal Protective Equipments (PPE)- Penalty @ Rs. 200/- per single violation per person 8. Burrow area/ quarry management not done- Penalty @ Rs. 10,000/- per location per instance.
<p>Clause 20.6 Arbitration</p>	<p>Substitute sub paragraph (a) with the following:</p> <p>(a) A dispute with an Indian Contractor shall be finally settled by arbitration in accordance with the Arbitration & Conciliation Act, 1996, or any statutory amendment thereof. The arbitral tribunal shall consist of 3 (three) Arbitrators, one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and</p>

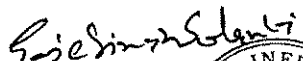
S. S. S. S.
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S. S. S. S.
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

	<p>shall act as Presiding Arbitrator. In case of failure of the two Arbitrators, appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed in the last, the Presiding arbitrator shall be appointed by the Appointing Authority as specified in the Bid Data Sheet. For the purposes of this Sub-Clause, the term“Indian Contractor” means a Contractor who is registered in India and is a juridical person created under Indian law as well as a joint venture between such a Contractor and a Foreign Contractor.</p> <p>In case of a dispute with a Foreign Contractor, the dispute shall be finally settled in accordance with the provisions of UNCITRAL Arbitration Rules. For the purposes of this Sub-Clause, the term “Foreign Contractor” means a Contractor who is not registered in India and is not a juridical person created under Indian Law.</p>
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Varaha Infra Limited
(Contractor)




Chief Engineer,
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(Employer)

Chief Engineer
World Bank Project
O/n the E.I.C.(C). Odisha, BBSR

Annexure-AI

Salient features of some major Labour Laws applicable to establishments engaged in Construction of Civil Works

(i) Workmen Compensation Act, 1923

The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

(ii) 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 at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

(iii) Employees' PF and Miscellaneous Provisions Act, 1952

The Act provides for monthly contributions by the employer plus workers @10 % or 8.33 %. The benefits payable under the Act are:

- (a) Pension or family pension on retirement or death as the case may be.
- (b) Deposit linked insurance on the death in harness of the worker.
- (c) Payment of PF accumulation on retirement/death etc.

(iv) Maternity Benefit Act, 1951

The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

(v) Contract Labour (Regulation and 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 a 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.

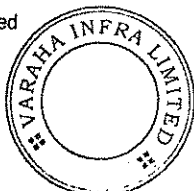
(vi) Minimum Wages Act, 1948

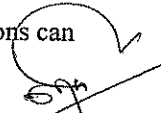
The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, and Runways are scheduled employment.

(vii) 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.


Varaha Infra Limited
(Contractor)




Chief Engineer,
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(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

(viii) Equal Remuneration Act, 1979

The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc.

(ix) Payment of Bonus Act, 1965

The Act is applicable to all establishments employing 20 or more workmen. 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. 3,500/- per month or less. The bonus to be paid to employees getting Rs. 2,500/- per month or above up to Rs.3, 500/- per month shall be worked out by taking wages as Rs.2, 500/- per month only. 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 the Act.

(x) 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.

(xi) 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.

(xii) Trade Unions Act, 1926

The Act lays down the procedure for registration of trade unions of workmen and employees. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities.

(xiii) Child Labour (Prohibition and 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.

(xiv) Inter-State Migrant Workmen's (Regulation of Employment and 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

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(Employer)

Chief Engineer
World Bank Project
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(xv) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and The Building and Other Construction workers Welfare Cess Act of 1996

All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay Cess @ 1% of the cost of construction as notified by the Labour and Employment Department, Government of Odisha vide Resolution dated December 15, 2008. 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 accommodation for Workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

(xvi) The Factories Act, 1948

The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave 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.

Sandeep Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
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Annexure-A II

Safety & Welfare Provisions for labour to be employed by the Contractor

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.

1. Safety Provisions:

The Contractor shall comply with all the precautions as required for the safety of the workmen.

- (i) All workmen at site shall be provided with safety helmets and yellow/orange jackets. Workmen required on site during night hours shall be provided with fluorescent yellow jackets with reflective lopes.
- (ii) Workers employed on mixing asphaltic materials, cement, lime mortars, concrete etc. shall be provided with protective footwear, protective goggles.
- (iii) Those engaged in handling any material, which is injurious to the eyes, shall be provided with protective goggles.
- (iv) Those engaged in welding works shall be provided with welder's protective eye-shield.
- (v) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- (vi) 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.
- (vii) Scaffolding or staging more than 3.25 metres above the ground or floor, swung or suspended from an overhead support or erected with stationary support, shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the support or structure.
- (viii) Working platforms, gangways, and stairways shall be so constructed that they do not sag unduly or unequally, and if the height of any platform or gangway or stairway is more than 3.25 metres above ground level or floor level, it shall have closely spaced boards, have adequate width and be suitably provided with guard rails as described in (ii) above.
- (ix) 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.
- (x) 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

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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.

(xi) Adequate precautions shall be taken to prevent danger from electrical equipment. 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.

(xii) Excavation and Trenching: All trenches, 1.5 metres or more in depth, shall at all times be supplied with at least one ladder for each 20 metres in length or fraction thereof. Ladders shall be extended from the bottom of the trench to at least 1 metre above the surface of the ground. The sides of a trench, which is 1.5 metres or more in depth shall be stepped back to provide a suitable slope, or be securely held by timber bracing so as to avoid the danger of side collapse. Excavated material shall not be placed within 1.5 metres of the edge of any trench or half the depth of the trench, whichever is more. Excavation shall be made from the top to the bottom. Under no circumstances shall undermining or undercutting be done.

(xiii) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that manhole covers are open and manholes are ventilated at least for an hour before workers are allowed to go into them. Manholes so open shall be cordoned off with suitable railing and provide warning signals or boards to prevent accidents to the public.

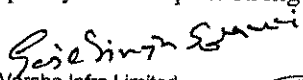
(xiv) Demolition: Before any demolition work is commenced and also during the process of the work:

- 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.


(xv) 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.

(xvi) 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.


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Chief Engineer,
World Bank Projects, Odisha
(Employer)

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World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

(c) 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

(xvii) 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 energised, insulating mats, working apparel such as gloves, sleeves and boots, as may be necessary, shall be provided. Workers shall not wear any rings, watches and carry keys or other material which are good conductors of electricity.

(xviii) 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.

(xix) 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.

(xx) 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.

(xxi) Notwithstanding anything contained in condition (i) to (xv) above, the Contractor shall 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.

The Contractor shall be responsible for observance, by his sub-contractors, of the foregoing provisions.

2. Labour Welfare Provisions:

(i) First Aid:

At every workplace, there shall be maintained in a readily accessible place first aid appliances including an adequate supply of sterilised dressings and sterilised cotton wool as prescribed in the Factory Rules of the State in which the work is carried on. The appliances shall be kept in good order and, in large work places, they shall be placed under the charge of a responsible person who shall be readily available during working hours.

(ii) Accommodation for Labour:

The Contractor shall during the progress of the work provide, erect and maintain necessary temporary living accommodation and ancillary facilities for labour at his own expense to standards and scales approved by the Engineer.

Sanjiv Kumar Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

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(iii) Drinking Water:

In every workplace, there shall be provided and maintained at suitable places easily accessible to labour, a sufficient supply of cold water fit for drinking.

Where drinking water is obtained from an intermittent public water supply each workplace shall be provided with storage tanks where drinking water shall be stored.

Every water supply storage shall be at a distance of not less than 15 metres from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within such proximity of any latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door, which shall be dust proof and waterproof.

A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection, which shall be done at least once a month.

(iv) Washing and Bathing Places:

Adequate washing and bathing places shall be provided separately for men and women. Such places shall be kept in clean and drained condition.

(v) Scale of Accommodation in Latrines and Urinals:

There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place, and the accommodation, separately for each for these, shall not be less than at the following scale:

No. of Seats

(a) Where number of persons does not exceed 50 2

(b) Where number of persons exceed 50 but does

not exceed 100 3

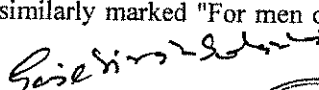
(c) For additional persons per 100 or part thereof 3

In particular cases, the Engineer shall have the power to increase the requirement, wherever necessary.

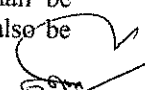
(vi) Latrines and Urinals:

Except in workplaces provided with water-flushed latrines connected with a water borne sewage system, all latrines shall be provided with dry-earth system (receptacles) which shall be cleaned at least four times daily and at least twice during working hours and kept in a strictly sanitary condition. Receptacles shall be tarred inside and outside at least once a year.

If women are employed, separate latrines and urinals, screened from those for men and marked in the vernacular in conspicuous letters "For women only", shall be provided. Those for men shall be similarly marked "For men only". A poster showing the figure of a man and a woman shall also be


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Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
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exhibited at the entrance to latrines for each sex. There shall be adequate supply of water, close to latrines and urinals.

(vii) Construction of Latrines:

Inside walls shall be constructed of masonry or other non-absorbent material and shall be cement-washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrines shall have at least a thatched roof.

(viii) Disposal of Excreta:

Unless otherwise arranged for by the local sanitary authority, arrangement for proper disposal of excreta by incineration at the workplace shall be made by means of a suitable incinerator approved by the local medical health and municipal or cantonment authorities. Alternatively, excreta may be disposed of by putting a layer of night soils at the bottom of a pucca tank prepared for the purpose and covering it with a 15 cm layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn into manure).

The Contractor shall, at his own expense, carry out all instructions issued to him by the Engineer to effect proper disposal of soil and other conservancy work in respect of Contractor's work-purpose or employees on the site. The Contractor shall be responsible for payment of any charges, which may be levied by municipal or cantonment authority for execution of such work on his behalf.

(ix) Provisions of shelters during rest:

At every workplace, there shall be provided, free of cost, four suitable sheds, two for meals and two others for rest, separately for use of men and women labour. The height of each shelter shall not be less than 3 metres from floor level to lowest part of roof. Sheds shall be kept clean and the space provided shall be on the basis of at least 0.5 sq.m. per head.

(x) Crèches:

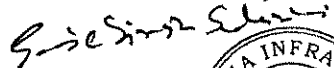
At a place where women are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud floor and wall with wooden planks spread over mud floor and covered with matting.


Huts shall be provided with suitable and sufficient openings, for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be a maidservant in attendance. Sanitary utensils shall be provided to the satisfaction of local medical, health a municipal or cantonment authorities. Use of huts shall be restricted to children, their attendants and mothers of children.

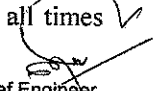
(xi) Canteen:

A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered necessary.

(xii) Planning, siting and erection of the above mentioned structures shall be approved by the Engineer or his Representative and the whole of such temporary accommodation shall at all times


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Chief Engineer,
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(Employer)

Chief Engineer
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during the progress of the Works be kept tidy and in a clean and sanitary condition to the satisfaction of the Engineer or his Representative and at the Contractor's expense. The Contractor shall conform generally to sanitary requirements of local medical, health and municipal or cantonment authorities and at all times adopt such precautions as may be necessary to prevent soil pollution of the Site.

On completion of the Works, the whole of such temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the whole of the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the Engineer.

(xiii) Anti-malarial precautions:

The Contractor shall, at his own expense, conform to all anti malarial instructions given to him by the Engineer, including filling up any borrow pits which may have been dug by him.

(xiv) Awareness and Education of HIV/AIDS

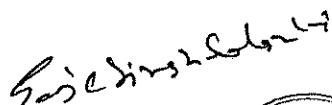
The contractor shall provide/carryout HIV/AIDS awareness and training programme to its labour and management, at least twice per year during the construction period.

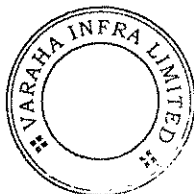
(xv) Child Labour Prohibition


The contractor shall not employ Child Labour for any works or in any manner under the Contract at any time. In the event that the Contractor uses child labour, the Employer shall terminate the Contract.

(xvi) Amendments:

The Employer may, from time to time, add to, or amend these Rules and issue such directions as it may be considered necessary for the proper implementation of these Rules or for the purpose of removing any difficulty, which may arise in the administration thereof


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR


Section IX. Annex to the Particular Conditions - Contract Forms

Table of Forms

Performance Security	ii
Advance Payment Security	vi
Retention Money Security	viii


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Performance Security

Option 1: (Demand Guarantee)

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

PERFORMANCE GUARANTEE No.: _____

We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works](hereinafter called "the Contract").

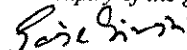
Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures]([amount in words]),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

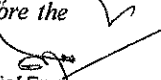
This guarantee shall expire, no later than the Day of, 2...², and any demand for payment under it must be received by us at this office on or before that date.

¹ The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Employer.

² Insert the date twenty-eight days after the expected completion date. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."


Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Handwritten signature

Varaha Infra Limited
(Contractor)



Handwritten signature

Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Option 2: Performance Bond

By this Bond _____ as Principal (hereinafter called "the Contractor") and _____] as Surety (hereinafter called "the Surety"), are held and firmly bound unto _____ as Oblige (hereinafter called "the Employer") in the amount of _____, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

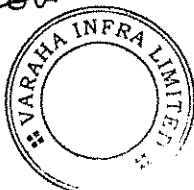
WHEREAS the Contractor has entered into a written Agreement with the Employer dated the _____ day of _____, 20 ____, for _____ in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.


NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Employer to be, in default under the Contract, the Employer having performed the Employer's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) complete the Contract in accordance with its terms and conditions; or
- (2) obtain a Bid or bids from qualified Bidders for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by the Employer and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or
- (3) pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Gore Singh Sahu
Varaha Infra Limited
(Contractor)




Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors, and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this _____ day of _____ 20 ____.

SIGNED ON _____ on behalf of _____

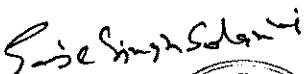
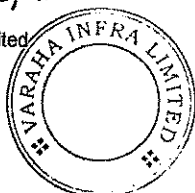
By _____ in the capacity of _____


In the presence of _____

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____


Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.(C). Odisha, BBSR

Advance Payment Security

Demand Guarantee

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works] (hereinafter called "the Contract").


Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ [amount in figures]([amount in words]) is to be made against an advance payment guarantee.

At the request of the Contractor, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures]([amount in words]) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number _____ at _____ [name and address of Bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ___ day of _____.

¹ The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

Gajendra Solanki
Varaha Infra Limited
(Contractor)


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.I. Odisha, BBSR

2____, ² whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date..

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

² *Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

Geet Singh Selanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
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Retention Money Security

Demand Guarantee

_____ [Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: _____ [Name and Address of Employer]

Date: _____

RETENTION MONEY GUARANTEE No.: _____

We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment, payment of *insert* these second half of the Retention Money *or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security* is to be made against a Retention Money guarantee.

At the request of the Contractor, we _____ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ [amount in figures] ([amount in words]¹) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the payment of the second half of the Retention Money referred to above must have been received by the

¹ The Guarantor shall insert an amount representing the amount of the second half of the Retention Money or or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security and denominated either in the currency(ies) of the second half of the Retention Money as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

Gajendra Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
in the E.I.C. (IC) Odisha, BBSR

Contractor on its account number _____ at _____ [name and address of Bank].


This guarantee shall expire, at the latest, 21 days after the date when the Employer has received a copy of the Performance Certificate issued by the Engineer. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.


This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Rise Singh Solanki
Varaha Infra Limited
(Contractor)




Chief Engineer,
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AGREEMENT No. **05** of 2015-16



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

PACKAGE No. OSRP-CW-ICB-P04A2

For

Construction for Widening & Strengthening of existing carriageway to 2-lane
road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance
Works)
under

Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Odisha Works Department, Government of Odisha

and

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road,
Jodhpur- 342006, Rajasthan, India
Tel : +91-291-2556877 , Fax : +91-291-2553861
E-mail: vccjodhpur@gmail.com

[VOLUME-III: Specifications]

Agreement Value: Rs. 97,89,97,903

*Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit – V, Bhubaneswar – 751 001*

December 23, 2015

Scope of Works

1. BACKGROUND

- 1.1 The Government of Odisha through Government of India has signed for financial assistance in the form of a Loan from the International Bank for Reconstruction and Development (the World Bank) for the Odisha State Roads Project. Part of this financial assistance will be applied towards civil works for the widening and strengthening of about 310 km of State Highways (SH).
- 1.2 The executing agency for the Odisha State Road Project is the Works Department, Odisha (OWD). The OWD has established a Project Management Unit (PMU) exclusively to be in-charge of the Odisha State Road Project. The PMU is headed by the Chief Engineer, World Bank Projects, Odisha assisted by appropriate professional and support staff.
- 1.3 The proposed construction packages to be taken up is as follows:

Sl.	Package No.	Name of the Road	Approximate Length of Construction in Km	Period of Construction
1	OSRP-CW-ICB-P04A2	Nischintakoili to Duhuria (Km 25/0 to Km 49/0 of MDR - Balance work).	24 kms	18 Months

Geographical & Climatic Information

1.3.1 Nischintakoili – Duhuria

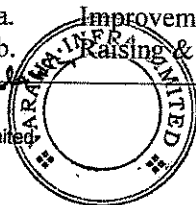
This road is located in the eastern part of Odisha. The total length of the road in this year-II package, is 24 km. The terrain is plain. The major stretch of road is located in Cuttack and kendrapada districts, however a little stretch is also located in bhadrak district. This area experiences rainfall of average 1600mm per annum and bulk of the rainfall occurs during June to October, which is the monsoon period in Odisha. Highest temperature in the area during, March to May is 45 degree Celsius and the temperature dips to the lowest of 10 degree Celsius during winter season. This project stretch passes through Nischintakoili, Chandol, Sukarapada, Duhuria (NH Jn. before Kendrapara) major villages/semi urban area. Principal rivers in the area are river Mahanadi, which runs parallel to the project road for certain distance.

2.0 WORKS

The civil works will comprise of the following, as required, mostly on existing alignments.

- a. Improvement of road geometry;
- b. Raising & Widening of embankments considering drainage and road geometry

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- c. Sub base, base and bituminous pavement with limited concrete pavements in built up areas and toll plazas;
- d. Widening of carriageway and shoulders;
- e. Improvement of side drainage & improvement to or replacement and widening of culverts;
- f. Repair and rehabilitation of bridges;
- g. Construction of new Culverts and Bridges;
- h. Traffic safety features;
- i. Road signs and road markings;
- j. Environmental protection and management measures during construction stage;
- k. Traffic diversion and management during the construction;
- l. Routine Maintenance of Project Corridors during the construction period;
- m. Construction and maintenance of Diversion roads

The Chief Engineer, World Bank Projects, Odisha on behalf of the Government of Odisha in Works Department, now wishes to engage a Contractor/ Joint Venture of Construction Firms of multi-disciplinary international and local expertise (hereafter the "Contractor"), to carry out construction work of the proposed project in accordance with the conditions of Contract.

The supervision of the civil works will be carried out by qualified consultants with satisfactory experience in implementing projects of similar nature and size.

3. REPORTING REQUIREMENTS

The Contractor shall prepare and submit to the Employer along with soft copy of each of the following reports:

Sl	Document	Number of Copies	Time
1	Work Programme	3	Four weeks after commencement of Works.
2	RFI Database month wise in the Interim Payment Applications.	3	Four weeks after commencement of Works.
3	Sectional/Substantial Completion Reports*	3	After substantial completion

***SECTIONAL AND SUBSTANTIAL / FINAL COMPLETION REPORTS**

The Contractor will prepare a comprehensive final Completion Report for each defined section of the construction contract, after such sections reach a stage of substantial completion during the period of the services. These reports must be submitted immediately after the completion of the work by the contractor and before taking over of such sections by the Employer. The report shall incorporate summary of the method of construction, as built construction drawings, problems encountered & solutions undertaken thereon.



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Technical Specifications

GENERAL TECHNICAL REQUIREMENTS

1.0. GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor, and comprise of the following:

1.1 PART – I - General Technical Specifications

The General Technical Specifications shall be the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” (FIFTH REVISION – 2013), as corrected in the original issued by the Ministry of Shipping, Road Transport & Highways(MORTH), Government of India and published by the Indian Roads Congress (IRC), with a cross reference to relevant Bureau of Indian Standards (BIS) for materials or other aspects not covered by the IRC.

1.2 PART - II - Supplementary Technical Specifications

The Supplementary Technical Specifications shall comprise various Amendments/Modifications/Additions to the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” referred to in PART - I above and also **Additional Specifications** for particular item of works not already covered in PART-I.

1.2.1 A particular Clause or a part thereof in “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION – 2013)” as corrected in the original referred in PART - I above, where Amended/Modified/Added upon, and incorporated in PART-II, referred to above. Such Amendment/Modification/Addition supersedes the relevant Clause or part of the Clause.

1.2.2 When an Amended/Modified/Added Clause supersedes a Clause or part thereof in the said Specifications, then any reference to the superseded Clause shall be deemed to refer to the Amended/Modified/Added Clause or part thereof.

1.2.3 In so far as Amended/Modified/Added Clause may come in conflict or be inconsistent with any of the provisions of the said Specifications under reference, the Amended/Modified/Added Clause shall always prevail.

1.2.4 The Additional Specifications shall comprise specifications for particular item of works not already covered in PART - I.

1.2.5 The Sub-Clauses of the following Sections in the “Specifications for Road and Bridge Works (FIFTH REVISION – 2013) have been amended/modified/added upon 100, 300, 400, 500, 600, 800, 900, 1000, 1500 & 2800.

1.2.6 In the absence of any definite provisions on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and specifications of IRC and IS in that order. Where even these are silent, the construction and

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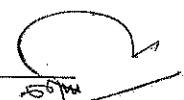
completion of the works shall conform to sound engineering practice as approved by the Engineer and in case of any dispute arising out of the interpretation of the above, the decision of the Engineer shall be final and binding on the Contractor.

1.2.7 The provisions of special conditions of contract, those specified elsewhere in the tender document, as well as execution drawings and notes, or other specifications issued in writing by the Engineer shall form part of the technical specifications of this project.

1.3 **PART – III- Specifications for Building Works**

1.4 **PART – IV- Specifications and Guidelines for Environment Mitigation Plan**

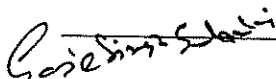
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Chief Engineer
World Bank Project
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PART – I

The General Technical Specifications shall be the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” (FIFTH REVISION – 2013), as corrected in the original issued by the Ministry of Road Transport & Highways(MORTH), Government of India and published by the Indian Roads Congress (IRC), with a cross reference to relevant Bureau of Indian Standards (BIS) for materials, testing acceptance or other such aspects not covered by the IRC.


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PART- II SUPPLEMENTARY TECHNICAL SPECIFICATION

**(AMENDMENTS/ ALTERATIONS/ MODIFICATIONS/ ADDITIONS/DELETIONS
TO EXISTING CLAUSES OF GENERAL TECHNICAL SPECIFICATIONS-PART-I)**

SECTION 100 GENERAL

Clause 102 Definitions

The following abbreviations shall be added in this Clause.

- “MORTH” - Ministry of Road Transport & Highways
- “WBM” - Water Bound Macadam
- “WMM” - Wet Mix Macadam
- “MDD” - Maximum Dry Density (as per IS: 2720-Part 8)
- “OMC” - Optimum Moisture Content

Wherever in the Specification, the phrase “Condition of Contract” is Mentioned, it shall mean Conditions of Contract part-I and II Contained in Section.. of Bidding Documents.

Clause 103 Add at the end of the clause

The latest edition of these standards or any other relevant standards till 30 (thirty) days before the final date of submission of the tender shall be adopted.

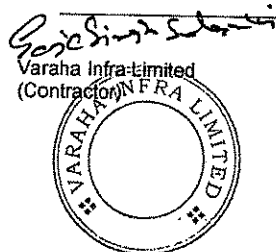
Clause 105 Scope of Work

Clause 105.3 Add the following below the existing clause

The contractor shall establish, adhere to monitor and maintain an adequate Quality Management Plan (QMP).

The QMP shall provide input to the overall project management plan and shall include quality control, quality assurance, and continuous process improvement approaches for the project. The QMP shall cover the quality assurance aspects of all services rendered, all items to be supplied and all construction activities to be performed under the Contract, also including temporary structures and equipment which will influence the quality of the completed works or the progress of the Contract.

The QMP shall provide input to the overall project management plan and shall include Quality Control Checklists, Quality Assurance Plan, and continuous process improvement approaches for the project. The QMP shall be reviewed by the Engineer to ensure that decisions are based on accurate information and to assure reduction of cost and



schedule overruns caused by *rework*. The Contractor's Quality Assurance Plan describes the methods and procedures which the Contractor will apply for the execution of the Contract, including how the contractor will:

- (a) identify the quality requirements specific to the contract,
- (b) plan and execute the work to satisfy those requirements
- (c) inspect and/or test the work to ensure compliance with the quality requirements
- (d) ensure strict document control and structured filing of contract administration documents
- (e) record and monitor the results as evidence of compliance
- (f) monitor the material supply and delivery processes;
- (g) ensure the ability to trace materials incorporated in the works;
- (h) undertake testing and measurement requirements;
- (i) provide evidence of testing apparatus being recently calibrated;
- (j) demonstrate manufacturer's specification confirming compliance of materials;
- (k) record of required testing, measurement and design sheets;
- (l) document all non-conformances and ensure that prompt action is taken to correct non-compliance.

The Contractor's Quality Management Plan must clearly describe the systems, procedures and methods that will be used to deliver and monitor compliance of the Services.

The QMP shall also cover subjects listed below:

- Organization and Management Responsibility
- Document and data control
- Construction programme
- Method statements
- Process Control
- Working, inspection, testing and documentation procedures
- Safety and emergency procedures
- Control and documentation of purchasing and handling of materials
- Non-conformity and corrective action.
- Internal quality audits
- Servicing
- Education and training of staff
- Site Environment Plan



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The general procedures of the QMP shall be submitted to the Employer and Engineer for approval not later than TWENTY EIGHT DAYS after the date of receipt of letter of acceptance. The special part of the QMP shall be submitted successively to the effect that it shall have been approved prior to the commencement of the activities to which the program shall apply.

Clause 105.4 Add the following sentence

“If the Quality Assurance plan of the project as finalized and approved by the Engineer demands other time schedule for various submissions and approvals, the QA plan requirement will prevail”.

Clause 107 **Contract Drawings**

Clause 107.3 **Add the following after the end of the para**

After careful study of the drawings issued by the Engineer, the Contractor shall, prepare, where necessary all supplementary and working drawings with necessary field/construction information and check for adequacy of construction methods and procedure etc. and shall submit the same to the engineer for approval prior to construction. Engineer shall be given not less than 7 days for review of these supplementary/working drawings and as directed, the contractor shall modify the drawings incorporating the comments and requirements of the Engineer.

Clause 111 **Precautions for Safeguarding the Environment**

This whole clause shall be modified by following.

Clause 111.1 **General**

The clause shall be read as follows

The contractor shall take all precautions for safeguarding the environment during the course of the construction of works. He shall abide by all rules, regulations and laws in force governing pollution and environmental protection that are applicable to the area where the works are situated.

On completion of the Works, all areas disturbed by the Contractor's construction activities shall be restored in their original condition, or as per the plan agreed prior to commencement of construction activities.

The cost of this work shall be deemed to be included in the rates, unless specifically mentioned in the contract.



Clause 111.2 Borrow pits for Embankment Construction

The clause shall be read as follows

Borrow pits shall not be dug within the Right-of-Way of the road. The contractor will submit a burrow area management plan before opening up any borrow area to ensure the schedules of his excavation activities, safety arrangements during operation and rehabilitation after closure of the burrow pit. The contractor shall operate strictly adhering to the Burrow Area Management Plan.

The Contractor will ensure that proper excavation techniques are used to improve stability and safety of the borrow area. The excavation shall be carried out in such a way that the area does not inundate during monsoons and generate cesspools of water for breeding site. The stipulations in Clause- 305.2.2 shall govern.

The cost of such safety and rehabilitation work shall be deemed to be included in the rates, unless specifically mentioned in the contract. Failure to adhere to the Environmental Mitigation Measures during construction will attract penalty as mentioned in the Contract data serial no. 37(c).

Clause 111.3 Quarry Operations

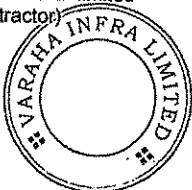
The clause shall be read as follows

The contractor shall obtain material from licensed quarries only after the consent of the Revenue department or other concerned authorities. The quarry operations shall be undertaken within the purview of the rules and regulations in force. Contractor shall ensure scheduling the movement of transport carrying material to and from site during non-peak hours. The contractor will ensure the schedules of his activities, safety arrangements during operation and rehabilitation after closure of the quarry. The contractor shall operate strictly adhering to the Burrow Area Management Plan.

The trucks carrying all types of construction material shall be covered with tarpaulin to prevent spillage and air pollution. Stockpiling of material shall be properly planned so as to ensure that no traffic jam takes place on the highway. In no case overloading than the allowable capacity of vehicle shall be permitted.

The cost of such safety and rehabilitation work shall be deemed to be included in the rates, unless specifically mentioned in the contract. Failure to adhere to the Environmental Mitigation Measures during

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construction will attract penalty as mentioned in the Contract data serial no. 37(c).

Clause 111.5 Pollution from Hot Mix Plants and Batching Plants

Add the following paragraph at the end of this Sub-clause.

The contractor shall ensure that noise, vibrations and emission conforms to the regulatory norms and be fitted with dust extraction unit. Failure to adhere to the norms will attract penalty as mentioned in the Contract data serial no. 37(c).

Clause 111.6 Substances hazardous to health

Add the following as 111.6.1 & 111.6.2

Clause 111.6.1 Precautions against Toxic Chemicals

The storage and use of any herbicide or other toxic chemical shall be strictly in accordance with the manufacturer's instructions. The Engineer shall be given at least 7 working days' notice of the proposed use of any herbicide or toxic chemical.

A register of all herbicides and other toxic chemicals delivered to the site shall be kept and maintained up to date by the contractor. The register shall include name physical properties and characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product.

Clause 111.6.2 Precautions against generation of hazardous materials

The contractor shall not use or generate any material in the process work, which are hazardous to the health of persons, animals or vegetation. Where it is necessary to use some substance, which can cause injury to the health of the workers, the contractor shall provide suitable clothing or appliances to his workers, viz. ear plugs, helmets or dust masks or any other suitable devices.

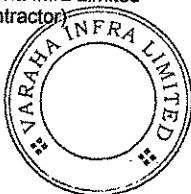
Clause 112 Arrangement for Traffic during Construction

Clause 112.1 General

Delete the last sentence and add the following

“One week before undertaking work which would involve any obstruction whatsoever to traffic, the Contractor shall submit, for the Engineer's approval, a Traffic Management Plan.

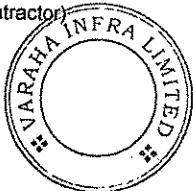
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The plan shall include:

- i) Typical drawing for temporary diversions
- ii) Typical details of arrangements for construction under traffic including details of traffic arrangements proposed to be in place after the cessation of work each day.

Special consideration shall be given in the preparation of the Traffic Control Plan for the safety of pedestrian and works delineation of the roadway at night.

Temporary diversions will be constructed only with the approval of the Engineer.

Clause 112.2

Passage of Traffic along a part of the Existing Carriage way under improvement:

The clause shall be read as follows

- i. If the existing road is used as diversion, then contractor will maintain it at his cost only.
- ii. For widening /strengthening existing carriageway where part width of the existing carriageway is proposed to be used for passage of traffic, treated shoulders / widened portion of the road shall be provided for passage of traffic on the side on which work is not in progress. The treatment to the shoulder/ widened portion of the road shall consist of providing at least 150mm thick granular base course(with crushed stone / blast furnaces slag) to provide a temporary carriageway of at least 5M and such treated shoulder / widened portion of the road shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer. The continuous length, in which such work shall be carried out, would be limited normally to 500M at a place. However, where work is allowed by the Engineer, in the longer stretches, passing places at least 20M long with additional paved width of 5M shall be provided at every 0.5 KM interval.

After the works are completed, with the approval of the Engineer, the temporary passages shall be dismantled, the debris disposed of and the area cleared as per the direction of the Engineer.


Clause 113


General Rules for the Measurement of Works for Payment:

Clause 113.2

Measurements for Lead of Materials

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Delete this Clause and replace with

“The rates in the Bill of Quantities are deemed to include the costs of haulage from source of supply to the plant as well as to the construction site as the case may be for all materials required for the Works.”

Clause 114 Scope of Rates for Different Items of Work

Clause 114.2 Add Below Item (ii) of clause 114.2

The Contractor shall submit the request for Inspection, test reports, measured levels, measurement sheets, payment applications via electronic media/ in a computerized system to the Engineer in a format approved by the Engineer.

Add the following as item (xix) of the sub-clause 114.2

Cost of all provisions for executing the work safely including all protective clothing, barriers, earplugs, shoes, helmets etc.

Clause 114.4 Add the following new Clause as 114.4

If any work executed by the Contractor does not meet the specifications, it shall be deemed as rejected. The Engineer, in his sole discretion, may consider a proposal by the Contractor to retain, the element or part of the structure. The Contractor's proposal shall be supported by calculations, drawings and other data to prove the soundness of the proposal and shall clearly describe the additional measures required to ensure the intended performance of the structure. Rate/ price for the rehabilitation structure shall be settled mutually between the Engineer and the Contractor and in case of failure to arrive at an agreed rate. The Engineer's decision regarding the rate shall be final and binding.

SECTION 300 EARTH WORK, EROSION CONTROL AND DRAINAGE

Clause 301 Excavation for Roadway and Drains

Clause 301.3.7 This clause shall be read as under:

“In works involving widening of existing pavements or providing paved shoulders, the existing shoulder/verge/ median shall be removed to its full width. The sub-grade material within 0.2m deep from the lowest part of the pavement for widened portion or paved shoulders shall be loosened and re-compacted as per Clause 305 to a density not less than 97% of maximum dry density determined according to Is: 2720 (Part 8). Any unsuitable material encountered in this portion of

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subgrade shall be removed and replaced with suitable material and compacted in accordance with Clause 305”.

Clause 301.3.11 Use and Disposal of excavated materials

Add at the end of para

Unsuitable and Surplus material which in the opinion of the Engineer cannot be used in the works, shall be removed from site by the Contractor and disposed of at the nearest pit or other approved disposal location **with all lead and lifts** in accordance with all statutory requirements.”

Clause 301.8 Add item No.v in table

(v) Disposal of surplus material with all lead and lifts ...cum’

Clause 301.9 Rates

Clause 301.9.2 This Clause shall read as under

“The Contractor unit rate for loosening and re-compacting at sub-grade level shall include full compensation for loosening to the specified depth, removing the loosened soil outside the roadway excavation, rolling the surface below, breaking the clods, spreading the excavated soil in layers watering where necessary and compacting to the requirements.”

Clause 305 Embankment Construction

Clause 305.2.1.1 Delete the words “subgrades and earthen shoulders” from the first line.

Add the following at the end of first paragraph

The material to be used in the subgrades shall be moorum/gravelly soil.

Clause 305.2.1.5 Add the following at the end of Note (2)

The material for subgrade shall satisfy the requirement of 4 day soaked design **CBR of 10% or more**, when tested as per IS: 2720 (Part 16) at 97% of maximum laboratory dry density (IS:2720-Part 8).

Clause 306 Soil Erosion and Sedimentation Control

Clause 306.4 Measurement for payment

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Substitute Clause 306.4 as follows

“ All temporary sedimentation and pollution control works shall be deemed as incidental to the earthwork and other items of work and as such no separate payment shall be made for the same.”

Clause 306.5 Rates

This Clause shall be deleted

SECTION 400 SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS

Clause 401 GRANULAR SUB BASE

Clause 401.2 Materials
Replace the clause with the following.

The Materials to be used for the work shall be crushed stone aggregate and **crusher run screening** only. The materials shall be free from organic or other deleterious constituent and confirm to Grading V of Table 400-1.

Clause 406. WET MIX MACADAM SUB-BASE/BASE

Clause 406.2.1.1 Physical requirements:

Add at the end of first paragraph

The fraction of materials passing through 4.75 mm sieve shall be crusher run screening only. The river sand or quarry sand shall not be permitted either as such or mixed with crusher-run-screening in the Wet Mix Macadam.

Add the following at the end of the paragraph:

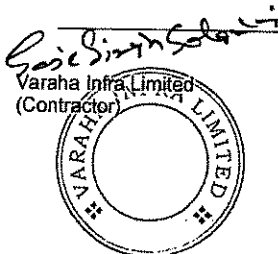
Soundness test shall be carried out in accordance with IS : 2386 (Part-5). The average loss of weight of coarse aggregate after 5 cycles shall not exceed 12% when tested with sodium sulphate and 18% when tested with magnesium sulphate as specified in IS: 383.

Clause 406.3. CONSTRUCTION OPERATIONS

Clause 406.3.1. Preparation of base

404.3.1 shall be applicable by replacing the work “Water Bound Macadam” by “Wet Mix Macadam”.

Clause 406.3.3 Add the following at end of 2nd para



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Unless otherwise instructed by the Engineer , the moisture content at the time of compaction shall be between 80% and 120% of the optimum moisture content

Clause 406.3.4 Add after the second para with the following:

All the layers of WMM course shall be spread only by a paver finisher and compacted as per clause no. 406.3.5.

Clause 406.3.5. Delete second sentence of first para.

Substitute para 7 of this clause as follows :

Rolling shall be continued till the density achieved over the full thickness of the material laid is at least 98% of the maximum dry density as determined by the method outlined in I.S.:2720(part 8) and satisfies the requirements of Sub Clause 903.3.

Clause 408 SHOULDERS, ISLANDS AND MEDIAN

Clause 408.2 Materials

Add after first para as follows

The hard shoulder shall consists of minimum 150mm thick granular/moorum layer having liquid limit less than 25% and PI between 3% to 6%.

Replace second para with :

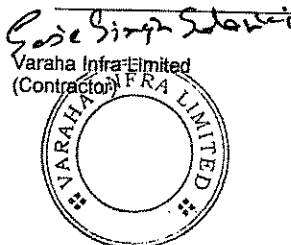
Median/Traffic islands shall be raised and kerbed at the perimeter and the enclosed area filled with agriculture soil and suitably covered with grass turf/shrubs as per clause 307 and/or paved as per clause 410.3.4 or 410.3.5.

Clause 408.4 Construction Operations

Clause 408.4.1 Shoulder

Add as follows after para 4

The hard shoulder shall be compacted as per table 300-2.



- Clause 501** **General Requirement for Bituminous Pavement Layers.**
- Clause 501.3** Replace the Phrase “ in a hot mix plant” with “ in a batch type hot mix plant only (in no case material from drum mix type hot mix plant shall be entertained)” in the first line.
- Clause 503** **Tack Coat**
- Clause 503.8** **Rate**
Replace second sentence as
The rate shall cover provision of binder for tack coat at 0.25kg per square meter for granular surface and 0.2 kg per square meter for normal bitumen surfaces with provision that the variation between this quantity and actual quantity of bitumen will be assessed and the payment adjusted accordingly.
- Clause 505** **Dense Bituminous Macadam**
- Clause 505.2.5** Aggregate grading and binder content
- Clause 505.2.5.1** **Add after the 1st Para.**
Grading specified for the work is grading –II provided in table 500-10.
- Clause 505.9** Replace the last sentence of first paragraph with “The rate shall include the provision of bitumen at 4.5% by weight of the total mixture for Grading-II only “.
- SECTION 600** **CONCRETE PAVEMENTS**
- Clause 601** **Dry Lean Cement Concrete sub-base**
- Clause 601.6.4** **Placing**

Replace the 1st para as “ Lean concrete shall be placed using semi mechanized equipments or adopting hand guided method of construction with approval of the Engineer.”
- Clause 602** **CEMENT CONCRETE PAVEMENT**
- Clause 602.9.3.3** **Paving equipment**

Add at the end of 1st paragraph the concrete can be placed adopting hand guided method of construction as per methods of construction. Work shall be carried out by skilled persons as per the methodology approved by the Engineer.

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SECTION 800 TRAFFIC SIGNS, MARKING & OTHER ROADS APPURTENANCES

Clause 801 Traffic Signs

Add the following after the para.

"All road signs shall be of retro-reflectorised type with super high-intensity retro-reflective sheeting. The sheeting is typically unmetalised micro-prismatic retro-reflective element material or any other type as approved by the Engineer."

Clause 805.1

Add the following after the para.

The hectometer/kilometer stones shall be made of concrete of M20 grade.

SECTION 900 QUALITY CONTROL FOR ROAD WORKS

Clause 903 Quality Control Tests During Construction

Add new sub clause as 903.4.3 as follows

Clause 903.4.3

Bituminous mix shall be spread with paver fitted with electronic sensing device and string line arrangement (supported by steel pegs @ 5 m apart) on either side of paving width for automatic levelling, surface evenness and profile control. Use of string line is compulsory to provide signal to the electronic sensing device fitted with the Paver Finisher.

Bituminous works shall be tested immediately after finishing for:

- a) Thickness (compacted) measured by extracting cores shall be dealt in accordance with MORTH Specification Section 900.
- b) Density (compaction) test as performed on the extracted cores
- c) Workmanship test by measuring roughness of the finished layer by duly calibrated Towed Fifth Wheel Bump Integrator.

Note: Contractor shall arrange the core extraction machine at his cost and shall take cores of the executed bituminous works jointly with Engineer without any extra cost.

The result of tests shall be compared with the prescribed acceptable values. The payment of all such works executed shall be based on the test results. In case test results for parameters (b) & (c) above fall below the required values in accordance with specification, deductions as specified below here under shall apply limiting to 'Nil' payment for the executed bituminous works. Separate deductions shall be made for each attribute i.e. Density Test and Workmanship test.

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b) Density (Compaction Test):

Reduction in Core Density	Deduction in the payable rate
-Upto 1.00% from the required percentage	@ 5%
- Between 1.01% to 2.00% from the required percentage	@15%
- Between 2.01% to 3.00% from the required percentage	@30%
-By more than 3.01% from the required percentage	@ 100%. Such works shall be rejected and NIL payment shall be made

The minimum deduction in the payable rate shall be made for 250 Sqm for each failure.

c) Workmanship Test: Roughness measured longitudinally

Calibration of equipment and measurement of surface unevenness shall be done in accordance with IRC:SP:16-2004.

The finished bituminous concrete layers shall be tested for workmanship (immediately before allowing traffic) by measuring roughness, longitudinally separately for each lane with the Calibrated Towed Fifth Wheel Bump Integrator. The measured roughness shall not exceed a value of 2000 mm/km for finished Bituminous Concrete and Concrete surfaces.

Any completed layer (concrete or BC) having roughness in excess of the value 2000 mm/km shall be paid in accordance with the Deduction Formulae as specified below:

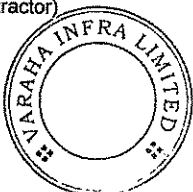
Measured Roughness	Deduction in the payable rate
- Upto 5.00% more than the requirement	Nil
-More than 5.01% and upto 30.00% more than the requirement	@ (10%+1% for every 1% in excess of 5%)
-More than 30% more than the requirement	Work shall be rejected. Complete re-work shall be done.

The area for which deduction in the payable rate shall apply shall be determined by the Engineer based on analysis of results. However, regardless of any other consideration, the minimum deduction shall not be less than 2000 m².

SECTION 1000 MATERIALS FOR STRUCTURES

Clause 1009.3 Add the following note under table 1000-3

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All steel shall be procured from original producers (manufacturing billets) such as SAIL/ TATA/ RINL/ JINDAL. Thermo Mechanically Treated bars (TMT bars) of grade Fe-500 conforming to IS: 1786 shall be used.

Clause 1012

Concrete Admixtures

Add the following at the end of paragraph of Clauses 1012.1

Admixtures shall not impair the durability of concrete; they shall not combine with the ingredients to form harmful compounds or endanger the protection of reinforcement against corrosion.

Add the following at the end of the clause.

After selecting a few acceptable brands & types of admixture based on the manufacturer's data/technical literature. Independent acceptance tests should be carried out for the same using the approved combinations of cement / sand / aggregates intended for use in the Project. After establishing the basic acceptability using strength criteria (compression & tensile strengths) a number of trial mixes be designed using different proportion of admixtures / cement / water etc. to establish the data bank on the behaviour of the admixture for the project site conditions. A spectroscopic signature of accepted product should be obtained and preserved for comparison for acceptance of the production lots.

Re-trials should be conducted with change in source / type of cement.

Workmanship

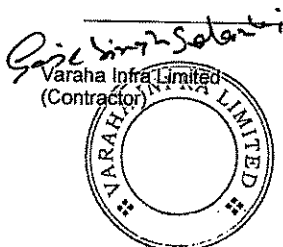
The dosage should be finalised on the basis of field trial and special mechanical devices should be used for dispensing the admixture in the batching / mixing plant. No addition of admixture after dosage is permitted (including addition in transit mixers).

Manufacturer's experts should be available for consultation / trouble shooting of problems associated with their product. The conditions of storage, shelf life etc. as specified by the manufacturer should be strictly observed. The manufacturer's Quality Assurance Plan during process of production should be obtained and field for reference / record.

Clause 1015

Test and Standards of Acceptance

Add following as last paragraph :



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Independent testing of steel shall be carried out by the contractor for each consignment from each source in the laboratory approved by the Engineer before use... These tests are in addition to the tests carried out by the manufacturer.

SECTION 1500 FORMWORK

Clause 1502 Materials

Delete the last sentence of para one

Delete the word "or Timber" in 1st line of para 2

SECTION 2800 REPAIR OF STRUCTURE

FOLLOWING NEW CLAUSES SHALL BE ADDED

Clause 2816 Dismantling of damaged and existing structures

The dismantling of various components of structure like railing, kerbs, footpath, approach slab, wing walls, piers, abutments, parapet, deck slab etc. shall be carried out as specified in drawings and as per directions of Engineer. The work shall be executed in accordance with MORTH specifications section 200, clause 202.

Clause 2817 Dowel bars

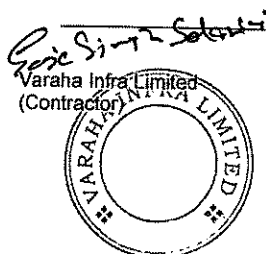
Dowel bars in deck slab at locations of parapet and expansion joint and grouting with epoxy resin locations shall be provided as shown in the drawings.

Holes shall be drilled vertically using rotary drill machines. Care shall be taken that the holes are drilled vertical and the deck concrete is not damaged. It shall be ensured that buried reinforcement of the deck is not damaged due to drilling by avoiding locations above reinforcement. Rebar detector shall be used for this purpose. 16 mm dia. dowel bars shall be inserted in the hole and kept in undisturbed position with appropriate fixture. The annular space shall be filled by epoxy grouting.

Work of epoxy grouting shall be done in accordance with MORTH Specifications Section 2800 clause 2803. It shall be ensured that the inside of the hole is dry.

Epoxy resin shall be of following specifications:

Compressive strength	- min 35 MPa at 24 hours.
Tensile strength	- 15 - 20 MPa at 7days.



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Flexural strength - 30-40 MPa at 7 days
Viscosity @ 250C - 900-1200 cps

Clause 2818 Railing / Parapets

Cast-in-situ railing/ parapets shall be constructed in accordance with the requirements of structural concrete section 1700. The reinforcement shall conform to section 1600. The formwork shall conform to section 1500. The work in general shall conform to section 2700 clause 2703.

The reinforcement of the railings/ parapets shall be welded with the existing reinforcement of the deck slab and with the dowel bars as shown in the drawings or as directed by the Engineer.

Clause 2819 Expansion Joint

The old expansion joint assemblies shall be removed carefully along the entire width of the carriageway as per MORTH Clause 2809.1 and recess of size shall be prepared as specified in drawing. The requirements of new expansion joint shall confirm to MORTH specifications section 2600.

Clause 2820 Drainage Spout

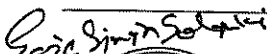

For existing bridge decks drainage spouts shall be replaced and new drainage spouts shall be provided as shown in the drawings.


The waterproofing material shall be provided around the area of drainage spout from the top of the deck.

The work shall be executed in accordance with MORTH Specifications Section 2700 clause 2705 except to the extent modified below.

The work shall be done after the wearing coat is removed. The existing spouts shall be removed carefully with minimum damage to surrounding concrete. The pocket formed shall be sufficiently large to ensure good flow and compaction of concrete around the new spout. The area around the spout covering the pocket of new concrete adequately, approximately 500 mm x 500 mm shall be provided with a 5 mm thick polymer modified cementitious (PMC) brush topping layer.

Before commencing application of PMC brush topping the prepared concrete substrata shall be thoroughly soaked with clean water. The surface shall then be primed with PMC slurry. Before priming it should be ensured that any free surface water is removed. PMC mortar


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shall be applied before priming agent sets. The material shall be applied in accordance with manufacturer's recommendations.

The specifications for polymer modified cementitious (PMC) brush topping and polymer modified cementitious (PMC) mortar shall be as per clause 2822.


Clause 2821

Approach Slab

Approach slabs, which are cracked or otherwise damaged, shall be recasted after dismantling of the existing slab as specified in drawing. The work shall be executed in accordance with MORTH specifications section 2700 clause 2704. The approach slab shall be laid over lean concrete as per drawing after compacting the base properly.


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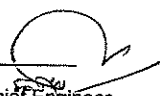
PART III

TECHNICAL SPECIFICATIONS FOR BUILDING WORKS

This part shall comprise the latest "Specifications for Building Works" Volume I to Volume IV, 1995 as published by the Central Public Works Department, Govt. of India and deemed to be bound into this document.

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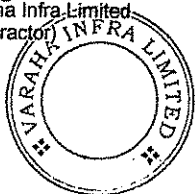


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PART IV

ENVIRONMENT MANAGEMENT PLAN

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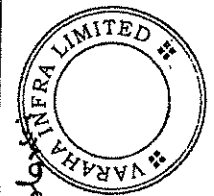
Sandeep Singh Solanki
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ENVIRONMENTAL MANAGEMENT PLAN

		Management Measures
S. No.	Environmental Issue/Aspect	
E.1	Tree Cutting	The Contractor shall not cut or damage trees except that are required to be felled for construction of traffic diversion works and facilities, after obtaining necessary permission for felling of the same from the authorities.
E.2	Joint Field Verification	The Engineer and the Contractor will organize and carry out joint field verification to ascertain the possibility of saving environmental and community resources. The complaints/suggestions together with the observations and expert opinion of the joint verification team containing the need for additional protection measures or changes in design/scale/nature of protection/management measures shall be well documented with other requisite details such as date, time, place and signature of the individuals involved. Approval will be accorded by the Engineer in consultation with the Project Authority.
E.3	Location and installation of Crushers, Hot-mix Plants and Batching Plants	All plants (hot-mix, crushers, batching plant, WMM or any other) shall be located at least 1000 mts. away from habitations, forests and wildlife movement areas, preferably in the downwind direction. The Contractor shall submit the proposed location plan (including survey number/s of the land parcel/s under consideration, area, land-use and surrounding features) and seek prior approval of the Engineer before entering into any formal agreement with land owner/s for setting-up such construction facilities. The Contractor will formalize agreement with land owner/s only after a written approval has been accorded by the Engineer.
E.4	Construction Camp/s – Selection, Design and Lay-out	The 'installation' of the plant/s shall commence after the contractor has obtained 'consent to establish' from the Orissa State Pollution Control Board. The 'operation' of the plant/s shall be permitted by the Engineer after the 'consent to operate' has been obtained from the SPCB. A copy of the application submitted to the SPCB and the consent/s received must be submitted to the Engineer, based on which the approvals will be accorded. Action/s by the Engineer against any non-compliance on this count shall be borne by the Contractor at his own risk and cost. No construction camps, including material stack yards and storage facility will not be proposed within 500 mts. From a. a settlement/habitation b. water source and c. reserved or protected forest limits to avoid conflicts and stress on the local infrastructure facilities and natural resources.

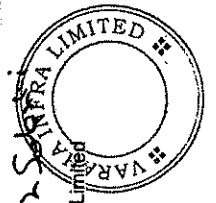


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S. No.	Environmental Issue/Aspect	Management Measures
E.5	Construction Vehicles, Equipment and Machinery	<p>In case the contractor proposes setting-up of plant/s within a construction camp, clause P.3 will apply.</p> <p>The Contractor shall submit the proposed location plan (including survey number/s of the land parcel/s under consideration, area, land-use and surrounding features) and seek prior approval of the Engineer before entering into any formal agreement with land owner/s for setting-up construction camps. The Contractor will formalize agreement with land owner/s only after a written approval has been accorded by the Engineer.</p> <p>Complete details about the pre-dominant wind direction and design of facilities, including circulation area, parking, material storage, kitchen/mess, sanitation, waste collection and disposal, drainage, electrical utility placement and water supply shall be provided by the Contractor as part of the documentation seeking approval of the Engineer on this count.</p> <p>All vehicles, equipment and machinery to be procured for construction shall confirm to the relevant Bureau of India Standard (BIS) norms. The Contractor shall ensure that all vehicles, equipment and machinery used for construction are regularly maintained and confirm to the emission standards specified by the CPCB. Certification issued for such contrivances by the designated/approved authorities shall be submitted to the Engineer.</p> <p>The Contractor shall maintain a proper record of Pollution Under Control Certificates for all vehicles and machinery used for works under the contract. Copies of such records shall be kept at the site office and shall be made available to the Engineer when sought.</p>
E.6	Identification, Operation and Rehabilitation of Burrow Areas	<p>The Contractor shall submit the proposed location plan (including site details, survey number/s of the land parcel/s under consideration, area and quantum of material proposed for extraction, land-use and surrounding features) and seek prior approval of the Engineer before entering into any formal agreement with land owner/s for opening burrow areas. The Contractor will formalize agreement with land owner/s only after a written approval has been accorded by the Engineer. The Engineer will be required to inspect every proposed burrow area location and evaluate (parallel with technical examination) such proposals in accordance to environmental requirements as laid down in the EMP prior to issuing the 'approval' for use of such sites.</p> <p>No burrow areas shall be opened within 500 mts. from wildlife movement zones and forest areas. The burrow areas shall be at least 250 mts. from schools, human habitations (residential and commercial establishments), village access roads, state highways and other roads.</p> <p>No burrow area will be opened/operated without the written permission of the Engineer. The location, shape and size of the designated burrow areas will be as approved by the Engineer and in accordance to the IRC recommended practice for burrow pits for road embankments (IRC 10: 1961). The 'format' for seeking Engineer's approval on environmental considerations will be as per the template provided in this EMP and will include a reference/location map; area, existing land use and haul road details:</p>


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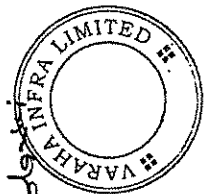
S. No.	Environmental Issue/Aspect	Management Measures
		<p>photograph of the site; and the proposed rehabilitation plan. The Contractor will not start burrowing earth from the approved burrow area/s until an agreement is signed between land owner/s and Contractor and a copy of this agreement is submitted to the Engineer.</p> <p>In burrow pits, the depth shall be regulated so that the sides of the excavation should not be steeper than 1:2, from the edge.</p> <p>All burrow areas whether in private, community or govt. land shall be restored as per the approved rehabilitation plan immediately after completion of the use of such a source. The Contractor shall plan and ensure rehabilitation work in such a manner that it is completed prior to the rainy season. 'Substantial completion' or 'completion' certificates for the civil work shall not be issued unless restoration and rehabilitation works have been completed by the Contractor and the same has been accorded a written approval by the Engineer.</p>
E.7	Identification, Operation and Rehabilitation of Stone Quarry	<p>The Contractor shall submit the proposed location plan (including site details, survey number/s of the land parcel/s under consideration, area and quantum of material proposed to be used, land-use, photograph/s of the site and surrounding features within 500 mts.) and seek prior approval of the Engineer before entering into any formal agreement with land owner/s in case of a new quarry site or with the owner/operator in case use of an existing quarry is proposed.</p> <p>No quarry and/or crusher units shall be 'selected' or 'used', which is within 1000 mts. from a human habitation, forest boundary and wildlife habitats/movement areas.</p> <p>The Contractor shall obtain necessary legal permission/s from Department of Mines, Govt. of Orissa and the District Administration, SPCB and local Tehsildar and submit a copy of the same to the Engineer. All quarry operations, including procurement, storage and use of blasting material/s will be undertaken within the rules and regulations in vogue.</p>
E.8	Identification, and Operation of Sand Quarry	<p>The Contractor shall submit the proposed location plan (including details of the site/s under consideration, proposed quantum of material extraction and surrounding features) and seek prior approval of the Engineer. No sand quarry shall be opened within 500 mts. from wildlife movement zones and forest areas.</p> <p>In the event of selection of a new site for sand quarrying, the Contractor shall obtain prior approval and concurrence from Competent District Authority, the local Tehsildar and the Engineer keeping in view the objections and convenience of the local population. Where the supplier of sand is another party, the authentic copy of lease agreement that has been executed between the local Tehsildar and the supplier has to be submitted to the Engineer before any procurement of material is made from such a site. The procurement of material shall be allowed only from those sand quarry sites that are permitted by the local Tehsildar with the concurrence of the District Collector with due regard to Orissa Miner Mineral Concession Rules, 2004.</p>

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Management Measures	
S. No.	Environmental Issue/Aspect
E.9	Arrangement for Construction Water
	<p>The Contractor shall submit the proposed location plan (including site details; type of the source under consideration; its usage by other consumers; proposed quantum of water extraction) and seek prior approval of the Engineer. To avoid disruption/disturbance to other water users, the Contractor will extract water only from the approved locations and shall seek a written approval of the Engineer before finalizing and using any such water source – whether ground or at surface.</p> <p>Use of ground water facility shall be subject to the local legislation; ground water availability in the area and the granting of necessary permission by the Competent Authority. The Contractor shall pay the royalty for use of such water as decided under the relevant norms. A copy of the permission obtained from the Competent Authority shall be submitted to the Engineer prior to the use of any such source. The possibility/ permission for sinking of bore wells adjacent to nals and streams may be examined, such that while the water requirement for the road construction activity is met and these structures when abandoned can help in ground water recharge after suitable modification.</p>
E.10	Clearing and Grubbing
	<p>All works shall be carried out by the Contractor in a manner such that the damage or disruption to flora is minimal. Only ground cover/shrubs that impinge directly on the permanent works or necessary temporary works will be removed with prior approval from Engineer.</p>
E.11	Stripping, stacking and preservation of top soil
	<p>The top soil from all sites including road side widening and working area, cutting areas, quarry sites, burrows areas, construction camps, haul roads in agricultural fields (if any) and areas to be permanently covered shall be stripped to a specified depth of 150mm and stored in stockpiles for re-use. A portion of the temporarily acquired area (along the boundaries in a construction camp, burrow areas etc.) and along the road at the Right of Way edge will be earmarked for storing top soil. The locations for stacking will be pre-identified in consultation and with approval of the Engineer.</p> <p>The following precautionary measures will be taken by the Contractor to preserve the stockpiles till they are re-used:</p> <p>(a) Stockpile will be such that the slope does not exceed 1:2 (vertical to horizontal), and height is restricted to 2 m. (b) To retain soil and to allow percolation of water, the edges of the pile will be protected by silt fence. (c) Multiple handling kept to a minimum to ensure that no compaction occurs. (d) Such stockpiles shall be covered with empty gunny bags or will be planted with grasses to prevent loss during rains.</p> <p>Such stockpiled topsoil will be utilized for -</p> <ul style="list-style-type: none"> ➤ Covering reclamation sites or other disturbed areas including burrow areas (other than those in barren areas) ➤ Top dressing of road embankment and fill slopes ➤ Filling up of tree pits and ➤ In the agricultural fields of farmers, acquired temporarily that need to be restored.



Varaha Infra Limited
 Varaha Infra Limited
 (Contractor)

Chief Engineer, World Bank Projects, Odisha (Employer)

Chief Engineer World Bank Project On the F.I.C.(C), Odisha, BSR

Management Measures	
S. No.	Environmental Issue/Aspect
	Residual topsoil, if there is any, will be utilized for the plantation works along the road corridor. The utilization as far as possible shall be in the same area/close to the same area from where the top soil was removed. The stripping, preservation and reuse shall be closely supervised and properly recorded by the Engineer.
E.12 Labour Camp Management	
12.1	<p>Prior to setting-up such a labour/worker's facility, the location, lay-out and basic provision of facilities to be provided at each labour camp site shall be submitted to the Engineer for approval. The construction or hiring of such facilities shall commence only after the written approval from the Engineer has been received by the Contractor.</p> <p>The Contractor shall ensure the fulfillment of the following conditions:</p> <p>a) Supply of sufficient quantity of potable water within the precincts of every workplace in a cool and shaded area. Such facilities shall be regularly maintained from health and hygiene point of view.</p> <p>b) All open wells will be entirely covered and will be provided with a trap door to prevent accidental fall and contamination from dust, litter etc. A reliable pump will be fitted to each covered well.</p> <p>The Engineer is required to inspect the labour camp once in a week to ensure compliance to the health and hygienic standards prescribed in the Labour Regulations and in the EMP.</p>
12.2	<p>The Contractor shall ensure that -</p> <p>c) The provision of toilets and sewage system for the camp is to be designed, built and operated in such a fashion that no health hazard occurs and no pollution to the air, surrounding agricultural fields, ground water or adjacent water courses takes place.</p> <p>d) Separate toilets and bathrooms for women workers wherever required, screened from those of men, are provided with markings in vernacular language.</p> <p>e) All such facilities must have adequate water supply with proper drainage and disposal facility.</p> <p>f) All toilets in workplaces are to be maintained, cleaned and disinfected daily using proper disinfectants.</p> <p>g) Portable toilets may be brought to use and the night soil from such units has to be disposed through designated septic tanks so as to prevent pollution of the surrounding areas.</p> <p>h) In the main camp, no night soil or sewerage shall be disposed of at any place other than the septic tanks constructed at the site.</p> <p>All these facilities shall be inspected on a weekly basis by the Engineer to check the hygiene standards.</p>
12.3	<p>The Contractor shall ensure that -</p> <p>c) The provision of toilets and sewage system for the camp is to be designed, built and operated in such a fashion that no health hazard occurs and no pollution to the air, surrounding agricultural fields, ground water or adjacent water courses takes place.</p> <p>d) Separate toilets and bathrooms for women workers wherever required, screened from those of men, are provided with markings in vernacular language.</p> <p>e) All such facilities must have adequate water supply with proper drainage and disposal facility.</p> <p>f) All toilets in workplaces are to be maintained, cleaned and disinfected daily using proper disinfectants.</p> <p>g) Portable toilets may be brought to use and the night soil from such units has to be disposed through designated septic tanks so as to prevent pollution of the surrounding areas.</p> <p>h) In the main camp, no night soil or sewerage shall be disposed of at any place other than the septic tanks constructed at the site.</p> <p>All these facilities shall be inspected on a weekly basis by the Engineer to check the hygiene standards.</p>



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Management Measures	
<p>S. No. E.13</p>	<p>Environmental Issue/Aspect Transportation of Construction Materials and Haul Road Management</p> <p>The Contractor shall maintain properly (as directed by the Engineer) all roads (existing or constructed for the project), used for transporting construction materials, equipment and machineries for the works under this contract. It shall be the responsibility of the Contractor to ensure that all roads used for transportation of construction materials are clear from any dust, sand, soil, aggregates etc. that may have fallen from the transporting vehicles. The Contractor will arrange for regular water sprinkling, at least three times in a day, for dust suppression of all such roads and surfaces.</p> <p>All vehicles delivering goods to the site shall be covered to avoid spillage of materials and air pollution.</p> <p>The unloading of all materials at construction sites will be limited to day time only to avoid accidents. Screens of hessian cloth, agro-net and such other barricading material are to be erected along all dumping and stockpiling sites, so that generation of the dust in the vicinity of such locations can be minimized to a great extent.</p>
<p>E.14</p>	<p>Worksite Safety Management</p>
<p>14.1</p>	<p>Traffic Diversions</p> <p>This shall be done according to the provisions of Technical Specifications Cl. 112.</p>
<p>14.2</p>	<p>Traffic Safety</p> <p>This shall be done according to the provisions of Technical Specifications Cl. 112</p>
<p>14.3</p>	<p>Safety of Workers</p> <p>The Contractor will make sure that during the construction work all relevant provisions of the Factories Act, 1948 and the Building and Other Construction Workers (Regulation of Employment and Conditions of Services) Act, 1996 are adhered to. The Contractor will comply with all the precautions as required for ensuring the safety of the workmen as per the International Labor Organization (ILO) Convention No. 62 as far as those are applicable to this contract.</p> <p>The Contractor shall provide and ensure enforcement with zero tolerance on the following:</p> <ol style="list-style-type: none"> a) Protective footwear and protective goggles to all workers employed handling asphalt materials, cement, mortar, concrete, blasting and crusher operations. b) Welder's protective eye-shields and protective footwear to workers engaged in welding works. c) Earplugs to workers exposed to high noise levels. d) Hard hat or helmets to all workers, supervising staff and inspecting officials entering a construction site, plant area, quarry and engaged in loading/unloading operations. e) Protective goggles and clothing to workers engaged in stone breaking activities.

Rajesh Kumar
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		Management Measures
S. No.	Environmental Issue/Aspect	
		<p>f) Nettings below and on the sides of overhead construction and excavation work to prevent mishaps due to accidental fall of workmen and debris.</p> <p>g) 'No smoking' and other 'high risk' areas are to be provided with warning signage besides strict enforcement of PPE with zero tolerance limits.</p>
14.4	Risk from Electrical Equipment(s)	<p>All power transmission lines whether cladded or sufficiently covered are potential hazards at construction sites. The Contractor shall take all required precautions to prevent danger from electrical cables, wires and equipment and ensure that –</p> <p>a) No material will be stacked or placed below/near power transmission lines, wires and equipment, which can be a potential danger to any road user, workman or public.</p> <p>b) All such electrical installations and wirings shall be barricaded in manner that ensures safety of the road users, workers, operating vehicles/equipment (such as cranes, excavators, loaders, fabricating units) and wildlife.</p> <p>c) Necessary fencing, illumination and proper insulation of the electrical lines shall be ensured by the contractor for safety and security of the general public, road users, workers and the wildlife.</p> <p>d) The contractor shall ensure proper maintenance of electrical supply lines/points.</p> <p>e) All such electrical operating units shall be switched off before operations are closed every day or night as the case may be.</p> <p>f) All electrical equipment/cables/wires to be used in the construction shall have to conform to the relevant BIS specifications/codes.</p> <p>g) The contractor will ensure that such equipment/cables/wires are free from patent defect, and maintained in good working order (as per the owner manual supplied by the manufacturer) through regular supervision, monitoring, maintenance and repair/ replacement from time to time.</p>
14.5	First Aid	<p>The Contractor shall arrange for -</p> <ul style="list-style-type: none"> ▪ A readily available lifesaving first aid kits including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone. ▪ Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital. ▪ Equipment and trained nursing /paramedical staff at construction camps. ▪ Periodic health checks for workers.
14.6	Risk Force Majeure	<p>The Contractor shall take all reasonable precautions to prevent danger of destruction to life and property of the public as well as the workers on account of flood, fire, explosion, accidents involving vehicles carrying hazardous materials etc. in an around work sites, camps, maintenance units, burrow areas, quarries, haul roads and in any other place associated with the project activity.</p>

Sujeet Kumar

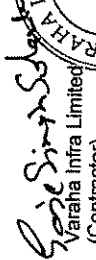


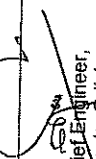
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World Bank Project
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Management Measures	
S. No.	Environmental Issue/Aspect
	<p>The Contractor will make the required arrangements so that in case of any mishap all necessary steps can be taken for prompt on-the-spot first aid treatment. Arrangements shall be made for quick rescue operation including shifting of the injured to the nearest hospital</p> <p>Fire extinguishers/fire-fighting equipment and salvaging equipment for the recovery of hazardous chemicals on account of accidents or spillage are to be kept ready at camping sites or major construction sites to attend to such eventualities.</p> <p>A Construction Safety Plan to be prepared by the Contractor during the Mobilization phase shall identify all necessary actions in the event of an emergency. The actions shall include description of stand-by arrangements, rescue of workers/people and salvage of hazardous chemicals/ materials in case of such eventualities. This plan shall be prepared in accordance with the standard practice adopted under labour welfare activities and Factories Act and will be approved by the Engineer.</p>
E.15	Accessibility
	<p>Construction activities that affect the use of side roads and existing accesses to individual properties, whether public or private, shall not be undertaken without providing adequate provision/s approved by the Engineer. The Contractor will provide safe and convenient passage for vehicles, pedestrians and livestock to and from road sides and property accesses connecting the project road by providing safe temporary arrangements, including a connecting road, as necessary.</p>
E.16	Disruption to Other Users of Water
	<p>While working across or close to any perennial water bodies, the Contractor shall not obstruct/prevent the flow of water.</p> <p>Construction over and close to the non-perennial streams shall be undertaken in dry season and if such activity is likely to disrupt, constrain or impact the community use of the water body, adequate prior information (at least two weeks in advance) will be provided to such a community. Such water body may be ponds, water harvesting structures (WHS), feeder channels to pond, irrigation sources etc. If the supply of water or access to a source is being completely cut off, then the Contractor shall make necessary arrangements to provide water in the interim period. Water quality test shall be done prior to providing / supplying the water.</p>
E.17	Labour Requirements
	<p>The Contractor preferably will use labour drawn from local areas to provide maximum benefit to the local community especially to the vulnerable individuals/groups living in the project area.</p>
E.18	Pollution Management
18.1	Dust Pollution
	<p>The Contractor will take every precaution to reduce the level of dust (SPM and RSPM) and make arrangements to minimize dust pollution through provision of wind screens/barriers, water sprinkling/mist spray units, and encapsulation of dust source shall be made at the plant sites.</p>


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Management Measures	
S. No.	Environmental Issue/Aspect
	<p>Specifications of crushers, hot mix plants and batching plants shall comply with the requirements of the relevant legislations and as laid out in the 'Consents' issued by the OSPCB. The Contractor will provide necessary certificates to confirm that all crushers used for the works under the Contract conform to relevant dust emission control legislation.</p> <p>Even if the Contractor chooses to use an existing crusher (already operating in the area), basic minimum standards stipulated under the Pollution Control Legislation will have to be met and dust control devices need to be installed and operated. Copies of the required certificates and 'consents' of such a plant shall be procured by the Contractor and submitted to Engineer prior to the procurement of material from a unit of this nature.</p>
18.2	<p>Siltation of Water Bodies and Degradation of Water Quality</p> <p>Release of wastes (non-toxic and toxic) by the Contractor into water bodies and drainage systems that may adversely impact the aquatic life both locally and in the downstream stretches shall be viewed as serious non-compliance of EMP since these may affect the eco-flow, aquatic life and livelihoods of people dependent on such resources.</p> <p>The Contractor will ensure that construction and excavated materials containing fine particles are stored in an enclosure, particularly during the rainy season, such that sediment-laden water does not drain into nearby water bodies..</p> <p>The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system by providing proper septic tanks and soak pits. Spills, dust fines, waste oil, wastes and debris shall be cleared and disposed off as per the guidelines provided in the EMP under the supervision of the Engineer.</p> <p>The Contractor will avoid continuation of construction activity close to the streams or water bodies during monsoon. Stream courses and drains will be kept free from dumping of solid wastes, excavated earth, sludge and discharge of waste water from construction camps and sites. Liquid wastes arising from construction sites are to be impounded into proper collection pits.</p>
18.3	<p>Water Pollution from Fuel, Lubricants and Chemicals</p> <p>Garage, service stations, refueling stations and equipment maintenance yards shall be so located at least 100 mts. away from kitchen, mess and drinking water facilities within the camp site.</p> <p>The Contractor shall ensure that all vehicles, machinery and equipment are operated (including re-fueling) and maintained in such a fashion that any spillage (while working or accidental) of fuel and lubricants does not contaminate the land and water resources. There shall be lined drains and service ramps with oil and grease traps/oil interceptors in such areas to prevent liquid wastes from entering into soil, any aquifer, local water source, bore well, pond and other water bodies. Storage of drums (both filled and empty) and refueling shall be done on concrete platforms (impervious surface). Additionally, roofing (of any type other than asbestos) shall be provided to prevent contamination of land and water due to run-off from such sites during rains. Oil interceptors are also to be provided at vehicle parking areas.</p>


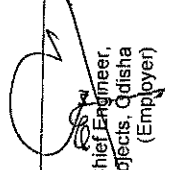


Soie Singh Saha
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S. No.	Environmental Issue/Aspect	Management Measures
18.4	Noise Pollution	<p>The contractor will arrange for collection, storage, reuse/disposal of spent oil, lubricants, grease, sludge, slurry, bitumen, chemicals and paints or other such material. Covered bins/drums (marked specifically regarding the contents) shall be kept separately at maintenance and refueling areas. Disposal shall be at pre-identified sites (as listed in the Waste Management Plan) as approved by the Engineer. All spills and collected petroleum products will be disposed off in accordance with the prevailing MoEF and SPCB guidelines issued for such purpose. The Engineer will certify that all arrangements comply with the guidelines of SPCB/ MoEF.</p> <p>The Contractor shall ensure the following:</p> <ul style="list-style-type: none"> a) All plants and equipment used in construction (including those of sub-Contractors and/or suppliers such as aggregate crushing plants) shall strictly conform to the MoEF/CPCB noise standards and shall have latest noise suppression mountings. b) All vehicles and equipment used in construction will be fitted with exhaust silencers. c) Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective, these shall be replaced. d) Maintenance of equipment, machinery and vehicles (including proper lubrication, tuning, checks for muffler effectiveness) shall be regular and up to the satisfaction of the Engineer to keep noise levels under control. e) Construction activity at sites within 100m habitations and hospitals shall not be carried out during night (10:00 pm to 06:00 am). f) Construction activity at sites within 500m from wildlife movement zones, reserved and protected forest areas shall not be carried out between 06:00 pm to 06:00 am. g) Blasting operations, if any shall be carried out with full safety precautions and in compliance with measures as specified in the legal provisions. <p>Monitoring shall be carried out by the Contractor in presence of the Engineer at the construction sites as per the Noise Monitoring Plan provided in this EMP and results shall be shared with the Engineer.</p>
E.19	Drainage and Flood Control	<p>The contractor will also ensure that no material (such as earth, stone, or other construction material or wastes) blocks the natural flow of water in any water course or cross drainage channel. All cross drainage and structure construction sites shall be cleared/cleaned-up prior to the rainy season. Also, prior to the monsoon season, the Contractor will provide either permanent or temporary drains to prevent water accumulation in residential, commercial and agricultural areas adjoining the under-construction zones of the road. Besides this, drainage shall be cleared to avoid accumulation of water within the construction sites, camp and plant sites and storage yard well in advance of the rainy season.</p>

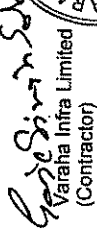
Sandeep Kumar Shrivastava
 Varaha Infra Limited
 (Contractor)


Chief Engineer,
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 (Employer)

Chief Engineer
 World Bank Project
 On the E.I.C.(C), Odisha, BBSR


Management Measures	
S. No. E.20	<p>Environmental Issue/Aspect Slope Protection and Control of Soil Erosion</p> <p>The Contractor will provide slope protection works as per design, or as directed by the Engineer to control soil erosion and sedimentation through use of dykes, sedimentation chambers, basins, fiber mats, mulches, grasses, slope drains and other devices as required under specific local conditions. All temporary sedimentation, pollution control works and maintenance thereof will be deemed as incidental to the earth work or other items of work and as such no separate payment will be made for them.</p> <p>The Contractor shall ensure the following:</p> <ol style="list-style-type: none"> a) After construction of road embankment, the side slopes of all cut and fill areas will be graded and covered with stone pitching, grass and shrub, as per design specifications. b) Turfing works will be taken up as soon as possible provided the season is favorable for the establishment of grass sods. c) Other measures of slope stabilization may include mulching/netting with sowing of grass seeds and sprinkling of water on such slopes after the completion of the earth work. d) Along sections abutting water bodies, stone pitching, as laid out in the design, will be provided to protect slopes.
E.21 Waste Management	
21.1	<p>Waste Management – Planning and Identification of Disposal Sites</p> <p>The Contractor will ensure that any spoils/materials unsuitable for embankment fill are not be disposed off near any water course; water body; agricultural land; natural habitats like grass lands, wet lands, flood plains, forests and pastures. All proposed disposal sites for waste material shall be identified by the Contractor and a Rehabilitation Plan (including details about pollution prevention and safety measures) for each such site shall be submitted to the Engineer for approval.</p>
21.2	<p>Re-use and Disposal of Debris Generated from Dismantling of Structures and Road Surface</p> <p>Debris generated due to the dismantling of the existing road will be suitably re-used in the proposed construction as follows:</p> <ul style="list-style-type: none"> ▪ The dismantled scraps of bitumen will be disposed off through utilization for the paving of cross roads, access roads and paving works in construction sites and campus, temporary traffic diversions, haulage routes, parking areas along the corridor or in any other manner approved by the Engineer. ▪ At locations identified for disposal of residual bituminous wastes, the disposal will be carried out over a 60 mm thick layer of rammed clay so as to eliminate the possibility of leaching of wastes into the ground water. ▪ The Contractor will suitably dispose off unutilized non-toxic debris either through filling up of burrows areas located in wasteland or at pre-designated disposal sites, subject to the approval of the Engineer. ▪ Debris generated from pile driving or other construction activities along the rivers and streams drainage channels shall be carefully disposed in such a manner that it does not flow into the water body.

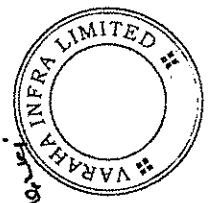

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 (Contractor)





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 Chief Engineer (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Management Measures	
S. No.	Environmental Issue/Aspect
	<p>▪ Non-bituminous wastes may be dumped in burrow pits (preferably located in barren lands) where such burrow pits are not suitable to develop as an economic source like pisci-culture or a source of irrigation. Such burrow pits can be filled up with non-bitumen wastes and then covered with a minimum 30cm layer of the soil, where plantation of trees and shrubs can be taken-up.</p> <p>The Contractor at his own cost shall resolve any claim, arising out of waste disposal or any non-compliance that may arise on account of lack of action on his part.</p>
21.3	<p>Waste Disposal from Construction and Plant Site/s</p> <p>The Contractor will provide garbage bins in the construction camp/s and ensure that these are regularly emptied and disposed off in a hygienic manner. No incineration or burning of wastes shall be carried out by the Contractor. The disposal of kitchen waste and other biodegradable matter shall be carried out in pits covered with a layer of earth within the camp site.</p> <p>Discarded plastic bags, paper and paper products, bottles, packaging material, gunny bags, hessian, metal containers, strips and scraps of metal, PVC pipes, rubber and poly urethane foam, auto mobile spares, tubes, tyres, belts, filters, waste oil, drums and other such materials shall be either reused or will be sold/given out for recycling.</p>
E.22	<p>Chance Found Archaeological Property</p> <p>All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislation.</p>
E.23	<p>Demobilization and Decommissioning</p> <p>The Contractor shall clear all temporary structures and dispose all garbage, night soils and POL waste as per the approved Waste Management Plan. All construction zones including river-beds, drainage channels, culverts, road-side areas, camps, hot mix plant sites, crushers, batching plant sites and any other area used/affected by the project will be rehabilitated as per the approved plans. The Engineer shall ensure that all clean-up and restoration operations are completed satisfactorily and written approval is given to the contractor before the 'works completion certificate' is issued/recommended to the Client.</p> <p>All clean-up and restoration operations, including road-side and structure construction site clean-up; burrow area rehabilitation; provision of drainage and slope protection measures and; restoration of top-soil shall be completed. All disposal pits or trenches will be filled in disinfected and effectively sealed off. Residual topsoil, if any will be distributed or spread evenly at plantation sites, on adjoining/near-by barren land or affected agricultural land adjacent to the RoW.</p> <p>The Engineer shall ensure through site inspection that the Contractor and Engineer have complied with all these provisions prior to 'taking-over' the milestone stretch in question.</p>


 Varaha Infra Limited
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 Chief Engineer
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Form P1

IDENTIFICATION OF DISPOSAL SITE LOCATIONS

[One Time Format, to be filled by the Contractor before dumping in each location]

Link : _____
[Give chainages and nearest settlements from both ends]

Sl. No.	Criteria on which information for each site is to be collected	Site 1	Site 2	Site 3
1	Existing Land Use			
2	Area covered (m ²)			
3	Total Material that can be dumped within the site (m ²)			
4	Depth to which dumping is feasible (m)			
5	Distance of nearest watercourse (m)			
6	Nearest Settlement (m)			
7	Date/s of Community Consultation/s			
8	Whether the community is agreeable to sitting of dumping site (Y/N)			
9	Date of Permission from Villager/local community			
10	Proposed future use of the Site			
11	Selected Site (tick any one column only)			

Enclosures: [Tick as appropriate]

1. Map of each location (Total,.....no.s) : Attached / Not Attached
2. Photographs of
 - a. Each disposal location : Attached/ Not Attached
 - b. Each community consultation : Attached/ Not Attached
3. Photo copy of Agreement with individual owners
 - a. Mr. : Attached/ Not Attached
 - b. Mr. : Attached/ Not Attached

Remarks

Submitted

Checked

Approved

Signature.....

Signature.....


Signature.....

Name.....


Name.....

Name.....

Varaha Infra Limited
(Contractor)
Gade Singh



Chief Engineer,
World Bank Projects, Odisha
(Employer)



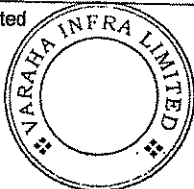
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Designation.....
Contractor

Environmental Engineer.
Construction Supervision Consultant

Resident Engineer

Sanjay Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

SETTING-UP CONSTRUCTION CAMP AND STORAGE AREA

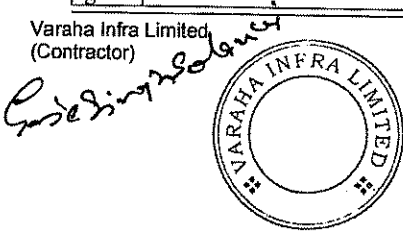
[One Time Format, to be to be filled by the Contractor & submitted before target date of establishing camps or each time before change of layout]

Location of Camp : _____

Date _____

Sl. No.	Item	Unit	Details
1.	Detail of item camp		
a.	Size of Camp	m x m	
b.	Area of Camp	Sq.m	
c.	Distance from Nearest Settlement		
d.	Distance from Nearest Water Source [Type/Size/Capacity/present Use/Ownership]		
e.	Date of camp being operational dd/mm/yy		
f.	Present land use		
g.	No of trees with girth > 0.3m.		
h.	Details of Storage area (Availability of impervious surface)	Mxm	
i.	Availability of separate waste disposal from storage area	Cum	
2.	Details of topsoil stacking		
a.	Quantity of top soil removed	Sq.m	
b.	Details of storage of topsoil [Describe stacking arrangement]		
3.	Details of workforce		
a.	Total No of Laborers	Nos	
b.	Total no of Male Workers	Nos	
c.	No of Male Workers below 18 years	Nos	
d.	Total No of Female Workers	Nos	
e.	No of Female workers below 18 years	Nos	
f.	No of children	Nos	
4.	Details of dwelling units		
a.	No of dwellings/huts		
b.	Minimum Size of Dwelling	m x m	
c.	No. of openings per dwelling	Nos	
d.	Minimum size of opening	m x m	
e.	Walls	Specifications	
f.	Roofing	Specifications	
g.	Flooring	Specifications	

Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



Sl. No.	Item	Unit	Details
h.	Drinking Water Tank	Specifications	
i.	Capacity of Drinking Water Tank	Cum	
j.	Size of Drinking Water Tank	Mxm	
k.	Total no of WC	Nos	
l.	No of Wcs for female workers	Nos	
m.	Minimum Size of WC	Mxm	
n.	Total No of Bathrooms for female workers	Nos	
o.	Size of septic tank for WC/Baths	Mxm	
p.	Capacity of Water Tank for WCs /Bathrooms and general purpose	cum	
q.	Fencing around camp	Y/N	
5.	Details of facilities		
a.	Availability of security 24 hrs a day	Yes/No	
b.	Details of First Aid Facility	Yes/No	
c.	Availability of Dav Care Centre	Yes/No	
d.	Availability of dust bins (capacity 60 Itr)	Nos	

Encl:

- Site Layout of Construction camp
- Drawings of dwelling units with allied facilities

Attached/ Not Attached
Attached/ Not Attached

Remarks

Submitted

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant

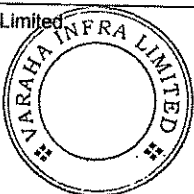
Approved

Signature.....

Name.....

Resident Engineer

Sridhar Subedi
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

ESTABLISHMENT OF BURROW AREAS PRIOR TO OPENING
 [One time Format, to be submitted by the Contractor for taking consent for opening of EACH Burrow area]

Link No. _____
 Material _____

[Give chainages and nearest settlements from both ends]

Sl. No.	Location			Quantity of Available Material (cum)	Distance from nearest Water Course (m)	Distance from nearest Settlement(m)	Land Use		No. of Trees Affected	Rehabilitation Measures Proposed
	Name of Village	Chainage of Project Road (km)	Side (LHS /RHS)				Haul road length (km)	Area m x m		

- Photograph of Proposed Site
- Location Map
- Agreement with Land Owner

Attached/ Not Attached
 Attached/ Not Attached
 Attached/ Not Attached

Submitted

Signature.....
 Name.....
 Designation.....
 Contractor

Checked

Signature.....
 Name.....
 Environmental Engineer,
 Construction Supervisor Consultant

Approved

Signature.....
 Name.....
 Resident Engineer

Rajeev Kumar
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

ESTABLISHMENT OF HOT MIX PLANT /BATCH MIX PLANT
 [To be submitted by Contractor for taking permission from PMU]


Link _____

Sl. No.	Location			Area (m ²)	Distance from nearest Water Course (m)	Distance from nearest Settlement	Existing Land Use	Prevalent Wind Direction	Weather in Down Wind Direction (Y/N)	Approved by EO (Y/N)	Remark
	Name of Village	Chainage (km)	Side (LHS /RHS)								

1. Photograph of Proposed Site Attached/ Not attached _____
2. Site Plan Attached/ Not attached _____
3. Permission from OSPCB Attached/ Not attached (Valid upto _____)

Submitted	Checked	Approved
Signature.....	Signature.....	Signature.....
Name.....	Name.....	Name.....
Designation.....	Environmental Engineer.	Resident Engineer
Contractor	Construction Supervision Consultant	

Rode Simin Sharma
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the F.I.C.(C), Cuttack, BBSR

ROAD SAFETY REPORTING FORMATS

[Reporting by Contractor to PMU before commencement of construction in the Working Zone]

Link _____

DIVERSION at location : km _____

Report-Date.....

Sl. No.	Item	Unit	Remarks
Details of Construction Zone			
1.	Length of Working Zone	m	
2.	Distance between this and adjacent construction zone	m	
3.	Length of approach transition zone (should be min 50 for a speed of 50 km/ hr)	m	
4.	Length of terminal transition zone	m	
5.	Length of Longitudinal Buffer Zones	m	
6.	Length of Lateral Buffer Zone	m	
Signage's in advance warning zone			
1.	Sign 'Men at Work' before 200m	Y/N	
2.	Sign 'Men at Work' before working zone	Y/N	
3.	Signage saying 'Compulsory Keep Right /Left' provided	Y/N	
4.	Signage saying 'Narrow Road on left/ right' provided	Y/N	
Signage in Approach Transition Zone			
1.	Signage saying 'Compulsory Keep Right /Left' provided	Y/N	
2.	Delineators placed along length of transition	Y/N	
Signage in work zone			
1.	Hazard Marker placed where railing for CD structure on diversion starts	Y/N	
2.	Barricade on either side of work sub zone	Y/N	
Signage in Terminal transition zone			
1.	Sign for Restriction Ends	Y/N	
Road Delineator			
1.	Delineator posts provided	Y/N	
2.	Sand bag delineators with Retroreflective stickers provided	Y/N	
3.	Object Makers Provided	Y/N	

1. Sketch of construction zone showing all sub zones and location of signs
Attached Attached/ Not
2. Format on Acquisition of Temporary diversions
Attached Attached/ Not

Submitted

Checked

Approved

Signature.....

Signature.....

Signature.....

Name.....

Name.....

Name.....

Designation.....

Environmental Engineer.

Resident Engineer

Contractor

Construction Supervision Consultant

Sanjay Kumar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Gajendra Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

ARRANGEMENT FOR TEMPORARY LAND

[Quarterly Reporting by Contractor to PMU, Site Layout of all locations to be attached with this format]

Link _____

Report - Date: _____

Sl. No.	Item	Target date for Establishment	Date of Establishment	Location			Present Land use	Size (m x m)	Existing Trees >30 cm girth	Dist. From nearest settlement	Dist. From nearest water source	Site approved or not (Y/N)	Remarks by CMU (PRBDB) if any
				Name of Village	Chainage (km)	Side (LHS /RHS)							
1	Burrow Areas BA 1												
2	Workers Camps WC 1												
3	Site for Batching Plant BP 1												
4	Site for Hot Mix Plant HMP 1												
5	Stock Yard SY 1												

Submitted

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

Designation.....
Environmental Engineer,
Construction Supervision Consultant

Approved

Signature.....

Name.....

Designation.....
Resident Engineer

Geje Sanku Sanku
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Form P7

IDENTIFICATION OF SOURCE OF WATER FOR CONSTRUCTION

[Monthly Reporting by the Contractor]

Link _____

Report - Date: _____

Sl. No.	Source (Name)	Location /Ch.	Distance from Road	Permission Required	Remarks

Submitted

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer

Varaha Infra Limited
Varaha Infra Limited
(Contractor)



Chief Engineer
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
Chief Engineer
World Bank Project
for the E.I.C.(C), Odisha, BBSR

Form C1

DETAILS OF EARTHWORK

[Monthly Report to be filled by the Contractor for Each Burrow Area under use]

Link _____

Month.....

Date of Submission.....

Location of Burrow Area under use

	Name of Village	Chainage (km)	Side (LHS / RHS)	Haul road length (m)
I				
II				

2. Details of Burrow Areas

2.1	Capacity of the Burrow Area	
2.2	Percentage of the capacity exhausted	
2.3	Total quantity of the Earth Excavated (in cum)	
2.4	Quantity of Top Soil removed from the Burrow Areas	
2.5	Location of Top Soil stored removed	
2.6	Quantity of Top Soil stored at the beginning of the month	
2.7	Quantity of Top Soil utilized at the end of the month	
2.8	Location (s) where Top Soil has been utilized (Specify on a location plan)	
2.9	Quantity of earthwork excavation from existing road	
2.10	Total quantity of earthwork reused in cum. (5%)	
2.11	Location disposal (if other than sites) (Specify clearly on a location plan)	
2.12	Quantity of earthwork re-used in fill operation	
2.13	Location of burrow areas in disuse / exhausted	
2.14	Outline a rehabilitation plan for each of the exhausted burrow areas with special reference to Erosion Protection Measures. Also, submit at separate detailed rehabilitation plan for exhausted burrow areas for approval supported adequately with layouts, plans and drawings.	

Remarks

Submitted

Checked

Approved

Signature.....

Signature.....

Signature.....

Name.....

Name.....

Name.....

Designation.....
Contractor

Environmental Engineer.
Construction Supervision Consultant

Resident Engineer

Rajeev Singh
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

DETAILS OF HOT MIX PLANT

[Monthly Report for Each Hot Mix Plant , to be filled by the Contractor]

Reporting Month.....

Date of Submission.....

1. Environment Features of the surrounding area

1.1	Name and location of Hot Mix Plant (w.r.t. PWD km ch.)	
1.2	Wind direction	
1.3	Name (s), distance population and type of settlements in a 1.5 km radius of site.	

2. Draw/ Attach Sketch Plan of HMP clearly indicating distance and approach roads.

3. Details of HMP and Mitigation Measures taken

3.1	Installed Capacity	
3.2	Average Utilization	
3.3	Make	
3.4	Model	
3.5	Last Serviced	

4. Explain Air Pollution Control Measures taken at the HMP site

5. Explain Noise Pollution Control Measures taken at the HMP site

Remarks

Submitted

Signature.....

Name.....

Designation.....

Contractor

Checked

Signature.....

Name.....

Environmental Engineer.

Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer

Sandeep Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

DETAILS OF LAND FILL OPERATIONS

[Monthly Report for Each Land Fill site, to be filled by the Contractor]

Month.....

Reporting

Reporting Date

1. Environment Features of the surrounding area

1.1	Location of each land fill site (Provide sketch Map below)	Name of Village	Chainage (km)	Side (LHS/RHS)	Haul road length (m)
	I				
	II				
1.2	Capacity of each land fill site				
1.3	Safety measure taken at land fill site (s)	1. 2. 3.			

1. Sketch maps

Attached/ Not attached

2.

Submitted

Checked

Approved

Signature.....

Signature.....

Signature.....

Name.....

Name.....

Name.....

Designation.....
Contractor

Environmental Engineer.
Construction Supervision Consultant

Resident Engineer

Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Form C4

DETAILS OF MACHINERY IN OPERATION

[Monthly Report , to be filled by the Contractor]

Link _____

Reporting Month.....

Date of Submission.....

1. Details of Machinery Operation

Sr. no.	Machinery in operation	Registration No./ Mark	Make	Validity date of Pollution Control Certificate
1	Pavers	1.		
		2.		
2	Rollers	1.		
		2.		
3	Number of excavators	1.		
		2.		
4	Number of graders	1.		
		2.		
5	Number of dumpers	1.		
		2.		
		3.		
6	Others (Give details)			

1. Copy of OSPCB emission control certificates (To be attached Quarterly) Attached/ Not Attached

Remarks

Submitted

Checked

Approved

Signature.....

Signature.....

Signature.....

Name.....

Name.....

Name.....

Designation.....
Contractor

Environmental Engineer.
Construction Supervision Consultant

Resident Engineer

Genje Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Via the E.I.C.(C), Odisha, BBSR

Form C5

DETAILS OF WORKSHOPS IN OPERATION

[Quarterly Report , to be filled by the Contractor]

Reporting
 Month..... Date of
 Reporting.....

Sr. No.	Details	Location 1	Location 2	Location 3
1	No. of workshops with repairs facility (furnish location and type of facility provided)			
2	Number of vehicles in repair at each location			
3	Number of oil interceptor provided in each repair / fueling site			
4	Total quantity of oil and wastes recovered in each interceptor during last month. (kg / lit)			
5	Details of waste disposal. (Whether Sold/ Disposed)			

Submitted

Signature.....

Name.....

Designation.....
 Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
 Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer

Seize Singh Saini
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

REDEVELOPMENT OF BURROW AREAS
 [Monthly Reporting Format to be filled by the Contractor]

Link _____ Report-Date _____

Sl. No.	Burrow Area No.	Rehabilitation Measures	Date of approval of Rehabilitation	Date of Handing Over back to the Owner	Remarks

1. Drawing for Redevelopment for each Burrow Area Attached/ Not Attached
2. Photographs of sites before use Attached/ Not Attached
3. Photographs of sites after rehabilitation Attached/ Not Attached

Submitted

Signature.....
 Name.....
 Designation.....
 Contractor

Checked

Signature.....
 Name.....
 Environmental Engineer.
 Construction Supervision Consultant

Approved

Signature.....
 Name.....
 Resident Engineer

Rajesh Simran Solanki
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

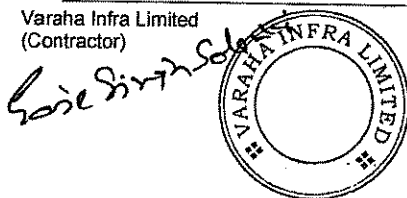
SAFETY CHECK LIST

[Monthly Reporting Format to be filled by the Contractor for each location]

Name of Safety Officer _____
 Date of Inspection _____
 Location

Description	Category		
	A	B	C
General			
House Keeping			
Stacking of Material			
Passageway			
Lighting			
Ventilation			
Others			
Electrical			
Switches			
Wirings			
Fixed Installation			
Portable Lighting			
Portable Tool			
Welding Machine			
Others			
Fire Prevention			
Fire Fighting Appliance			
Dangerous Goods Store			
Gas Welding Cylinders			
Others			
Others			
Dust Control			
Noise Control			
First Aid Equipment			
Washing Facility			
Latrine			
Canteen			
Provision of Personal Protective			
Helmet			
Eye Protector			
Ear Protector			
Respirator			
Safety Shoes			
Safety Belts			
Others			

Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
To the E.J.C.(C), Odisha, BBSR

A: Adequate at time of Inspection ; B: Needs Improvement ; C: Needs Immediate Attention

Remarks

Submitted

Signature.....

Name.....

Designation.....

Contractor

Checked

Signature.....

Name.....

Environmental Engineer.

Construction Supervision Consultant

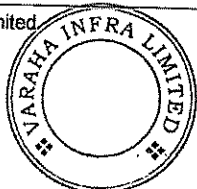
Approved

Signature.....

Name.....

Resident Engineer

Sojit Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

ACCIDENT REPORT

[To be completed ON OCCURRENCE of injury by the Safety Officer]

Location : _____
 Time : _____ Day/ Night Weather : _____

Part I

Type of Accident

D01 ()	Fall of person from a height	D11 ()	Explosion
D02 ()	Slip, trip or fall on same level	D12 ()	Fire
D03 ()	Struck against fixed objects	D13 ()	Contact with hot or corrosive substance
D04 ()	Struck by flying or falling objects	D14 ()	Contact with poisonous gas or toxic substances.
D05 ()	Struck by moving objects	D15 ()	Contact with poisonous gas or toxic substances
D06 ()	Struck / caught by cable	D16 ()	Hand tool accident
D07 ()	Stepping on nail etc.	D17 ()	Vehicle / Mobile plant accident
D08 ()	Handling without machinery	D18 ()	Machinery operation accident
D09 ()	Crushing / burying	D19 ()	Other (please specify)
D10 ()	Drowning or asphyxiation		

Agent Involved in Accident

E01 ()	Machinery	E11 ()	Excavation / underground working
E02 ()	Portable power appliance	E12 ()	
E03 ()	Vehicle or associated equipment / machinery	E13 ()	Ladder
E04 ()	Material being handled, used or stored	E14 ()	Scaffolding /gondola
E05 ()	Gas, vapor, dust, fume or oxygen	E15 ()	Construction formwork, shuttering and false work.
E06 ()	Hand tools	E16 ()	Electricity supply cable, wiring switchboard and associated equipment
E07 ()	Floor edge	E17 ()	Nail, splinter or chipping
E08 ()	Floor opening	E18 ()	Other (Please specify)
E09 ()	Left shaft	E19 ()	
E10 ()	Stair edge		

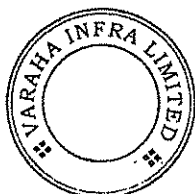
Unsafe Action Relevant to the Accident

F01 ()	Operating without authority	F11 ()	Failure to use eye protector
F02 ()	Failure to secure objects	F12 ()	Failure to use respirator
F03 ()	Making safety devices inoperative	F13 ()	Failure to use proper clothing
F04 ()	Working on moving or dangerous equipment	F14 ()	Failure to use warn others or given proper signals
F05 ()	Using un-safety equipment	F15 ()	Horseplay
F06 ()	Adopting unsafe position or posture	F16 ()	No unsafe action
F07 ()	Operating or working at unsafe speed	F17 ()	Others (please specify)
F08 ()	Unsafe loading, Placing, mixing etc.	F18 ()	
F09 ()	Failure to use helmet	F19 ()	
F10 ()	Failure to use proper footwear		

G01 ()	No protective gear	G08 ()	Unsafe layout of job, traffic etc.
G02 ()	Defective protective gear	G09 ()	Unsafe process of job methods
G03 ()	Improper dress / footwear	G10 ()	Poor housekeeping
G04 ()	Improper guarding	G11 ()	Lack of warning system
G05 ()	Improper ventilation	G12 ()	Defective tool, machinery or materials
G06 ()	Improper illumination	G13 ()	No unsafe condition
G07 ()	Improper procedure	G14 ()	Others (please specify)

Varaha Infra Limited
(Contractor)

Sandeep Singh Solanki



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Human Factors Relevant to the Accident

H01 ()	Incorrect attitude /motive	H06 ()	Disobeyance of Rules
H02 ()	Alcohol/ Drug Usage	H07 ()	More Risk taking issue
H03 ()	Poor perception issue	H08 ()	Lack of Comprehension
H04 ()	Unsafe act by other persons	H09 ()	No unsafe personal factor
H05 ()	Fatigue Related Issues	H10 ()	Other (please specify)

Remarks

Submitted	Checked	Approved
Signature.....	Signature.....	Signature.....
Name.....	Name.....	Name.....
Designation..... Contractor	Environmental Engineer. Construction Supervision Consultant	Resident Engineer

Part-II

[To be completed Upon Finalization of Employee's compensation Claim]

- 101 () No permanent incapacity
- 102 () Less than 5% incapacity
- 103 () More than 5% incapacity
- 104 () Final

Submitted	Checked	Approved
Signature.....	Signature.....	Signature.....
Name.....	Name.....	Name.....
Designation..... Contractor	Environmental Engineer. Construction Supervision Consultant	Resident Engineer

Sourish Saha
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

POLLUTION MONITORING

Form C9

(Periodically To be submitted by Contractor for locations at which monitoring to be conducted as per EMP)

Report – Date: _____

Compliance to Mitigation measures suggested in last report
 If not reasons thereof.....

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential /Industrial /Commercial)	Remarks
1. Air Monitoring											
						SPM RSPM HC Sox NOx	SPM RSPM HC Sox NOx				
2. Water Monitoring											
						pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease	pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease				



Pradip Kumar Saha
 Varaha Infra Limited
 (Contractor)

[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential /Industrial /Commercial)	Remarks
3. Soil Monitoring											
						pH Organic Matter Alkalinity Conductivity Water holding Capacity Pb	pH Organic Matter Alkalinity Conductivity Water holding Capacity Pb				
4.Noise Monitoring											
						L _{day} equivalent L _{night} equivalent L _{equivalent}	L _{day} equivalent L _{night} equivalent L _{equivalent}				

Remark

Submitted

Signature.....

Name.....

Designation.....

Contractor

Checked

Signature.....

Name.....

Environmental Engineer.

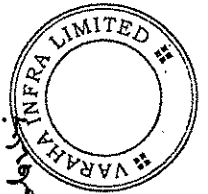
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer



Sanjay Singh
Varaha Infra Limited
(Contractor)

[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
in the F.I.C.I. Odisha, BBSR

Form C10

RESTORATION OF CONSTRUCTION SITES

(Monthly To be submitted by Contractor for locations at which monitoring to be conducted as per EMP)

Link _____

Report-Date.....

Sl. No.	Contract Package	Labour Camp		Construction Camp		Plant Site		Burrow areas		Disposal Locations		Top Soil	
		O	R	O	R	O	R	O	R	O	R	Preserved	Restored

Remarks

Submitted

Checked

Approved

Signature.....

Signature.....

Signature.....

Name.....

Name.....

Name.....

Designation.....
Contractor

Environmental Engineer.
Construction Supervision Consultant

Resident Engineer

Sandeep Kumar Saha
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Form PMU 1

FORMAT FOR KEEPING RECORDS OF CONSENT OBTAINED BY CONTRACTOR
 [Monthly Format]

Report-Date: _____

Sl. No.	Clearance	Applicable Acts	Agencies	Obtained on	Valid upto	Remarks
1						
2						
3						
4						
5						
6						

Remarks

Verified

Signature.....
 Name.....
 Resident Engineer
 Construction Supervision Consultant

Countersigned

Signature.....
 Name.....
 Executive Engineer (PMU)

Sandeep Singh Sobani
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 World Bank Project
 under the E.I.C.(C). Odisha, BBSR

Form PMU 2

CHECK LIST FOR ENVIRONMENT INSPECTION
[Monthly Format]

Date of Inspection _____

Sl. No.	ESMP Measures	Remarks
1	Provision of a personnel accountable for implementation of ESMP /Safety Measures with Contractor	
2	Consent of PCB to Establish HMP	
3	Consent of PCB to operate HMP	
4	Compliance of PCB Conditions for HMP installation and operation	
5	Whether compliance reported through monthly Progress report to Divisional Office of Executive Engineer	
6	PUC taken for all Construction vehicles	
7	Concrete platform with trap under bitumen boiler, Fuel Tank for HMP and generator set provided or not	
8	Precautions to prevent contamination of soil by emulsion, Bitumen, oil and lubricant taken while storing	
9	Providing cover to fine construction material & bituminous mix during transportation	
10	Burrow areas:	
	a) Burrow areas approved by Department	
	b) Existing land was used	
	c) Nos Opened	
	d) Available Quantity	
	e) Utilized Quality	
	f) Balance Quantity	
11	Spoil and debris disposal:	
	a) Present status of land	
	b) Closure and completion plan	
12	Site specific traffic Safety management Plan:	
	a) Contractor installed the warning /regulatory Traffic signs at the construction site	

P. Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Sl. No.	ESMP Measures	Remarks
	c) The arrangement adequate	
13	Safety equipment i.e. helmet, gloves, gumboot, mask, earplugs etc. provided to workers	
14	Health Facility at camp and work site i.e. First Aid kit & suitable vehicle for conveyance in case of emergency / accident	
15	Permit for Procuring River sand	
16	License from Department of mines for quarrying	
17	Consent to establish / operation of crusher	
18	Provision of labour camp with sanitation & potable water	
19	Fire precautions at Hot Mix Plant and site Office	
20	Air and noise monitoring done in camp site	
21	Whether any cultural property is being impacted	
22	Status of drainage provision in camp area	
23	General House Keeping	

Remarks

Verified

Signature.....

Name.....

Resident Engineer
Construction Supervision Consultant

Countersigned

Signature.....

Name.....

Executive Engineer (PMU)

Sandeep Kumar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
in the E.I.C.(C). Odisha, BBSR

Form PMU 3

SUMMARY SHEET
[To be filled MONTHLY by PMU]

Month _____ Date _____

Sl. No.	Description	Remarks
1	No Objection Certificate	
A	Hot mix Plant	
	Location 1	
	Location 2	
	Location 3	
B	Cement batching Plant	
	Location 1	
	Location 2	
	Location 3	
2	Pollution Under Certificate	
	Vehicles	
	Machineries	
3	No objection Certificate for Diesel Gen set	
	Location 1	
	Location 2	
4	Labour Camps	
	No. of sites Identified	
	Approved	
	Opened	
	Conforms to conditions imposed at the time of opening of sites	
	Closed	
5	Workers	
	No of workers employed	
	No of male workers	
	No of female workers	
	No of day workers	
6	Burrow Area	
	No. of sites identified	
	Approved	
	Opened	
	Quantity of available material	
	Quantity of material Utilized	
	Quantity of Topsoil preserved	
	Quantity to top soil used	
	No of sites closed	
	No. of sites Rehabilitated	
7.	Quarry	
	No. of sites identified	
	Approved	
	Opened	
	Material available	
	Material obtained	
	No. of sites Rehabilitated	
8	Disposal Locations	
	No. of sites identified	
	Approved	
	Opened	

Sandeep Singh Solanki
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Engineer
World Bank Project
J/o the E.I.C.(C), Odisha, BBSR

Sl. No.	Description	Remarks
	Amount of Waste disposed	
	Type of waste disposed	
	No. of sites Rehabilitated	
9	Road Safety	
	Road Safety norms followed as per guidelines, SP-55 and approved Traffic plan	
10	Cleaning of Culvert/ drains	
	No. of culverts/ drains	
	Nos. Cleaned	
11	Trees	
	No of trees marked for cutting in field	
	No of trees cut	
	No of trees to be Planted	
	Trees Planted	
12	Haul Roads	
	Adequacy of maintenance of Haul Road Network	

Remarks

Verified

Countersigned

Signature.....

Signature.....

Name.....

Name.....

Resident Engineer
Construction Supervision Consultant

Executive Engineer (PMU)

Sujeet Kumar Saha
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

PACKAGE No. OSRP-CW-ICB-P04A2

For

Construction for Widening & Strengthening of existing carriageway to 2-lane
road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR)
(Balance Works)

under

Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Odisha Works Department, Government of Odisha

and

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road,
Jodhpur- 342006, Rajasthan, India
Tel : +91-291-2556877 , Fax : +91-291-2553861
E-mail: veejodhpur@gmail.com

[VOLUME-IV: Drawings]

Agreement Value: Rs. 97,89,97,903

*Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit – V, Bhubaneswar – 751 001*

December 23, 2015

CONTENTS of CONTRACT

Volume – I	:	Letter of Acceptance, Letter of Bid and Addenda
Volume – II	:	Particular Conditions and the General Conditions;
Volume – III	:	Specifications
Volume – IV	:	Drawings
Volume – V	:	Completed Schedules

CONTENTS of VOLUME IV

Sl.	Description	Page No.
1	Nischintakoili to Duhuria (Km.25/0 to Km.49/0)	1
	A. Table of Contents, TCS, Miscellaneous Drawings, Plan & Profile Drawings of Highways, Environment Drawing	2-69
	B. Bridges & Culverts	70-97

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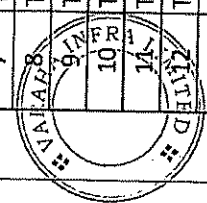


Chief Engineer
World Bank Project
of the E.I.C.(C), Odisha, BBSP
Chief Engineer
World Bank Project
of the E.I.C.(C), Odisha, BBSP

TABLE OF CONTENT (HIGHWAY DRAWINGS)

SL. No.	DESCRIPTION	DRAWING No.	NO. OF SHEETS
1	COVER PAGE		
2	TABLE OF CONTENT (HIGHWAY DRAWINGS)	73466\LASA\HIGHWAYS\TC-01	1
3	TYPICAL CROSS SECTIONS	73466\LASA\HIGHWAYS\TYP-CS-01 TO 02	2
MISCELLANEOUS DRAWINGS			
1	HORIZONTAL CURVE DETAILS	73466\LASA\HIGHWAYS\MISC-01	1
2	VERTICAL CURVE DETAILS	73466\LASA\HIGHWAYS\MISC-02	1
3	SCHEDULE OF EXTRA WIDENING	73466\LASA\HIGHWAYS\MISC-03	1
4	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION	73466\LASA\HIGHWAYS\MISC-04	2
5	DETAILS OF PAVEMENT SCHEDULE WITH TCS	73466\LASA\HIGHWAYS\MISC-05	1
6	TYPICAL DETAILS OF SLOPE PROTECTION	73466\LASA\HIGHWAYS\MISC-06	1
7	TYPICAL DETAILS OF DOWEL BAR AND TIE BAR ARRANGEMENT	73466\LASA\HIGHWAYS\MISC-07	1
8	TYPICAL DETAILS OF TRANSITION SLAB BETWEEN RIGID AND FLEXIBLE PAVEMENT	73466\LASA\HIGHWAYS\MISC-08	1
9	TYPICAL DETAILS OF TRANSITION OF DIFFERENT ROAD SECTIONS	73466\LASA\HIGHWAYS\MISC-09	1
10	TYPICAL DETAILS OF DRAIN AND KERB	73466\LASA\HIGHWAYS\MISC-10	1
11	TYPICAL DETAILS AND SCHEDULE OF MINOR JUNCTIONS	73466\LASA\HIGHWAYS\MISC-11	2
12	TYPICAL DETAILS OF CROSS ROAD DRAINS	73466\LASA\HIGHWAYS\MISC-12	1
13	TYPICAL DETAILS OF ROAD MARKINGS	73466\LASA\HIGHWAYS\MISC-13	3
14	TYPICAL DETAILS OF ROAD SIGNS	73466\LASA\HIGHWAYS\MISC-14	4
15	TYPICAL DETAILS AND SCHEDULE OF PEDESTRIAN CROSSING, HUMPS AND RUMBLE STRIPS	73466\LASA\HIGHWAYS\MISC-15	2
16	TYPICAL DETAILS OF FOOTPATH BARRIER	73466\LASA\HIGHWAYS\MISC-16	1
17	TYPICAL DETAILS OF METAL BEAM CRASH BARRIER	73466\LASA\HIGHWAYS\MISC-17	2
18	TYPICAL DETAILS OF KM STONE AND HECTOMETRE STONE	73466\LASA\HIGHWAYS\MISC-18	1
19	REINFORCEMENT DETAILS OF KM STONE AND HECTOMETRE STONE	73466\LASA\HIGHWAYS\MISC-19	1
20	TYPICAL DETAILS OF GUARD POST AND 200m STONE	73466\LASA\HIGHWAYS\MISC-20	1
21	TYPICAL DETAILS OF DELINEATOR	73466\LASA\HIGHWAYS\MISC-21	1
22	TYPICAL DETAILS OF RRPM MARKERS	73466\LASA\HIGHWAYS\MISC-22	1
23	TYPICAL DETAILS AND SCHEDULE OF BUSBAY	73466\LASA\HIGHWAYS\MISC-23	2
24	TYPICAL DETAILS OF TOLL PLAZA	73466\LASA\HIGHWAYS\MISC-23	6
1	PLAN & PROFILE	73466\LASA\HIGHWAYS\PP-26 TO 49	24

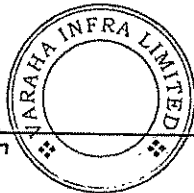
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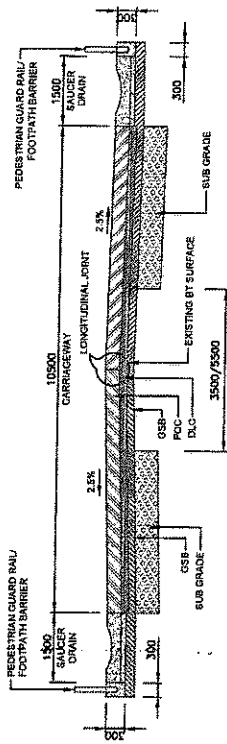
REV	NO.	DATE	BY	CHKD	APPD	REVISED	REASON	DRAWN	PREPARED	CHECKED	APPROVED
M/s. CONSULTING ENGINEERS GROUP LTD. E-12, 40/1, C/O. D.P. ALUVA ROAD, Bhubaneswar-751011 Tel: 91-11-2308899, 2321885, 2325558 Fax: 2321348, e-mail: eng@engineers.com											
LEA Associates South Asia Pk. Ltd. B-1, 5/7, 1st Floor, Mohana Cooperative Industrial Estate, Mathura Road, New Delhi-110044											
CLIENT: ODISHA WORKS DEPARTMENT											
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKULI - DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PPA-2											
SCALE: N.T.S.											
DRAWING TITLE: TABLE OF CONTENT (HIGHWAY DRAWINGS)											
DATE NUMBER: 73466\LASA\HIGHWAYS\TC-01											

TYPICAL CROSS SECTIONS

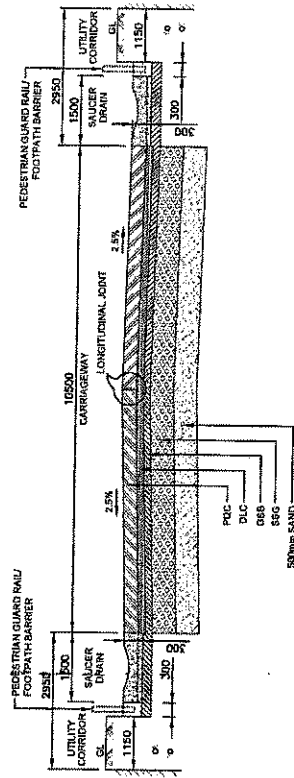


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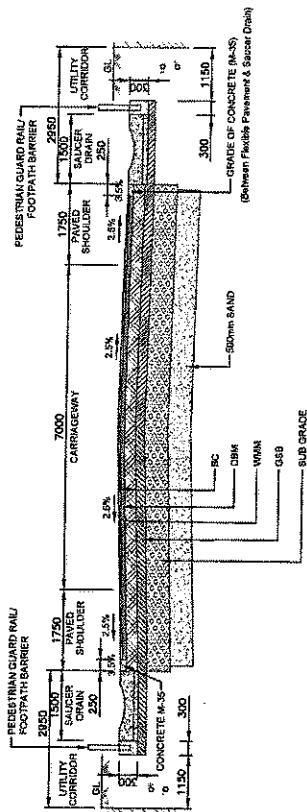
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Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



TCS-03: TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION WITHOUT EXPANSIVE CLAY



TCS-04: TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION OVER EXPANSIVE CLAYS

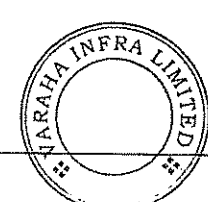


TCS-05: TYPICAL CROSS SECTION IN BUILT-UP AREA FOR NEW CONSTRUCTION IN EXPANSIVE CLAYS

- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
 2. FOR DRAIN DETAILS REFER DRAWINGS NO.7/MR/LAS/Highway/MS/SC-10.
 3. FOR LAYER THICKNESS DETAILS REFER SCHEDULE OF WIDTHS AND LAYER THICKNESS DETAILS.
 4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO.7/MR/LAS/Highway/MS/SC-08.
 5. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
 6. IN CASE THE UTILITY/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS' DIRECTION.
 7. THE SIDE OF INNER EARTH COVER WILL DEPEND ON THE WIDENING SCHEDULE.

TYPICAL CROSS SECTIONS	
(SHEET 2 OF 2)	
Scale	1:75
Project	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 7 LANE ROAD FROM NISHCHINTAKOLI - DUMURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2
Client	ODISHA WORKS DEPARTMENT
Consultant	CONSULTING ENGINEERS GROUP LTD. (PVT) LTD. 8-1, 2nd FLOOR, MOHAN CO-OPERATIVE INDUSTRIAL ESTATE, MATAPURA ROAD, NEW DELHI-110044
Scale	1:75
Project	TCS-03
Client	ODISHA WORKS DEPARTMENT
Consultant	CONSULTING ENGINEERS GROUP LTD. (PVT) LTD. 8-1, 2nd FLOOR, MOHAN CO-OPERATIVE INDUSTRIAL ESTATE, MATAPURA ROAD, NEW DELHI-110044

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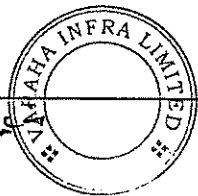


Chief Engineer
World Bank Project
On the E.I.C.(C), Odisha

NO.	DATE	BY	REVISION	APPROVED
1				
2				
3				
4				
5				

MISCELLANEOUS DRAWINGS (HIGHWAY)

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World Bank Project
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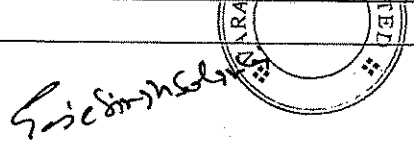
HORIZONTAL CURVE DETAILS

HORIZONTAL CURVE INFORMATION (Km 25+000 to Km 49+000)


Curve No.	Direction	TS	SC	PC	Transitio n In	Radius	Transitio n Out	PT	CS	ST	Design Speed
77	LEFT			2507.25		2000		25167.12			100
78	RIGHT			25871.49		2000		25899.93			100
79	LEFT			26198.2		2000		26231.04			100
80	RIGHT			26280.19		2000		26489.28			100
81	LEFT			26970.75		2000		26980.22			100
82	LEFT			27272.53		2000		27293.06			100
83	RIGHT			27614.67		2000		27694.34			100
84	RIGHT			28085.13		2000		28218.5			100
85	LEFT			28318.96		310	40	28387.58		28427.58	80
86	RIGHT			28710.51		2000		28760.11			100
87	RIGHT			28908.59		2000		28931.68			100
88	RIGHT			29215.67		2000		29269.65			100
89	LEFT			29593.78		2000		29855.08			100
90	RIGHT			30012.15		2000		30028.41			100
91	LEFT			30447.84		2000		30504.98			100
92	RIGHT			30876.61		700	95	30895.33		30730.33	80
93	LEFT			30845.18		2000		30916.42			100
94	RIGHT			31112.92		2000		31197.78			100
95	LEFT			31566.35		2000		31417.78			100
96	RIGHT			31619.38		1996		31647.99			100
97	RIGHT			31964.23		4996		31969.63			100
98	LEFT			32183.84		2000		32221.87			100
99	RIGHT			32394.2		2000		32432.23			100
100	LEFT			32616.86		600	95	32714.24		32749.24	100
101	LEFT			33203.14		30	1000	33393.84		33426.84	100
102	RIGHT			33695.8		360	60	33844.34		33904.34	80
103	LEFT			34398.04		70	700	34551.99		34621.99	100
104	LEFT			35049.21		5000		35062.01			100
105	LEFT			35329.82		2000		35396.76			100

HORIZONTAL CURVE INFORMATION (Km 25+000 to Km 49+000)


Curve No.	Direction	TS	SC	PC	Transitio n In	Radius	Transitio n Out	PT	CS	ST	Design Speed
106	RIGHT			35716.84		600	35	35825.79		35860.79	80
107	RIGHT			36688.05		2000		36976.72			100
108	LEFT			37140.24		2000		37158.89			100
109	RIGHT			37243.36		5000		37250.93			100
110	RIGHT			37315.57		5000		37354.62			100
111	RIGHT			37482.11		5000		37545.1			100
112	LEFT			37622.63		5000		37628.09			100
113	LEFT			37664.85		2000		37683.86			100
114	RIGHT			37783.77		400	30	37906.29		37936.29	80
115	LEFT			37991.55		100	45	38047.02		38097.02	50
116	RIGHT			39083.48		2000		39157.18			100
117	LEFT			39373.86		2000		39390.28			100
118	LEFT			39969.55		5000		40013.89			100
119	LEFT			40736.44		2000		40994.02			100
120	RIGHT			41064.69		900	30	41163.33		41193.33	80
121	LEFT			41233.29		1200		41296.67			80
122	LEFT			41440.38		400	55	41533.8		41588.8	80
123	RIGHT			41756.88		5000		41809.69			100
124	LEFT			42151.73		1500	35	42354.9		42389.9	100
125	RIGHT			43310.34		300	40	43409.55		43449.55	65
126	LEFT			44301.11		1000	50	44479.7		44529.7	100
127	RIGHT			44717.69		2000		44774.14			100
128	RIGHT			44935.57		1500	35	45221.58		45256.58	100
129	LEFT			45200.08		5000		45564.67			100
130	LEFT			47427.61		360	60	47543.57		47603.57	80
131	RIGHT			48094.57		2000		48146.81			100
132	LEFT			48199.06		1200		48294.52			80
133	RIGHT			48340.46		150	45	48418.74		48468.74	50
134	RIGHT			48737.78		5000		48799.93			100



 Project Engineer



 Chief Engineer
 World Bank Project
 On the E.I.C.(C), Odisha, BBSR

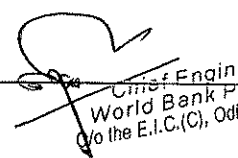
 OISHA WORKS DEPARTMENT	PROJECT WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILU, DURGURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PD04-2	CLIENT LEA ASSOCIATES SOUTH ASIA PVA LTD, INDIA R-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044	CONSULTANT C O N S U L T I N G ENGINEERS GROUP LTD, 6/3, 1st FLOOR, CHANDRANAGAR, DELHI-110044 Tel: 91-11-26208920, 26208928 Fax: 91-11-26208921, 26208929 e-mail: cog@engineers.com	DRAWING TITLE HORIZONTAL CURVE DETAILS	SCALE N.T.S.	DRAWING NO. HORIZONTAL CURVE DETAILS
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

VERTICAL CURVE DETAILS

VERTICAL CURVE DETAILS (JAGATPUR - DUHURIA)

Curve No.	Curve Type	VIP Details		Curve Length	K' value	Curve Start		Curve End		Start Gradient	End Gradient	Grade Difference
		Chainage	Level			Chainage	Level	Chainage	Level			
1	Hog	26+266.637	16.72	200	462.581	26+166.637	16.762	26+366.637	16.246	-0.042	-0.474	0.432
2	Sag	26+608.137	15.1	200	433.97	26+508.137	15.574	26+708.137	15.086	-0.474	-0.014	-0.46
3	Sag	27+453.760	14.986	200	617.648	27+353.760	14.999	27+553.760	15.296	-0.014	0.31	-0.324
4	Hog	28+066.826	16.888	250	413.388	27+941.826	16.500	28+191.826	16.52	0.310	-0.294	0.604
5	Sag	28+496.757	15.622	150	188.763	28+421.757	15.843	28+571.757	15.997	-0.294	0.5	-0.794
6	Hog	28+757.263	16.925	150	377.189	28+682.263	16.550	28+832.263	16.956	0.500	0.042	0.458
7	Hog	29+308.426	17.155	200	378.647	29+208.426	17.113	29+408.426	16.669	0.042	-0.486	0.528
8	Sag	29+699.203	15.254	200	386.385	29+599.203	15.740	29+799.203	15.285	-0.486	0.031	-0.517
9	Hog	30+071.581	15.37	150	3037.668	29+996.581	15.347	30+146.581	15.356	0.031	-0.018	0.049
10	Hog	30+620.162	15.27	400	4570.529	30+420.162	15.306	30+820.162	15.059	-0.018	-0.106	0.088
11	Sag	31+886.403	13.931	200	1891.323	31+786.403	14.037	31+986.403	13.931	-0.106	0	-0.106
12	Sag	32+226.178	13.931	200	2905.945	32+126.178	13.931	32+326.178	14	0.000	0.069	-0.069
13	Hog	33+904.361	15.086	500	2891.223	33+654.361	14.914	34+154.361	14.826	0.069	-0.104	0.173
14	Hog	34+777.453	14.177	150	929.964	34+702.453	14.255	34+852.453	13.978	-0.104	-0.265	0.161
15	Sag	35+281.580	12.839	150	391.383	35+206.580	13.038	35+356.580	12.927	-0.265	0.118	-0.383
16	Hog	35+886.600	13.552	200	1847.652	35+786.600	13.434	35+986.600	13.562	0.118	0.01	0.108
17	Hog	37+063.458	13.665	250	1488.891	36+938.458	13.653	37+188.458	13.467	0.010	-0.158	0.168
18	Hog	37+912.434	12.321	100	881.103	37+862.434	12.400	37+962.434	12.185	-0.158	-0.272	0.114
19	Sag	38+079.835	11.866	150	495.195	38+004.835	12.070	38+154.835	11.889	-0.272	0.031	-0.303
20	Hog	38+963.845	12.141	250	795.063	38+838.845	12.102	39+088.845	11.787	0.031	-0.283	0.314
21	Sag	39+524.318	10.553	300	533.306	39+374.318	10.978	39+674.318	10.972	-0.283	0.279	-0.562
22	Hog	39+849.895	11.462	150	631.228	39+774.895	11.253	39+924.895	11.493	0.279	0.042	0.237
23	Hog	40+614.970	11.78	200	1012.828	40+514.970	11.738	40+714.970	11.624	0.042	-0.156	0.198
24	Sag	41+185.840	10.89	200	1426.329	41+085.840	11.046	41+285.840	10.874	-0.156	-0.016	-0.14
25	Sag	42+378.267	10.703	200	582.826	42+278.267	10.719	42+478.267	11.03	-0.016	0.327	-0.343
26	Hog	42+887.011	12.369	600	738.331	42+587.011	11.387	43+187.011	10.913	0.327	-0.485	0.812
27	Sag	43+417.340	9.796	250	249.794	43+292.340	10.402	43+542.340	10.441	-0.485	0.516	-1.001
28	Hog	43+672.162	11.11	100	124.261	43+622.162	10.852	43+722.162	10.965	0.516	-0.289	0.805
29	Sag	43+853.756	10.585	150	438.27	43+778.756	10.802	43+928.756	10.625	-0.289	0.053	-0.342
30	Hog	44+216.891	10.778	200	1535.921	44+116.891	10.725	44+316.891	10.701	0.053	-0.077	0.13
31	Sag	45+030.148	10.154	150	432.042	44+955.148	10.212	45+105.148	10.357	-0.077	0.270	-0.347
32	Hog	45+474.206	11.355	300	624.204	45+324.206	10.949	45+624.206	11.04	0.270	-0.21	0.48
33	Sag	46+018.574	10.211	600	1501.527	45+718.574	10.841	46+318.574	10.779	-0.210	0.189	-0.399
34	Hog	46+418.170	10.968	150	878.531	46+343.170	10.826	46+493.170	10.982	0.189	0.019	0.17
35	Hog	47+166.763	11.108	150	430.925	47+091.763	11.094	47+241.763	10.861	0.019	-0.329	0.348
36	Sag	47+459.732	10.143	150	614.722	47+384.732	10.390	47+534.732	10.079	-0.329	-0.085	-0.244
37	Sag	47+997.368	9.684	200	1095.269	47+897.368	9.769	48+097.368	9.781	-0.085	0.097	-0.182
38	Hog	48+352.161	10.029	150	490.069	48+277.161	9.956	48+427.161	9.872	0.097	-0.209	0.306
39	Sag	48+694.529	9.314	150	308.851	48+619.529	9.471	48+769.529	9.522	-0.209	0.277	-0.486





 Chief Engineer
 World Bank Project
 (to the E.I.C.(C), Odisha, BBSR)

 ODISHA WORKS DEPARTMENT	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOULI DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2	SCALE: N.T.S.	DRAWING TITLE: VERTICAL CURVE DETAILS
DESIGN CONSULTANT:  E.C. CONSULTANTS CONSULTING GROUP LTD. 15/1, COLLEGE ROAD, Bhubaneswar, Odisha INDIA. TEL: 0674-251348, FAX: 0674-251348, e-mail: ec@ecngl.com	CLIENT:  ODISHA INFRASTRUCTURE DEVELOPMENT AUTHORITY S-1, 6/2, 1st FLOOR, MANSAN CO-OPERATIVE INDUSTRIAL ESTATE, MATURA ROAD, NEW DELHI-110084		
APPROVED:  DATE:	CHECKED:  DATE:		

SCHEDULE OF EXTRA WIDENING

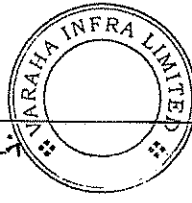
Extra Widening (Km 25+000 to Km 49+000)								
Direction	TS	SC	Transition In	Radius	Transition Out	CS	ST	Design Speed
LEFT	28318.980	28358.980	40	300	40	28387.576	28427.576	80
LEFT	37991.551	38036.551	45	100	45	38047.017	38092.017	50
RIGHT	43310.343	43350.343	40	300	40	43409.545	43449.545	65
RIGHT	48340.460	48385.460	45	150	45	48418.738	48463.738	50

NOTES:-

- EXTRA WIDENING HAS BEEN DONE AS PER THE GUIDE LINES DETAILED IN IRC: 74:1990.
- WIDENINGS SHALL BE CONSIDERED AS EQUALLY ON BOTH THE INNER AND OUTER CURVES.
- THE SLOPE OF THE CARRIAGEWAY SHALL EXTEND IN THE WIDENING SECTIONS.

DRAWING TITLE		SCALE			
SCHEDULE OF EXTRA WIDENING		N.T.S.			
PROJECT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOHLI - DJHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PMA-2			
CLIENT		ODISHA WORKS DEPARTMENT			
DESIGN REVIEW CONSULTANT		LEA Associates South Asia P.A. Ltd., India B-1, E-27, 2nd Floor, Mohan Cooperative Industrial Estate, Wadhwa Road, New Delhi-110044			
CONSULTING ENGINEERS GROUP LTD.		M. C. JOSHI & CO. CONSULTANTS 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000		APPROVED	

Rajesh Singh Solanki



Chief Engineer
World Bank Project
for the E.I.C.(C), Odisha, India

SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION (FLEXIBLE PAVEMENT)

Sl. No.	Proposed Chaining		Distance in KMs	Thickness Design (IRC-37)										Type of Construction		
	From	To		Crest Details Over Existing Pavement					Crest Details Over Existing Pavement						Total Thickness	
				Surface Course	Base	Sub Base	Sub Grade	Embankment	Surface Course	Base	Sub Base	Sub Grade	Total Thickness			
BC	DBM	WMM1	WMM2	GSB	Sub Grade	Fill	BC	DBM	WMM1	WMM2	GSB	Sub Grade	Sub Base	Sub Grade	Total Thickness	
1	25.00	26.60	1.6	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
2	26.60	27.25	0.65	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION
3	28.40	29.55	1.15	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
4	29.55	29.85	0.3	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION
5	29.85	32.65	2.8	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
6	33.20	35.25	2.05	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
7	35.90	38.10	2.2	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
8	38.10	38.40	0.3	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION
9	38.40	38.60	0.2	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
10	39.55	41.40	1.85	40	90	100	150	200	500	-	-	-	-	-	1,580	NEW CONSTRUCTION DFS
11	41.60	43.00	1.4	40	90	100	150	200	500	500	-	-	-	-	1,580	NEW CONSTRUCTION DFS
12	43.00	43.30	0.3	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
13	43.60	44.30	0.7	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION
14	44.80	45.75	0.95	40	90	100	150	200	500	-	-	-	-	-	1,080	NEW CONSTRUCTION
15	45.75	46.00	0.25	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION
16	46.00	47.95	1.95	40	90	100	150	200	500	-	-	-	-	-	1,580	NEW CONSTRUCTION DFS
17	47.95	49.00	1.05	40	90	100	150	200	-	-	-	-	-	-	580	NEW CONSTRUCTION

Siddhanta



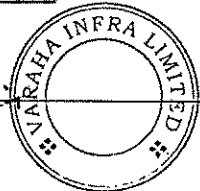
Chief Engineer
 State Bank of India
 The E.I.C.(C), Odisha

Sl. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Scale	N.T.S.																
Project	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOIL - DUHURIA KM 25+00 TO KM 49+00 (BALANCE WORK) PACKAGE - P04A2																
Client	ODISHA WORKS DEPARTMENT																
Design Consultant	C O N S U L T I N G ENGINEERS GROUP LTD. E-22, 2ND FLOOR, MADHAN CO-OPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 Tel: +91-11-2520889, 2521999, 2520888 Fax: 2521348, e-mail: cog@engineersgroup.com																
Contract No.	SIVARATHI LIMITED																
Contract Value	Rs. 10.00 Crores																
Contract Date	15/05/2011																
Contract Location	SIVARATHI LIMITED																
Contract Status	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION																
Contract No.	73466LASAHIGH-HWA/SMISC-Q4																
Contract Date	01/07/2011																

SCHEDULE OF PAVEMENT COMPOSITION (RIGID PAVEMENT)

Sl. No.	Chainage		Length	PQC Slab (in mm)	Separation layer (in micron)	Sub base (DLC) (in	Subbase GSB (in	Subgrade (in mm)	Embankment (in mm)	Total Thickness (in mm)	Remarks	Remarks
	From	To										
1	27.25	28.40	1.15	300	125	150	150	500	-	1,100	-	New
2	32.65	33.20	0.55	300	125	150	150	500	-	1,100	-	New
3	35.25	35.90	0.65	300	125	150	150	500	-	1,100	-	New
4	38.60	39.00	0.40	300	125	150	150	500	-	1,100	-	New
5	39.00	39.55	0.55	300	125	150	150	500	500	1,600	DFS	New
6	41.40	41.60	0.20	300	125	150	150	500	500	1,600	DFS	New
7	43.30	43.60	0.30	300	125	150	150	500	-	1,100	-	New
8	44.30	44.80	0.50	300	125	150	150	500	-	1,100	-	New
9	48.25	49.00	0.75	300	125	150	150	500	-	1,100	-	New

Sej Singh



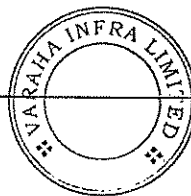
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha

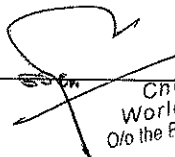
DATE: 20/08/2018	BY: [Signature]	FOR: [Signature]	SCALE: N.T.S.	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM BISHCHINTAKOILU - DUDHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2	ODISHA STATE HIGHWAYS & BRIDGES DEPARTMENT	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION
DESIGN NO: 2018/08/001	DATE: 20/08/2018	BY: [Signature]	FOR: [Signature]	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM BISHCHINTAKOILU - DUDHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2	ODISHA STATE HIGHWAYS & BRIDGES DEPARTMENT	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION
DESIGN NO: 2018/08/001	DATE: 20/08/2018	BY: [Signature]	FOR: [Signature]	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM BISHCHINTAKOILU - DUDHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2	ODISHA STATE HIGHWAYS & BRIDGES DEPARTMENT	SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION

DETAILS OF PAVEMENT SCHEDULE WITH TYPE OF TCS

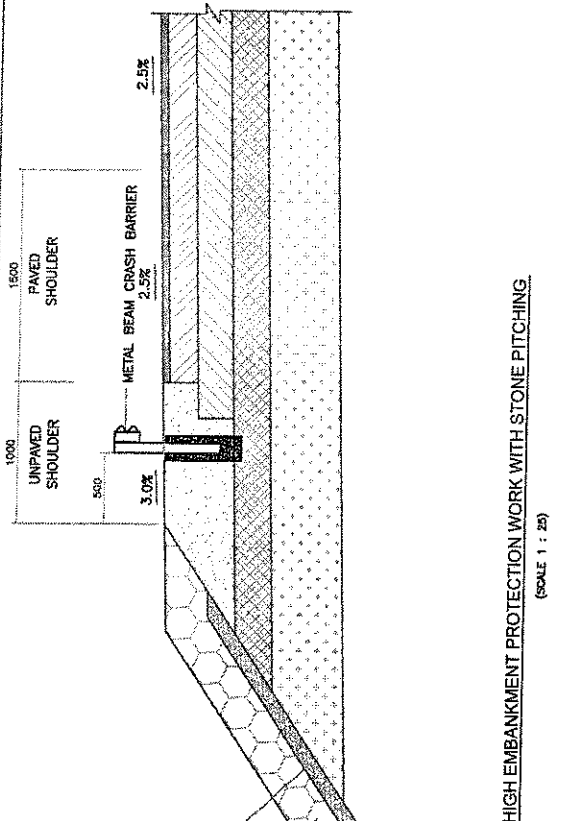
Sl. No.	Chainage		Length (in kms)	Total Thickness (in mm)	Type of Construction	Type of Area	TCS	Remarks
	From	To						
	1	25.00						
2	26.60	26.80	0.20	1080	RECONSTRUCTION	BUILT	5	
3	26.80	27.25	0.45	1080	RECONSTRUCTION	OPEN	1	
4	27.25	28.40	1.15	1100	RIGID PAVEMENT	BUILT	3	
5	28.40	29.55	1.15	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
6	29.55	29.85	0.30	1080	RECONSTRUCTION	OPEN	1	
7	29.85	32.65	2.80	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
8	32.65	33.20	0.55	1100	RIGID PAVEMENT	BUILT	3	
9	33.20	35.25	2.05	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
10	35.25	35.90	0.65	1100	RIGID PAVEMENT	BUILT	3	
11	35.90	38.10	2.20	1080	NEW CONSTRUCTION	OPEN	2	REALIGN & PROFILE
12	38.10	38.40	0.30	1080	RECONSTRUCTION	OPEN	1	
13	38.40	38.60	0.20	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
14	38.60	39.00	0.40	1100	RIGID PAVEMENT	BUILT	3	
15	39.00	39.55	0.55	1600	RIGID PAVEMENT_DFS	BUILT	4	
16	39.55	41.40	1.85	1580	NEW CONSTRUCTION_DFS	OPEN	2	
17	41.40	41.60	0.20	1600	RIGID PAVEMENT_DFS	BUILT	4	
18	41.60	43.00	1.40	1580	NEW CONSTRUCTION_DFS	OPEN	2	
19	43.00	43.30	0.30	1080	NEW CONSTRUCTION	OPEN	2	PROFILE
20	43.30	43.60	0.30	1100	RIGID PAVEMENT	BUILT	3	
21	43.60	44.30	0.70	1080	RECONSTRUCTION	OPEN	1	
22	44.30	44.80	0.50	1100	RIGID PAVEMENT	BUILT	3	
23	44.80	45.15	0.35	1080	NEW CONSTRUCTION	BUILT+OPEN	2	PROFILE
24	45.15	45.75	0.60	1080	NEW CONSTRUCTION	OPEN	2	
25	45.75	46.00	0.25	1080	RECONSTRUCTION	OPEN	1	
26	46.00	47.95	1.95	1580	NEW CONSTRUCTION_DFS	OPEN	2	
27	47.95	48.25	0.30	1080	RECONSTRUCTION	OPEN+BUILT	1	
28	48.25	49.00	0.75	1100	RIGID PAVEMENT	BUILT	3	

Saidimphulagan

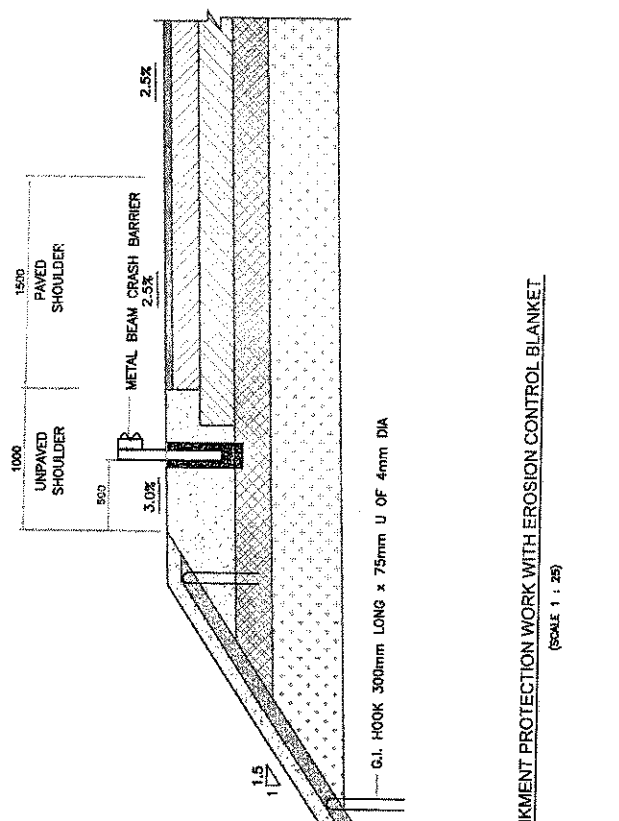



 Chief Engineer
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 O/o the E.I.C.(C), Odisha, BBSR

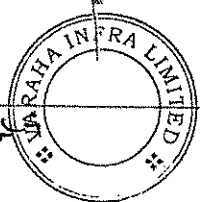
DATE: 15.06.2011 PREPARED BY: P. S. SINGH CHECKED BY: P. S. SINGH APPROVED BY: P. S. SINGH	I.C. CONSULTANT ENGINEERS GROUP LTD. 1st Floor, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044 TEL: 91-11-26208232/88-232356 Fax: 2621346, e-mail: eng@egpltd.com	CLIENT ODISHA WORKS DEPARTMENT	PROJECT WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOLI - DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - PM4A2	SCALE N.T.S.	DRAWING TITLE DETAILS OF PAVEMENT SCHEDULE WITH TYPE OF TCS	DRAWING NO. 75466LASA/HIGHWAYS/MISC-05
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HIGH EMBANKMENT PROTECTION WORK WITH STONE PITCHING
(SCALE 1 : 25)



HIGH EMBANKMENT PROTECTION WORK WITH EROSION CONTROL BLANKET
(SCALE 1 : 25)

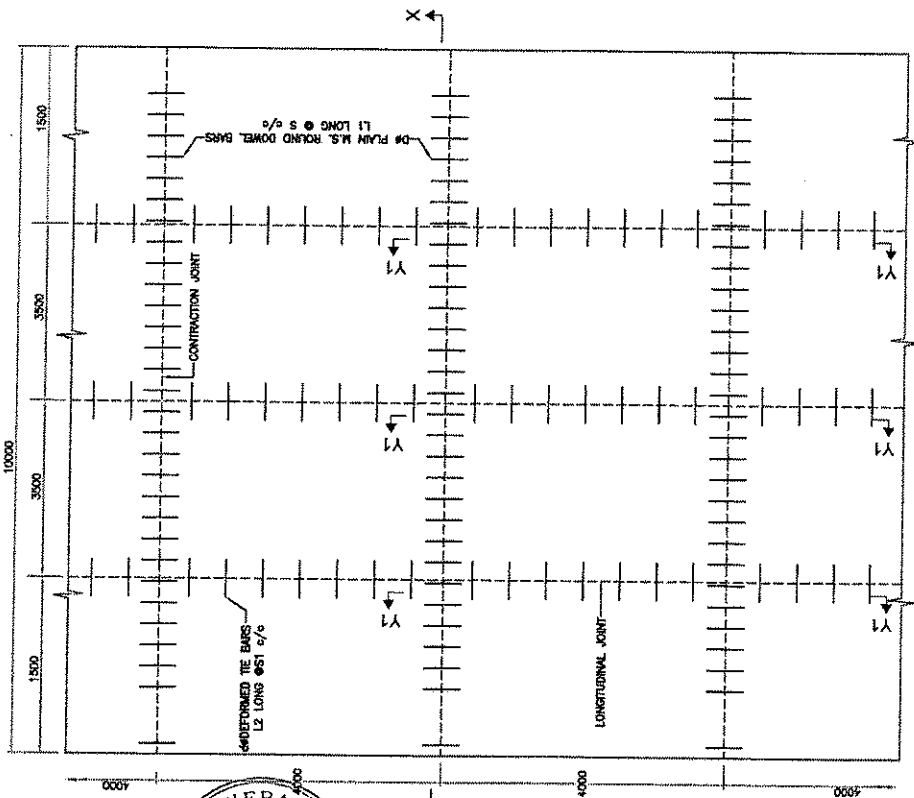


Sudhanshu

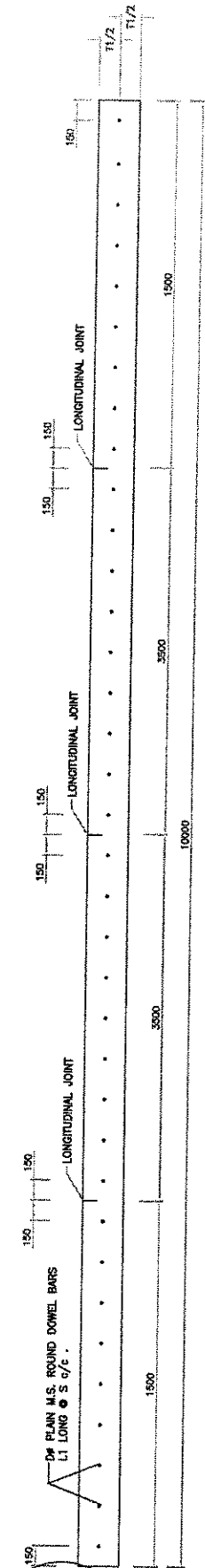
[Signature]

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKULI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2 DRAWING TITLE: TYPICAL DETAILS OF SLOPE PROTECTION DWG. NO.: 7346BLASRHHIGHWAYS/MISC-06 SCALE	
CLIENT: ODISHA WORKS DEPARTMENT	
CONSULTANT: LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1 st FLOOR, NOKIA COOPERATIVE INDUSTRIAL ESTATE, MATIURA ROAD, NEW DELHI-110044 TEL: +91-11-2628088, 2628089, 2628090, 2628091 FAX: 2623345, e-mail: enquiry@lea.com	
APPROVED: <i>[Signature]</i> PREPARED: <i>[Signature]</i> CHECKED: <i>[Signature]</i> DRAWN BY: <i>[Signature]</i>	
NO. 1 DATE: AUGUST, 2015	REVISION: SECOND REVISION LASKA VIKAS SUBRATODI, GHATAK
NO. 2 DATE: FEB, 2013	REVISION: FIRST REVISION OWO OWO SUBRATODI, GHATAK
NO. 3 DATE: JUNE, 2008	REVISION: ORIGINAL CEG CEG MA MISHRA (EE) MA MISHRA (EE)
IPR CONSULTANT: CONSULTING ENGINEERS GROUP LTD. (A MEMBER COMPANY OF THE INSTITUTE OF ENGINEERS, INDIA) TEL: +91-11-2628088, 2628089, 2628090, 2628091 FAX: 2623345, e-mail: enquiry@iegi.com	



MAIN CARRIAGEWAY
(SCALE 1 : 50)

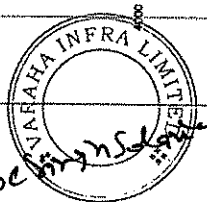


SECTION Y1-Y1 (SHOWING TIE BAR ARRANGEMENT BETWEEN CARRIAGEWAYS)
(SCALE 1 : 25)

NOTATIONS

T1	Pavement Thickness
T2	DLC Thickness
S	Spacing of Dowel Bars
S1	Spacing of Tie Bars
D	Dowel Bar Dia
d	Tie Bar Dia
L1	Length of Dowel Bar
L2	Length of Tie Bar

- NOTES:
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
 2. THIS DRG. IS TO BE READ ALONG WITH TYPICAL CROSS SECTION FOR RIGID PAVEMENT DRG. NO. 73466LASA/HIGHWAYS/MISC-08
 3. FOR PAVEMENT THICKNESS AND OTHER DIMENSIONS REFER PAVEMENT SCHEDULE FOR RIGID PAVEMENT.



Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

SECTION X-X (SHOWING DOWEL BAR ARRANGEMENT)
(SCALE 1 : 50)

DATE	BY	PREPARED	CHECKED	APPROVED
AUGUST, 2015	LASA	VINAY	SUBRAT/D.GHATAK	S.D. SHANMUGUREE
FEB. 2013	QWD	QWD	PK MISHRA (AE)	MR. MISHRA (EE)
JUNE, 2008	LEG	LEG	PK MISHRA (AE)	MR. MISHRA (EE)
ORIGINAL				
REVISION				

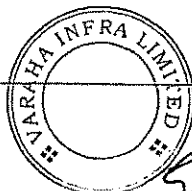
DR. CHANDRA KANT
CONSULTING
E.C.O. GROUP LTD.,
E-2/INDIA-2, JALPAIGURI, WEST BENGAL, INDIA
Tel: +91-341-232089, 232090 Fax: +91-341-232091
E-mail: ecg@ecginfo.com

ODISHA REVENUE DEPARTMENT
LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, 1st FLOOR, MOHAN CO-OPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044

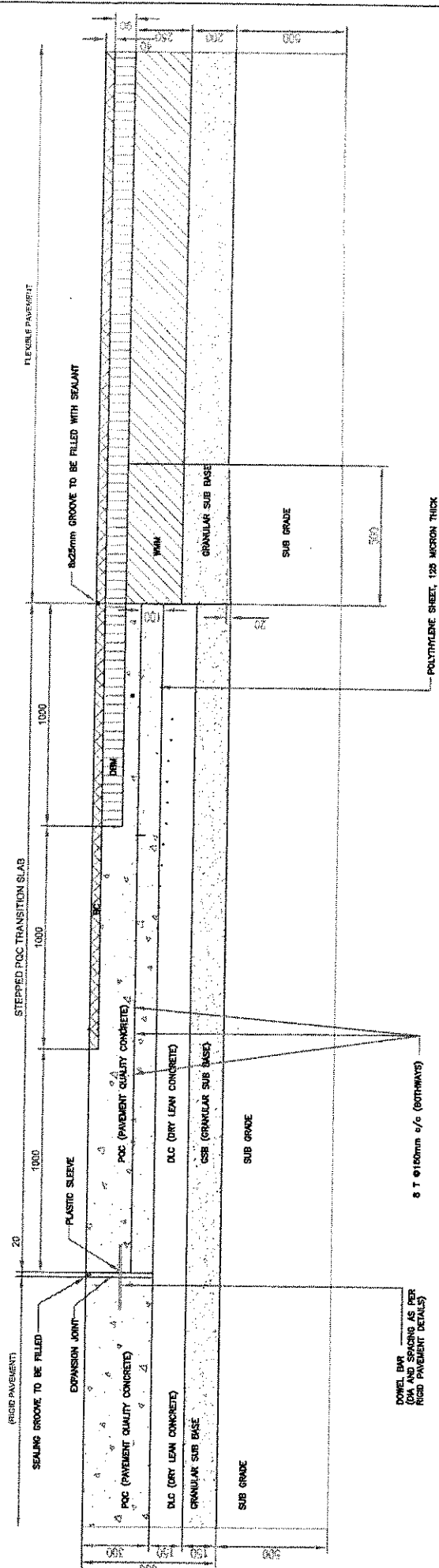
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM MISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 45+000 (BALANCE WORK) PACKAGE NO. - P04A-2

DRAWING TITLE: TYPICAL DETAILS OF DOWEL BAR AND TIE BAR ARRANGEMENT

DWG. NO.: 73466LASA/HIGHWAYS/MISC-07 SCALE: N.T.S.



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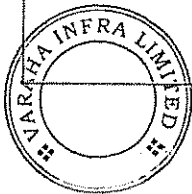


TYP. DETAILS OF TRANSITION SLAB BETWEEN RIGID & FLEXIBLE PAVEMENT
(SCALE 1 : 80)

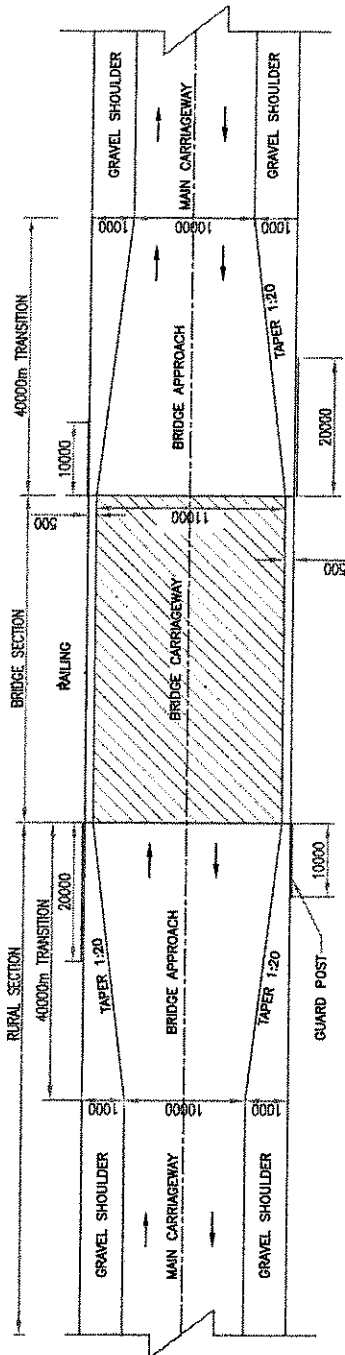
- NOTES:**
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED.
 2. THIS DRAWING IS TO BE READ ALONG WITH OTHER TYP. ROAD X-SECTION DRAWINGS.
 3. FOR TRANSITION DETAILS REFER 73466\ASA\HIGHWAYS\MISC-02.

<p>DATE: AUGUST, 2015 REVISION: SECOND REVISION NO: FEB, 2013 DATE: JUNE, 2009 REVISION: ORIGINAL</p>		<p>BY: VIKAS CDS CDS</p>		<p>APPROVED: [Signature] CHECKED: [Signature] PREPARED: [Signature]</p>		<p>UPPER CONSULTANT: CONSULTING ENGINEERS GROUP E-12, 1st FLOOR, KANAK PURI, SECTOR-17 INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044 Tel: +91-11-2620889, 2321839, 2320358 e-mail: ceo@cegroupindia.com</p>		<p>LOWER CONSULTANT: LEA ASSOCIATES SOUTH ASIA PVT. LTD., INDIA B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044</p>		<p>CLIENT: ODISHA WORKS DEPARTMENT</p>		<p>PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - PD4A-2</p>		<p>DWG. NO.: 73466\ASA\HIGHWAYS\MISC-02</p>	
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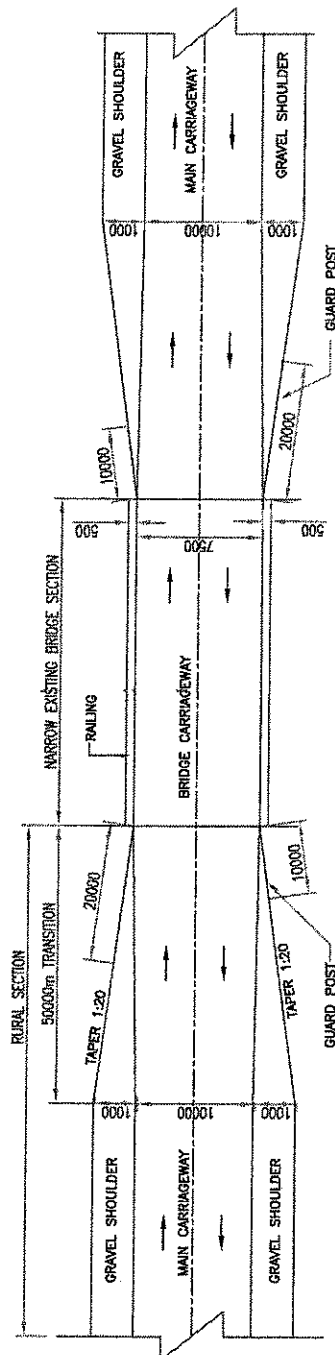
Handwritten signature
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



Sujeet Singh Solanki



TRANSITION BETWEEN RURAL 12m SECTION TO BRIDGES WITH 11m CLEAR CARRIAGEWAY

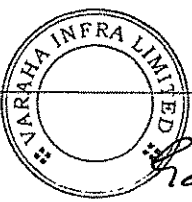


TRANSITION BETWEEN RURAL 12m SECTION TO NARROW EXISTING BRIDGES SECTION

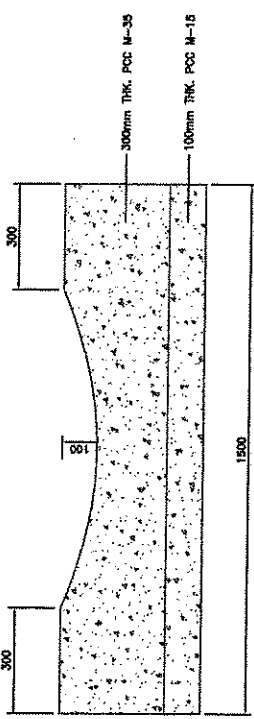
NOTES
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS INDICATED OTHERWISE.
 2. FOR DETAILS OF STRUCTURES REFER STRUCTURAL DRS.
 3. METAL BEAM CRASH BARRIER ARE INSTALLED WHERE EMBANKMENT HEIGHT IS MORE THAN 3 METRES & AT BRIDGE APPROACHES.
 4. FOR GUARD POST DETAIL REFER DWG. NO. 73466\ASA\HIGHWAYS\MISC-17.
 5. FOR HAZARD MARKER DETAIL REFER TYPICAL ROAD SIGN & DETAILS OF ROAD DELINEATORS

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2		DWG. NO. : 73466\ASA\HIGHWAYS\MISC-08	
CLIENT: ODISHA WORKS DEPARTMENT		PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2	
CONSULTANT: LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1 st and FLOOR, NIHAH COOPERATIVE INDUSTRIAL ESTATE, MATURIA ROAD, NEW DELHI-110044		DRAWING TITLE: TYPICAL DETAILS OF TRANSITION OF DIFFERENT ROAD SECTIONS	
APPROVED:		CHECKED:	
PREPARED:		DATE:	
DRAWN:		REVISION:	
SR. ENGINEER: SUBRAT/GHATAK		SR. ENGINEER: SR. SABANGBI	
CIVIL ENGINEER: P.K. MISHRA (AE)		CIVIL ENGINEER: P.K. MISHRA (EE)	
PROJECT NO: 73466\ASA\HIGHWAYS\MISC-17		PROJECT NO: 73466\ASA\HIGHWAYS\MISC-17	
TEL: +91-11-2622888, 2321899, 2321909		TEL: +91-11-2622888, 2321899, 2321909	
FAX: 2321345, E-MAIL: cnp@leainfra.com		FAX: 2321345, E-MAIL: cnp@leainfra.com	

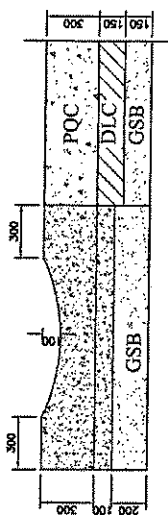
Sujeet Singh Solanki
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



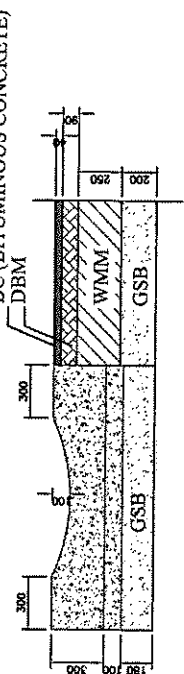
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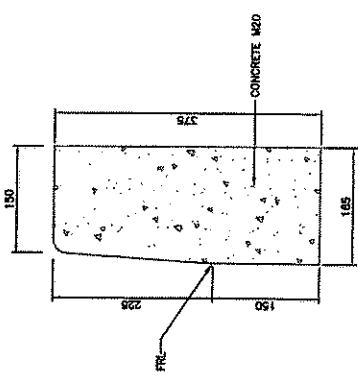
PRECAST SAUCER DRAIN
(Scale 1 : 10)



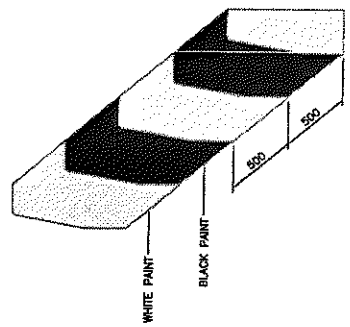
PRECAST SAUCER DRAIN IN RIGID PAVEMENT
(Scale 1:20)



PRECAST SAUCER DRAIN IN FLEXIBLE PAVEMENT
(Scale 1:20)



TYPE-1
KERB FOR CENTRAL AND DIRECTIONAL ISLAND
(SCALE 1 : 5)



KERB MARKING

Sl. No.	Chaiage		SIDE	Type of Drain	Length of Saucer Drain	Remarks
	From	To				
	1	26+600				
2	27+250	28+400	Both	Saucer	1150	
3	32+650	33+200	Both	Saucer	550	
4	35+250	35+900	Both	Saucer	650	
5	38+600	39+550	Both	Saucer	950	
6	41+400	41+600	Both	Saucer	200	
7	43+300	43+600	Both	Saucer	300	
8	44+300	44+800	Both	Saucer	300	
9	44+800	45+150	Left	Saucer	350	
10	47+950	48+250	Right	Saucer	300	
11	48+250	48+950	Both	Saucer	700	

SCHEDULE OF DRAIN - NISCHINTAKOLI TO DUHURIA

- NOTES:-**
1. THE PROVISION AND LENGTH OF THE LINED DRAIN SHALL BE REASSESSED DURING THE TIME OF CONSTRUCTION.
 2. FOOTPATH BARRIERS SHALL BE PROVIDED AS PER DWG No. 73466(LASA)HIGHWAYS/MS-16.
 3. FOR BARRIAGES OPENING SHALL BE PROVIDED.
 4. LINED DRAIN SCHEDULE SUPER SEED THE PLAN.
 5. ALL REINFORCEMENT SHALL BE CONFIRMED TO Fm 500.

DATE	BY	DRAWN	PREPARED	CHECKED	APPROVED
17 AUGUST 2015	LASA VINAY	SUBRAT/GHATAK	SD SANKHARDE	GP SAHOO (T)	
20 FEB 2013	DWD	DWD	MR JASRAJ (EE)	MR JASRAJ (EE)	
30 JUNE 2008	ORIGINAL	CEG			
	REVISION				

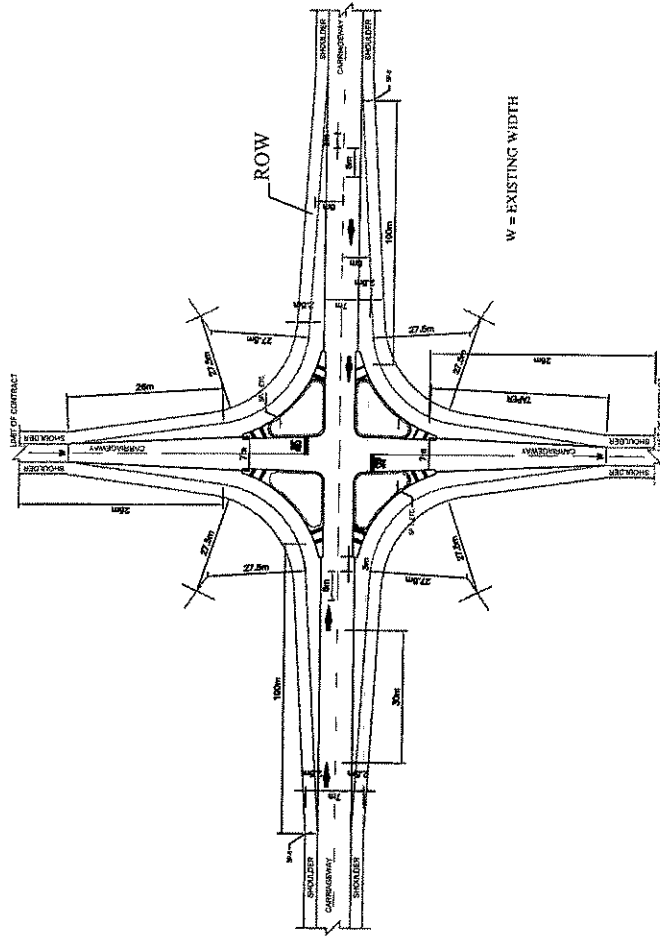
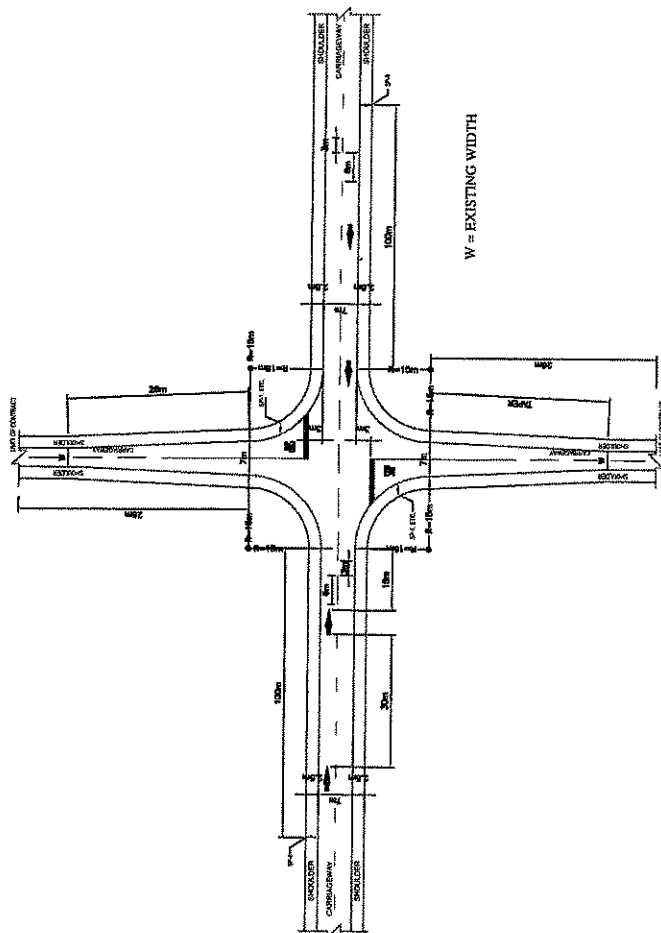
CONSULTING ENGINEERS GROUP LTD.
 LEA Associates South Asia Pvt. Ltd, India
 B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATUHURA ROAD, NEW DELHI-110044.
 Tel: +91-11-2202069, 2202070, 2202071 Fax: 2321348, e-mail: cep@cegroup.com

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2
 DWG. NO. : 73466(LASA)HIGHWAYS/MS-10
 SCALE:

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World Bank Project
O/o the E.I.C.(C), Odisha, Bhubaneswar



Sl. No.	Challage	Remarks
1	32+700	Builtup Section



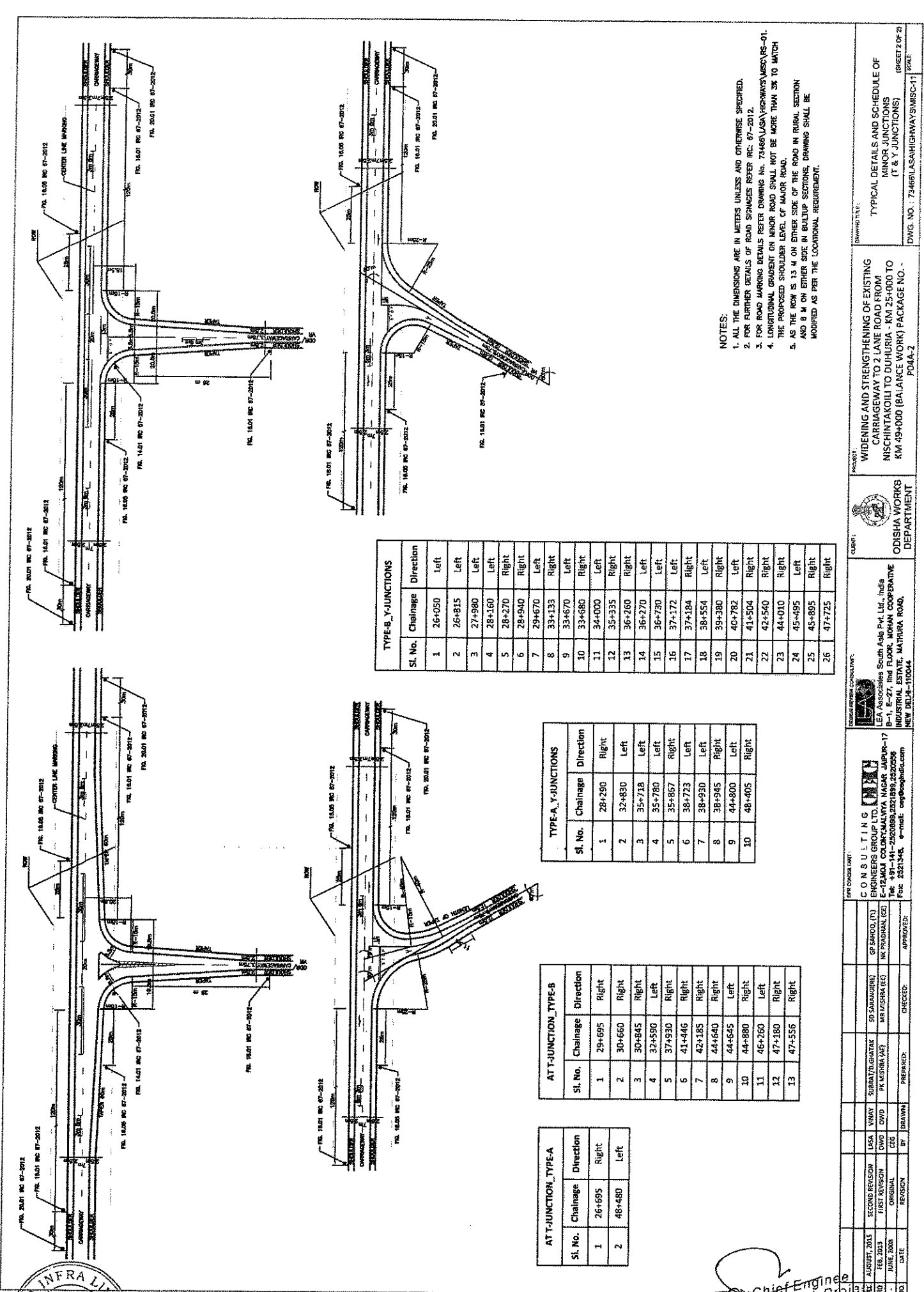
NOTES:

1. FOR DETAILS OF ROAD SIGNS NUMBERED SP-1, ETC. SEE DRAWING NO. 73468\JASA\HIGHWAYS\HSC-14.
2. FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELISING ISLAND REFER DRAWING NO. 73468\JASA\HIGHWAYS\HSC-13, 14 & 15.
3. FOR DETAILS REGARDING ROAD HUMP & OTHER SIGN BOARDS, MARKING REFER DRAWING NO. 73468\JASA\HIGHWAYS\HSC-13, 14 & 15.
4. LONGITUDINAL GRADIENT ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH AND 8 M ON EITHER SIDE IN BUILTUP SECTIONS, DRAWING SHALL BE MODIFIED AS PER THE LOCATIONAL REQUIREMENT.

NO.	DATE	REVISION	BY	DRWING	PREPARED	CHECKED	APPROVED
01	AUGUST 2013	SECOND REVISION	JASA	UNAK	S. S. SINHA (MGR)	S. S. SINHA (MGR)	GP MANDAL (I)
02	FEB. 2013	FIRST REVISION	CHD	CHD	P. K. MISHRA (JG)	M. K. MISHRA (JG)	PR. PRADIP (I)
03	JUNE 2008	ORIGINAL	CCS	CCS			

CONSULTANT ENGINEERS GROUP LTD. E-12/101 COLONY MALVIYA NAGAR JAJPUR-17 Ph: 2220899-2321899, 2320556 Fax: 2321346, e-mail: cog@engineersgroup.com		CLIENT ODISHA WORKS DEPARTMENT	
PROJECT WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2		DRAWING TITLE TYPICAL DETAILS AND SCHEDULE OF MINOR JUNCTIONS (4-LEGGED)	
DWG. NO. : 73468\JASA\HIGHWAYS\HSC-11		SCALE AS PER THE LOCATIONAL REQUIREMENT.	

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



- NOTES:**
1. ALL THE DIMENSIONS ARE IN METERS UNLESS AND OTHERWISE SPECIFIED.
 2. FOR FURTHER DETAILS OF ROAD SPACINGS REFER IRC: 67-2012.
 3. FOR ROAD MARKINGS DETAILS REFER DRAWING No. 75468(LASA)HRHWAYS(MISC)-01.
 4. LONGITUDINAL GRADELINE ON MINOR ROAD SHALL NOT BE MORE THAN 3% TO MATCH
 5. THE PROPOSED SHOULDER LEVEL OF MAJOR ROAD.
- AND 9 M ON EITHER SIDE OF THE ROAD IN RURAL SECTION MODIFIED AS PER THE LOCALITIONAL REQUIREMENT.

TYPE-B_Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	26+050	Left
2	26+815	Left
3	27+980	Left
4	28+160	Left
5	28+270	Right
6	28+940	Right
7	29+670	Left
8	33+133	Right
9	33+670	Left
10	33+680	Right
11	34+000	Left
12	35+935	Right
13	36+260	Right
14	36+270	Left
15	36+730	Left
16	37+172	Left
17	37+184	Right
18	38+554	Left
19	39+380	Right
20	40+782	Left
21	41+504	Right
22	42+540	Right
23	44+010	Right
24	45+495	Left
25	45+895	Right
26	47+725	Right

TYPE-A_Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	28+290	Right
2	32+830	Left
3	35+718	Left
4	35+780	Left
5	35+867	Right
6	38+723	Left
7	38+930	Left
8	38+945	Right
9	44+800	Left
10	48+405	Right

ATT-JUNCTION_TYPE-B		
Sl. No.	Chainage	Direction
1	29+695	Right
2	30+660	Right
3	30+845	Right
4	32+590	Left
5	37+530	Right
6	41+446	Right
7	42+185	Right
8	44+640	Right
9	44+645	Left
10	44+880	Right
11	46+260	Left
12	47+180	Right
13	47+556	Right

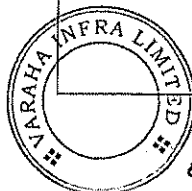
ATT-JUNCTION_TYPE-A		
Sl. No.	Chainage	Direction
1	26+695	Right
2	48+480	Left

<p>LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st and 2nd FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-110044</p>		<p>ODISHA WORKS DEPARTMENT</p>	
<p>NISHCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. POAA-2</p>		TYPICAL DETAILS AND SCHEDULE OF MINOR JUNCTIONS (T & Y JUNCTIONS) (SHEET 2 OF 2)	
DWG. NO.: 72486(LASAHIGHWAY)MISC-11		SCALE	

VARAHINFRA LIMITED

Singh Solanki

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, Bhubaneswar



Siddhanta Sahu

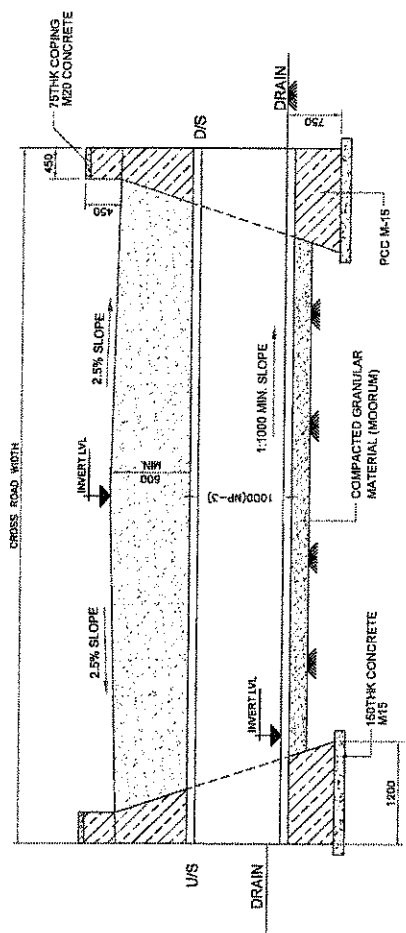
AT ALLEGED TYPE-A		
Sl. No.	Chainage	Direction
1	32700	Both
2	32700	Both

ATT-JUNCTION TYPE-A		
Sl. No.	Chainage	Direction
1	26695	Right
2	48480	Left

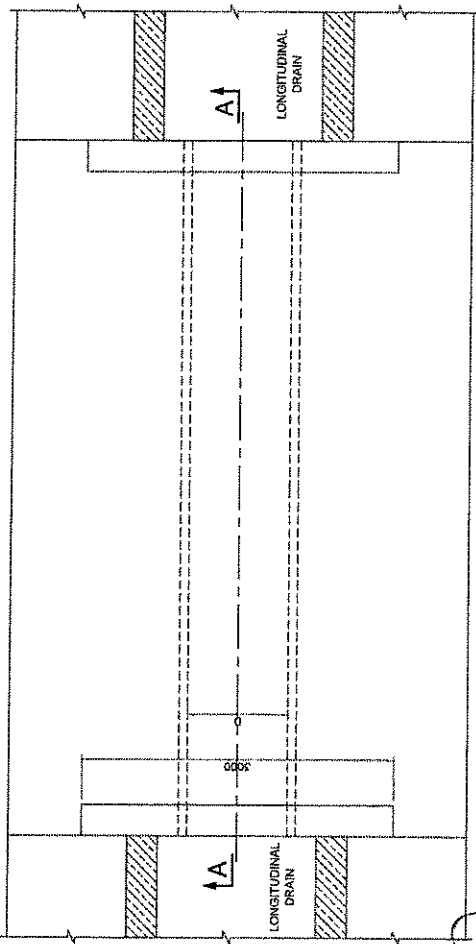
ATT-JUNCTION TYPE-B		
Sl. No.	Chainage	Direction
1	29695	Right
2	30660	Right
3	30845	Right
4	32560	Left
5	32930	Right
6	41445	Right
7	42185	Right
8	46540	Right
9	46645	Left
10	44860	Right
11	65260	Left
12	42180	Right
13	47555	Right

TYPE-A, V-JUNCTIONS		
Sl. No.	Chainage	Direction
1	28290	Right
2	28630	Left
3	28615	Left
4	27960	Left
5	28270	Right
6	27940	Right
7	29670	Left
8	32133	Right
9	33670	Left
10	49405	Right

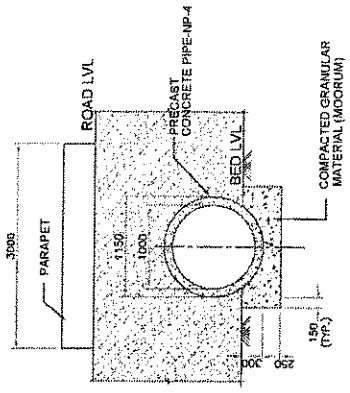
TYPE-B, Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	26695	Right
2	26695	Right
3	26695	Right
4	26695	Right
5	26695	Right
6	26695	Right
7	26695	Right
8	26695	Right
9	26695	Right
10	26695	Right
11	26695	Right
12	26695	Right
13	26695	Right
14	26695	Right
15	26695	Right
16	26695	Right
17	26695	Right
18	26695	Right
19	26695	Right
20	26695	Right
21	26695	Right
22	26695	Right
23	26695	Right
24	26695	Right
25	26695	Right
26	26695	Right



SECTION A-A



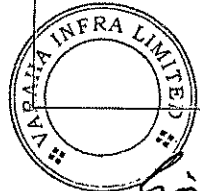
SECTION B-B



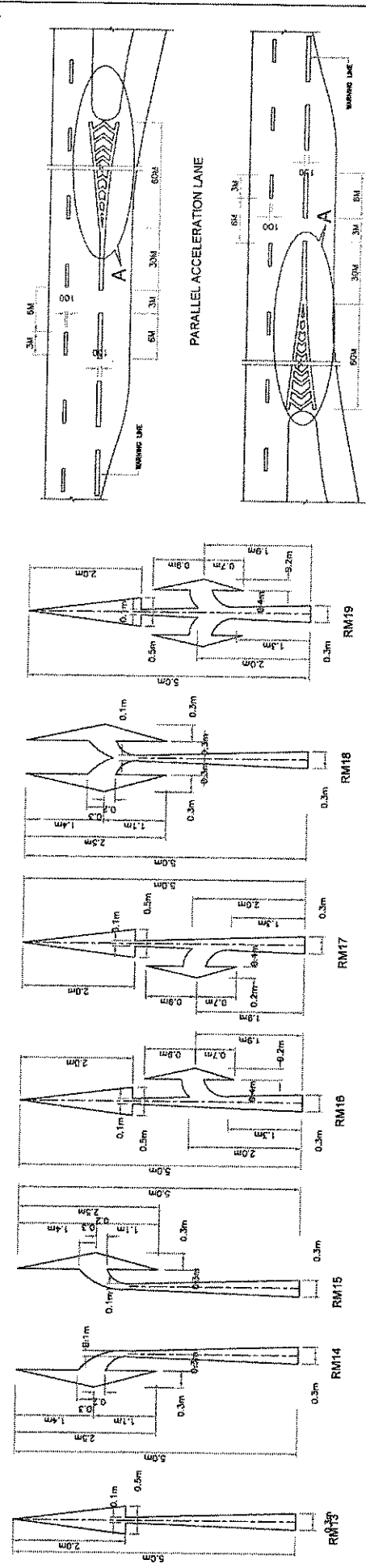
TYPICAL PLAN FOR PIPE CULVERT ON CROSS ROAD

DATE		APPROVED		CHECKED		PREPARED		DRAWN		PROJECT		SCALE		DRAWING TITLE	
11	14.03.2015	SECY	REVISION	BY	BY	BY	BY	BY	BY	AS SHOWN	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI - DURGUNA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2	AS SHOWN	TYPICAL DETAILS OF CROSS ROAD DRAINS	7-3466RLASAHIGHWAYSMISC-12	REV. IN
12	14.03.2015	SECY	REVISION	BY	BY	BY	BY	BY	BY	AS SHOWN	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI - DURGUNA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2	AS SHOWN	TYPICAL DETAILS OF CROSS ROAD DRAINS	7-3466RLASAHIGHWAYSMISC-12	REV. IN

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR



Sudhanshu Solanki



ARROW MARKING FOR ROUTE DIRECTION

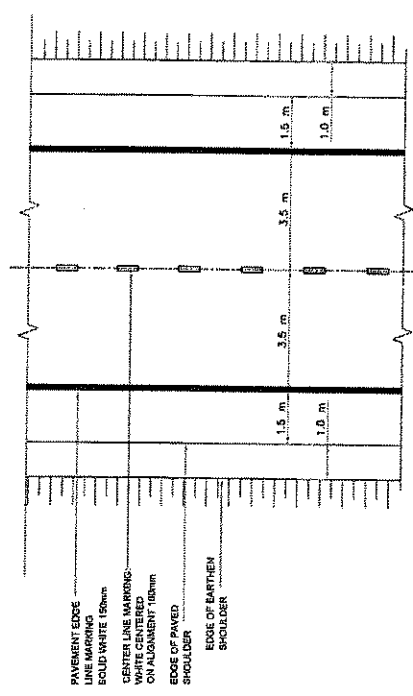
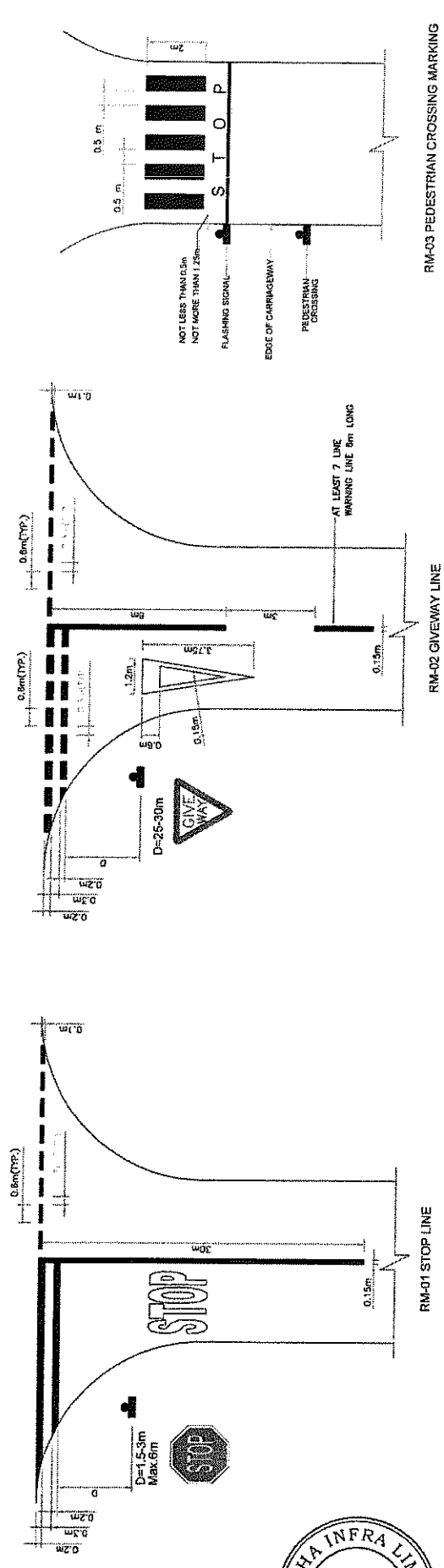
- NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED.
 2. IN ACCESS CULVERT TO BE LAID IN DITCH WITHOUT HEADWALL AND WITHOUT CONCRETE BEDDING.

DATE		JOB		SITE		SCALE		PROJECT		CLIENT		CONSULTANT	
NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE
01	JAN 2015	ISSUED FOR WORK											
02	FEB 2015												
03	JUNE 2015												
		ORIGINAL											

CONSULTANT:		PROJECT:	
 MVA CONSULTING CONSULTANTS 15/2, MARKET CROSS, MALINI, COLONY, SURABHAPUR, RAJKOT TEL: +91-79-2320369, 2321860, 2320956. FAX: 2321546. e-mail: info@mvacorp.com		ODISHA WORKS DEPARTMENT WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PQA-2	
NATIONAL HIGHWAYS AUTHORITY LEA Associates South Asia Pk. Ltd, India 8-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATURA ROAD, NEW DELHI-110044		AS SHOWN	
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PQA-2		SCALE: AS SHOWN	
CLIENT: ODISHA WORKS DEPARTMENT		DRAWING TYPE: TYPICAL DETAILS OF ROAD MARKINGS	
DRAWING NO: 73406LASHHIGHWAYSMS13-13		SHEET (OF 2)	

(Signature)

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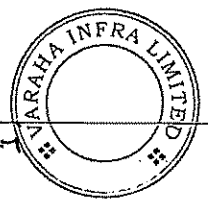


GENERAL LAYOUT FOR LANE MARKING

Rev.	DATE	BY	CHECKED	APPROVED	DATE
1	19/02/15				
2	05/06/15				
3	05/06/15				

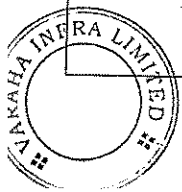
PREPARED BY:	DESIGNED BY:	DRAWN BY:	SCALE:	AS SHOWN	TYPICAL DETAILS OF ROAD MARKINGS	FORM NO. WPPSC-13
REVISED BY:	CHECKED BY:	APPROVED BY:	PROJECT:	CURB:	CUSTOMER:	REV. 1
PROJECT MANAGER:	SUPERVISOR:	ENGINEER:	CARRIAGEWAY TO 2 LANE ROAD FROM NISHICHINTAKOLI - DUDHURIA KM 26+00 TO KM 46+00 (BALANCE WORK) PACKAGE - P0442	ODISHA WORKS DEPARTMENT	ODISHA ASSOCIATES SOUTH ASIA PVT. LTD. INDIA	
CONSULTANT:	ENGINEERS GROUP LTD.	INDIA				

Gie birh...

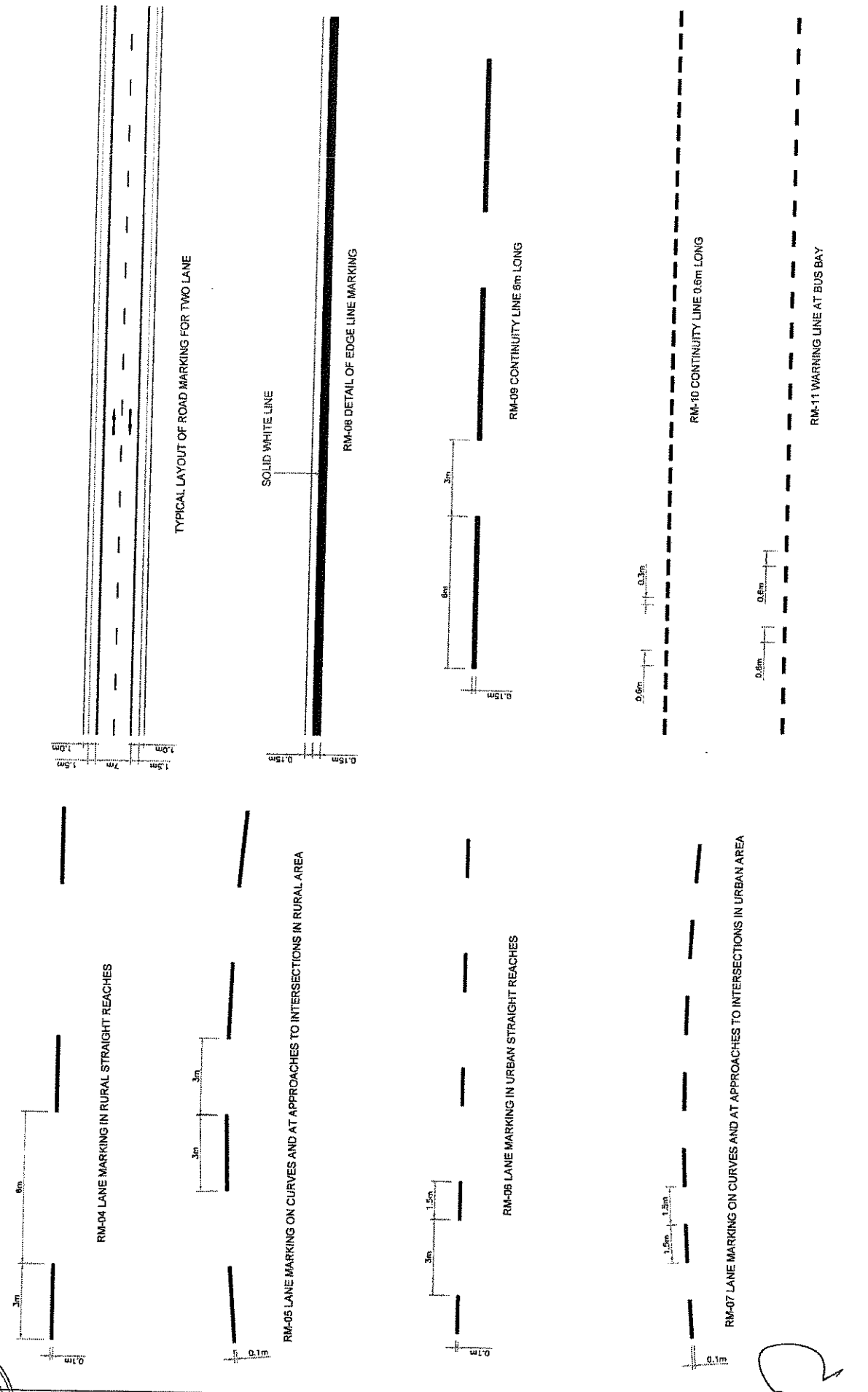


[Handwritten Signature]

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of the E.I.C.(C), Odisha, BBSR

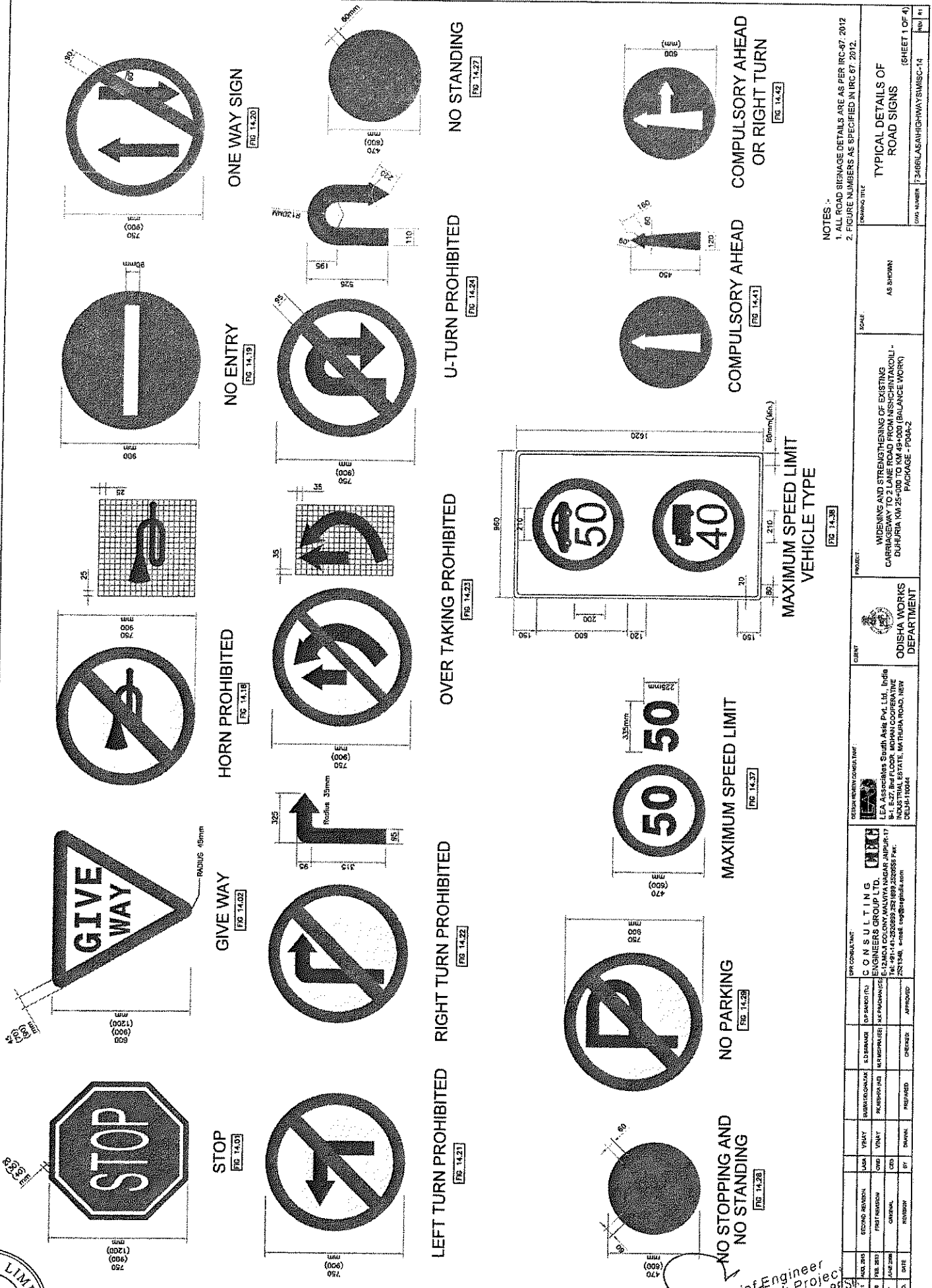


Geetanjali Das



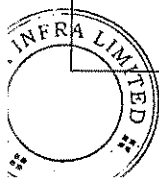
 ODISHA WORKS DEPARTMENT		PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHAPRANTAKOILI-DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-Z		SCALE: AS SHOWN		DRAWING TITLE: TYPICAL DETAILS OF ROAD MARKINGS		DWG NUMBER: 73468LASA/HIGHWAY/SIMISC-13		SHEET 3 OF 3	
CLIENT: LEA Associates South Asia Pvt. Ltd., Ind-66 B-1, E-27, 1st FLOOR, KOKHAN COOPERATIVE INDUSTRIAL ESTATE, MATYURA ROAD, NEW DELHI-110046	DESIGN REVIEW CONTROL SHEET: LEA ASSOCIATES SOUTH ASIA PVT. LTD. B-1, E-27, 1st FLOOR, KOKHAN COOPERATIVE INDUSTRIAL ESTATE, MATYURA ROAD, NEW DELHI-110046	CONSULTANT: CONSULTANTS ENGINEERS GROUP LTD. S-12/ARAD COLONY MALVIYA NAGAR, JAIPUR-302017 Tel: +91-141-2522882/2521899/2522556 Fax: 2521348, e-mail: ceng@cegroup.com	DATE: 25/01/2018	BY: [Signature]	CHKD: [Signature]	APPD: [Signature]	REVISED: [Signature]	DATE: 25/01/2018	NO.: 01	DATE: 25/01/2018	NO.: 01

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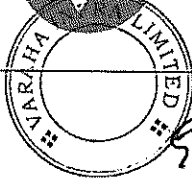
NOTES -
 1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67, 2012
 2. FIGURE NUMBERS AS SPECIFIED IN IRC 67, 2012.

DESIGN NO.		DATE		SCALE		DRAWING TITLE	
NO. OF SHEETS	TOTAL SHEETS	DATE	DATE	SCALE	SCALE	AS SHOWN	TYPICAL DETAILS OF ROAD SIGNS (SHEET 1 OF 4)
PROJECT							
CLIENT				PRODUCT			
ODISHA WORKS DEPARTMENT				WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHINTAKOLI - DUHURIA KM 25-300 TO KM 49-000 (BALANCE WORK) PACKAGE - P06A-2			
DESIGN CONSULTANT				DESIGN CONSULTANT			
CONSTRUCTORS GROUP LTD.				CONSTRUCTORS GROUP LTD.			
PROJECT MANAGER				PROJECT MANAGER			
SUPERVISOR				SUPERVISOR			
CHECKED				CHECKED			
APPROVED				APPROVED			
NO.	DATE	BY	DATE	NO.	DATE	BY	DATE
1				1			
2				2			

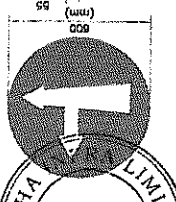


Signature

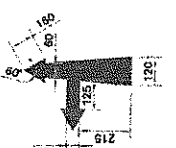
Chief Engineer
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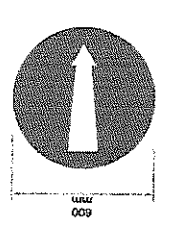
Handwritten signature



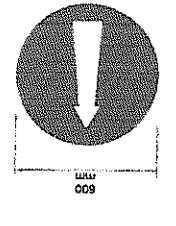
COMPULSORY AHEAD OR LEFT TURN
FIG 14.43



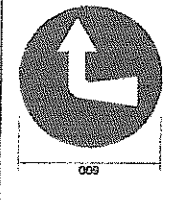
COMPULSORY TURN RIGHT
FIG 14.44



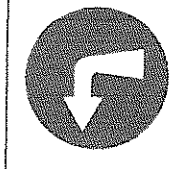
COMPULSORY TURN LEFT
FIG 14.45



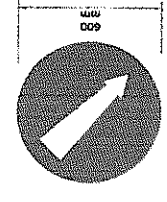
COMPULSORY TURN RIGHT IN ADVANCE OF JUNCTION
FIG 14.46



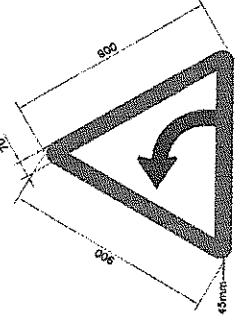
COMPULSORY TURN LEFT IN ADVANCE OF JUNCTION
FIG 14.47



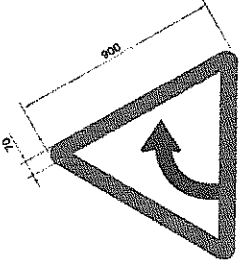
COMPULSORY KEEP LEFT
FIG 14.48



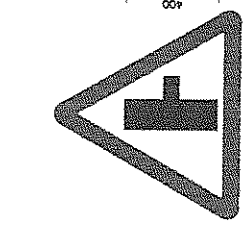
COMPULSORY KEEP RIGHT
FIG 14.49



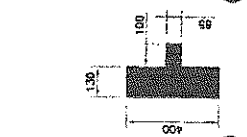
LEFT HAND CURVE
FIG 15.01



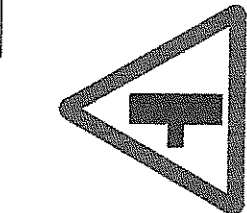
RIGHT HAND CURVE
FIG 15.02



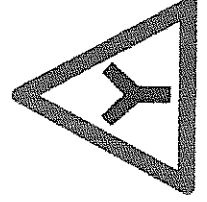
SIDE ROAD RIGHT
FIG 15.09



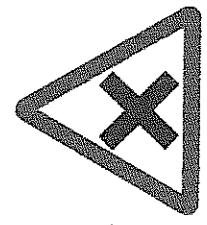
SIDE ROAD LEFT
FIG 15.10



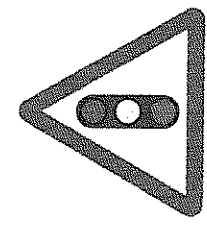
Y INTERSECTIONS
FIG 15.11



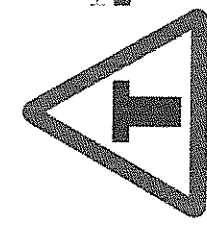
Y INTERSECTIONS
FIG 15.12



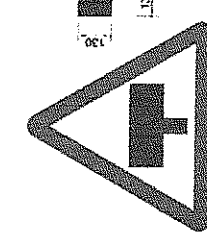
CROSS ROAD
FIG 15.14



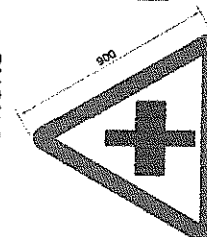
TRAFFIC SIGNALS
FIG 15.16



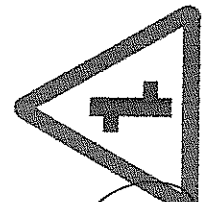
T-INTERSECTION MAJOR ROAD AHEAD
FIG 15.17



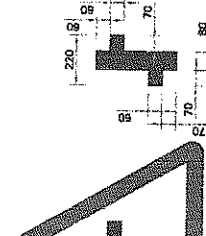
T-INTERSECTION MAJOR ROAD AHEAD
FIG 15.18



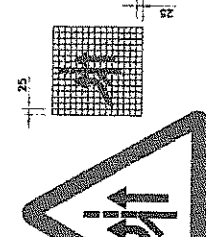
MAJOR ROAD AHEAD
FIG 15.19



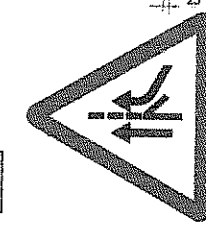
STAGGERED INTERSECTIONS RIGHT
FIG 15.20



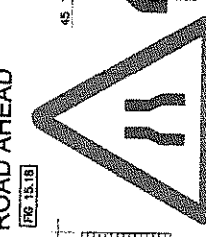
MERGING TRAFFIC AHEAD (FROM LEFT)
FIG 15.21



MERGING TRAFFIC AHEAD (FROM RIGHT)
FIG 15.22



NARROW ROAD AHEAD
FIG 15.23



ROAD WIDENS
FIG 15.24

NOTES :-
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-R7: 2012
2. FIGURE NUMBERS AS SPECIFIED IN IRC 67, 2012.

NO.	REV.	DATE	BY	CHKD.	APPD.	DESCRIPTION
01						
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WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUFHURA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - PMA-2

AS SHOWN

SCALE: AS SHOWN



ODISHA WORKS DEPARTMENT

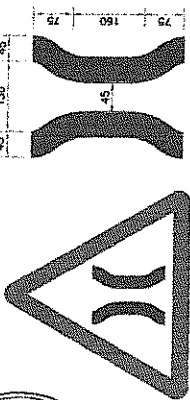
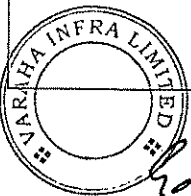
CLIENT: LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, 1st FLOOR, MOHAN CO-OPERATIVE INDUSTRIAL ESTATE, MATTHURA ROAD, NEW DELHI-110044

DESIGNER/CONSULTANT: CONSUULTING ENGINEERS GROUP PVT. LTD.
E-12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100

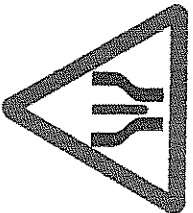
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUFHURA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - PMA-2

DATE: 15/07/2012
BY: [Signature]
CHKD: [Signature]
APPD: [Signature]

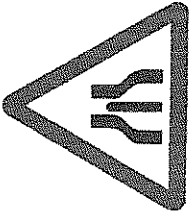
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



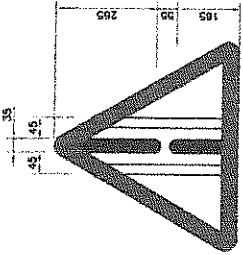
NARROW BRIDGE AHEAD
FIG 15.29



START OF DUAL CARRIAGEWAY
FIG 15.30



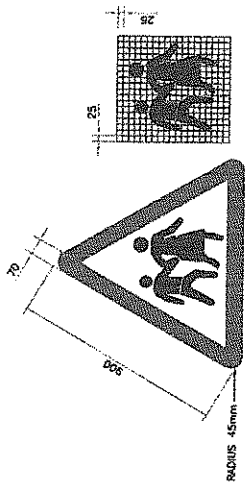
END OF DUAL CARRIAGEWAY
FIG 15.31



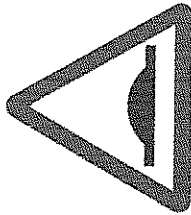
GAP IN MEDIUM
FIG 15.32



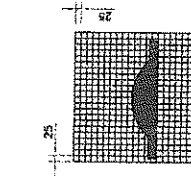
PEDESTRIAN CROSSING
FIG 15.33



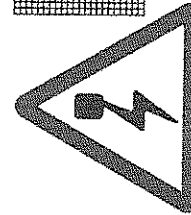
SCHOOL AHEAD
FIG 15.34



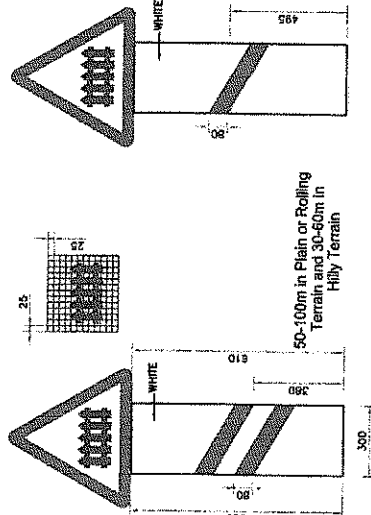
SPEED BREAKER
FIG 15.48



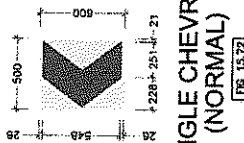
OVERHEAD CABLES
FIG 15.57



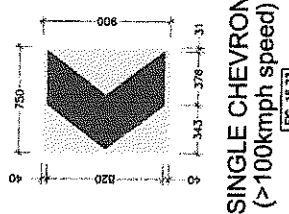
BARRIER
FIG 15.60



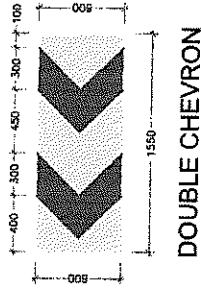
(a) At 200m



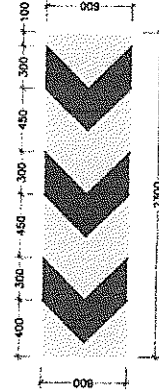
SINGLE CHEVRON (NORMAL)
FIG 15.72



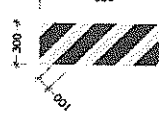
SINGLE CHEVRON (>100kmph speed)
FIG 15.73



DOUBLE CHEVRON
FIG 15.74



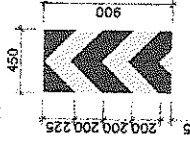
TRIPLE CHEVRON
FIG 15.75



OBJECT HAZARD (Left)
FIG 15.76



OBJECT HAZARD (Right)
FIG 15.77



TWO WAY HAZARD MARKER
FIG 15.78

GUARDED RAILWAY CROSSING
FIG 15.71

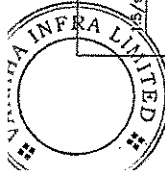
(b) At 50-100m (PLAIN / ROLLING)
At 30-60m (HILL)

50-100m in Plain or Rolling Terrain and 30-60m in Hilly Terrain

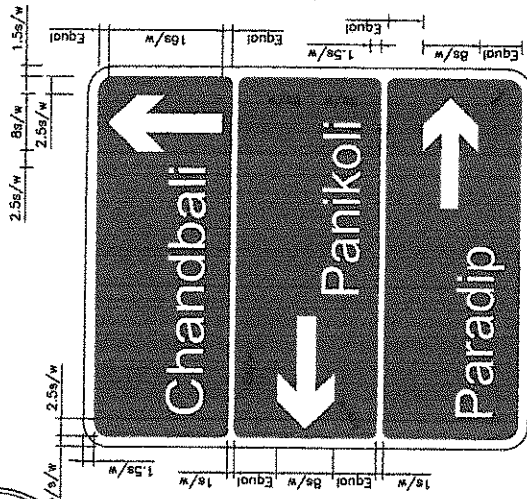
NOTES :-
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67; 2012
2. FIGURE NUMBERS AS SPECIFIED IN IRC 67; 2012.

APPROVED		CHECKED		APPROVED		DRAWN		BY		DATE		REVISION	
NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE

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World Bank Project
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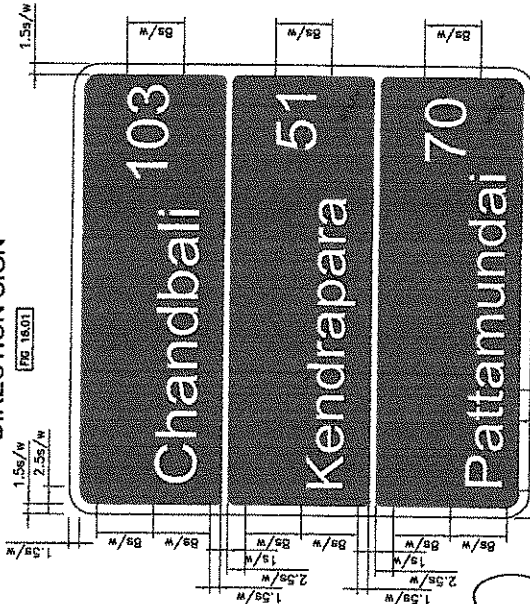


Signature

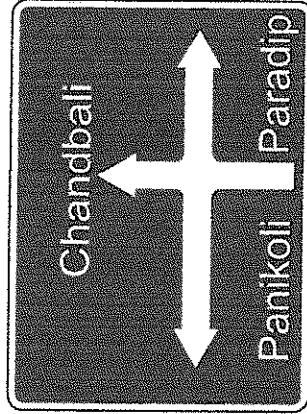


REASSURANCE SIGN
[FIG. 16.09]

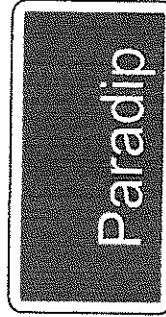
STACK TYPE ADVANCE DIRECTION SIGN
[FIG. 16.01]



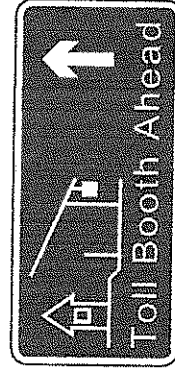
MAP TYPE ADVANCE DIRECTION SIGN (SHOULDER MOUNTED)
[FIG. 16.02]



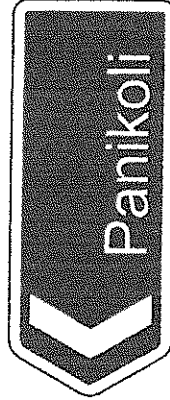
FLAG TYPE ADVANCE DIRECTION SIGN
[FIG. 16.03]



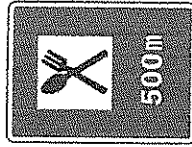
PLACE IDENTIFICATION SIGN
[FIG. 15.08]



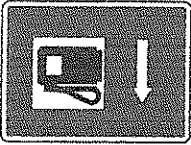
MAP TYPE ADVANCE DIRECTION SIGN (SHOULDER MOUNTED)
[FIG. 16.02]



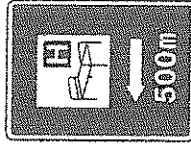
FLAG TYPE DIRECTION SIGN
[FIG. 16.04]



EATING PLACE
[FIG. 17.01]



HOSPITAL
[FIG. 17.07]



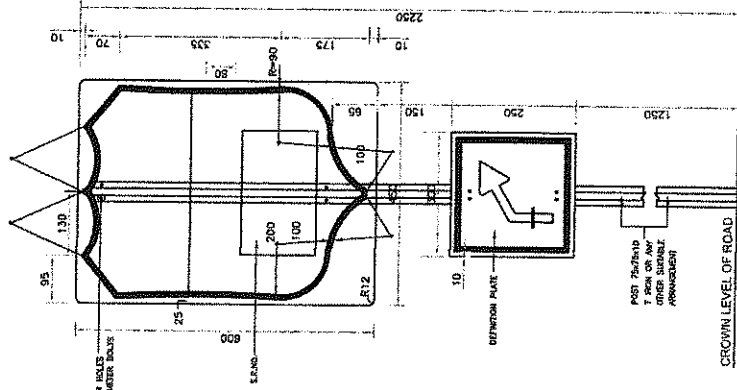
PUBLIC TELEPHONE
[FIG. 17.08]



NATIONAL HIGHWAY ROUTE MARKER SIGN
[FIG. 16.71]



STATE HIGHWAY ROUTE MARKER SIGN
[FIG. 16.72]

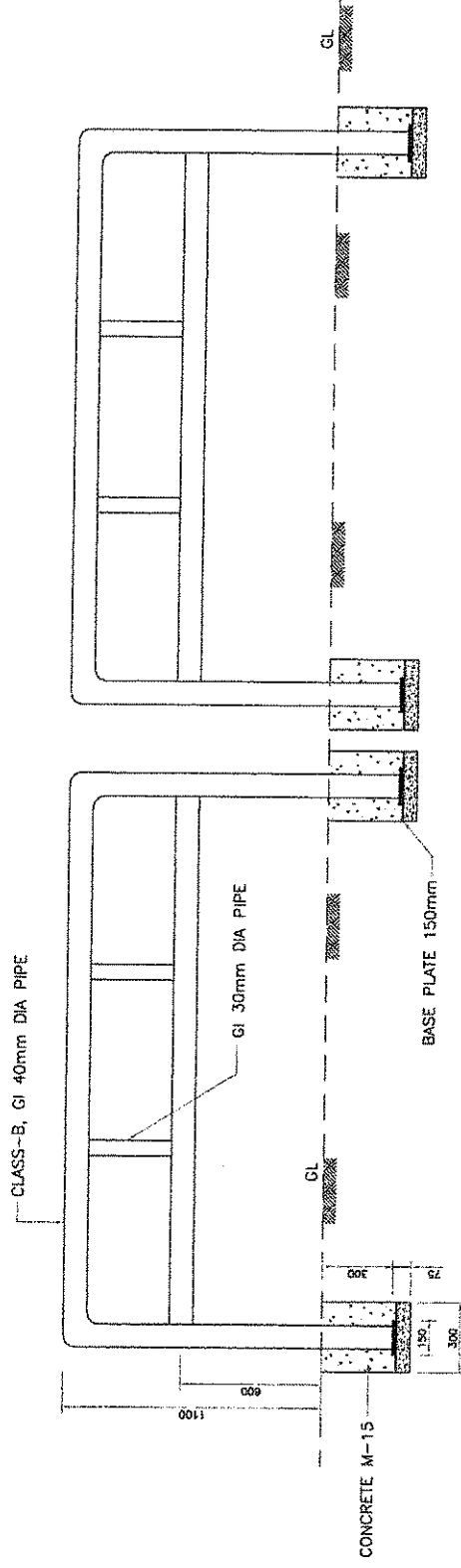


NOTES :-
1. ALL ROAD SIGNAGE DETAILS ARE AS PER IRC-67: 2012
2. FIGURE NUMBERS AS SPECIFIED IN IRC 67: 2012.

SCALE: AS SHOWN
DRAWING TITLE: TYPICAL DETAILS OF ROAD SIGNS
(SHEET 4 OF 9)
DRAWING NO: 7346(R)LAN-HIGHWAY-SI-MISC-14
REV: (0)

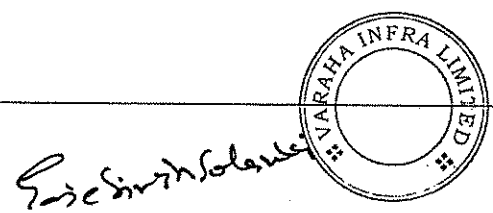
DATE	BY	CHECKED	APPROVED
REVISION	BY	DATE	
CRITICAL	BY	DATE	
PREPARED	BY	DATE	
DESIGNED	BY	DATE	
DRAWN	BY	DATE	
PROJECTED	BY	DATE	
CONTRACTOR'S	BY	DATE	
CLIENT'S	BY	DATE	
PROJECT	BY	DATE	
WIDENING AND STRENGTHENING OF EXISTING ROAD FROM NISCHINTANKOLI - DUKHURA KM 28.200 TO KM 30.250 (BALANCE WORK) PACKAGE - P044-Z ODISHA WORKS DEPARTMENT LEA ASSOCIATES SOUTH ASIA PVT. LTD., INDIA B-1, 2 ND FLOOR, MOHANA CO-OPERATIVE SOCIETY, BANPURI ROAD, NEW DELHI-110044 TEL: +91-11-25305652/25318995/25320595 Fax: +91-11-25305652 E-MAIL: info@leaasia.com			

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



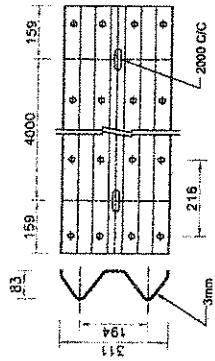
ELEVATION OF FOOTPATH BARRIER
(SCALE 1:10)

NOTE:
 1. LENGTH OF FOOTPATH BARRIER AT EACH BUS BAY SHALL BE 15m (MIN.)
 2. LENGTH OF FOOTPATH BARRIER AT BUILT UP/VILLAGE AREA SHALL BE 14.77m (MIN.)
 3. THE LOCATION OF FOOTPATH BARRIER AT BUILT UP/VILLAGE AREA SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.



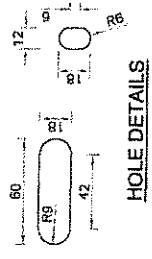
[Signature]
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

NO.	DATE	BY	REVISION	APPROVED	DESIGNED	CHECKED	APPROVED	DESIGNED	CHECKED	APPROVED	DESIGNED	CHECKED	APPROVED	DESIGNED	CHECKED	APPROVED	DESIGNED	CHECKED	APPROVED	
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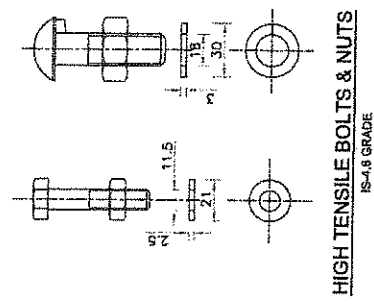


GUARDRAIL

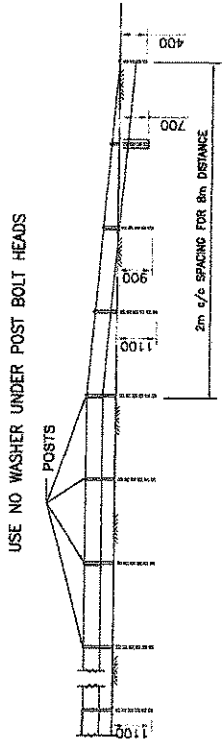
RAIL	
box	= 1311.0 cm ³
Z _{xx}	= 86.0 cm ³
A	= 14.1 cm ²
I _{yy}	= 105.0 cm ⁴
Z _{yy}	= min. 25.0 cm ³
W	= 11.0 kg/m



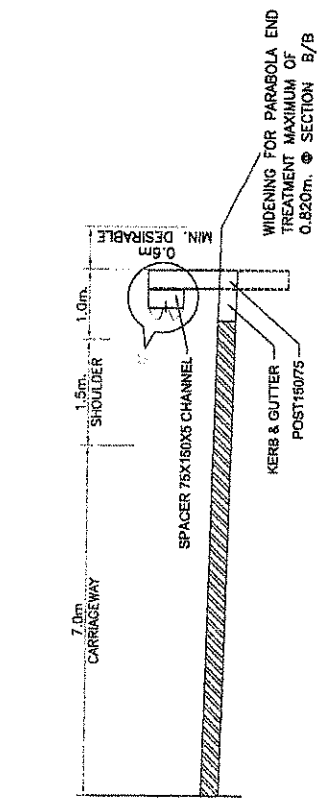
HOLE DETAILS



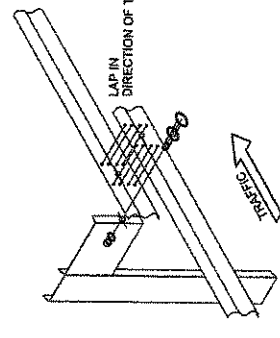
HIGH TENSILE BOLTS & NUTS
15-11.5 GRADE



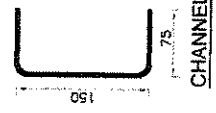
TYPICAL TURN DOWN DETAIL



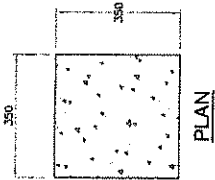
SECTION A-A



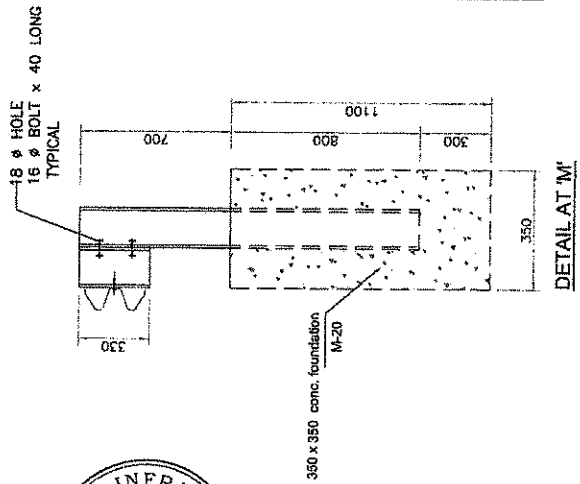
EXPLODED VIEW OF W BEAM SPLICE / ASSEMBLY



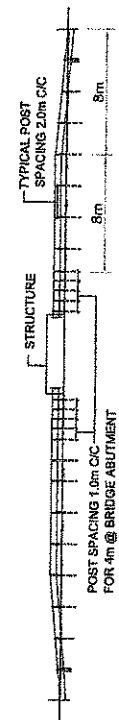
CHANNEL



PLAN

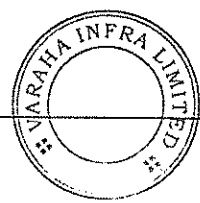


DETAIL AT 'M'



ELEVATION AT STRUCTURE LOCATION

Rajesh Singh Solanki



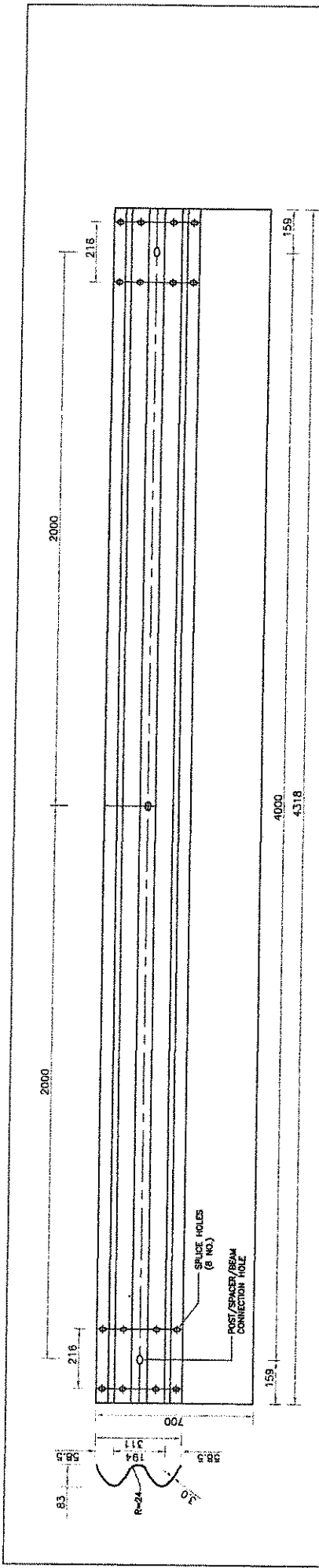
[Signature]
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

- NOTE:**
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED.
 2. THE LOCATION OF THE FOOTPATH BARRIERS ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

REVISION		APPROVED		CHECKED		DESIGNED		DRAWING TITLE	
NO.	DATE	BY	DATE	BY	DATE	BY	DATE	NO.	DATE
1	AUG 2015	SECOND REVISION							
2	FEB 2015	PROVISIONAL							
3	JUNE 2014	ORIGINAL							

PROJECT	WIDENING AND STRENGTHENING OF EXISTING CARBIDE TO 2 LANE ROAD FROM NISHCHITAKOLI - DURGARA FOR 25+00 TO 30+00 (BALANCE WORK) PACKAGE - PAK-2
SCALE	N.T.S.
ENGINEER TITLE	
PROJECT	ODISHA WORKS DEPARTMENT
DESIGN REVIEW CONSULTANT	LEA Associates South Asia Pvt. Ltd., India B-1, 8/27, 1st FLOOR, MIDHAN COOPERATIVE SOCIETY, ALI, LEFT HATE, MATHURA ROAD, NEW DELHI - 110044
CONSULTANT	CONSULTING ENGINEERS GROUP LTD. E-12/3/1 COLONY ANANTA NAGAR, JALPAIGURI - 726104, West Bengal, India. Tel: +91-31-2529899, 2521888, 2528358 Fax: 2521146, e-mail: ce@cegroup.co.in

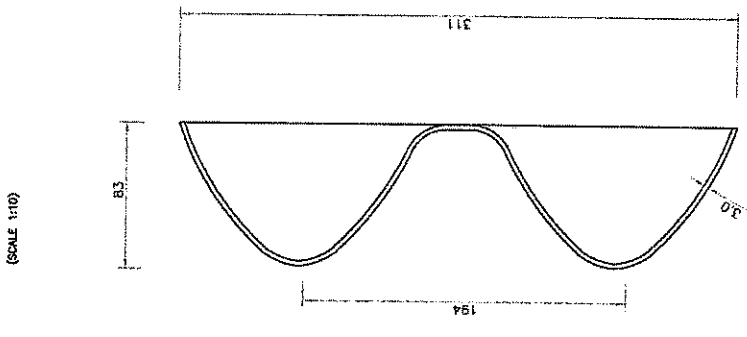
TYPICAL DETAILS OF METAL BEAM CRASH BARRIER



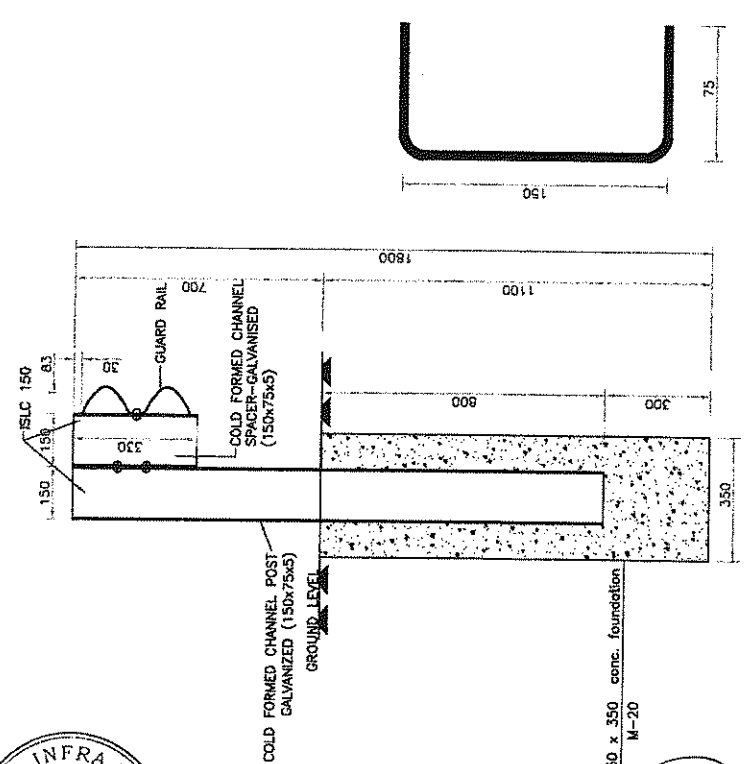
W-PROFILED CORRUGATED BEAM

- HOT ROLL FORMED
- YIELD STRENGTH 255 MPA
- TENSILE STRENGTH 410-520 MPA
- THE W BEAMS ARE FABRICATED IN THICKNESS OF 3.0mm/2.67mm AND IS OF DIMENSIONS 311mm x 83mm. THE RAW MATERIAL FOR THE W BEAMS SHALL CONFORM TO STEEL AS PER IS 9888 GRADE Fe 380/Fe, 410/Fe 510 AND THEY ARE HOT DIP GALVANIZED TO 550gms/sqm. IN GENERAL THE W BEAMS ARE SUPPLIED ACCORDING TO THE CLIENT'S SPECIFICATIONS AND REQUIREMENT.

W- GUARD RAIL BEAM
(SCALE 1:10)



GUARD POST
(SCALE 1:10)



POST AND SPACER CHANNEL

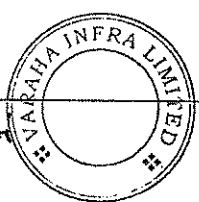
DETAILS OF W-BEAM SECTION

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED.
2. THE LOCATION OF THE FOOTPATH BARRIERS ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

NO.	DATE	REVISION	BY	CHKD	APPROVED
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Sic Singh Solanki



[Signature]

Chief Engineer
World Bank Project
O/o The E.I.C.(C), Odisha, BBSR

PROJECT TITLE: TYPICAL DETAILS OF METAL BEAM CRASH BARRIER (SHEET 2 OF 2)

CLIENT: N.T.S.

DESIGNER: N.T.S.

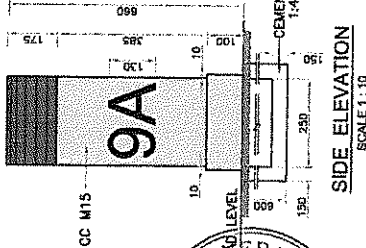
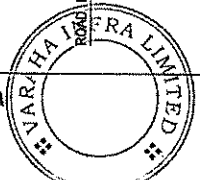
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 21.15 M FROM MISHCHINTAKOLLU - DURIKUBA KM 25+000 TO KM 26+000 (BALANCE WORK) PACKAGE - P04A-2

ODISHA WORKS DEPARTMENT

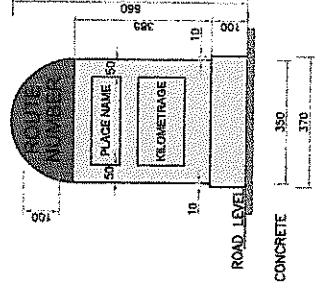
LEA ASSOCIATES SOUTH ASIA PVT. LTD., INDIA
B-12, 1ST FLOOR, INDIAN CO-OPERATIVE ROAD, WESTERLY, MATRUHAN ROAD, NEW DELHI-110044

CONSULTING ENGINEERS GROUP LTD.
E-12, JLOU COLONY, MALUVA NAGAR, JALPAIGURI
TEL: +91-11-2620889, 2621888, 2620958 Fax: 2621886, Email: ceg@cegroup.com

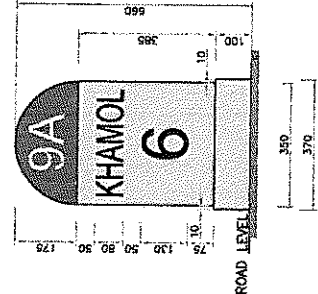
Sachin Singh



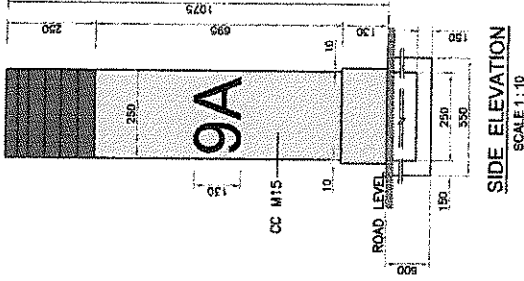
SIDE ELEVATION
SCALE 1 : 10



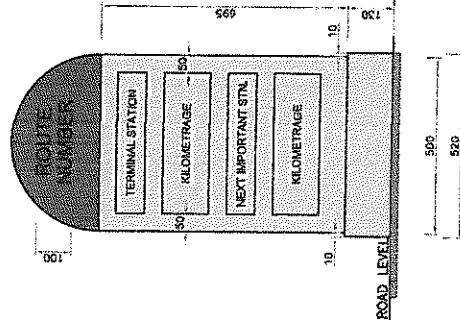
FACE - 1
SCALE 1 : 10



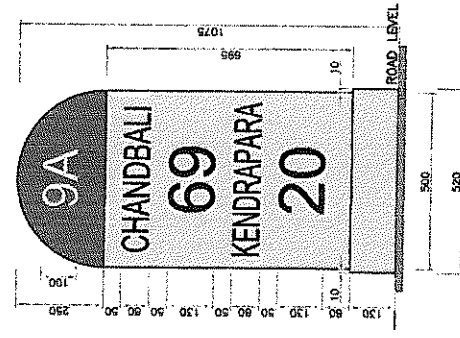
FACE - 1
SCALE 1 : 10



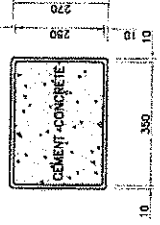
SIDE ELEVATION
SCALE 1 : 10



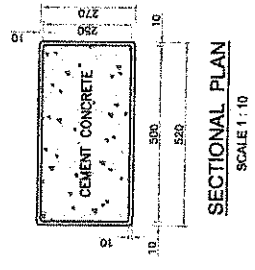
FACE - 1
SCALE 1 : 10



FACE - 1
SCALE 1 : 10



SECTIONAL PLAN
TYPICAL DESIGN FOR THE ORDINARY
KILOMETRE STONE
SCALE 1 : 10



SECTIONAL PLAN
SCALE 1 : 10

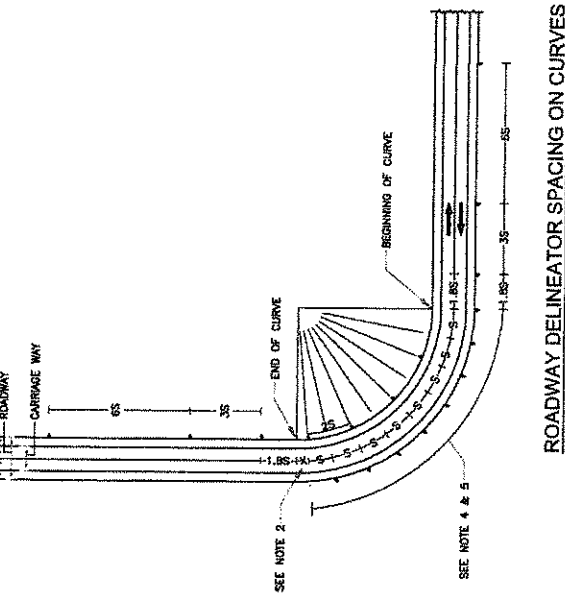
TYPICAL DESIGN FOR THE 5TH KILOMETRE STONE

NOTES:

1. ALL THE DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. FOR FURTHER DETAILS OF DRAWING REFER RC: 6 - 1980 AND RC: 20 - 1987.
3. KILOMETRE STONE TO BE FIXED ON RIGHT SIDE OF THE ROAD.

DRAWING TITLE TYPICAL DETAILS OF KM STONE AND HECTOMETRE STONE		CIVIL NUMBER 7346BLASAHIGHWAYINMSC-18	
SCALE AS SHOWN		PROJECT WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKALI - BUDHURA KM 25+000 (BALANCE WORK) PACKAGE - P04-2	
CLIENT ODISHA WORKS DEPARTMENT		CONSULTANT LEA Associates South Asia Pvt. Ltd., India B-1, 2-27, 11th FLOOR, MOHAK COOPERATIVE SOCIETY ESTATE, MATRUKA ROAD, NEW DELHI-110044	
PROJECT PART C O N S U L T I N G ENGINEERS GROUP LTD. E-12, KOLJI COLONY, WALIYA NAGAR JAIPUR-37 Tel: 91-141-2520289, 2521889, 2520285 Fax: 2521045, e-mail: ceg@cegroupindia.com		DRAWING PART C O N S U L T I N G ENGINEERS GROUP LTD. E-12, KOLJI COLONY, WALIYA NAGAR JAIPUR-37 Tel: 91-141-2520289, 2521889, 2520285 Fax: 2521045, e-mail: ceg@cegroupindia.com	
NO. 01	REVISED NO	DATE NOV 2013	CHECKED CH
DESIGNED NO	DRAWN NO	APPROVED NO	DATE NOV 2013

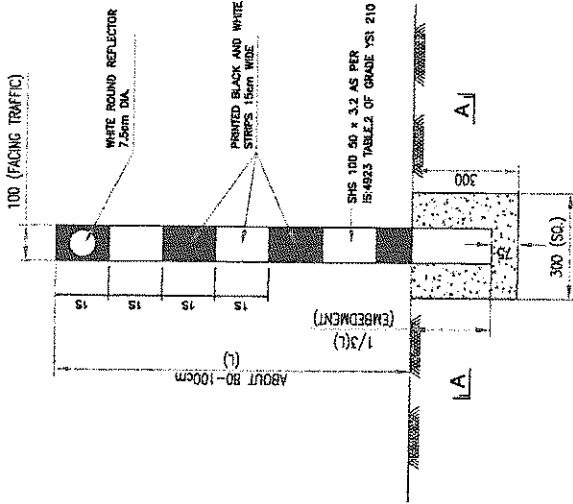
Sachin Singh
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



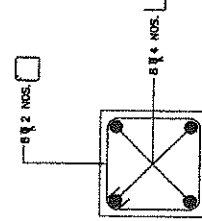
ROADWAY DELINEATOR SPACING ON CURVES

TABLE FOR RECOMMENDED SPACING FOR ROADWAY DELINEATORS ON HORIZONTAL CURVES

RADIUS OF CURVE (METRES)	SPACING ON CURVE, S (METRES)
30	6
50	8
100	12
200	20
300	25
400	30
500	35
600	38
700	42
800	45
900	48
1000	50



DELINEATOR WITH RECTANGULAR REFLECTOR



- NOTES:**
1. ALL DIMENSIONS ARE IN MM EXCEPT WHERE OTHERWISE MENTIONED.
 2. ADJUST SPACING 'S' SUITABLY SO THAT THE LAST ROADWAY DELINEATOR IS AT THE END OF THE CURVE.
 3. INSTALL ALL DELINEATORS AT EDGE OF THE ROADWAY PERPENDICULAR TO THE ONCOMING TRAFFIC.
 4. SEE TABLE FOR VALUE OF 'S' i.e. SPACING OF DELINEATORS ON THE CURVE.
 5. THE SPACING OF FIRST, SECOND & THIRD DELINEATORS ON THE APPROACHES SHALL BE 1.85, 35 & 65 RESPECTIVELY BUT NOT EXCEEDING 50m.
 6. THE GRADE OF CONCRETE FOR FOUNDATION SHALL BE M-20.
 7. THE GRADE OF STEEL SHALL BE Fe 500.
 8. CLEAR COVER TO ALL REINFORCEMENT SHALL BE 40mm.

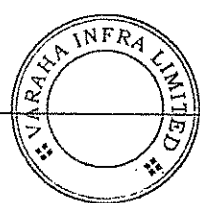
NO.	DATE	REVISION	BY	CHKD	APPD	DATE	REVISION	BY	CHKD	APPD	DATE

PREPARED BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

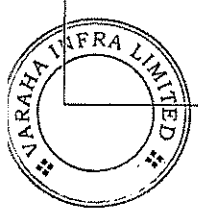
CONSULTING ENGINEERS GROUP LTD.
 E-STATE COLONY, MAHURA ROAD, NEW DELHI-110048
 Tel: 41-11-2522889, 2521899, 2522936 Fax: 2521548, 4111111@engineersgroup.com

ODISHA WORKS DEPARTMENT
 PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI, DUHURIA KM 25+00 TO KM 49+00 (BALANCE WORK) PACKAGE - PMA-2
 AS SHOWN
 TYPICAL DETAILS OF DELINEATOR
 DRAWING TITLE: DELINEATOR
 DRAWING NO.: 73466LSA/HHIGHWAY/MS-C-21
 REV: R

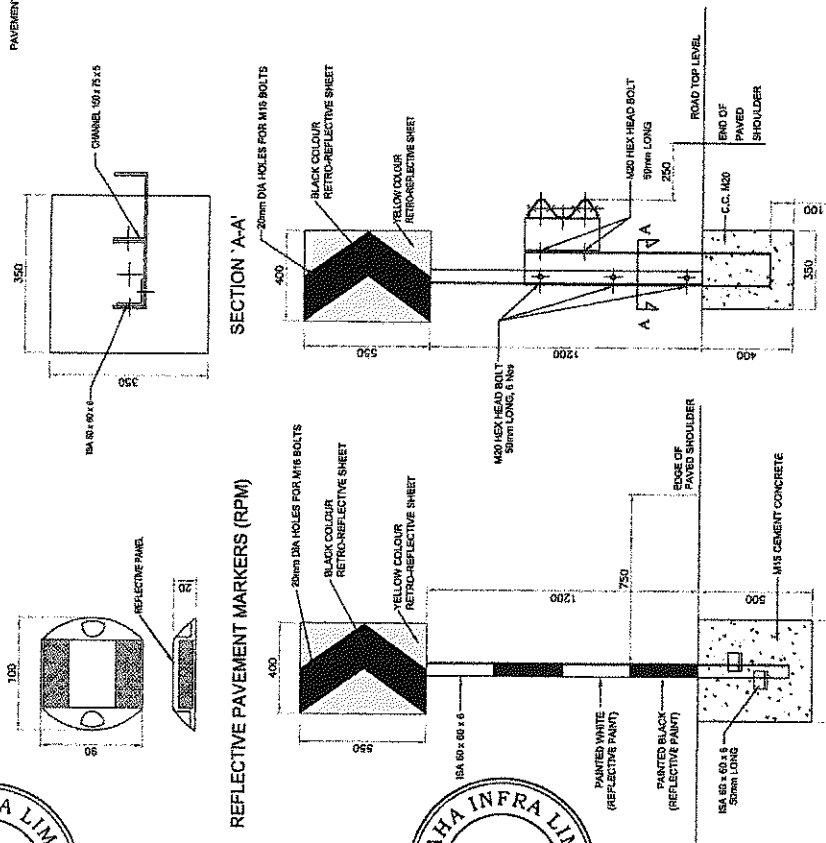
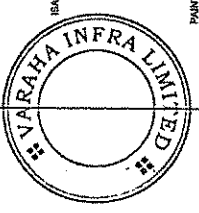
Saise Infr Solus



Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



Saidin Singh Solanki



REFLECTIVE PAVEMENT MARKERS (RPM)

(FOR CURVES > 170m & < 200m RADIUS)
CHEVRON DIRECTION
CHEVRON SIGN BOARD

(FOR CURVES < 170m RADIUS)
CHEVRON DIRECTION
SIGN BOARD WITH CRASH BARRIER

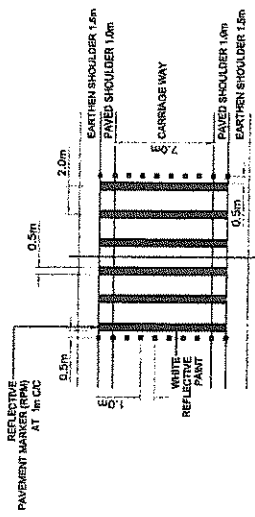
REFLECTIVE PAVEMENT MARKERS

1. SPECIFICATION OF MATERIAL, DESIGN, OPTICAL PERFORMANCE, TESTS AND FIXING OF RPM SHALL BE IN ACCORDANCE WITH TECH.SPEC. CL.12.

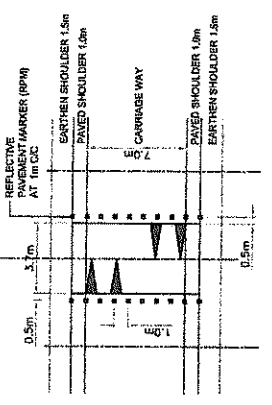
2. LOCATIONS OF RPM

COLOR OF RPM	LOCATION	SPACING
WHITE	RUMBLE STRIP & ROAD HUMP AS SHOWN IN DRG.	3m C/C
AMBER	CURVES < 60m RADIUS ALONG CENTERLINE	3m C/C
RED	BEFORE AND AFTER PEDESTRIAN CROSSING AS SHOWN IN DRG. U/10/11 AND AT APPROACHES TO ROAD INTERSECTION AS SHOWN IN DRG. U/10/11	1m C/C

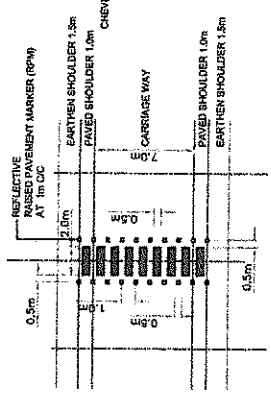
3. RPM SHOULD MEET MINIMUM CIL VALUES EQUIVALENT TO CATEGORY 'A' STUDS AS PER CLAUSE 812 OF TECH.SPEC.



LOCATION OF RPM BEFORE RUMBLE STRIPS



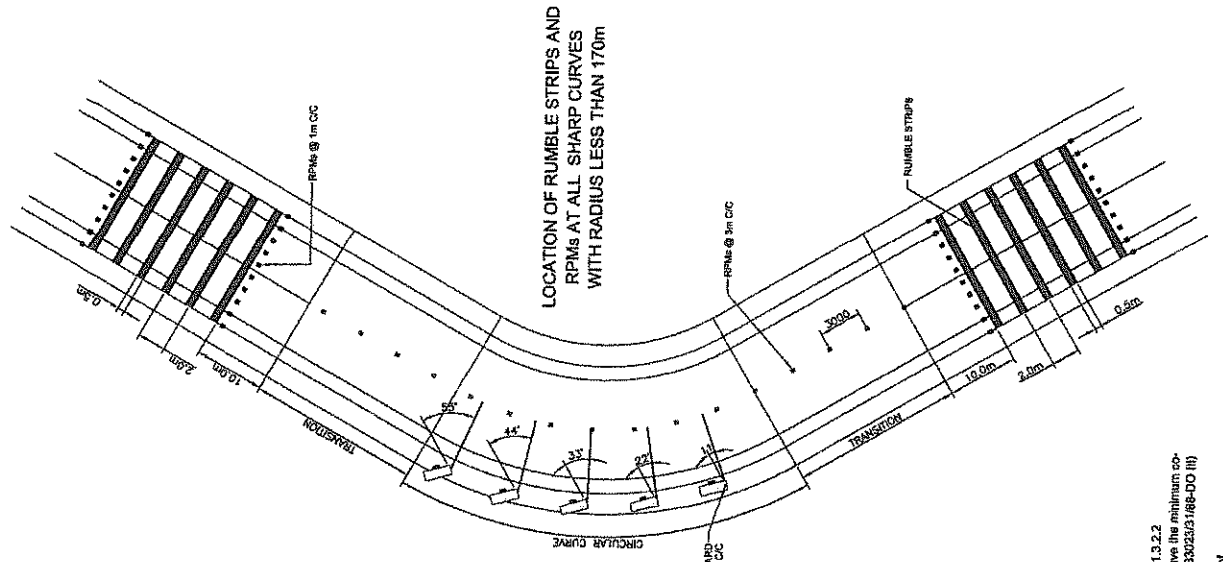
LOCATION OF RPM BEFORE ROAD HUMP



LOCATION OF RPM BEFORE PEDESTRIAN CROSSING

CHEVRON SIGN BOARD

- The size of 'Chevron' Signboard is 400mm x 350mm.
- The sign board should be wide-angle micro-prismatic lens conforming to tech-spec. CL.861.3.2.2
- The retro - reflective surface after coating with soap and water in dry condition should have the minimum coefficient of retro-reflection (MORT) of 60% @ 5.2 degree & Ministry's letter No. RW/IN-33023/168-00 II) as indicated below for encapsulated lens.
- Chevron sign boards shall be installed at 10m c/c as shown in the drawings at all curves of radius less than 200m along the outer edge facing the traffic of nearby lane.



LOCATION OF RUMBLE STRIPS AND RPMs AT ALL SHARP CURVES WITH RADIUS LESS THAN 170m

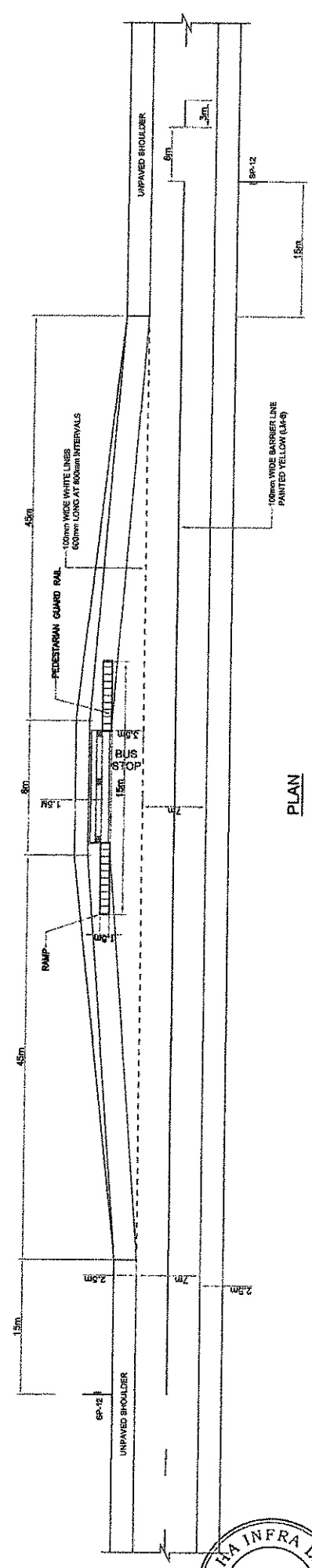
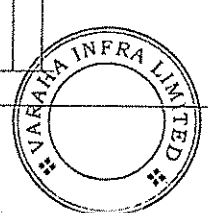
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2	MAY 2013	SRINIVAS	REVISION	
3	MAY 2013	SRINIVAS	REVISION	
4	JAN 2014	SRINIVAS	DESIGNED	
5	JAN 2014	SRINIVAS	DESIGNED	

NO.	DATE	BY	REVISION	APPROVED:
1	AUG 2012	SRINIVAS	DESIGNED	
2	MAY 2013	SRINIVAS	REVISION	
3	MAY 2013	SRINIVAS	REVISION	
4	JAN 2014	SRINIVAS	DESIGNED	
5	JAN 2014	SRINIVAS	DESIGNED	

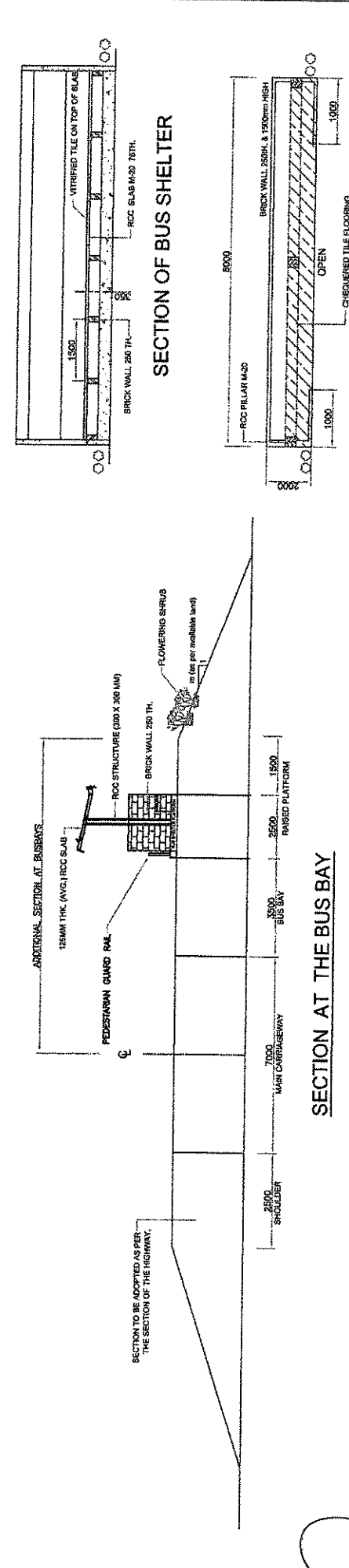
DRIVEN REVIEW CONSULTANT	PROJECT:	SCALE:	DRAWING TITLE:
LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE SOCIETY, NEAR STATE, MATURA ROAD, NEW DELHI-110044	MIDENING AND STRENGTHENING OF EXISTING CARRIAGE WAY TO FLAME ROAD FROM MISHCHINTAKOLI - DURGHA (M 2B) BALANCE WORK) PACKAGE - P04-02	N.T.S.	TYPICAL DETAILS OF RRPPI MARKERS
ODISHA WORKS DEPARTMENT	PROJECT:	SCALE:	DRAWING TITLE:
LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE SOCIETY, NEAR STATE, MATURA ROAD, NEW DELHI-110044	MIDENING AND STRENGTHENING OF EXISTING CARRIAGE WAY TO FLAME ROAD FROM MISHCHINTAKOLI - DURGHA (M 2B) BALANCE WORK) PACKAGE - P04-02	N.T.S.	TYPICAL DETAILS OF RRPPI MARKERS

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

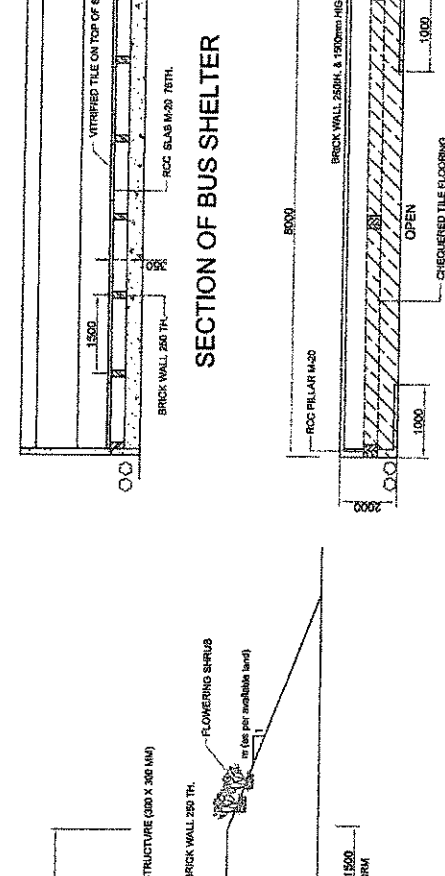
Sudesh Singh Sahasr



PLAN
BUS BAY DETAILS



SECTION AT THE BUS BAY



PLAN FOR BUS SHELTER

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
2. PAVED LAYERS OF CARRIAGEWAY SHALL BE EXTENDED IN THE BUS BAY AREA AS PER THE STANDARD DRAWINGS
3. REFER TO THE STANDARD DRAWINGS FOR BUS STOP DRAWINGS AND DETAILS.
4. THE LOCATION OF THE FOOTPATH AND BUS BAY ARE TENTATIVE ONLY. THE EXACT LOCATION SHALL BE FINALIZED IN CONSULTATION WITH THE ENGINEER PRIOR TO START OF EXECUTION.

NO.	DATE	BY	DRAWN	PREPARED	CHECKED	APPROVED:	DATE
RI	AUGUST, 2015	LASA	VINAY	SUBWAY/D. GHATAK	G.P. SANKO, (TL)		
RC	FEB, 2013	OND	DWD	PK MITRA (AS)	SD SARKAR (EE)		
·	JUNE, 2008	CEG	CEG	MR. MITRA (EE)	MR. MITRA (EE)		
·		REVISION					
·		ORIGINAL					
·		FIRST REVISION					
·		SECOND REVISION					

DPW CONSULTANT:

CONSULTING ENGINEERS GROUP LTD.,
E-12/PAK COLONY MALVIYA NAGAR, LAKHIMPUR-17
Tel: +91-141-2227899, 2227899, 22225256
Fax: 2221248, e-mail: eng@cegroup.com

ODISHA REVIEW CONSULTANTS

LEA Associates South Asia Pvt. Ltd., India
B-1, E-27, 1st FLOOR, MOHAM COOPERATIVE INDUSTRIAL ESTATE, MATIURA ROAD, NEW DELHI-110044

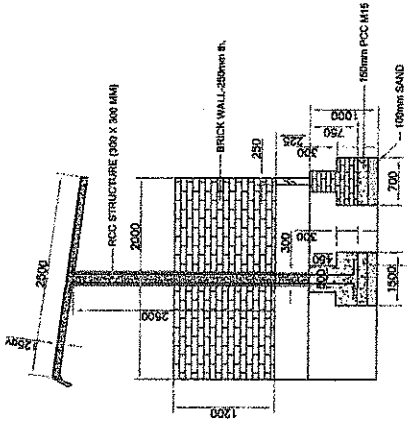
ODISHA WORKS DEPARTMENT

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOLI TO DUHURIA - KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE NO. - P04A-2

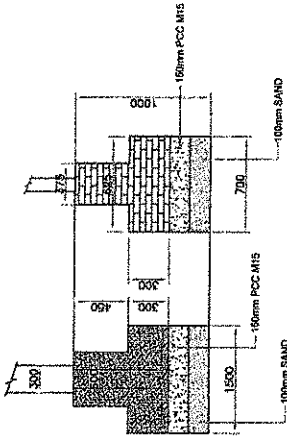
DWG. NO. : 72486(LAS)HIGHWAYS/MS/SC-03 (SHEET 1 OF 2) SCALE

Chief Engineer,
World Bank Project
of the E.I.C.(C), Odisha, BBSR

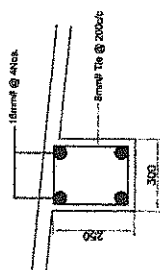
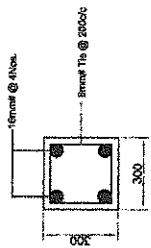
SCHEDULE OF BUSBAYS			
SL. NO.	CHAINAGE	SIDE	PAVEMENT
1	26+900	R	Flexible
2	27+160	L	Flexible
3	28+000	L	Rigid
4	29+650	L	Flexible
5	30+950	R	Flexible
6	31+000	L	Flexible
7	32+850	L	Rigid
8	33+000	R	Rigid
9	33+700	R	Flexible
10	34+000	L	Flexible
11	35+250	L	Flexible
12	35+750	R	Rigid
13	36+950	L	Flexible
14	37+000	R	Flexible
15	37+800	R	Flexible
16	38+370	L	Flexible
17	38+570	R	Flexible
18	41+150	L	Flexible
19	41+155	R	Flexible
20	43+230	R	Flexible
21	43+690	L	Flexible
22	44+650	L	Rigid
23	44+800	R	Rigid
24	45+800	R	Flexible
25	45+850	L	Flexible
26	48+000	R	Flexible
27	48+100	L	Flexible



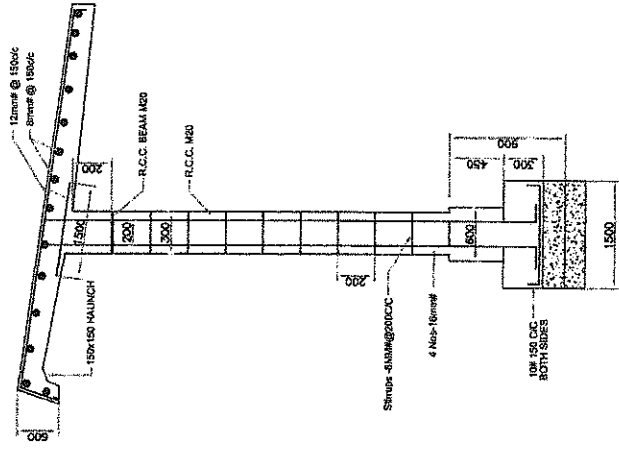
CROSS SECTION
BUS SHELTER PLATFORM
(SCALE 1:100)



REINFORCEMENT PLAN OF COLUMN
(SCALE 1:20)

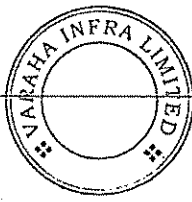


REINFORCEMENT OF BEAM
(SCALE 1:20)



REINFORCEMENT OF PILLAR
(SCALE 1:50)

Sachin Singh



[Signature]

Chief Engineer
World Bank Project
O to the E.I.C.(C), Odisha, BBSR

DATE	NO	REVISION	BY	PREPARED	CHECKED	APPROVED
AUGUST, 2015	01	SECOND REVISION	LUSA	SURBAYD GHATAK	SR SAHANGIRE	GP SAHOO, (TL)
FEB, 2013	02	FIRST REVISION	OWD	VIWAY	SR SAHANGIRE	GP SAHOO, (TL)
JUNE, 2008	03	ORIGINAL	CEG	OWD	SR SAHANGIRE	GP SAHOO, (TL)

DESIGN REVISION CONSULTANT:
C O N S U L T I N G
E N G I N E E R S G R O U P L T D
 E-12, ALMA COLONY MALVIYA, NAGAR, JAIPUR-31
 Tel: +91-141-2620888, 2621899, 2620265
 Fax: 2621348, e-mail: eng@agcltd.com

DESIGN REVISION CONSULTANT:
LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE
 INDUSTRIAL ESTATE, MATHURA ROAD,
 NEW DELHI-110044

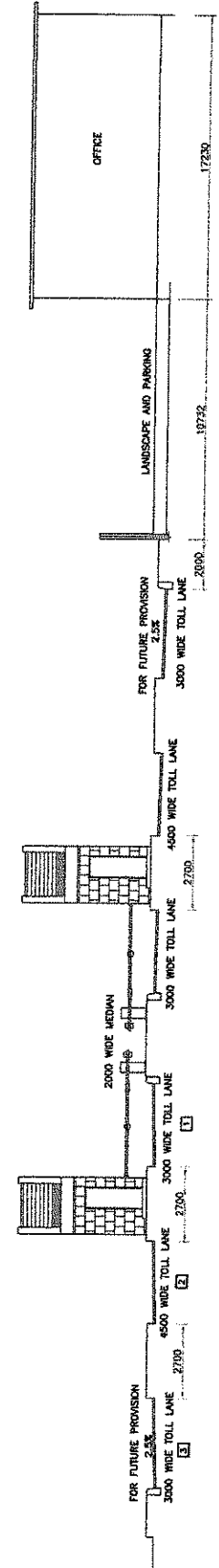
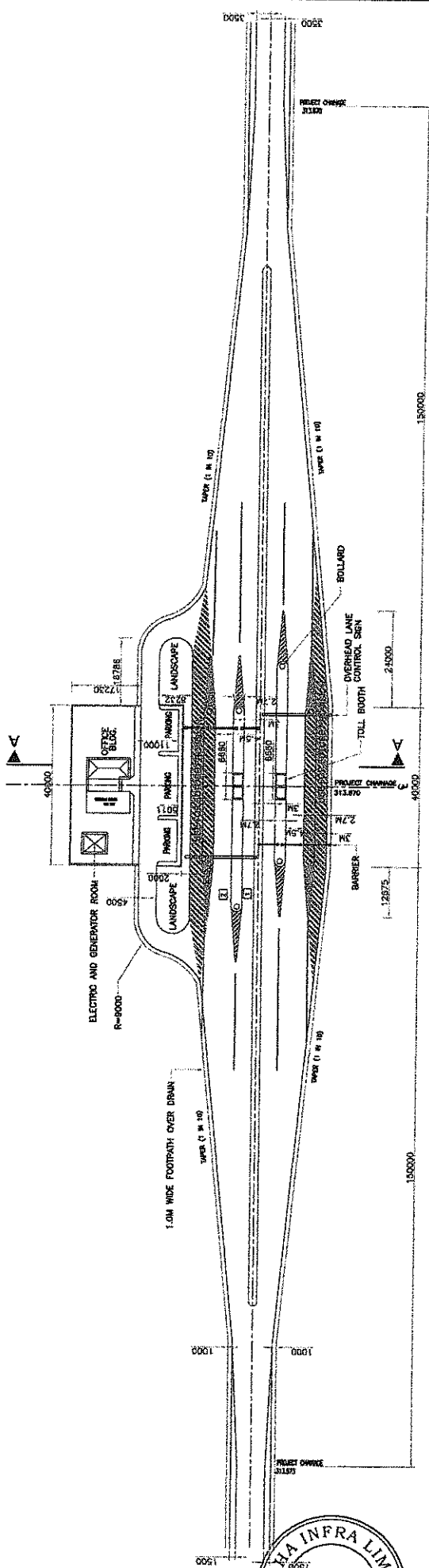
PROJECT: WIDENING AND STRENGTHENING OF EXISTING
 CARRIAGEWAY TO 2 LANE ROAD FROM
 NISCHINTAKOLI TO DUHURIA - KM 25+000 TO
 KM 49+000 (BALANCE WORK) PACKAGE NO. -
 POMA-2

CLIENT: ODISHA WORKS
 DEPARTMENT

DRAWING TITLE: TYPICAL DETAILS OF
 BUS BAY

DWG. NO.: 73488(LASAHIGHWAYS)MSC-23

(SHEET 2 OF 2)

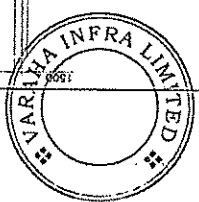


SECTION A-A
N.T.S

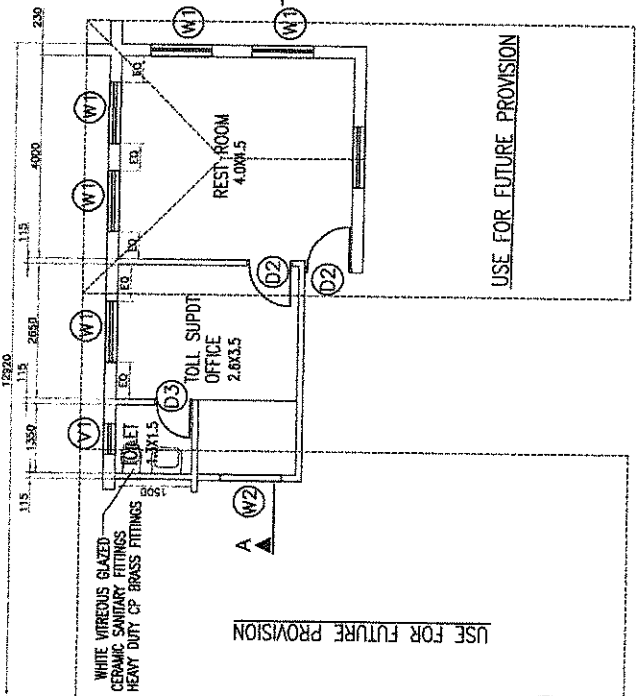
- RESERVED LANE FOR THROUGH TRAFFIC (VEHICLES WHO HAVE PAID TOLL AT PREVIOUS TOLL PLAZA)
 - ▨ GENERAL LANE
 - ▧ RESERVED LANE FOR MULTI AXLE VEHICLES
- NOTE:-
- * BITUMINOUS PAVEMENT SHOULD BE PROVIDED IN TOLL-LANES
 - * ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
 - * DIMENSIONS ARE NOT TO BE SCALED AND ONLY WRITTEN DIMENSIONS TO BE FOLLOWED

<p>PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NIBHCHRITAKOLL - DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2</p>		<p>SCALE: N.T.S.</p>	<p>CONTRACT TITLE: TYPICAL DETAILS OF TOLL PLAZA AT KM 31+330 TO 31+670 (TOLL PLAZA LAYOUT)</p>
<p>CLIENT: ODISHA WORKS DEPARTMENT</p>	<p>DESIGN REVIEW CONSULTANT: LEA Associates South Asia Pvt. Ltd, India B-1, E-27, 1st FLOOR, INDIAN CO-OPERATIVE INDUSTRIAL ESTATE, MATURBA ROAD, NEW DELHI-110044</p>	<p>DATE: 15.06.2017</p>	<p>NO. 1</p>
<p>CONSULTING ENGINEER: M.K. PRADHAN (SR)</p>	<p>DESIGNER: M.K. PRADHAN (SR)</p>	<p>DATE: 15.06.2017</p>	<p>NO. 2</p>
<p>PROJECT ENGINEER: M.K. PRADHAN (SR)</p>	<p>DESIGNER: M.K. PRADHAN (SR)</p>	<p>DATE: 15.06.2017</p>	<p>NO. 3</p>
<p>PROJECT ENGINEER: M.K. PRADHAN (SR)</p>	<p>DESIGNER: M.K. PRADHAN (SR)</p>	<p>DATE: 15.06.2017</p>	<p>NO. 4</p>

Soeiling Solutions



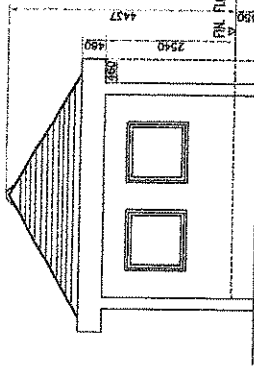
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSK



USE FOR FUTURE PROVISION

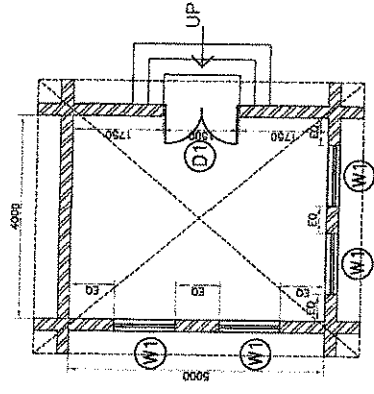
WHITE VITREOUS GLAZED CERAMIC SANITARY FITTINGS HEAVY DUTY CP BRASS FITTINGS

USE FOR FUTURE PROVISION

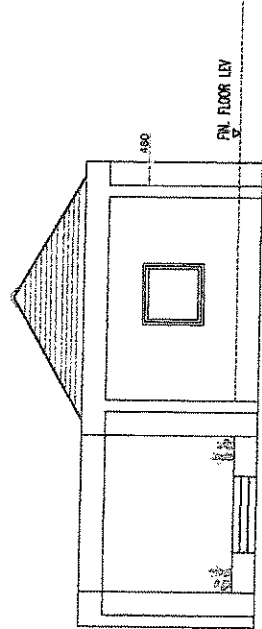


FRONT ELEVATION: ELECTRIC ROOM

(ALL FITTINGS/FIXTURE AS PER APPROVAL OF ENGINEERS)



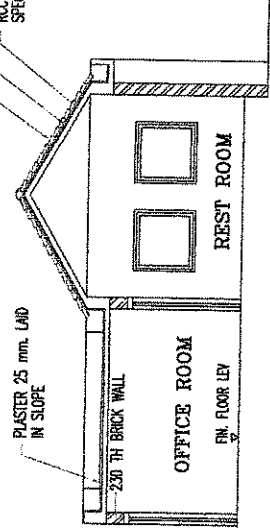
PLAN: ELECTRIC ROOM
(Plinth Area = 25 sq m)



FRONT ELEVATION: TOLL MAIN OFFICE

PLAN: TOLL MAIN OFFICE

CLAY TILES ON MORTAR BED (1:3) WATER PROOFING AS PER SPECIFICATIONS RCC SLAB AS PER SPECIFICATIONS



SECTION - AA

SCHEDULE OF DOORS & WINDOWS

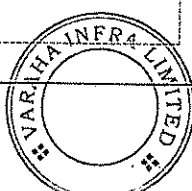
S. NO.	TYPE	WIDTH	HEIGHT	CILL LEV	LINTEL LEV
1.	D1	1500	2100	0.0	2100
2.	D2	900	2100	0.0	2100
3.	D3	750	2100	0.0	2100
4.	W1	1200	1200	+900	2100
5.	W2	900	1200	+900	2100
6.	V1	600	600	+1500	2100

USE FOR FUTURE PROVISION

OFFICE ROOM

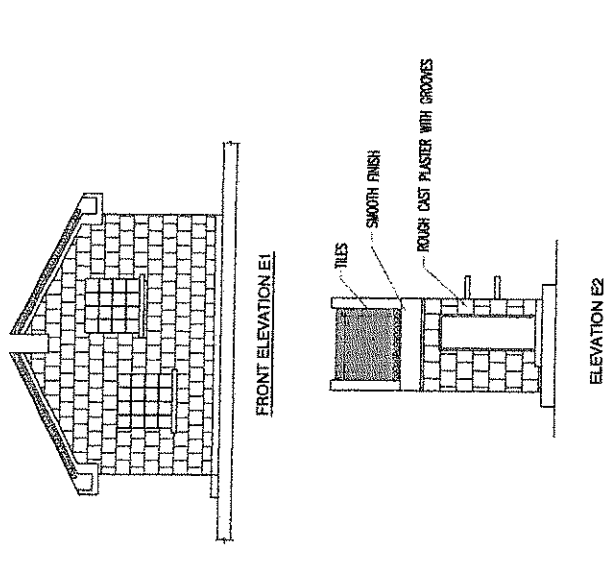
REST ROOM

Soe bin Singh Solanki



Chief Engineer
World Bank
O/o the E.I.C.(C), Odisha

DATE: 15.01.2015	BY: [Signature]	APPROVED: [Signature]	PREPARED: [Signature]	CHECKED: [Signature]	DATE: 15.01.2015
DESIGNER: [Signature]	DRYING: [Signature]	ESTIMATION: [Signature]	ESTIMATION: [Signature]	ESTIMATION: [Signature]	ESTIMATION: [Signature]
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARBONWAY TO ZLAINE ROAD FROM NISHCHINTAKOLI - DUDHURA (NH 23) TO NH 49/1000 (BALANCE WORK) PACKAGE - P04A-2	CLIENT: ODISHA WORKS DEPARTMENT	DESIGNER: LEA Associates South Asia Pvt. Ltd., In-charge B-1, 5 th floor, Mohan Cooperative Market, State, Mathura Road, New Delhi - 110044	CONSULTANT: ENGINEERS GROUP LTD. 15-12, MOULI COLONY, MALVIYA NAGAR, APARAJIT, Patna - 801 004, Phone: 061-2522656 Fax: 252 1046, Email: engg@egpltd.com	REVIEWER: [Signature]	DATE: 15.01.2015
SCALE: N.T.S.	PROJECT TITLE: TOLL PLAZA AT KM 31+330 TO 31+570 (TOLL PLAZA LAYOUT)	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARBONWAY TO ZLAINE ROAD FROM NISHCHINTAKOLI - DUDHURA (NH 23) TO NH 49/1000 (BALANCE WORK) PACKAGE - P04A-2	CLIENT: ODISHA WORKS DEPARTMENT	DESIGNER: LEA Associates South Asia Pvt. Ltd., In-charge B-1, 5 th floor, Mohan Cooperative Market, State, Mathura Road, New Delhi - 110044	CONSULTANT: ENGINEERS GROUP LTD. 15-12, MOULI COLONY, MALVIYA NAGAR, APARAJIT, Patna - 801 004, Phone: 061-2522656 Fax: 252 1046, Email: engg@egpltd.com
CHECK NUMBER: 73468/LAS/HR/HWA/S/MS/EC-24	DATE: 15.01.2015	DATE: 15.01.2015	DATE: 15.01.2015	DATE: 15.01.2015	DATE: 15.01.2015



Specifications for Toll Plaza

- 1. Foundation
 - RCC of M20 grade for Raft/ Footing/ Pedestal , columns and plinth band
 - Filling with sand
 - Anthermite treatment
 - Damp Proof Course
- 2. Super structure
 - Walls with brick work in cement mortar 1:5
 - RCC continuous lintels in M20
 - Slab and Beams in RCC of M20 grade
 - External plaster 25mm thick in C.M. 1:6
 - Exterior Acrylic emulsion painting
 - Interior Acrylic emulsion painting
- 3. Finishing
 - Vitrified floor tiles of size 605mm x 605mm (double charged)
- 4. Manufacturer's Materials
 - Reinforcing steel , structural steel, cement, paints to be approved by Engineer before use in the works and Manufacturer's Test Certificate to be produced for each batch of supply
- 5. Other materials
 - Materials such as sand, stone aggregate, earth to pass the acceptance criteria
- 6. Fabricated Materials
 - Materials for shutters, grills and similar items will be as per technical specifications
- 7. Fittings and Fixtures
 - Sanitary fittings , electrical fittings, hardware fittings and all such materials have to be approved by the Engineer
- 8. Doors:
 - One side Teak veneer Flush Doors of thickness 35mm conforming to IS 2202(Part-I), 1999
- 9. Windows:
 - Anodized Aluminium Window frames and shutters conforming to IS-1081, with 3mm thick glazing and MS grills in the masonry opening.
- 10. Reinforcement
 - All reinforcements shall conform to Grade Fe-500 of IS-4786

SCHEDULE OF DOORS & WINDOWS

S. NO	TYPE	MASONRY OPENING WIDTH	HEIGHT	CILL LEV	LUNTEL LEV
1.	D1	800	2100	00	2100
2.	W1	1200	1200	900	1800
3.	W2	1200	1200	1650	3300

PROJECT: WIDEBANE AND STRENGTHENING OF EXISTING CABRIAGEWAY TO 2 LANE FROM 4 LANE HIGHWAY AT DURGAPURA, KM 28+000 TO KM 28+000 (BALANCE WORK) PACKAGE - P04A-2

CLIENT: ODISHA WORKS DEPARTMENT

DESIGN CONSULTANT: LEA Associates South Asia Pvt. Ltd., India
 101, 1st Floor, Mohan Cooperative Market, Indraprastha, Anandapur, Delhi-110044

DATE: 14/02/2019

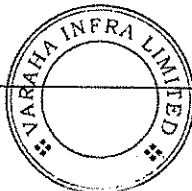
DATE	BY	PREPARED	CHECKED	APPROVED
14/02/2019	SV	SV	SV	SV

TITLE: TYPICAL DETAILS OF TOLL PLAZA AT KM 31+330 TO 31+670 (TOLL PLAZA LAYOUT)

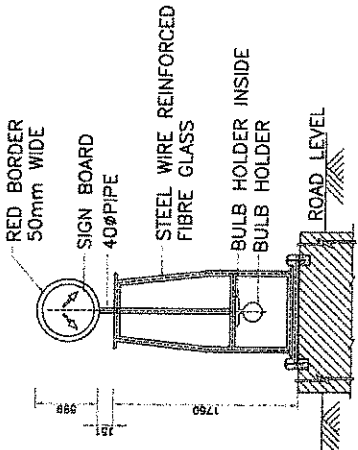
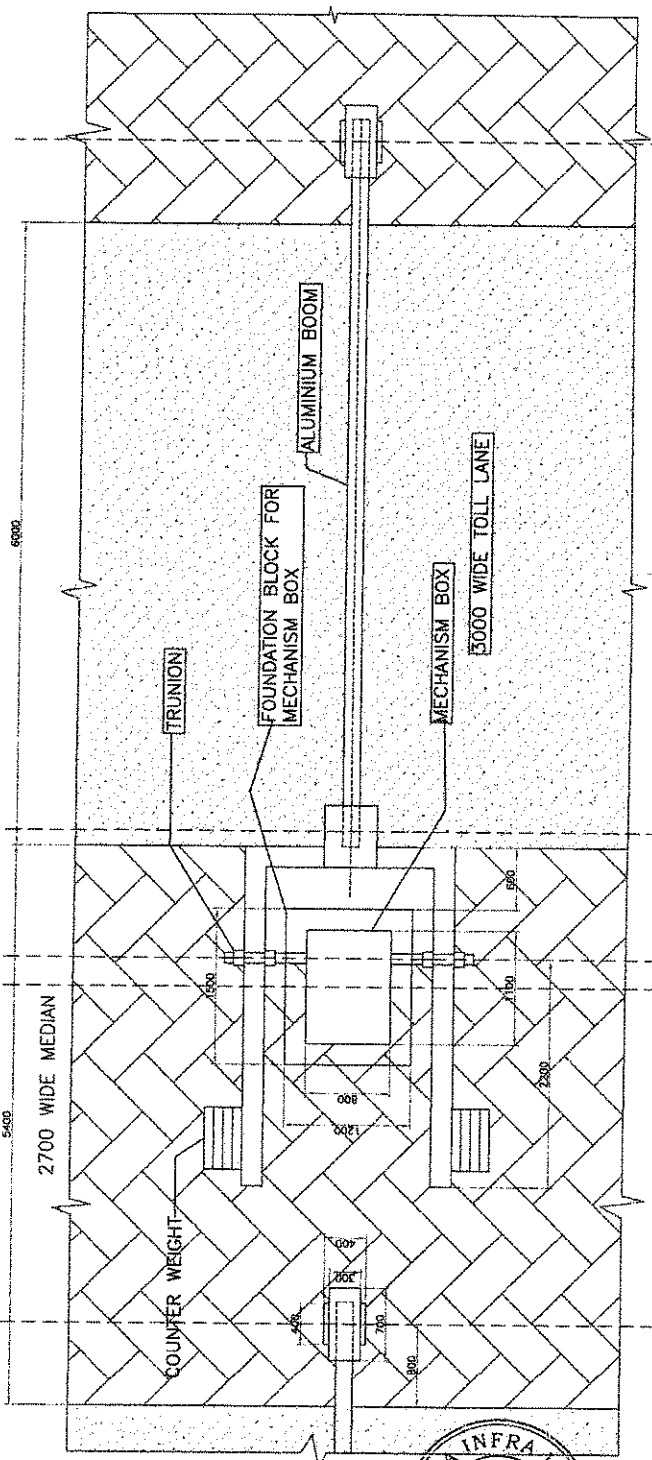
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SHEET 3 OF 8

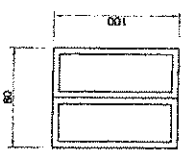
Sanjay Singh Solanki



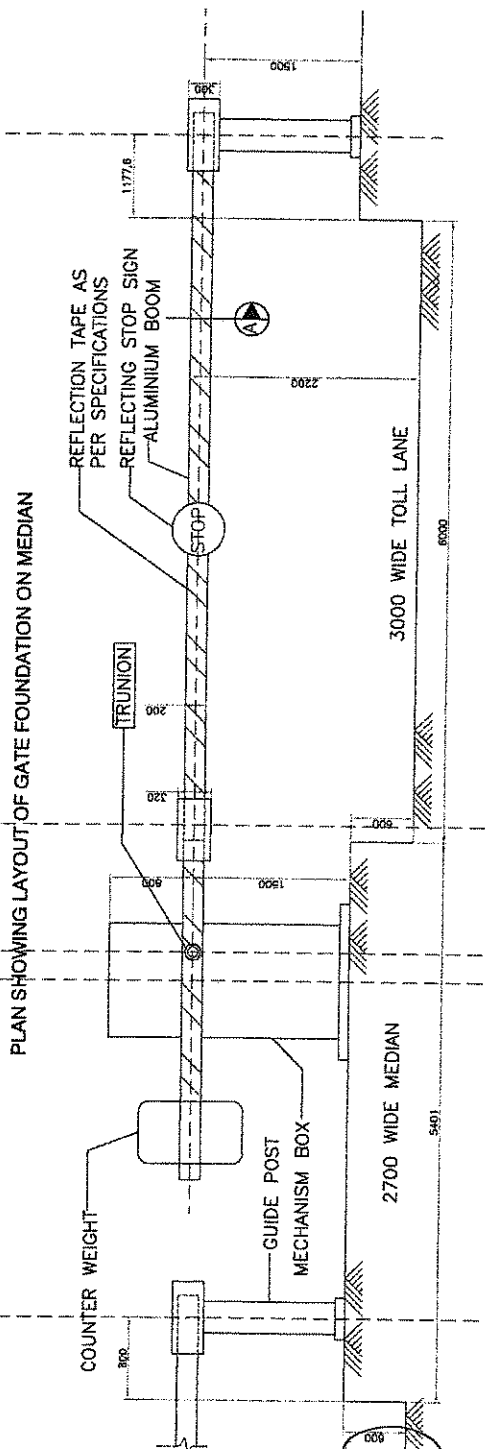
Chief Engineer
World Bank Project
On the E.I.C.C., Odisha, BBSR



TYPICAL DETAILS OF BOLLARD



DETAIL A



ELEVATION

PLAN SHOWING LAYOUT OF GATE FOUNDATION ON MEDIAN

Sudhanshu Solanki



Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

NO.	DATE	REVISION	BY	CHKD	APPROVED
1		ORIGINAL			
2		FOR SIGNATURE			
3		FOR SIGNATURE			
4		FOR SIGNATURE			
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6		FOR SIGNATURE			
7		FOR SIGNATURE			
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DRAWING TITLE: TYPICAL DETAILS OF TOLL PLAZA AT KM 31+330 TO 31+870 (TOLL PLAZA LAYOUT)

SCALE: N.T.S.

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 3 LANE WITH MISCHINTAROLI-DHURURIA KM 28+100 TO KM 38+100 (BALANCE WORKS) PACKAGE - P04A-2

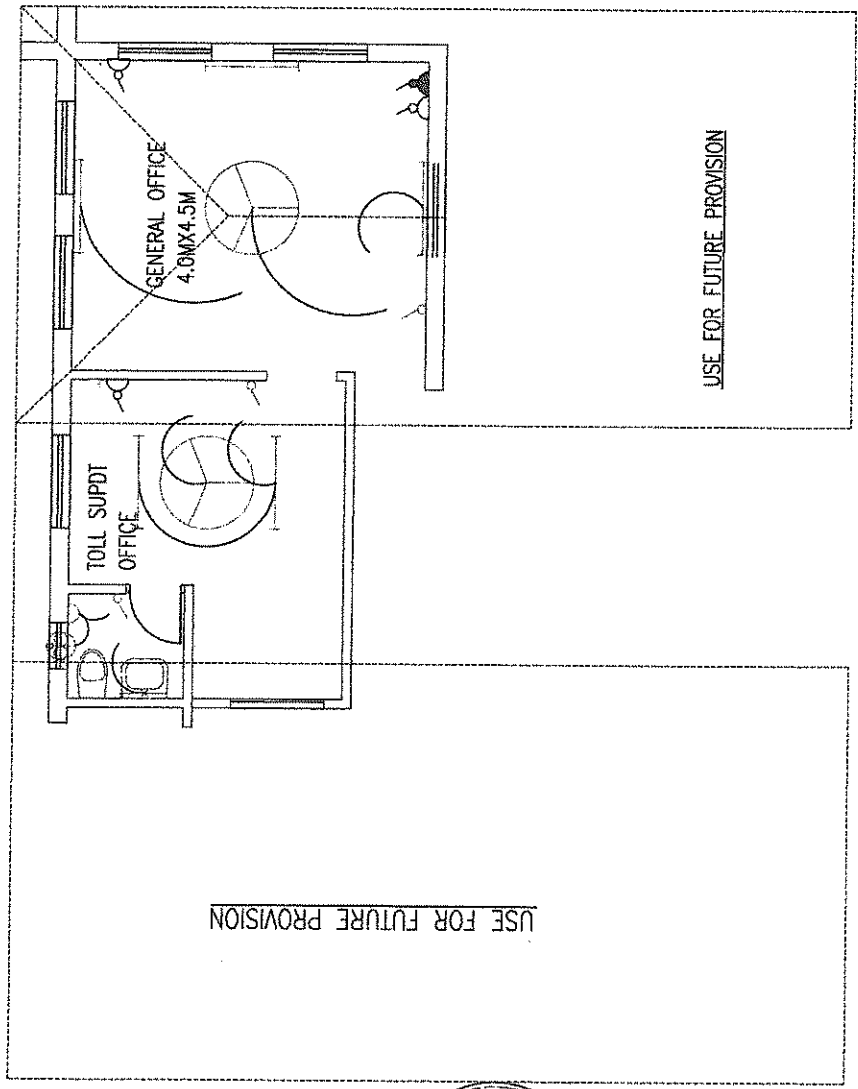
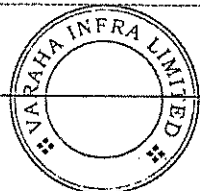
CLIENT: ODISHA WORKS DEPARTMENT

CONSULTANT: LEA ASSOCIATES SOUTH ASIA PVT. LTD., INDIA
B-1, E-27, 1st FLOOR, MOHAN CO-OPERATIVE SOCIETY, INDUSTRIAL ROAD, NEW DELHI-110041

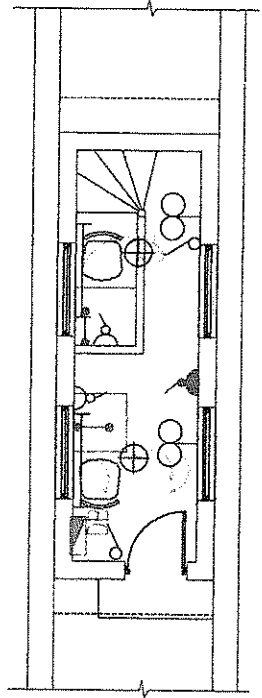
DRAWING NO: Z1468(LASAR)HIGHWAYS/MISC-24

SHEET 4 OF 8

Prasanna Kumar Singh



ELECTRICAL LAYOUT: TOLL PLAZA MAIN OFFICE



ELECTRICAL LAYOUT: TOLL BOOTH

LEGEND

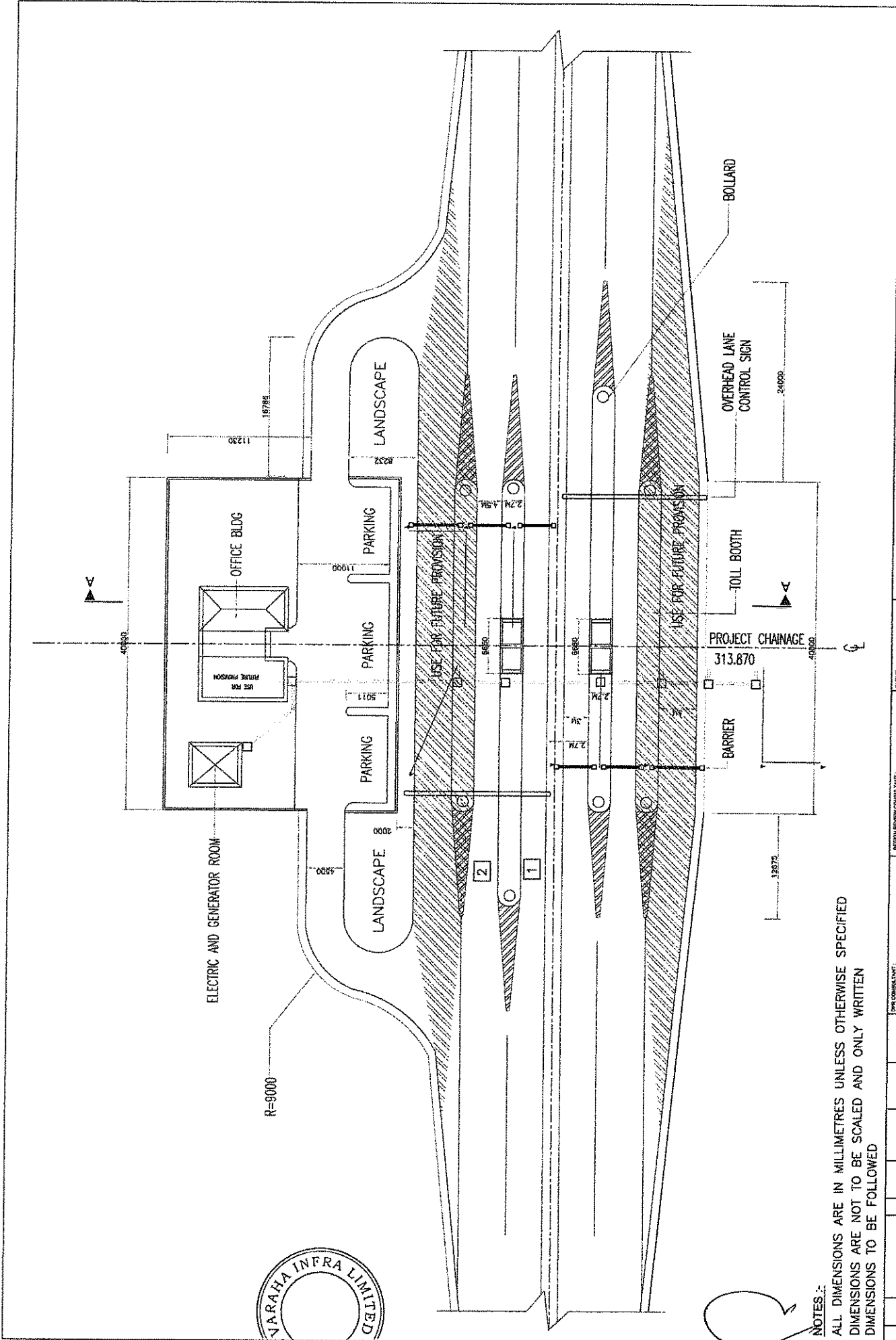
- 5 A ONE WAY SWITCH/SWITCH BOARD (1000 MM FROM FFL)
- 5 A TWO WAY SWITCH/SWITCH BOARD (1000 MM FROM FFL)
- 5 A SOCKET WITH SWITCH (150 MM FROM FFL)
- 15 A POWER SOCKET WITH SWITCH (150 MM FROM FFL)
- GEYSER 15 A SOCKET
- 15 A SWITCH FOR GEYSER
- 25 A A/C OUTLET (150 MM FROM FFL)
- 5 A LIGHT PLUG WITHOUT SWITCH FOR EXHAUST FAN (1800 MM FROM FFL)
- TELEPHONE OUTLET (150 MM FROM FFL)
- TV OUTLET (150 MM FROM FFL)
- CALL BELL SWITCH (1000 MM FROM FFL)
- BELL BUZZER (2100 MM FROM FFL)
- CEILING LIGHT
- BRACKET LIGHT (2100 MM FROM FFL)
- MIRROR LIGHT
- 1 x 36 W SINGLE TUBE LIGHT
- EXHAUST FAN
- DISTRIBUTION BOARD
- CEILING FAN

Sl. No.	DATE	REVISION	BY	CHKD	APPD	DESIGNER	APPD	DESIGNER	APPD
1	12/01/2020		BY	CHKD	APPD				
2	12/01/2020		BY	CHKD	APPD				
3	12/01/2020		BY	CHKD	APPD				
4	12/01/2020		BY	CHKD	APPD				

CLIENT: ODISHA WORKS DEPARTMENT	PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 10.5 M FROM DISCHHANTAKOLI - DURIHURA KM 28+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2	SCALE: N.T.S.	DRAWING TITLE: TOLL PLAZA AT KM 31+330 TO 31+670 (TOLL PLAZA LAYOUT)
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DESIGNER: LEA Associates South Asia Pvt. Ltd., India B-1, B-7, 1st FLOOR, MOHAN CO-OPERATIVE SOCIETY, MATTARA ROAD, NEW DELHI-110044	DESIGN CONSULTANT: CONSULTING ENGINEERS GROUP LTD. E-14, KAJI COLONY, MALVIYA NAGAR, JAIPUR-31 Tel: +91-141-2522993, 2521896, 2522659 Fax: 2521544, Email: ceg@engineersgroup.com
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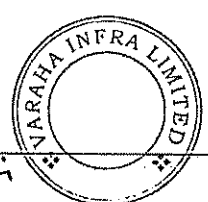
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NH DUDHURA KM 25+00 TO KM 48+00 (BALANCE WORK) PACKAGE - P04A-2		SCALE: N.T.S.	DRIVING TITLE: TYPICAL DETAILS OF TOLL PLAZA AT KM 31+330 TO 31+670 (TOLL PLAZA LAYOUT)
CLIENT: ODISHA WORKS DEPARTMENT		DATE NUMBER: 73406LASAHIGHWAYSMSC-24	
DESIGN CONSULTANT: C O N S U L T I N G ENGINEERS GROUP LTD. E-12, 1st FLOOR, MOHAN CO-OPERATIVE SOCIETY, MATRUHA ROAD, NEW DELHI-110044		DATE: 12/08/20	
APPROVED: PREPARED: CHICKLER		DATE: 12/08/20	
REVISIONS: NO. 01 DATE 12/08/20 BY CHICKLER ORIGINAL NO. 02 DATE 12/08/20 BY CHICKLER FIRST REVISION NO. 03 DATE 12/08/20 BY CHICKLER SECOND REVISION		NO. 01 NO. 02 NO. 03	

NOTES:-
 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE NOT TO BE SCALED AND ONLY WRITTEN
 DIMENSIONS TO BE FOLLOWED

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

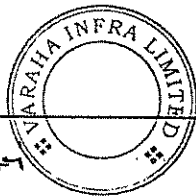


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PLAN & PROFILE

(KM 25+000 TO 49+000)

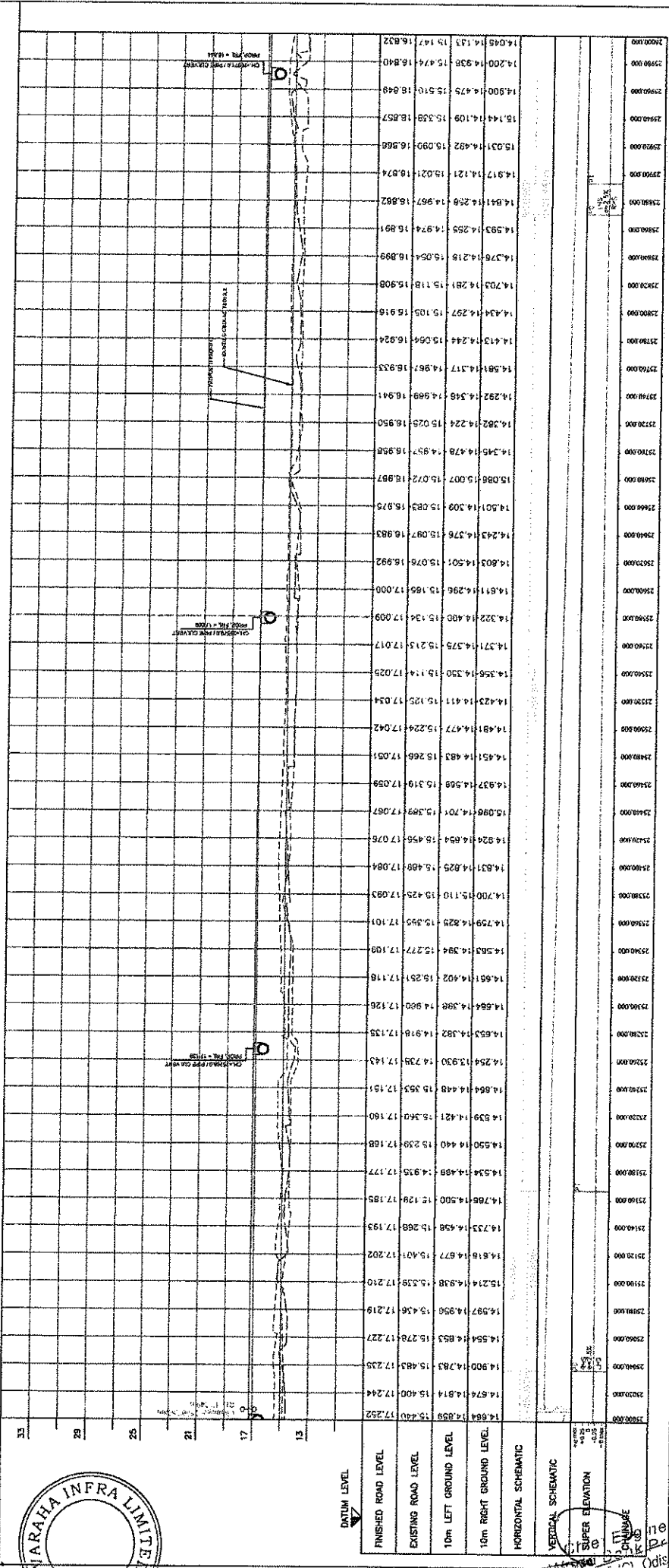
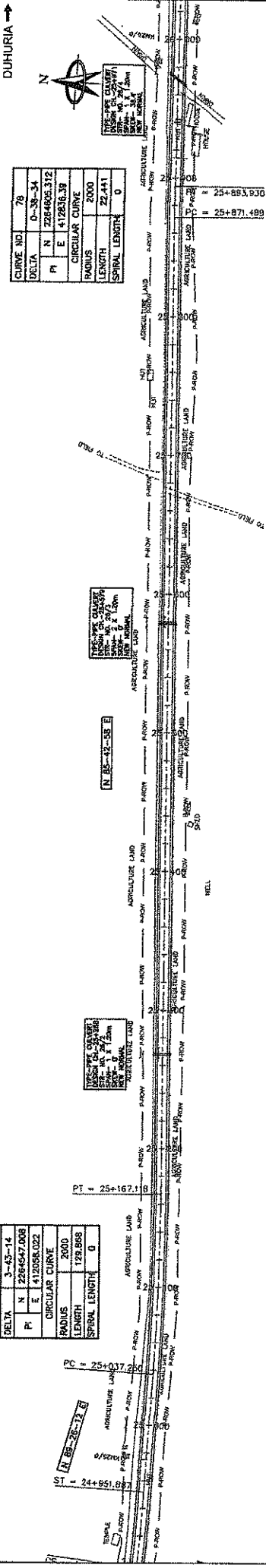
Saie Singh



[Signature]

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

NISHCHINTAKOILI



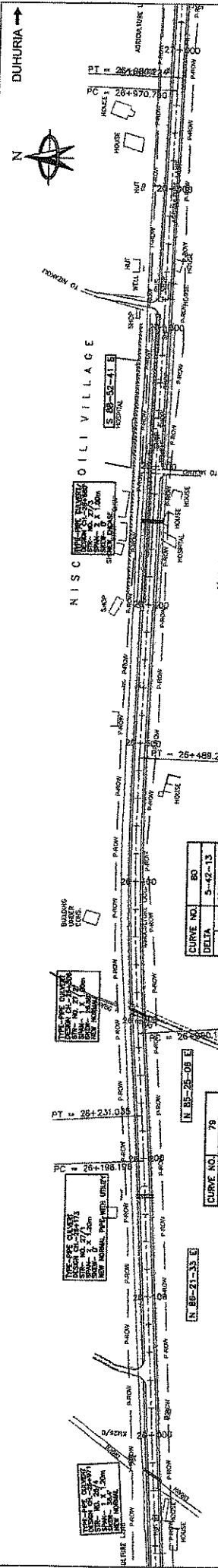
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34	10/06/2024	SAHIL	REVISED
35	10/06/2024	SAHIL	REVISED

DESIGN REVISION CONSULTANT	ODISHA WORKS DEPARTMENT
PROJECT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2
SCALE	HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5
DRAWING TITLE	PLAN & PROFILE KM 25+000 TO 26+000
DATE	10/06/2024
DRW. NO.	75466LSA/HIGHWAY/SPP-26

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NISHCHINTAKOILI



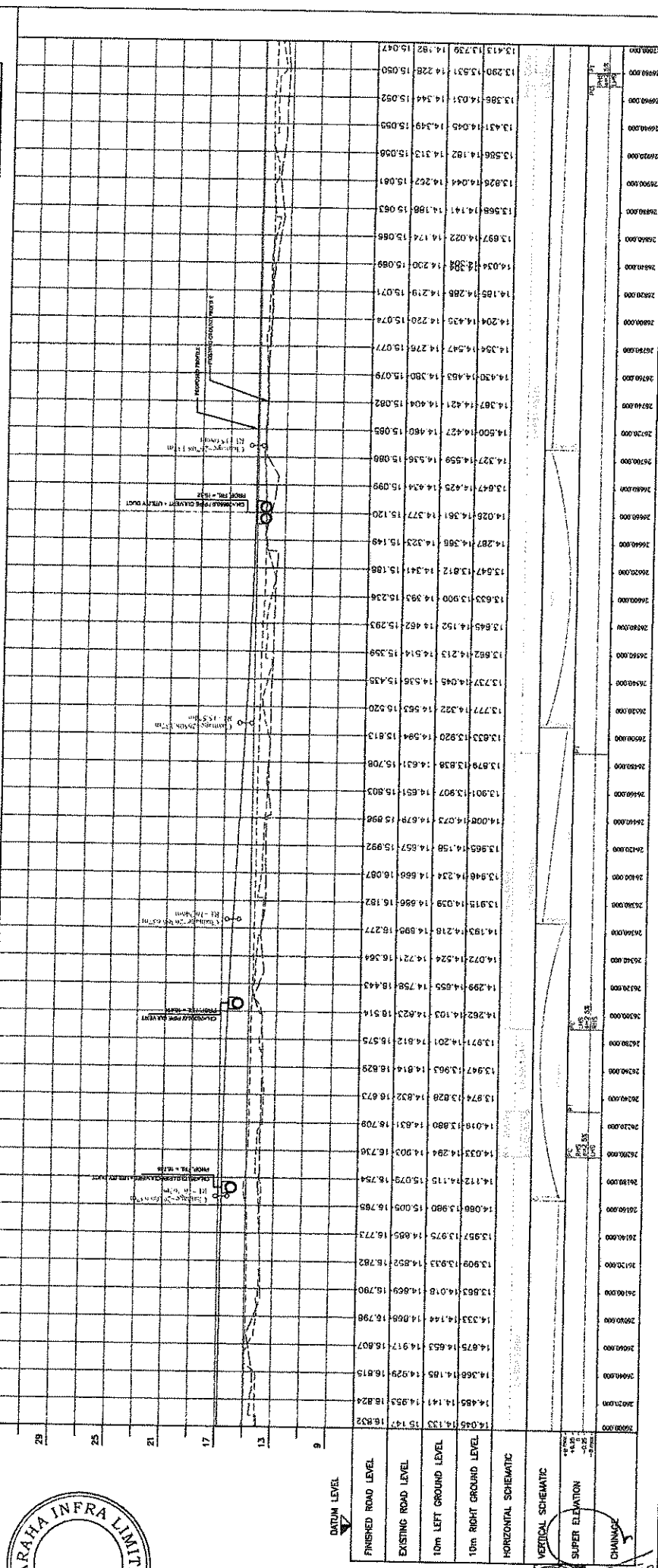
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PI	N 2264625.973
E	E 413277.981
CIRCULAR CURVE	
RADIUS	2000
LENGTH	9.473
SPIRAL LENGTH	D

CURVE NO.	80
DELTA	3-42-13
PI	N 2284940.385
E	E 413342.27
CIRCULAR CURVE	
RADIUS	2000
LENGTH	199.084
SPIRAL LENGTH	D

CURVE NO.	78
DELTA	0-59-47
PI	N 2264625.389
E	E 413197.527
CIRCULAR CURVE	
RADIUS	2000
LENGTH	32.838
SPIRAL LENGTH	D

N 85-21-33.5

N 85-25-08.6



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
13.413	13.739	14.228	14.344	15.052
13.290	13.531	14.228	14.344	15.052
13.385	14.031	14.344	14.349	15.052
13.431	14.045	14.349	14.313	15.058
13.586	14.182	14.313	14.252	15.061
13.828	14.044	14.252	14.198	15.063
13.568	14.141	14.198	14.174	15.068
13.697	14.022	14.174	14.230	15.089
14.034	14.388	14.230	14.219	15.071
14.185	14.288	14.219	14.220	15.076
14.204	14.426	14.220	14.276	15.077
14.394	14.547	14.276	14.380	15.079
14.430	14.483	14.380	14.404	15.082
14.387	14.421	14.404	14.460	15.085
14.500	14.427	14.460	14.536	15.088
14.327	14.559	14.536	14.634	15.099
13.847	14.425	14.634	14.777	15.120
14.028	14.361	14.777	14.323	15.149
14.287	14.356	14.323	14.341	15.168
13.847	13.812	14.341	14.393	15.236
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13.645	14.192	14.462	14.514	15.359
13.682	14.213	14.514	14.536	15.435
13.737	14.045	14.536	14.583	15.520
13.777	14.322	14.583	14.594	15.613
13.833	13.920	14.594	14.631	15.708
13.878	13.838	14.631	14.679	15.803
13.901	13.907	14.679	14.679	15.898
14.008	14.073	14.679	14.657	15.992
13.965	14.158	14.657	14.666	16.087
13.946	14.234	14.666	14.686	16.182
13.915	14.038	14.686	14.721	16.277
14.193	14.218	14.690	14.724	16.368
14.072	14.524	14.724	14.758	16.443
14.299	14.655	14.758	14.823	16.516
14.824	14.103	14.823	14.812	16.575
13.971	14.201	14.812	14.814	16.629
13.947	13.963	14.814	14.832	16.673
13.874	13.828	14.832	14.831	16.708
14.018	13.880	14.831	14.803	16.736
14.033	14.284	14.803	14.803	16.754
14.172	14.115	14.803	14.805	16.785
14.068	13.980	14.805	14.855	16.773
13.957	13.975	14.855	14.852	16.782
13.908	13.933	14.852	14.859	16.790
13.883	14.018	14.859	14.858	16.798
14.333	14.144	14.858	14.917	16.807
14.875	14.653	14.917	14.929	16.815
14.366	14.185	14.929	14.935	16.824
14.485	14.141	14.935	14.935	16.832
14.045	14.133	14.935	14.935	16.832

PLAN & PROFILE
KM 26+000 TO 27+000

SCALE: 1:25
HORIZONTAL SCALE
1:2.5
VERTICAL SCALE

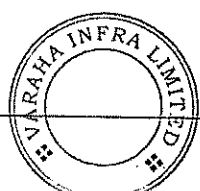
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CASSEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2

CLIENT: ODISHA WORKS DEPARTMENT

PERFORMER CONSULTANT: LEA Associates South Asia Pvt. Ltd., India B-1, 6th Floor, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044

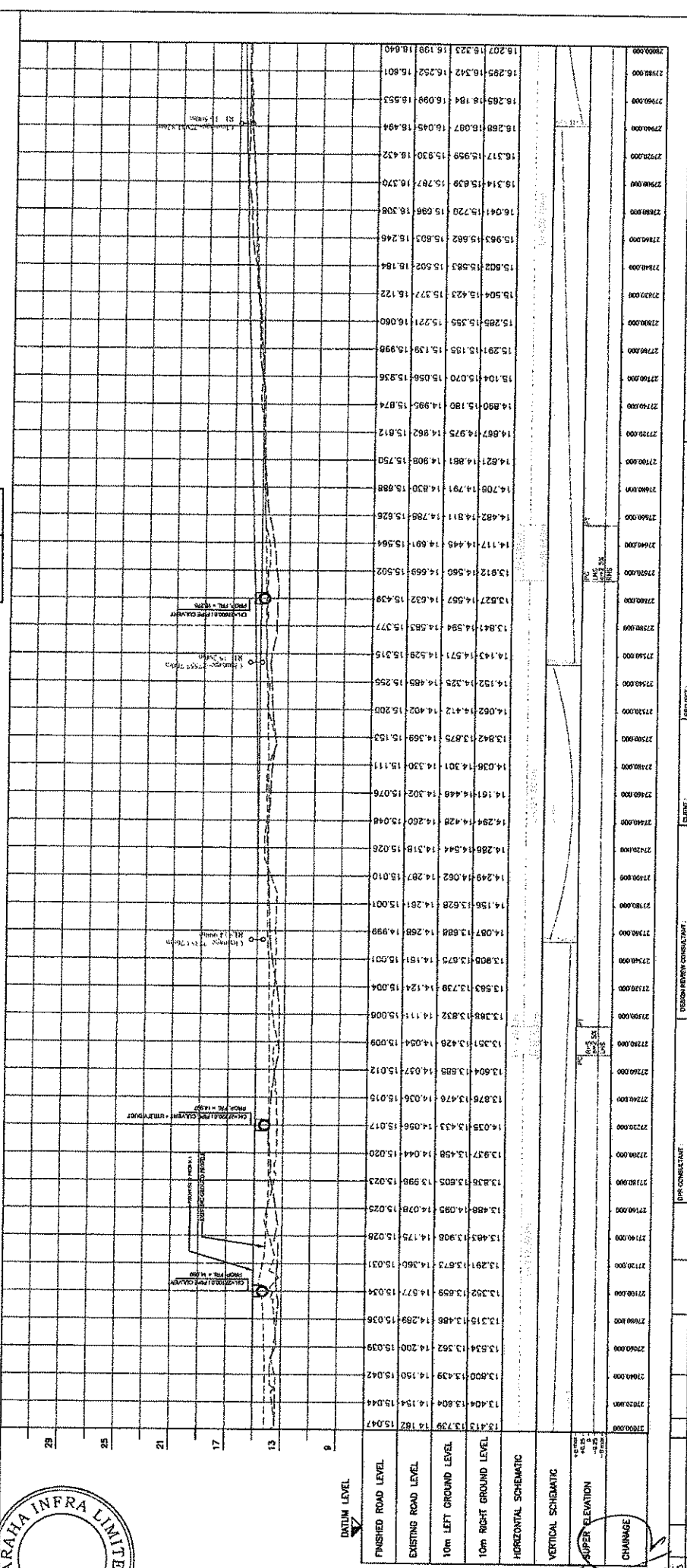
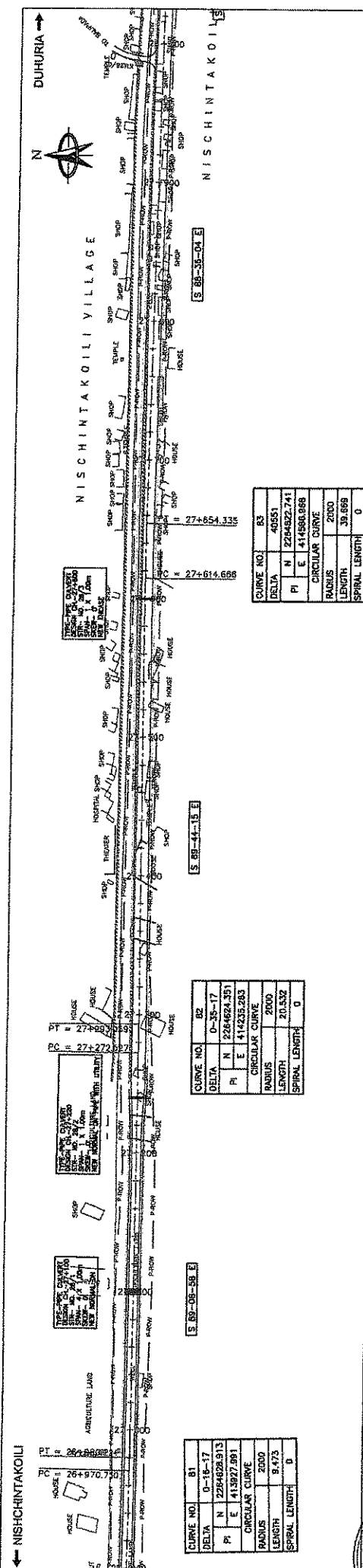
DRP CONSULTANT: ENGINEERS GROUP LTD., E-2, JOKI COLONY, ANULYA, MANGAL JAJPUR-751007 Tel: +91-141-2528289, 2521889, 2529558 Fax: 2521246, e-mail: esg@engineersindia.com

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Sankar Solanki

World Bank
O/G E.I.C.(C), Odisha, BBSR



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PLAN & PROFILE
KM 27+000 TO 28+000
 DRAWING TITLE:

SCALE: 1:500
 HORIZONTAL SCALE: 1cm = 25m
 VERTICAL SCALE: 1cm = 2.5m

WIDENING AND STRENGTHENING OF EXISTING
CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI -
DURHURIA KM 25+000 TO KM 48+000 (BALANCE WORK)
 PACKAGE - PMA-2

ODISHA WORKS
DEPARTMENT

DESIGN CONSULTANT:
CONSU LTING
ENGINEERS GROUP LTD.
 E-24/03 COLONY, JALUWA, BANGALORE-56
 Tel: 91-81-4222888, 2621888, 2620556 Fax:
 2621348, E-mail: cag@engineersindia.com

DESIGN REVIEW CONSULTANT:
LEA Associates South Asia Pvt. Ltd., India
 B-1, E-27, IIIrd FLOOR, MOHAN COOPERATIVE
 INDUSTRIAL ESTATE, MATURHA ROAD, NEW
 DELHI-110044

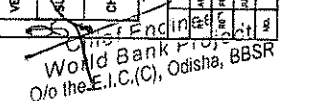
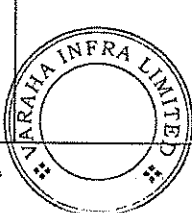
PROJECT:
 WIDENING AND STRENGTHENING OF EXISTING
 CARRIAGEWAY TO 2 LANE ROAD FROM NISCHINTAKOILI -
 DURHURIA KM 25+000 TO KM 48+000 (BALANCE WORK)

CLIENT:
 ODISHA WORKS DEPARTMENT

DATE: 27-07-2018

REVISIONS:

Nischintakoli



NISHCHINTAKOILI

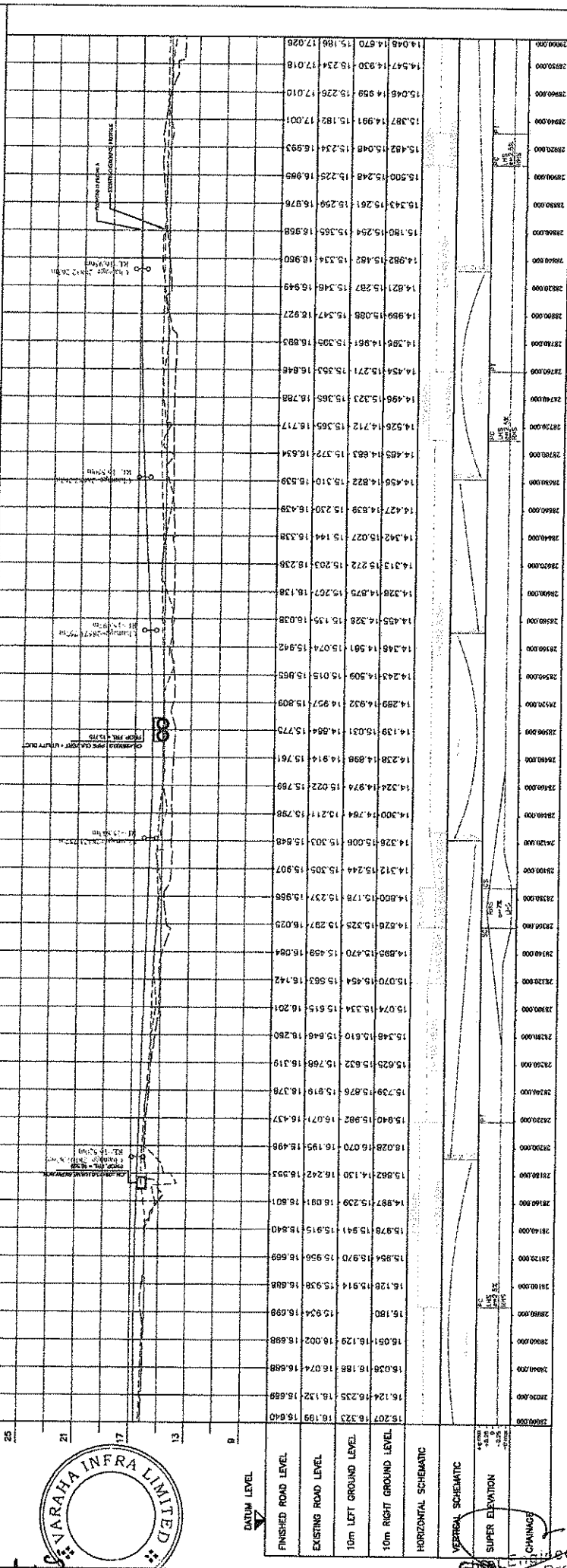
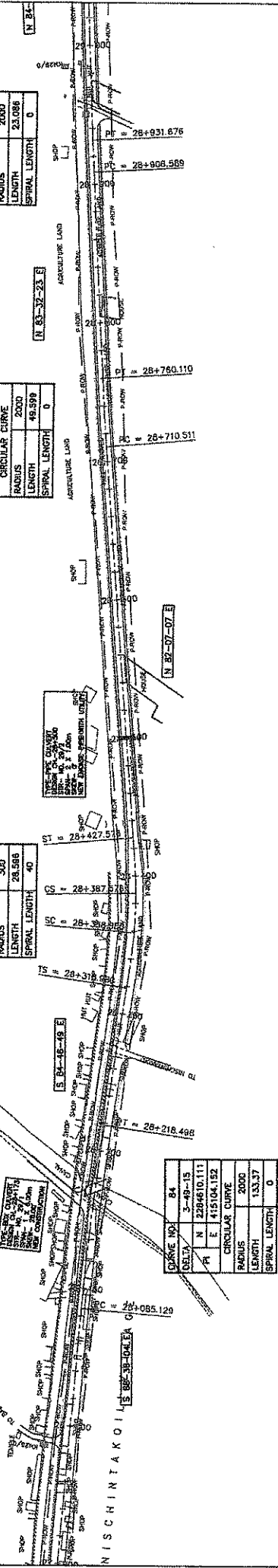
DUHURIA

CURVE NO.	65
DELTA	13-08-03
PI	N 2284589.946
E	415324.695
CIRCULAR CURVE	
RADIUS	500
LENGTH	28.588
SPRAL LENGTH	40

CURVE NO.	66
DELTA	42038
PI	N 2284636.672
E	415885.08
CIRCULAR CURVE	
RADIUS	2000
LENGTH	48.599
SPRAL LENGTH	0

CURVE NO.	67
DELTA	0-39-41
PI	N 2284660.408
E	415887.33
CIRCULAR CURVE	
RADIUS	2000
LENGTH	23.086
SPRAL LENGTH	0

CURVE NO.	64
DELTA	3-49-15
PI	N 2284610.111
E	415104.132
CIRCULAR CURVE	
RADIUS	2000
LENGTH	133.37
SPRAL LENGTH	0



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VARAHA INFRA LIMITED

CONSULTING ENGINEERS GROUP LTD.
E-12, KAJI COLONY, MALVIYA NAGAR, JAIPUR-31
Tel: +91-141-2620659, 2621889, 2626556 Fax: 2627346, e-mail: eng@vgilife.com

ODISHA WORKS DEPARTMENT

WIDENING AND STRENGTHENING OF EXISTING CARROWAY TO LANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 28+000 TO KM 49+000 (BALANCE WORK)
PACKAGE - PWA-2

PLAN & PROFILE
KM 28+000 TO 29+000

DATE: 15/05/2013

SCALE: HORIZONTAL SCALE 1:250, VERTICAL SCALE 1:50

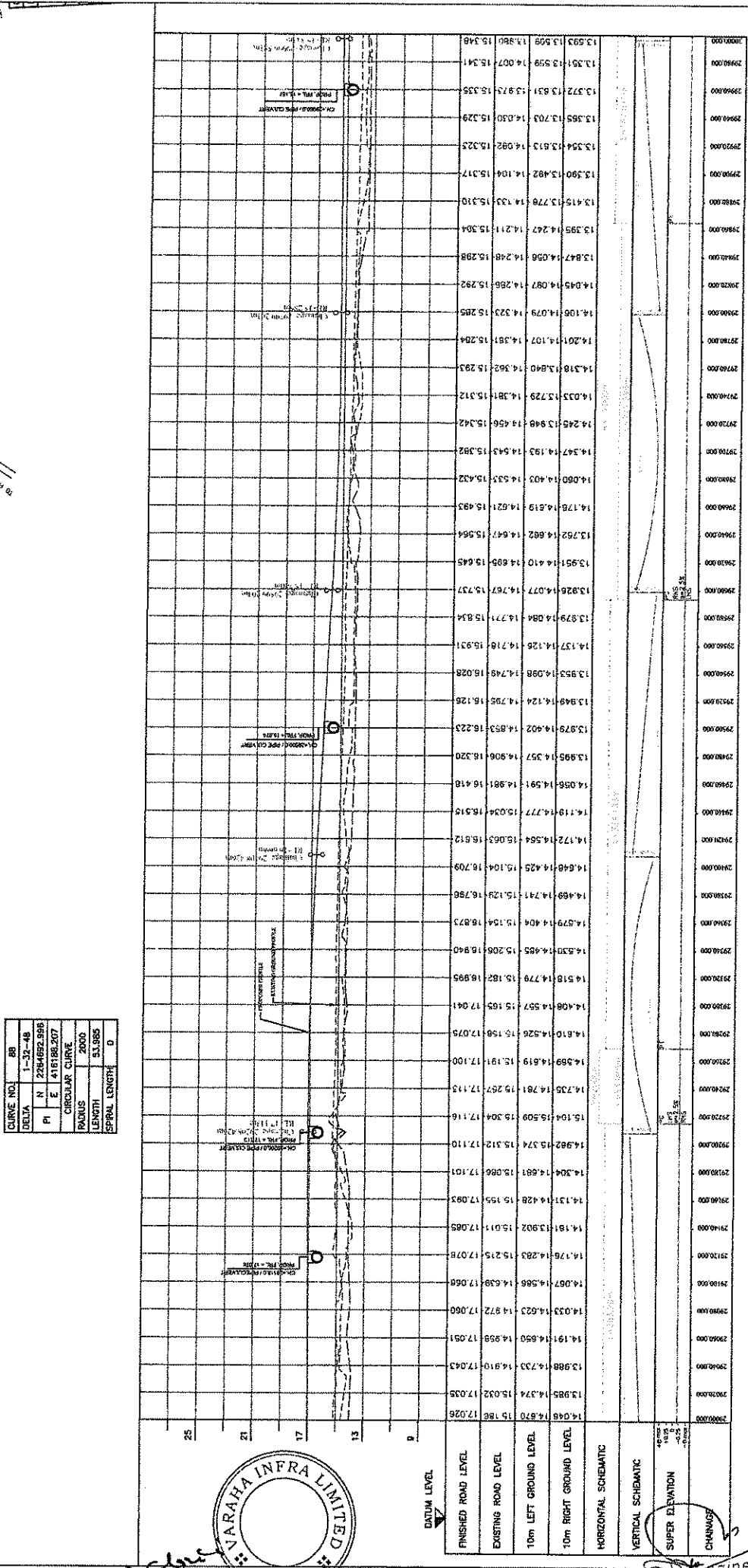
DUHURIA →



CURVE NO.	6B
DELTA	7-46-19
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PI	E 418673.85
CIRCULAR CURVE	
RADIUS	2000
LENGTH	271.298
SPIRAL LENGTH	0

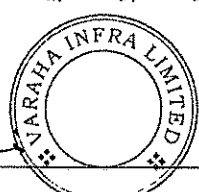
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DELTA	1-32-48
PI	N 2284652.968
PI	E 418188.207
CIRCULAR CURVE	
RADIUS	2000
LENGTH	51.985
SPIRAL LENGTH	0

CURVE NO.	67
DELTA	0-39-41
PI	N 2284660.468
PI	E 415867.33
CIRCULAR CURVE	
RADIUS	2000
LENGTH	23.088
SPIRAL LENGTH	0



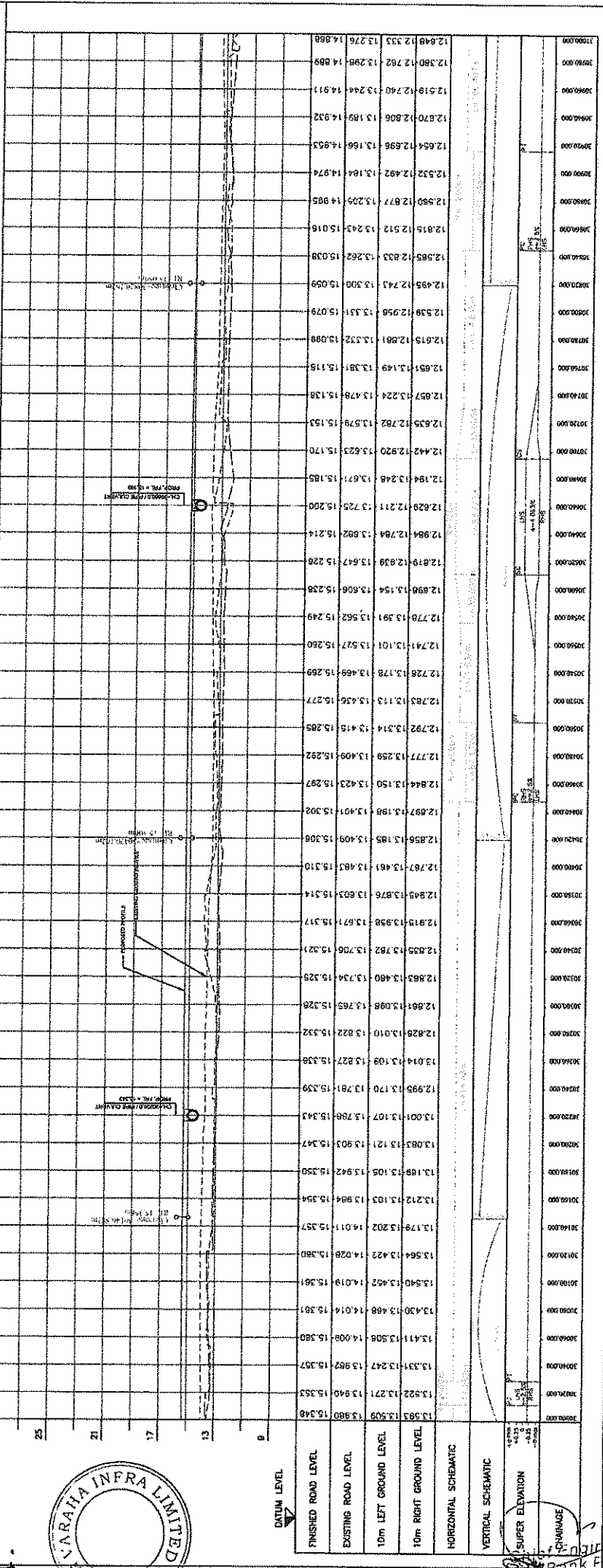
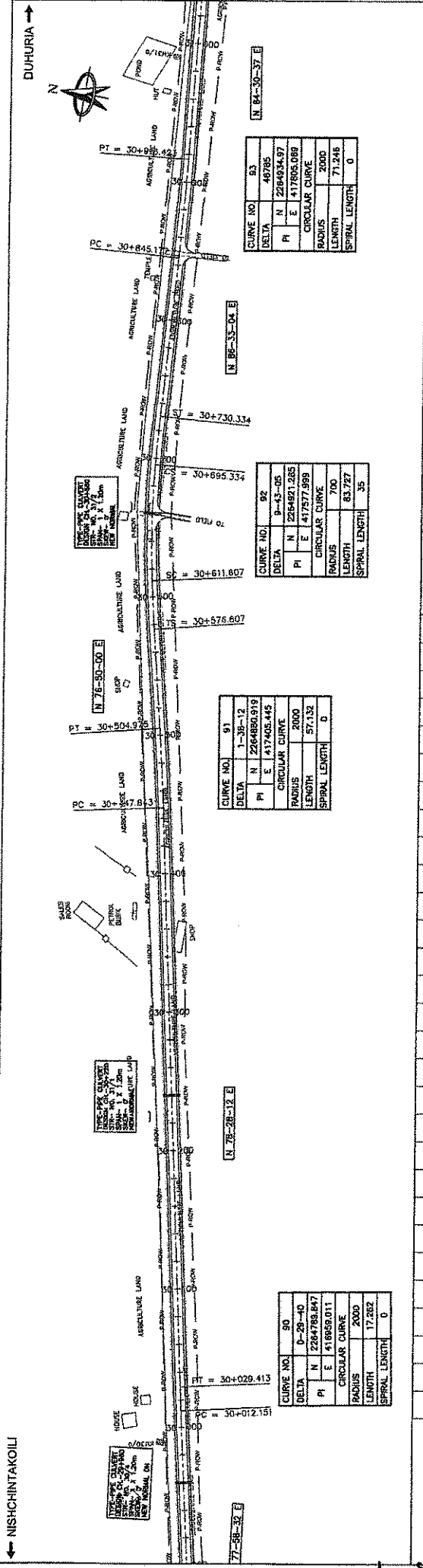
NO.	DATE	REVISION	BY	CHECKED	APPROVED
1	JUN 2009	ORIGINAL	CEJ		
2	JAN 2010	REVISION			
3	FEB 2010	FIRST REVISION			
4	AUG 2010	SECOND REVISION			
5					

DESIGN POWER CONSULTANT:	LEA Associates South Asia Pvt. Ltd., India B-1, 527, 1st FLOOR, MOHAN COOPERATIVE ESTATE, MATRUHA ROAD, NEW DELHI-110044
CONSULTING ENGINEERS GROUP LTD.	12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-17 Tel: +91-141-2520990, 2521099, 2520565 Fax: 2521046, e-mail: eng@cepiltd.com
DESIGN POWER CONSULTANT:	ODISHA WORKS DEPARTMENT
PROJECT:	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NUSCHINTAKOILI - DUHURIA KM 28+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A-2
DRAWING TITLE:	PLAN & PROFILE KM 28+000 TO 30+000
DWG. NUMBER:	734561ASAHIGHWAYSPR-3D



Sudhakar

World Bank Project
to the E.I.C.C., Odisha, BBSR



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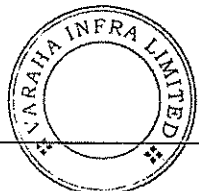
PLAN & PROFILE
 KM 30+000 TO 31+000
 ROAD NUMBER: 73466/ASA/HIGHWAYS/PP-31

SCALE:
 HORIZONTAL SCALE: 1:2500
 VERTICAL SCALE: 1:500

CLIENT:
 ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT:
 LEA Associates South Asia Pvt. Ltd., India
 B-1, B-27, 1st FLOOR, MOHAN COOPERATIVE
 RESIDENCIAL ESTATE, MATURAH ROAD, NEW
 DELHI-110044

BPR CONSULTANT:
 CONSULTING ENGINEERS GROUP LTD.
 E-2/103 COLONY, MALVIYA NAGAR, JAIPUR-302015
 Tel: +91-141-2520889, 2521989, 2523555 Fax:
 2521946, e-mail: ceg@cegroupindia.com



Singh

O/o the E.C.(C), Odisha, BBSR

NISHCHINTAKOILI

DUHURIA

CURVE NO.	97
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	98
DELTA	0-48-15
PI	N 2264982.539
E	418555.324
CIRCULAR CURVE	
RADIUS	2000
LENGTH	28.012
SPIRAL LENGTH	0

CURVE NO.	99
DELTA	0-33-19
PI	N 2264973.889
E	418314.754
CIRCULAR CURVE	
RADIUS	2000
LENGTH	31.427
SPIRAL LENGTH	0

CURVE NO.	100
DELTA	0-46-15
PI	N 2264973.889
E	418314.754
CIRCULAR CURVE	
RADIUS	2000
LENGTH	31.427
SPIRAL LENGTH	0

CURVE NO.	101
DELTA	0-48-15
PI	N 2264982.539
E	418555.324
CIRCULAR CURVE	
RADIUS	2000
LENGTH	28.012
SPIRAL LENGTH	0

CURVE NO.	102
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	103
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	104
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	105
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

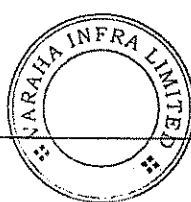
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PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	107
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

CURVE NO.	108
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

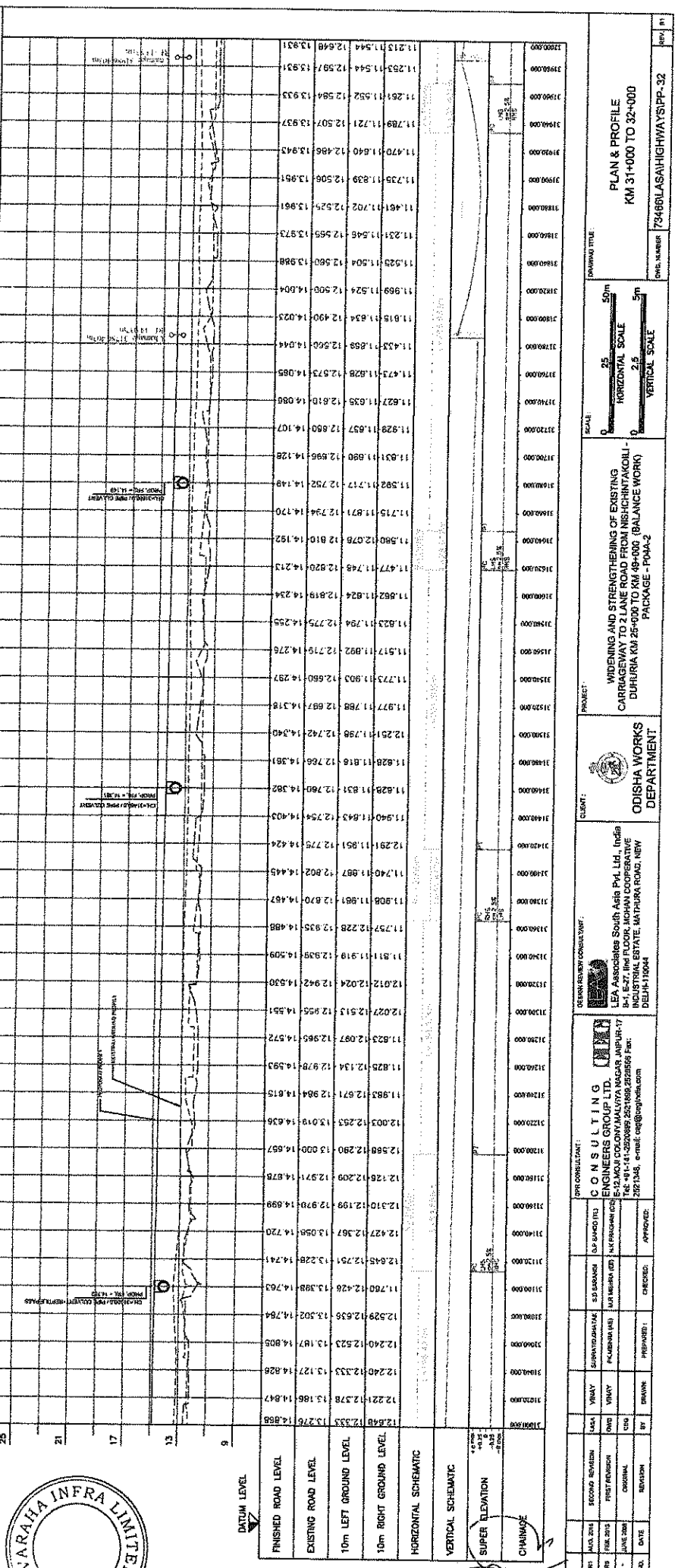
CURVE NO.	109
DELTA	0-41-22
PI	N 2265013.65
E	418873.191
CIRCULAR CURVE	
RADIUS	4988
LENGTH	35.401
SPIRAL LENGTH	0

TOLL PLAZA LOCATION



Siddhanta Saha

Chief Engineer, World Bank Project O/o the E.I.C.C. Odisha, BBSR



PROJECT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 28+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2
CLIENT	ODISHA DEPARTMENT
DESIGNED BY	LEA ASSOCIATES SOUTH ASIA PVT. LTD. India
CHECKED BY	LEA ASSOCIATES SOUTH ASIA PVT. LTD. India
DATE	15/05/2018
APPROVED BY	LEA ASSOCIATES SOUTH ASIA PVT. LTD. India
DATE	15/05/2018
SCALE	HORIZONTAL SCALE 1:25 VERTICAL SCALE 1:5
DRAWING TITLE	PLAN & PROFILE KM 31+000 TO 32+000
FIG. NUMBER	7348BILASAHIGHWAYSIPP-32

DUHURIA



SUKARPADA VILLAGE

SUKARPADA VILLAGE

CURVE NO.	100
DELTA	21.080
PI	N 2285090.015
E	415602.831
CIRCULAR CURVE	
RADIUS	600
LENGTH	62.38
SPIRAL LENGTH	.35

PI	N 32+714.2
E	32+651.8
CIRCULAR CURVE	
RADIUS	2000
LENGTH	38.032
SPIRAL LENGTH	0

CURVE NO.	89
DELTA	44.666
PI	N 2285044.372
E	418533.432
CIRCULAR CURVE	
RADIUS	2000
LENGTH	38.032
SPIRAL LENGTH	0

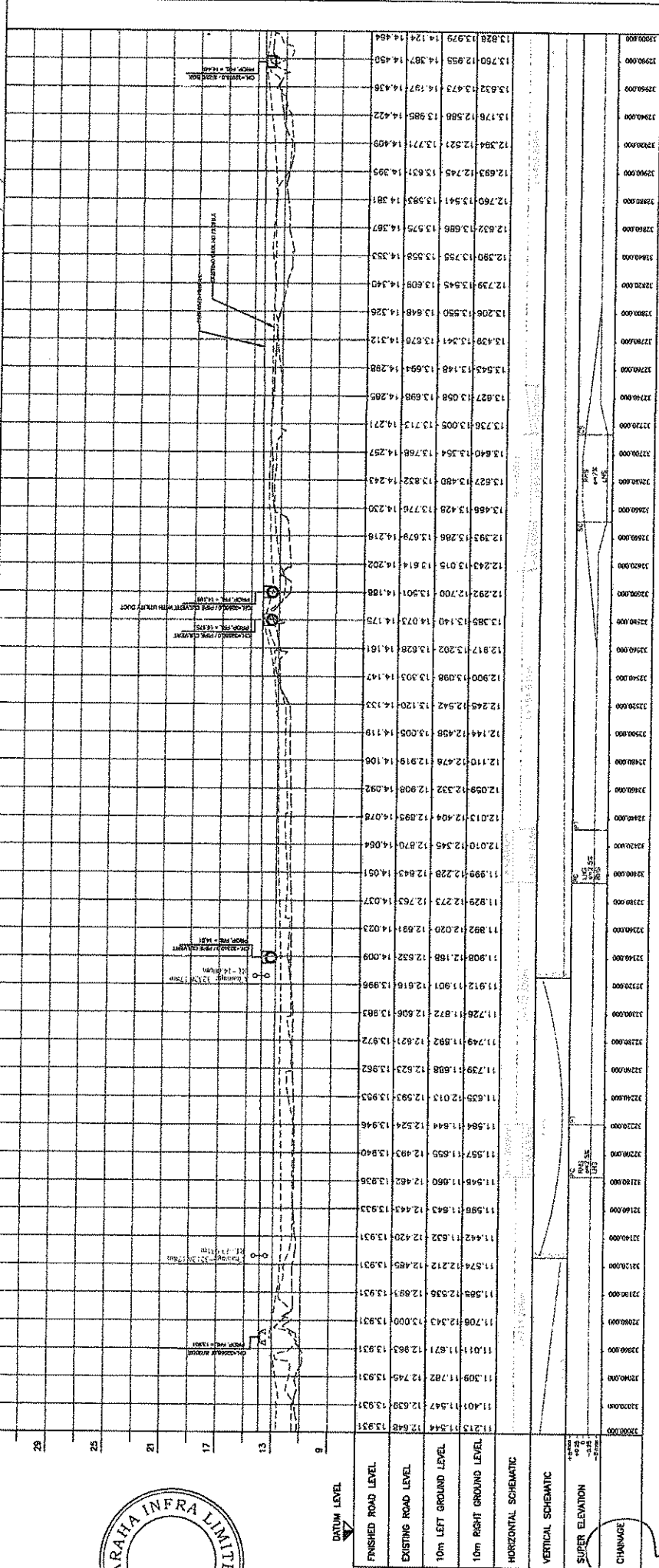
PI	N 32+432.229
E	32+384.196
CIRCULAR CURVE	
RADIUS	2000
LENGTH	38.032
SPIRAL LENGTH	0

CURVE NO.	88
DELTA	44.666
PI	N 2285028.181
E	419123.898
CIRCULAR CURVE	
RADIUS	2000
LENGTH	38.032
SPIRAL LENGTH	0

PI	N 32+221.8
E	32+173.648
CIRCULAR CURVE	
RADIUS	2000
LENGTH	38.032
SPIRAL LENGTH	0

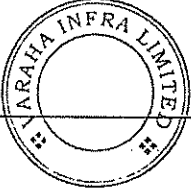
CURVE NO.	97
DELTA	0-24-22
PI	N 2285013.85
E	418523.191
CIRCULAR CURVE	
RADIUS	4958
LENGTH	35.401
SPIRAL LENGTH	0

PI	N 31+968.628
E	31+920.491
CIRCULAR CURVE	
RADIUS	4958
LENGTH	35.401
SPIRAL LENGTH	0



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CHKD.	
APPD.	
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S. Singh



World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

CONSULTING ENGINEERS GROUP LTD.
 10/1, C/O. S. K. SINGH, VIKAS NAGAR, JALPAIGURI
 DIST. JALPAIGURI, W.B. INDIA
 TEL: 0357-2331346, 2331348, 2331349, 2331350
 FAX: 0357-2331351, 2331352, 2331353, 2331354
 E-MAIL: ceng@cegroup.com

ODISHA WORKS DEPARTMENT

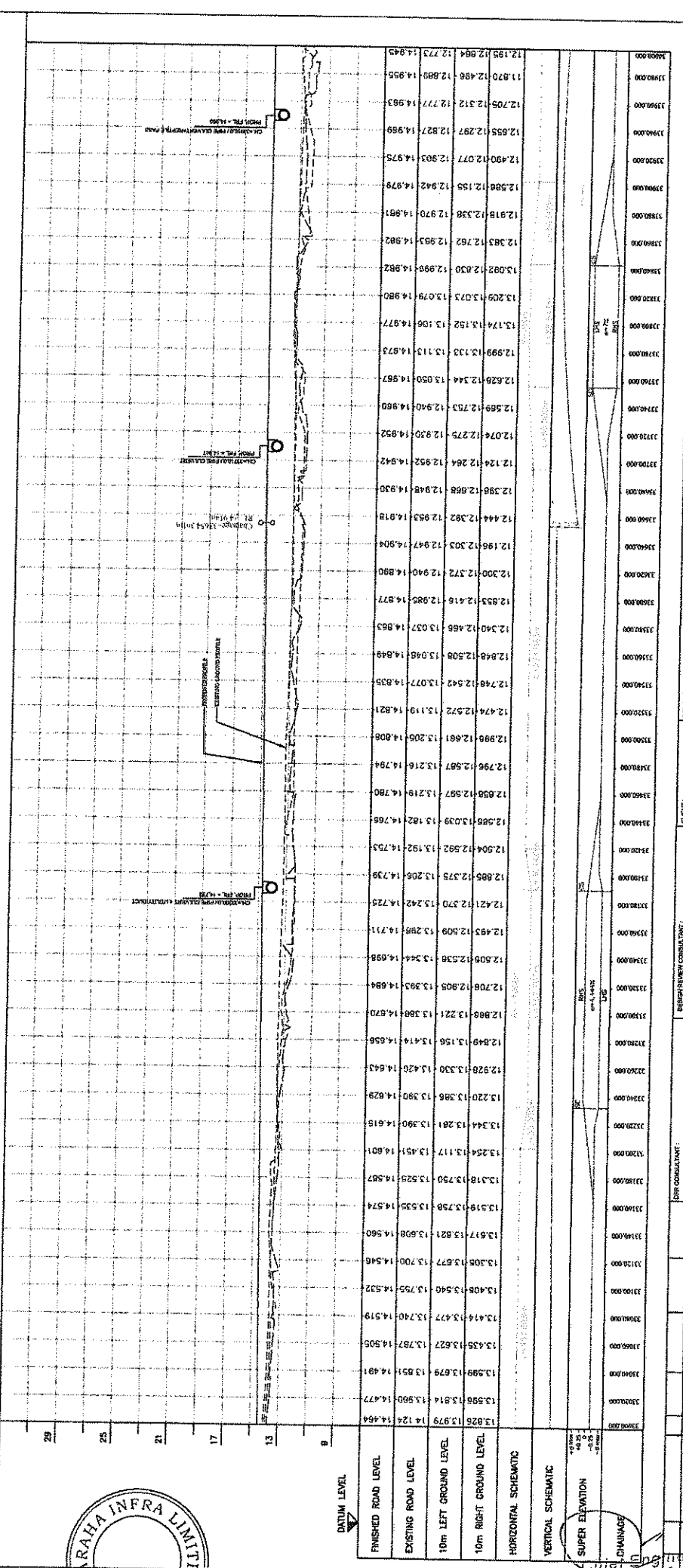
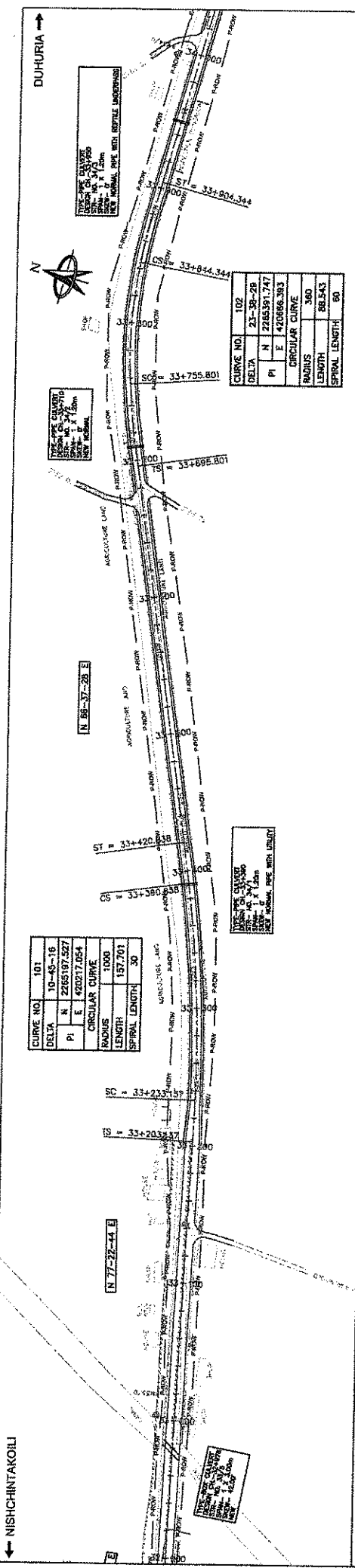
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 26+000 TO KM 48+000 (BALANCE WORK) PACKAGE - PMA-2

SCALE: HORIZONTAL SCALE 1:25 VERTICAL SCALE 1:5

FORMING TITLE: PLAN & PROFILE KM 32+000 TO 33+000

DATE: 17/04/2014

NO.: 7346/BLASAI/HIGHWAYS/PP-33



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL	HORIZONTAL SCHEMATIC	VERTICAL SCHEMATIC	SUPER ELEVATION
33+000	12.979	12.979	12.979	12.979			
33+010	12.979	12.979	12.979	12.979			
33+020	12.979	12.979	12.979	12.979			
33+030	12.979	12.979	12.979	12.979			
33+040	12.979	12.979	12.979	12.979			
33+050	12.979	12.979	12.979	12.979			
33+060	12.979	12.979	12.979	12.979			
33+070	12.979	12.979	12.979	12.979			
33+080	12.979	12.979	12.979	12.979			
33+090	12.979	12.979	12.979	12.979			
33+100	12.979	12.979	12.979	12.979			
33+110	12.979	12.979	12.979	12.979			
33+120	12.979	12.979	12.979	12.979			
33+130	12.979	12.979	12.979	12.979			
33+140	12.979	12.979	12.979	12.979			
33+150	12.979	12.979	12.979	12.979			
33+160	12.979	12.979	12.979	12.979			
33+170	12.979	12.979	12.979	12.979			
33+180	12.979	12.979	12.979	12.979			
33+190	12.979	12.979	12.979	12.979			
33+200	12.979	12.979	12.979	12.979			
33+210	12.979	12.979	12.979	12.979			
33+220	12.979	12.979	12.979	12.979			
33+230	12.979	12.979	12.979	12.979			
33+240	12.979	12.979	12.979	12.979			
33+250	12.979	12.979	12.979	12.979			
33+260	12.979	12.979	12.979	12.979			
33+270	12.979	12.979	12.979	12.979			
33+280	12.979	12.979	12.979	12.979			
33+290	12.979	12.979	12.979	12.979			
33+300	12.979	12.979	12.979	12.979			
33+310	12.979	12.979	12.979	12.979			
33+320	12.979	12.979	12.979	12.979			
33+330	12.979	12.979	12.979	12.979			
33+340	12.979	12.979	12.979	12.979			
33+350	12.979	12.979	12.979	12.979			
33+360	12.979	12.979	12.979	12.979			
33+370	12.979	12.979	12.979	12.979			
33+380	12.979	12.979	12.979	12.979			
33+390	12.979	12.979	12.979	12.979			
33+400	12.979	12.979	12.979	12.979			

PROJECT TITLE: PLAN & PROFILE
 KM 33+000 TO 34+000

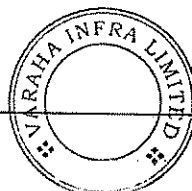
WIDENING AND STRENGTHENING OF EXISTING
 CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI,
 DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK)
 PACKAGE - PWA-2

ODISHA WORKS
 DEPARTMENT

LEA Associates South Asia Pvt. Ltd, India
 8-1, 6-27, 1st FLOOR, KCHAI CO-OPERATIVE
 INDUSTRIAL ESTATE, MATURA ROAD, NEW
 DELHI-110044

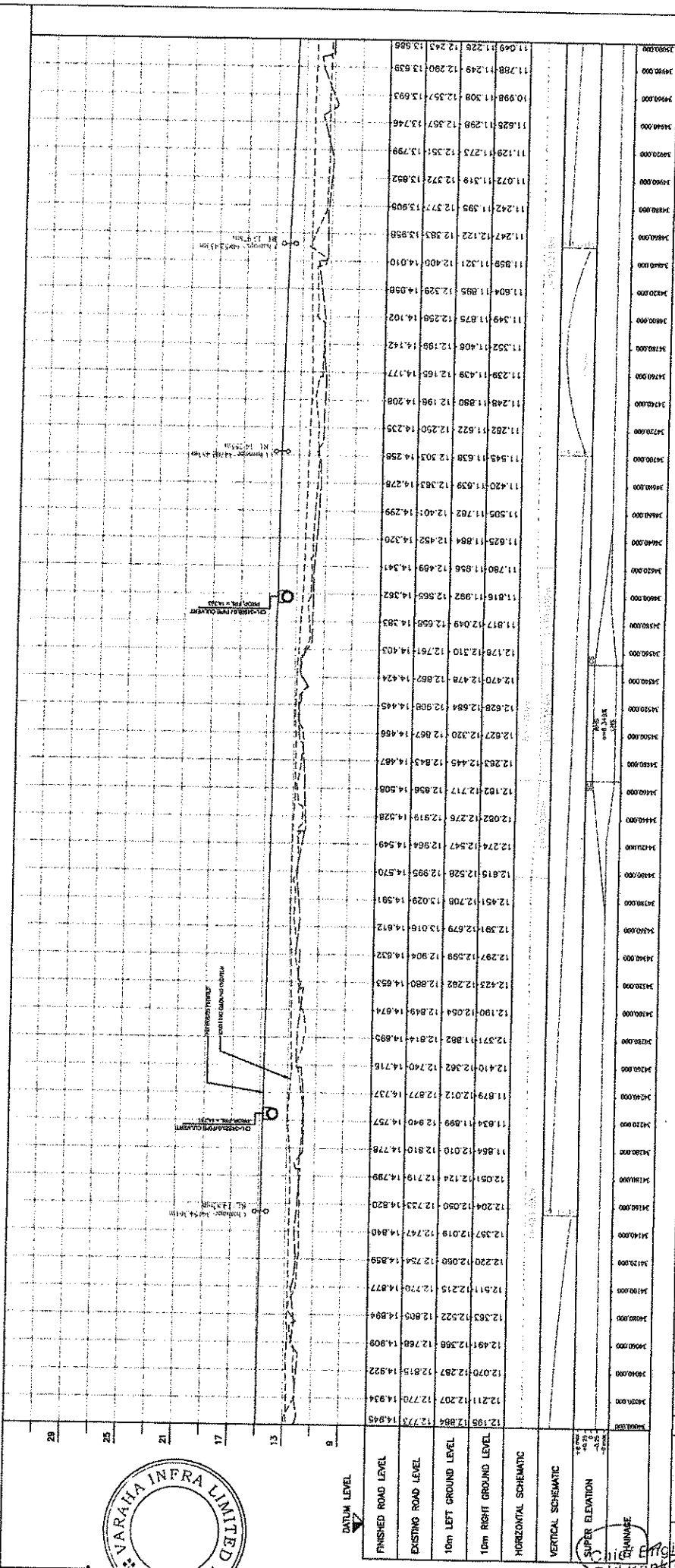
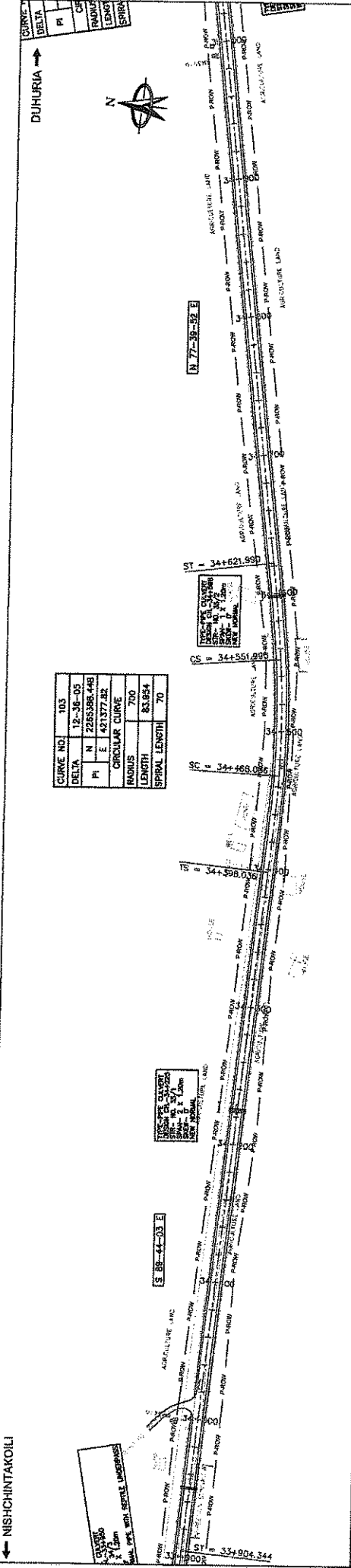
CONSULTANT:
 ENGINEERS GROUP LTD.
 (S-2, MOULI COLONY, MALWA NAGAR, JALPAIGURI-71
 Tel: +91-141-2520589, 2021859, 2020588 Fax:
 2021348, e-mail: eng@engineersgroup.com

DESIGNED BY:	SKS	CHECKED BY:	SKS
DRAWN BY:	SKS	APPROVED BY:	SKS
DATE:	10/01/2024	DATE:	10/01/2024



Sichinh Solanki

W & P Bank
 O/o the E.I.C.(C), Odisha, BBSR



STATION	DATUM LEVEL	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL	HORIZONTAL SCHEMATIC	VERTICAL SCHEMATIC	SUPER ELEVATION
34+000	12773	12773	12773	12773	12773			
34+005	12773	12773	12773	12773	12773			
34+010	12773	12773	12773	12773	12773			
34+015	12773	12773	12773	12773	12773			
34+020	12773	12773	12773	12773	12773			
34+025	12773	12773	12773	12773	12773			
34+030	12773	12773	12773	12773	12773			
34+035	12773	12773	12773	12773	12773			
34+040	12773	12773	12773	12773	12773			
34+045	12773	12773	12773	12773	12773			
34+050	12773	12773	12773	12773	12773			
34+055	12773	12773	12773	12773	12773			
34+060	12773	12773	12773	12773	12773			
34+065	12773	12773	12773	12773	12773			
34+070	12773	12773	12773	12773	12773			
34+075	12773	12773	12773	12773	12773			
34+080	12773	12773	12773	12773	12773			
34+085	12773	12773	12773	12773	12773			
34+090	12773	12773	12773	12773	12773			
34+095	12773	12773	12773	12773	12773			
35+000	12773	12773	12773	12773	12773			

PLAN & PROFILE
KM 34+000 TO 35+000

DRAWING TITLE

SCALE: 25m HORIZONTAL SCALE 2.5m VERTICAL SCALE

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOLLI - DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P04A.2

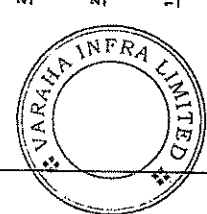
ODISHA WORKS DEPARTMENT

DESIGN CONSULTANT: LEA Associates South Asia Pvt. Ltd. India B-1, 527, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-11004

CONSULTING ENGINEERS GROUP LTD. E-12 MOJI COLONY, MALVIYA NAGAR, JAIPUR-37 Tel: +91-141-262889, 2571893, 2628566 Fax: 2621546, e-mail: eng@ogehd.com

DATE	BY	DRAWN	CHECKED	APPROVED

100



Signature

Signature

NISHCHINTAKOILI

DUHURIA

CURVE NO.	106
DELTA	43.301
PI	N 2285877.447
PI	E 4228233.873
CIRCULAR CURVE	
RADIUS	800
LENGTH	73.952
SPIRAL LENGTH	35

CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D

CURVE NO.	104
DELTA	0-08-48
PI	N 2285805.08
PI	E 421811.151
CIRCULAR CURVE	
RADIUS	5000
LENGTH	12.802
SPIRAL LENGTH	D

CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D

CURVE NO.	106
DELTA	43.301
PI	N 2285877.447
PI	E 4228233.873
CIRCULAR CURVE	
RADIUS	800
LENGTH	73.952
SPIRAL LENGTH	35

CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D

CURVE NO.	106
DELTA	43.301
PI	N 2285877.447
PI	E 4228233.873
CIRCULAR CURVE	
RADIUS	800
LENGTH	73.952
SPIRAL LENGTH	35

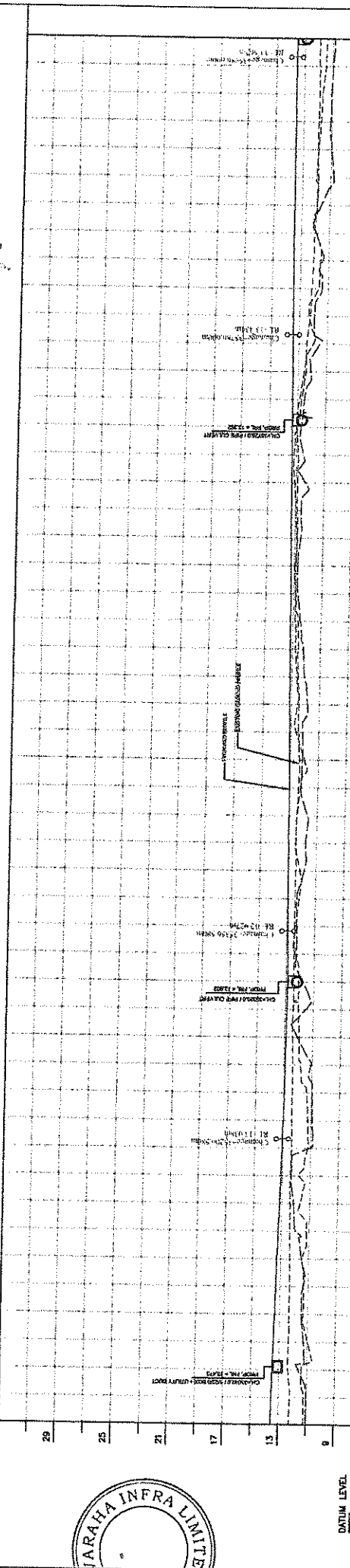
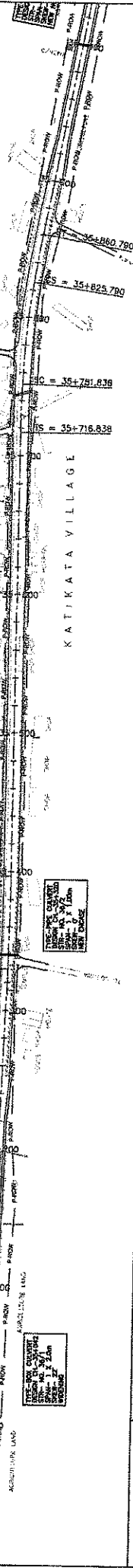
CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D

CURVE NO.	106
DELTA	43.301
PI	N 2285877.447
PI	E 4228233.873
CIRCULAR CURVE	
RADIUS	800
LENGTH	73.952
SPIRAL LENGTH	35

CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D

CURVE NO.	106
DELTA	43.301
PI	N 2285877.447
PI	E 4228233.873
CIRCULAR CURVE	
RADIUS	800
LENGTH	73.952
SPIRAL LENGTH	35

CURVE NO.	105
DELTA	1-55-04
PI	N 2285971.562
PI	E 422211.56
CIRCULAR CURVE	
RADIUS	2000
LENGTH	66.942
SPIRAL LENGTH	D



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL	HORIZONTAL SCHEMATIC	VERTICAL SCHEMATIC	SUPER ELEVATION
10.000	11.049	11.224	12.243	13.588			
10.050	11.052	11.224	12.213	13.533			
10.100	11.024	11.395	12.351	13.480			
10.150	11.035	11.333	12.335	13.374			
10.200	11.326	11.496	12.354	13.269			
10.250	11.520	11.195	12.377	13.215			
10.300	12.181	11.715	12.422	13.162			
10.350	12.346	11.829	12.433	13.109			
10.400	11.155	11.211	12.365	13.066			
10.450	10.820	11.258	12.398	13.005			
10.500	10.980	11.379	12.402	12.964			
10.550	11.085	11.842	12.387	12.933			
10.600	12.082	11.871	12.445	12.912			
10.650	11.555	12.078	12.451	12.882			
10.700	11.793	12.094	12.454	12.901			
10.750	12.289	12.379	12.474	12.911			
10.800	12.297	12.399	12.489	12.931			
10.850	12.329	12.179	12.475	12.956			
10.900	11.950	12.147	12.443	12.979			
10.950	11.707	12.430	12.458	13.026			
11.000	12.201	12.288	12.381	13.049			
11.050	12.140	12.000	12.364	13.073			
11.100	12.170	12.622	12.449	13.098			
11.150	11.863	12.584	12.473	13.120			
11.200	12.080	12.648	12.562	13.144			
11.250	12.226	12.798	12.807	13.187			
11.300	12.483	12.848	12.851	13.214			
11.350	12.764	12.945	12.903	13.238			
11.400	12.897	12.853	12.824	13.261			
11.450	12.588	12.978	12.874	13.285			
11.500	12.331	13.109	12.886	13.309			
11.550	12.499	13.186	12.880	13.332			
11.600	12.715	13.036	13.041	13.356			
11.650	12.534	12.734	12.888	13.379			
11.700	12.117	12.477	12.603	13.403			
11.750	11.507	12.003	12.445	13.426			
11.800	11.931	12.350	12.245	13.449			
11.850	11.447	11.685	12.167	13.470			
11.900	11.453	11.583	12.086	13.488			
11.950	11.952	11.912	12.026	13.506			
12.000	11.641	11.924	11.916	13.521			
12.050	10.782	12.001	11.881	13.533			
12.100	10.952	11.890	11.927	13.543			
12.150	11.079	11.768	11.919	13.551			
12.200	11.052	11.883	11.894	13.557			
12.250	10.961	11.468	11.818	13.561			
12.300	10.889	11.378	11.930	13.563			

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P/04-2

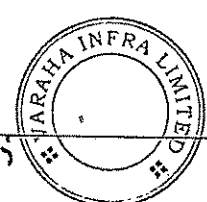
CLIENT: ODISHA WORKS DEPARTMENT

DESIGNER: LEA Associates South Asia Pvt. Ltd. India B-1, 6-27, 11th FLOOR, MITHAN COOPERATIVE INDUSTRIAL ESTATE, MATURAH ROAD, NEW DELHI-110044

CONTRACTOR: CONSUULTING ENGINEERS GROUP LTD. F-45, MOU COLONY, MALVIYA NAGAR, JAIPUR-37 Tel: +91-141-2628892, 2521893, 2521895 Fax: 2521346, e-mail: coneg@conegmail.com

DATE: 10/01/2013

SCALE: HORIZONTAL SCALE 1:2500, VERTICAL SCALE 1:500



Suse Singh Solanki

Signature and stamp of the engineer in charge.

NISHCHINTAKOILI

DUHURIA



THIS CASE CHARTER IS VALID FOR 12 MONTHS FROM THE DATE OF ISSUANCE. ANY WORK DONE AFTER THIS PERIOD WILL BE AT THE CLIENT'S RISK AND WITHOUT LIABILITY OF THE CONSULTANT.

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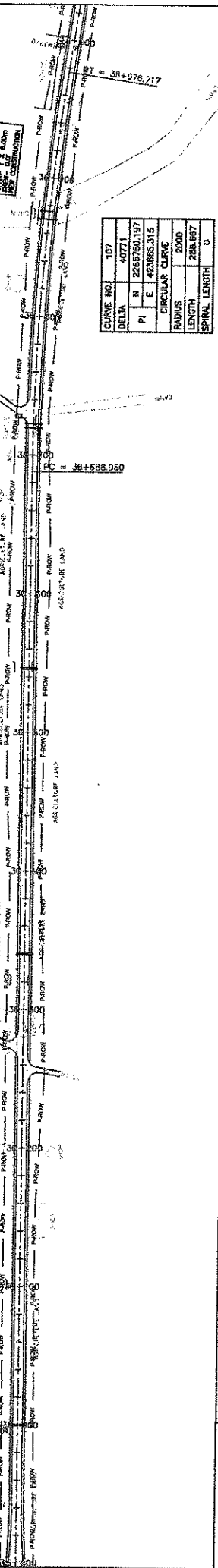
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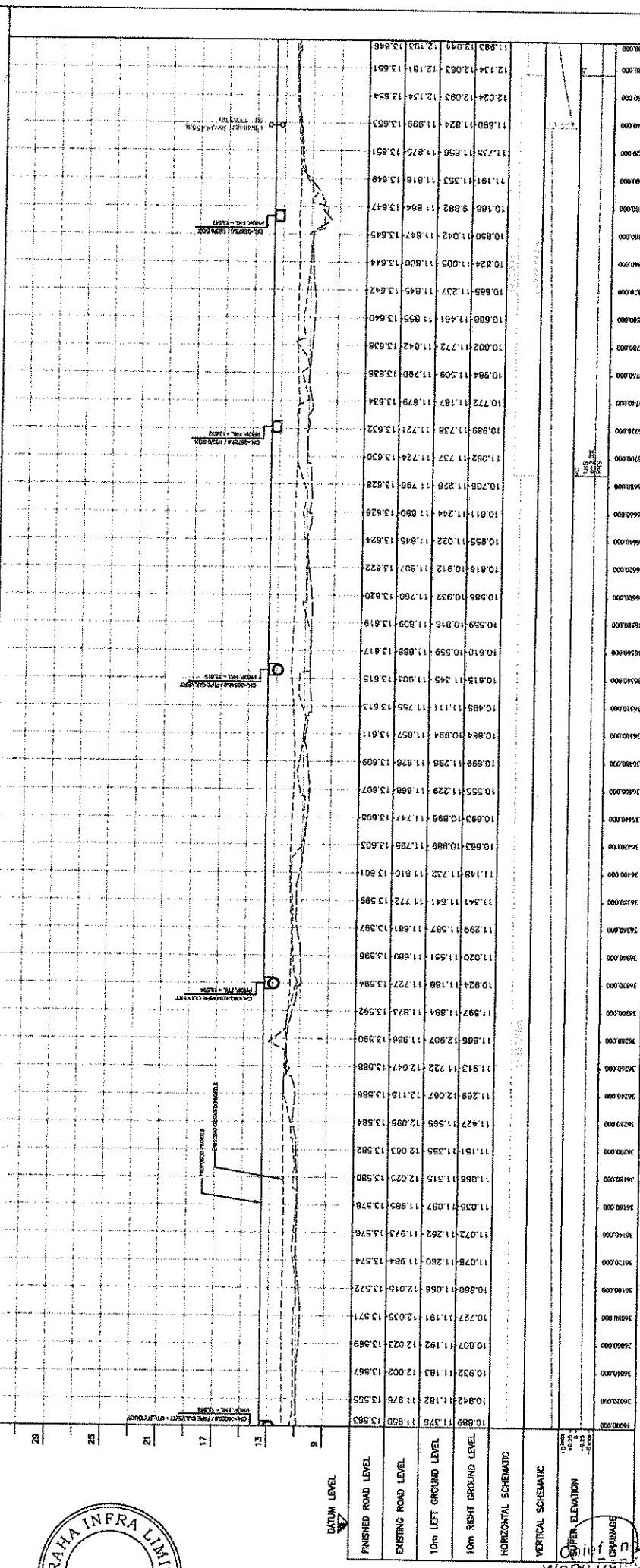
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CURVE NO	407
DELTA	40771
PI N	2285750.197
PI E	433885.315
CIRCULAR CURVE	
RADIUS	2000
LENGTH	288.887
SPIRAL LENGTH	0



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL	HORIZONTAL SCHEMATIC	VERTICAL SCHEMATIC	SUPER ELEVATION
36+988.050	10.889	11.376	11.850	12.563			
36+990.000	10.842	11.182	11.876	12.565			
36+992.000	10.932	11.183	12.002	12.567			
36+994.000	10.807	11.192	12.023	12.569			
36+996.000	10.727	11.191	12.035	12.571			
36+998.000	10.880	11.066	12.015	12.572			
37+000.000	11.078	11.280	11.984	12.574			
37+002.000	11.072	11.282	11.973	12.576			
37+004.000	11.035	11.087	11.985	12.578			
37+006.000	11.066	11.315	12.023	12.580			
37+008.000	11.151	11.395	12.003	12.582			
37+010.000	11.427	11.565	12.095	12.584			
37+012.000	11.269	12.067	12.115	12.586			
37+014.000	11.913	11.722	12.047	12.588			
37+016.000	11.865	12.907	11.986	12.590			
37+018.000	11.597	11.884	11.873	12.592			
37+020.000	10.824	11.188	11.727	12.594			
37+022.000	11.020	11.551	11.689	12.596			
37+024.000	11.299	11.987	11.681	12.597			
37+026.000	11.341	11.641	11.772	12.599			
37+028.000	11.148	11.732	11.810	12.601			
37+030.000	10.853	10.988	11.789	12.603			
37+032.000	10.693	10.885	11.747	12.605			
37+034.000	10.555	11.229	11.668	12.607			
37+036.000	10.699	11.298	11.628	12.609			
37+038.000	10.884	10.984	11.657	12.611			
37+040.000	10.485	11.111	11.755	12.613			
37+042.000	10.615	11.245	11.803	12.615			
37+044.000	10.610	10.959	11.889	12.617			
37+046.000	10.559	10.818	11.809	12.619			
37+048.000	10.586	10.932	11.760	12.620			
37+050.000	10.818	10.912	11.807	12.622			
37+052.000	10.855	11.022	11.845	12.624			
37+054.000	10.811	11.244	11.880	12.626			
37+056.000	10.708	11.228	11.796	12.628			
37+058.000	11.052	11.737	11.724	12.630			
37+060.000	10.989	11.738	11.721	12.632			
37+062.000	10.772	11.787	11.679	12.634			
37+064.000	10.984	11.509	11.790	12.636			
37+066.000	10.802	11.772	11.842	12.638			
37+068.000	10.688	11.661	11.955	12.640			
37+070.000	10.685	11.237	11.845	12.642			
37+072.000	10.824	11.005	11.800	12.644			
37+074.000	10.890	11.042	11.847	12.645			
37+076.000	10.188	9.882	11.884	12.647			
37+078.000	11.191	11.353	11.816	12.648			
37+080.000	11.735	11.658	11.875	12.651			
37+082.000	11.880	11.824	11.899	12.653			
37+084.000	12.024	12.093	12.134	12.654			
37+086.000	12.134	12.083	12.181	12.651			
37+088.000	12.044	12.044	12.193	12.648			
37+090.000	11.993	12.044	12.193	12.646			

PLAN & PROFILE
KM 36+000 TO 37+000

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARBON LANEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA NH 25+000 TO KM 46+000 (BALANCE WORK) PACKAGE - F004-2

CLIENT: ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT: CON S U L T I N G ENGINEERS GROUP LTD. E-2/ALOKI COLONY MALWA NAGAR JAIPUR-17 Tel: +91-141-2520880, 2521894, 2520856 Fax: 2521948, email: peg@conpld.com

DATE: 20/06/2018

BY: [Signature]

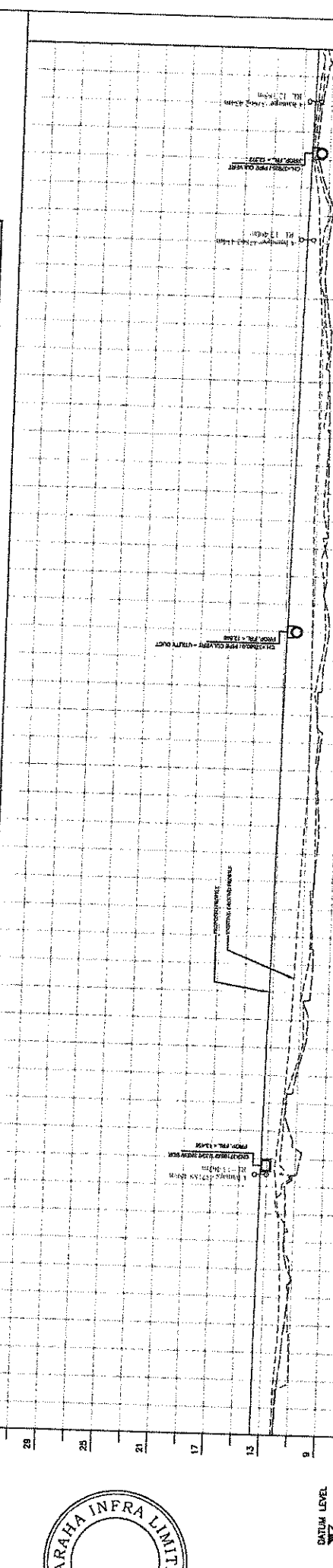
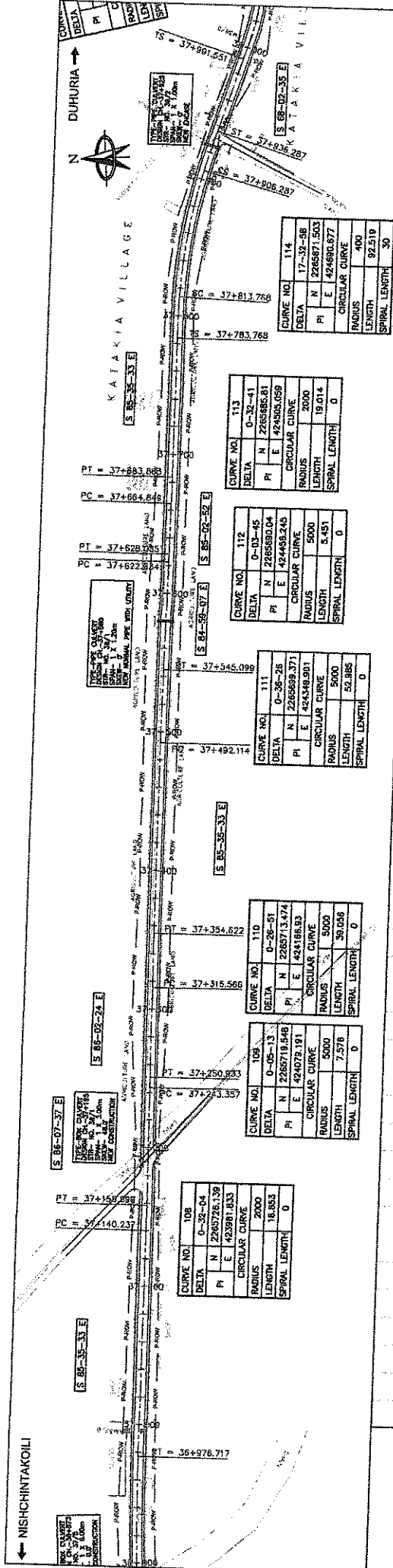
APPROVED: [Signature]

SCALE: HORIZONTAL SCALE 1:25, VERTICAL SCALE 1:50



Handwritten signature: Sridhar Solanki

Handwritten notes: SUPER CHANGE, WORK, O/o the...



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
37000.000	11.983	12.064	12.193	13.646
37010.000	11.964	12.003	12.149	13.638
37020.000	11.833	11.947	12.086	13.628
37030.000	11.620	11.704	11.862	13.615
37040.000	11.433	11.426	11.665	13.599
37050.000	11.206	11.274	11.534	13.561
37060.000	11.052	11.185	11.500	13.580
37070.000	10.877	11.086	11.420	13.449
37080.000	10.677	10.982	11.294	13.489
37090.000	10.458	10.872	11.157	13.417
37100.000	10.208	10.752	11.011	13.322
37110.000	9.937	10.622	10.857	13.256
37120.000	9.645	10.482	10.695	13.227
37130.000	9.333	10.332	10.526	13.198
37140.000	9.001	10.172	10.351	13.164
37150.000	8.659	10.002	10.171	13.122
37160.000	8.307	9.822	10.000	13.074
37170.000	7.945	9.632	9.828	13.020
37180.000	7.573	9.432	9.655	12.961
37190.000	7.191	9.222	9.481	12.898
37200.000	6.799	9.002	9.306	12.832
37210.000	6.397	8.772	9.130	12.762
37220.000	5.985	8.532	8.954	12.689
37230.000	5.563	8.282	8.778	12.613
37240.000	5.131	8.022	8.602	12.534
37250.000	4.689	7.752	8.426	12.451
37260.000	4.237	7.472	8.250	12.364
37270.000	3.775	7.182	8.074	12.272
37280.000	3.303	6.882	7.900	12.175
37290.000	2.821	6.572	7.726	12.073
37300.000	2.329	6.252	7.552	11.966
37310.000	1.827	5.922	7.378	11.854
37320.000	1.315	5.582	7.204	11.737
37330.000	0.793	5.232	7.030	11.615
37340.000	0.261	4.872	6.856	11.488
37350.000	-0.281	4.502	6.682	11.356
37360.000	-0.813	4.122	6.508	11.219
37370.000	-1.335	3.732	6.334	11.077
37380.000	-1.847	3.332	6.160	10.930
37390.000	-2.349	2.922	5.986	10.778
37400.000	-2.841	2.502	5.812	10.621
37410.000	-3.323	2.072	5.638	10.459
37420.000	-3.795	1.632	5.464	10.292
37430.000	-4.257	1.182	5.290	10.120
37440.000	-4.709	0.722	5.116	9.943
37450.000	-5.161	0.252	4.942	9.761
37460.000	-5.613	-0.228	4.768	9.574
37470.000	-6.065	-0.708	4.594	9.382
37480.000	-6.517	-1.188	4.420	9.185
37490.000	-6.969	-1.668	4.246	8.983
37500.000	-7.421	-2.148	4.072	8.776
37510.000	-7.873	-2.628	3.898	8.564
37520.000	-8.325	-3.108	3.724	8.347
37530.000	-8.777	-3.588	3.550	8.125
37540.000	-9.229	-4.068	3.376	7.898
37550.000	-9.681	-4.548	3.202	7.666
37560.000	-10.133	-5.028	3.028	7.429
37570.000	-10.585	-5.508	2.854	7.187
37580.000	-11.037	-5.988	2.680	6.940
37590.000	-11.489	-6.468	2.506	6.688
37600.000	-11.941	-6.948	2.332	6.431
37610.000	-12.393	-7.428	2.158	6.169
37620.000	-12.845	-7.908	1.984	5.902
37630.000	-13.297	-8.388	1.810	5.630
37640.000	-13.749	-8.868	1.636	5.353
37650.000	-14.201	-9.348	1.462	5.071
37660.000	-14.653	-9.828	1.288	4.784
37670.000	-15.105	-10.308	1.114	4.492
37680.000	-15.557	-10.788	0.940	4.195
37690.000	-16.009	-11.268	0.766	3.893
37700.000	-16.461	-11.748	0.592	3.586
37710.000	-16.913	-12.228	0.418	3.274
37720.000	-17.365	-12.708	0.244	2.957
37730.000	-17.817	-13.188	0.070	2.635
37740.000	-18.269	-13.668	-0.104	2.308
37750.000	-18.721	-14.148	-0.278	1.976
37760.000	-19.173	-14.628	-0.452	1.639
37770.000	-19.625	-15.108	-0.626	1.297
37780.000	-20.077	-15.588	-0.800	0.950
37790.000	-20.529	-16.068	-0.974	0.598
37800.000	-20.981	-16.548	-1.148	0.241
37810.000	-21.433	-17.028	-1.322	-0.120
37820.000	-21.885	-17.508	-1.496	-0.483
37830.000	-22.337	-17.988	-1.670	-0.840
37840.000	-22.789	-18.468	-1.844	-1.191
37850.000	-23.241	-18.948	-2.018	-1.536
37860.000	-23.693	-19.428	-2.192	-1.875
37870.000	-24.145	-19.908	-2.366	-2.208
37880.000	-24.597	-20.388	-2.540	-2.535
37890.000	-25.049	-20.868	-2.714	-2.856
37900.000	-25.501	-21.348	-2.888	-3.171
37910.000	-25.953	-21.828	-3.062	-3.480
37920.000	-26.405	-22.308	-3.236	-3.783
37930.000	-26.857	-22.788	-3.410	-4.080
37940.000	-27.309	-23.268	-3.584	-4.371
37950.000	-27.761	-23.748	-3.758	-4.657
37960.000	-28.213	-24.228	-3.932	-4.938
37970.000	-28.665	-24.708	-4.106	-5.214
37980.000	-29.117	-25.188	-4.280	-5.485
37990.000	-29.569	-25.668	-4.454	-5.751
38000.000	-30.021	-26.148	-4.628	-6.012

PLAN & PROFILE
KM 37+000 TO 38+000

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOIL - DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK) PACKAGE - P044-2

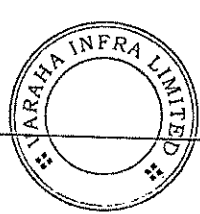
CLIENT: ODISHA WORKS DEPARTMENT

CONSULTING ENGINEERS GROUP LTD. LEA Associates South Asia Pvt. Ltd. India B-1, 2nd FLOOR, MOHANA COOPERATIVE INDUSTRIAL ESTATE, BATHARA ROAD, NEW DELHI-110044

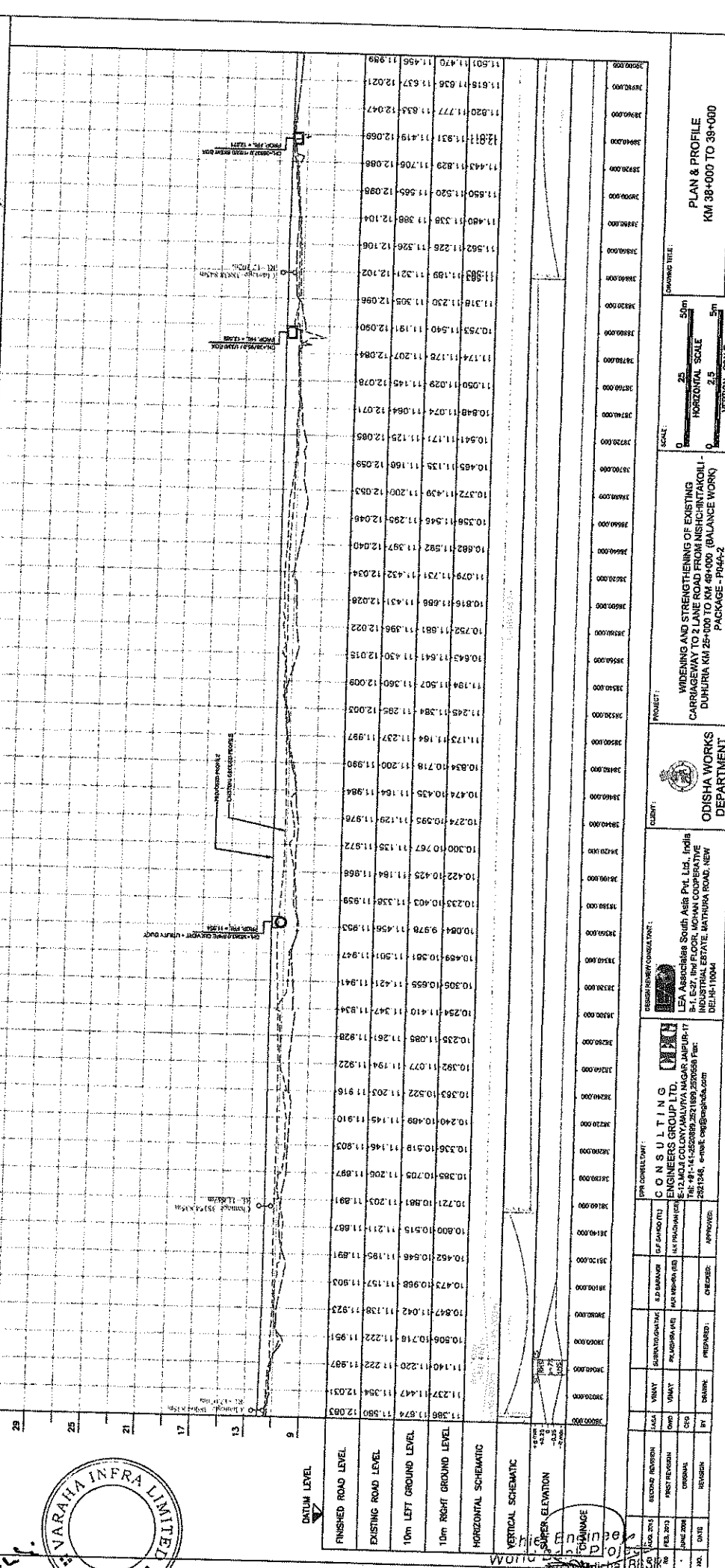
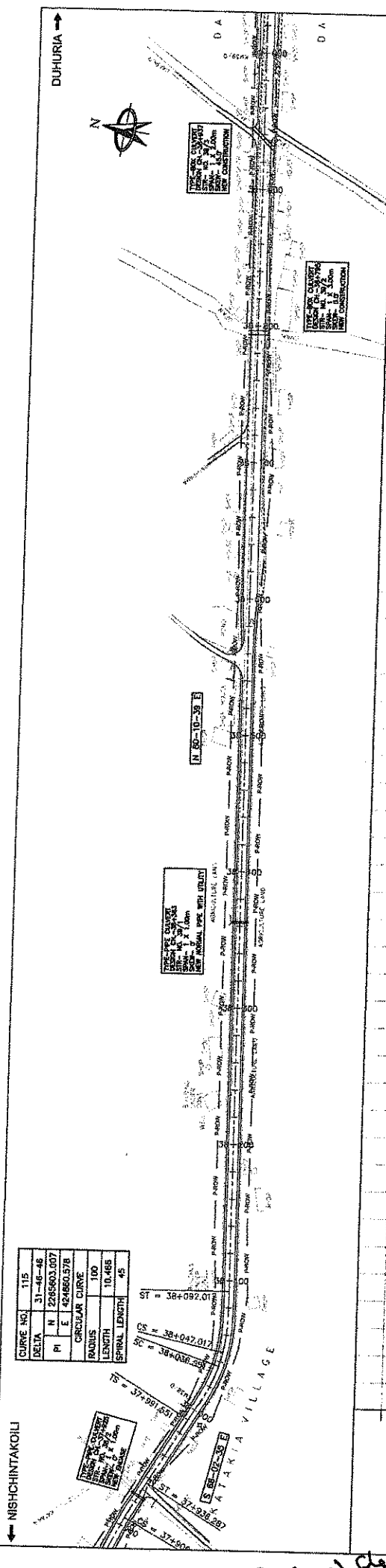
DATE: 21/01/2023

SCALE: HORIZONTAL SCALE 1:25, VERTICAL SCALE 1:5

NO.	DATE	BY	CHKD	APPV
1		WAS	WAS	WAS
2		WAS	WAS	WAS
3		WAS	WAS	WAS
4		WAS	WAS	WAS
5		WAS	WAS	WAS



Signature



DATE	NO.	BY	DRAWN	PREPARED	CHECKED	APPROVED

DESIGNER	DATE	NO.	BY

DATE	NO.	BY	DRAWN	PREPARED	CHECKED	APPROVED

PROJECT TITLE:
 WIDENING AND STRENGTHENING OF EXISTING
 CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI -
 DUHURIA KM 25+00 TO KM 49+000 (BALANCE WORK)
 PACKAGE - P04A-2

SCALE:
 HORIZONTAL SCALE 1:25
 VERTICAL SCALE 1:2.5

CLIENT:
 ODISHA WORKS
 DEPARTMENT

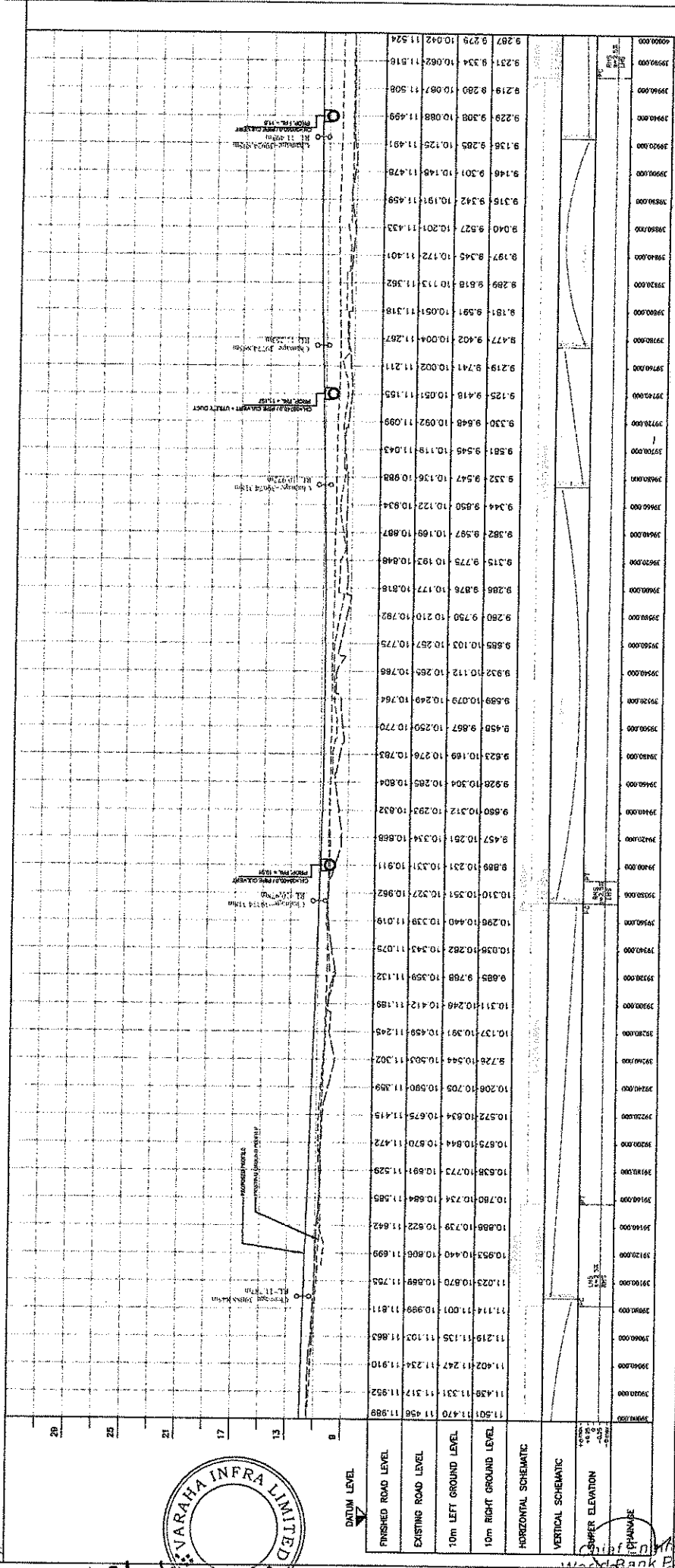
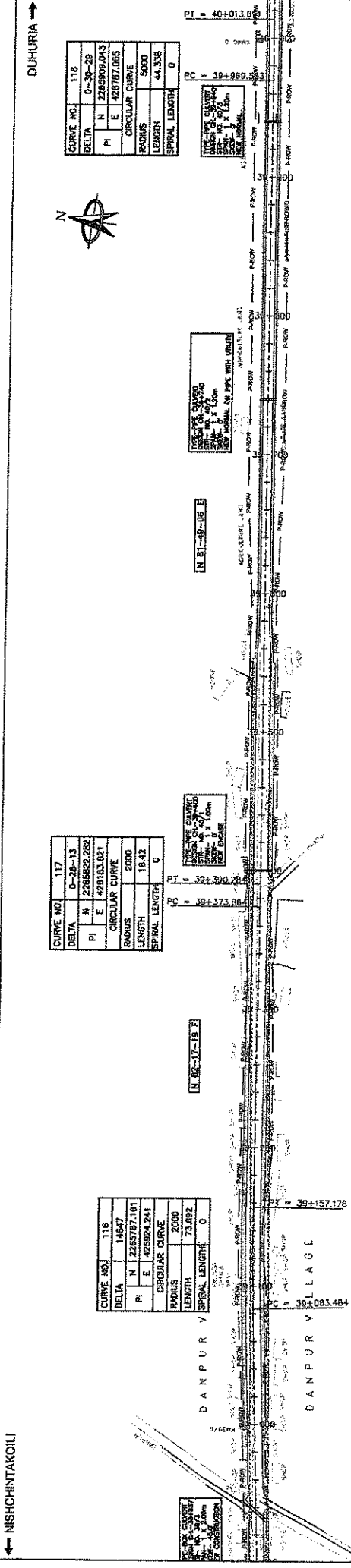
DESIGN CONSULTANT:
 LEA Associates South Asia Pvt. Ltd, India
 B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE
 INDUSTRIAL ESTATE, MATURVA ROAD, NEW
 DELHI-110044

IPR CONSULTANT:
 CONSULTING ENGINEERS GROUP LTD,
 E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-302015
 TEL: 91-14-252089, 252189, 252058 FAX:
 252184, e-mail: ce@cegroupindia.com

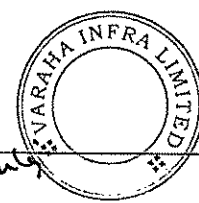
PROJECT NO.: 73468LASA-HIGHWAYS-PP-39



Signed by: [Signature]



REV.	PT	73466/ASA/HAIGHWAYS/PP-40
DRAWING TITLE: PLAN & PROFILE KM 39+000 TO 40+000		
SCALE: HORIZONTAL SCALE 1:25, VERTICAL SCALE 1:5		
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2		
CLIENT: ODISHA WORKS DEPARTMENT		
DESIGN REVIEW CONSULTANT: LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 1st Floor, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATUHURA ROAD, NEW DELHI-110004		
BPR CONSULTANT: CONSULTING ENGINEERS GROUP LTD. E-42, MOU COLONY, MALVIYA NAGAR, JAIPUR-37 Tel: 91-141-2520882, 2521899, 2520855 Fax: 8823348, e-mail: eng@cegroupindia.com		
DATE	DATE	DATE
BY	BY	BY
CHECKED	CHECKED	CHECKED
APPROVED	APPROVED	APPROVED
DATE	DATE	DATE



Sudhakar Singh

Wood Bank Road
O/o the E.I.C.P.C., Odisha, BBSR

CURVE NO.	118
DELTA	D-30-29
PI	N 2285905.043
PI	E 426797.065
CIRCULAR CURVE	
RADIUS	5000
LENGTH	44.358
SPIRAL LENGTH	0

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...



CURVE NO.	119
DELTA	16640
PI	N 2285905.043
PI	E 427850.725
CIRCULAR CURVE	
RADIUS	2000
LENGTH	257.578
SPIRAL LENGTH	0

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
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DATE	1/1/2024
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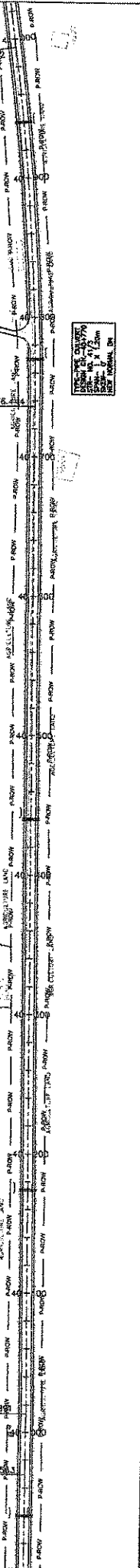
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SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

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SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

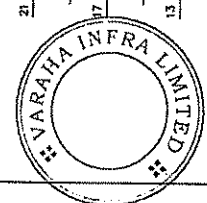
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BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...

TYPE OF CURVE	AS PER DRAWING
SCALE	1:1000
DATE	1/1/2024
BY	...
CHECKED	...
APPROVED	...



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
40+00	9.287	9.279	10.042	11.524
40+05	9.427	9.381	10.026	11.535
40+10	9.220	9.364	10.034	11.541
40+15	9.164	9.497	10.041	11.549
40+20	9.188	9.249	10.000	11.558
40+25	9.420	9.212	10.026	11.566
40+30	9.168	9.278	10.045	11.574
40+35	9.143	9.207	10.114	11.583
40+40	9.119	9.408	10.182	11.591
40+45	9.068	9.379	10.168	11.599
40+50	9.082	9.158	10.050	11.608
40+55	9.083	9.139	9.982	11.616
40+60	8.937	9.042	9.992	11.624
40+65	9.036	9.187	10.003	11.632
40+70	9.153	9.202	9.978	11.641
40+75	9.114	9.924	9.974	11.649
40+80	9.028	10.281	9.994	11.657
40+85	8.128	9.783	10.017	11.665
40+90	9.092	9.429	10.017	11.674
40+95	8.066	9.233	10.023	11.682
41+00	9.230	9.266	10.107	11.691
41+05	9.123	9.534	10.138	11.707
41+10	9.247	9.320	10.146	11.716
41+15	9.071	9.228	10.089	11.724
41+20	8.100	9.240	9.975	11.732
41+25	8.874	9.236	9.911	11.740
41+30	9.049	9.179	9.843	11.748
41+35	9.105	9.185	9.844	11.747
41+40	8.114	9.285	9.902	11.745
41+45	9.126	9.645	9.949	11.738
41+50	9.147	9.450	9.821	11.728
41+55	9.136	9.435	9.838	11.713
41+60	9.123	9.373	9.971	11.695
41+65	9.133	9.305	10.072	11.673
41+70	9.400	10.043	10.154	11.646
41+75	9.476	10.182	10.179	11.618
41+80	9.530	10.038	10.184	11.589
41+85	9.076	10.154	10.153	11.564
41+90	8.957	9.987	10.073	11.523
41+95	8.148	9.431	9.854	11.492
42+00	9.143	9.853	9.859	11.460
42+05	8.115	9.782	9.785	11.429
42+10	9.075	9.690	9.628	11.398
42+15	9.059	9.516	9.646	11.367
42+20	9.030	9.551	9.753	11.336
42+25	8.948	9.532	9.777	11.304
42+30	8.868	9.239	9.790	11.273
42+35	8.819	9.420	9.819	11.242
42+40	8.891	9.139	9.725	11.211
42+45	8.877	9.185	9.453	11.180



Signature

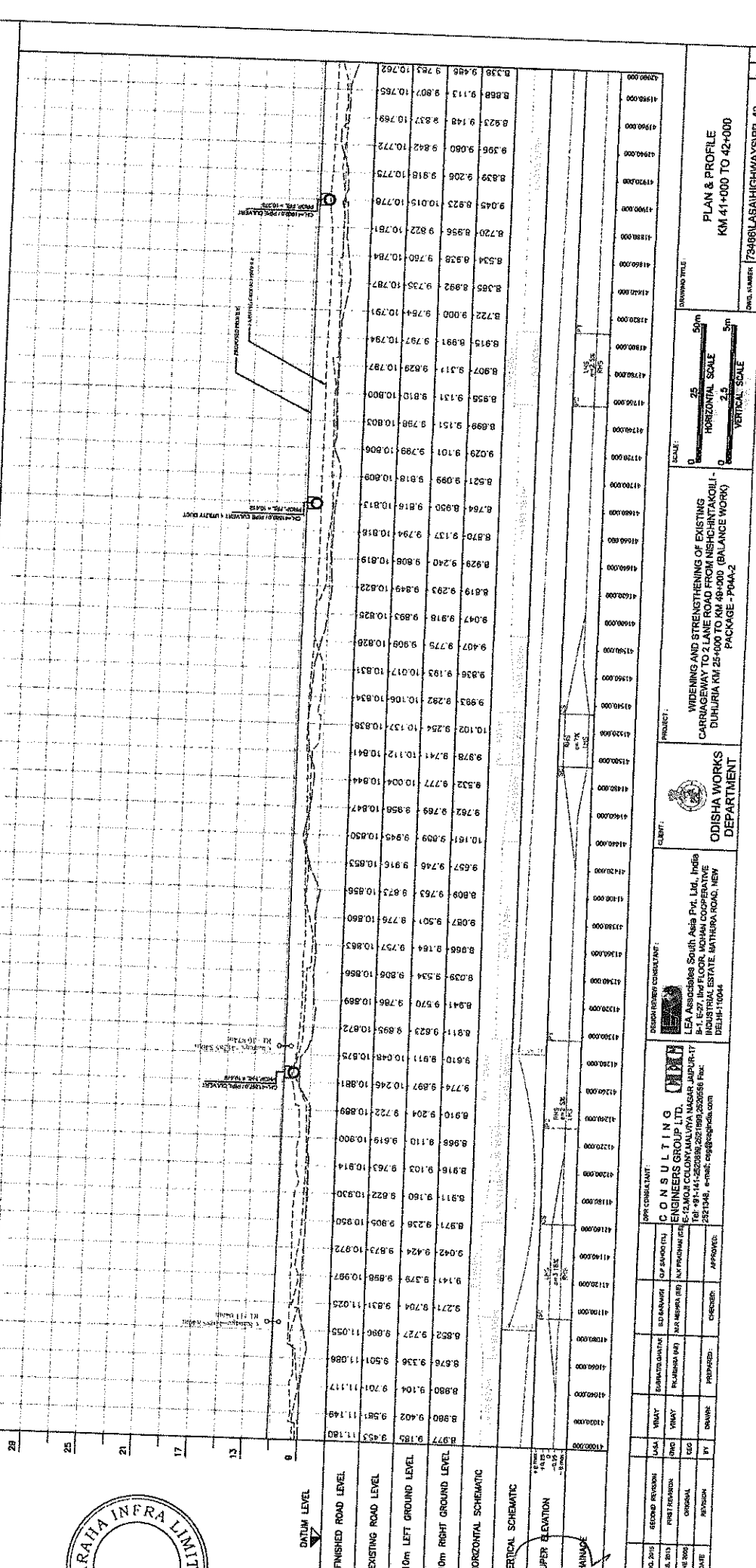
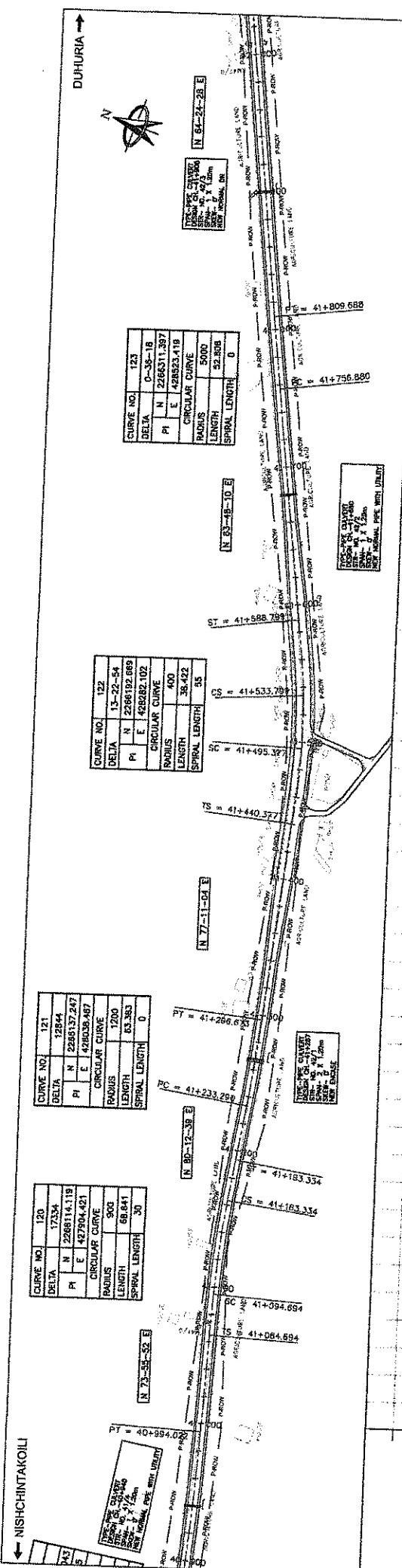
Signature
O/o the E.I.C.(C), Odisha, BBSR

DATE	1/1/2024	BY	...	DATE	1/1/2024	BY	...
DESIGNED	...	CHECKED	...	DATE	1/1/2024	BY	...
DRAWN	...	APPROVED	...	DATE	1/1/2024	BY	...
CHECKED	...	DATE	1/1/2024	BY	...	DATE	1/1/2024
APPROVED	...	DATE	1/1/2024	BY	...	DATE	1/1/2024

CONSULTING ENGINEERS GROUP LTD.
 JARAPUKURTI
 TEL: 91-11-2620892, 2621089, 2620855, 2620856
 2621948, e-mail: ce@cegroup.com

ODISHA WORKS DEPARTMENT
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 25+000 TO KM 40+000 (BALANCE WORK) PACKAGE - P04A-2

PLAN & PROFILE
 KM 40+000 TO 41+000
 DRAWING NO. 73468(LA)HIGHWAYS/IPP-41
 SHEET NO. 41



NO.	DATE	PREPARED BY	CHECKED BY	APPROVED BY
1				
2				
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PLAN & PROFILE
KM 41+000 TO 42+000

73486LASAIIHIGHWAYSPP-42

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOIL - DUHURIA KM 25+000 TO KM 42+000 (BALANCE WORK)

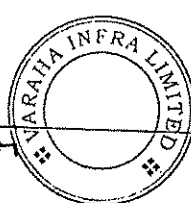
ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT:
LEA Associates South Asia Pvt. Ltd. India
B-1, 6-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHERA ROAD, NEW DELHI-11004

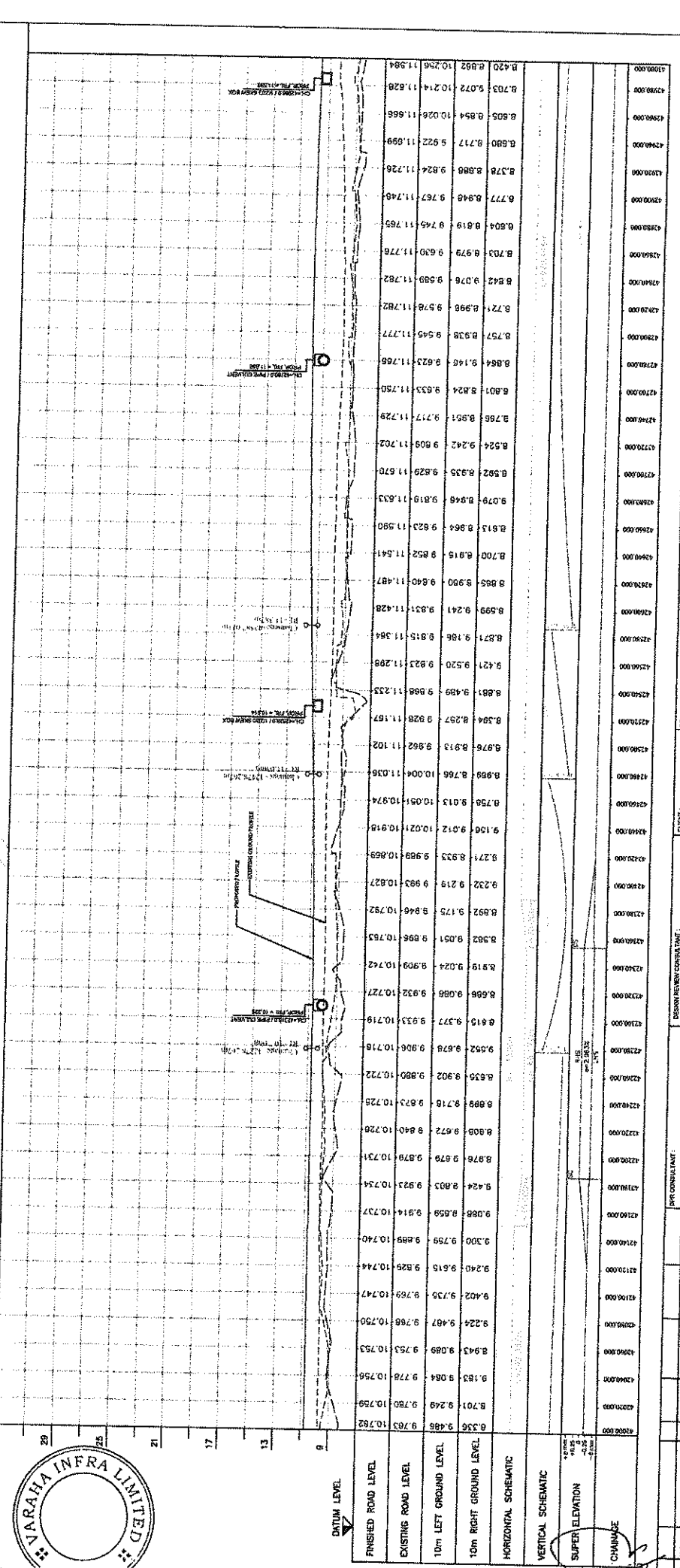
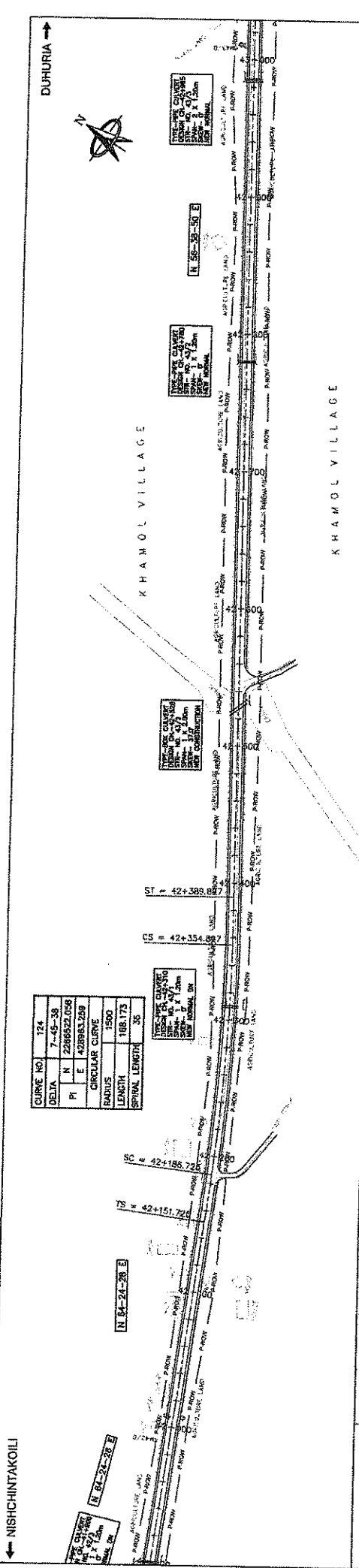
CONSULTANT:
CONSULTING ENGINEERS GROUP LTD.
E-2, MOULI COLONY MALWA NAGAR, JALPUR-17
Ph: 0142625882, 2821989, 2825556 Fax: 2821348, e-mail: esg@cegroupindia.com

DRAWING TITLE: 50m
SCALE: 25
HORIZONTAL SCALE: 2.5
VERTICAL SCALE: 5m

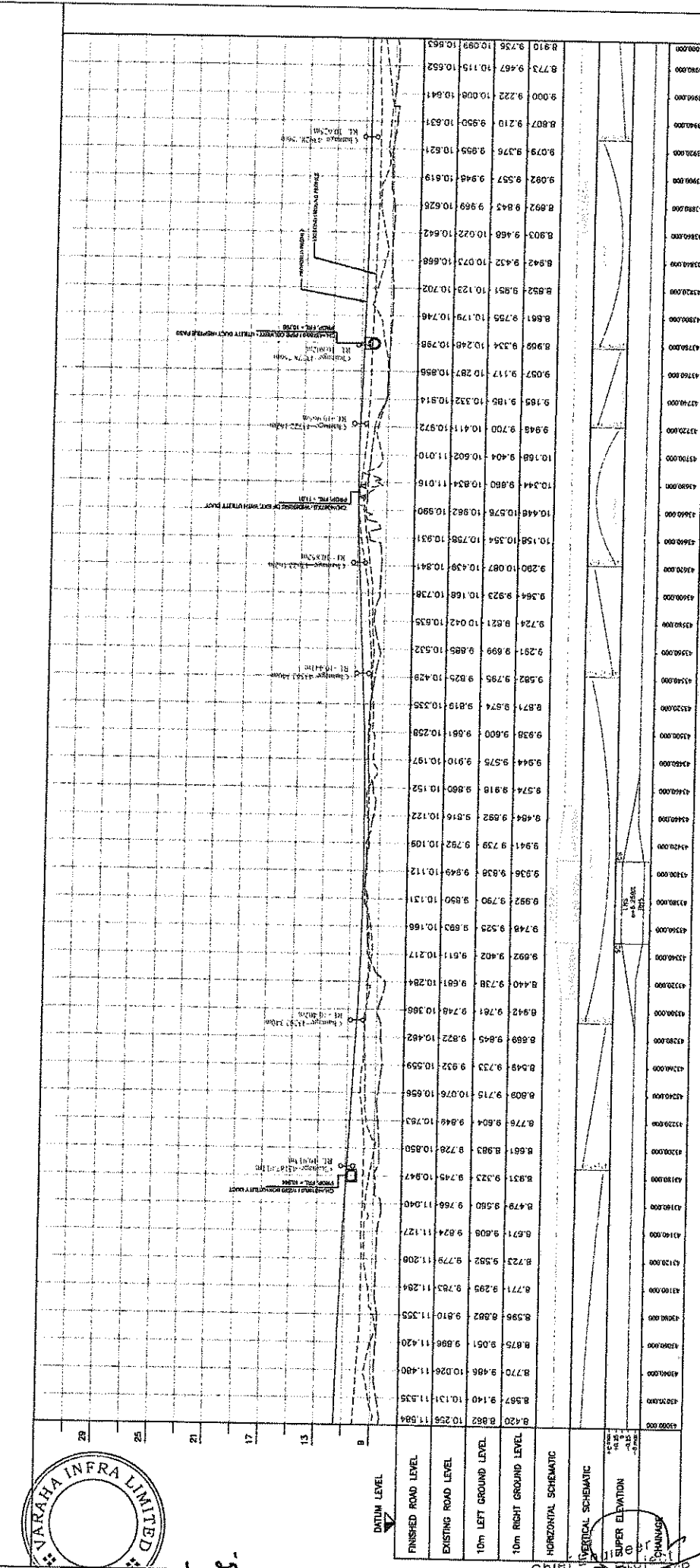
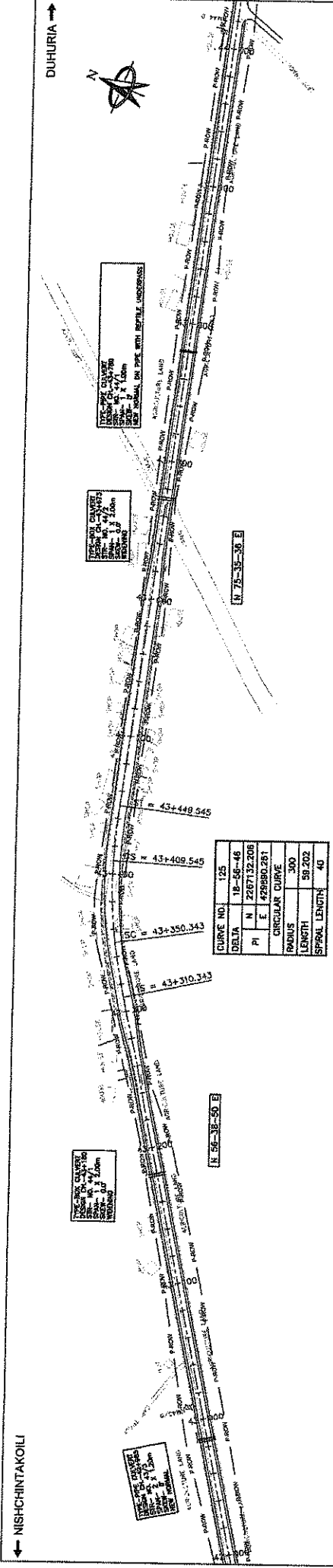
Sujeet Singh



World Bank Project
O/o the E.I.C.C., Odisha, BBSR



ST	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL	EXISTING ROAD LEVEL	FINISHED ROAD LEVEL
4200+00	9.488	9.703	9.488	9.703
4200+10	9.248	9.750	9.248	9.750
4200+20	9.183	9.084	9.183	9.084
4200+30	9.402	9.735	9.402	9.735
4200+40	9.300	9.759	9.300	9.759
4200+50	9.088	9.858	9.088	9.858
4200+60	9.424	9.803	9.424	9.803
4200+70	9.876	9.879	9.876	9.879
4200+80	9.808	9.872	9.808	9.872
4200+90	9.809	9.718	9.809	9.718
4201+00	9.830	9.902	9.830	9.902
4201+10	9.906	9.806	9.906	9.806
4201+20	9.924	9.924	9.924	9.924
4201+30	9.986	9.904	9.986	9.904
4201+40	9.898	10.742	9.898	10.742
4201+50	9.898	9.051	9.898	9.051
4201+60	9.922	9.175	9.922	9.175
4201+70	9.983	10.827	9.983	10.827
4201+80	9.933	9.989	9.933	9.989
4201+90	9.912	10.021	9.912	10.021
4202+00	9.758	10.051	9.758	10.051
4202+10	9.898	9.766	9.898	9.766
4202+20	9.976	9.913	9.976	9.913
4202+30	9.994	9.297	9.994	9.297
4202+40	9.881	9.489	9.881	9.489
4202+50	9.821	11.298	9.821	11.298
4202+60	9.871	9.186	9.871	9.186
4202+70	9.899	9.241	9.899	9.241
4202+80	9.885	9.980	9.885	9.980
4202+90	9.700	9.815	9.700	9.815
4203+00	9.813	9.864	9.813	9.864
4203+10	9.079	9.948	9.079	9.948
4203+20	9.592	9.829	9.592	9.829
4203+30	9.592	11.670	9.592	11.670
4203+40	9.524	9.242	9.524	9.242
4203+50	9.785	9.951	9.785	9.951
4203+60	9.801	9.824	9.801	9.824
4203+70	9.884	9.148	9.884	9.148
4203+80	9.757	9.938	9.757	9.938
4203+90	9.721	9.998	9.721	9.998
4204+00	9.842	9.078	9.842	9.078
4204+10	9.703	9.979	9.703	9.979
4204+20	9.804	9.819	9.804	9.819
4204+30	9.777	9.948	9.777	9.948
4204+40	9.378	9.888	9.378	9.888
4204+50	9.690	9.717	9.690	9.717
4204+60	9.805	9.854	9.805	9.854
4204+70	9.702	10.214	9.702	10.214
4204+80	9.892	11.981	9.892	11.981



NO.	DATE	BY	REVISION
1	10/11/2018	DR	ORIGINAL
2	10/11/2018	DR	REVISION
3	10/11/2018	DR	REVISION
4	10/11/2018	DR	REVISION
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49	10/11/2018	DR	REVISION
50	10/11/2018	DR	REVISION

PLAN & PROFILE
KM 43+000 TO 44+000

SCALE: HORIZONTAL SCALE 1:25, VERTICAL SCALE 1:50

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOLI-DURHURIA KM 25+000 TO KM 44+000 (BALANCE WORK) PACKAGE - PKA-2

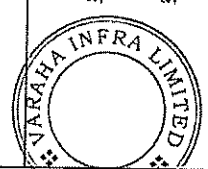
ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT: LEA Associates South Asia Pvt. Ltd., India B-1, E-27, 11th Floor, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATHURA ROAD, NEW DELHI-11004

DR CONSULTANT: CONSULTING ENGINEERS GROUP LTD. E-12, MAJE COLONY, MALVIYA NAGAR, JAIPUR-302002. Tel: +91-141-2528989, 2521888, 2520555 Fax: 2521348, e-mail: eng@cegroupindia.com

APPROVED: [Signature]

DATE: 10/11/2018



Sachin Shrivastava

World Bank
 O/o the E.I.C.C. Office, BSR

NISHCHINTAKOILI

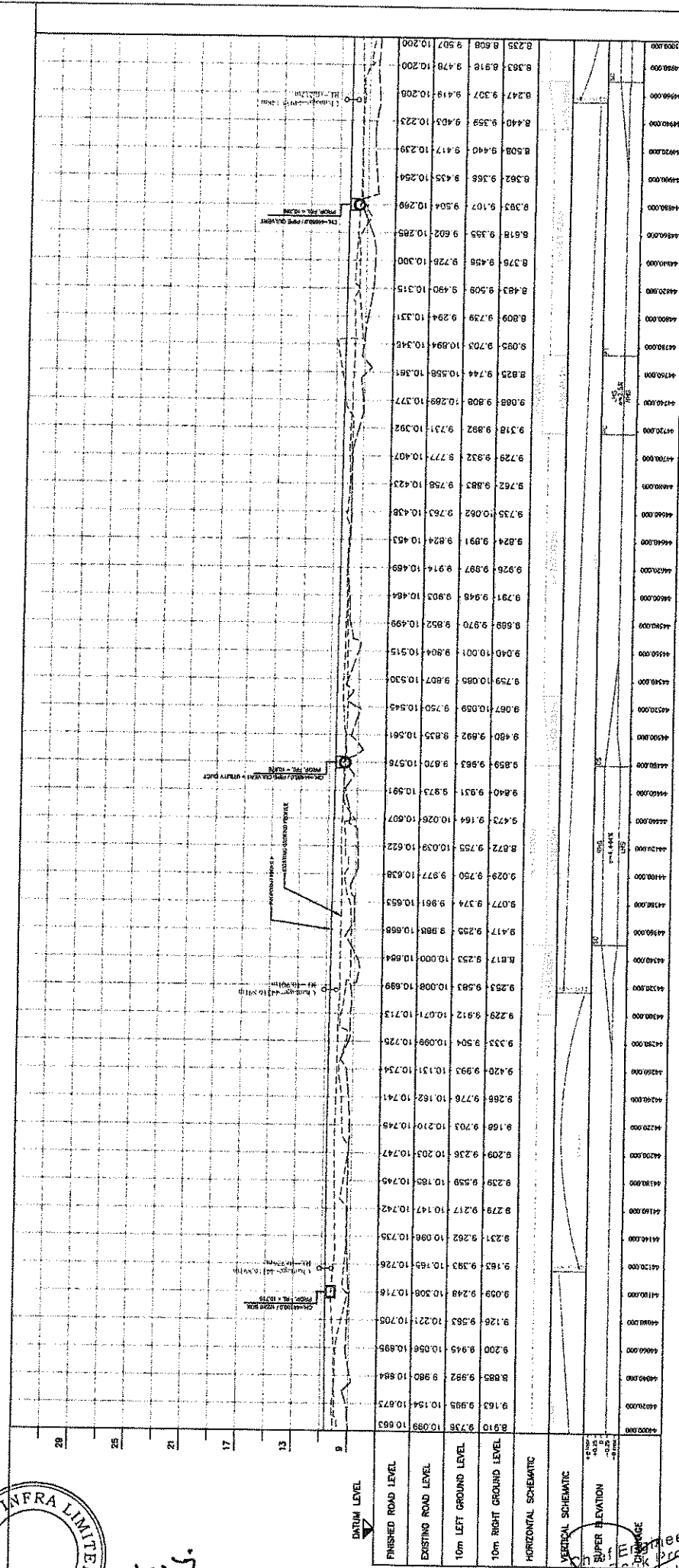
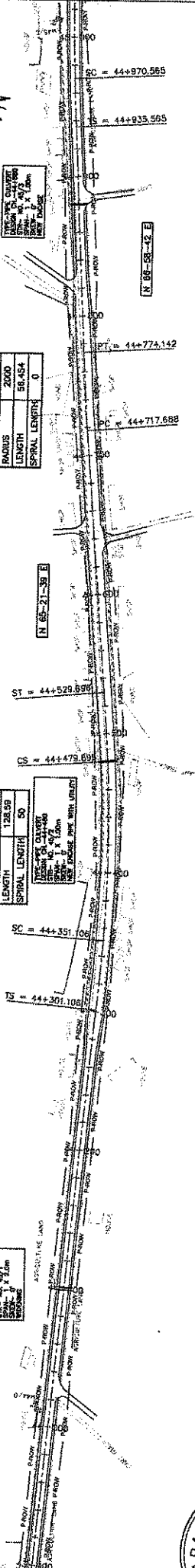
DUHURIA

CURVE NO.	127
DELTA	1-37-02
N	2207327.800
E	431184.52
CIRCULAR CURVE	
RADIUS	2000
LENGTH	BR-454
SPIRAL LENGTH	0

CURVE NO.	126
DELTA	21-08
N	2207380.013
E	430863.873
CIRCULAR CURVE	
RADIUS	1000
LENGTH	128.59
SPIRAL LENGTH	50

THIS PLAN CURVE
DESIGN SPEED = 40 km/hr
SUPER ELEVATION = 1.5%
SIDE SLOPE = 1:1

THIS PLAN CURVE
DESIGN SPEED = 40 km/hr
SUPER ELEVATION = 1.5%
SIDE SLOPE = 1:1



NO.	DATE	BY	REVISION
1			ORIGINAL
2			REVISION
3			REVISION
4			REVISION
5			REVISION
6			REVISION
7			REVISION
8			REVISION
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23			REVISION
24			REVISION
25			REVISION
26			REVISION
27			REVISION
28			REVISION
29			REVISION
30			REVISION

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI, DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PQA-2

DRAWING TITLE: PLAN & PROFILE KM 44+000 TO 45+000

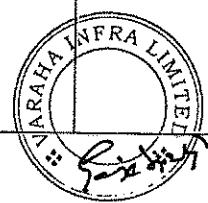
SCALE: HORIZONTAL SCALE 1:25, VERTICAL SCALE 1:5

CLIENT: ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT: LEA Associates South Asia Pvt. Ltd. India B-1, E-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATURA ROAD, NEW DELHI-110044

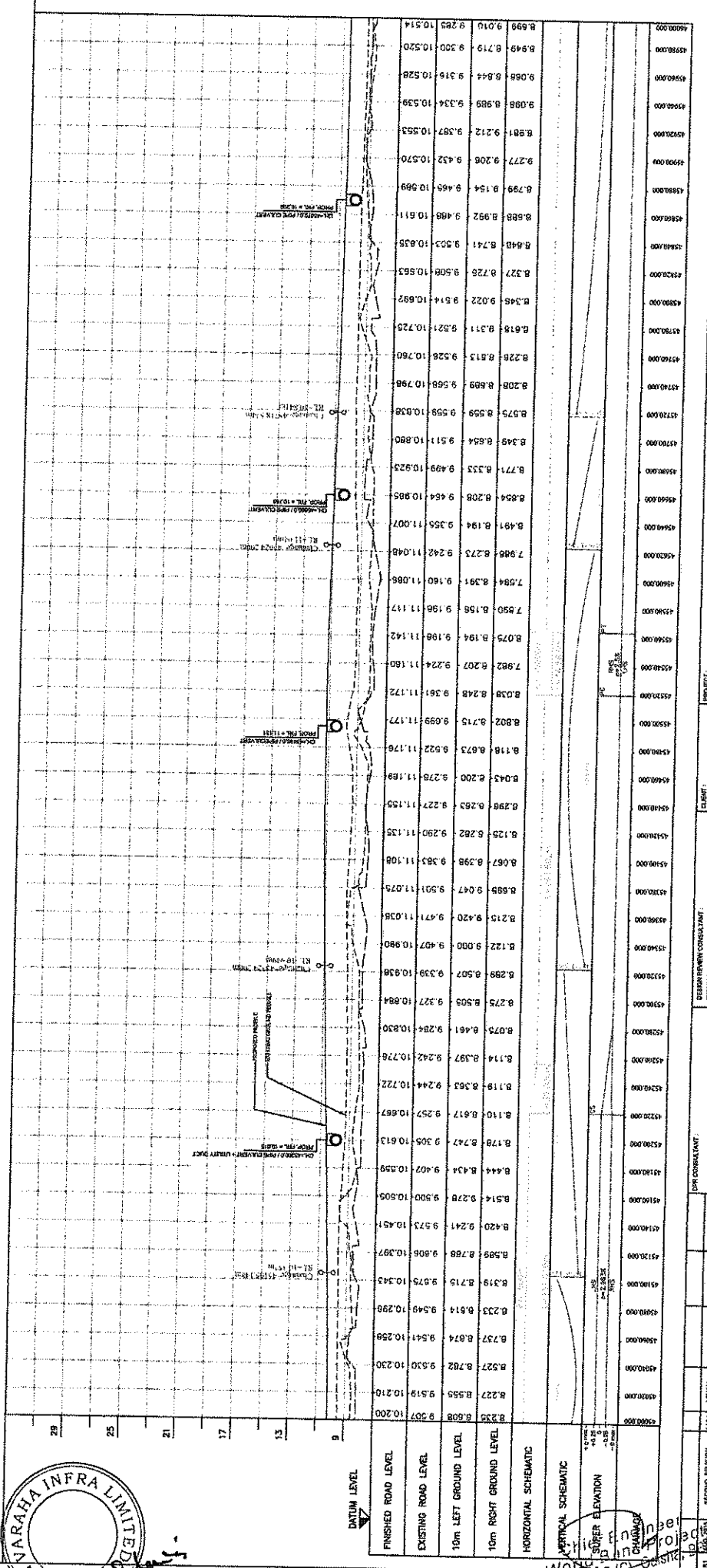
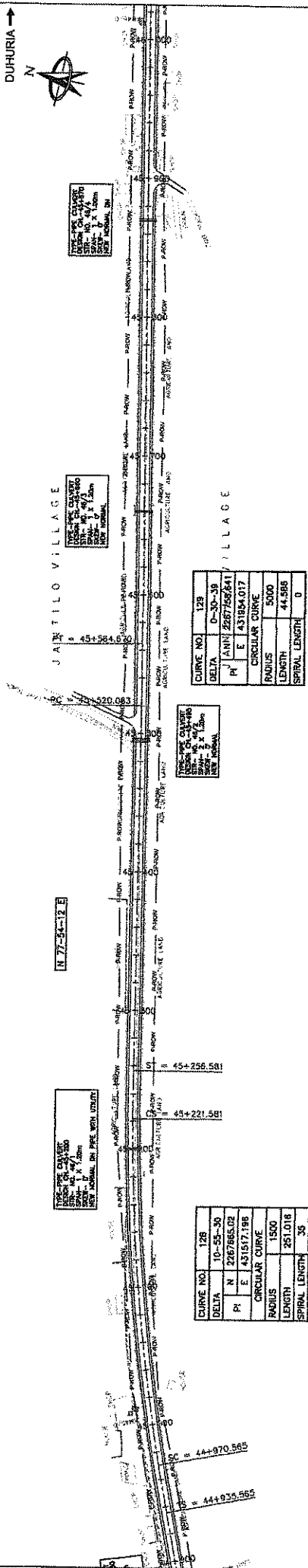
CONSULTANT: CONSUULTING ENGINEERS GROUP LTD. E-12, MOJI COLONY, MALVIYA NAGAR, JAIPUR-302015 Tel: +91-141-2520889, 2521699, 2525556 Fax: 2521548, E-mail: coneg@coneg.co.in

APPROVED: [Signature]



On the left side of the road, there is a drainage channel. The profile shows the road level is consistently above the ground level, with a slight dip in the center for drainage. The vertical curve is clearly visible, showing a smooth transition between different grades.

NISHCHINTAKOILI



NO.	DATE	BY	REVISION
01	10/05/2018	DR	Original
02	10/05/2018	DR	As per comments

DR CORRECTANT:	APPROVED:
CONSULTING ENGINEERS GROUP LTD. B-1, 5-27, 10th FLOOR, KAMANI CORPORATIVE INDUSTRIAL ESTATE, MATUHURA ROAD, NEW DELHI-110044 Tel: 91-11-2620989, 2621389, 2625556 Fax: 2621348, e-mail: ceg@cegroupindia.com	[Signature] APPROVED:

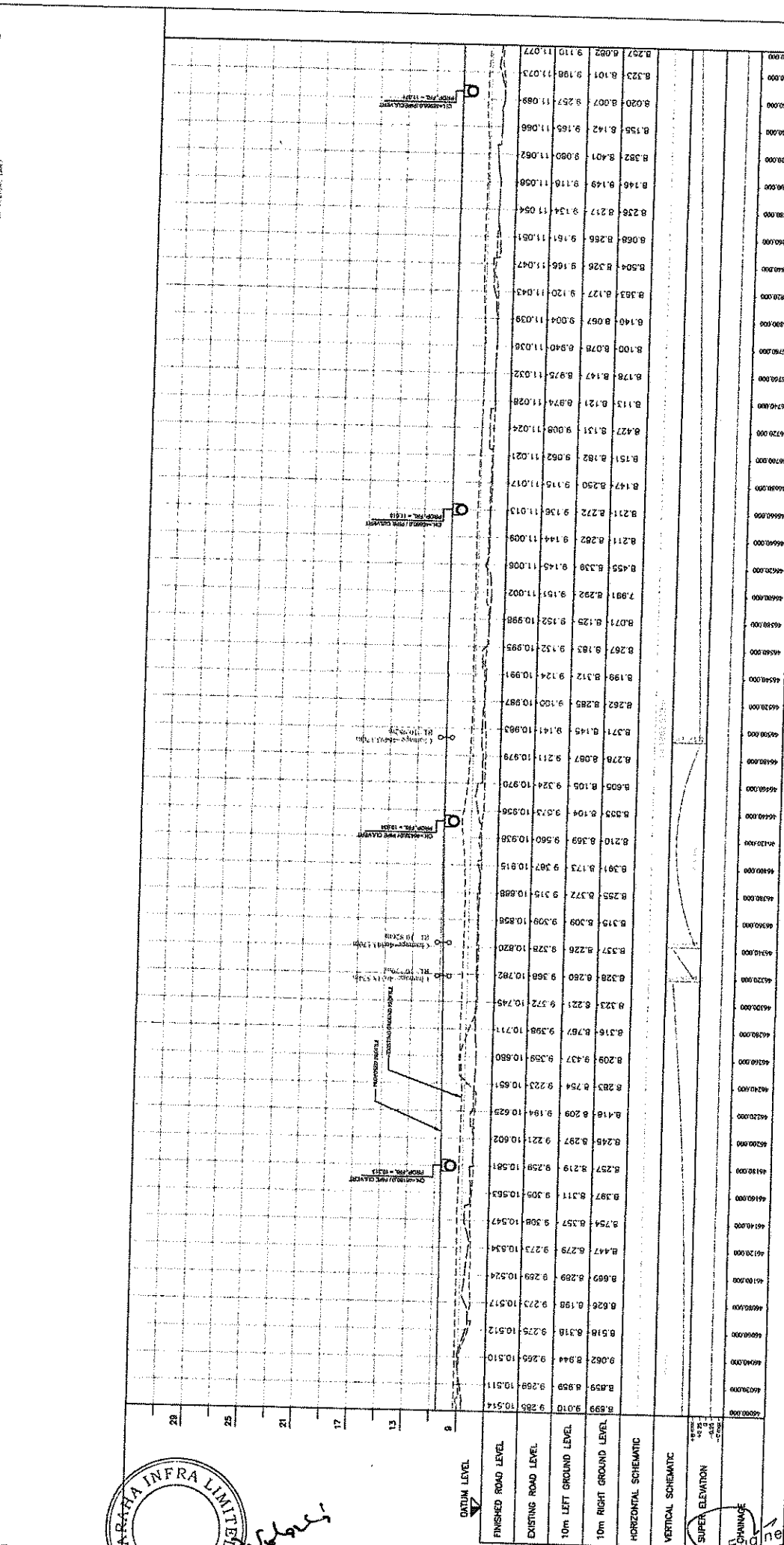
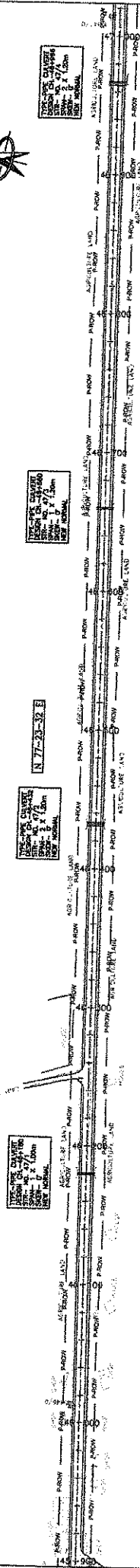
CLIENT:	PROJECT:
ODISHA WORKS DEPARTMENT	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO PLANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - PMA-2

SCALE:
HORIZONTAL SCALE: 1:25 VERTICAL SCALE: 1:2.5

DRAWING TITLE:	DWG. NUMBER:
PLAN & PROFILE	13486LSAHHIGHWAYSPP-46

NISHCHINTAKOILI

DUHURIA



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
40000.000	8.699	9.010	9.285	10.514
40100.000	8.459	8.959	9.299	10.511
40200.000	8.062	8.944	9.265	10.510
40300.000	8.275	8.925	9.275	10.512
40400.000	8.626	8.198	9.273	10.517
40500.000	8.669	8.289	9.269	10.524
40600.000	8.447	8.279	9.273	10.534
40700.000	8.754	8.357	9.308	10.547
40800.000	8.387	8.311	9.309	10.563
40900.000	8.257	8.219	9.258	10.581
41000.000	8.245	8.297	9.221	10.602
41100.000	8.416	8.209	9.194	10.629
41200.000	8.283	8.754	9.223	10.651
41300.000	8.209	8.437	9.359	10.680
41400.000	8.316	8.767	9.398	10.711
41500.000	8.323	8.221	9.372	10.749
41600.000	8.328	8.260	9.368	10.782
41700.000	8.337	8.226	9.328	10.820
41800.000	8.319	8.309	9.309	10.858
41900.000	8.295	8.372	9.316	10.888
42000.000	8.391	8.173	9.307	10.915
42100.000	8.210	8.369	9.560	10.938
42200.000	8.333	8.104	9.573	10.956
42300.000	8.605	8.105	9.324	10.970
42400.000	8.278	8.097	9.211	10.979
42500.000	8.371	8.145	9.141	10.983
42600.000	8.262	8.285	9.100	10.987
42700.000	8.199	8.312	9.124	10.991
42800.000	8.267	8.163	9.152	10.995
42900.000	8.071	8.129	9.152	10.998
43000.000	7.991	8.292	9.161	11.002
43100.000	8.455	8.339	9.145	11.006
43200.000	8.211	8.202	9.144	11.009
43300.000	8.231	8.272	9.136	11.013
43400.000	8.147	8.250	9.115	11.017
43500.000	8.151	8.182	9.062	11.021
43600.000	8.427	8.131	9.008	11.024
43700.000	8.113	8.121	8.974	11.028
43800.000	8.178	8.147	8.975	11.032
43900.000	8.100	8.078	8.940	11.036
44000.000	8.140	8.097	9.004	11.039
44100.000	8.363	8.127	9.120	11.043
44200.000	8.504	8.326	9.166	11.047
44300.000	8.068	8.266	9.161	11.051
44400.000	8.238	8.217	9.134	11.054
44500.000	8.146	8.149	9.118	11.058
44600.000	8.352	8.401	9.090	11.062
44700.000	8.156	8.142	9.165	11.066
44800.000	8.030	8.007	9.257	11.069
44900.000	8.323	8.104	9.198	11.073
45000.000	8.082	9.110	11.077	

PLAN & PROFILE
KM 46+000 TO 47+000

PROJECT: **WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI - DUHURIA KM 25+000 TO KM 49+000 (BALANCE WORK) PACKAGE - P04A-2**

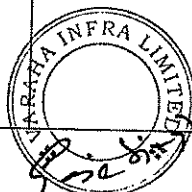
CLIENT: **ODISHA WORKS DEPARTMENT**

DESIGN REVIEW CONSULTANT: **LEA Associates South Asia Pvt. Ltd., India**
 1st FLOOR, MODERN COOPERATIVE INDUSTRIAL ESTATE, MATIHRORA ROAD, NEW DELHI-110044

CONSULTANT: **CONSULTING ENGINEERS GROUP LTD.**
 17, JALDI COLONY, MALVIYA NAGAR, JAIPUR-17
 INDIA. TEL: 0141-2621895/2621895 Fax: 0141-2621948, e-mail: ceg@cegroup.com

DATE: 15/05/2015	DESIGNED BY: SSK	CHECKED BY: SSK	APPROVED BY: SSK
DATE: 15/05/2015	DRAWN BY: SSK	CHECKED BY: SSK	APPROVED BY: SSK
DATE: 15/05/2015	DESIGNED BY: SSK	CHECKED BY: SSK	APPROVED BY: SSK
DATE: 15/05/2015	DRAWN BY: SSK	CHECKED BY: SSK	APPROVED BY: SSK

SCALE: HORIZONTAL SCALE: 1:2500, VERTICAL SCALE: 1:500



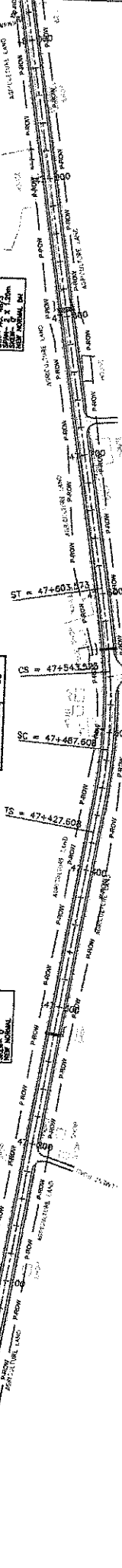
WORLDWIDE ENGINEERING CONSULTANTS (P) LTD. 0/6 The E.I.P.(C), Odisha

CURVE NO.	130
DELTA	18° 27' 23"
PI	N 2068189.466
E	433860.208
CIRCULAR CURVE	
RADIUS	560
LENGTH	55.965
SPIRAL LENGTH	6D

VERTICAL CURVE DATA
 GRADE 1: -0.25%
 GRADE 2: 0.25%
 L: 112.00m
 SPT: NORMAL

VERTICAL CURVE DATA
 GRADE 1: -0.25%
 GRADE 2: 0.25%
 L: 112.00m
 SPT: NORMAL

VERTICAL CURVE DATA
 GRADE 1: -0.25%
 GRADE 2: 0.25%
 L: 112.00m
 SPT: NORMAL



STATION	FINISHED ROAD LEVEL	EXISTING ROAD LEVEL	10m LEFT GROUND LEVEL	10m RIGHT GROUND LEVEL
47+000.000	8.297	8.082	8.110	8.077
47+010.000	8.257	8.042	8.070	8.037
47+020.000	8.217	8.002	8.030	8.007
47+030.000	8.177	7.962	8.000	8.000
47+040.000	8.137	7.922	8.000	8.000
47+050.000	8.097	7.882	8.000	8.000
47+060.000	8.057	7.842	8.000	8.000
47+070.000	8.017	7.802	8.000	8.000
47+080.000	7.977	7.762	8.000	8.000
47+090.000	7.937	7.722	8.000	8.000
47+100.000	7.897	7.682	8.000	8.000
47+110.000	7.857	7.642	8.000	8.000
47+120.000	7.817	7.602	8.000	8.000
47+130.000	7.777	7.562	8.000	8.000
47+140.000	7.737	7.522	8.000	8.000
47+150.000	7.697	7.482	8.000	8.000
47+160.000	7.657	7.442	8.000	8.000
47+170.000	7.617	7.402	8.000	8.000
47+180.000	7.577	7.362	8.000	8.000
47+190.000	7.537	7.322	8.000	8.000
47+200.000	7.497	7.282	8.000	8.000
47+210.000	7.457	7.242	8.000	8.000
47+220.000	7.417	7.202	8.000	8.000
47+230.000	7.377	7.162	8.000	8.000
47+240.000	7.337	7.122	8.000	8.000
47+250.000	7.297	7.082	8.000	8.000
47+260.000	7.257	7.042	8.000	8.000
47+270.000	7.217	7.002	8.000	8.000
47+280.000	7.177	6.962	8.000	8.000
47+290.000	7.137	6.922	8.000	8.000
47+300.000	7.097	6.882	8.000	8.000
47+310.000	7.057	6.842	8.000	8.000
47+320.000	7.017	6.802	8.000	8.000
47+330.000	6.977	6.762	8.000	8.000
47+340.000	6.937	6.722	8.000	8.000
47+350.000	6.897	6.682	8.000	8.000
47+360.000	6.857	6.642	8.000	8.000
47+370.000	6.817	6.602	8.000	8.000
47+380.000	6.777	6.562	8.000	8.000
47+390.000	6.737	6.522	8.000	8.000
47+400.000	6.697	6.482	8.000	8.000
47+410.000	6.657	6.442	8.000	8.000
47+420.000	6.617	6.402	8.000	8.000
47+430.000	6.577	6.362	8.000	8.000
47+440.000	6.537	6.322	8.000	8.000
47+450.000	6.497	6.282	8.000	8.000
47+460.000	6.457	6.242	8.000	8.000
47+470.000	6.417	6.202	8.000	8.000
47+480.000	6.377	6.162	8.000	8.000
47+490.000	6.337	6.122	8.000	8.000
47+500.000	6.297	6.082	8.000	8.000
47+510.000	6.257	6.042	8.000	8.000
47+520.000	6.217	6.002	8.000	8.000
47+530.000	6.177	5.962	8.000	8.000
47+540.000	6.137	5.922	8.000	8.000
47+550.000	6.097	5.882	8.000	8.000
47+560.000	6.057	5.842	8.000	8.000
47+570.000	6.017	5.802	8.000	8.000
47+580.000	5.977	5.762	8.000	8.000
47+590.000	5.937	5.722	8.000	8.000
47+600.000	5.897	5.682	8.000	8.000

PLAN & PROFILE
KM 47+000 TO 48+000

DRAWING TITLE: 73466LASA(HIGHWAYS)PP-48
DWD NUMBER: 73466LASA(HIGHWAYS)PP-48

SCALE: 1:25

HORIZONTAL SCALE: 1:25

VERTICAL SCALE: 1:5

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOLI - DUHURIA KM 25+000 TO KM 48+000 (BALANCE WORK)

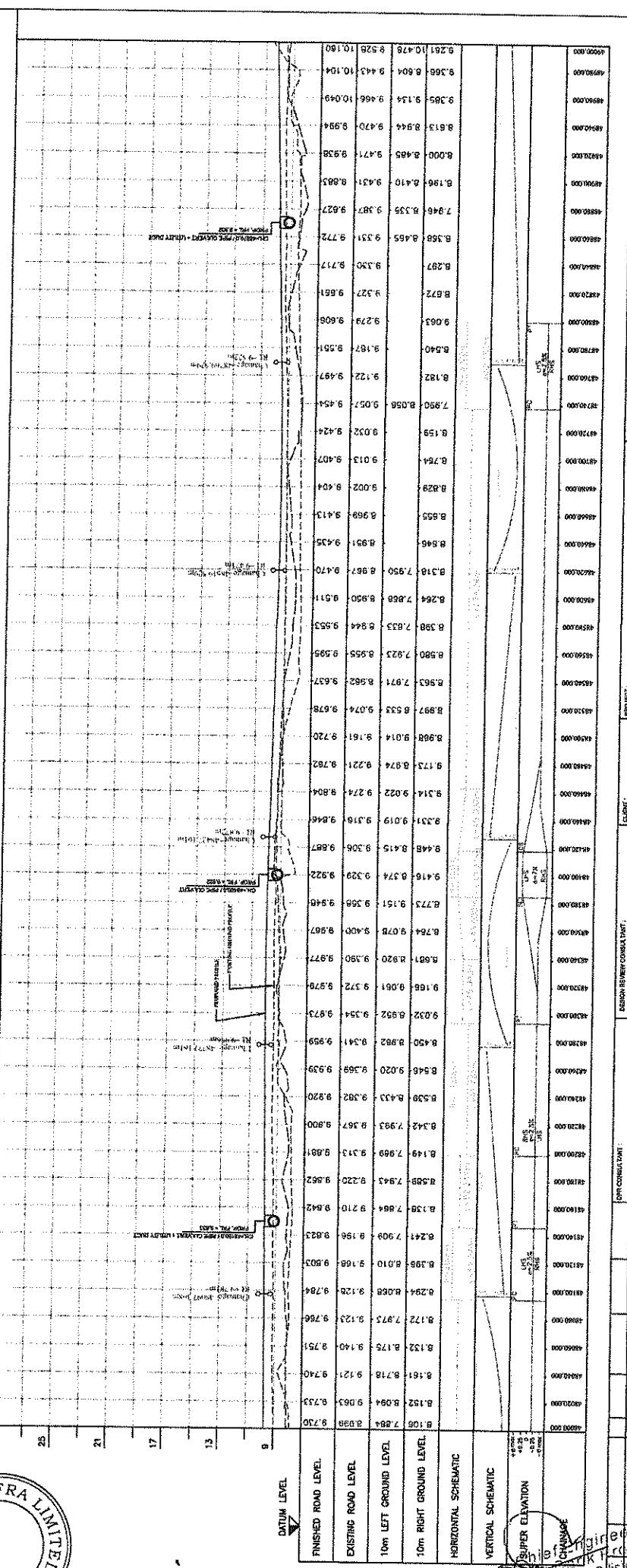
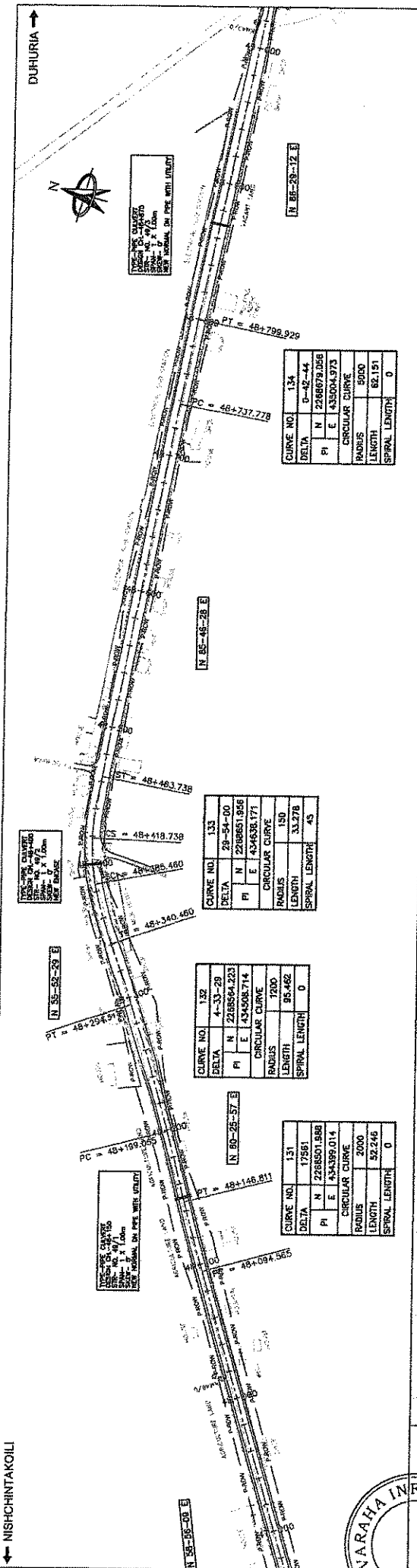
PACKAGE - P04-2

CLIENT: ODISHA WORKS DEPARTMENT

DESIGN REVIEW CONSULTANT: LEA Associates South Asia Pvt. Ltd., India
B-1, 5th Floor, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044

NO.	DATE	BY	CHKD	APPVED	DESCRIPTION
1	18/08/20	NK	SK	SK	PREPARED
2	20/08/20	SK	SK	SK	REVISION
3	20/08/20	SK	SK	SK	REVISION
4	20/08/20	SK	SK	SK	REVISION
5	20/08/20	SK	SK	SK	REVISION

SUPER ELEVATION: 11.077
CHANGING



PLAN & PROFILE
KM 48+000 TO 49+000

DRAWING TITLE

SCALE: 25
HORIZONTAL SCALE 5m
VERTICAL SCALE 2.5

PROJECT: WIDENING AND STRENGTHENING OF EXISTING
CARRIAGEWAY TO 2 LANE ROAD FROM NISHCHINTAKOILI,
DUDHURA KM 25+000 TO KM 49+000 (BALANCE WORK)
PACKAGE - P04A-2

DESIGNER: ODISHA WORKS
DEPARTMENT

DESIGN REVIEW CONSULTANT:
LEA Associates South Asia Pvt. Ltd., India
B-1, 6-27, 1st FLOOR, MOHAN COOPERATIVE
INDUSTRIAL ESTATE, MATHURA ROAD, NEW
DELHI-110044

CONSULTANT:
CONSULTING ENGINEERS GROUP LTD.
E-12/MAJI COLONY, MAYAPUR, NEW DELHI-110017
Tel: +91-11-2620989, 2321899, 2525558 Fax:
2521546, e-mail: ce@cegroupindia.com

NO.	DATE	BY	DRAWN	REVISION	REASON	APPROVED	CHECKED




010 the E.L.L.C.

TABLE OF CONTENT

STRUCTURAL DRAWINGS

Sl. No	Drawing Name	Dwg. No.	No. Of Sheets	Page No.
1	GENERAL NOTES	73466RLASAGN-01	01	01
2	GENERAL ARRANGEMENT DRAWING OF MINOR BRIDGE OVER SUKARPADA CANAL AT Km 32+088	73466RLASAGADIMBR-04	01	02
3	GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION	73466RLASAGADIBOX-01	01	03
4	GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL BOX CULVERT UNDER WIDENING	73466RLASAGADIBOX-02	01	04
5	GENERAL ARRANGEMENT DRAWING OF SKEW SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION	73466RLASAGADIBOX-03	01	05
6	GENERAL ARRANGEMENT DRAWING OF SKEW SINGLE CELL BOX CULVERT UNDER WIDENING	73466RLASAGADIBOX-04	01	06
7	GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL PIPE CULVERT (TYPES-1, 2 & 3)	73466RLASAGADPIPE-01	03	07,08,09
8	GENERAL ARRANGEMENT DRAWING OF NORMAL DOUBLE CELL PIPE CULVERT (TYPES-1, 2 & 3)	73466RLASAGADPIPE-02	03	10,11,12
9	TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL ACCESS CULVERT	73466RLASAGADACPIPE-01	01	13
10	SCHEDULE OF PIPE CULVERT NEW CONSTRUCTION	73466RLASAGADPIPE-01	01	14
11	SCHEDULE OF PIPE CULVERT FOR REPTILE UNDERPASS	73466RLASAGADPIPE-01	01	15
12	SCHEDULE OF PIPE CULVERT WITH UTILITY	73466RLASAGADPIPE-02	01	16
13	SCHEDULE OF ACCESS PIPE CULVERT	73466RLASAGADPIPE-03	01	17
14	MISCELLANEOUS DRAWING DETAILS OF CRASH BARRIER, RCC APPROACH SLAB, DRAINAGE SPOUT AND EXPANSION JOINT	73466RLASAGADPIPE-04	01	18
15	MISCELLANEOUS DRAWING DETAILS OF RCC RAILING & POST, RCC DRAIN, FLOOR PROTECTION & CURTAIN WALL	73466RLASAMISC-01	01	19
16	MISCELLANEOUS DRAWING DETAILS OF RETAINING WALL	73466RLASAMISC-02	01	20
		73466RLASAMISC-03	01	
ENVIRONMENTAL DRAWINGS				
1	TYPICAL GENERAL ARRANGEMENT DRAWING FOR UTILITY DUCT	73466RLASAGADENV-01	01	21
2	TYPICAL GENERAL ARRANGEMENT DRAWING FOR REPTILE UNDERPASS	73466RLASAGADENV-02	01	22
3	TYPICAL DRAWING FOR SILT FENCE SEDIMENT ARRESTOR	73466RLASAGADENV-03	01	23
4	TYPICAL DRAWING FOR OIL & GREASE TRAP	73466RLASAGADENV-04	01	24




 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Sl. No	DATE	REVISION	BY	DRAWN	CHECKED	APPROVED	
01	AUG-2012						
02	FEB-2011	FIRST REVISION	DNV	JOY	BARABATULAMANT	GP RAJAGOPAL	
03	JUNE-2008	ORIGINAL	DNV	JOY	RAJASARAS	SRINIVAS	
PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISCHINTAKOILI - KM 25+00 TO KM 40+00 BALANCE WORK (PACKAGE - P04-2)							
DEPARTMENT: ODISHA WORKS DEPARTMENT							
CLIENT: LEA Associates South Asia Pvt. Ltd., India B-1, E-2, 1st FLOOR, MOHAN COOPERATIVE ESTATE, MATTHURA ROAD, NEW DELHI-110044							
CONSULTANT: CONSULTING ENGINEERS GROUP LTD. 2-A, M.L. COLONY, MALVIYA NAGAR, JAIPUR-17 TEL: 91-141-2520895-2521692,2522688 Fax: 2521044, e-mail: ceg@cegroupindia.com							
DRAWING TITLE: TABLE OF CONTENT							
							Scale: _____ Drawing No: _____ Sheet Number: _____

(A) GENERAL

- I. The design of bridges & culverts are in accordance with the IRC codes, specifications, other relevant IS codes & standards of M.O.R.T & H.
- II. All dimensions are in mm . levels are in metre & chainages are in kilometer. Only written dimensions shall be followed. No dimensions shall be scaled.
- III. The following loads have been considered in the design: --
 - a. One lane of IRC class 70R or one lane of IRC class A, or two lanes of IRC class A, on carriageway, whichever is critical.
 - b. Footpath load of 5kN/sgm for superstructure having footpaths has been considered in design.
 - c. Wearing coat load of 2.0kn/m². has been considered in design.
- IV. The designs are applicable for "severe" conditions of exposure.
- V. Wearing coat shall be 65mm thick comprising of 2 layers of 20mm each thick asphaltic concrete and one layer of 25mm thick mastic asphalt.

(B) MATERIALS SPECIFICATIONS

- I. Concrete shall be design mix and have a minimum 28 days characteristic strength as given below on 150mm cubes.

GRADE OF CONCRETE

STRUCTURAL ELEMENT	GRADE OF CONCRETE
a. RCC Foundation	- M20
b. RCC Substructure	- M20
c. RCC Pier / Abutment Cap	- M25
d. RCC Dirt Wall	- M25
e. RCC Approach Slab	- M30
f. RCC Superstructure	- M30
g. RCC Crash Barrier	- M40
h. RCC Return Wall	- M20
i. PCC Leveling Course	- M15
j. RCC Parapet	- M15
k. RCC Box	- M20

- II. Portland Slag Cement conforming to IS: 455 and having more than 50% slag shall be used oil concrete work up to grade M35
- Ordinary Portland Cement, 53 Grade conforming to IS: 12269 shall be used for High Performance concrete work. for grade M40 and M60
- III. To improve workability of concrete and cement grout, admixtures conforming to IS: 6925 and IS: 9103 may be permitted subject to satisfactory proven use. Admixtures generating hydrogen, nitrogen, chlorides etc. should not be used.
- IV. Minimum cement content & maximum water cement ratio in concrete shall be as per table 5 of IRC: 21-2000 for "severe conditions of Exposure".
- V. Nominal maximum size of aggregate to be used in RCC and PSC work shall be as per Technical specification.
- VI. Clear cover to main reinforcement shall be as follows: --
 - a) Superstructure - 50mm
 - b) Box type structures - 75mm
 - c) Piers / Abutment structure - 75mm
 - d) Abutment caps, Pier cap - 50mm
 - e) Foundation - 75mm
 - f) Retaining walls (earth face) - 75mm
 - g) Railing & Crash Barrier - 40mm
- VII. Suitable surface coating for concrete shall be used in the splash zone for protection against corrosion.

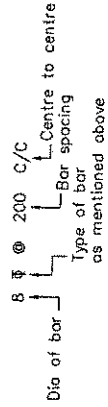
Water

- I. Water to be used in concreting, grouting and curing shall conform to clause 302.4 of IRC: 21-2000.

Reinforcement

- I. All reinforcement shall be of grade Fe 500 conforming to IS: 1786.

- II. Notation of reinforcement bar shall be as follows: --



- III. ϕ represent Grade -- S : 415 Grade Bar
- \emptyset represent Grade -- S : 240 Grade Bar
- spacing given for all reinforcement is perpendicular to bars unless otherwise shown on drawings.
- IV. Steel spacer bars shall be provided between adjacent layers of parallel reinforcement and spaced at not more than 60 x smaller bar dia. The diameter of the spacer bar shall be at least 25mm but not less than the maximum dia of the parallel reinforcements.
- V. Laps in reinforcement bars shall be avoided as far as possible. Laps may be provided ,if unavoidable. However, in such cases:
 - (a) minimum lap length of reinforcement shall conform to table 12 & clause 304.6.6 of IRC :21-2000
 - (b) not more than 50% of reinforcement bars shall be lapped at any one section
 - (c) for closely spaced bars lapping may be avoided by providing suitable type of mechanical splicing.
- VI. Welding of reinforcement bars shall not be permitted.
- VII. All structural steel shall conform to IS : 2062, Grade B. Fabrication shall conform to IRC:24.

Expansion Joints

- I. The expansion joints must be robust, durable, water tight and replaceable. It must be provided over the full width of superstructure including kerb and footpath following the profile of the same (where relevant). Expansion joints shall be obtained only from approved manufacturers and should be of proven type. Details of the expansion joint shall be approved by the site engineer before commencement of construction. Site fabricated expansion joints shall be prohibited.
- II. Fabricated steel parts shall be positioned accurately before concreting the portion of deck slab.
- III. Presence of manufacturer's representative at the time of positioning of embedded parts and installation of expansion joints is mandatory.
- IV. For the RCC type structures, asphalt plug type expansion joint shall be provided in accordance with M.O.R.T & H specification and shall be procured from the manufacturers as approved by NHAI.



Chief Engineer World Bank Project to the E.I.C.(C), Odisha, BBSR

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISICHINTAKOIL - KM 25+00 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)

SCALE:

CONTRACTOR: LEA Associates South Asia Pvt. Ltd., India 1st FLOOR, MOHAN COOPERATIVE HOUSING SOCIETY, MATRUKA ROAD, NEW DELHI-11004.

ENGINEER REVIEW CONSULTANT: CONSULTING ENGINEERS GROUP LTD. E-2/JOJO COLONY, MAJUMTA NAGAR JAYPUR-17 DELHI-11004. E-mail: esg@engineersgroup.com

NO.	DATE	REVISION	BY	CHKD	APPD	REMARKS
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2						
3						
4						
5						
6						
7						
8						
9						
10						

DESIGNER: [Signature]

CHECKED: [Signature]

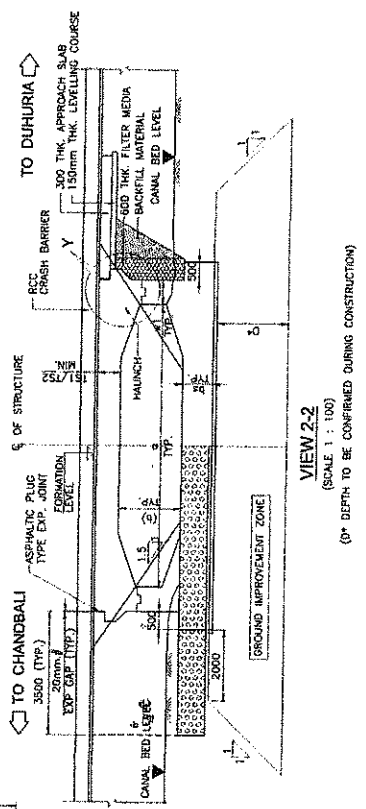
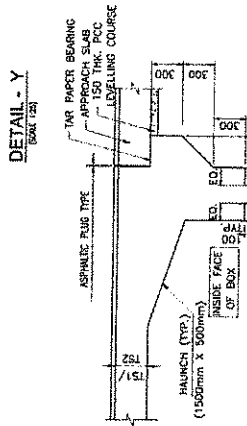
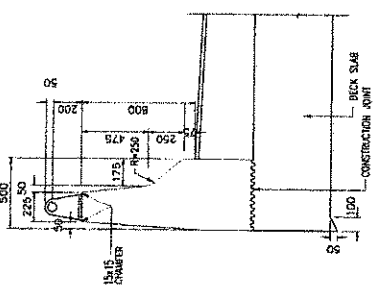
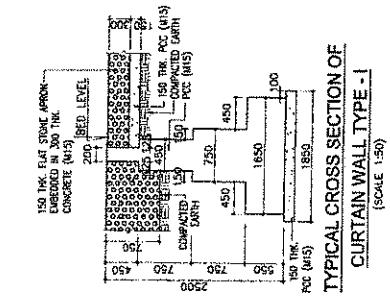
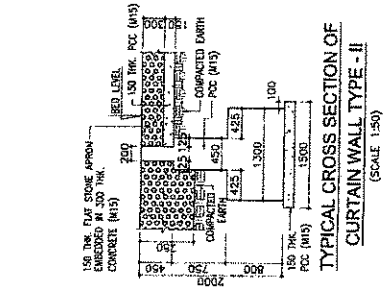
APPROVED: [Signature]

ODISHA WORKS DEPARTMENT

GENERAL NOTES

PKS NUMBER: LASA173466IGN-01

REV: 01



- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
 2. WORKING DRAWINGS FOR THE CONTRACTOR TO BE CONFIRMED DURING CONSTRUCTION.
 3. THE DEPTH OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:-
 4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
 5. WORKING DRAWINGS FOR THE CONTRACTOR TO BE CONFIRMED DURING CONSTRUCTION.
 6. THE DEPTH OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:-
 7. CLEARANCE FROM THE EXISTING ROAD TO THE STRUCTURE SHALL BE AS PER FOLLOWING:-
 8. ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
 9. THE SHAPE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 9 T/M².
 10. THE STRUCTURE NUMBER SHALL BE CLEARLY MAPPED AT EITHER END OF THE STRUCTURE.

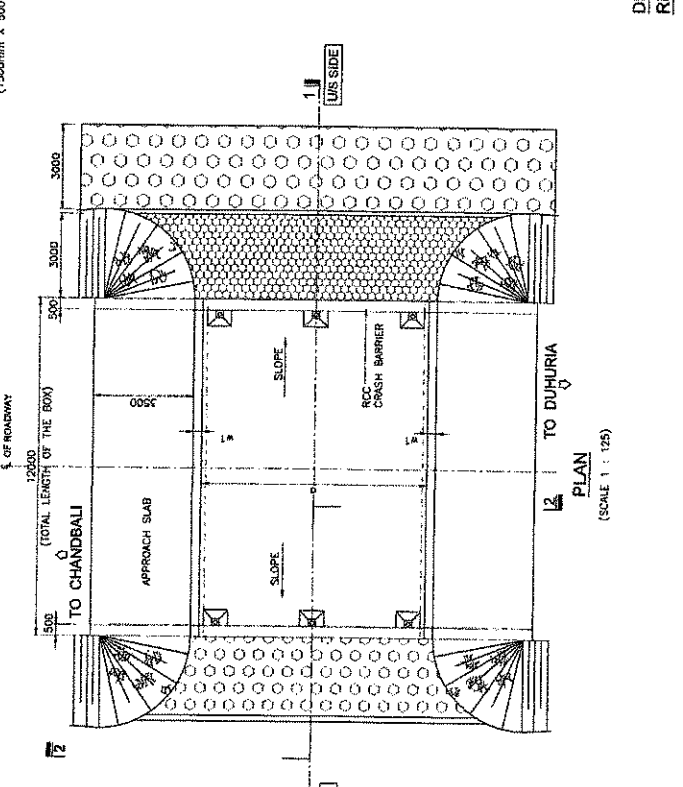
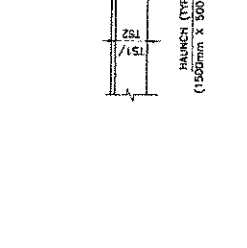
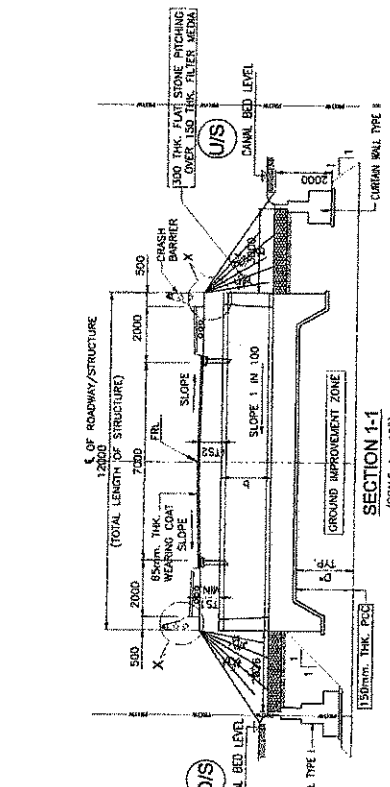


TABLE:-

Dimensions in millimeters (mm) unless otherwise specified.

NO.	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL AMOUNT
1	CONCRETE	M ³	174.17	174.17	30330.00
2	REINFORCEMENT	TONS	20.70	20.70	4284.00
3	FORMWORK	M ²	1035.84	1035.84	107100.00
4	LABOUR	MAN-DAYS	1035.84	1035.84	107100.00
5	OTHERS				
6	TOTAL				257334.00

PROJECT NO. 734661/LASAGADAMNER-04

SCALE: AS SHOWN

PROJECT TITLE: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO PLANE ROAD FROM JANGAPUR TO NISHCHINTAKOLI - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)

CLIENT: ODISHA WORKS DEPARTMENT

DESIGN REVIEW ORGANIZATION: LEA Associates South Asia Pvt. Ltd., India

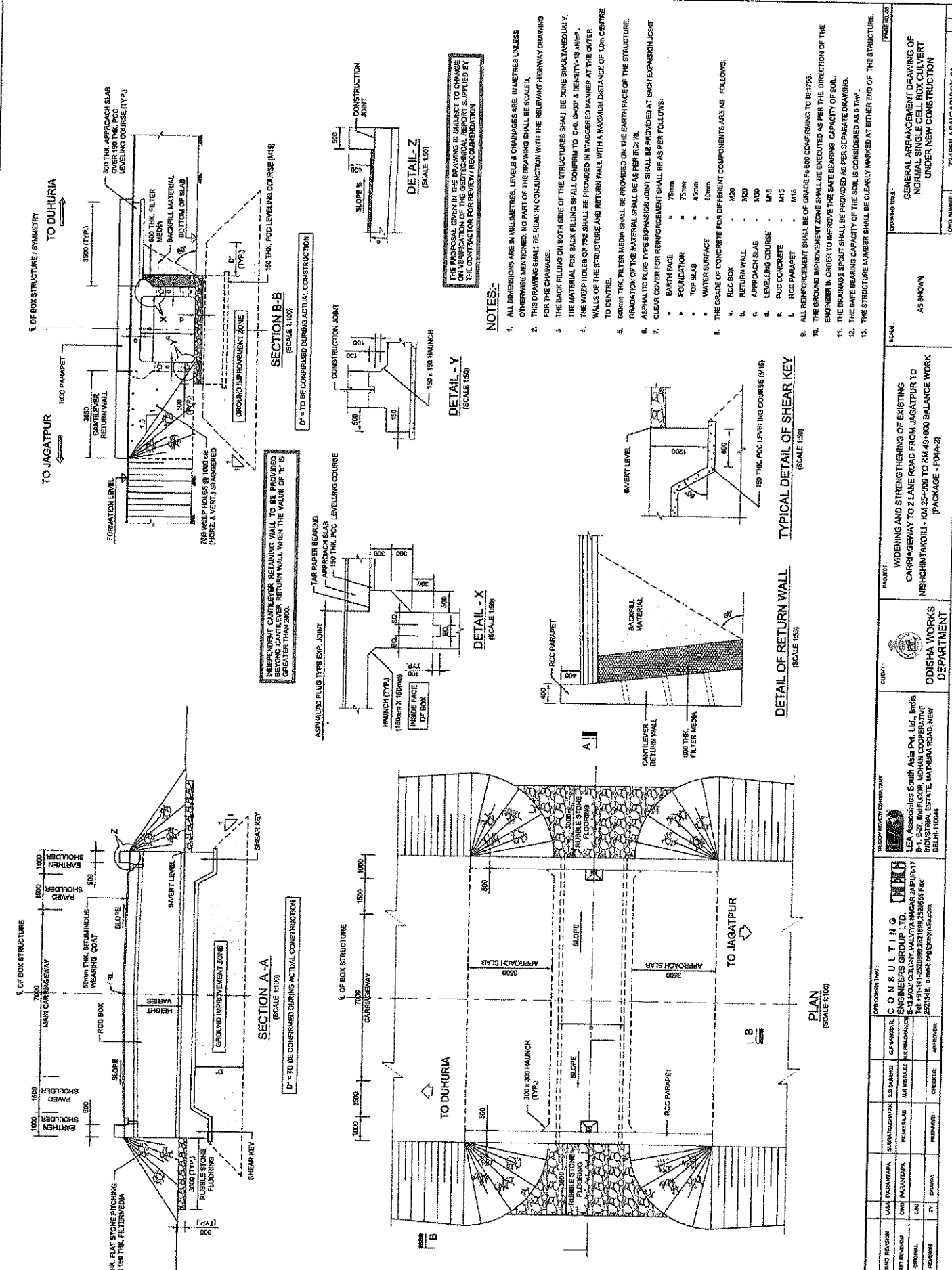
DATE: 25/11/2014

PROJECT CONSULTANT: CONSULTING ENGINEERS GROUP LTD., B-1/ALOKI COLONY, MALVIYA NAGAR, JALPAIGURI-725104, WB

DATE: 25/11/2014

NO.	DATE	BY	CHKD.	APPD.	REVISION
1	25/11/2014	JAY			AS BIDDING
2	25/11/2014	JAY			FOR APPROVAL
3	25/11/2014	JAY			FOR APPROVAL
4	25/11/2014	JAY			FOR APPROVAL

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR



INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED BEYOND CANTILEVER RETURN WALL WHEN THE VALUE OF 'H' IS GREATER THAN 2000.

P = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

ASPHALTIC PLUG TYPE EXP. JOINT

TAR PAPER BEARING

APPROACH SLAB

150 THK. PCC LEVELLING COURSE

CONSTRUCTION JOINT

150 x 150 HAUNCH

HAUNCH (TYP.) (150mm X 150mm)

INSIDE FACE OF BOX

RCC PARAPET

CANTILEVER RETURN WALL

600 THK. FILTER MEDIA

BACKFILL MATERIAL

INVERT LEVEL

150 THK. PCC LEVELLING COURSE (M/S)

TYPICAL DETAIL OF SHEAR KEY (SCALE 1:50)

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CHANGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHAUNGE.
3. THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SMALL TANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFORM TO C-40, 90-90 & DENSITY IS 19.5 KN/M³.
4. THE WEEP HOLER OF 75Ø SHALL BE PROVIDED IN SUGGESTED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
5. 600mm THK FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC:78.
6. ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
7. CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS:
 - a. EARTH FACE = 75mm
 - b. FOUNDATION = 75mm
 - c. TOP SLAB = 40mm
 - d. WATER SURFACE = 50mm
8. THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
 - a. RCC BOX = M20
 - b. RETURN WALL = M20
 - c. APPROACH SLAB = M20
 - d. LEVELLING COURSE = M15
 - e. RCC CONCRETE = M15
 - f. RCC PARAPET = M15
9. ALL REINFORCEMENT SHALL BE OF GRADE F80 CONFORMING TO IS:1786.
10. THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
11. THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
12. THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 9 T/m².
13. THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.

NO.	DATE	REVISION	BY	CHKD	APPORVED	CHECKED	APPROVED
1	18.06.2024	ISSUED FOR PERMIT	DR. J. P. PATRA	M. S. HAZARATI	S. P. HAZARATI		
CONSULTING ENGINEERS GROUP LTD. T-22, 2ND FLOOR, MALVIYA MANGA JAIPUR-47 INDUSTRIAL ESTATE, JAHAJIRA ROAD, NEY DELHI-110044 E-MAIL: ce@ceggroup.com							
ODISHA WORKS DEPARTMENT CLIENT:				WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLLI - KM. 25+100 TO KM. 49+100 BALANCE WORK (PACKAGE - P04A-2)			
PROJECT TITLE:			GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION			73466LASRAGADBOX-01	

SECTION A-A (SCALE 1:100)

SECTION B-B (SCALE 1:100)

DETAIL - X (SCALE 1:50)

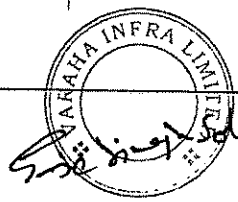
DETAIL - Y (SCALE 1:50)

DETAIL - Z (SCALE 1:50)

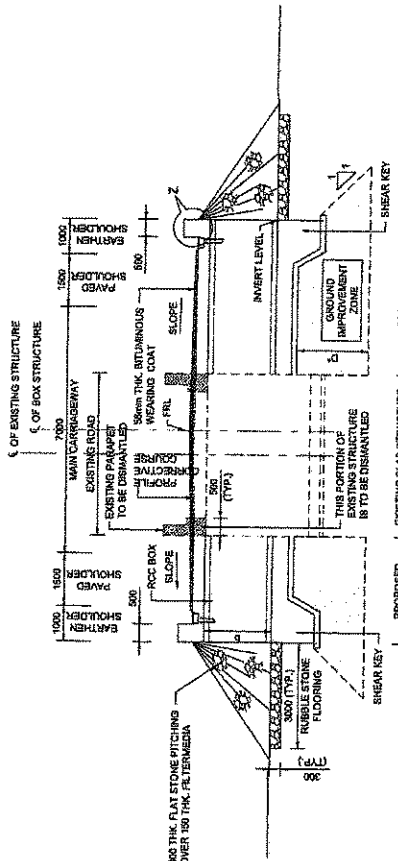
DETAIL OF RETURN WALL (SCALE 1:50)

TYPICAL DETAIL OF SHEAR KEY (SCALE 1:50)

PLAN (SCALE 1:100)

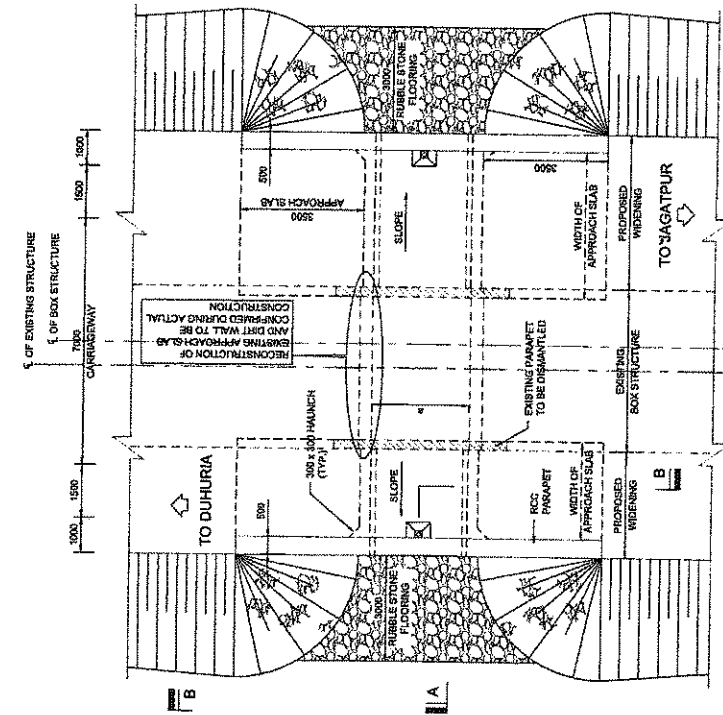


Chief Engineer,
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

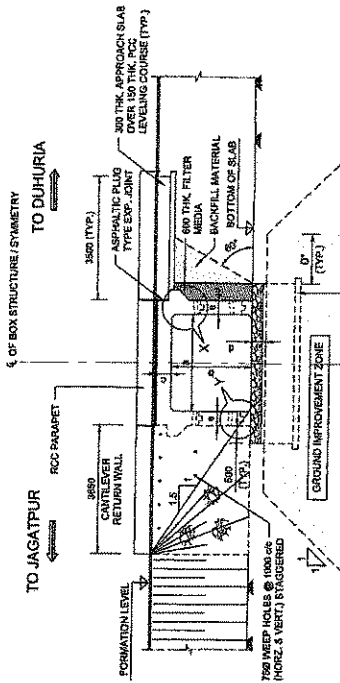


SECTION A-A
(SCALE 1:100)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

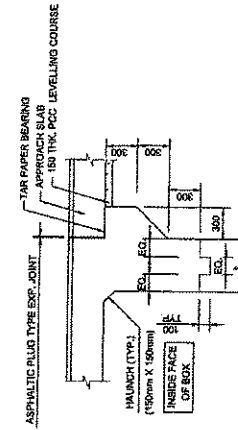


PLAN
(SCALE 1:100)



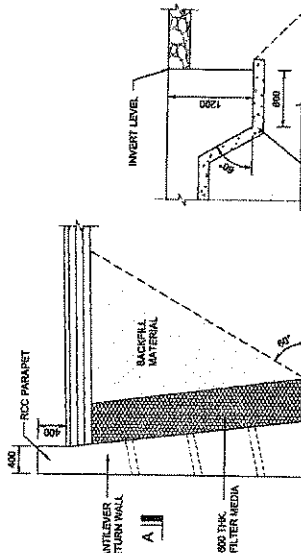
SECTION B-B
(SCALE 1:100)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



DETAIL - X
(SCALE 1:50)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION



DETAIL - Y
(SCALE 1:50)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

TYPICAL DETAIL OF SHEAR KEY
(SCALE 1:50)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

DETAIL OF RETURN WALL
(SCALE 1:50)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

DETAIL - Z
(SCALE 1:50)

D* = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CHANGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHANGE.
3. THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFORM TO CP-0, CP-30* & DENSITY IS 18 MIN*.
4. THE WEEP HOLES OF 750 SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
5. 500mm THK FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC 78.
6. ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
7. CLEAR COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:
 - EARTH FACE = 75mm
 - FOUNDATION = 75mm
 - TOP REBAR = 40mm
 - WATER SURFACE = 50mm
8. THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
 - 1. RCC BOX = M20
 - 2. RETURN WALL = M20
 - 3. APPROACH SLAB = M20
 - 4. LEVELLING COURSE = M15
 - 5. PCC CONCRETE = M15
 - 6. RCC PARAPET = M15
9. ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFORMING TO IS:1786.
10. THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
11. THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
12. THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 9 T/m².
13. THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.

SCALE:

AS SHOWN

DRAWING TITLE

GENERAL ARRANGEMENT DRAWING OF NORMAL SINGLE LANE BOX CULVERT UNDER WIDENING

PROJECT NO

CAD

ODISHA WORKS DEPARTMENT

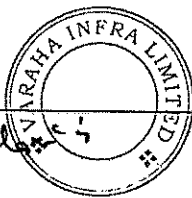
PROJECT

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISCHINTAKOLI - KM 25-400 TO KM 49-000 BALANCE WORK (PACKAGE - P04A-2)

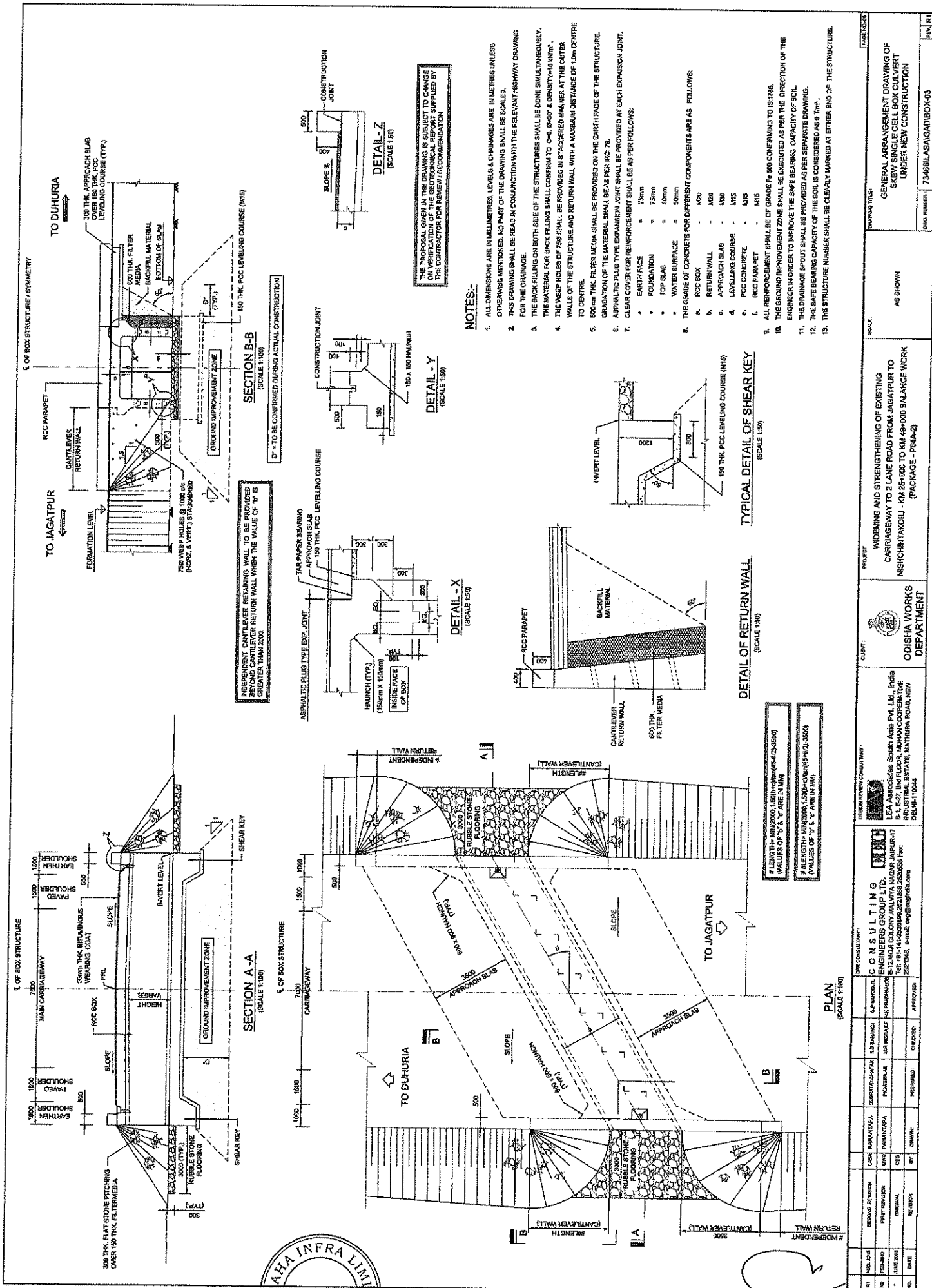
DATE

7/24/2014

REV: R1



Chief Engineer
World Bank Project
On the I.C.(C), Odisha, BBSR



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CHANGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWINGS FOR THE CHAINAGE.
3. THE BACK FILLING ON BOTH SIDE OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY. THE MATERIAL FOR BACK FILLING SHALL CONFORM TO C-4, 0.900' & DENSITY=18 UNIT³.
4. THE NEEP HOLE OF F98 SHALL BE PROVIDED IN STAGGERED MANNER AT THE OUTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.5m CENTRE TO CENTRE.
5. 60mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER RC-78.
6. ASPHALTIC PLUG TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
7. CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS:
 - a. EARTH FACE = 75mm
 - b. FOUNDATION = 75mm
 - c. TOP SLAB = 40mm
 - d. WATER SURFACE = 50mm
8. THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
 - a. RCC BOX = M20
 - b. RETURN WALL = M20
 - c. APPROACH SLAB = M30
 - d. LEVELLING COURSE = M15
 - e. PCC CONCRETE = M15
 - f. RCC PARAPET = M15
9. ALL REINFORCEMENT SHALL BE OF GRADE F4 900 CONFORMING TO IS:1786.
10. THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
11. THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
12. THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 8 THP.
13. THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.

THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGES ON VERIFICATION OF THE GEOTECHNICAL REPORT SUPPLIED BY THE CONTRACTOR FOR REVIEW / RECOMMENDATION

INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED AT EITHER END OF RETURN WALL WHEN THE VALUE OF 'H' IS GREATER THAN 5M

D' - TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

LENGTH MAXIMUM 1.50m (MINIMUM 0.75-0.90m) (VALUES OF 'V' & 'V' ARE IN MM)
 # ALL EXISTING DIMENSIONS (LENGTH & WIDTH) (VALUES OF 'V' & 'V' ARE IN MM)

PLAN
(SCALE 1:100)

NO.	DATE	BY	DRAWN	CHECKED	APPROVED
1	15.08.2014	SRINIVAS	SRINIVAS	SRINIVAS	SRINIVAS
2	15.08.2014	SRINIVAS	SRINIVAS	SRINIVAS	SRINIVAS
3	15.08.2014	SRINIVAS	SRINIVAS	SRINIVAS	SRINIVAS
4	15.08.2014	SRINIVAS	SRINIVAS	SRINIVAS	SRINIVAS

DR CONSULTANT:
CONSULTING ENGINEERS GROUP LTD.
 B-12, 2ND FLOOR, MOHAN COOPERATIVE SOCIETY, MATUNDA ROAD, NEW DELHI-110044

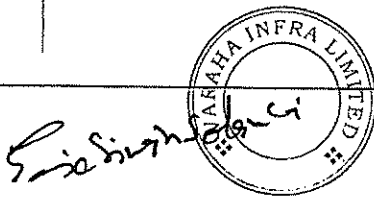
CLIENT:
ODISHA WORKS DEPARTMENT

PROJECT:
 WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISICHINTAKOIL - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)

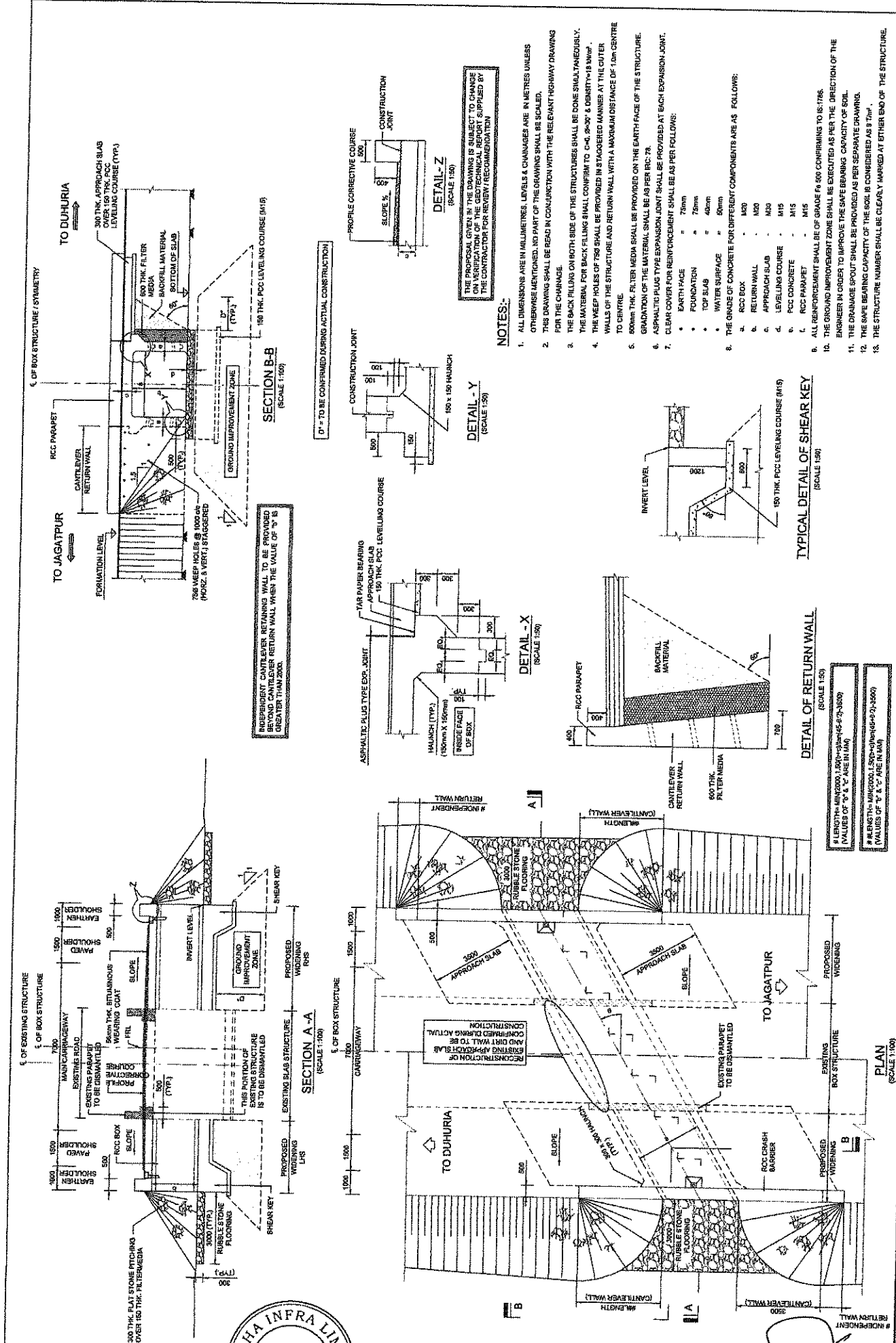
DRAWING TITLE:
 GENERAL ARRANGEMENT DRAWING OF SKEW SINGLE CELL BOX CULVERT UNDER NEW CONSTRUCTION

SCALE:
 AS SHOWN

NO. IN SET:
 73486LASAGNAD/BOX-03



Chief Engineer
 World Bank Project
 On the E.I.C.C., Odisha, BBSR



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CHANGES ARE IN METRES UNLESS OTHERWISE MENTIONED. NO PART OF THE DRAWING SHALL BE SCALED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY DRAWING FOR THE CHANGE.
3. THE BACK FILLING ON BOTH SIDES OF THE STRUCTURES SHALL BE DONE SIMULTANEOUSLY.
4. THE WEEP HOLES OF 750 SHALL BE PROVIDED IN STAGGERED MANNER AT THE CUTTER WALLS OF THE STRUCTURE AND RETURN WALL WITH A MAXIMUM DISTANCE OF 1.0m CENTRE TO CENTRE.
5. 800mm THK. FILTER MEDIA SHALL BE PROVIDED ON THE EARTH FACE OF THE STRUCTURE. GRADATION OF THE MATERIAL SHALL BE AS PER IRC-78.
6. ASPHALTIC PLUS TYPE EXPANSION JOINT SHALL BE PROVIDED AT EACH EXPANSION JOINT.
7. CLEAR COVER FOR REINFORCEMENT SHALL BE AS PER FOLLOWS:
 - a. EARTH FACE = 75mm
 - b. FOUNDATION = 75mm
 - c. TOP SLAB = 40mm
 - d. WATER SURFACE = 50mm
8. THE GRADE OF CONCRETE FOR DIFFERENT COMPONENTS ARE AS FOLLOWS:
 - a. RCC BOX = M20
 - b. RETURN WALL = M20
 - c. APPROACH SLAB = M20
 - d. LEVELING COURSE = M15
 - e. FCC CONCRETE = M15
 - f. RCC PARAPET = M15
9. ALL REINFORCEMENT SHALL BE OF GRADE F800 CONFORMING TO IS:1786.
10. THE GROUND IMPROVEMENT ZONE SHALL BE EXECUTED AS PER THE DIRECTION OF THE ENGINEER IN ORDER TO IMPROVE THE SAFE BEARING CAPACITY OF SOIL.
11. THE DRAINAGE SPOUT SHALL BE PROVIDED AS PER SEPARATE DRAWING.
12. THE SAFE BEARING CAPACITY OF THE SOIL IS CONSIDERED AS 8 T/m².
13. THE STRUCTURE NUMBER SHALL BE CLEARLY MARKED AT EITHER END OF THE STRUCTURE.

INDEPENDENT CANTILEVER RETAINING WALL TO BE PROVIDED AT EITHER END WHEN THE VALUE OF 'B' IS GREATER THAN 20M.

DT = TO BE CONFIRMED DURING ACTUAL CONSTRUCTION

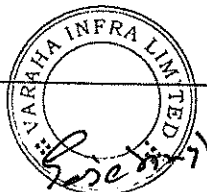
THE PROPOSAL GIVEN IN THE DRAWING IS SUBJECT TO CHANGE WITHOUT NOTICE BY THE CONTRACTOR FOR ANY RECOMMENDATION

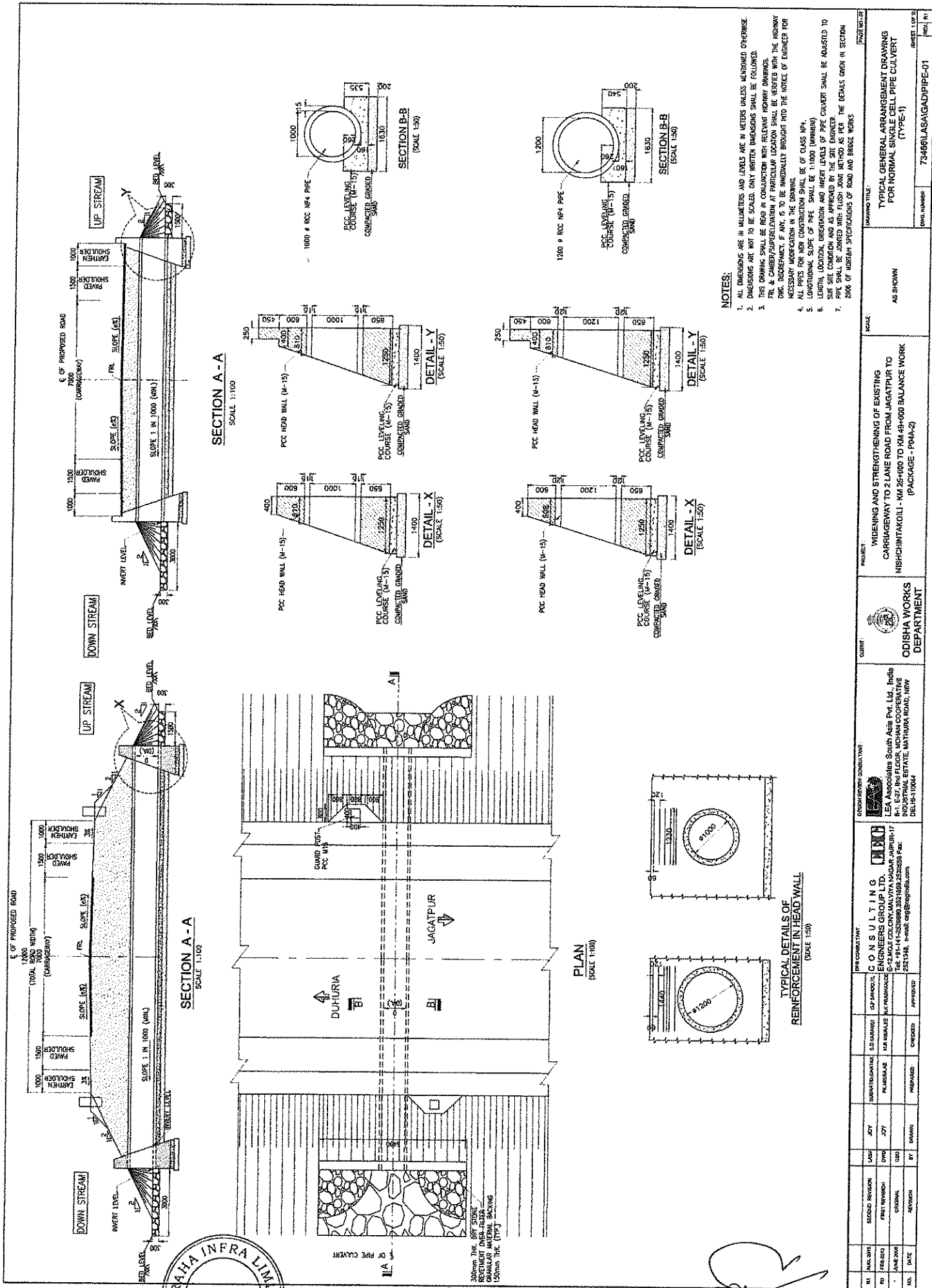
R LENGTH = MIN(2000, 1.50 * (B + 45) * 2) - 3000
(VALUES OF 'B', 'A' ARE IN MM)

R LENGTH = MIN(2000, 1.50 * (B + 45) * 2) - 3000
(VALUES OF 'B', 'A' ARE IN MM)

NO.	DATE	REVISION	BY	CHKD	APPV
01	10/01/2019	ISSUED FOR TENDER	SRINIVASARAO	SRINIVASARAO	SRINIVASARAO
02	10/01/2019	REVISED	SRINIVASARAO	SRINIVASARAO	SRINIVASARAO
03	10/01/2019	REVISED	SRINIVASARAO	SRINIVASARAO	SRINIVASARAO

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR





- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT TENDER DRAWINGS.
 4. PER & CHECK/SUPERVISION AT PARTICULAR LOCATION SHALL BE KEPT WITH THE HIGHWAY DEPARTMENT. DISCREPANCY IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 5. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS III.
 6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
 7. PIPE SHALL BE JOINTED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION.
 8. 200G OF WORKER SPECIFICATIONS OF ROAD AND BRIDGE WORKS.

PROJECT TITLE:		PROJECT NO.:
TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL SINGLE CELL PIPE CULVERT (TYPE-1)		PROJECT NO.:
AS SHOWN	DWG. NUMBER:	PROJECT NO.:
	734861AS/ASAD/PIPE-01	PROJECT NO.:

SCALE: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+100 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)



ODISHA WORKS DEPARTMENT

CONSULTANT: LEA Associates South Asia Pvt. Ltd., India

ENGINEERS GROUP LTD. MALVIYA NAGAR, JAIPUR-31

REGD. OFFICE: PLOT NO. 10, INDUSTRIAL AREA, DELHI-110044

DATE: 22/04/2016

CHECKED: APPROVED:

PREPARED: BY: DRAWN:

REVISION: SECOND REVISION: DATE: 22/04/2016

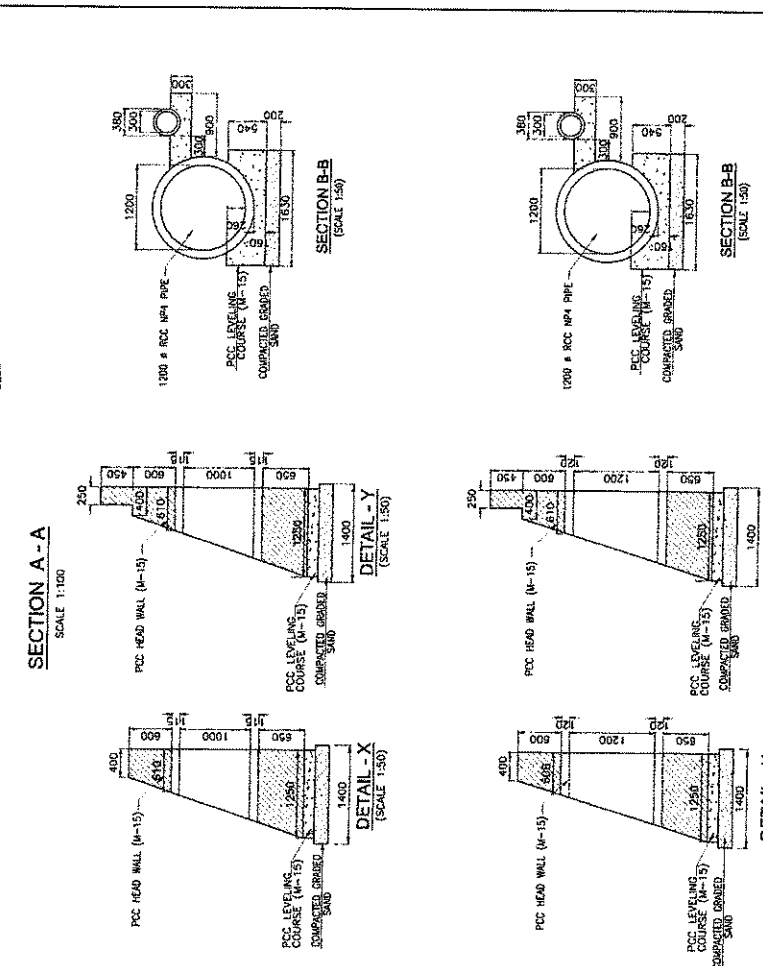
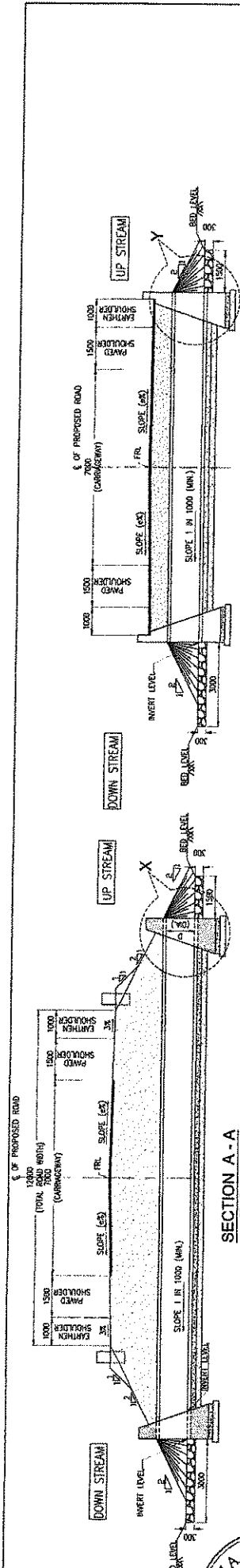
NO. DATE: 22/04/2016

VARAHA INFRA LIMITED

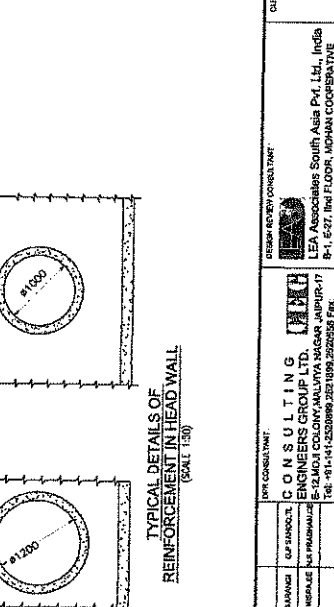
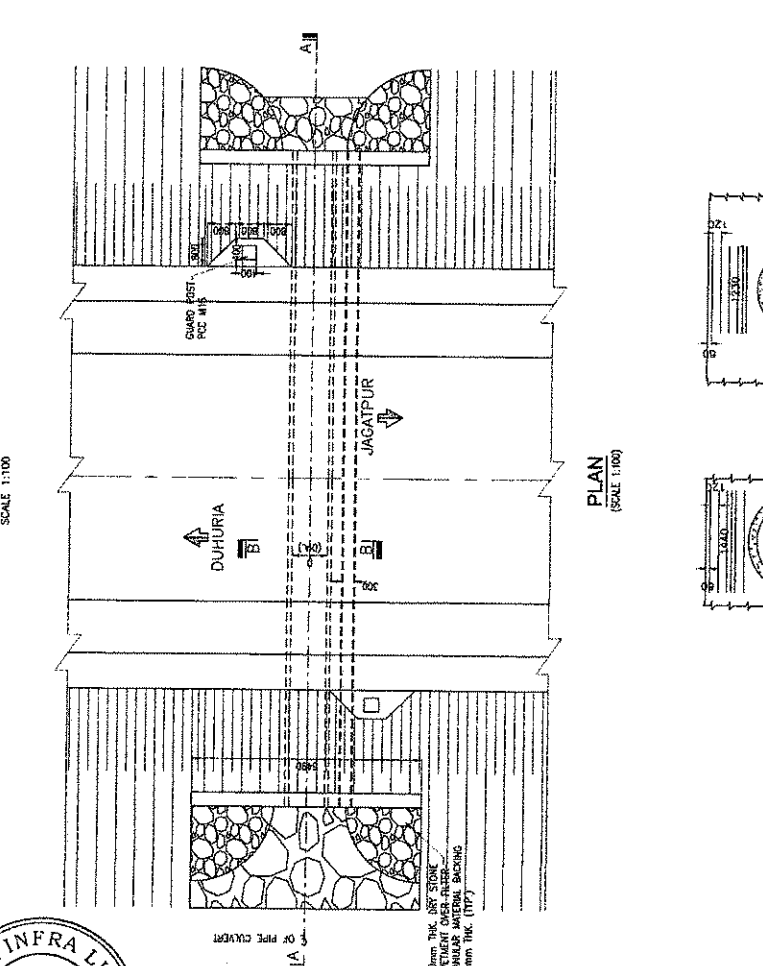
Signature

Signature

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

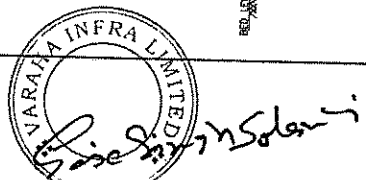
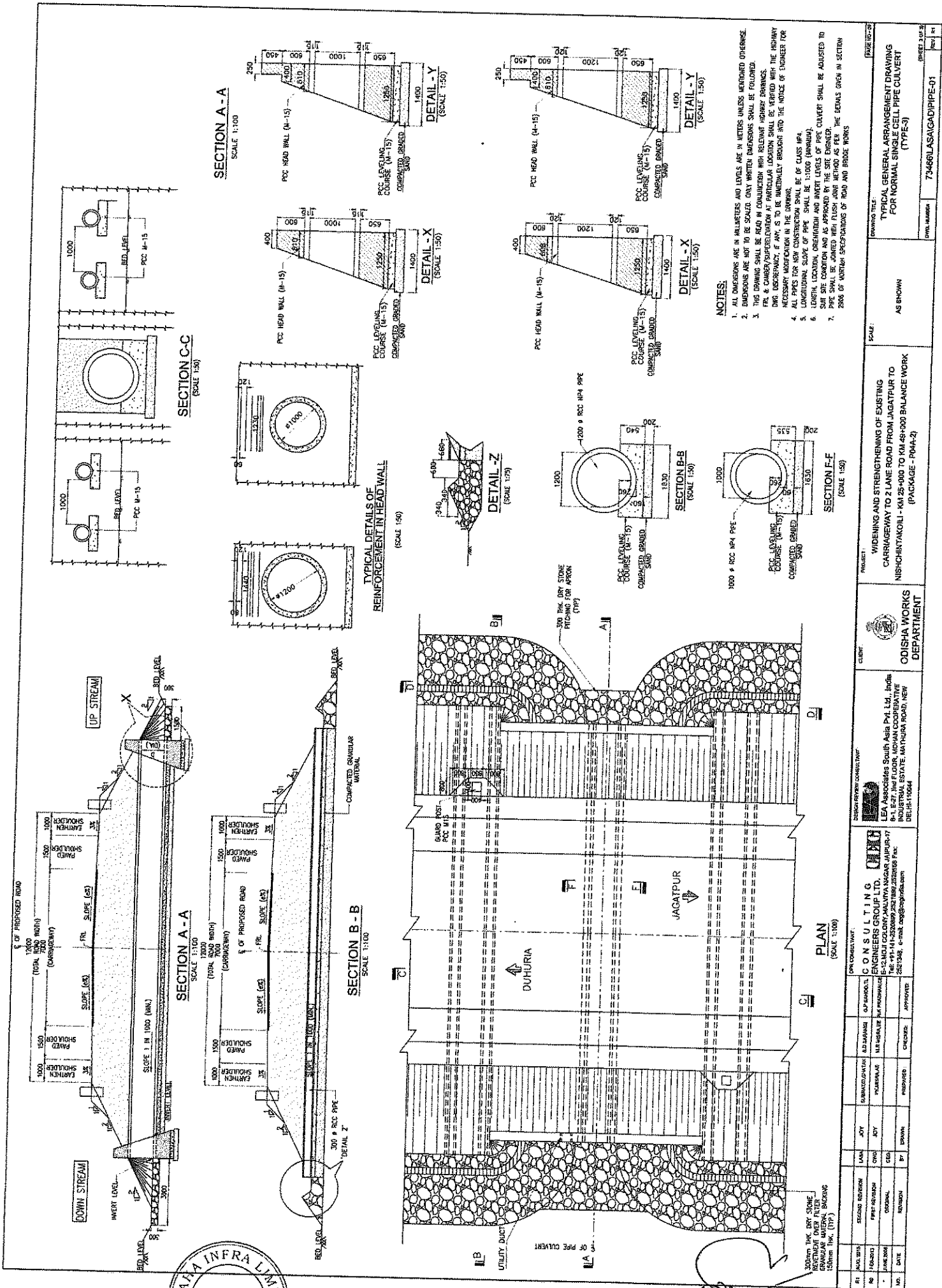


- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE STATED.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS.
 4. FOR A CHANGE IN PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY ENGINEER'S OFFICE.
 5. NECESSARY MODIFICATION IN THIS DRAWING SHALL BE MADE BY THE ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 6. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS III.
 7. LONGITUDINAL SLOPE OF PIPE SHALL BE 1:1000 (MINIMUM).
 8. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
 9. PIPE SHALL BE JOINED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2005 OF MARRHAM SPECIFICATIONS OF ROAD AND BRIDGE WORKS.



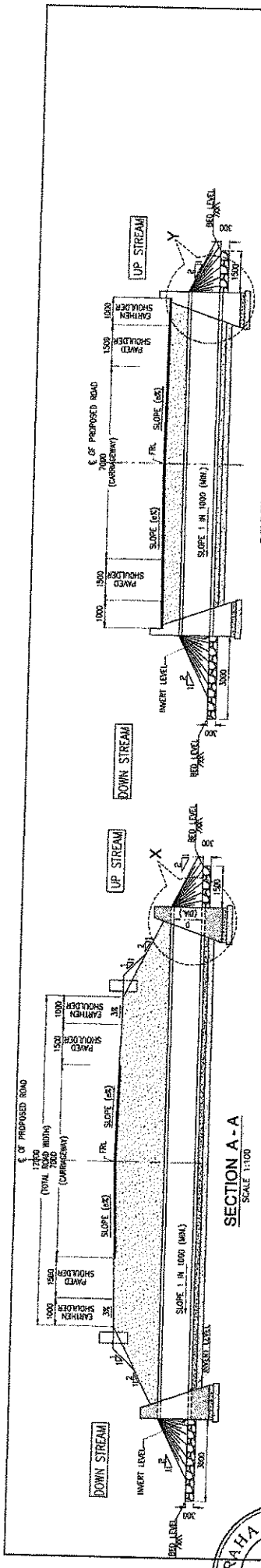
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

PROJECT			WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAXCILLI - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)		
CLIENT			ODISHA WORKS DEPARTMENT		
CONSULTANT			LEA Associates South Asia Pvt. Ltd, India B-1, 2-27, 1st FLOOR, MOHANA CO-OPERATIVE INDUSTRIAL ESTATE, MATHERA ROAD, NEW DELHI-110044		
DRAWING NO.			73468(LASAGAD)PIPE-01		
DATE			2023/04/20		
SCALE			AS SHOWN		
PROJECT			WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAXCILLI - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)		
CLIENT			ODISHA WORKS DEPARTMENT		
CONSULTANT			LEA Associates South Asia Pvt. Ltd, India B-1, 2-27, 1st FLOOR, MOHANA CO-OPERATIVE INDUSTRIAL ESTATE, MATHERA ROAD, NEW DELHI-110044		
DRAWING NO.			73468(LASAGAD)PIPE-01		
DATE			2023/04/20		
SCALE			AS SHOWN		
PROJECT			WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAXCILLI - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)		
CLIENT			ODISHA WORKS DEPARTMENT		
CONSULTANT			LEA Associates South Asia Pvt. Ltd, India B-1, 2-27, 1st FLOOR, MOHANA CO-OPERATIVE INDUSTRIAL ESTATE, MATHERA ROAD, NEW DELHI-110044		
DRAWING NO.			73468(LASAGAD)PIPE-01		
DATE			2023/04/20		
SCALE			AS SHOWN		
PROJECT			WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAXCILLI - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)		
CLIENT			ODISHA WORKS DEPARTMENT		
CONSULTANT			LEA Associates South Asia Pvt. Ltd, India B-1, 2-27, 1st FLOOR, MOHANA CO-OPERATIVE INDUSTRIAL ESTATE, MATHERA ROAD, NEW DELHI-110044		
DRAWING NO.			73468(LASAGAD)PIPE-01		
DATE			2023/04/20		
SCALE			AS SHOWN		

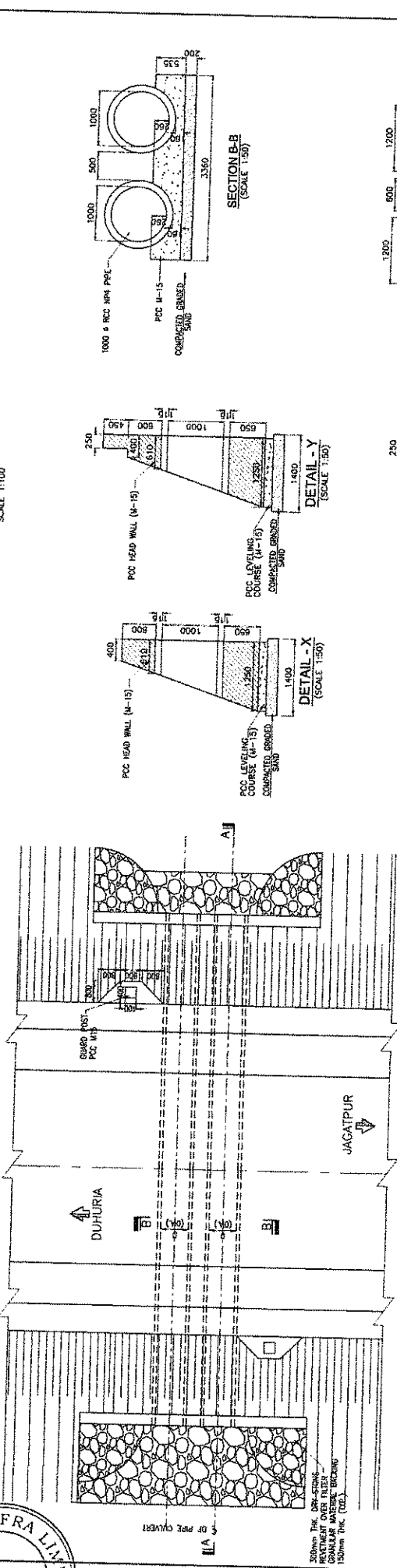


DRAWING TITLE		PROJECT		SCALE		DRAWING NO.		SHEET NO.	
TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL SINGLE CELL PIPE CULVERT (TYPE-3)		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - PMA-2)		AS SHOWN		73466/LASAGAD/PIPE-01		PAGE 01 OF 02	
DRAWING NO.		PROJECT		SCALE		DRAWING NO.		SHEET NO.	
73466/LASAGAD/PIPE-01		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - PMA-2)		AS SHOWN		73466/LASAGAD/PIPE-01		PAGE 01 OF 02	
DRAWING NO.		PROJECT		SCALE		DRAWING NO.		SHEET NO.	
73466/LASAGAD/PIPE-01		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - PMA-2)		AS SHOWN		73466/LASAGAD/PIPE-01		PAGE 01 OF 02	
DRAWING NO.		PROJECT		SCALE		DRAWING NO.		SHEET NO.	
73466/LASAGAD/PIPE-01		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - PMA-2)		AS SHOWN		73466/LASAGAD/PIPE-01		PAGE 01 OF 02	

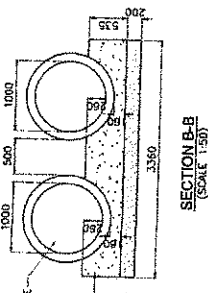
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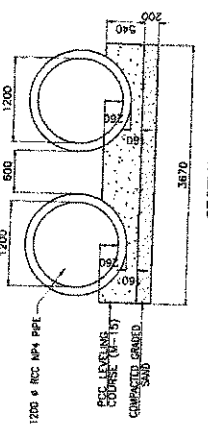
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SCALE 1:100



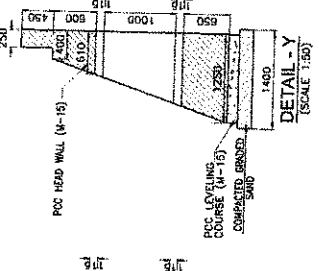
PLAN
SCALE 1:100



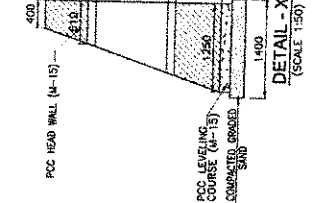
SECTION B-B
SCALE 1:50



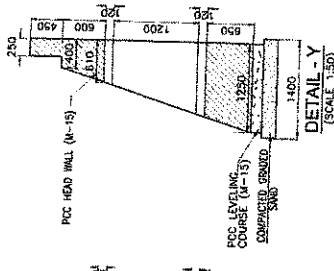
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SCALE 1:50



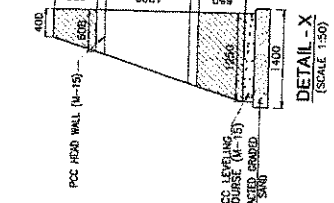
DETAIL - Y
SCALE 1:50



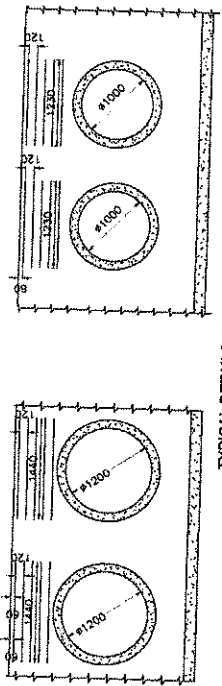
DETAIL - X
SCALE 1:50



DETAIL - Y
SCALE 1:50



DETAIL - X
SCALE 1:50



TYPICAL DETAILS OF
REINFORCEMENT IN HEAD WALL
SCALE 1:50

- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT WORK SPECIFICATIONS.
 4. PER & CHANGE/SUPPLEMENTATION AT PARTICULAR LOCATION SHALL BE ISSUED BY THE HIGHWAY ENGINEER. IF ANY, IS TO BE MADE, IT SHALL BE BRINGED INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 5. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS M4.
 6. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT THE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
 7. PIPE SIZE SHALL BE PROVIDED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2806 OF MORTH SPECIFICATIONS OF ROAD AND BRIDGE WORKS.

PROJECT NO: 73486(LASASAD)PIPE-02
DRAWING NO: 73486(LASASAD)PIPE-02
DATE: 15/08/2017
SCALE: AS SHOWN

WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)

ODISHA WORKS DEPARTMENT

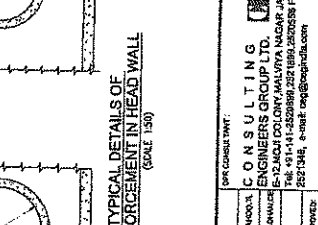
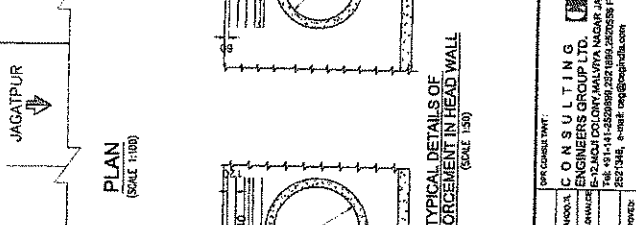
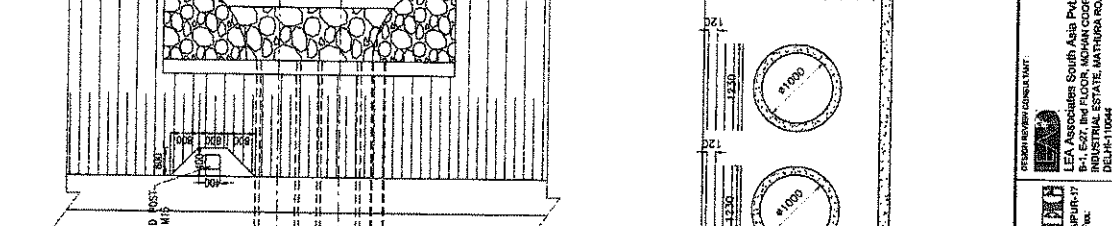
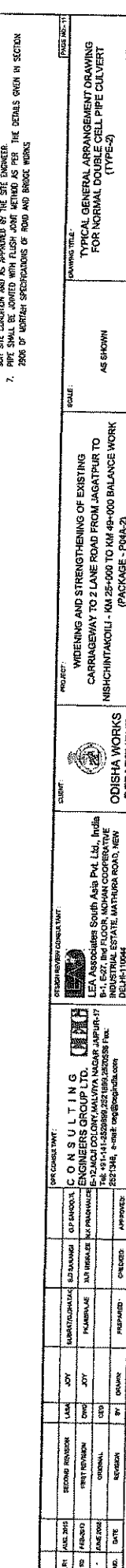
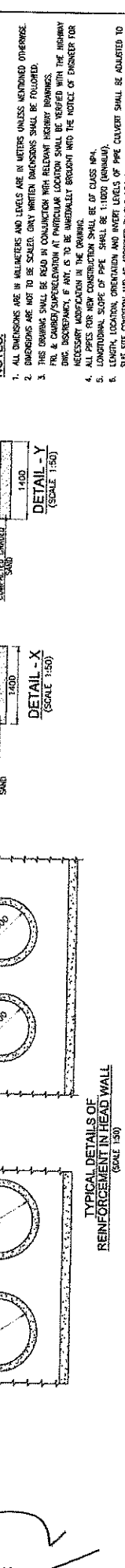
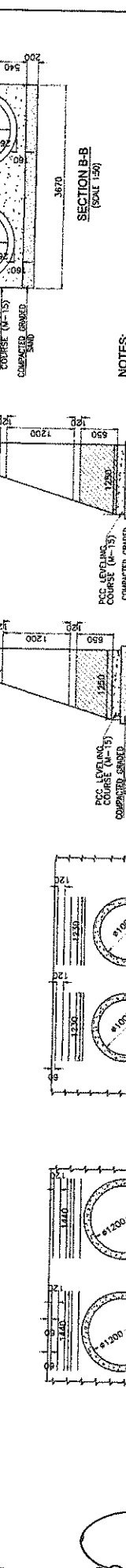
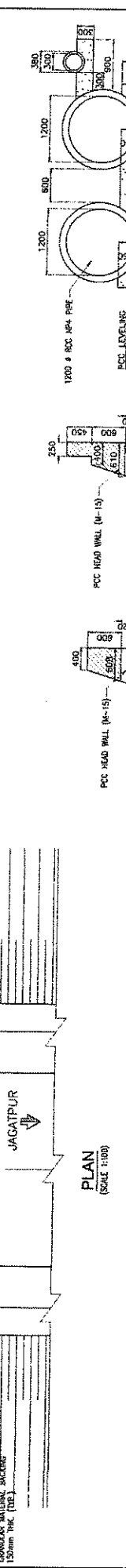
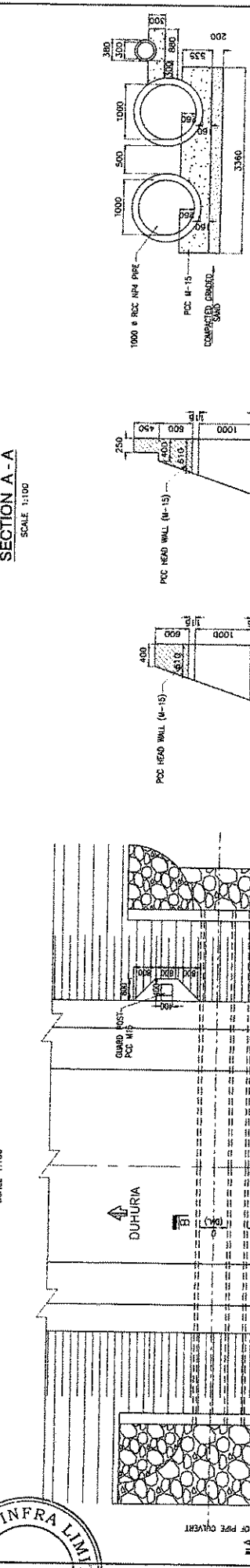
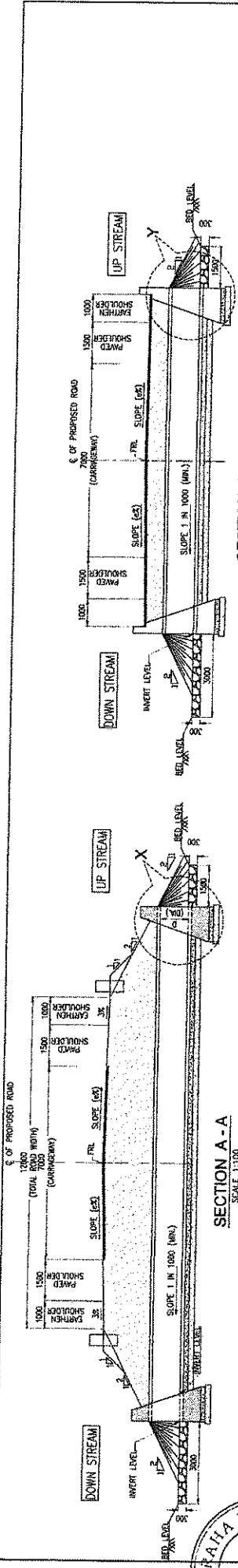
LEA Associates South Asia Pvt. Ltd., India
P-1, 62/2, Jharkhand Road, Bhubaneswar
INDUSTRIAL ESTATE, ANARDA ROAD, NEW DELHI-110044

CONSULTING ENGINEERS GROUP LTD., INDIA
B-13, MIDC PHASE II, CHAKRI JALPURT
Tel: 91-11-26108000, 26108001, 26108002
2611146, e-mail: eng@cegroupindia.com

NO.	DATE	BY	CHKD	APPV	REVISION
01	15/08/2017	DRW	CHK	APPV	SECOND REVISION
02	15/08/2017	DRW	CHK	APPV	PREP REVISION
03	15/08/2017	DRW	CHK	APPV	ORIGINAL



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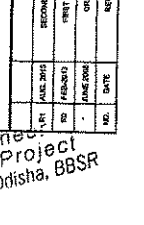
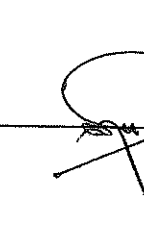
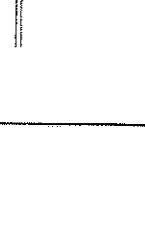
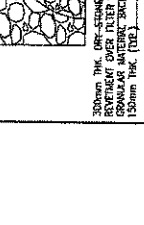
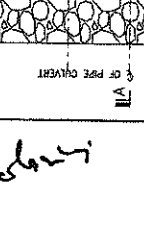
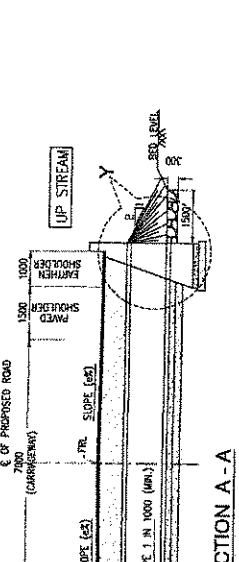
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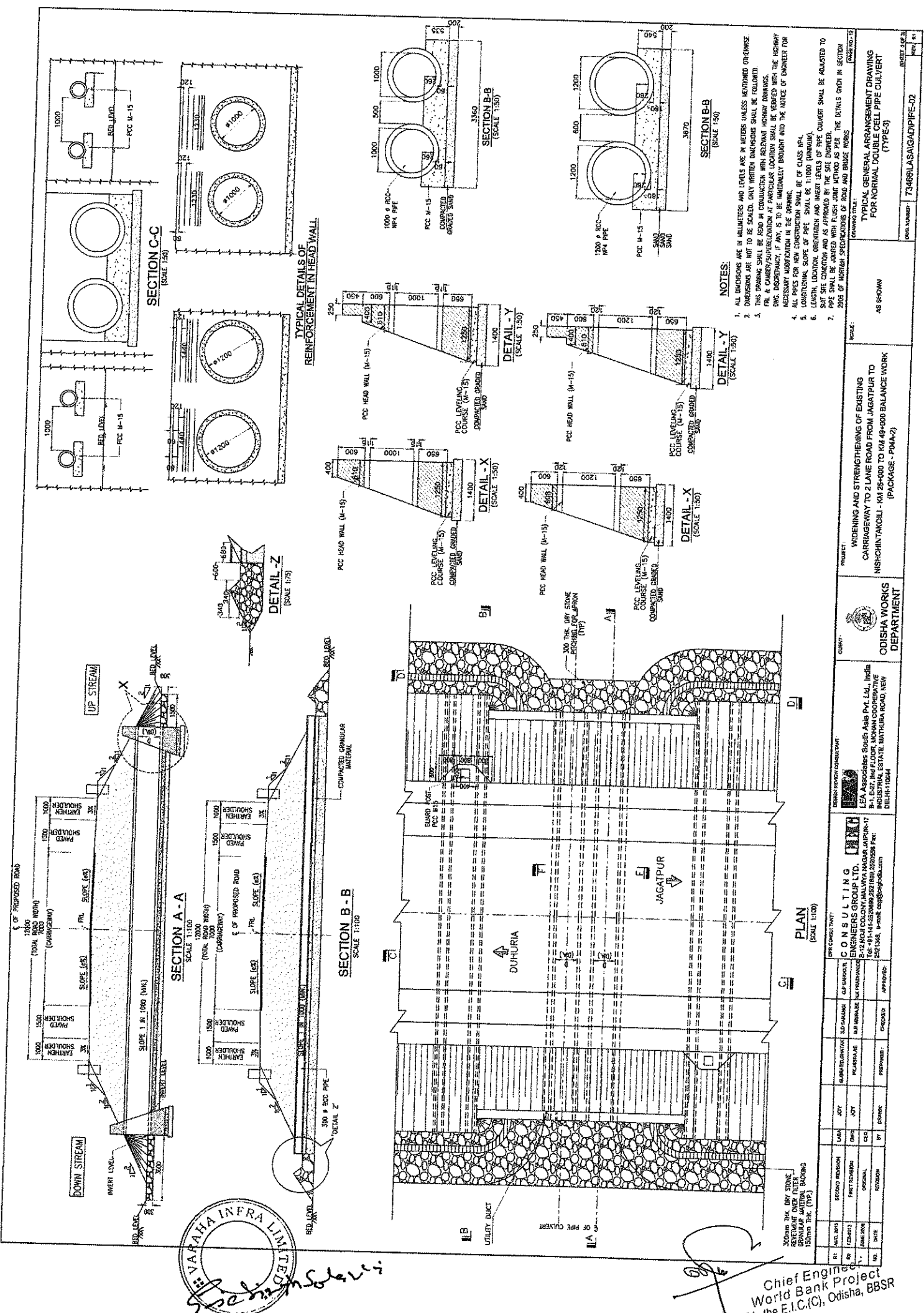
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALE. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THIS DRAWING SHALL BE KEPT IN CONNECTION WITH ALL NEARBY DRAWINGS.
4. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS RPA.
5. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
6. PIPE SHALL BE JOINTED WITH FLESH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION.
7. ZONE OF WORKER SPECIFICATIONS OF ROAD AND BRIDGE WORKS.

PRINCIPAL ENGINEER
WIDENING AND STRENGTHENING OF EXISTING
CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO
NIISHCHINTAKULLI - KM. 25+00 TO KM 48+00 BALANCE WORK
(PACKAGE - POA-2)

DATE	2024	BY	SRINIVAS
DATE	2024	BY	SRINIVAS
DATE	2024	BY	SRINIVAS
DATE	2024	BY	SRINIVAS

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- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS.
 4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS OF ROAD AND BRIDGE WORKS.
 5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS OF ROAD AND BRIDGE WORKS.
 6. LENGTH, LOCATION, ORIENTATION AND ANGLES OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITIONS AND APPROVED BY THE SITE ENGINEER.
 7. 200g OF MORTAR SPECIFICATIONS OF ROAD AND BRIDGE WORKS.

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NUSCHINTAKOLL - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)

AS SHOWN

DATE: 15/08/2017

SCALE: AS SHOWN

PROJECT NO: 73466(LASAGAD)PIRE-02

HEET NO: 02

DESIGNER: ODISHA WORKS DEPARTMENT

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NUSCHINTAKOLL - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)

SCALE: AS SHOWN

PROJECT NO: 73466(LASAGAD)PIRE-02

HEET NO: 02

DESIGNER: ODISHA WORKS DEPARTMENT

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NUSCHINTAKOLL - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)

SCALE: AS SHOWN

PROJECT NO: 73466(LASAGAD)PIRE-02

HEET NO: 02

DESIGNER: ODISHA WORKS DEPARTMENT

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NUSCHINTAKOLL - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - PMA-2)

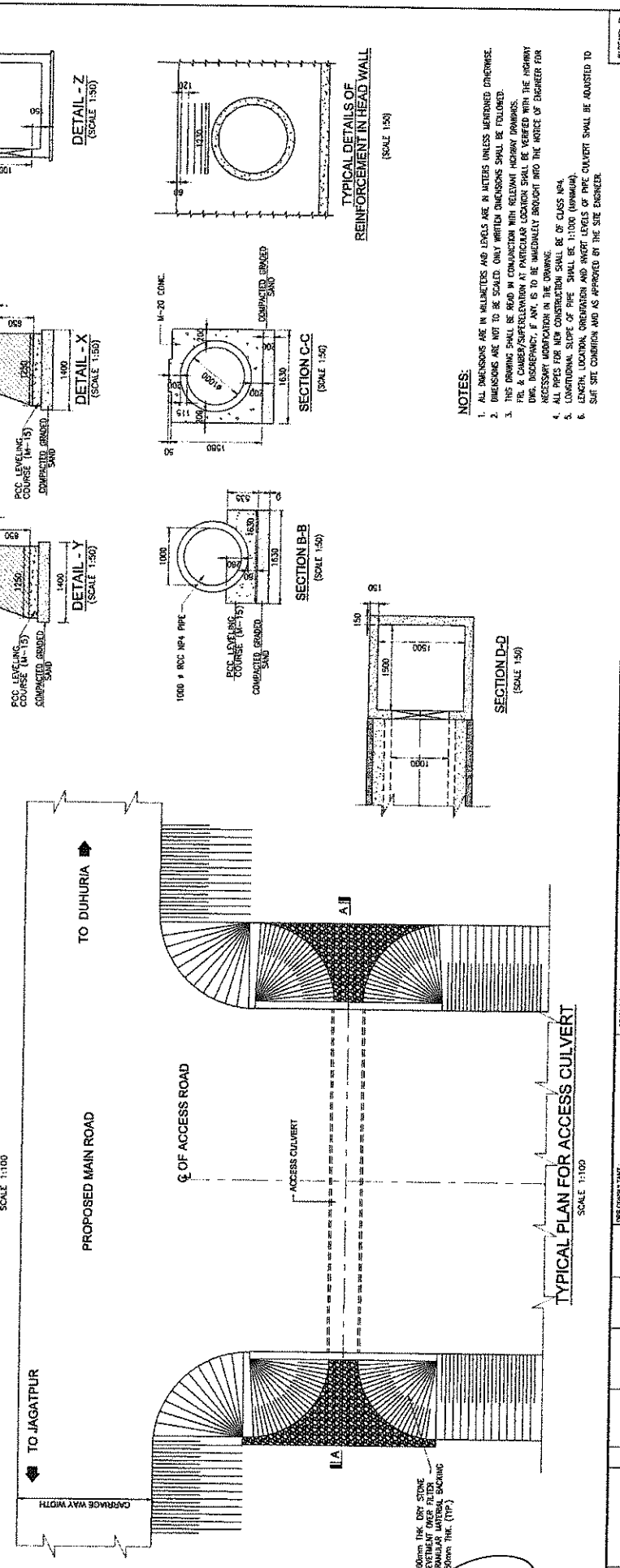
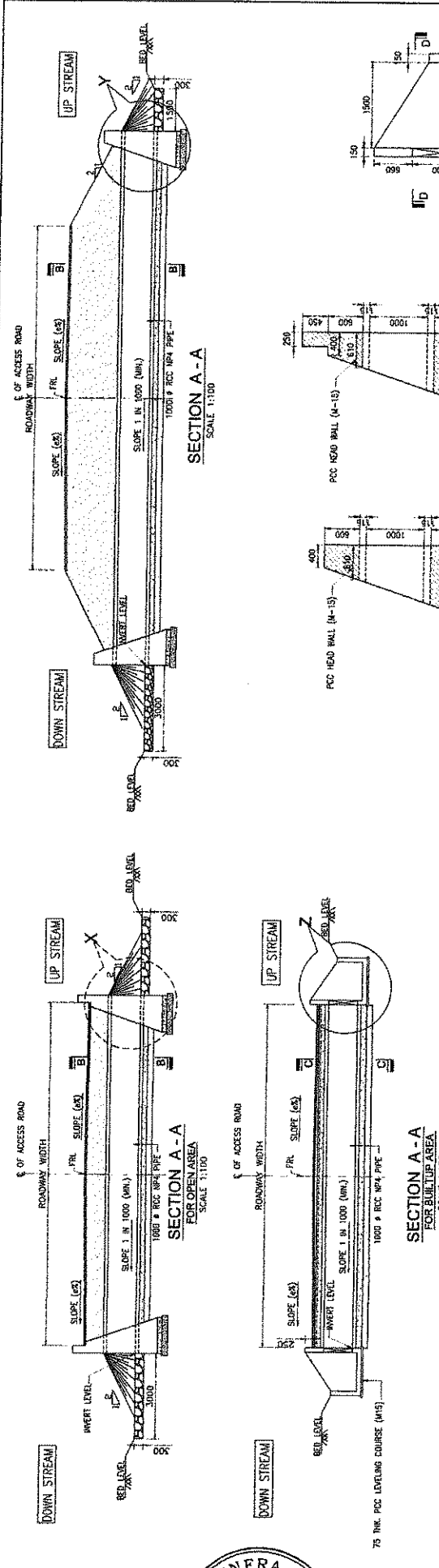
SCALE: AS SHOWN

PROJECT NO: 73466(LASAGAD)PIRE-02

HEET NO: 02

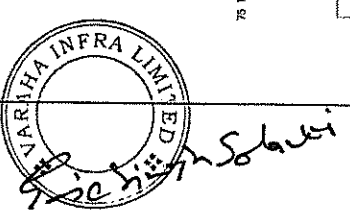
NO.	DATE	BY	REVISION	APPROVED
01	15/08/2017	JAY	ISSUED FOR TENDERS	
02	15/08/2017	JAY	FOR APPROVAL	
03	15/08/2017	JAY	FOR APPROVAL	
04	15/08/2017	JAY	FOR APPROVAL	
05	15/08/2017	JAY	FOR APPROVAL	

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 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONNECTION WITH RELEVANT HIGHWAY DRAWINGS.
 4. PER & CHECKER/SUPERVISOR AT PARTICULAR LOCATION SHALL BE VERIFIED WITH THE HIGHWAY DIV. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT INTO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 5. ALL PIPES FOR NEW CONSTRUCTION SHALL BE OF CLASS NPA.
 6. CONTINUOUS SLOPE OF PIPE SHALL BE 1:1000 (MINIMUM).
 7. GENERAL LOCATION, ORIENTATION AND INVERT LEVELS OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITIONS AND AS APPROVED BY THE SITE ENGINEER.

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 28+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)				DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR NORMAL ACCESS CULVERT			
CLIENT: ODISHA WORKS DEPARTMENT				SCALE: AS SHOWN			
DESIGNER: SOUTH ASIAN PVT. LTD. INDRAPRASTHA COLONY, DELHI-110044				DRAWING NO.: 73488LAS/AGD/AC/PIPE-01			
CONTRACT NO.: 2573488				DATE: 20/06/2017			
SUPERVISOR: ASHOK K. SAHOO				CHECKER: AP/2017			
DESIGNER: SUDHANU K. SAHOO				PREPARED BY: SUDHANU K. SAHOO			
DRAWING NO.: 73488LAS/AGD/AC/PIPE-01				PAGE NO.: 01			



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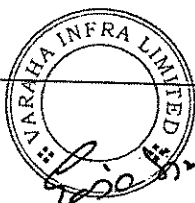
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MAIN ROAD PIPE CULVERT DETAIL									
Sl. No.	CD	Chaugage	Pipe Dia, d (m)	Pipe thickness, t (m)	Outer dia, D (m)	No. of rows	Shew angle (deg)	Type of Culvert	Pipe Length (m)
PIPE CROSS DRAINAGE NEW CONSTR.									
1	25+268.000	1.20	0.12	1.44	1	0	Normal	33	33
2	25+579.000	1.20	0.12	1.44	2	0	Normal	53	53
3	25+927.000	1.20	0.12	1.44	1	36.4	Normal	30	30
4	25+906.000	1.00	0.115	1.23	1	26.88	Normal	30	30
5	26+660.000	1.00	0.115	1.23	2	0	Normal	53	53
6	27+100.000	1.00	0.115	1.23	4	0	Normal DN 73	18	18
7	27+600.000	1.00	0.115	1.23	1	0	Encase 18	18	18
8	28+500.000	1.00	0.115	1.23	2	0	Encase 18	53	53
9	29+118.000	1.20	0.12	1.44	1	0	Normal	28	28
10	29+208.000	1.20	0.12	1.44	1	0	Normal DN 23	23	23
11	29+500.000	1.20	0.12	1.44	1	0	Normal DN 25	25	25
12	29+960.000	1.20	0.12	1.44	1	0	Normal DN 23	23	23
13	30+220.000	1.20	0.12	1.44	1	0	Normal	25	25
14	30+660.000	1.20	0.12	1.44	1	0	Normal	28	28
15	31+460.000	1.20	0.12	1.44	1	0	Normal	28	28
16	31+680.000	1.20	0.12	1.44	1	0	Normal	28	28
17	32+340.000	1.20	0.12	1.44	1	0	Normal DN 25	25	25
18	32+580.000	1.20	0.12	1.44	1	0	Encase 18	18	18
19	32+600.000	1.00	0.115	1.23	1	0	Normal DN 23	23	23
20	33+710.000	1.20	0.12	1.44	1	0	Normal	28	28
21	34+225.000	1.20	0.12	1.44	2	0	Normal	55	55
22	34+598.000	1.20	0.12	1.44	1	0	Normal	25	25
23	35+042.000	1.20	0.12	1.44	1	0	Normal DN 25	25	25
24	35+320.000	1.00	0.115	1.23	1	0	Encase 18	18	18
25	35+725.000	1.00	0.115	1.23	1	16.9	Encase 18	18	18
26	36+320.000	1.20	0.12	1.44	1	0	Normal	25	25
27	36+546.000	1.20	0.12	1.44	1	0	Normal	30	30
28	37+925.000	1.00	0.115	1.23	1	0	Encase 15	15	15
29	39+400.000	1.00	0.115	1.23	1	0	Encase 18	18	18
30	39+940.000	1.20	0.12	1.44	1	0	Normal	25	25
31	40+440.000	1.20	0.12	1.44	1	0	Normal	25	25
32	40+770.000	1.20	0.12	1.44	1	0	Normal DN 23	23	23
33	41+267.000	1.20	0.12	1.44	2	0	Encase 33	33	33
34	41+900.000	1.20	0.12	1.44	1	0	Normal DN 23	23	23
35	42+310.000	1.20	0.12	1.44	1	0	Normal	28	28
36	42+780.000	1.20	0.12	1.44	1	0	Normal	28	28
37	42+985.000	1.20	0.12	1.44	2	0	Normal DN 38	38	38
38	44+100.000	1.20	0.12	1.44	2	0	Normal	18	18
39	44+880.000	1.00	0.115	1.23	1	0	Encase 18	53	53
40	45+495.000	1.20	0.12	1.44	2	0	Normal	26	26
41	45+650.000	1.20	0.12	1.44	1	0	Normal DN 23	23	23
42	45+870.000	1.00	0.115	1.23	1	0	Normal	28	28
43	46+180.000	1.00	0.115	1.23	1	0	Normal	28	28
44	46+432.000	1.20	0.12	1.44	2	0	Normal	55	55
45	46+660.000	1.20	0.12	1.44	1	0	Normal	28	28
46	46+966.000	1.20	0.12	1.44	2	0	Normal	63	63
47	47+280.000	1.20	0.12	1.44	1	0	Normal	28	28
48	47+560.000	1.00	0.115	1.23	1	0	Encase 18	18	18
49	47+805.000	1.20	0.12	1.44	2	0	Normal DN 48	48	48
50	48+400.000	1.00	0.115	1.23	1	0	Encase 18	18	18

PROJECT NO. 14	PROJECT TITLE	SCALE:	AS SHOWN	DATE: 14/07/11
WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISCHINTAKOLL - KM 25+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)		7346RLASASCRPIPE.C1		
ODISHA WORKS DEPARTMENT		SCHEDULE OF PIPE CULVERT NEW CONSTRUCTION		
CONSUULTING ENGINEERS GROUP LTD. (A COMPANY INCORPORATED IN INDIA) B-1, 6/27, Old B.L.P.O. Road, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISCHINTAKOLL - KM 25+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)		
APPROVED:	DESIGNED BY:	CHECKED BY:	DATE:	
APPROVED:	DESIGNED BY:	CHECKED BY:	DATE:	
APPROVED:	DESIGNED BY:	CHECKED BY:	DATE:	

MAIN ROAD PIPE CULVERT DETAIL							
Sl. No.	CD Chainage	Pipe Dia, d (m)	Pipe thickness, t (m)	Outer dia, D (m)	No. of rows	Skew angle (deg)	Pipe Length (1.0m dia)
PIPE WITH REPTILE							
1	31+4100.000	1.20	0.12	1.44	2	0	Normal 55
2	33+950.000	1.20	0.12	1.44	1	0	Normal 28
3	40+174.000	1.20	0.12	1.44	1	0	Normal 25
4	43+780.000	1.00	0.115	1.23	1	0	Normal DN 23

MAIN ROAD PIPE CULVERT DETAIL (WIDENING)									
Sl. No.	CD Chainage	Pipe Dia, d (m)	Pipe thickness, t (m)	Outer dia, D (m)	No. of rows	Skew angle (deg)	Widen-Left (m)	Widen-Right (m)	Pipe Length (m)
REPTILE UNDERPASS									
1	25+005.595	0.30	0.05	0.4	1	0	6	6	20
2	25+006.595	0.30	0.05	0.4	1	0	6	6	20
3	31+093.405	0.30	0.05	0.4	1	0	6	6	17.5
4	31+094.405	0.30	0.05	0.4	1	0	6	6	17.5
5	31+105.595	0.30	0.05	0.4	1	0	6	6	17.5
6	31+106.595	0.30	0.05	0.4	1	0	6	6	17.5
7	33+943.405	0.30	0.05	0.4	1	0	6	6	20
8	33+944.405	0.30	0.05	0.4	1	0	6	6	20
9	33+955.595	0.30	0.05	0.4	1	0	6	6	20
10	33+956.595	0.30	0.05	0.4	1	0	6	6	20
11	40+167.405	0.30	0.05	0.4	1	0	6	6	17.5
12	40+168.405	0.30	0.05	0.4	1	0	6	6	17.5
13	40+179.595	0.30	0.05	0.4	1	0	6	6	17.5
14	40+180.595	0.30	0.05	0.4	1	0	6	6	17.5
15	43+773.405	0.30	0.05	0.4	1	0	6	6	15
16	43+774.405	0.30	0.05	0.4	1	0	6	6	15
17	43+785.595	0.30	0.05	0.4	1	0	6	6	15
18	43+786.595	0.30	0.05	0.4	1	0	6	6	15



2000 Singh Sanku

[Handwritten Signature]

Chief Engineer
World Bank Project
On the E.I.C.(C), Odisha, BBSR

Sl. No.	DATE	REVISION	BY	DRWN	CHKD	APPD
01	15/06/2012	SECOND REVISION	UPM	PNV/NT/PA	PNV/NT/PA	PNV/NT/PA
02	15/06/2012	FIRST REVISION	UPM	PNV/NT/PA	PNV/NT/PA	PNV/NT/PA
03	15/06/2012	ORIGINAL	UPM	PNV/NT/PA	PNV/NT/PA	PNV/NT/PA
04	15/06/2012	REVISION	UPM	PNV/NT/PA	PNV/NT/PA	PNV/NT/PA

DESIGN CONSULTANT: **CONSULTING ENGINEERS GROUP LTD.**
E-12, MOUL COLONY, MALVIYA NAGAR, PO-117, B-1, B-27, 1st FLOOR, MIDAHAN INDUSTRIAL ESTATE, MATHERA ROAD, BBSR-751004

CLIENT: **ODISHA WORKS DEPARTMENT**

PROJECT: **WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOIL - KM 25+000 TO KM 49+000 BALANCE WORK (PACKAGE - P04A-2)**

SCALE: **AS SHOWN**

PROJECT NO.: **7346RLASASCHPIPE.02**

DATE: **15/06/2012**



S. S. S. S.

MAIN ROAD PIPE CULVERT DETAIL

Sl. No.	CD Chainage	Pipe Dia, d		Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Type of Culvert	Pipe Length
		(m)	(m)						
PIPE WITH UTILITY									
1	26+173.000	1.20	1.44	0.12	1.44	2	0	Normal	53
2	26+550.000	1.00	1.23	0.115	1.23	1	0	Normal DN 20	20
3	27+220.000	1.00	1.23	0.115	1.23	1	0	Normal DN 20	20
4	28+500.000	1.00	1.23	0.115	1.23	1	0	Encase	18
5	33+390.000	1.20	1.44	0.12	1.44	1	0	Normal	25
6	36+000.000	1.00	1.23	0.115	1.23	1	0	Normal	25
7	37+580.000	1.20	1.44	0.12	1.44	1	0	Normal	28
8	38+563.000	1.00	1.23	0.115	1.23	1	0	Normal	25
9	39+740.000	1.20	1.44	0.12	1.44	1	0	Normal DN 23	23
10	40+840.000	1.20	1.44	0.12	1.44	1	0	Normal	25
11	41+680.000	1.00	1.23	0.115	1.23	1	0	Normal	25
12	44+480.000	1.00	1.23	0.115	1.23	1	0	Encase	18
13	45+200.000	1.20	1.44	0.12	1.44	1	0	Normal DN 25	25
14	48+150.000	1.00	1.23	0.115	1.23	1	0	Normal DN 20	20
15	48+870.000	1.00	1.23	0.115	1.23	1	0	Normal DN 18	18

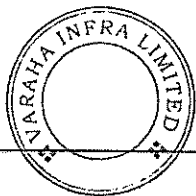
MAIN ROAD PIPE CULVERT DETAIL (WIDENING)

Sl. No.	CD Chainage	Pipe Dia, d		Pipe thickness, t	Outer dia, D	No. of rows	Skew angle	Widen-Left	Widen-Right	Pipe Length
		(m)	(m)							
REPTILE CULVERT										
23	26+173.000	0.30	0.05	0.4	0.4	1	0	10	10	30
24	26+550.000	0.30	0.05	0.4	0.4	1	0	7.5	7.5	19
25	27+220.000	0.30	0.05	0.4	0.4	1	0	7.5	7.5	20
26	28+500.000	0.30	0.05	0.4	0.4	1	0	7.5	7.5	18
27	33+390.000	0.30	0.05	0.4	0.4	1	0	10	10	28
28	36+000.000	0.30	0.05	0.4	0.4	1	0	10	10	28
29	37+580.000	0.30	0.05	0.4	0.4	1	0	10	10	30
30	38+363.000	0.30	0.05	0.4	0.4	1	0	10	10	27
31	39+740.000	0.30	0.05	0.4	0.4	1	0	7.5	7.5	23
32	40+840.000	0.30	0.05	0.4	0.4	1	0	10	10	27
33	41+680.000	0.30	0.05	0.4	0.4	1	0	10	10	26
34	44+480.000	0.30	0.05	0.4	0.4	1	0	7.5	7.5	18
35	45+200.000	0.30	0.05	0.4	0.4	1	0	10	10	27
36	48+150.000	0.30	0.05	0.4	0.4	1	0	10	10	23
37	48+870.000	0.30	0.05	0.4	0.4	1	0	6.75	6.75	18

Sl. No.	DATE	BY	CHKD	APPD
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PREPARED: _____ CHECKED: _____ APPROVED: _____
 DRAWN: _____
 PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 3 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 26+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)
 AS SHOWN
 DRAWING TITLE: SCHEDULE OF PIPE CULVERT WITH UTILITY
 PAGE NO. - 18
 DWG. NUMBER: 73465LASASCHPIPE-03

Chief Engineer
 World Bank Project
 On the E.I.C.(C), Odisha, BBSR



S. Chakrabarty

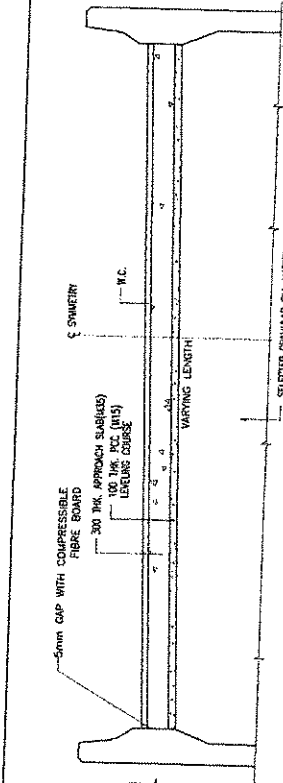
MAIN ROAD PIPE CULVERT DETAIL

Sl. No.	CD Change	Outer dia, d (m)	Pipe thickness, t (m)	Outer dia, D (m)	No. of rows	Skew angle (deg)	Type of Culvert	Pipe Length (m)
PIPE-ACCESS ROAD								
1	26+50.000	1.00	0.115	1.23	1	0	Normal DN 15	23
2	26+65.000	1.00	0.115	1.23	1	0	Normal DN 15	15
3	26+81.500	1.00	0.115	1.23	1	0	Encase 20	20
4	27+98.000	1.00	0.115	1.23	1	0	Encase 25	25
5	28+160.000	1.00	0.115	1.23	1	0	Normal DN 28	28
6	28+270.000	1.00	0.115	1.23	1	0	Encase 25	25
7	28+290.000	1.00	0.115	1.23	1	0	Encase 25	25
8	28+940.000	1.00	0.115	1.23	1	0	Normal 23	23
9	29+670.000	1.00	0.115	1.23	1	0	Encase 20	20
10	29+685.000	1.00	0.115	1.23	1	0	Normal DN 20	20
11	30+660.000	1.00	0.115	1.23	1	0	Normal 28	28
12	30+845.000	1.00	0.115	1.23	1	0	Normal 25	25
13	32+590.000	1.00	0.115	1.23	1	0	Encase 20	20
14	32+700.000	1.00	0.115	1.23	1	0	Encase 25	25
15	32+830.000	1.00	0.115	1.23	1	0	Encase 25	25
16	33+133.000	1.00	0.115	1.23	1	0	Encase 25	25
17	33+670.000	1.00	0.115	1.23	1	0	Normal 25	25
18	33+680.000	1.00	0.115	1.23	1	0	Normal 25	25
19	34+000.000	1.00	0.115	1.23	1	0	Normal 25	25
20	35+335.000	1.00	0.115	1.23	1	0	Encase 25	25
21	35+718.000	1.00	0.115	1.23	1	0	Encase 25	25
22	35+780.000	1.00	0.115	1.23	1	0	Normal 30	30
23	35+867.000	1.00	0.115	1.23	1	0	Normal DN 28	28
24	36+260.000	1.00	0.115	1.23	1	0	Normal 23	23
25	36+270.000	1.00	0.115	1.23	1	0	Normal 23	23
26	36+730.000	1.00	0.115	1.23	1	0	Normal 28	28
27	37+172.000	1.00	0.115	1.23	1	0	Normal DN 20	20
28	37+184.000	1.00	0.115	1.23	1	0	Normal 25	25
29	37+930.000	1.00	0.115	1.23	1	0	Encase 20	20
30	38+554.000	1.00	0.115	1.23	1	0	Normal DN 20	20
31	38+723.000	1.00	0.115	1.23	1	0	Encase 25	25
32	38+930.000	1.00	0.115	1.23	1	0	Encase 25	25
33	38+945.000	1.00	0.115	1.23	1	0	Encase 25	25
34	39+380.000	1.00	0.115	1.23	1	0	Encase 15	15
35	40+782.000	1.00	0.115	1.23	1	0	Normal 23	23
36	41+446.000	1.00	0.115	1.23	1	0	Encase 15	15
37	41+504.000	1.00	0.115	1.23	1	0	Normal DN 18	18
38	42+165.000	1.00	0.115	1.23	1	0	Encase 20	20
39	42+540.000	1.00	0.115	1.23	1	0	Normal 23	23
40	44+10.000	1.00	0.115	1.23	1	0	Normal 23	23
41	44+640.000	1.00	0.115	1.23	1	0	Encase 25	25
42	44+645.000	1.00	0.115	1.23	1	0	Encase 25	25
43	44+800.000	1.00	0.115	1.23	1	0	Encase 25	25
44	44+880.000	1.00	0.115	1.23	1	0	Encase 20	20
45	45+495.000	1.00	0.115	1.23	1	0	Normal 25	25
46	45+895.000	1.00	0.115	1.23	1	0	Normal DN 23	23
47	46+260.000	1.00	0.115	1.23	1	0	Normal DN 20	20
48	47+180.000	1.00	0.115	1.23	1	0	Normal 25	25
49	47+556.000	1.00	0.115	1.23	1	0	Encase 20	20
50	47+725.000	1.00	0.115	1.23	1	0	Encase 20	20
51	48+405.000	1.00	0.115	1.23	1	0	Normal 30	30
52	Repeat	1.00	0.115	1.23	1	0	Encase 20	20
53	Repeat	1.00	0.115	1.23	1	0	Encase 20	20
54	48+480.000	1.00	0.115	1.23	1	0	Encase 25	25

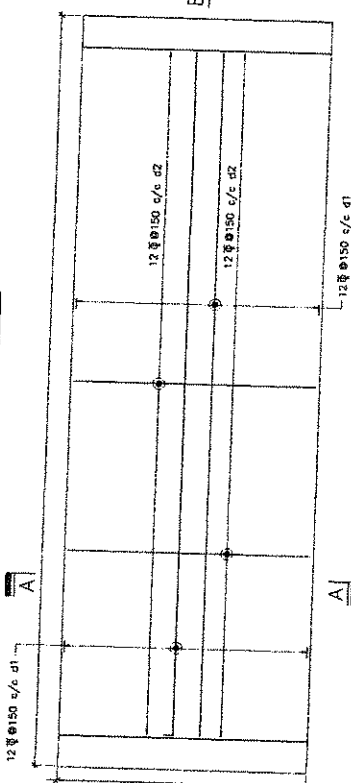
DATE	BY	CHKD	APPD	DESIGNED	DRAWN	DATE	BY	CHKD	APPD
14/03/20						14/03/20			
NO.	REV.	DATE	BY	REASON	DATE	BY	REASON	DATE	BY

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)
 CLIENT: ODISHA WORKS DEPARTMENT
 DESIGNER/ENGINEER: LEA Associates South Pvt. Ltd., India B-1, 5-27, 1st FLOOR, MOHAN COOPERATIVE INDUSTRIAL ESTATE, MATIURA ROAD, NEW DELHI-110044
 DPT CONSULTANT: CON SU L T I N G ENGINEERS GROUP LTD. E-14 MOH GOLF, MATIURA ROAD, JAGATPUR, INDIA Tel: +91-11-2228692, 2321693, 23220559 Fax: 2321346, Email: con@congroup.com
 DRAWN TITLE: SCHEDULE OF ACCESS PIPE CULVERT
 AS SHOWN
 DATE: 17/04/2018
 DRAWN BY: R1

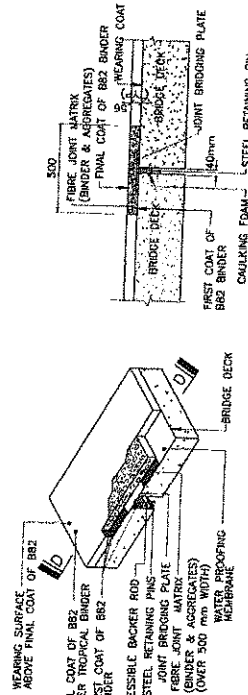
Chief Engineer
 World Bank Project
 Of the E.I.C.(C), Odisha, BBSR



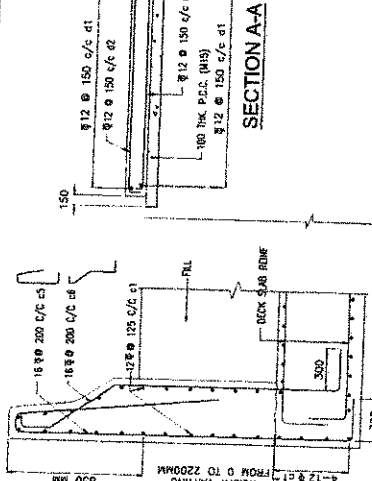
SECTION A-A



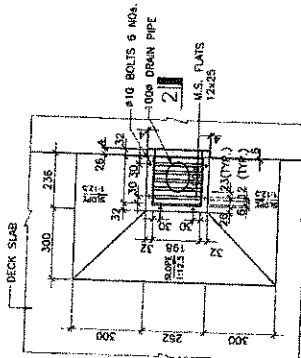
R.C. DETAILS OF APPROACH SLAB
(AT FINISHED ROAD LEVEL)



ASPHALTIC PLUG JOINT
DETAILS OF ASPHALTIC PLUG TYPE EXPANSION JOINT
(FOR SUPERSTRUCTURE WITH RCC DECK)
(SCALE 1:20)

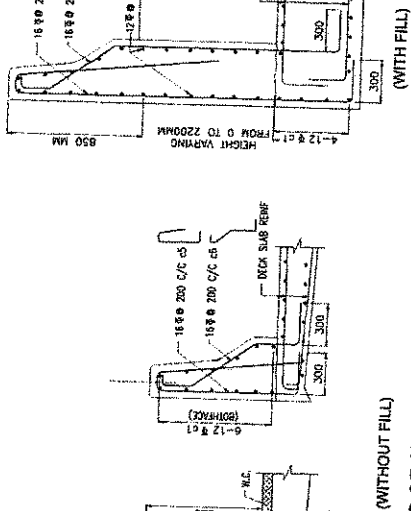


SECTION 2-2

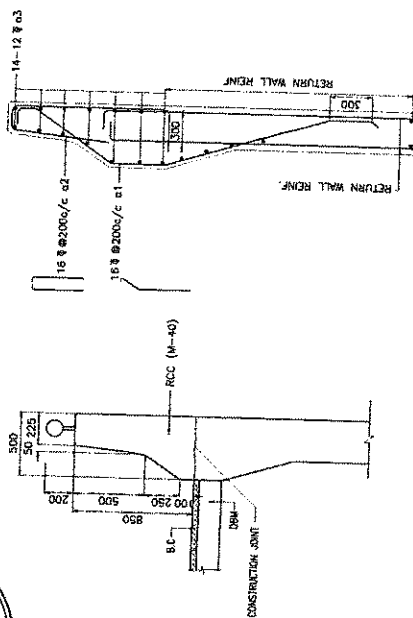


PLAN

TYPICAL DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT



DETAILS OF CRASH BARRIER FOR DIFFERENT LOCATION



DIMENSION DETAIL REINFORCEMENT OVER RETURN WALL
DETAILS OF CRASH BARRIER OVER RETURN WALL

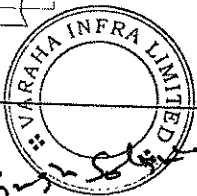
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS MENTIONED OTHERWISE. ONLY DIMENSIONS ARE TO BE FOLLOWED.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH RELEVANT C.A. & REINF. DETAIL DRAWINGS.

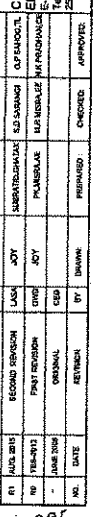
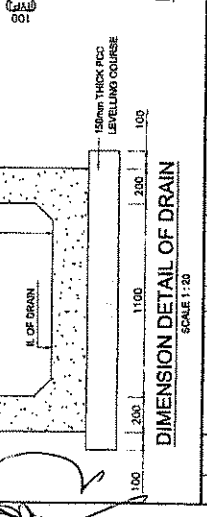
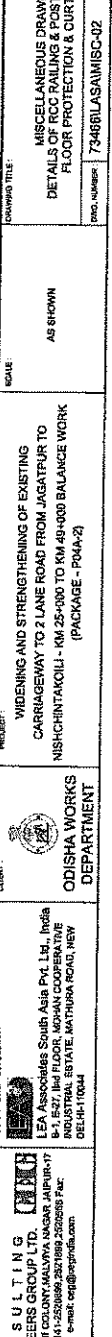
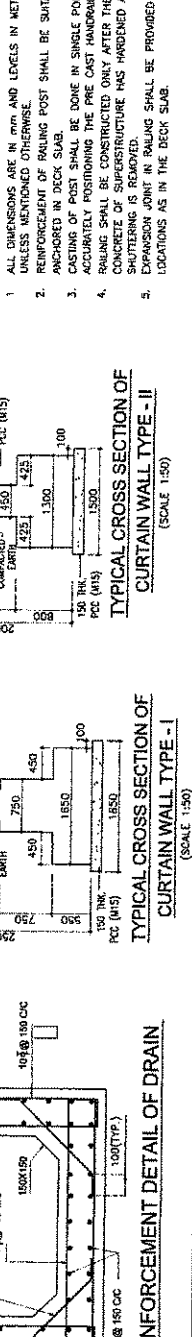
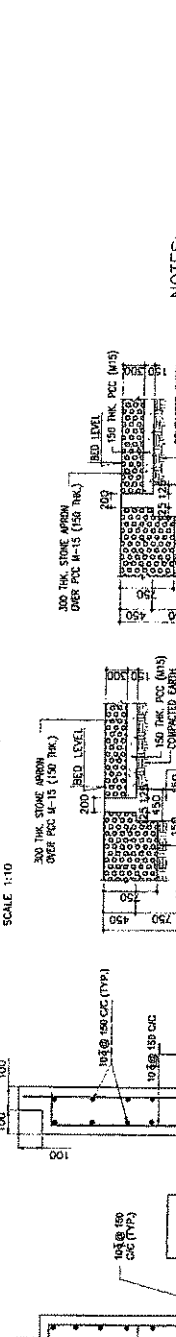
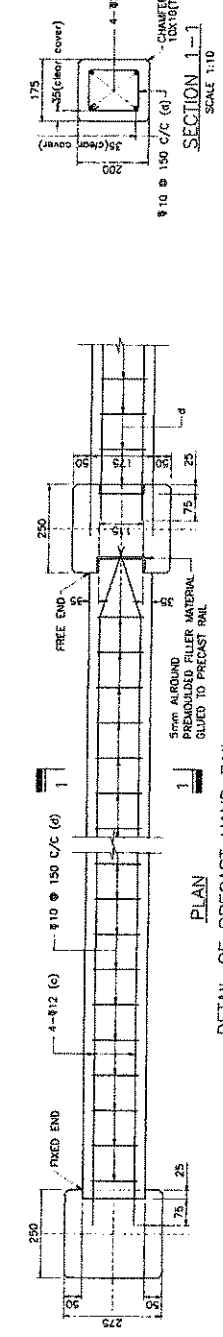
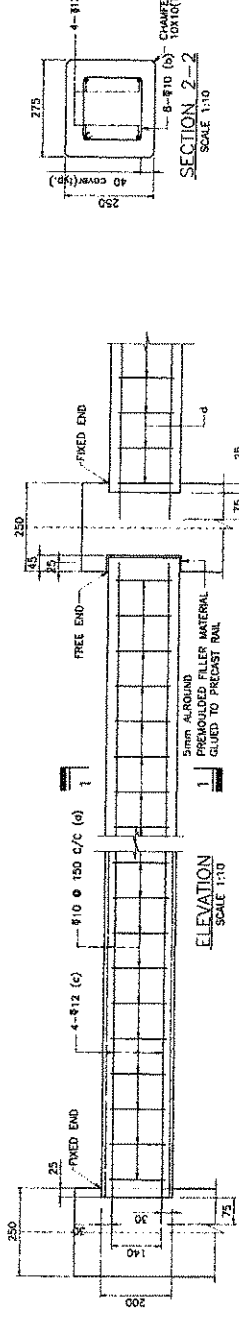
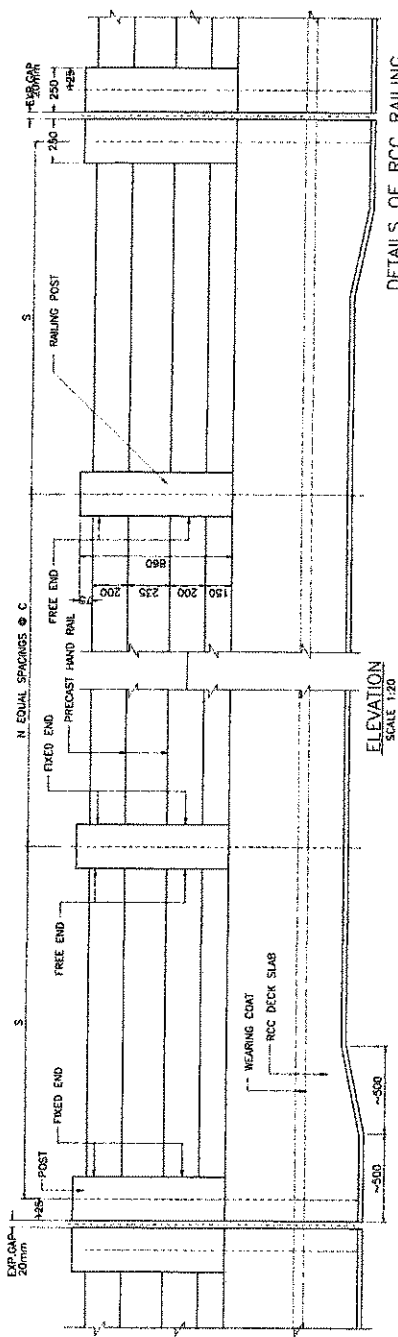
PROJECT:	WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO MISHC-HINTAKOLI - KM 25-40070 KM 48-000 BALANCE WORK (PACKAGE - P04-2)
SCALE:	AS SHOWN
PROJECT:	MISCELLANEOUS DRAWING DETAILS OF CRASH BARRIER, RCC APPROACH SLAB, DRAINAGE SPOUT AND EXPANSION JOINT
PAGE NO.:-	15
DATE:	7/3/2015

CLIENT:	ODISHA WORKS DEPARTMENT
DESIGN & CONSULTANT:	CDN SULLY & G ENGINEERS GROUP LTD. E-12, HUI COLONY, HALDIPATI, CUTACK-751017 Tel. +91-674-2520390, 2521893, 2520358 Fax. 2521844, e-mail: csg@sullys.com
APPROVED:	[Signature]

NO.	DATE	BY	CHKD	APPD	DESCRIPTION
01	15.01.15	JAY	JAY		SECOND REVISION
02	16.03.15	JAY	JAY		FINAL REVISION
03	17.04.15	JAY	JAY		FINAL REVISION
04	18.05.15	JAY	JAY		FINAL REVISION



Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



NOTES:—
 1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METERS UNLESS SPECIFIED OTHERWISE.
 2. REINFORCEMENT OF RAILING POST SHALL BE SUITABLY PACKAGED FOR EASY STORAGE.
 3. CASTING OF PRECAST RAIL SHALL BE DONE IN SINGLE POUR AFTER ACCURATE POSITIONING.
 4. RAILING SHALL BE CONSTRUCTED ONLY AFTER THE STRUCTURAL CONCRETE OF SUPERSTRUCTURE HAS HARDENED AND SHUTTERING IS REMOVED.
 5. EXPANSION JOINT IN RAILING SHALL BE PROVIDED AT THE SAME LOCATIONS AS IN THE DECK SLAB.

CLIENT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 49+00 BALANCE WORK (PACKAGE - P04A-2)
 PROJECT: ODISHA WORKS DEPARTMENT
 CONSULTANT: LEA Associates South Asia Pvt. Ltd., India
 5/12, MIDC COLONY, MALVIYA NAGAR, JAIPUR-302015
 TEL: 01422688000, 022189925000 FAX: 02213344
 E-mail: info@leasouth.com

Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

DATE: 17/06/2014
 DRAWN BY: DRANK
 CHECKED: APPROVED:

NO. 17
 SHEET NO. 17
 OF 17

AS SHOWN
 MISCELLANEOUS DRAWING
 DETAILS OF RCC RAILING & POST, RCC DRAIN,
 FLOOR PROTECTION & CURTAIN WALL

73466/LSA/MISC-02

73466/LSA/MISC-02

73466/LSA/MISC-02

73466/LSA/MISC-02

73466/LSA/MISC-02

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73466/LSA/MISC-02

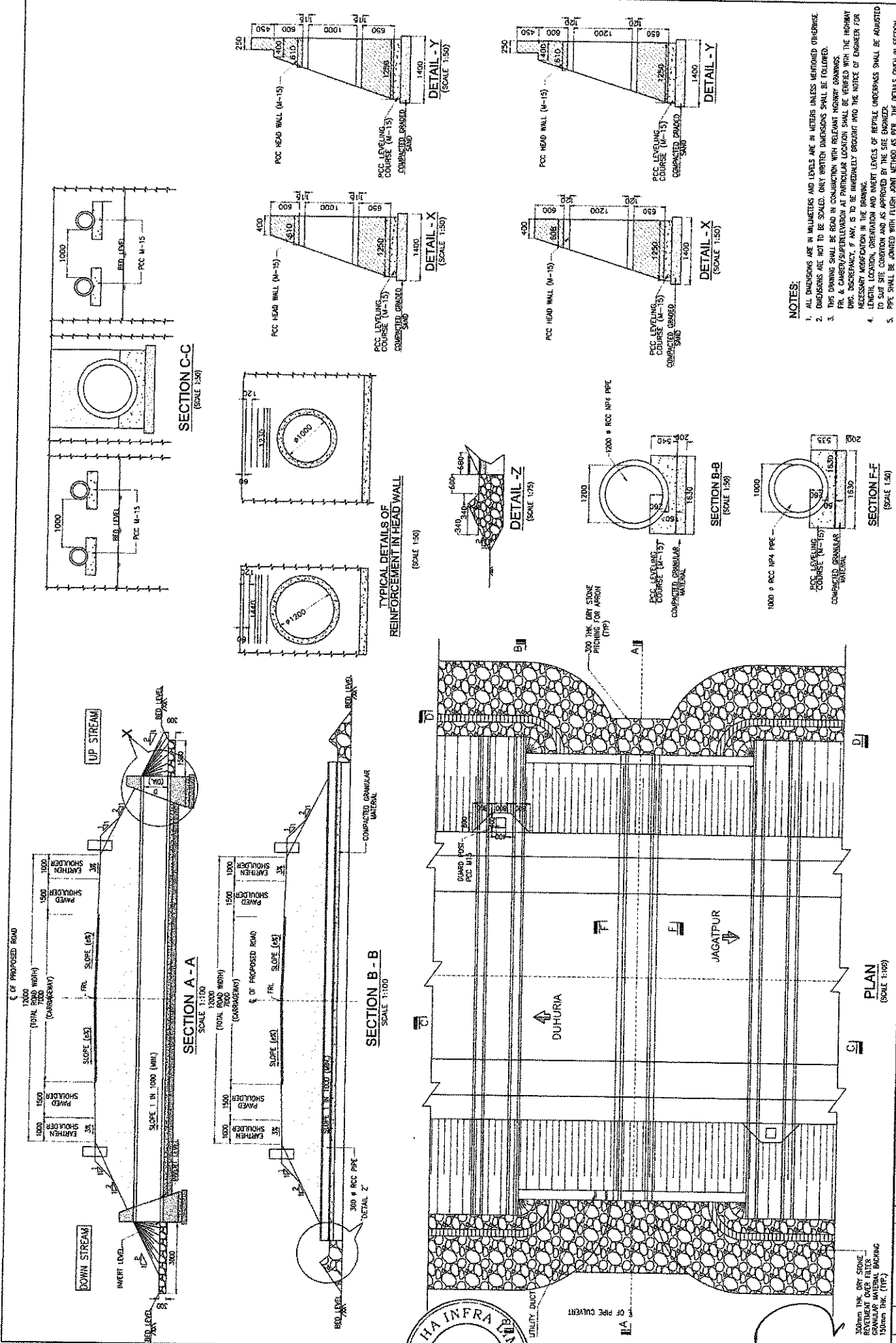
73466/LSA/MISC-02

73466/LSA/MISC-02

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73466/LSA/MISC-02

73466/LSA/MISC-02



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT DRAWINGS.
 4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF THE BRIDGE AT PARTICULAR LOCATION. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT TO THE NOTICE OF ENGINEERS FOR NECESSARY MODIFICATION IN THE DRAWING.
 5. LENGTH, LOCATION, ORIENTATION AND INVERT LEVELS OF REPTILE UNDERPASS SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE SITE ENGINEER.
 6. ALL JOINTS SHALL BE JOINED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2006 OF NATIONAL SPECIFICATIONS OF ROAD AND BRIDGE WORKS.

SCALE: AS SHOWN
 DRAWING TITLE: TYPICAL GENERAL ARRANGEMENT DRAWING FOR REPTILE UNDERPASS
 DRAWING NO.: 73468NLABAGAD/ENV-01

PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO MISHCHINTAKOLI - KM 25+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)
 DRAWING NO.: 73468NLABAGAD/ENV-01

COURT: ODISHA WORKS DEPARTMENT

DESIGNER: LEA Associates South Asia Pvt. Ltd., India
 101, 127, 11th FLOOR, MIDHAN COOPERATIVE SOCIETY, MATURDA ROAD, NEW DELHI-11004

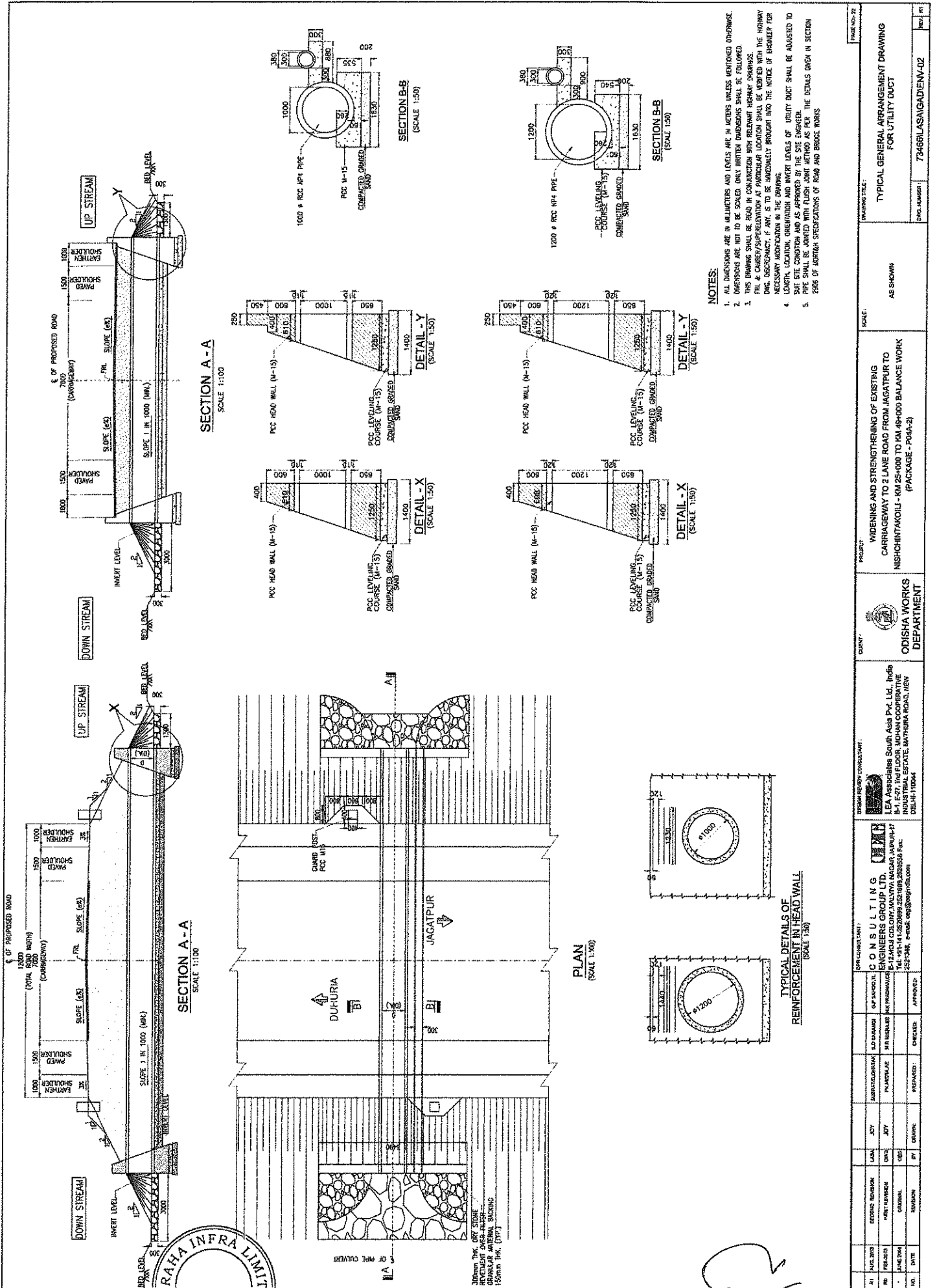
NO.	DATE	REVISION	BY	APPROVED
1		ISSUED FOR TENDER		
2		FOR APPROVAL		
3		FOR APPROVAL		
4		FOR APPROVAL		
5		FOR APPROVAL		

CONTRACTOR: CONSULTING ENGINEERS GROUP LTD.
 E-12 RAJ COLONY ANULVA NAGAR, JAIPUR-302015
 TEL: 0141-2599829, 2521899, 2525258 FAX: 0141-2599829

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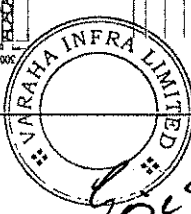


Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR



NOTES:

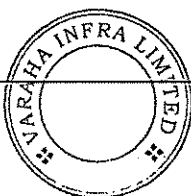
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT SPECIFICATION DRAWINGS.
4. LOCATION, LOCATION OF UTILITY DUCT SHALL BE ADJUSTED TO SUIT SITE CONDITIONS AND AS APPROVED BY THE GET ENGINEER.
5. PIPE SHALL BE JOINED WITH FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2206 OF INDIA SPECIFICATIONS OF ROAD AND BRIDGE WORKS.



Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

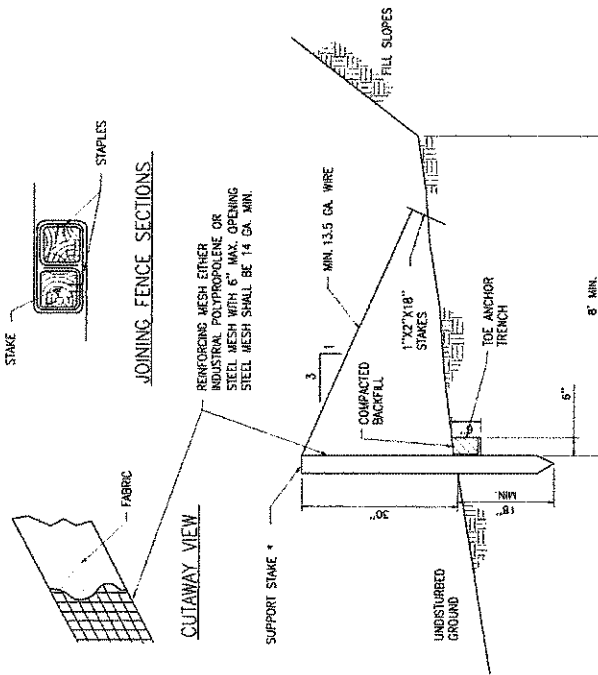
DRAWING TITLE:		TYPICAL GENERAL ARRANGEMENT DRAWING FOR UTILITY DUCT	
PROJECT:		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOIL - KM 25+000 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)	
COUNTY:		ODISHA WORKS DEPARTMENT	
CONSULTANT:		LEA ASSOCIATES South Asia Pk. Ltd. India B-4, 1577, 1st FLOOR, MADHANA COOPERATIVE INDUSTRIAL ESTATE, MAYAPURIA ROAD, NEW DELHI-110044	
NO.	DATE	BY	CHKD BY
APPROVED:		APPROVED:	
DRAWN BY:		DRAWN BY:	
CHECKED BY:		CHECKED BY:	
DESIGNED BY:		DESIGNED BY:	
SUPERVISOR:		SUPERVISOR:	
PROJECT ENGINEER:		PROJECT ENGINEER:	
CONSULTANT:		CONSULTANT:	
ENGINEERS GROUP LTD. 403, 1ST FLOOR, 17		INDIA	
INDUSTRIAL ESTATE, MAYAPURIA ROAD, NEW DELHI-110044		INDIA	
TEL: 011-41250888, 2621019, 26250816, 26250817		INDIA	
FAX: 011-41250888, 2621019, 26250816, 26250817		INDIA	
E-MAIL: eng@leaindia.com		INDIA	
INDIA		INDIA	

Siddhanta

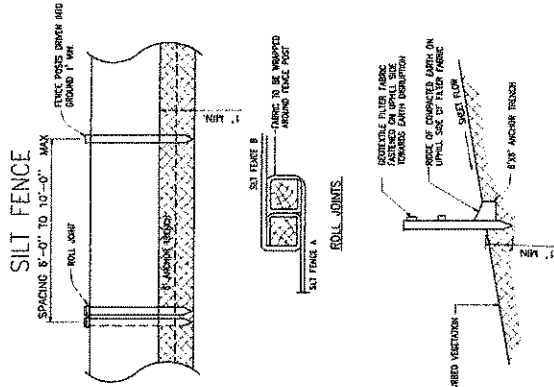


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Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



- STAKES SPACED @ 8' MAX. USE 2"x2"x18" (S, 3/8") WOOD OR EQUIVALENT STEEL (U OR T) STAKES



NO.	DATE	REVISION	BY	DATE	APPROVED
1	AUG-2015	SECOND REVISION	LDK		
2	FEB-2017	FIRST REVISION	OND		
3	JAN-2018	REVISED	OND		
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PROJECT: WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKUCHI - KM 25+00 TO KM 48+000 BALANCE WORK (PACKAGE - P04A-2)

CLIENT: ODISHA WORKS DEPARTMENT

CONSULTING ENGINEERS GROUP LTD. 5/2, JCT COLONY, MALVIYA NAGAR, JALPUR-17 2521245. e-mail: ceg@cegroup.com

ODISHA WORKS DEPARTMENT

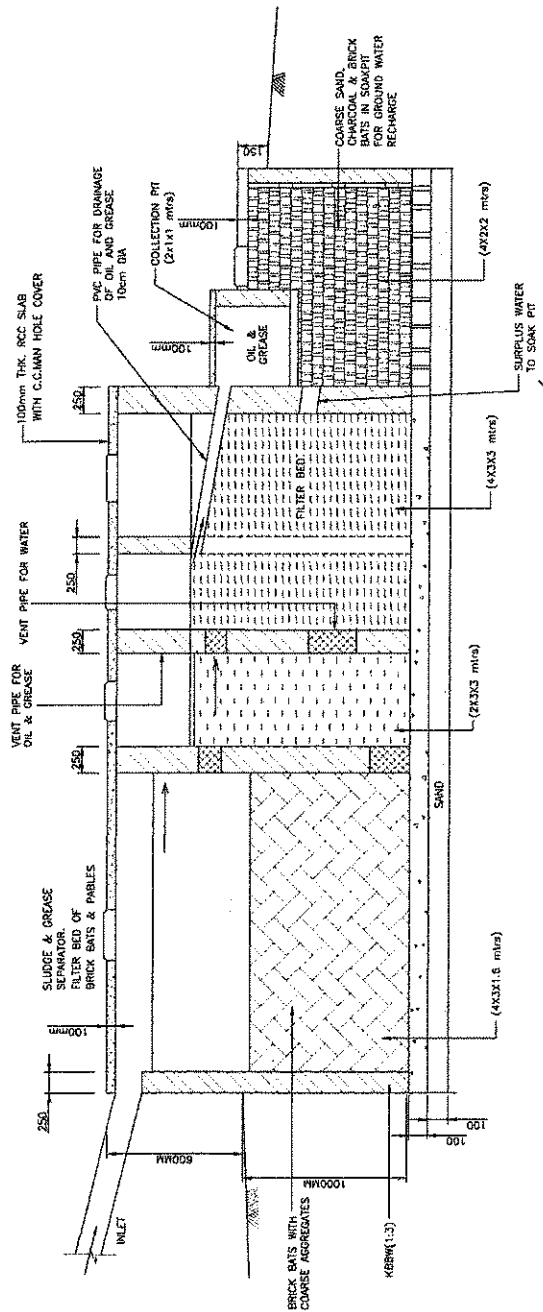
LEA Associates South Asia Pvt. Ltd. Indis B-1, 5/27, 1st FLOOR, UDAWAN CO-OPERATIVE INDUSTRIAL ESTATE, MATPURA ROAD, NEW DELHI-110044

SCALE: AS SHOWN

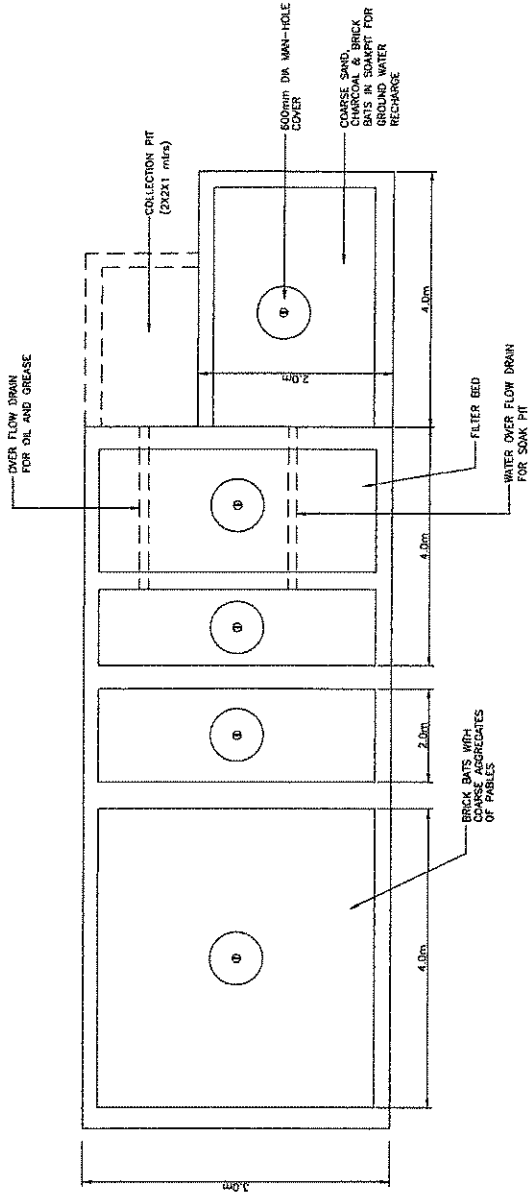
DRAWING TITLE: TYPICAL DRAWING FOR SILT FENCE SEDIMENT ARRESTOR

DATE: 17/08/2015

NO. 73465PLASAGADIEIVJ-03



SECTION OF SOAK PIT



PLAN OF SOAK PIT

NOTE: PROVIDE AT CONTRACTORS PLANT SITE.

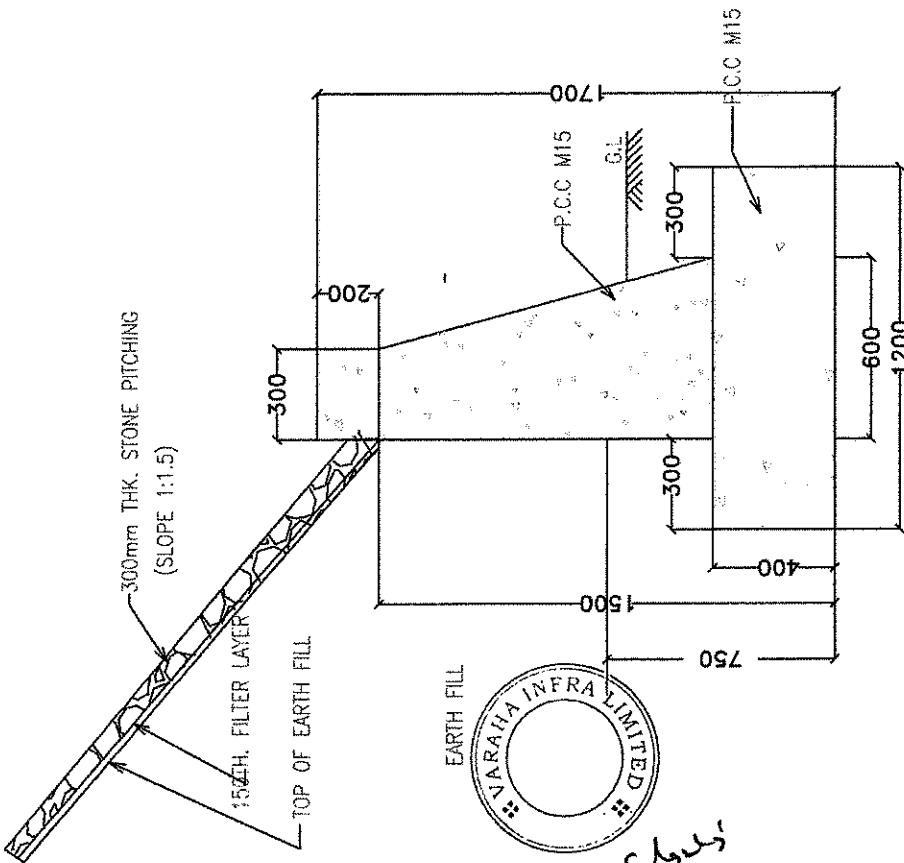
DATE		REVISION	BY	DATE	APPROVED
JUL 2018	ISSUE FOR TENDER				
FEB 2018	FOR REVIEW				
JUN 2017	ORIGINAL				
PREPARED:		CHECKED:		APPROVED:	
DESIGN CONSULTANT:		CONTRACTOR:		CLIENT:	
 M & E CONSULTANTS PVT. LTD. 15/12, MLI COLONY, MALVIYA NAGAR, JAIPUR-302015 INDUSTRIAL ESTATE, MATIURA ROAD, NEW DELHI-110044		 ODISHA WORKS DEPARTMENT		WIDENING AND STRENGTHENING OF EXISTING CARRIAGEWAY TO 2 LANE ROAD FROM JAGATPUR TO NISHCHINTAKOLI - KM 25+00 TO KM 40+00 BALANCE WORK (PACKAGE - P044-2)	
DRAWING TITLE:		SCALE:		PROJECT:	
TYPICAL DRAWING FOR OIL AND GREASE TRAP		N.T.S		DRAWING NO. - 4	
PAGE NO. - 4		DATE:		JOB NO.:	
7348BBLASANGADENW-04					

Saidhish...



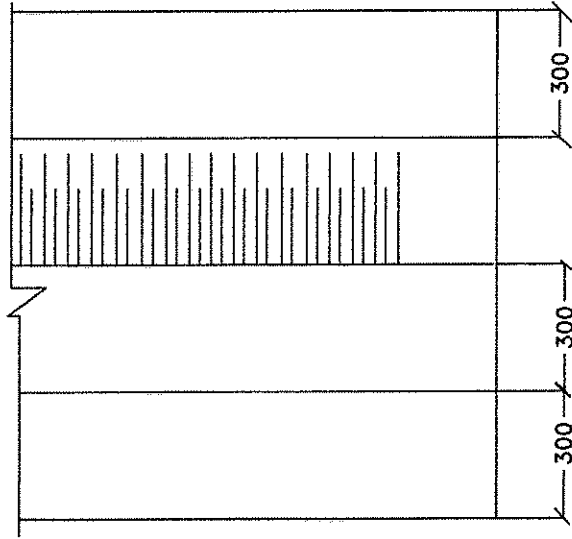
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Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR



TOE WALL FOR POND
(CROSS SECTION)

Sl No.	Items	Quantity	Rate	Total
1	Pond	4.977	R 30	149.31
2	Pond	5.305	R 25	132.63
3	Pond	7.411	L 15	111.17
4	Pond	7.489	R 35	262.12
5	Pond	11.895	R 95	1130.03
6	Pond	31.424	L 25	785.60
7	Pond	38.56	L 30	1156.80
8	Pond	45.928	R 20	918.56



PLAN OF TOE WALL FOR WATER BODY

TO MINIMISE IMPACT ON STORAGE CAPACITY & WATER SPREAD OF PONDS, WATER BODY, NALA BED, TOE WALLS TO BE ERRECTED SUCH THAT IT PREVENTS ACCIDENTAL FALL INTO THE DEPRESSION AND WASHING OF VEHICLES/BATHING/ WASHING ON THE ROAD SIDE

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

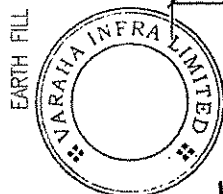
TYPICAL PCC TOE WALL WITH STONE PITCHING FOR WATER BODIES AS ENVIRONMENTAL MITIGATION.

(JAGATPUR - DUJHURIA)

DRG NO.	OSRP/CEG/JD-49KM/ENV/03	DESIGNED BY	DRAWN BY	REVRT	APPROVED
SH. NO.	DATE	DEC.12	REV	R-1	
SCALE			CEG	CEG	EE(PMU) CE,WBP

CONSULTING ENGINEERS GROUP LTD.

E-12, Moji Colony, Malviya Nagar, Jaipur-17
Tel: +91-141-2520899, 2521898, 2520556
Fax: 2521348, e-mail: ceg@cegroupindia.com

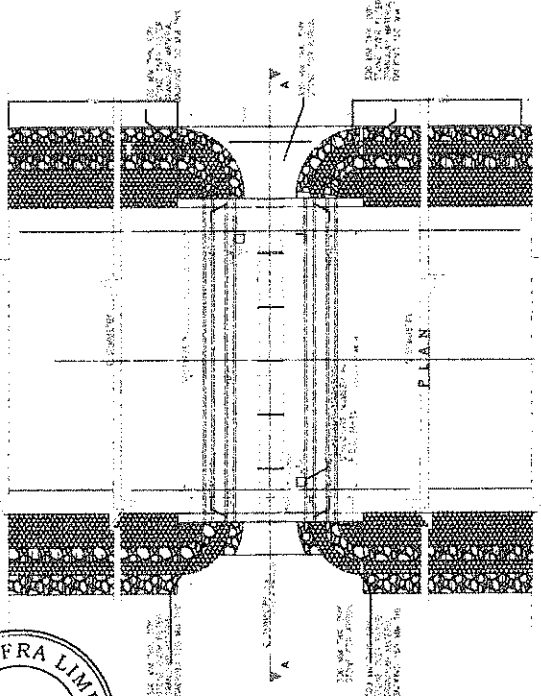
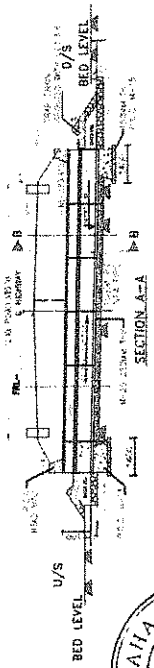


Srinivasulu

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Chief Executive Officer
World Bank
U.S.A. (C.O.)

REPTILE UNDER PASS



Sl. No	Proposed Chainage
1	9+030
2	12+326
3	16+423
4	25+000
5	31+100
6	33+950
7	40+174
8	43+780



Siddhant Saha

[Signature]

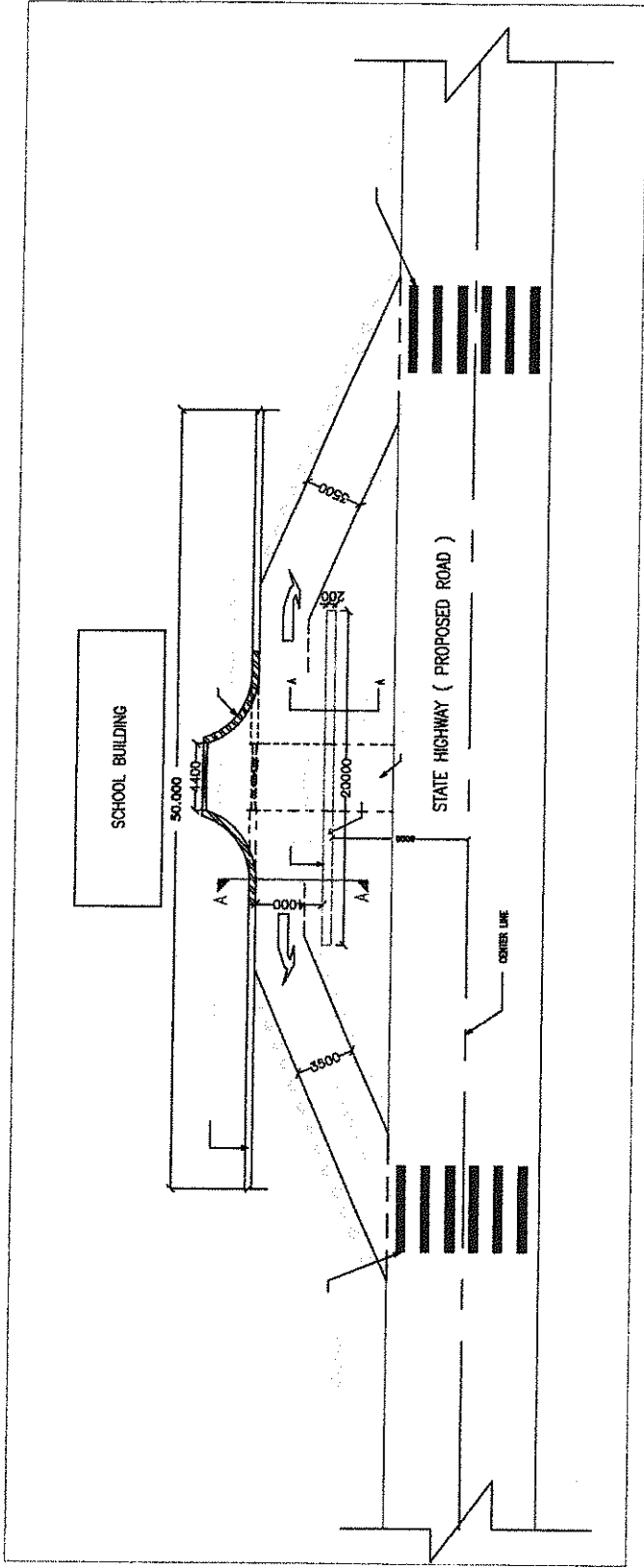
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

ORISSA STATE ROADS PROJECT Works Department, Govt. of Orissa		REPTILE UNDERPASS-PIPE CULVERT (GEN.)	
Rev No.:	DATE : 12/12/12	DRG.NO.:	OSR/PI/W/44
PREPARED BY	CHECKED BY	DESIGNED BY	APPROVED
		CEG	CEG
		CEG	BE/PMU
			CE/WIP

Sl No	Item	Chainage	Location L/R	Affected Length in mtrs
1	School, Gujarpur	4.33	Left	40
2	School	5.382	Left	58
3	School	5.7	Left	34
4	School	10.275	Right	20
5	School	19.565	Left	41
6	School	50.36	Right	10
7	Hospital	2.3	Left	78
8	Hospital	26.695	Left	78
9	Temple	6.120	Left	15



- THERE SHALL BE RUMBLER STRIPS & SPEED BREAKERS 150m & 10m AWAY FROM PEDESTRIAN CROSSINGS NEAR SCHOOLS, COLLEGES, HOSTELS, TEMPLES, HOSPITALS, DISPENSARIES AND OLD AGE HOMES, WEEKLY MARKET AREA, G.P MARKET COMPLEX ADJACENT TO THE ROAD WITHIN 25m TO 50m DISTANCE FROM CENTRE LINE. THE BOUNDARY WALL SHOULD HAVE G.I ANGLE POSTS WITH G.I WIRE MESH GRILL/ STRINGS FOR GROWING CREEPERS TO MUFFLE NOISE AND DUST.
- CREEPERS WITH SCENTED/COLOURFUL FLOWERS TO BE PLANTED WHICH HAVE TOMENTOSE LEAVES TO ABSORB MORE DUST AND NOISE.
- THE BOUNDARY WALL PLASTERING TO HAVE VERTICAL GROOVES TO DEFELECT NOISE TOWARDS THE ROAD WHICH WILL ACT AS A COUNTER NOISE SOURCE TO DAMPEN THE HIGH WAY NOISE LEVEL.
- VEGETATIVE SHRUBS AND BUSHES WHICH ARE NON BROWSABLE AND HAVING SCENTED FLOWERS TO BE PLANTED ON THE PERIPHERY OR EDGE OF THE APPROACH ROAD TO SUCH PLACES. THE BOUNDARY ENTRY POINT TO BE SHIFTED IN WORDS IN CASE OF CLOSE WITH NAME OF THE INSTITUTION ENGRAVED.
- PROXIMITY AND DIRECT ENTRY TO THE ROAD WITH AND A BARRICADE WALL SHALL BE ERRECTED 4m AWAY FROM THE ENTRY POINT INFRONT OF THE GATE



CONSULTING ENGINEERS GROUP LTD.
 E-12, Moji Colony, Malviya Nagar, Jaipur-17
 Tel: +91-141-2520899, 2521899, 2520556
 Fax: 2521348, e-mail: ceg@cegroupindia.com

PROJECT:-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

INTERCEPTIVE BARRICADES FOR EDUCATIONAL AND MEDICAL INSTITUTIONAL APPROACHES AS ENVIRONMENTAL MITIGATION PLAN.			
DRG NO.: OSRP/CEG/JD-49KM/ENW/05	DESIGNED BY: REV/RT	REV	APPROVED
SH. NO.	DATE: DEC, 12	REV: R-1	CEG
SCALE	NTS		CEG (PMU)
			CE, WBP

Chief Executive Officer

AGREEMENT No. **05** of 2015-16



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

PACKAGE No. OSRP-CW-ICB-P04A2

For

Construction for Widening & Strengthening of existing carriageway to 2-lane
road from Nischintakoili to Duhuria (Km. 25/0 to Km. 49/0 of MDR) (Balance
Works)
under

Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Odisha Works Department, Government of Odisha

and

M/s Varaha Infra Ltd.,
Umesh Smriti, 6 Jalam Vilas Scheme, Paota B Road,
Jodhpur- 342006, Rajasthan, India
Tel : +91-291-2556877 , Fax : +91-291-2553861
E-mail: vccjodhpur@gmail.com

[VOLUME-V: Schedules]

Agreement Value: Rs. 97,89,97,903

*Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit – V, Bhubaneswar – 751 001*

December 23, 2015


CONTENTS of CONTRACT

Volume – I	:	Letter of Acceptance, Letter of Bid and Addenda
Volume – II	:	Particular Conditions and the General Conditions;
Volume – III	:	Specifications
Volume – IV	:	Drawings
Volume – V	:	Completed Schedules

CONTENTS of VOLUME V

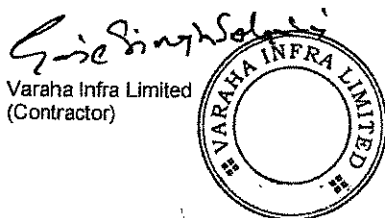
Sl.	Description	Page No.
1	Grand Summary of Price Schedule	1
2	Day Work Summary	2
3	Price Schedule	3-33

G. S. Singh Solanki



Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Grand Summary of Price Schedule		
Contract Name: "CONSTRUCTION FOR WIDENING & STRENGTHENING OF EXISTING CARRIAGE WAY TO 2- LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - Km 25 to Km 49 MDR (Balance Work) (Package No-ICB-CW-P04A-2)		
Contract No.: Agreement No. 05 of 2015 - 16		
<i>General Summary</i>	<i>Page</i>	<i>Amount</i>
BILL NO.1 : SITE CLEARANCE	3 to 4	3,876,240.50
BILL NO.2 : EARTH WORKS	4 to 5	235,492,950.00
BILL NO.3 : SUB-BASE AND BASE COURSES	6	204,902,390.00
BILL NO.4 : BITUMINOUS COURSES	6 to 7	349,531,281.00
BILL NO.5 : CULVERTS AND UNDERPASSES	8 to 11	76,917,585.80
BILL NO.6 : BRIDGES	12 to 15	5,559,913.48
BILL NO.7 : RETAINING WALL, DRAINAGE AND PROTECTIVE WORKS	15 to 17	99,591,892.07
BILL NO.8 : ROAD SAFETY AND AMENITIES	17 to 22	67,257,938.60
BILL NO.9 : MAINTENANCE, REPAIR AND REHABILITATION	22 to 23	23,174,865.84
BILL NO.10 : ENVIRONMENTAL MITIGATION MEASURES	24 to 28	20,797,040.26
Subtotal of Bills	(A)	1,087,102,097.55
Total for Daywork (Provisional Sum)	(B)	673,350.00
Total Bid Price (A + B)	(C)	1,087,775,447.55
Discount @ 10% on Total Bid Price (C) (10% Discount shall be effected in each Work Bill)	(D)	108,777,544.76
Final Bid Price (C - D)	(E)	978,997,902.80
	Say,	978,997,903.00

Rupees Ninety Seven Crores Eighty Nine Lakhs Ninety Seven Thousand Nine Hundred Three only



[Signature]


Chief Engineer
World Bank Projects, Odisha
O/o the E (Employer)

Daywork Summary

Contract Name: "CONSTRUCTION FOR WIDENING & STRENGTHENING OF EXISTING CARRIAGE WAY TO 2- LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - Km 25 to Km 49 MDR (Balance Work) (Package No-ICB-CW-P04A-2)
Contract No.: Agreement No. 05 of 2015 - 16

	<i>Amount (Rs.)</i>	<i>% Foreign</i>
1. Total for Daywork: Labour	82,718.00	NIL
2. Total for Daywork: Materials	402,944.00	NIL
3. Total for Daywork: Contractor's Equipment	187,688.00	NIL
Total for Daywork (Provisional Sum)	673,350.00	

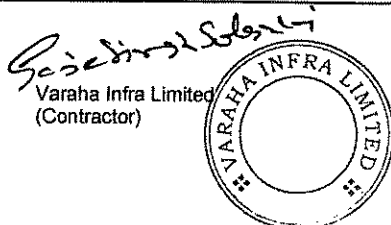



 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 Of the E.I.C.(C). Odisha, BBSR

Contract Name: "CONSTRUCTION FOR WIDENING & STRENGTHENING OF EXISTING CARRIAGE WAY TO 2- LANE ROAD FROM NISCHINTAKOILI TO DUHURIA - Km 25 to Km 49 MDR (Balance Work)
(Package No-ICB-CW-P04A-2)


PRICE SCHEDULE (WORKS ITEMS & DAYWORKS)

Item No.	Description	Unit	Quantity	Rate	Amount
BILL NO.1 : SITE CLEARANCE					
1.01	Clearing and Grubbing for road land complete as per Technical Specification Clause 201 and as per the direction of the Engineer.	Ha	32.00	36,300.000 Rupees Thirty Six Thousand Three Hundred only	1,161,600.00
1.02	Dismantling structures and pavement including disposal of resulting material and/or salvaging useful materials complete as per Technical Specification Clause 202, 2809 and as per the direction of the Engineer.				
	a) Brick/ Stone Structures of dry or in lime/cement mortar	Cum	921.00	302.500 Rupees Three Hundred Two And Fifty Paise only	278,602.50
	b) Concrete/ Reinforced concrete/ Prestressed concrete structures including cleaning straightening & cutting of bars and separating them out from RCC/PSC.				
	For Slab Culverts & Box Culverts and Bridges				
	i)P.C.C.	Cum	117.00	363.000 Rupees Three Hundred Sixty Three only	42,471.00
	ii)R.C.C.	Cum	126.00	387.200 Rupees Three Hundred Eighty Seven And Twenty Paise only	48,787.20
	c) Dismantalling of Pavement course	Cum	10,552.00	169.400 Rupees One Hundred Sixty Nine And Forty Paise only	1,787,508.80
	d) Hume pipe	Lm	188.00	484.000 Rupees Four Hundred Eighty Four only	90,992.00
	e) CC Kerb	Lm	8.00	242.000 Rupees Two Hundred Forty Two only	1,936.00
	f) Dry stone pitching	Cum	10.00	544.500 Rupees Five Hundred Forty Four And Fifty Paise only	5,445.00
	g) Expansion joint	Rm	22.00	121.000 Rupees One Hundred Twenty One only	2,662.00



Item No.	Description	Unit	Quantity	Rate	Amount
	h) Bituminous Concrete Wearing Coarse	Sqm	55.00	145.200 Rupees One Hundred Forty Five And Twenty Paise only	7,986.00
1.03	Removing stumps and roots of trees having girth above 300 mm, transporting and disposing same clear off the work site and back filling the pit with sand to required compaction complete as per Technical Specifications Clause 305, as directed by the Engineer, for girth size:				
	a) Above 300 mm to 600 mm	No.	300.00	275.000 Rupees Two Hundred Seventy Five only	82,500.00
	b) Above 600 mm to 900 mm	No.	250.00	385.000 Rupees Three Hundred Eighty Five only	96,250.00
	c) Above 900 mm to 1800 mm	No.	250.00	550.000 Rupees Five Hundred Fifty only	137,500.00
	d) Above 1800 mm	No.	200.00	660.000 Rupees Six Hundred Sixty only	132,000.00
	SUB TOTAL				3,876,240.50
BILL NO.2 : EARTH WORKS					
2.01	Roadway excavation in all kinds of soil necessary for construction of roadway complete as per Technical Specification Clause 301 and as per the direction of Engineer.	Cum	16,684.00	55.000 Rupees Fifty Five only	917,620.00
2.02	Construction of embankment with approved material obtained from approved borrow areas with all leads and lifts Complete as per Drawing and technical Specification Clause 305 and as per the direction of the Engineer.	Cum	55,112.00	220.000 Rupees Two Hundred Twenty only	12,124,640.00
2.03	Construction of embankment with sand from approved borrow areas with all leads and lifts complete as per Drawing and Technical Specification Clause 305 and as per the direction of the Engineer.	Cum	177,616.00	440.000 Rupees Four Hundred Forty only	78,151,040.00

Sandeep Singh Solanki
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
2.04	Construction of subgrade and earthen shoulder with moorum/ gravelly soil having CBR value 10% or more from approved borrow areas with all leads and lifts Complete as per Drawing and technical Specification Clause 305 and as per the direction of the Engineer.	Cum	199,939.00	715.000 Rupees Seven Hundred Fifteen only	142,956,385.00
2.05	Construction of embankment with suitable material deposited at site from roadway and structure excavation all complete as per Drawing and Technical Specification Clause 305 and as per the direction of the Engineer.	Cum	10,011.00	55.000 Rupees Fifty Five only	550,605.00
2.06	Loosening and recompacting the existing subgrade in all kinds of soil upto a depth of 300mm/500mm to meet the requirement of table 300-2 complete as per Technical Specification Clause 305 and as per the direction of the Engineer.	Cum	6,900.00	22.000 Rupees Twenty Two only	151,800.00
2.07	Earthwork with agriculture soil for filling of median/island complete as per Technical Specification Clause 407 and as per the direction of the Engineer.	Cum	675.00	220.000 Rupees Two Hundred Twenty only	148,500.00
2.08	Scarifying the existing bituminous surface layers without disturbing the base including transporting and disposing off waste material at approved location complete as per Technical Specification Clause 501 and as per the direction of the Engineer.	Sqm	41,244.00	5.500 Rupees Five And Fifty Paise only	226,842.00
2.09	Stripping, storing of top soil by road side at 15 m internal and re-application on embankment slopes, cut slopes and other areas in localities where the available embankment material is not conducive to plant growth as directed by the Engineer and as per technical specification-301.	Cum	2,682.00	99.000 Rupees Ninety Nine only	265,518.00
SUB TOTAL					235,492,950.00

Sudhakar Sankar
Varaha Infra Limited
(Contractor)



Sudhakar Sankar
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.I.C. Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
BILL NO.3 : SUB-BASE AND BASE COURSES					
3.01	Construction of Granular Sub-base course using crushed stone aggregate by providing the materials conforming to Gr-V of Table 400-1 complete as per Technical Specification Clause 401 and as per the direction of the Engineer.	Cum	65,795.00	1,650.000	108,561,750.00
				Rupees One Thousand Six Hundred Fifty only	
3.02	Construction of wet mix macadam complete as per Technical Specification Clause 406 and as per the direction of the Engineer.	Cum	54,739.00	1,760.000	96,340,640.00
				Rupees One Thousand Seven Hundred Sixty only	
SUB TOTAL					204,902,390.00
BILL NO.4 : BITUMINOUS COURSES					
4.01	Providing bituminous Primer coat over granular surface complete all as per Technical Specification Clause 502 and as per the direction of the Engineer.	Sqm	220,264.00	33.000	7,268,712.00
				Rupees Thirty Three only	
4.02	Providing Tack coat complete as per Technical Specification Clause 503 and as per the direction of the Engineer.				
	(a) Over Granular Surface treated with primer	Sqm	220,264.00	16.500	3,634,356.00
				Rupees Sixteen And Fifty Paise only	
	(b) Over normal bituminous surface	Sqm	203,173.00	11.000	2,234,903.00
				Rupees Eleven only	
4.03	Providing Dense Bituminous Macadam course using Bitumen Grade-60/70 (VG-30) complete as per Technical Specification Clause 505 and as per the direction of Engineer.	Cum	18,266.00	7,150.000	130,601,900.00
				Rupees Seven Thousand One Hundred Fifty only	
4.04	Providing bituminous concrete wearing course using CRMB-55 complete as per Technical Specification Clause 507 and as per the direction of the Engineer.	Cum	8,122.00	8,250.000	67,006,500.00
				Rupees Eight Thousand Two Hundred Fifty only	

Sudhanshu Kumar
Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
4.05	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing as per Technical Specification clause 601 and as per the direction of the Engineer.	Cum	8,524.00	3,080.000	26,253,920.00
				Rupees Three Thousand Eighty only	
4.06	Construction of un-reinforced, dowel jointed, plain cement concrete pavement of M40 grade with 43 grade cement @ minimum 400 kg per cum , over a prepared dry lean concrete sub base, mixed in a batching and mixing plant as per approved mix design, transported to site by transit mixers, laid either with a fixed form or slip form paver or by hand guided method, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane of 125 micron thickness, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing and Clause 602 of Technical Specifications.	Cum	17,048.00	6,270.000	106,890,960.00
				Rupees Six Thousand Two Hundred Seventy only	
4.07	Providing and laying 20 mm thick Close Graded Premix Mixed Seal Surfacing type A complete as per Technical Specification Clause 508.	Sqm	17,091.00	330.000	5,640,030.00
				Rupees Three Hundred Thirty only	
	SUB TOTAL				349,531,281.00

Varaha Infra Limited
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 (Contractor)



Chief Engineer
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)

Chief Engineer
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(C), Odisha, ARSR

Item No.	Description	Unit	Quantity	Rate	Amount
BILL NO.5 : CULVERTS					
5.01	Earthwork in excavation of foundation for structures complete as per Drawing and Technical Specifications Clause 304 including all leads and lifts and as per the direction of the Engineer.	Cum	18,124.00	132.000 Rupees One Hundred Thirty Two only	2,392,368.00
5.02	Earth fill below pitching in quadrant portion with approved material complete as per Drawing and Technical Specification Clause 305 with all leads and lifts and as per the direction of the Engineer.	Cum	1,029.00	55.000 Rupees Fifty Five only	56,595.00
5.03	Providing and filling behind abutment, wing wall and return wall with granular material etc. Layers not exceeding 150mm thick including all leads and lifts complete as per Drawing, direction of the Engineer and Technical Specification Clause 304 and as per the direction of the Engineer.	Cum	1,399.00	1,331.000 Rupees One Thousand Three Hundred Thirty One only	1,862,069.00
5.04	Providing filter media behind abutment, wing wall and return wall complete as per Drawing and Technical Specification Clause 2504, 2509, 2510 and as per the direction of the Engineer.	Cum	348.00	1,089.000 Rupees One Thousand Eighty Nine only	378,972.00
5.05	Cement Concrete M-15 grade in levelling course and pipe bed etc. including centering and shuttering all complete as per Drawing and Technical Specification Sections 1500 and 1700 and as per the direction of the Engineer.	Cum	2,353.00	4,400.000 Rupees Four Thousand Four Hundred only	10,353,200.00
5.06	Cement Concrete M-15 grade in substructure & headwall including centering and shuttering all complete as per Drawing and Technical Specification Sections 1500, 1700, 2200 and as per the direction of the Engineer.	Cum	1,824.00	4,950.000 Rupees Four Thousand Nine Hundred Fifty only	9,028,800.00

S. J. Singh Solanki

Varaha Infra Limited
(Contractor)

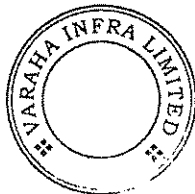


[Signature]
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World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
5.07	Reinforced cement concrete (M-20 grade) in all types of culverts as per Drawing and Technical Specification Section 1500, 1700 & 2200 and as per the direction of the Engineer.	Cum	2,455.00	5,500.000 Rupees Five Thousand Five Hundred only	13,502,500.00
5.08	Reinforced cement concrete M-30 grade in approach slabs including cost of reinforcement all complete as per Drawing and Technical Specification Clause 2704 and as per the direction of the Engineer.	Cum	247.00	5,500.000 Rupees Five Thousand Five Hundred only	1,358,500.00
5.09	HYSD (TMT) bar reinforcement complete as per Drawing and Technical Specifications Clause 1600 and as per the direction of the Engineer.	MT	151.00	55,000.000 Rupees Fifty Five Thousand only	8,305,000.00
5.10	Providing laying and joining NP-4(I.S 458) hume pipes for culverts on concrete cradle bedding excluding cost of concrete complete as per Drawing Tech. Specification section 2900 and IRC special publication No.13 and as per the direction of the Engineer.				
	a) 1000 mm dia. In Single Row	Lm	523.00	7,865.000 Rupees Seven Thousand Eight Hundred Sixty Five only	4,113,395.00
	b) 1200 mm dia. In Single Row	Lm	848.00	10,285.000 Rupees Ten Thousand Two Hundred Eighty Five only	8,721,680.00
	c) 1200 mm dia. In Double Row	Double Row-Lm	278.00	19,800.000 Rupees Nineteen Thousand Eight Hundred only	5,504,400.00
5.11	Providing , laying and joining 300 mm dia NP-4 Hume Pipe with collars on first class bedding for utility duct and reptile pass including cost of granural bedding and transportation, loading & unloading, taxes, watering, curing, T&P etc. all complete as per Technical Specification Section 2900 & IRC SP-13 and as per the direction of the Engineer	Lm	682.00	1,331.000 Rupees One Thousand Three Hundred Thirty One only	907,742.00

Saje Singh Solanki
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(Contractor)



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Chief Engineer
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O/o the E.I.C.(C), Odisha, BSR

Item No.	Description	Unit	Quantity	Rate	Amount
5.12	Providing , laying and joining 1000 mm dia NP-4 Hume pipe in single row on first class bedding for spur road drain including cost of granural bedding and all materials, labour, transportation ,loading & unloading, taxes,watering,curing,T &P etc.all complete as per Technical Specification Section 2900& IRC SP-13 and as per the direction of the Engineer.	Lm	1,243.00	3,630.000	4,512,090.00
				Rupees Three Thousand Six Hundred Thirty only	
5.13	Providing and laying filter material underneath stone pitching in slopes complete as per Drawing and Technical Specification section 2504, 2509, 2510 and as per the direction of the Engineer.	Cum	496.00	770.000	381,920.00
				Rupees Seven Hundred Seventy only	
5.14	Providing and laying stone Pitching on embankment slopes complete as per Drawing and Technical Specification Clause 2504 and as per the direction of the Engineer	Cum	837.00	1,331.000	1,114,047.00
				Rupees One Thousand Three Hundred Thirty One only	
5.15	Providing rubble stone flooring in Cement mortar (1 Cement: 3 Sand) and joints complete as per Drawing and Technical Specification Section 1400, 2504 and as per the direction of the Engineer.	Cum	467.00	1,331.000	621,577.00
				Rupees One Thousand Three Hundred Thirty One only	
5.16	Providing weep holes in box portion, return wall, wing wall etc. all complete as per Drawing and Technical Specification Clause. 2706 and as per the direction of the Engineer.	Nos	360.00	159.500	57,420.00
				Rupees One Hundred Fifty Nine And Fifty Paise only	
5.17	Supplying, fitting and fixing tar paper bearing in position complete with all accessories as per drawings and technical specification clause 2605,and as per the direction of the Engineer.	Sqm	8.00	29.700	237.60
				Rupees Twenty Nine And Seventy Paise only	

Sudhanshu Solanki

Varaha Infra Limited
(Contractor)

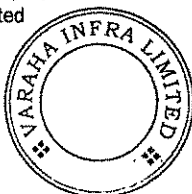


[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
5.18	Supplying and fixing Asphaltic Plug expansion joints complete as per Drawing and as per IRC: SP: 69-2005 and as per the direction of the Engineer.	Rmt	249.00	6,897.000 Rupees Six Thousand Eight Hundred Ninety Seven only	1,717,353.00
5.19	Cement Concrete M-15 grade for parapet Wall as per drawing and Technical Specifications 1500,1700,2100 and 2200 and as per the direction of Engineer.	Cum	102.00	4,400.000 Rupees Four Thousand Four Hundred only	448,800.00
5.20	Bituminous wearing course 56mm thick comprising 50mm thick asphaltic concrete in a single layer over Bituminous mastic course 6mm thick with a prime coat complete as per Drawing and Technical Specification Section 503,516 & 2700 and as per the direction of the Engineer.	Sqm	1,264.00	880.000 Rupees Eight Hundred Eighty only	1,112,320.00
5.21	Synthetic enamel painting of culvert No. and span arrangement as per IRC - 7 - 1971 and as per the direction of the Engineer.	Nos.	176.00	302.500 Rupees Three Hundred Two And Fifty Paise only	53,240.00
5.22	Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface etc.Complete as per the direction of Engineer.	Sqm	256.00	84.700 Rupees Eighty Four And Seventy Paise only	21,683.20
5.23	Providing Sand Filling in Foundation Trenches as per Drawing & Technical Specification Clause 304 and as per the direction of the Engineer.	Cum	1,079.00	363.000 Rupees Three Hundred Sixty Three only	391,677.00
SUB TOTAL					76,917,585.80

Sandeep Singh Solanki
Varaha Infra Limited
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Chief Engineer,
World Bank Projects, Odisha
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World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
BILL NO.6 : BRIDGES					
6.01	Earthwork in excavation of foundation for structures complete as per Drawing and Technical Specification Clause 304 including all leads & lift and as per the direction of the Engineer.	Cum	932.00	145.200 Rupees One Hundred Forty Five And Twenty Paise only	135,326.40
6.02	Providing and filling foundation and at the back of abutment, wing wall and return wall etc. and below pipe bed in layers not exceeding 150mm thick with granular material including all leads & lifts as per Technical Specification Clause 304 and as per the direction of the Engineer.	Cum	11.00	302.500 Rupees Three Hundred Two And Fifty Paise only	3,327.50
6.03	Providing Filter media behind abutment, wing wall and return wall complete as per Drawing and Technical Specification Clause 2504 and as per the direction of the Engineer.	Cum	11.00	1,089.000 Rupees One Thousand Eighty Nine only	11,979.00
6.04	Cement concrete M-15 grade in levelling course etc including centering and shuttering all complete as per Drawing and Technical Specification Section 1500 , 1700 & 2100 and as per the direction of the Engineer.	Cum	41.00	4,400.000 Rupees Four Thousand Four Hundred only	180,400.00
6.05	Cement concrete (M-15 grade) in foundation and substructure etc including centering and shuttering all complete as per Drawing and Technical Specification Section 1500, 1700, 2100 and as per the direction of the Engineer.	Cum	90.00	5,500.000 Rupees Five Thousand Five Hundred only	495,000.00
6.06	Reinforced cement concrete of following grades in substructure complete as per Drawing & Technical Specification sections 1500, 1700, 2200 and as per the direction of the Engineer.				
	a) M-35 Grade	Cum	250.00	7,150.000 Rupees Seven Thousand One Hundred Fifty only	1,787,500.00


 Varaha Infra Limited
 (Contractor)




 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
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 O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
6.07	Providing HYSD (TMT) bar reinforcement complete as per drawing and technical specifications clause 1600 and as per the direction of Engineer.		-		
	a) in substructure	MT	25.00	55,000.000 Rupees Fifty Five Thousand only	1,375,000.00
6.08	Reinforced cement concrete M-30 grade for in approach slabs complete as per Drawing and Technical Specification section 1500, 1600, 1700, 2700 and as per the direction of the Engineer.	Cum	24.00	6,600.000 Rupees Six Thousand Six Hundred only	158,400.00
6.09	Providing Bituminous wearing course 56mm thick comprising 50mm thick asphaltic Concrete with modified bitumen comprising of CRMB-55 in a single layer over Bitumenous mastic course 6 mm thick with a prime Coat Complete as per drawing and Technical Specification Section 503,516 & 2700 and as per the direction of Engineer	Sqm	180.00	880.000 Rupees Eight Hundred Eighty only	158,400.00
6.10	Providing and fixing Drainage Spouts Complete as per Drawing and Technical Specification Clause 2705 and as per the direction of the Engineer.	Nos.	8.00	484.000 Rupees Four Hundred Eighty Four only	3,872.00
6.11	Providing and laying Stone pitching in slopes complete as per Drawing and Technical Specification Section 2500 and as per the direction of the Engineer.	Cum	8.00	1,331.000 Rupees One Thousand Three Hundred Thirty One only	10,648.00
6.12	Providing as laying fitter material underneath Stone pitching in slopes Complete as per Drawing and Technical Specification Clause 2504 and as per the direction of the Engineer.	Cum	4.00	1,089.000 Rupees One Thousand Eighty Nine only	4,356.00

Sudhansu Solanki
 Varaha Infra Limited
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[Signature]
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 World Bank Projects, Odisha
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 O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
6.13	Providing weep holes in abutments, wing walls and return walls etc. as per Drawing and Technical Specification Clause 2706 and as per the direction of the Engineer.	Nos.	58.00	162.800 Rupees One Hundred Sixty Two And Eighty Paise only	9,442.40
6.14	Providing rubble Stone flooring in Cement mortar (1Cement:3 sand) and joints Complete as per Drawing and Technical Specification Section 1400 and 2500 and as per the direction of the Engineer.	Cum	90.00	1,452.000 Rupees One Thousand Four Hundred Fifty Two only	130,680.00
6.15	Supplying as fixing of Asphaltic plug expansion joint complete as per drawing specifications and as per the direction of Engineer.	Lm	24.00	7,260.000 Rupees Seven Thousand Two Hundred Sixty only	174,240.00
6.16	Synthetic enamel painting of Bridge No. and span arrangement as per IRC-7-1971 and as per the direction of Engineer.	Nos.	2.00	605.000 Rupees Six Hundred Five only	1,210.00
6.17	Providing and laying 150mm dia. HDPE Service pipe as per Drawing and as per the direction of the Engineer.	Rm	66.00	632.230 Rupees Six Hundred Thirty Two And Twenty Three Paise only	41,727.18
6.18	Providing Gravel fill below pitching in quadrant portion with approved material complete as per Drawing and Technical Specification Clause 305 with all leads and lifts and as per the direction of the Engineer.	Cum	5.00	632.500 Rupees Six Hundred Thirty Two And Fifty Paise only	3,162.50
6.19	Providing Sand Filling in Foundation as per Drawing & Technical Specification Clause 304, 305 and as per the direction of the Engineer.	Cum	1,845.00	346.500 Rupees Three Hundred Forty Six And Fifty Paise only	639,292.50

Seje Singh Solanki

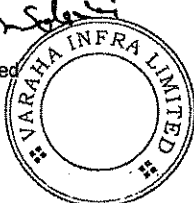
Varaha Infra Limited
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[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
6.20	Providing Reinforced cement concrete crash barrier constructed with M-40 grade concrete with HYSD reinforcement conforming to IRC:21, with MS vertical plate & base plate, 50mm dia pipe and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design and as per dimensions in the approved drawing and at locations directed by the Engineer and Technical Specification Clause 809, and section 1500, 1600, 1700.	Lm	33.00	7,150.000	235,950.00
SUB TOTAL				Rupees Seven Thousand One Hundred Fifty only	5,559,913.48
BILL NO.7 : RETAINING WALL, DRAINAGE AND PROTECTIVE WORKS					
7.01	Retaining Wall				
(a)	Earthwork in excavation for foundation complete as per Drawing and Technical Specification Clause 304 in Retaining wall for high embankment stretches as per the direction of the Engineer.	Cum	8,100.00	137.940	1,117,314.00
				Rupees One Hundred Thirty Seven And Ninety Four Paise only	
(b)	Providing Plain cement concrete M -15 in foundation levelling course etc. including centering and shuttering all complete as per Drawing and Technical Clauses 1500, 1700 and as per the direction of the Engineer.	Cum	519.00	4,180.000	2,169,420.00
				Rupees Four Thousand One Hundred Eighty only	
(c)	Providing Cement concrete M -20 for reinforced concrete in foundation and substructure including centering and shuttering all complete as per Drawing and Technical Clauses 1500, 1700, 2100 and as per the direction of the Engineer.	Cum	2,713.00	5,500.000	14,921,500.00
				Rupees Five Thousand Five Hundred only	

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(Employer)

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Item No.	Description	Unit	Quantity	Rate	Amount
(d)	Providing steel reinforcement HYSD (TMT) for retaining wall complete as per Drawing and Technical Specification Clause 1600 and as per the direction of the Engineer.	MT	217.00	55,000.000 Rupees Fifty Five Thousand only	11,935,000.00
(e)	Providing weep holes in retaining wall complete as per Drawing and Technical Specification Clause 2706 and as per the direction of the Engineer.	Nos.	2,800.00	459.800 Rupees Four Hundred Fifty Nine And Eighty Paise only	1,287,440.00
7.02	Providing and laying stone pitching on embankment slopes as per Drawing and Technical Specification Clause 2504 and as per the direction of the Engineer.	Cum	5,581.00	1,264.450 Rupees One Thousand Two Hundred Sixty Four And Forty Five Paise only	7,056,895.45
7.03	Providing and laying filter material underneath stone pitching on embankment slopes as per Drawing and Technical Specification Clause 2504 and as per the direction of the Engineer.	Cum	3,683.00	1,034.550 Rupees One Thousand Thirty Four And Fifty Five Paise only	3,810,247.65
7.04	Turfing side slopes of main road and service road with grass sods complete as per Technical Specification Clause 307 and as per the direction of the Engineer.	Sqm	146,403.00	22.990 Rupees Twenty Two And Ninety Nine Paise only	3,365,804.97
7.05	Providing and laying in position pre-cast Cement Concrete saucer drain in blocks of length 500mm of M-35 grade to the required lines and grade over 100mm thick Cement concrete base of M-15 grade including excavation, cost of all material, labour, transportation, taxes, royalties, rent, watering & curing, T & P etc. complete as per Drawing No-OSRP/CEG/DR and as per the direction of the Engineer.	Lm	10,500.00	4,702.500 Rupees Four Thousand Seven Hundred Two And Fifty Paise only	49,376,250.00

Sujeet Singh Sankar
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Item No.	Description	Unit	Quantity	Rate	Amount
7.06	Providing and construction of Unlined surface drain as per Drawing and as per the direction of the Engineer.	Cum	21,780.00	209.000 Rupees Two Hundred Nine only	4,552,020.00
SUB TOTAL					99,591,892.07
BILL NO-8 : ROAD SAFETY AND AMENITIES					
8.01	Providing and laying plain cement concrete kerb as per Drawing and Technical Specifications Clauses 408 Section 1500, 1700 and as per the direction of the Engineer.	Lm	1,420.00	517.280 Rupees Five Hundred Seventeen And Twenty Eight Paise only	734,537.60
8.02	Providing and laying service ducts with 160/136mm dia HDPE Double Walled Corrugated Pipe conforming to IS:14930 (Part-II) including cutting of trenches and as per the direction of Engineer.	Lm	3,550.00	940.500 Rupees Nine Hundred Forty And Fifty Paise only	3,338,775.00
8.03	Providing and fixing RCC boundary posts complete as per Drawing and Technical Specification Clause 806 and as per the direction of the Engineer.	Nos.	263.00	689.700 Rupees Six Hundred Eighty Nine And Seventy Paise only	181,391.10
8.04	Providing and fixing precast RCC/PCC hectometer, Kilometer and 5th kilometer stones complete as per Technical Specification Clause 804 and as per the direction of the Engineer.		-		
	a) No of (200) Hectometre Stone	Nos.	96.00	689.700 Rupees Six Hundred Eighty Nine And Seventy Paise only	66,211.20
	b) No of Kilometre stone	Nos.	19.00	1,832.300 Rupees One Thousand Eight Hundred Thirty Two And Thirty Paise only	34,813.70
	c) No. of 5th Kilometre Stone	Nos.	5.00	2,988.700 Rupees Two Thousand Nine Hundred Eighty Eight And Seventy Paise only	14,943.50

Sanjay Singh Salunkhe
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Item No.	Description	Unit	Quantity	Rate	Amount
8.05	Constructing footpath/ paved separator at toll plaza, passenger platform / paved part of medians and islands with 50mm thick Chequered tile flooring using 25mm thick pre-cast machine pressed cement concrete chequered tiles over 25mm thick cement mortar bed in CM(1:1) over 100mm thick PCC in CC M-15 over sand filling including cost of all materials .labour,transportaion,taxes ,royalties,watering ,curing,sundries.T&P etc.complete as per Drawing and Technical Specifications and as per the direction of the Engineer. complete as per Drawing and Technical Specifications Clause 409 and 407 and as per the direction of the Engineer.	Sqm	1,301.00	1,149.500	1,495,499.50
				Rupees One Thousand One Hundred Forty Nine And Fifty Paise only	
8.06	Providing passenger shelters for Bus Bays as per Drawing and Technical Specifications Section 1300,1500, 1600, 1700, 2100, 2200, 2300 and as per the direction of the Engineer.	Nos.	27.00	97,707.500	2,638,102.50
				Rupees Ninety Seven Thousand Seven Hundred Seven And Fifty Paise only	
8.07	Providing and laying of hot applied thermoplastic compound in Lane line / Edge marking/ Arrows/ Letters and other markings along the strips 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes, as perTechnical Specifiacation section 800 and as per direction of Engineer.	Sqm	12,525.00	522.500	6,544,312.50
				Rupees Five Hundred Twenty Two And Fifty Paise only	
8.08	Supplying and fixing sign boards complete as per Technical Specifications Clause 801. Including the cost of Posts, Fitting & fixing. Sheeting will be retro reflective type of high intensively grade and messages / boards and as per the direction of the Engineer.				

Sachin Kumar
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Of the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
(a)	Informatory Signs		-		
	(i) Facility Information (800 x 600)mm	Nos.	16.00	5,747.500 Rupees Five Thousand Seven Hundred Forty Seven And Fifty Paise only	91,960.00
	(ii) Direction Signs (1200 x 700 mm)	Nos.	2.00	9,196.000 Rupees Nine Thousand One Hundred Ninety Six only	18,392.00
	(iii) Advance Direction (size 1800 x 1200mm) ,	Nos.	4.00	9,196.000 Rupees Nine Thousand One Hundred Ninety Six only	36,784.00
	(iv) Re-Assurance Sign (1800 X 1200 mm)	Nos.	2.00	9,196.000 Rupees Nine Thousand One Hundred Ninety Six only	18,392.00
	(v) Destination Sign (1500 X 900 mm) ,	Nos.	2.00	9,196.000 Rupees Nine Thousand One Hundred Ninety Six only	18,392.00
	(vi) Place Identification (1500 X 900 mm) ,	Nos.	28.00	8,046.500 Rupees Eight Thousand Forty Six And Fifty Paise only	225,302.00
	(vii) Toll Booth (1500 X 900 mm)	Nos.	4.00	8,046.500 Rupees Eight Thousand Forty Six And Fifty Paise only	32,186.00
	(viii) Bus Lane Sign (450mm x 600mm)	Nos.	27.00	9,196.000 Rupees Nine Thousand One Hundred Ninety Six only	248,292.00
	(ix) Other Informatory Signs (2100mm x 1500mm)	Nos.	2.00	11,000.000 Rupees Eleven Thousand only	22,000.00
(b)	CAUTIONARY SIGNS triangular 900mm side	Nos.	4.00	5,518.000 Rupees Five Thousand Five Hundred Eighteen only	22,072.00
(c)	MANDATORY SIGNS		-		
	(i) Circular 600mm dia	Nos.	4.00	4,400.000 Rupees Four Thousand Four Hundred only	17,600.00
	(ii) Octagon 900 mm height	Nos.	65.00	4,598.000 Rupees Four Thousand Five Hundred Ninety Eight only	298,870.00
	(iii) Triangular 900 mm side	Nos.	259.00	5,518.000 Rupees Five Thousand Five Hundred Eighteen only	1,429,162.00

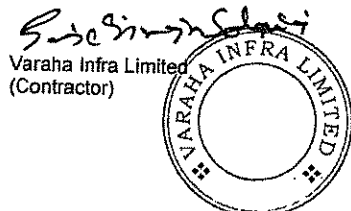
Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)


Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
8.09	Providing & fixing retro - reflectorised road delineators complete as per Drawing , Technical Specifications Clause 805 and as per the direction of the Engineer.				
	(i) Roadway delinator	Nos.	181.00	230.000 Rupees Two Hundred Thirty only	41,630.00
	(ii) Hazard Marker	Nos.	48.00	690.000 Rupees Six Hundred Ninety only	33,120.00
	(iii) Object Marker	Nos.	30.00	690.000 Rupees Six Hundred Ninety only	20,700.00
8.10	Providing and fixing RCC Guard post with reflective paint marking on the top 25mm width band complete including end anchorage as per Drawing and Technical Specifications Clause 806 and as per the direction of the Engineer.	Nos.	500.00	546.000 Rupees Five Hundred Forty Six only	273,000.00
8.11	Providing and fixing of metal beam crash barrier made out of cold rolled steel strip W profile of 3 mm thick having a minimum yield strength of 2400 kg/sqcm, width of 313 mm and depth of corrugation as 83 mm hot dip galvanized of zinc coating @ 550 gm/sq.m. The post and spacer channel is made out of cold rolled channel 150x75x5 mm having minimum yield strength of 2400 kg/sqcm and hot dip galvanized of zinc coating @ 550 gm/sq.m. The total length of post shall be 1900 mm and minimum height of post above concrete foundation shall be 800 mm. The length of spacer channel shall be 330 mm. Job includes neatly fixing new post in cement concrete of M-20 grade complete (cost included) as directed by the Engineer including fasteners and fixing etc. complete. The spacing of the Steel posts shall be about 2 m. The guard rail reflectors of 100 mm dia circular made out of 2 mm thick GI sheet duly fixed with micro-prismatic type sheeting with Type 9 ASTM D 4956-01 standards @ every 5 meters. The work is to be executed as per drawing, Specifications and as directed by the Engineer.	Lm	14,940.00	2,613.000 Rupees Two Thousand Six Hundred Thirteen only	39,038,220.00



Item No.	Description	Unit	Quantity	Rate	Amount
8.12	Providing and fixing Pedestrian guard rails in modules including painting with approved paint complete as per drawing and Technical Specification Clause 803,1008,1300 & 1700.	Lm	1,547.00	3,450.000 Rupees Three Thousand Four Hundred Fifty only	5,337,150.00
8.13	Supply of colour video coverage in Digital format during construction as per Technical Specifications Clause 126 As per requirement and as per the direction of the Engineer.	set	15.00	3,450.000 Rupees Three Thousand Four Hundred Fifty only	51,750.00
8.14	Providing and marking rumble strips for comprising of six rumbles in each set etc.complete at required places as per Drawing and as per the direction of the engineer.	Lm.	279.00	977.000 Rupees Nine Hundred Seventy Seven only	272,583.00
8.15	Providing road hump complete at required places as per Drawing and as per the direction of the Engineer.	Mtr	155.00	2,500.000 Rupees Two Thousand Five Hundred only	387,500.00
8.16	Providing toll plaza as per drawing and technical specification and ass per the direction of Engineer.	Nos.	1.00	1,574,815.000 Rupees Fifteen Lakhs Seventy Four Thousand Eight Hundred Fifteen only	1,574,815.00
8.17	Providing and fixing of bi-directional retro reflective raised pavement markers of approved colour.Quality & make confirming to ASTM D-4280 as per approved drawing and locations provided in the schedule made from injection moulded high impact polymer with approved quality adhesives including cost of all materials labour,transportation,taxes,duties,sundries ,T&P etc.Complete as per the technical specifications and directions of Engineer.	No	6,476.00	230.000 Rupees Two Hundred Thirty only	1,489,480.00

Sandeep Singh
 Varaha Infra Limited
 (Contractor)



[Signature]
 Chief Engineer,
 World Bank Projects, Odisha
 (Employer)
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 O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
8.18	Supplying, erecting and commissioning 100kVA diesel powered generator of approved make for Toll Plaza at required place as per the direction of Engineer including cost of all labour, transportation, taxes, duties etc. complete.	No	1.00	1,210,000.000 Rupees Twelve Lakhs Ten Thousand only	1,210,000.00
SUB TOTAL					67,257,938.60
BILL NO.9 MAINTENANCE & REPAIR AND					
9.01	Restoration of Rain Cuts (Restoration of rain cuts with soil, moorum, gravel or a mixture of these, clearing the loose soil, benching for 300 mm width, laying fresh material in layers not exceeding 250 mm and compacting with plate compactor or power rammers to restore the original alignment, levels and slopes) as per direction of the Engineer.	cum	331.00	137.940 Rupees One Hundred Thirty Seven And Ninety Four Paise only	45,658.14
9.02	Maintenance of Earthen Shoulder (filling with fresh soil) (Making up loss of material/irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment.) as per the direction of the Engineer.	sqm	26,460.00	36.580 Rupees Thirty Six And Fifty Eight Paise only	967,906.80
9.03	Maintenance of Earth Shoulder Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor etc. complete as per direction of the Engineer.	sqm	66,150.00	36.580 Rupees Thirty Six And Fifty Eight Paise only	2,419,767.00

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Item No.	Description	Unit	Quantity	Rate	Amount
9.04	Filling Pot- holes and Patch Repairs with open - graded Premix surfacing, 20mm. (Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material as directed by the Engineer. per clause 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2)	sqm	27,287.00	522.500 Rupees Five Hundred Twenty Two And Fifty Paise only	14,257,457.50
9.05	Expoxy bonding of new concrete to old concrete for jacketing as technical Specification clause 2805 and as per the direction of Engineer.	sqm	306.00	229.900 Rupees Two Hundred Twenty Nine And Ninety Paise only	70,349.40
9.06	Providing temporary diversion including temporary cross drainage works for construction of structures plying of traffic in both directions wherever necessary and maintenance including traffic control and safety as per drawing and Technical Specification complete till the operation of the original road/structure including dismantling and clearing debris and as per the direction of Engineer.	Lm	660.00	1,567.500 Rupees One Thousand Five Hundred Sixty Seven And Fifty Paise only	1,034,550.00
9.07	Providing temporary passage of traffic by widening existing pavement with Crushed Slag for plying of traffic in both directions wherever necessary and maintenance including traffic control and safety as per drawing and Technical Specification and as per the direction of Engineer.				
(i)	With New Material	Cum	1,822.00	1,567.500 Rupees One Thousand Five Hundred Sixty Seven And Fifty Paise only	2,855,985.00
(ii)	With Salvaged Material obtained from dismantling roadway and /or diversion	Cum	1,822.00	836.000 Rupees Eight Hundred Thirty Six only	1,523,192.00
SUB TOTAL					23,174,865.84

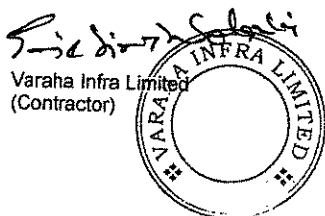
Sanjiv Singh Solanki

Varaha Infra Limited
(Contractor)



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
BILL NO.10 : ENVIRONMENTAL MITIGATION MEASURES					
10.01	Earthwork in excavation of foundation for structures complete as per Drawing No. OSRP/CEG/SH/ENV/1 - A, B, C, D, 03, 04 - A, B, 05, 05 - A, 07, 09, 10, 12 and Technical Specifications Clause 304 including all leads and lifts and as per the direction of the Engineer.	Cum	112.00	126.450 Rupees One Hundred Twenty Six And Forty Five Paise only	14,162.40
10.02	Sand filling below foundation of wing wall and return wall, pipe bed in layers not exceeding 150mm thick including All leads and lifts complete as per Drawing No. OSRP/CEG/SH/ENV/1 - A, B, C, D, 03, 04 - A, B, 05, 05 - A, 07, 09, 10, 12 direction of the Engineer and Technical Specification Clause 304 and as per the direction of the Engineer.	Cum	22.00	517.280 Rupees Five Hundred Seventeen And Twenty Eight Paise only	11,380.16
10.03	Providing & laying in position Cement Concrete M-15 grade in foundation, levelling course etc. including centering and shuttering all complete as per Drawing No. OSRP/CEG/SH/ENV/1 - A, B, C, D, 03, 04 - A, 05 - A, 07, 09, 10, 12 and Technical Specification Sections 1500 and 1700 and as per the direction of the Engineer.	Cum	75.00	3,657.500 Rupees Three Thousand Six Hundred Fifty Seven And Fifty Paise only	274,312.50



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(Employer)

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Item No.	Description	Unit	Quantity	Rate	Amount
10.04	Providing & laying in position Cement Concrete PCC M-20 grade in foundation, levelling course etc. including centering and shuttering all complete as per drawing no. OSRP/CEG/SH/ENV/1A,B,C,09, Major Jns and Technical Specification Sections 1500 and 1700.and as per the direction of the Engineer.	Cum	13.00	4,180.000	54,340.00
				Rupees Four Thousand One Hundred Eighty only	
10.05	Providing weep holes in PCC toe wall with 100mm dia AC pipe at 1mtrs horizontal interval all complete as per Drawing no. OSRP/CEG/SH/ENV/03 and Technical Specifications cl no. 2706 & 2200 and as per the direction of the Engineer.	Nos	70.00	155.180	10,862.60
				Rupees One Hundred Fifty Five And Eighteen Paise only	
10.06	Providing & laying in position Reinforced Cement Concrete RCC M-20 grade in foundation complete as per Drawing No. OSRP/CEG/SH/ENV/04-A,B,,C 05,5-A,,06,07,10, & Technical Specification sections 1700,2100 & 2200 and as per the direction of the engineer.	Cum	19.00	4,180.000	79,420.00
				Rupees Four Thousand One Hundred Eighty only	
10.07	Providing HYSD(TMT) bar reinforcement with anti-corrosive treatment coating including cutting,bending,binding and placing the bars in position including cost of binding wire etc.complete as per Drawing No.OSRP/CEG/SH/ENV/04-A,B,C,D,05,06,07,10 and Technical Specifications Clause 1600 and as per the direction of the Engineer.	MT	1.00	55,000.000	55,000.00
				Rupees Fifty Five Thousand only	
10.08	Providing and laying filter material under neath the pitching in slopes at water bodies and ponds as per technical specification clause 2500, drawing no.OSRP/CEG/SH/ENV/3 and direction of Engineer-in-Charge.	Cum	42.00	459.800	19,311.60
				Rupees Four Hundred Fifty Nine And Eighty Paise only	

Signature

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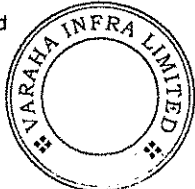
Signature
Chief Engineer,
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(Employer)

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World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
10.09	Providing and laying stone pitching on slopes over filter material at water bodies and ponds as per technical specification clause 2500, drawing no.OSRP/CEG/SH/ENV/3 and direction of Engineer-in-Charge.	Cum	56.00	269.100 Rupees Two Hundred Sixty Nine And Ten Paise only	15,069.60
10.10	Providing cement paint two coats to the walls as per drawing no. OSRP/CEG/SH/ENV/03, 04-A, B, 05, 05A, 10 as per direction of Engineer-in-Charge.	Sqm	150.00	80.470 Rupees Eighty And Forty Seven Paise only	12,070.50
10.11	Providing and fixing fixed flower vase of bottom(150x150), top (400x400) of depth 300mm and 40mm thick CC M-20 grade as per drawing no OSRP/CEG/SH/ENV/4A and as per direction of Engineer.	Nos	42.00	574.750 Rupees Five Hundred Seventy Four And Seventy Five Paise only	24,139.50
10.12	Construction of approach road with GSB and moorum topping well mixed and compacted as hard sholder as per the enviornmental drawing ,technical specification cl.no.3002 and as per direction of Engineer.	Lm	200.00	1,264.450 Rupees One Thousand Two Hundred Sixty Four And Forty Five Paise only	252,890.00
10.13	Maintenance of haulage road for 4 occurances throughout the construction period as per technical specification clause no. 3002 asnd direction of Engineer.	Cum	11,250.00	1,426.940 Rupees One Thousand Four Hundred Twenty Six And Ninety Four Paise only	16,053,075.00
10.14	Stripping of top soil from borrow areas located in agriculture fields, storing at a suitable place, spreading and re-laying after taking the borrow earth to maintain fertility of the agricultural field, finishing it to the required levels and satisfaction of the farmer.and as per the direction of the Engineer.	Cum	15,000.00	182.880 Rupees One Hundred Eighty Two And Eighty Eight Paise only	2,743,200.00

Varaha Infra Limited

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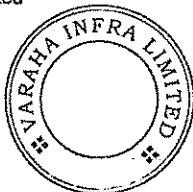


Chief Engineer
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(Employer)

Chief Engineer
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Item No.	Description	Unit	Quantity	Rate	Amount
10.15	Providing and making masonry Oil & Grease trap chamber of required size including excavation of foundation in all kinds of soil, 100mm thick bed concrete in CC M15 over 100mm thick sand filling, 1st class KB brick masonry in (1:3) for walls up to required height, covered with 100mm thick RCC slab with man hole covers and reinforcement bars as per design, including 12mm thick cement plaster in CM(1:3) with a neat coat of cement punning to the inside wall surfaces including cost of all materials, labour, transportation, taxes, sundries, curing, T&P etc. all complete as per approved drawing No OSRP/CEG/ENV/06, technical specifications and as per the direction of the Engineer.	Nos	1.00	543,400.000	543,400.00
				Rupees Five Lakhs Forty Three Thousand Four Hundred only	
10.16	Providing silt fence and sediment arrestor in the construction zones and stock piles of top soil by fixing wooden posts of 100mm dia firmly to the ground at required intervals and placing closely woven fabric of coconut fibre reinforced with HDPE materials etc. complete as per drawing No OSRP/CE/PW, technical specifications including cost of all materials, labour, transportation, taxes, sundries, curing, T&P etc. and as per the direction of the Engineer.	Lm	1,700.00	225.300	383,010.00
				Rupees Two Hundred Twenty Five And Thirty Paise only	
10.17	Grouting stone pitching on embankments of reptile passes for making trap drain 23cm deep with Cement Concrete M15 grade using 20mm down stone aggregates as per drawing no-OSRP/CEG/ENV/14, technical specifications including cost of all materials, labour, transportation, taxes, sundries, curing, T&P etc. and as per the direction of the Engineer.	Sqm	144.00	221.850	31,946.40
				Rupees Two Hundred Twenty One And Eighty Five Paise only	

Sujeet Singh Solanki
 Varaha Infra Limited
 (Contractor)



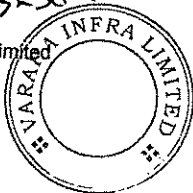
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 Chief Engineer,
 World Bank Projects, Odisha
 Chief (Employer)
 World Bank Project
 O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
10.18	Providing erosion control blanket made from coconut fibre reinforced with closely woven HDPE nets on both sides with appature size less than 5mm of weight not less than 600 gm/sqm, over embankment slopes including preparation of bed, dressing the slopes, removing boulders, pebbles, vegetations and fixed firmly to the slopes using "U" shape galvanized iron hooks of 4mm diametre having dimension 300x75mm and covered with 100mm thick top soil brought from the stock piles/ approved area , spreading manure and spreading of native seeds or planting of shrubs/ grass and maintaining the same for one month by sprinkling water at regular interval as per drawing no OSRP/PMU/ENV/02 technical specifications including cost of all materials, labour, transportation, taxes, sundries, watering, T&P etc. and as per the direction of the Engineer.	Sqm	600.00	365.750	219,450.00
				Rupees Three Hundred Sixty Five And Seventy Five Paise only	
SUB TOTAL					20,797,040.26

Schedule of Daywork Rates: 1. Labour

D101	Labour (Un-skilled)	Day	100.00	200.000 Rupees Two Hundred only	20,000.00
D102	Mason (Special)	Day	10.00	260.000 Rupees Two Hundred Sixty only	2,600.00
D103	Carpenter (Special)	Day	5.00	260.000 Rupees Two Hundred Sixty only	1,300.00
D104	Mason (Second Class)	Day	10.00	220.000 Rupees Two Hundred Twenty only	2,200.00
D105	Carpenter (Second Class)	Day	5.00	220.000 Rupees Two Hundred Twenty only	1,100.00
D106	Steelworker Erector	Day	15.00	260.000 Rupees Two Hundred Sixty only	3,900.00
D107	Driver for vehicle up to 10 tons	Day	10.00	240.000 Rupees Two Hundred Forty only	2,400.00

Varaha Infra Limited
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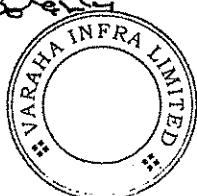
Chief Engineer
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Item No.	Description	Unit	Quantity	Rate	Amount
D108	Operator for excavator, dragline, shovel or crane	Day	10.00	260.000 Rupees Two Hundred Sixty only	2,600.00
D109	Operator for tractor with dozer blade or ripper	Day	10.00	240.000 Rupees Two Hundred Forty only	2,400.00
D110	Operator grader	Day	10.00	260.000 Rupees Two Hundred Sixty only	2,600.00
D111	Operator in other construction equipment	Day	10.00	260.000 Rupees Two Hundred Sixty only	2,600.00
D112	Chowkidars for watch & ward	Day	120.00	220.000 Rupees Two Hundred Twenty only	26,400.00
D113	Allow 15% percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			18.00% Rupees And Eighteen Paise only	70100.00 12618
Total Daywork Rates: 1. Labour					82718.00

Schedule of Daywork Rates: 2. Materials

D201	Cement, ordinary Portland or equivalent in bags conforming to IS:269:1989 and IS 455:1989	Per Mt	5.00	5,500.000 Rupees Five Thousand Five Hundred only	27,500.00
D202	HYSD reinforcing bars upto 25 mm dia conforming to IS:1786:1989	Per Mt	1.00	49,500.000 Rupees Forty Nine Thousand Five Hundred only	49,500.00
D203	Bricks of class designation 75 as per IS:1077:1992	Per 1000 Nos	5,000.00	6,317.710 Rupees Six Thousand Three Hundred Seventeen And Seventy One Paise only	31,588.55
D204	Anti Corrosive Bituminous paint	Per Lit	5.00	193.930 Rupees One Hundred Ninety Three And Ninety Three Paise only	969.65
D205	Enamel Paint of any shade & colour (IS:2932-1964 & IS 137-1975)	Per Lit	5.00	193.930 Rupees One Hundred Ninety Three And Ninety Three Paise only	969.65

Signature
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Signature
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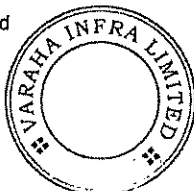
Item No.	Description	Unit	Quantity	Rate	Amount
D206	Coarse Sand as per IS 1542	Per Cum	10.00	261.970 Rupees Two Hundred Sixty One And Ninety Seven Paise only	2,619.70
D207	R.R. Stone for masonry	Per Cum	10.00	946.340 Rupees Nine Hundred Forty Six And Thirty Four Paise only	9,463.40
D208	Crusher broken stone aggregates up to 25 mm nominal size	Per Cum	10.00	738.100 Rupees Seven Hundred Thirty Eight And Ten Paise only	7,381.00
D209	Crusher broken stone aggregates Above 25 mm nominal size	Per Cum	10.00	738.100 Rupees Seven Hundred Thirty Eight And Ten Paise only	7,381.00
D210	Portable water at site	KL	1,250.00	120.000 Rupees One Hundred Twenty only	150,000.00
D211	Gravel/ Moorum for Road work	Per Cum	10.00	699.380 Rupees Six Hundred Ninety Nine And Thirty Eight Paise only	6,993.80
D212	Bitumen-VG-30	Per Mt	1.00	47,111.350 Rupees Forty Seven Thousand One Hundred Eleven And Thirty Five Paise only	47,111.35
D213	Allow 15% percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			18.00% Rupees And Eighteen Paise only	341478 61466
Total Daywork Rates: 2. Materials					402944.00

Schedule of Daywork Rates: 3. Contractor's Equipment

D301	Excavator, face shovel, or dragging including the cost of operator:				
D301 .1	Up to and including 1 m ³	Hour	10.00	1,016.400 Rupees One Thousand Sixteen And Forty Paise only	10,164.00
D301 .2	Over 1 m ³ to 2 m ³	Hour	5.00	1,016.400 Rupees One Thousand Sixteen And Forty Paise only	5,082.00

Sudhakar Solanki


Varaha Infra Limited
(Contractor)





[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
D301 .3	Over 2 m 3	Hour	5.00	1,016.400 Rupees One Thousand Sixteen And Forty Paise only	5,082.00
D302	Tractor, including bull or angle dozer including the cost of operator:				
D302 .1	Up to and including 150 kW	Hour	10.00	350.000 Rupees Three Hundred Fifty only	3,500.00
D302 .2	Over 150 kW to 200 kW	Hour	5.00	279.510 Rupees Two Hundred Seventy Nine And Fifty One Paise only	1,397.55
D302 .3	Over 200 kW to 250 kW	Hour	5.00	279.510 Rupees Two Hundred Seventy Nine And Fifty One Paise only	1,397.55
D303	Tractor with ripper including the cost of operator:				
D303 .1	Up to and including 200 kW	Hour	5.00	301.290 Rupees Three Hundred One And Twenty Nine Paise only	1,506.45
D303 .2	Over 200 kW to 250 kW	Hour	5.00	301.290 Rupees Three Hundred One And Twenty Nine Paise only	1,506.45
D304	Motor grader including the cost of operator:	Hour	10.00	1,869.450 Rupees One Thousand Eight Hundred Sixty Nine And Forty Five Paise only	18,694.50
D305	Crane- 5 tonne including the cost of operator:	Hour	10.00	278.300 Rupees Two Hundred Seventy Eight And Thirty Paise only	2,783.00
D306	Diesel Road Roller, or Vibratory Compactor upto 10 t including the cost of operator:	Hour	10.00	1,203.950 Rupees One Thousand Two Hundred Three And Ninety Five Paise only	12,039.50


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Item No.	Description	Unit	Quantity	Rate	Amount
D307	Trucks, or Truck tipper, or Truck with mounted water tank or truck with crane for removal of accidental vehicles including the cost of operator.	Hour	25.00	704.220 Rupees Seven Hundred Four And Twenty Two Paise only	17,605.50
D308	Tractor with trolley, or tractor with including the cost of operator:				
	(a) upto 25 HP	Hour	10.00	301.290 Rupees Three Hundred One And Twenty Nine Paise only	3,012.90
	(b) For 25-40 HP	Hour	5.00	301.290 Rupees Three Hundred One And Twenty Nine Paise only	1,506.45
D309	Bitumen mixture (10-14 Cft.) C.C including the cost of operator:	Hour	5.00	154.880 Rupees One Hundred Fifty Four And Eighty Eight Paise only	774.40
D310	Water pumping sets mounted on trolley (diesel driven)with inlet & outlet pipes including the cost of operator.				
	a) Sets up to 10 HP	Hour	5.00	121.000 Rupees One Hundred Twenty One only	605.00
	b) Sets 11 to 20 HP	Hour	5.00	121.000 Rupees One Hundred Twenty One only	605.00
	c) Sets above 20 HP	Hour	5.00	290.400 Rupees Two Hundred Ninety And Forty Paise only	1,452.00
D311	Generator sets mounted on trolley including the cost of operator:				
	a) Sets upto 5 Kva	Hour	5.00	290.400 Rupees Two Hundred Ninety And Forty Paise only	1,452.00
	b) Sets 5-15 Kva	Hour	5.00	181.500 Rupees One Hundred Eighty One And Fifty Paise only	907.50
D312	Mobile Crane / Power winch including the cost of operator:	Hour	5.00	3,047.990 Rupees Three Thousand Forty Seven And Ninety Nine Paise only	15,239.95
D313	Bull Dozer 100/110 Hp including the cost of operator:	Hour	5.00	121.000 Rupees One Hundred Twenty One only	605.00
D314	Plate compactors including the cost of operator:	Hour	5.00	249.260	1,246.30

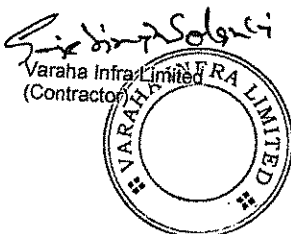
Varaha Infra Limited
(Contractor)



Chief Engineer,
World Bank Projects, Odisha
(Employer)

Chief Engineer
World Bank Project
Of the E.I.C.(C), Odisha, BBSR

Item No.	Description	Unit	Quantity	Rate	Amount
D315	Jack hammers for dismantling including the cost of operator.	Hour	5.00	Rupees Two Hundred Forty Nine And Twenty Six Paise only 249.260	1,246.30
D316	Utility Vehicles including the cost of driver.	Hour	5.00	Rupees Two Hundred Forty Nine And Twenty Six Paise only 249.260	1,246.30
D317	Mini Hot Mix Plant (60-90TPH) including the cost of operator.	Hour	5.00	Rupees Two Hundred Forty Nine And Twenty Six Paise only 9,680.000	48,400.00
				Rupees Nine Thousand Six Hundred Eighty only	159057.60
D318	Allow 15% percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			18.00%	28630
Total Daywork Rates: 3. Equipment					187688.00



[Signature]
Chief Engineer,
World Bank Projects, Odisha
(Employer)
Chief Engineer
World Bank Project
O/o the E.I.C.(C), Odisha, BBSR