



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

CIVIL WORKS CONTRACT

[PACKAGE No. OSRP-CW-ICB-P04B]

For

Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali
(Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)

under

Odisha State Roads Project

between

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

and

M/s DPJ-NKC J.V

Plot No. 63, Udyog Vihar, Phase-IV, Gurgaon-122016, Haryana (India)
Ph: +91 124 4852828, Fax: +91 124 2340017

[VOLUME-I: Agreement]

Agreement Value: Rs. 170,42,73,538.00

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

Dated: 16th September, 2013

CONTENTS of CONTRACT

Volume – I	:	Agreement, Letter of Acceptance, Letter of Bid and addenda
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Volume – III	:	Specifications
Volume – IV	:	Drawings
Volume – V	:	Completed Schedules,

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भारतीय गैर न्यायिक

एक सौ रुपये

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सत्यमेव जयते

Rs. 100

ONE
HUNDRED RUPEES

भारत INDIA

INDIA NON JUDICIAL

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D 288845

CIVIL WORKS CONTRACT

For

Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)

THIS AGREEMENT made the 16th day of September, 2013, between the Chief Engineer, World Bank Projects, Odisha, Office of the Engineer-in-Chief(Civil), Odisha, Nirman Soudh, Unit-V, Keshari Nagar, Bhubaneswar-751001, Odisha (India), Phone: +91 674 2396783, on behalf of the Government of Odisha in Works Department, Odisha Secretariat, Bhubaneswar-751001 (hereinafter "the Employer"), of the one part, and M/S DPJ-NKC (JV), Plot No. 63, Udyog Vihar, Phase-IV, Gurgaon-122016, Haryana (India), Phone: +91 124 485 2828, Fax: +91 124 2340017, (hereinafter "the Contractor"), of the other part for an amount of Rs. 170,42,73,538.00 (Indian Rupees One Hundred Seventy Crore Forty Two Lakh Seventy Three Thousand Five Hundred Thirty Eight) only.




Chief Engineer
World Bank Projects, Odisha
World Bank Project
Employer
C/o the E. C. (Civil), Odisha
Bhubaneswar

WHEREAS the Employer desires that the Works known as “**Widening & Strengthening of Existing Carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)**” 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 Specification
(ii) the Letter of Bid	Volume - IV
(iii) addenda 82 Pages	(vii) the Drawings; and
Volume - II	Volume - V
(iv) the Particular Conditions	(viii) the completed Schedules,
(v) the General 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 Works⁵ 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.



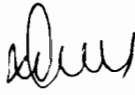

Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil) District
Bhubaneswar

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 each of the authorized representative of the Bidder M/s DPJ-NKC J.V, Gurgaon, Haryana

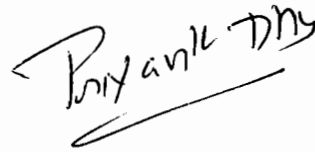

Mr. Naresh Kumar,
Managing Director, NKC Projects Pvt. Ltd.
Gurgaon (India)

WITNESS :

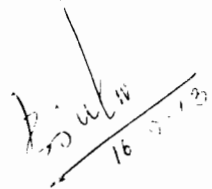
1. Mr. S.C. Catterjee,
Director, NKC Projects Pvt. Ltd.


16.09.2013

2. Mr. Priyank Dhar Dewvedi
Manager (Purchase), NKC Projects Pvt. Ltd.




3. Er. Bindheswar Patra
Superintending Engineer-cum-Employer's Representative-P04,
O/o the E.I.C. (Civil), Odisha


16.09.13

4. Mr. K.B. Panda
Financial Advisor, Project Management Unit,
Odisha State Roads Project


16/9/2013




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

DATED JULY 24, 2013

NO OBJECTION :

ODISHA STATE ROADS PROJECT - PACKAGE NO. OSRP-CW-ICB-P04B

rrohatgi@worldbank.org

Jul
24

to me, Sri, nvyas, Khabilongtshup, Kumudni, Swayamsiddha

Dear Mr Pradhan

Thank you for your e-mail dated July 3, 2013 requesting Bank's review of the Bid Evaluation Report for "Civil Works for Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9) - Package No. OSRP-CW-ICB-P04B" and subsequent e-mail dated July 16, 2013 providing clarifications on the issues raised by the Bank.

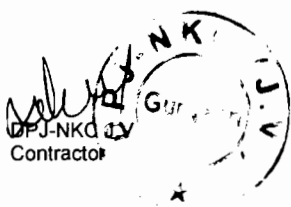
We have reviewed the subject BER and subsequent clarifications and based on the information provided by you, we have no objection to your recommendation for award of contract for "Civil Works for Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9) - Package No. OSRP-CW-ICB-P04B", on M/s. DPJ-NKC Joint Venture, Gurgaon at a total recommended price of INR 170,42,73,538.00, subject to the following


- (i) Ensure that schedule of handing over encumbrance free land to the contractor as per provisions of Bidding Document.
- (ii) Ensure publication of award results on the Project website and UNDB online within 15 days from Bank's no objection.
- (iii) Ensure availability of key personnel and key equipments by the Lead Partner during execution of works.
- (iv) Incorporating our comments(to be shared soon) on updated EA and disclosing the same.

We look forward to a copy of signed Contract Agreement along with copy of performance security and prior review checklist to enable issuance of WBR No. for claiming disbursement against this contract.

Regards,

Rajesh Rohatgi




Chief Engineer
World Bank Projects, Odisha
Employer
Chief Engineer
World Bank Project
Oro the E.C.Civil C

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

No. 8783 /W., Bhubaneswar, Dated, the
0718040085-2013

8th August, 2013

From

Sri A. Mahalik, OFS(SAG)
FA-cum-Additional Secretary to Government

To

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

Sub:- Widening and strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km.49/000 to 99/000 of MDR & Km. 45/000 to km 51/500 of SH-9).

Sir,

I am directed to invite a reference to your letter No.32075 dt.26.7.2013 on the subject noted above and to convey approval of the Government to the lowest substantially responsive evaluated bid of M/s. DPJ-NKC J.V., Gurgaon, Haryana, India amounting to Rs 170,42,73,538.00 (Rupees one hundred seventy crore, forty-two lakh, seventy-three thousand, five hundred thirty-eight) only which is 10.04% less than the corresponding estimated cost of Rs.189,45,18,949.00 subject to the condition that the bidder be empaneled under the State.

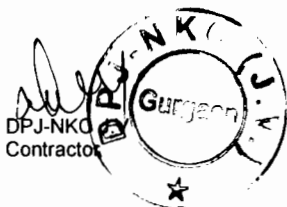
A copy of the proceeding of the tender committee held on 30.7.2013 for the above work is enclosed for reference.

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

Yours faithfully,

Encl: as above.

Sri A. Mahalik
8/8/2013
FA-cum-Additional Secretary to Govt.



[Signature]
Chief Engineer
World Bank Projects, Odisha
Nirman Soudha, Bhubaneswar.
Employee
World Bank Project
(to the E.I.C.(Civil), Const)

NOTIFICATION OF AWARD

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

Letter No. PMU-WB-22/2013 -

34483

August 8, 2013

From

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

To

M/s DPJ-NKC (JV) ,
Plot No. 63, Udyog Vihar, Phase-IV,
Gurgaon-122016, Haryana
Email: scchatterjee@nkcproject.com; info@nkcproject.com; sanjay.kumar@nkcproject.com

Sub: Civil Works ICB Package No-OSRP-CW-ICB-P04B under the proposed Odisha State Roads Project with World Bank Assistance

- Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH - 9)

- **LETTER OF ACCEPTANCE**

**Ref: i. IFB No: CW-ICB-P04B-10121 Dt. 11.03.2013
ii. Your BID Dt. 29.05.2013**

Sir,

This is to notify you that, your Bid dated 29th May, 2013 for execution of the Civil Works ICB Package No-OSRP-CW-ICB-P04B under the proposed Odisha State Roads Project with World Bank Assistance for "Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)" amounting to Indian Rs. 170,42,73,538 (Indian Rupees One hundred Seventy crore Forty-two lakh Seventy-three thousand Five hundred Thirty-eight) 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 Bank Guarantee in favour of the Chief Engineer, World Bank Projects, Odisha, Bhubaneswar on any Nationalized Bank located in India, valid till 4th December, 2016, amounting not less than Indian Rs.8,52,13,677/- (Indian Rupees Eight crore Fifty-two lakh Thirteen thousand Six hundred Seventy-seven) 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, Annex 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,


Chief Engineer

World Bank Projects, Odisha


DPJ-NKC (JV)
Contractor


Chief Engineer
World Bank Projects, Odisha
O/o the Employer

LETTER of BID & ADDENDA

Bid Submission Sheet

(Agreed & Modified as per the evaluated bid)

Date: 11.03.2013
ICB No: OSRP-CW-ICB-P04B
IFB No: CW-ICB-P04B-10121

To:
Chief Engineer,
World Bank Projects, Odisha
Nirman Soudh, Ground Floor
Bhubaneswar, 751001
India

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: "Widening & strengthening of existing carriageway to 2-lane from Duhuria to Chandbali Road (Km. 49/000 to Km. 99/000 of MDR and Km.45/000 to Km.51/000 of SH-9)"

- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:

Rupees 178,64,50,249.00 (Rupees One Hundred Seventy Eight Crore Sixty-four Lakh Fifty Thousand Two Hundred Forty-nine Only) .

- (d) The discounts offered and the methodology for their application are:


Unconditional Discount of **4.60%** (Four point six zero percent) offered on all items of Bill No:1 to Bill No:10 and Daywork (Provisional Sum)

- (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;

- (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;


DPJ-NKC
Contractor


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

- (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;
- (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
-----NONE-----			

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

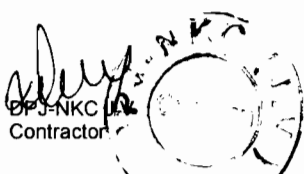
- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid 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.

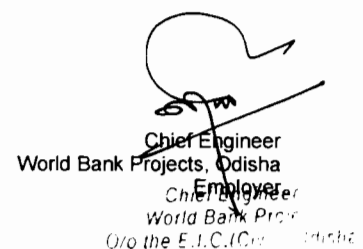
Name **Rohit Kumar Gupta** In the capacity of **Vice President(F&A)**

Signed Sd/- (Rohit Kumar Gupta) for DPJ-NKC J.V

Duly authorized to sign the bid for and on behalf of **DPJ-NKC J.V, Gurgaon, Haryana .**

Dated on 21 st day of May'2013


DPJ-NKC
Contractor


Chief Engineer
World Bank Projects, Odisha
Employer
Chief Engineer
World Bank Proj
O/o the E.I.C./C... Odisha

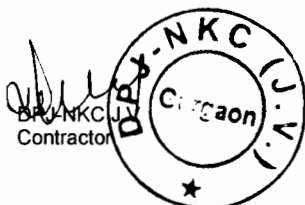
Appendix to Bid


Schedule of Adjustment Data

[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.]

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	-	-	100% INR	a: 0.15
b	Steel Rebars	Whole sale price index for Steel(rebars) Office of Economic advisor to Govt. of India, Ministry of Commerce & Industry	171.20 May,13	-do-	b: 0.05
c	Cement	Whole sale price index of Cement published by office of Office of the Economic advisor to Govt of India, Ministry of Commerce & Industry	170.40 May,13	-do-	c: 0.13
d	Bitumen (VG-30)	Official retail price of bulk bitumen at IOC depot at Haldia	Rs. 38,670/- 01.05.2013	-do-	d: 0.11
e	Labour	Minimum wage notified by the Labour and Employee's State Insurance Department of Govt. of Odisha, India	150.00 May,13	-do-	e: 0.05
f	POL	Official retail price of HSD at IOCL/HPCL/BPCL Consumer pump depot at Kendrapara, Odisha	51.55 May,13	-do-	f: 0.17
g	Other Materials	All India Wholesale price index(all comodities) as published by the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry	171.40 May,13	-do-	g: 0.34
Total					1.00




 Chief Engineer
 World Bank Projects, Odisha
 Chief Engineer
 World Bank Projects
 the E.C.C.

Reference for Base Index of Steel

Name of Commodity : Rebars

Type : Individual Commodity

Weight : 0.73617

Month /Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	171.4	171	171.3	171.4	171.2	170.9	170.5					
2012	167.9	168.7	171.2	177	175.5	175.9	175.3	174.6	174.6	173.8	172.3	172.1
2011	144.1	150.1	152.1	154.7	155.8	156.1	156.4	157.3	157.9	159	161.8	164.5
2010	133.5	130.4	132.2	143.1	139.7	138.4	136	136.5	136.7	137.5	137.4	137.7

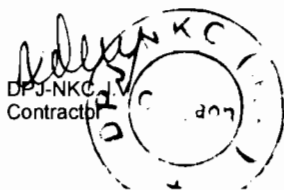
1. Figure 9999.9 may be treated as index for particular item not-available
2. Figures for the latest two months are provisional. Latest two months are to be reckoned with reference to the latest monthly press release issued.

Senior Economic Adviser,

Room No. 126-E, Ministry of Commerce
and Industry,
Udyog Bhawan, Rafi Marg, New Delhi -
110 011, INDIA
Telephone : 91-11-2306 2721 Fax : 91-
11-2306 3502
E-mail to the Senior Economic Adviser

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Economic Adviser, Ministry of Commerce and
Industry, Government of India

Disclaimer



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

Reference for Base Index of Cement

Name of Commodity : Grey Cement

Type : Individual Commodity

Weight : 1.26347

Month /Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	168.8	170.3	172.9	171.3	170.4	170.2	169.7					
2012	160.1	160.4	163.1	164.6	164.4	167.3	169.5	171.9	171.5	170.7	168.3	164.9
2011	147.9	150.9	153.7	154.4	155.3	153.6	153	151.7	152.2	157.9	160.8	161.7
2010	147.6	150.6	151.3	151.8	152.5	150.3	153.8	151.6	150.3	151.5	148.3	147.8

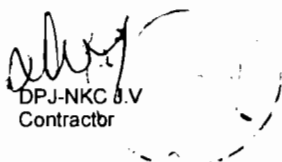
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Senior Economic Adviser,

Room No. 126-E, Ministry of Commerce and Industry,
Udyog Bhawan, Rafi Marg, New Delhi - 110 011, INDIA
Telephone : 91-11-2306 2721 Fax : 91-11-2306 3502
E-mail to the Senior Economic Adviser

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Disclaimer


DPJ-NKC S.V.
Contractor


Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
for the E.I.C.(Civil), Odisha
Bhubaneswar

Reference for Base Index of Bitumen

Indian Oil Corporation Limited

304, BHOI NAGAR, BHUBANESWAR-751022
 TEL: 0674-2543381, 2546821, FAX: 2541638, 2543381
 E Mail: ppadma@indianoil.in/dmahapatra@indianoil.in



IndianOil

To,

REF: OSO/CS: PR: CING
 DATE: 01.05.2013

SUB: PRICE OF BITUMEN

Dear Sir

We are giving below the Price of Bitumen for the following periods Ex- Haldia:

Basic Price in Rs./MT Ex-Haldia w.e.f.	BULK 80/100 (VG-10)	BULK 60/70 (VG-30)	BULK 30/40 (VG-40)	PACKED 80/100 (VG-10)	PACKED 60/70 (VG-30)	PACKED 30/40 (VG-40)	EMULSION RS	CRMB-50	CRMB-55	CRMB-60
01.06.12	34930.00	35730.00	38180.00	38030.00	38830.00	41280.00	28690.00	35590.00	35740.00	35690.00
16.06.12	34940.00	35740.00	38270.00	37940.00	38740.00	41270.00	28590.00	35500.00	35650.00	35600.00
01.07.12	34940.00	35740.00	38270.00	38040.00	38840.00	41370.00	29040.00	35600.00	35750.00	35700.00
16.07.12	34670.00	35470.00	37960.00	37670.00	38470.00	40960.00	28600.00	35250.00	35410.00	35360.00
01.09.12	36568.00	37368.00	39988.00	39668.00	40468.00	43088.00	30598.00	37178.00	37318.00	37258.00
16.09.12	33598.00	34398.00	36578.00	36698.00	37498.00	39678.00	28568.00	34448.00	34648.00	34648.00
01.10.12	31128.00	31928.00	33738.00	34228.00	35028.00	33738.00	26688.00	32178.00	32428.00	32468.00
16.10.12	28608.00	29408.00	30828.00	31708.00	32508.00	33928.00	24968.00	29858.00	30158.00	30258.00
16.11.12	30668.00	31468.00	33158.00	33768.00	34568.00	36258.00	26498.00	31748.00	32008.00	32068.00
01.12.12	34508.00	35308.00	37488.00	37608.00	38408.00	40588.00	29098.00	35288.00	35468.00	35448.00
16.12.12	34818.00	35618.00	37958.00	37918.00	38718.00	41058.00	29308.00	35568.00	35748.00	35718.00
01.01.13	36438.00	37238.00	39738.00	39538.00	40338.00	42838.00	30398.00	37058.00	37208.00	37148.00
16.01.13	36728.00	37528.00	40078.00	39828.00	40628.00	43178.00	30598.00	37328.00	37468.00	37398.00
16.02.13	36728.00	37528.00	40078.00	39828.00	40628.00	43178.00	30638.00	37328.00	37468.00	37398.00
01.04.13	36870.00	37670.00	40220.00	39970.00	40770.00	43320.00	30870.00	37470.00	37610.00	37540.00
16.04.13	37370.00	38170.00	40720.00	40470.00	41270.00	43820.00	31070.00	37930.00	38060.00	37980.00
01.05.13	37870.00	38670.00	41250.00	40970.00	41770.00	44350.00	31290.00	38390.00	38510.00	38420.00
INCREASE	500.00	500.00	530.00	500.00	500.00	530.00	220.00	460.00	450.00	440.00

Excise Duty @ 16% will be charged on the Basic Price.

- Education Cess @3% w.e.f:01.03.2007
- CST@2% WEF:01.06.2008
- Excise Duty @14% w.e.f.01.03.2008
- VG Grade Bitumen introduced w.e.f. 15.07.2009
- C.S.T @ 2% (Against C-Form) will be extra and will be charged after E.D. or full rate C.S.T. prevailing on the date of supply will be charged.
- Orissa Entry Tax @ 2% will be directly borne by the customer
- The price is Ex-Haldia and the customer has to arrange his own transport.
- W.E.F 01.02.2010 VAT ON BITUMEN EMULSION & CRMB SHALL BE AT THE RATE OF 12.5 %
- W.E.F 01.04.2011 VAT ON BITUMEN EMULSION & CRMB SHALL BE AT THE RATE OF 13.5 %
- W.E.F 01.04.2012 VAT CHANGED TO 5%.

Thanking you,

Yours faithfully,
 For Indian Oil Corpn Ltd.

Pamarty Padma
 Dy. Manager (Consumer Sales),
 Bhubaneswar CSA
 Mobile No.: 9437028793

DPJ-NKO J.V
 Contractor,

Chief Engineer
 World Bank Projects, Odisha
 Employer
 Chief Engineer
 World Bank Project
 Co-ordinator, Odisha

Reference for Base Index of Labour

The Odisha  Gazette

EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 1942, CUTTACK, TUESDAY, OCTOBER 9, 2012/ ASWINA 17, 1934

LABOUR & ESI DEPARTMENT

NOTIFICATION


The 6th October, 2012

No.8536—LL-I(AR)-2/12/LESI. —Whereas certain proposals to revise the minimum rates of wages payable to certain categories of employees employed in 83 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. 785, dated the 23rd April, 2012 of the *Odisha Gazette* under the notification of the Government of Odisha in the Labour & E.S.I. Department No.3146—LL-I(AR) 2/12/LESI., dated the 20th April, 2012 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 read with 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 83 employments as mentioned in the schedule to this notification in the whole State to ₹ 150.00, ₹ 170.00, ₹ 190.00 and ₹ 205.00 per day respectively. In the case of Agricultural Sector of the Schedule of employment, ₹126.00 and ₹ 150.00 shall be paid as daily wages to the Non-Ploughing and Ploughing Workers respectively. In addition to the said rate of wages, a special allowance called as Variable Dearness Allowance shall be payable @ ₹ 2.50 (Rupees two and paise fifty) only per day for every 50 point rise in the All India Consumer Price Index Number



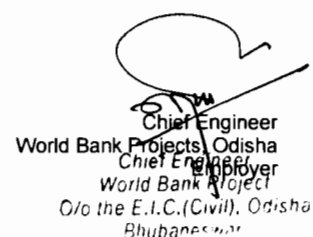

Chief Engineer
World Bank Projects, Odisha
Chief Engineer Employer
World Bank Project
C/O

(Base 2001-100) for industrial workers or on the expiry of every block period of two years from the date of coming into force of this notification whichever is earlier as may be notified by the Labour Commissioner, Odisha in the official gazette of the State and the same shall be uniformly applicable to the categories of employees specified above to be effective from the date as may be directed by the Labour Commissioner, Odisha in the said notification.

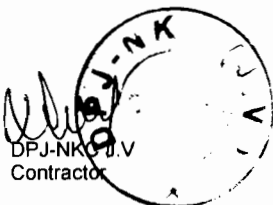
It is further directed that this notification shall come into force on date of its publication in the *Odisha Gazette*.

SCHEDULE

Sl. No. (1)	Name of the ESI (2)	Categories of Employees (3)	Proposed minimum rates of wages per day (4)
1	Agriculture		
2	Automobile Servicing, repairing garages and workshops.		
3	Ayurvedic and Unani Pharmacy		
4	Bakeries and Confectionaries including Biscuit making		
5	Bamboo Forest Establishment	Non Agriculture Sector	
6	Brass and Bell metal Industry	Unskilled	₹ 150.00
7	Carpet Weaving Industry	Semi-skilled	₹ 170.00
8	Cashew processing establishments	Skilled	₹ 180.00
9	Cement pipe making and allied products industry	Highly skilled	₹ 205.00
10	Ceramic and Pottery Industry		
11	Chemical Industry		
12	Cinema Industry		
13	Clay pottery		
14	Coil Industry		
15	Collection of Sal Seeds		
16	Construction or maintenance of Dams, Embankments, Irrigation Projects and sinking of wells and tanks.	Agriculture Sector	
17	Construction or maintenance of roads or in building Operations.	Non-ploughing	₹ 126.00
18	Contingent and Casual employees in Government and other establishments.	Ploughing	₹ 150.00
19	Cotton Ginning and Pressing Industry		




(1)	(2)	(3)	(4)
20	Dispensary of Medical Practitioner in any establishment of medical consultant or in any Chemical or Pathological Laboratory.		
21	Distilleries		
22	Electricity Board		
23	Finishing Dyeing of yarn and fabrics, Painting, Knitting and Embroidery.		
24	Fisheries and Sea food Industry		
25	Forest produce such as Genduli gum, Mahua making of coal and resin.		
26	Foundry Industry with or without attached machine shop.	Non Agriculture Sector	
27	Glass Industries	Unskilled	₹ 150.00
28	Gold and Silver ornaments and articles of artistic design.	Sem-skilled	₹ 170.00
29	Graphite Industry including beneficiation	Skilled	₹ 190.00
30	Handloom and Hosiery	Highly skilled	₹ 205.00
31	Hotels, Eating Houses and Restaurants		
32	Ice Factory and Cold Storage		
33	Jute industry and Jute Twine Industry		
34	Kendu Leaf collection		
35	Khadi Village Industries including manufacture of Khandasari and other products.		
36	Laundry including dry-washing		
37	Leather Industry		
38	Liquefied Petroleum Gas manufacture and distribution.		
39	Local Authority	Agriculture Sector	
40	Manufacture of brush and brooms	Non-ploughing	₹ 125.00
41	Manufacture of Coke and Burning Coals	Ploughing	₹ 150.00
42	Manufacture of Cold drinks, Soda and other allied products.		
43	Manufacture of Electrical Bulbs		
44	Manufacture of matches, fire works and explosives.		
45	Manufacture of nails and pins		




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

(1)	(2)	(3)	(4)
46	Manufacture of paints and varnishes		
47	Manufacture of plastic products including toys.		
48	Manufacture of Radio by assembling with parts		
49	Manufacture of ropes		
50	Manufacture of Utensils including Aluminum and Hindalium products.		
51	Metal Industry (except the cottage and village scale units).		
52	Minor Engineering Industry (ESI less than 50 persons)		
53	Motor Body Building		
54	Oil Mill	Non Agriculture Sector	
55	Paper and Cardboard Industry	Unskilled	₹ 150.00
56	Petrol and Diesel Oil Pumps	Sem-skilled	₹ 170.00
57	Pharmaceutical Industry	Skilled	₹ 190.00
58	Power Loom Industry	Highly skilled	₹ 205.00
59	Printing Press		
60	Private Road Transport		
61	Private Security Agency and Private Security Services.		
62	Public Health Engineering		
63	Public Motor Transport		
64	Readymade Garments Industries including Mechanized Trade of Readymade Garment Industry.		
65	Refractory Industry		
66	Regulated markets. Marketing Societies. Co-operative Societies and Banks.		
67	Rice Mill, Flour Mill or Dal Mill	Agriculture Sector	
68	Rubber and Rubber Products Industry	Non-ploughing	₹ 126.00
69	Salt Pans	Ploughing	₹ 150.00
70	Saw Mills		
71	Shops and Establishments		
72	Siali Leaf Pluckers		
73	Soap and Detergent Manufactory		
74	Social Forestry		

DPJ-NKC
Contractor



Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the Chief Engineer, Odisha




(1)	(2)	(3)	(4)
75	Spinning Mills		
76	Stone breaking or stone Crushing		
77	Tamarind Collection		
78	Tile and Brick Making		
79	Timber Trading (excluding felling and sawing)		
80	Timber Trading (including felling and sawing)		
81	Tobacco (including Bidi making) Manufactory		
82	Trunks, Suitcase and Bucket Manufactory		
83	Wood works and furniture making industries		

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 ESI.
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


 DPJ-NRC J.V
 Contractor


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

(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 8 (eight) hours per day excluding half an hour of rest.

By Order of the Governor

C.T.M. SUGUNA

Commissioner-cum-Secretary to Government.



Reference for Base Index of POL

Indian Oil Corporation Limited

A/2, Chandasekharpur, Bhubaneswar-751024

E Mail: ppadma@indianoil.in/dmahapatra@indianoil.in



IndianOil

To,

REF: OSC/CS/BBSR/ PRICING
DATE: 05.09.2013

Sub: RETAIL HSD PRICE EX KENDRAPADA

Dear Sir,


This is with regard to your mail dated 04.09.2013. we would like to inform that the Retail selling price of HSD ex Kendrapada as on 01.05.2013 was Rs.61.55 per ltr.

Thanking you,

Yours faithfully,
For Indian Oil Corpn Ltd.

Pamarty Padma
Dy. Manager (Consumer Sales),
Bhubaneswar CSA
Mobile No.: 9437028793




Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the E.I.C./O.M. Bhubaneswar
Bhubaneswar

Reference for Base Index of All Commodities

Name of Commodity : ALL COMMODITIES

Type : Group Item

Weight : 100

Month /Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	170.3	170.9	170.1	171.3	171.4	172.7	175.4					
2012	158.7	159.3	161	163.5	163.9	164.7	165.8	167.3	168.8	168.5	168.8	168.8
2011	148	148.1	149.5	152.1	152.4	153.1	154.2	154.9	156.2	157	157.4	157.3
2010	135.2	135.2	136.3	138.6	139.1	139.8	141	141.1	142	142.9	143.8	146

1. Figure 9999.9 may be treated as index for particular item not-available
2. Figures for the latest two months are provisional. Latest two months are to be reckoned with reference to the latest monthly press release issued.

Senior Economic Adviser,

Room No. 126-E, Ministry of Commerce and Industry,
Udyog Bhawan, Rafi Marg, New Delhi - 110 011, INDIA
Telephone : 91-11-2306 2721 Fax : 91-11-2306 3502
E-mail to the Senior Economic Adviser

Site Designed & Hosted by: NIC
Content provided and maintained by: OEA
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Disclaimer


Table C. Summary of Payment Currencies

Table: Alternative A

For "Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)

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	-	-	-	N.A
Foreign currency #	-	-	-	N.A
Net Bid Price		-	-	178,64,50,249.00
Discount				(-) 8,21,76,711.00
Provisional sums expressed in local currency	Nil	-	-	NIL
BID PRICE				170,42,73,538.00




 Chief Engineer
 World Bank Projects, Odisha
 Chief Engineer
 World Bank Project
 Of the E.T.C. (Civil), Odisha
 Bhubaneswar

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DPJ – NKC (JV)

Plot No.63, Udyog Vihar Phase-IV, Gurgaon-122016
Tel. +91 124-4852828 Fax: +91 124 : 2340017

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Section IV. Bidding Forms

ODISHA STATE ROADS PROJECT

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

DPJ-NKC (JV)
Plot no.-63 Udyog Vihar Phase-IV, gurgaon - 122016

To:

The Chief Engineer,
World Bank Projects, Odisha
O/o the E.I.C (Civil), Odisha,
Nirman Soudha, Unit-V,
Keshari Nagar, Bhubaneswar, Odisha
India.

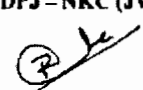
Tel No: 91-.674-239 6783
Fax No 91-674-239 0080.
E-mail: pnuosrp@gmail.com

Dear Sir:

Ref: Widening & strengthening of existing carriageway to 2-lane road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR and Km. 45/000 to Km. 51/500 of SH – 9)
– Certificate for Import/Procurement of Goods/Construction Equipment.

4. 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.
5. 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. 108/95 along with all subsequent amendments including the amendment dt.01-03-2008 and Customs Notification No. 85/99.
6. The goods for which certificates are required is as under:

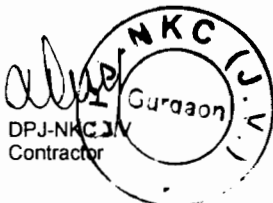
For DPJ – NKC (JV)



Rohit Kumar Gupta
Vice President (F & A)

For DPJ - NKC (JV)


Rohit Kumar Gupta
Vice President (F&A)

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

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Item	Make/Brand Name/Class	Capacity (Where applicable)	Quantity	Total Value	State whether it will be procured locally or imported (if so from which country)	Remarks regarding justification for the quantity and their usage in works
Bituminous (Gravel)	(i) VG-30 from approved source		2000 MT	Rs. 9.5 Cr	India	For Bituminous Works as per contract
	(ii) CRMB-55 from approved source		1900 MT	Rs. 9.5 Cr	India	For Bituminous Works as per contract
Bituminous	approved source		350 MT	Rs. 1.75 Cr	India	For Project Work
MS/D	approved source		5000 MT	Rs. 30 Cr	India	For Project Work
MS/LDC	approved source		900 MT	Rs. 5 Cr	India	For Project Work
MS/Cement	approved source		40000 MT	Rs. 24 Cr	India	For Project Work
MS/Steel	approved source		1847 MT	Rs. 9 Cr	India	For Project Work
MS/Others	approved source				India	
PMP	Suitable make/brand	128 TPH	1 No.	Rs. 2.30 Cr	India	For Project Work
WBM Plant	Suitable make/brand	100 TPH	1 No.	Rs. 0.22 Cr	India	For Project Work
Concrete batching Plant	Suitable make/brand	30 Cum/hr	1 Nos.	Rs. 1.26 Cr	India	For Project Work
Crusher Plant	Suitable make/brand	250 TPH	1 No.	Rs. 5.600 Cr	India	For Project Work
Motor Grader	Suitable make/brand	125/145 HP	6 Nos.	Rs. 4.92 Cr	India	For Project Work
Excavator	Suitable make/brand	0.9 Cum bucket	12 Nos.	Rs. 5.76 Cr.	India	For Project Work
Compactor	Suitable make/brand	8-10 Ton	6 Nos.	Rs. 1.5 Cr	India	For Project Work
Tandem Roller	Suitable make/brand	8-10 Ton	1 Nos.	Rs. 0.84 Cr	India	For Project Work
TR	Suitable make/brand	10 Ton	2 Nos.	Rs. 0.98 Cr	India	For Project Work
Blades/Browzer	Suitable make/brand	8 KI	2 Nos.	Rs. 0.60 Cr	India	For Project Work
Blades/Paver	Suitable make/brand	9 Mtr	1 No.	Rs. 1.75 Cr.	Germany	For Project Work
Blades/work	Suitable make/brand	9 Mtr	2 Nos.	Rs. 3.5 Cr	Germany	For Project Work
Concrete paver	Suitable make/brand	6 Mtr	1 No.	Rs. 5.70 Cr.	Germany	For Project Work
Tippers	Suitable make/brand	20 Ton	50 Nos.	Rs. 13 Cr	India	For Project Work
Water tanker	Suitable make/brand	12 KI	10 Nos.	Rs. 2 Cr.	India	For Project Work
Trailer	Suitable make/brand	6 Cum	8 Nos.	Rs. 2.16 Cr.	India	For Project Work
DG Set	Suitable make/brand	600 kVA	1 Nos.	Rs. 0.40 Cr	India	For Project Work
DG Set	Suitable make/brand	500 kVA	2 Nos.	Rs. 0.64 Cr.	India	For Project Work
DG Set	Suitable make/brand	125 kVA	1 Nos.	Rs. 0.18 Cr	India	For Project Work
DG Set	Suitable make/brand	82.5 kVA	2 Nos.	Rs. 0.10 Cr	India	For Project Work
DG Set	Suitable make/brand	62.5 kVA	1 Nos.	Rs. 0.04 Cr	India	For Project Work
DG Set	Suitable make/brand	30 kVA	2 Nos.	Rs. 0.06 Cr	India	For Project Work
DLC Paver	Suitable make/brand	9 Mtr	1 No.	Rs. 1.75 Cr	Germany	For Project Work
Tray Loader	Suitable make/brand	3 Cum	5 Nos.	Rs. 2.3 Cr	India	For Project Work
Hydra Crane	Suitable make/brand	11 Ton	5 Nos.	Rs. 0.7 Cr	India	For Project Work
Lighting Mast	Suitable make/brand	9 Mtr, 4000 watts	6 Nos.	Rs. 0.36 Cr	India	For Project Work

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For DPJ-NKC (IV)

Rohit Kumar Gupta
Vice President (F&A)

DPJ-NKC J.V.
Contractor

Chief Engineer
World Bank Projects, Odisha
World Bank Project
to the E.I.C.(C) (I), Or-31
B.K. 11

05

- 4. We agree that no modification to the above list is permitted after bids are opened
- 5. We 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.
- 6. We 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 the contractors for execution of project and after completion of the project, the goods remain with the contractors being owners of such goods for further deployment in other projects.

Date: 21-05-2013

(Signature) _____

Place: _____

For DPJ - NKC (JV)
 (Printed Name) _____
 (Designation) **Rohit Kumar Gupta**
Vice President (F&A)
 (Common Seal) _____

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DPJ-NKC J.V
 Contractor

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

ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	“ DPJ – NKC (JV) “
In case of JV, legal name of each partner	<ul style="list-style-type: none"> • D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD. – India • NKC PROJECTS PVT. LTD. (JV Partner)
Bidder's country of constitution	<ul style="list-style-type: none"> • D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD. – India • NKC PROJECTS PVT. LTD. (JV Partner) - India
Bidder's year of constitution	<ul style="list-style-type: none"> • D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD. – 2004 • NKC PROJECTS PVT. LTD. (JV Partner) - 2003
Bidder's legal address in country of constitution	<ul style="list-style-type: none"> • D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD. . Address:- U-6, Himalaya Accord, Amravati Road, Nagpur-440010. • NKC PROJECTS PVT. LTD. Address:- Plot No-63, Udyog Vihar Phase-IV, Gurgaon -122016 Haryana.
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	<p>Mr. Rohit Kumar Gupta, Vice President(F&A) NKC PROJECTS PVT. LTD. Address: Plot No – 63, Udyog Vihar Phase-IV, Gurgaon – 122016 (Haryana) Phone: +91 124 4852828, Fax: +91 124 2340017</p>
<p>Attached:</p> <ul style="list-style-type: none"> • Joint Venture Agreement • Authorization to represent the firm or JV named in above: Power of Attorney of Authorized Representative 	



MAHARASHTRA
 3513 15 MAY 2013
 No. 100L
 Name: D.P. Jain & Co
 Infrastructure Pvt. Ltd.
 HA 205178
 14

REBEL NO. 20470
 11102113

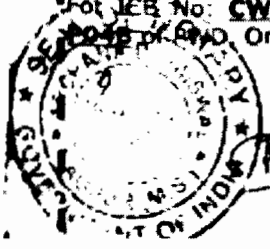
JOINT VENTURE AGREEMENT

BETWEEN

M/s. (A) with complete address **M/s D.P. Jain & Co. Infrastructure Pvt. Ltd.**, Having its registered office at U-6, Himalaya Accord Apartment, Opp: Law College, Amravati Road, Nagpur-440010 (Maharashtra)

M/s. (B) with complete address **M/s. NKC Projects Pvt. Ltd.**, having its registered office at C-124B, Greater Kailash Part-I, New Delhi-110048 and Corporate office at Plot No.63, Udyog Vihar Phase-IV, Gurgaon-122016 (Haryana)

For ICB No: **CW-ICB-P04B-10121** Invitation for Bid No. **OSRP-CW-ICB-P04B-10121**, Orissa under Orissa State Roads Project.
 For DPJ - NKC (JV)



Rohit Kumar Gupta
 Vice President (F&A)



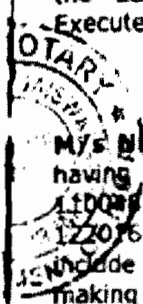
Rohit Kumar Gupta
 President (F&A)



DPJ-NKC JV
 Contractor

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

The Joint Venture Agreement executed on this day of 21st May 2013, between M/s D.P. Jain & Co. Infrastructure Pvt. Ltd., (hereinafter referred to "DPJ") a company under the Laws of Company Act, 1956 and having its registered office at U-6, Himalaya Accord Apartment, Opp: Law College, Amravati Road, Nagpur-440010 (Maharashtra) (herein after called the **LEAD PARTNER**, which expression shall include its successors, Executors and permitted Assigns)



AND

M/s NKC Projects Pvt. Ltd., (hereinafter referred to "NKC") a company having its registered office at C-124B, Greater Kailash Part-I, New Delhi-110048 and Corporate office at Plot No.63, Udyog Vihar Phase-IV, Gurgaon-122076 (Haryana) (herein after called as **PARTNER**, which expression shall include its successors, Executors and permitted Assigns) for the purpose of making a Bid and entering into a contract (in case of award) for "Civil Works for Widening & strengthening of existing carriageway to 2-lane road from Duhuria to Chandbali (Km 49/000 to Km 99/000 of SH-9A and Km 45/000 to Km 51/500 of SH-9)" ICB No. CW-ICB-P04B-10121 of PWD Odisha (herein after called as the **EMPLOYER**).

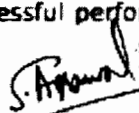
WHEREAS, the **EMPLOYER** invited Bids as per above mentioned tender Document for the "Widening & strengthening of existing carriageway to 2-lane road from Duhuria to Chandbali (Km 49/000 to Km 99/000 of SH-9A and Km 45/000 to Km 51/500 of SH-9)".

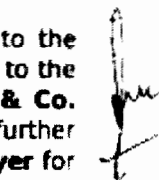
WHEREAS in accordance with Instruction to Bidders - clause 4 "Eligible Bidders" of the Tender Specification. A Bidder may be a private entity or a government-owned entity - subject to ITB 4.5 - or any combination of such entities with the intent to enter into an agreement supported by a letter of intent or under an agreement in the form of a Joint Venture in the name & style as "DPJ-NKC (JV)."

NOW THIS INDENTURE WITNESSETH AS UNDER


In consideration of the above premises and agreements all the partners to this Joint Venture do hereby now agree as follows:

1. In consideration of the award of the Contract by the Employer to the "DPJ-NKC (JV)", we, M/s. NKC Projects Pvt. Ltd., the Partners to the Joint Venture Agreement do hereby agree that M/s. D.P. Jain & Co. Infrastructure Pvt. Ltd., shall act as **LEAD PARTNER** and further declare and confirm that we shall jointly be bound unto the **Employer** for the successful performance of the Contract and shall be fully responsible


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For DPJ-NKC (JV)
Rohit Kumar Gupta
Vice President (F&A)


For DPJ-NKC (JV)
Rohit Kumar Gupta
Vice President (F&A)




Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
Org the E.I.C.(Civil), Odisha
Bhubaneswar

for the works in terms of quality requirements and timeliness in performance in accordance with the Contract. Irrespective of Joint responsibility, it is expressly understood that **LEAD PARTNER** will be present at the site of the works, through its authorized representative at all times and play lead role in mobilizing resources and execution of the contract. The **LEAD PARTNER** will incur liabilities and receive instructions for and on behalf of any or all partners of the Joint Venture and entire execution of the contract shall be done by the **LEAD PARTNER** and payment under the contract shall be received by the **LEAD PARTNER**. The precise responsibility of the members of the Joint Venture in respect of planning, quality, execution of the works are as under :



LEAD PARTNER: M/s D.P. Jain & Co. Infrastructure Pvt. Ltd

Ratio of Participation

PARTNER-A: M/s. D.P. Jain & Co. Infrastructure Pvt. Ltd- 60%

PARTNER-B: M/s NKC Projects Pvt. Ltd - 40%

If in the determination of the Employer that the **LEAD PARTNER** is unable to fulfill its responsibility as above, the Employer shall be at liberty to terminate the contract which shall be binding on all partners of the Joint Venture.

2. In case of any breach of the said Contract by the **LEAD PARTNER** or other Partners of the Joint Venture Agreement, the Partner(s) do hereby agree to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.
3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in meeting the performance guaranteed as per the works Contract, the Partner(s) of these presents undertake to promptly make good such loss or damages caused to the Employer, on its demands without any demur. It shall not be necessary or obligatory for the Employer to proceed against **LEAD PARTNER** to these presents before proceeding against or dealing with other Partner(s).
4. The financial liability of the Partners of this Joint Venture agreement to the Employer, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in the said Joint Venture Agreement, read in conjunction with the relevant conditions of the Contract shall, however, not be limited in any way so as to restrict or limit the liabilities of any of the Partners of the Joint Venture agreement.

Approved

 For DPJ - NKC (JV)
 Rohit Kumar Gupta
 Vice President (P&A)

Approved

 For DPJ - NKC (JV)
 Gurgoon
 Vice President (P&A)

DPJ-NKC J.V
 Contractor

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



It is expressly understood and agreed between the Partners to this Joint Venture agreement that the responsibilities and obligations of each of the Partners has been delineated in clause no. 1 herein above to this agreement. It is further agreed by the Partners that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint responsibilities of the Partners under this Contract.

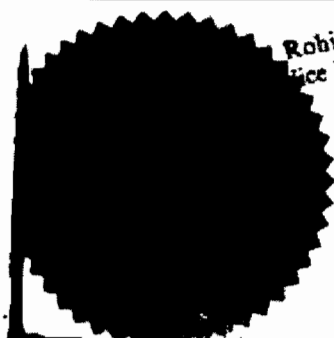
This Joint Venture Agreement shall be construed and interpreted in accordance with the laws of India, courts of Bhubaneswar ODISHA shall have the exclusive jurisdiction in all matters arising there under.

7. It is further agreed that the Joint Venture agreement shall be Irrevocable and shall form an integral part of the contract, and shall continue to be enforceable till the Employer discharges the same. It shall be effective from the date first mentioned above for all purposes and intents.



IN WITNESS WHEREOF, the Partners to the Joint Venture Agreement have through their Authorized Representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

<p>SIGNED SEALED AND DELIVERED For and on behalf of</p> <p>LEAD MEMBER M/s. D.P. Jain & Co. Private Limited Pvt. Ltd.</p> <p><i>[Signature]</i></p> <p>(Sandeep Agrawal) AGM (Contracts & Procurement)</p>	<p>SIGNED SEALED AND DELIVERED For and on behalf of</p> <p>SECOND PART For NKC Projects Pvt. Ltd</p> <p><i>[Signature]</i></p> <p>(Rohit Gupta) Vice President (F & A)</p>
<p>Witnesses</p> <p><i>[Signature]</i></p> <p>1. Yogendra S. Bisera For DPJ-NKC JV</p>	<p>Witnesses</p> <p><i>[Signature]</i></p> <p>1. Anish Dhanwal For DPJ-NKC JV</p>



[Signature]
Rohit Kumar Gupta
Vice President

[Signature]
Rohit Kumar Gupta
Vice President



ATTESTED

[Signature]
NOTARY
GOVERNMENT OF INDIA

[Signature]
DPJ-NKC J.V
Contractor

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



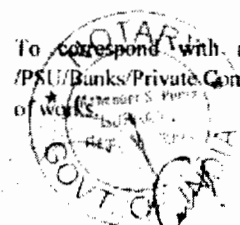
हरियाणा HARYANA

M 375356

POWER OF ATTORNEY

Whereas DPJ - NKC a Joint Venture which have been awarded the work of "Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km.49/000 to Km.99/000 of MDR & Km. 45/000 to Km.51/500 of SH-9) Contract Package No.-OSRP-CW-ICB-P04B by the Chief Engineer, World Bank Projects, Bhubaneswar-751001 Odisha. We the DPJ - NKC (JV) do hereby appoint Sh. Naresh Kumar, S/o Sh. Dharmbir Singh, Managing Director of M/s NKC Projects Pvt. Ltd. resident of A-506, Sujjan Vihar, Sector-43, Gurgaon-122009 (Haryana) as our attorney in our name and on our behalf to do and/or execute all and /or any of the following acts & things in connection with the above referred work:

1. To correspond with project Authorities and sign the Contract Agreement and other documents relating to the execution of the Contract.
2. To sign and submit the bills for the value of work done & advances and receive payments on behalf of DPJ- NKC (JV).
3. To correspond with any other State/Central Government Department /PSU/Banks/Private Companies / Individuals in connection with the execution of work.



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

4. To sub-delegate, if necessary, all or any of the above mentioned powers to any suitable officer.



DPJ-NKC (JV) hereby undertakes and agree that all acts, deeds & things lawfully done by the said attorney shall be construed as acts, deeds & things lawfully done by the Joint Venture and the Joint Venture undertakes to ratify and confirm all & whatsoever the said attorney shall lawfully do or cause to be done for the Joint Venture by the powers hereby given.

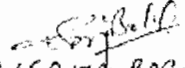
IN WITNESS WHEREOF, WE DPJ-NKC (JV) HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS 9th DAY OF SEPTEMBER, 2013.

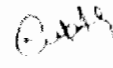
For and on behalf of
D.P. Jain & Co. Infrastructure Pvt. Ltd.


Director 

For and on behalf of
NKC Projects Pvt. Ltd.


Director 


1) (SANJAY BARMAN)



2) MAHENDER D. PRASAD



ATTESTED (MAHENDER D. PRASAD)
MAHENDER D. PRASAD
ADVOCATE & NOTARY PUBLIC
GURGAON (HARYANA) INDIA

09 SEP 2013





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

ELI - 2: JV Information Sheet

JV / Specialist Subcontractor Information	
Bidder's legal name	“ DPJ – NKC (JV)”
JV Partner's or Subcontractor's legal name	D.P.Jain & Co. Infrastructure Pvt. Ltd.
JV Partner's or Subcontractor's country of constitution	India
JV Partner's or Subcontractor's year of constitution	2004
JV Partner's or Subcontractor's legal address in country of constitution	U-6, Himalaya Accord Apartment, Opp:- Law College, Amravati Road, Nagpur-440010 (Maharastra) Ph no. 0712-2535357 Fax no. 0712-2560836 Email:-dpjainco@yahoo.com
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	Mr. Sandeep Agrawal M/s D.P. Jain & Co. Infrastructure Pvt. Ltd. Address:- U-6, Himalaya Accord Apartment, Opp:- Law College, Amravati Road, Nagpur-440010 (Maharastra) Ph no. 0712-2535357 Fax no. 0712-2560836 Email:-dpjainco@yahoo.com
<p>Attached the Following Documents</p> <ul style="list-style-type: none"> ❖ Certificate of Incorporation ❖ Authorisation in the form of Power of Autorney to represent the firm or JV named in above, in accordance with ITB 20.2. ❖ In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5. 	

DPJ-NKC JV
Contractor




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



अवकाश, अर्थात्, अवकाश
Form I, R,
निगमन का प्रमाण-पत्र

CERTIFICATE OF INCORPORATION

U 45200 MH 2004 PIC 150149

No. _____ of Date _____

ने प्रमाणित किया जाता है कि

कम्पनी अधिनियम (1956 का. सं. 1) के अन्तर्गत निम्नलिखित की संख्या है और कम्पनी कीर्तित है।

D.P. JAIN & CO. INFRASTRUCTURE PRIVATE

I hereby certify that

LIMITED

is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is limited.

ने प्रमाणित की आज का _____ को स्थान पर।

Given under my hand at **MUMBAI** this **TWENTYSECOND**

day of **DECEMBER** Two Thousand **FOUR**



(**D.V. RAJEEVAN**)
Assistant Registrar of Companies
Maharashtra, Mumbai

* सं. सं. - 1
J.S.C.-1
118/94, एच. एन. / 10/2/94/ 22-20-000-3-4-83-01P/94/94
118/94/S/CH/PC/94/22-20-000-3-4-83-01P



For DPJ-NKG (JV)
Rohit Kumar Gupta
Vice President (F&A)

DPJ-NKG
Contractor
Gura

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



CERTIFIED COPY OF AN EXTRACT FROM THE MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS OF D.P.JAIN & CO. INFRASTRUCTURE PVT LTD DULY CONVENED AT REGISTERED OFFICE ON THE 18TH MAY, 2013.

The Chairman informed the Board that Chief Engineer, Odisha State Roads Project, World Bank Projects, Bhubaneswar- 751 001(hereinafter referred to as the "Authority") has invited the **BID** for the project of "**Widening and Strengthening of existing carriageway to 2-lane road from Duhuria to Chandballi (Km. 49/0 to Km. 99/0 of SH-9A & Km. 45/0 to Km. 51/500 of SH-9)**" (Hereinafter referred to as the "**Project**")

The Chairman informed that the Company proposes to submit the **BID** for the said Project.

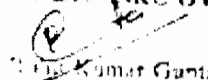
The Board discussed the same and then the following resolutions were passed unanimously;

***RESOLVED THAT** Company do submit the **BID** invited by Chief Engineer, Odisha State Roads Project, World Bank Projects, Bhubaneswar- 751 001 (hereinafter referred to as the "Authority") with regard to project of "**Widening and Strengthening of existing carriageway to 2-lane road from Duhuria to Chandballi (Km. 49/0 to Km. 99/0 of SH-9A & Km. 45/0 to Km. 51/500 of SH-9)**" (Hereinafter referred to as the "**Project**")

RESOLVED FURTHER THAT Shri. Girish Dharampal Jain, Director and/or Shri Sandeep Basant Agrawal, AGM (Contracts & Procurement) of the company, be and are hereby severally authorized to execute and submit the **BID** application document on behalf of the Company and to perform the following acts in the matter:-

1. To purchase, execute and submit the **BID** application documents, Contract documents, papers, forms and returns relating to the said Project for the said **Authority** and also to negotiate and finalize the same;
2. To enter into Joint Venture with M/s NKC Projects Pvt. Ltd having its registered office at Plot no. 63, Udyog Vihar, Phase-IV, Gurgaon-122 016 (Haryana), India and to sign Joint Venture Agreement and other documents, papers relating to the same Joint Venture.
3. To attach any further documents, paper or copies thereof as and when required;
4. To make any corrections, modification, additions and deletions in the Bid, documents, Contract documents, papers, form, return or copies thereof attached there to required from time to time;
5. To execute and submit any subsequent contract related to above and to negotiate and represent the company for the company for the above mentioned project;

For DPJ-NKC (JV)


Sandeep Basant Agrawal

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REG. NO. 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6. To deliver and file said documents, papers, Forms, Returns or copies attached thereto any authority as may be required to be filed with the said **Authority**;
7. To do all such other things, acts and deeds as may be necessary, incidental to or consequential upon exercise of the powers therein and on behalf of the Company.
8. To execute the Power of Attorney for the delegation of above mentioned Powers on behalf of the Company.

//CERTIFIED TRUE COPY//

For D. P. JAIN & CO. INFRASTRUCTURE PVT LTD

Deepak Jain
 Chairman & Managing Director
 (DEEPAK D. JAIN)



For DPJ - NKC (JV)

Rohit Kumar Gupta
 Rohit Kumar Gupta
 Vice President (F&A)

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 m

35.

[Handwritten signature]
 DPJ-NKC J.V
 Contractor

[Handwritten signature]
 Chief Engineer
 World Bank Project, Odisha
 World Bank Employer
 O/o the E.I.C.(Civil), Odisha
 Bhubaneswar.

ELI - 2: JV Information Sheet

JV / Specialist Subcontractor Information	
Bidder's legal name	"DPJ – NKC (J.V)"
JV Partner's or Subcontractor's legal name	NKC Projects Pvt. Ltd.
JV Partner's or Subcontractor's country of constitution	INDIA
JV Partner's or Subcontractor's year of constitution	July 14, 2003
JV Partner's or Subcontractor's legal address in country of constitution	Plot No – 63, Udyog Vihar Phase-IV, Gurgaon – 122016 (Haryana)
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	Mr. Rohit Kumar Gupta, Vice President(F&A) NKC PROJECTS PVT. LTD. Address: Plot No – 63, Udyog Vihar Phase-IV, Gurgaon – 122016 (Haryana) Phone: +91 124 4852828, Fax: +91 124 2340017
Attached the Following Documents 1) MEMORANDUM & ARTICLES OF ASSOCIATION 2) AUTHORIZATION TO REPRESENT THE FIRM	




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

**GOVERNMENT OF INDIA
MINISTRY OF COMPANY AFFAIRS
National Capital Territory of Delhi and
Haryana**

**B-block Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003 Delhi,
INDIA**

Corporate Identity Number : U45202DL2003PTC121288

**Fresh Certificate of Incorporation Consequent upon
Change of Name**

IN THE MATTER OF M/s N K C HIGHWAY DEVELOPERS PRIVATE LIMITED

I hereby certify that **N K C HIGHWAY DEVELOPERS PRIVATE LIMITED** which was originally incorporated on **FOURTEENTH** day of **JULY TWO THOUSAND THREE** under the Companies Act, 1956 (No.1 of 1956). **N K C HIGHWAY DEVELOPERS PRIVATE LIMITED** having duly passed the necessary resolution in terms Section 21 of the Companies Act, 1956 and the approval of the Central Government signified in writing having been accorded thereto under Section 21 of the Companies Act, 1956 read with Government of India Department of Company Affairs, New Delhi, Notification No. G.S.R. 507 (E) dated 24/06/1985 vide SRN A01054907 dated 18/07/2008 the name of the said company is this day changed to **NKC PROJECTS PRIVATE LIMITED** and this Certificate is issued pursuant to Section 23(1) of the said Act.

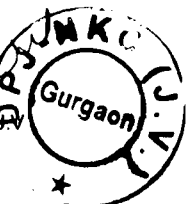
Given under my hand at Delhi this **EIGHTEENTH** day of **JULY TWO THOUSAND SIX**.



Sd/-
(NAVRANG SAINI)
Registrar of Companies,
National Capital Territory of Delhi
Haryana
For DPJ-NKC (JV)

40

DPJ-NKC
Contractor



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

भारत सरकार-कम्पनी कार्य मंत्रालय
 कम्पनी रजिस्ट्रार कार्यालय, राष्ट्रीय राजधानी क्षेत्र दिल्ली एवं हरियाणा
 कम्पनी अधिनियम, 1956 की धारा 18(1) (क)
 प्रदेश-खंडों में परिवर्तन की पुष्टि हेतु विशेष विनिश्चय के पंजीकरण का प्रमाण-पत्र

कार्पोरेट पहचान संख्या : U45202DL2003PTC121288
 कंपनी NKC PROJECTS PRIVATE LIMITED


के संसदात्मक में दिनांक 30/03/2007 को आयोजित की गई वार्षिक/अन्यथागत बैठक में एक विशेष विधिकरण पत्रिका द्वारा कम्पनी अधिनियम, 1956 (1956 का 1) की धारा 18 (1) का अनुपालन करने हेतु अपने कम्पनी-दस्तावेज में संशोधन कर दिया है।
 मैं उपरोक्त कम्पनी के पास है कि कम्पनी विशेष विधिकरण की प्रतिलिपि, कम्पनी अधिनियम 1956 के अनुच्छेद 18(1) के अधिनियम के तहत, कम्पनी अधिनियम के तहत है।
 मैं इस प्रकार द्वारा दिल्ली में यह प्रमाण-पत्र, आज दिनांक एक पूर्ण को प्रकाश कर के जारी किया जाता है।

GOVERNMENT OF INDIA - MINISTRY OF COMPANY AFFAIRS
 Registrar of Companies, National Capital Territory of Delhi and Haryana
SECTION 18(1) (A) OF THE COMPANIES ACT, 1956
 Certificate of Registration of the Special Resolution Confirming Alteration of Object Clause (a)
 Corporate Identity Number : U45202DL2003PTC121288

The share holders of M/s NKC PROJECTS PRIVATE LIMITED having passed Special Resolution in the Annual/Extra Ordinary General Meeting held on 30/03/2007 altered the provisions of its Memorandum of Association with respect to its objects and complied with the Section (18) (1) of the Companies Act, 1956 (No. 1 of 1956):

I hereby certify that the said Special Resolution together with the copy of the Memorandum of Association as altered has this day been registered.

Given under my hand at Delhi this First day of May Two Thousand Seven.



Sd/-
(KLAIR ANITA)
 सहायक कम्पनी रजिस्ट्रार / Assistant Registrar of Companies
 राष्ट्रीय राजधानी क्षेत्र दिल्ली एवं हरियाणा
 National Capital Territory of Delhi and Haryana

42

For Director (IV)
 Rohini Ananta
 Vice President (4)

DPJ-NKC J.V.
 Contractor

*
 NK
 2007

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



NKC PROJECTS PVT. LTD.

(An ISO 9001:2008 Certified Co.)

ABSTRACTS OF THE MINUTES OF MEETING OF BOARD OF DIRECTORS OF M/S. NKC PROJECTS PVT. LTD. HELD AT 11.30 A.M. ON 13TH DAY OF MAY 2013 AT HEAD OFFICE PLOT NO. 63, UDYOG VIHAR PHASE - IV, GURGAON - 122016, HARYANA

RESOLVED

That the Company do hereby nominate, constitute, appoint and authorize Mr. Naresh Kumar as Company's attorney for and on behalf of the Company to do all such acts, deeds & things as are necessary or required in connection with or incidental to submission of our bid in response to Bid Notice for "Widening & strengthening of existing carriageway to 2-lane road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR and Km. 45/000 to Km. 51/500 of SH - 9)" for "Chief Engineer, World Bank Projects, Odisha", herein after referred to as the Employer, including signing and submission of all documents, providing information / responses representing us in all matters in connection with our bid for the said Project including but not limited to signing and submission of all applications, bids and other documents and writings, participate in Applications and other conferences and providing information/ responses to the Employer, representing us in all matters before the Employer, signing and execution of all contracts including the Contract Agreement and undertakings consequent to acceptance of our bid, and generally dealing with the Employer in all matters in connection with or relating to or arising out of our bid for the said Project and/ or upon award thereof to us and/or till the entering into of the Contract Agreement with the Employer.

RESOLVED FURTHER

That approval be and is hereby given for Joint Bidding with "D. P. Jain & Co. Infrastructure Pvt. Ltd." having its office at "U - 6, Himalaya Accord, Amravati Road, Nagpur - 440010" for the said Bid Notice and to act as a Joint Venture Partner.

RESOLVED FURTHER

That a power of attorney for signing of application, Joint Venture Agreement and other documents on behalf of the company be issued and executed in favor of Mr. Rohit Kumar Gupta, Vice President (F&A) of NKC Projects Pvt. Ltd. under the hand of Mr. Naresh Kumar, Managing Director of the company.

RESOLVED FURTHER

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

CERTIFIED TO BE TRUE



57

For DPJ, NKC (JV)
Rohit Kumar Gupta
Vice President (F&A)

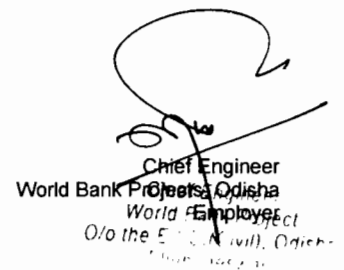
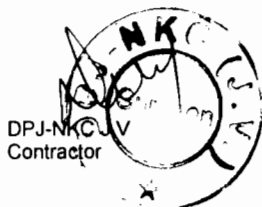
Head Office : Plot No. 63, Phase - IV, Udyog Vihar, Gurgaon-122016 (Haryana)
Ph: +91-124-4852828 Fax: +91-124-2340017 E-mail: info@nkcproject.com website: www.nkcproject.com

DPJ-NKC JV
Contractor

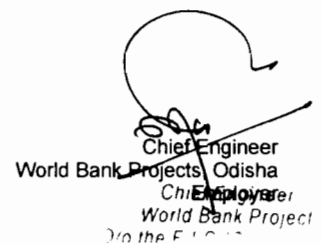
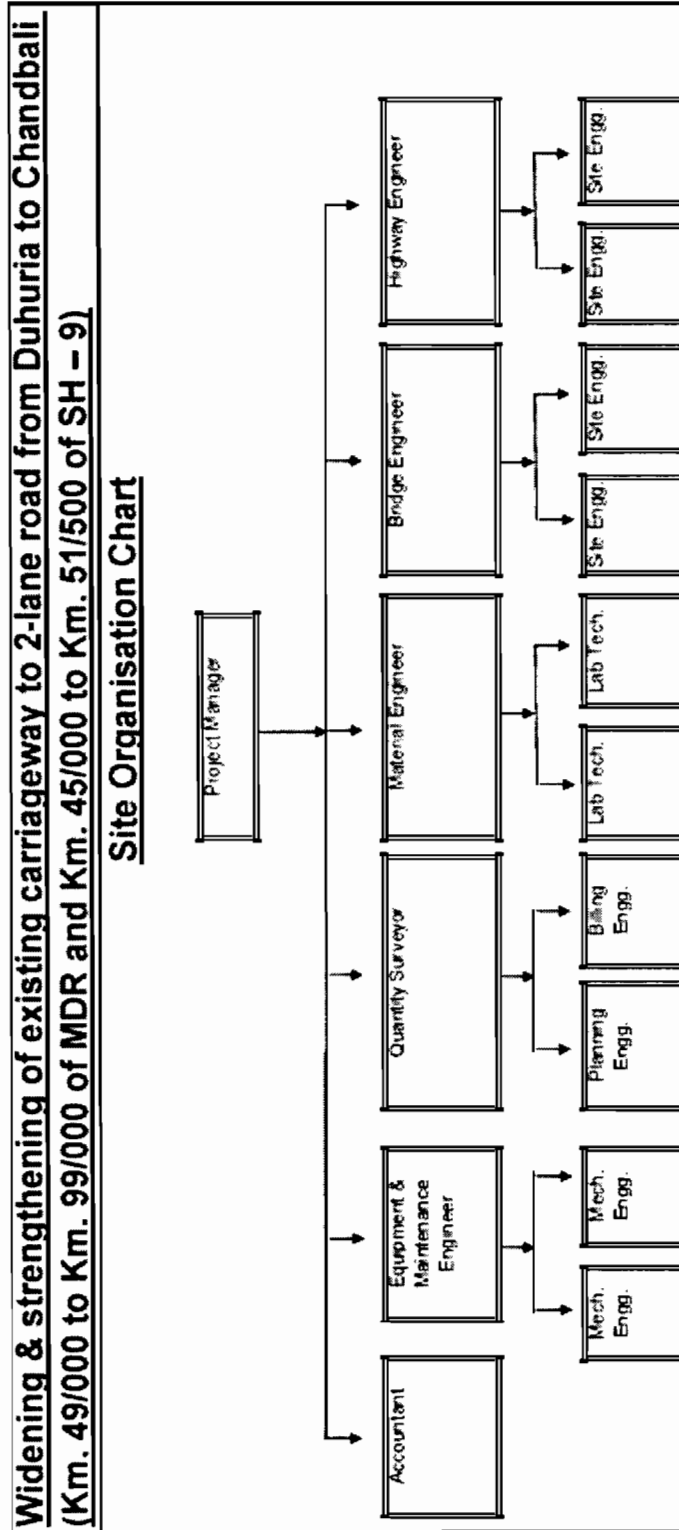
Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project
O/o the E.I.C. (Civil) Office

Technical Proposal

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



Site Organization

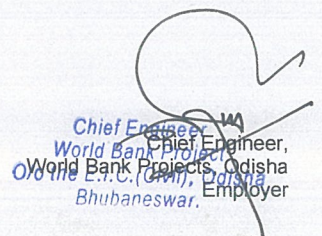


Method Statement

The section of Chandbali-Bhadrak-Anadpur Road (Km. 0/000 to Km. 45/000 of SH – 9 & Km 0/000 to Km. 43/000 of SH – 53) (Balance Work) is going to be widened from single lane to double lane.

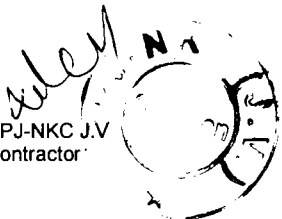
The work comprises of providing double lane carriage way with earthen and/or paved shoulders on either side. The principal items of work to be executed are Earthwork in embankment & subgrade, providing GSB, WMM, DBM, and BC including widening and /or consruction of CD works. The work shall be carried out with due traffic and safety management.

All the items of work shall be executed as per the Technical Specifications provided in the Contract.



Mobilization Schedule

Man Power	Start Date	7 days from Signing Agreement
	Completion Date	50 days from Signing Agreement
Machinery	Start Date	15 days from Signing Agreement
	Completion Date	90 days from Signing Agreement



Equipment Schedule as per Requirement of Bidding Document

The Bidder shall demonstrate that it has the key equipment listed hereafter:

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)	35
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

Equipment

PLANTS AND EQUIPMENTS OWNED AND PROPOSED FOR THE PROJECT BY M/s DPJ-NKC J.V, GURGAON, HARYANA

1.

Item of equipment:- MECHANICAL BITUMEN SENSOR PAVER - 1 No.		
Equipment information	Name of manufacturer: voegele	Model and power rating Super 2100-2
	Capacity 100 TPH	Year of manufacture 2010
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1) Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2) Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3) Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned (NKC Projects Pvt Ltd.) <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 CATTERPILLAR	Model and power rating 120K
	Capacity 200 Cum/Hr.	Year of manufacture 2011
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1. Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2. Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3. Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned (NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

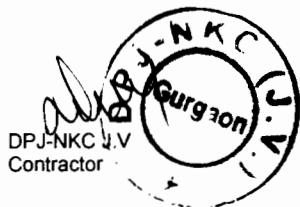



3.

Item of equipment: Hydraulic Excavators - 2 Nos		
Equipment information	Name of manufacturer KOBELCO	Model and power rating SK-210
	Capacity 60 Cum / hour	Year of manufacture 2011
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

4.

Item of equipment: Vibratory Roller (Tendom) - 3 Nos		
Equipment information	Name of manufacturer ESCORT	Model and power rating HD-85
	Capacity 8 Ton	Year of manufacture 2011
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned (NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	




 Chien Engineer
 World Bank Projects, Odisha
 World Bank Project
 Co the E.I.C. (Civil), Odisha
 Bhubaneswar.

5.

Item of equipment: Pnumatic Tyred Roller - 1 Nos		
Equipment information	Name of manufacturer Volvo	Model and power rating PT 220
	Capacity 25 Cum/Hr.	Year of manufacture 2010
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd	
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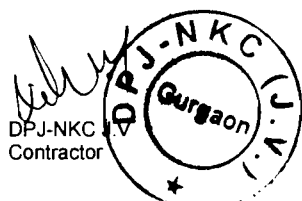
6.


Item of equipment: Hot Mix Plant (Batch Mix Only) : 1 No		
Equipment information	Name of manufacturer APOLLO	Model and power rating ANP -1500
	Capacity 128 TPH	Year of manufacture 2010
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned (NKC Projects Pvt.Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

7.

Item of equipment: Concrete Batching Plant – 1 No.		
Equipment information	Name of manufacturer Stetter	Model and power rating BPI 75 TS
	Capacity 75 Cum / Hr.	Year of manufacture 2010
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input checked="" type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Owner	Name of Owner: M/s Quippo Construction Equipment Ltd.	
	Address of the Owner: Near Haldiram, Hasanpur-Darbaripur Road, Opp. Indian Oil Pump, Gurgaon, Haryana- 122 002	
	Telephone:	Contact Name and Title: Sachin Kumar A.M (Sales and Marketiing), North India
	Fax:	Telex:
Agreements	Details of rental/ lease/ manufacture agreements specific to the project	
	Copy of the Lease Agreement Enclosed	




 Chief Engineer
 World Bank Project, Odisha
 O/o the Employer, Odisha
 Shubaneswar.



AGREEMENT TO LEASE

THIS AGREEMENT TO LEASE made on this 22nd day of May, 2013 BETWEEN Quippo Construction Equipment Ltd having its office at Hasanpur- Darbaripur Road, Near Haldiram, Opp. Indian Oil Petrol Pump, Gurgaon, Haryana (hereinafter called the "Lessor") and NKC Projects Pvt Ltd, having its office at Plot No. 63, Phase-VI, Gurgaon-122016 (Haryana) (hereinafter called the "Lessee")

AND WHEREAS on the request of the Lessee, the Lessor has agreed to give the following equipments on lease to the Lessee for the contract for the work namely "Widening & Strengthening of existing carriageway to 2-lane road from Jagatpur-Duhuria (Km. 0/0 to Km. 49/0 of MDR)". [Name of Contract] is awarded to the NKC Projects Pvt Ltd. (JV Partner of said Contract) we shall be able to provide to meet their equipment requirements for executing the said contract

Sl. No.	Equipments	Capacity	Qty.
1.	Concrete Batch-mix Plant	75 Cum/Hr.	1 No
2	WMM Plant	175 TPH	1 No
3	Concrete Fixed Form Paver	100 TPH	1 No

IN WITNESS WHEREOF, the parties hereto have executed this Lease as of the day and year first above written.

(Signature)

Neelam Kumar

LM. (Sales & marketing)

North India

On behalf of: Quippo Construction Equipment Ltd.

(Lessor)

(Signature)

On behalf of: NKC Projects Pvt Ltd.

(Lessee)

For DPJ-NKC (JV)

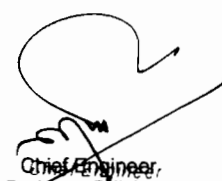
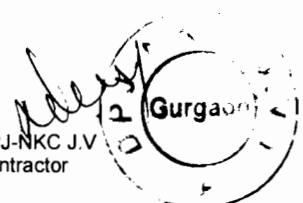
Rohit Kumar Gupta
Vice President (H & A)

WITNESSES

(Handwritten signatures of witnesses)
SANJAY BARTHAKAR

Quippo Construction Equipment Ltd.

Near Haldiram, Hasanpur- Darbaripur Road, Opp. Indian Oil Pump, Gurgaon Haryana -122007



8.

Item of equipment: TRANSIT MIXER – 5 NOS		
Equipment information	Name of manufacturer TATA	Model and power rating LPK - 2516
	Capacity 06 CUM	Year of manufacture 2008
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangao section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

9.

Item of equipment: FRONT END LOADER – 3 NOs		
Equipment information	Name of manufacturer LIUGONG	Model and power rating CLG-856
	Capacity	Year of manufacture : 2011
Current status	Current location Contract Package No. EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

10.

Item of equipment: DOZER - 1 NO.		
Equipment information	Name of manufacturer CATTERPILER	Model and power rating D5K
	Capacity 150 CUM/Hr.	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

11.

Item of equipment: TIPPER – 35 NOS		
Equipment information	Name of manufacturer Man Force Trucks Pvt Ltd.	Model and power rating CLA 25.220
	Capacity 30 Ton	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
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DPJ-NKC
Contractor

Chief Engineer
World Bank Projects, Odisha
Chief Engineer
World Bank Project

12.

Item of equipment: CONE CRUSHING UNIT- 1 NO		
Equipment information	Name of manufacturer METSO	Model and power rating C-106
	Capacity 200 TPH	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

13.

Item of equipment: BITUMEN SPRAYER- 1 No		
Equipment information	Name of manufacturer APOLLO	Model and power rating: ATM-8000
	Capacity 1750 Sqm/Hr	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

DPJ-NKC
Contractor

(Signature)

GURGA

(Circular Stamp)

(Signature)

Chief Engineer
World Bank Projects, Orissa
Employer
O/o the E.I.C.C.(Civil), Orisha
Bhubaneswar.

14.

Item of equipment: EARTH COMPACTOR - 03 Nos		
Equipment information	Name of manufacturer WIRTGEN	Model and power rating HAMM - 311
	Capacity 8-10 TON	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <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	Model and power rating LPK-1616
	Capacity 10 KL	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

16.

Item of equipment: Mechanical Paver - 1 No		
Equipment information	Name of manufacturer APOLLO	Model and power rating APOLLO
	Capacity 100 TPH	Year of manufacture 2007
Current status	Current location Contract Package No.EW- II (AS - 24) of NHA1 in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

17.

Item of equipment: WMM plant – 1 No		
Equipment information	Name of manufacturer Apollo	Model and power rating WM 175
	Capacity 175 TPH	Year of manufacture 2010
Current status	Current location	
	Details of current commitments Lease : Details of rental/lease/manufatcure agreements specific to the project.	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input checked="" type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Owner	Name of Owner: M/s Quippo Construction Equipment Ltd.	
	Address of the Owner: Near Haldiram, Hasanpur-Darbaripur Road, Opp. Indian Oil Pump, Gurgaon, Haryana- 122 002	
	Telephone:	Contact Name and Title: Sachin Kumar A.M (Sales and Marketiing), North India
	Fax:	Telex:
Agreements	Details of rental/ lease/ manufacture agreements specific to the project	
	Copy of the Lease Agreement Enclosed	



Chief Engineer
World Bank Projects, Gurgaon
Employer

Do the F.I.C. Form Carefully



AGREEMENT TO LEASE

THIS AGREEMENT TO LEASE made on this 22nd day of May, 2013 BETWEEN Quippo Construction Equipment Ltd having its office at Hasanpur- Darbaripur Road, Near Haldiram, Opp. Indian Oil Petrol Pump, Gurgaon, Haryana (hereinafter called the "Lessor") and NKC Projects Pvt Ltd, having its office at Plot No. 63, Phase-IV, Gurgaon-122016 (Haryana) (hereinafter called the "Lessee")

AND WHEREAS on the request of the Lessee, the Lessor has agreed to give the following equipments on lease to the Lessee for the contract for the work namely "Widening & Strengthening of existing carriageway to 2-lane road from Jagatpur-Duhuria (Km. 0/0 to Km. 49/0 of MDR)". [Name of Contract] is awarded to the NKC Projects Pvt Ltd. (JV Partner of said Contract) we shall be able to provide to meet their equipment requirements for executing the said contract

Sl. No.	Equipments	Capacity	Qty.
1.	Concrete Batch-mix Plant	75 Cum/Hr.	1 No
2.	WMM Plant	175 TPH	1 No
3.	Concrete Fixed Form Paver	100 TPH	1 No

IN WITNESS WHEREOF, the parties hereto have executed this Lease as of the day and year first above written.

(Signature)

Sachin Kumar
S.M. (Sales & marketing)
North India

On behalf of: Quippo Construction Equipment Ltd.

(Lessor)

(Signature)

On behalf of: NKC Projects Pvt Ltd.

(Lessee)

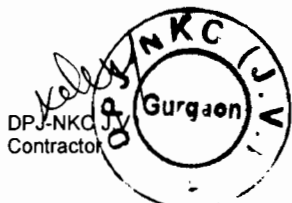
For DPI - NKC (JV)

Rohit Kumar Gupta
Vice President (I & A)

WITNESSES

Quippo Construction Equipmen Ltd.

Near Haldiram, Hasanpur- Darbaripur Road, Opp. Indian Oil Pump. Gurgaon Haryana -122007

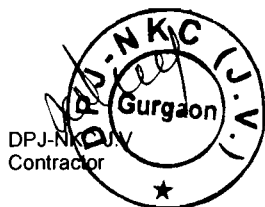



DPI-NKC Contractor

Chief Engineer
World Bank Project - Gurgaon
Emplyer
Gurgaon
Ruhana

18.

Item of equipment: Concrete Pump - 2 Nos		
Equipment information	Name of manufacturer STETTER	Model and power rating BP350D
	Capacity 20 Cum/Hr.	Year of manufacture 2011
Current status	Current location Contract Package No.EW- II (AS - 24) of NHAI in the State of Assam	
	Details of current commitments 1.Contract Package No. EW- II (AS - 24) "Balance Work of Construction of 4-lane road for KM.111.00 to Km.127.000 of Lumbding to Maibong section of NH-54 in the State of Assam. 2.Contract Package No.EW-II(AS-21) : Balance work of construction of 4-lane road for km. 140.700 to Km.165.080 of Nrimbanglo to Jatinga Junction section of NH-54 in the State of Assam ontract Package No. EW-II(AS-22) Joint Venture with JKM Infraprojects Pvt Ltd. 3.Contract Package No. EW-II(AS-22) : Balance work of construction of 4-lane road for km 165.400 to 190.587 of Jatinga Junction to Harangajo section of NH-54 in the State of Assam Contract Package, EW-II(AS-21) Joint Venture With JKM Infraprojects Pvt Ltd.	
Source	Indicate source of the equipment <input checked="" type="checkbox"/> Owned(NKC Projects Pvt Ltd.) <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	




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

19.

Item of equipment: CONCRETE FIXED FORM PAVER – 01 NOS		
Equipment information	Name of manufacturer MQ	Model and power rating MQ
	Capacity 100 TPH	Year of manufacture
Current status	Current location	
	Details of current commitments Lease : Details of rental/lease/manufacture agreements specific to the project	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input checked="" type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Owner	Name of Owner: M/s Quippo Construction Equipment Ltd.	
	Address of the Owner: Near Haldiram, Hasanpur-Darbaripur Road, Opp. Indian Oil Pump, Gurgaon, Haryana- 122 002	
	Telephone:	Contact Name and Title: Sachin Kumar A.M (Sales and Marketiing), North India
	Fax:	Telex:
Agreements	Details of rental/ lease/ manufacture agreements specific to the project	
	Copy of the Lease Agreement Enclosed	

DPJ-NKC
Contractor



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





AGREEMENT TO LEASE

THIS AGREEMENT TO LEASE made on this 22nd day of May, 2013 BETWEEN Quippo Construction Equipment Ltd. having its office at Hasanpur- Darbaripur Road, Near Haldiram, Opp. Indian Oil Petrol Pump, Gurgaon, Haryana (hereinafter called the "Lessor") and NKC Projects Pvt Ltd. having its office at Plot No. 63, Phase-IV, Gurgaon-122016 (Haryana) (hereinafter called the "Lessee")

AND WHEREAS on the request of the Lessee, the Lessor has agreed to give the following equipments on lease to the Lessee for the work namely "Widening & Strengthening of existing carriageway to 2-lane road from Jagatpur-Duhuria (Km. 0/0 to Km. 49/0 of MDR)". [Name of Contract] is awarded to the NKC Projects Pvt Ltd. (JV Partner of said Contract) we shall be able to provide to meet their equipment requirements for executing the said contract

Sl. No.	Equipments	Capacity	Qty.
1.	Concrete Batch-mix Plant	75 Cum/Hr	1 No
2	WMM Plant	175 TPH	1 No
3	Concrete Fixed Form Paver	100 TPH	1 No

IN WITNESS WHEREOF, the parties hereto have executed this Lease as of the day and year first above written.

(Signature)

Indra Kumar
LM. (Sales & marketing)
North India

On behalf of: Quippo Construction Equipment Ltd.
(Lessor)

(Signature)

On behalf of: NKC Projects Pvt Ltd.
(Lessee)

(Signature)

For DPJ - NKC (JV)

Rohit Kumar Gupta
Vice President (I & A)

WITNESSES

(Signatures of witnesses)
SANJAY BARTHAAL

Quippo Construction Equipmen Ltd.

Near Haldiram, Hasanpur- Darbaripur Road, ,Opp. Indian Oil Pump. Gurgaon Haryana -122002




Man-Power Schedule as per Requirement of Bidding Document

The Bidder shall demonstrate that it has the personnel for the key positions that meet the following requirements:

No.	Position	Total Work Experience (years)	In Similar Works Experience (years)	Educational Qualification
1	Project Manager – 1 No	10	5	Degree 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
 Chief Engineer
 World Bank Project
 O/o the E.I.C.(Civil), Odisha

PERSONNEL

Form PER – 1: PROPOSED PERSONNEL

BY M/S DPJ-NKC J.V

1.	Title of position* PROJECT MANAGER
	Name – Mr. Vinod Kumar Singh
2.	Title of position* HIGHWAY ENGINEER
	Name –Mr. Anjani Bhusan Kumar
3.	Title of position* BRIDGE ENGINEER
	Name-Mr. Pankaj Kumar Roy
4.	Title of position* MATERIAL ENGINEER
	Name-Mr. Abhiram Gogoi
5.	Title of position* QUANTITY SURVEYOR
	Name-Mr. S. Rasal Rose Prakash
6.	Title of position* EQUIPMENT MAINTENANCE ENGINEER
	Name-Mr. Ravinder Verma
7.	Title of position* ENVIRONMENT AND SAFETY MANAGER
	Name-Mr. Pradeep Kumar Agrawal



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

Resume of Proposed Personnel-1

Position-PROJECT MANAGER		
Personnel information	Name- Mr. Vinod Kumar Singh	Date of birth-28.06.1967
	Professional qualifications- B.E.Civil -1989	
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.	
	Address of employer – Plot No -63, Udyog Vihar Phase-IV, Gurgaon - 122016(Haryana)	
	Telephone: 0124-4852828	Contact (manager / personnel officer) Mr. Pankj Julka
	Fax No:0124-4823210	E-mail:-pankaj.j@nkcproject.com
	Job title:-Project Manager	Years with present employer: 04 Months

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience
2013	Present	Company: NKC Project Pvt Ltd. Designation: Project Manager
2011	2013	Company : Welspun Projects Ltd. Project Name: Rehabilitation and up-gradation to 4 Laning of Chiral-Anjar Road including Anjar Bypass (SH-50) and its Spur Road (SH-45) on BOT Basis; Flexible Pavement; Length 28.75 Km(Main Carriageway) & 6.2 Km (Service Road in Built-up Zone) – Project Cost: Rs.330 Crs. Designation: Senior General Manager.
2008	2011	Company: Madhucon Projects Limited. Project Name: Construction of 4 Lane Road from Km.143+200 to Km.209+900 of NH-19 of Chhapra –Hazipur Section in the State of Bihar under NHD –III on Annuity basis. Project Cost: Rs.700 Crs. Designation: Chief Project Manager.
1998	2008	Company: LEA Associates South Asia Pvt Ltd. Project Name: Construction Supervision of 4 lane Road Package ABP/3; Funded by World Bank; Rigid Pavement, Length: 45Km (Main Carriageway) & 68km. Cost: Rs.550 Crs.Designation: Resident Engineer/Sr. Highway Pavement Engineer.
1996	1998	Company: SBK Contracting Div. WLL Doha, Qatar (Middle East) Project Name: Construction of Al Wahda – Majlis Al Tawoon Road Project;Four Lanes Carriageway with service road, two multi level interchanges, five interchanges, five intersections; Length: 22Km., Flexible Pavement(Main Carriageway) & 44 Km Service Road.Designation: Highway cum Pavement Engineer.
1989	1995	Company: Monghyr Construction Co. Project Name: Road Rehabilitation: Ranchi-Gumia funded by Govt. of Bihar, Client: PWD, Govt. of Buhar, Project Cost: Rs.6.5 Crs. Designation: Project Engineer/Sr. Engineer(Highways)

Resume of Proposed Personnel-2

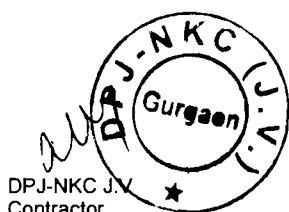
Position- HIGHWAY ENGINEER		
Personnel information	Name – Mr. Anjani Bhusan Kumar	Date of birth- 01-03-1978
	Professional qualifications:- Diploma in Civil Engineering - 1996	
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.	
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)	
	Telephone: 0124-4852828	Contact (manager / personnel officer) Mr. Pankj Julka
	Fax No: 0124 - 2340017	E-mail:- pankaj.j@nkcproject.com
	Job title:- Project Manager	Years with present employer: 01 Year

From	To	Company / Project / Position / Relevant technical and management experience
2012	Till Date	Company: NKC Projects Pvt Ltd. Designation: Highway Engineer
2010	2012	Company: Feedback Ventures 9P) Ltd. Project Name: Widening upto 4 Lane divided Highway including Strengthening of Existing two lane State Highway SH-5 BOT Project from Haloi-Godhra-Shamalaji Section (Km.335+168 to 506+780 Km) in the State of Gujrat under BOT basis. Designation: Highway Engineer.
2006	2010	Company: BSCPL-C&C JV ; Project Name: Four Lanning & strengthening of existing Two Lane National Highway (NH-57) from Muzaffarpur to darbhanga Km.0+000 to Km.37+750 BR-9 on East West Corridor in Bihar. Designation: Sr. Engineer
2001	2006	Company: Back Bone Enterprise Ltd, Ahmedabad. Project Name: Strengthening of Two Lane SH-25 from Fail to Jamnagar Km 63/981 to KM 78/830 & Jamnagar & Khambhalia KM94/106 to Km144/992. Designation: Highway Engineer.
1997	2001	Company: Vijeta Construction Ltd., Ranchi Project Name: Tilaiya Dhadhar Diversion Scheme Fatepur (Gaya) of Water Resource Department, Government of Bihar, Designation: Site Engineer.

Resume of Proposed Personnel-3

Position- : BRIDGE ENGINEER	
Personnel information	Name- MR. Pankaj Kumar Roy Date of birth - 25.12.1978
	Professional qualifications- : Diploma (Civil) - 2002
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)
	Telephone: 0124-4852828 Contact (manager / personnel officer) Mr. Pankaj Julka
	Fax No: 0124 - 2340017 E-mail:-pankaj.j@nkcproject.com
	Job title :- Bridge Engineer Years with present employer: 01 Year

From	To	Company / Project / Position / Relevant technical and management experience
2012	Till Date	Company: NKC Projects Pvt Ltd. Designation: Highway Engineer
2011	2012	Company: Dillip Buildcon Ltd. Project Name: 4 Lanning of Nagpur-Bhandra Road NH-06 on BOT basis. Designation: Bridge Engineer
2008	2010	Company : Ssanyong & Construction Co. Ltd. Project Name: Four Lanning of Jhansi-Lakhnadon Section NH-26 (Package -06) M.P. Designation: Sr. Structure Engineer.
2005	2008	Company : Som Datt Builders Pvt. Ltd. New Delhi, Project Name: Upgradation of Ludhiana-Malerkotla-Sangur Road (Contract Package No. PSRSP/WB/UG-2/ICB) Total Length of Road 72 Kms Project of Rs.226 Crs. Designation: Structure Engineer
2001	2005	Company: Valecha Engineering Ld. Project Name: Strengthening & Widening of Carriageway State Highway of MPRDC. Designation: Site Engineer (Road & Structure)



Resume of Proposed Personnel-4

Position- : MATERIAL ENGINEER		
Personnel information	Name –Mr.Abhiram Gogoi	Date of birth:-18/06/1971
	Professional qualifications - B.E.(Civil) - 1997	
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.	
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)	
	Telephone: 0124-4852828	Contact (manager / personnel officer) Mr. Pankaj Julka
	Fax No: 0124 - 2340017	E-mail:-pankaj.j@nkcproject.com
	Job title :- Material Engineer	Years with present employer: 06 Months

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience
2012	Till date	Company: NKC Projects Pvt Ltd. Designation: Highway Engineer
2007	2012	Company: Punj lloyd Ltd. Project Name: 4 Lanning of NH-31 from Km.961+500 to Km 983+000 (21.5 Km) Package; AS -09(EW-II), Flexible & rigid pavement. Designation : Manager
2006	2007	Company: KMC Ltd. Project Name: 4 Lanning of NH-31 in Assam; Package No. AS-07 of East West Corridor under Phase-II of NHDP. Designation: Material Engineer
2005	2006	Company: Runway Developers Ltd., Bina, M.P. Project Name: Design/drawing/project planning and supervision of Construction and upgradation works of various Retail Outlets (RO) and Jubilee Retail Outlets (JRO) & POL Depots, Power Houses. Designation: Pavement-cum-Material Engineer.
2000	2005	Company: Mukesh & Associates(Salem T.N) Project Name: Design/Drawing/project planning and Supervision of Construction & Upgradation works of various Retail Outlets(RO) and Jubilee Retail Outlets(JRO) & POL Depots, Power Houses. Designation: Asstt. Material Engineer.
1997	2000	Company: Balmer Lowrie & Co. Project Name: Supervision of Construction & Upgradation works of various Retail Outlets (RO) and Jubilee Retail Outlets(JRO) & POL Depots, Power Houses. Designation: Site Incharge.




 Chief Engineer
 World Bank Projects, Orisha
 World Bank Project
 Employee
 (Civil) (Civil), Gurgaon
 Bhubaneswar.

Resume of Proposed Personnel-5

Position- : QUANTITY SURVEYOR	
Personnel information	Name – Mr.S. RASAL ROSE PRAKASH Date of birth:- 30.01.1985
	Professional qualifications - B.E.(Civil)- 2009, Diploma (Civil) - 2004
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)
	Telephone: 0124-4852828 Contact (manager / personnel officer) Mr. Pankaj Julka
	Fax No: 0124 - 2340017 E-mail:- pankaj.j@nkcproject.com
	Job title :- Quantity Surveyor Years with present employer: 03 Months

From	To	Company / Project / Position / Relevant technical and management experience
2013	Till date	Company: NKC Projects Pvt Ltd. Designation: Highway Engineer
2010	2013	Company: Meenakshi Infrastructure Pvt. Ltd., Hyderabad; Project Name: Balance works of widening to 4/6 lanes and strengthening Existing 2-lanes carriageway of NH-05. Designation : Quantity Surveyor.
2007	2010	Company: JMC Projects(India) Ltd.; Project Name: 4 Lanning and strengthening for existing two lanes of Thurvankurchi Bypass End to Madurai Bypass End in the State of Tamilnadu. Designation : Quantity Surveyor.
2005	2007	Company: BCOEM-French Engineering Consultancy. Project Name: Four Lanning and strengthening for existing two lanes of Madurai-Kanyakumari in the State of Tamilnadu. Designation: Jr. Quantity Surveyor.
2005	2005	Company : Sri Interiors Designation: Qty. Surveyor
2004	2004	Company: BCOEM-French Engineering Consultancy. Project Name: DPR Four Lanning Karur-Madurai, Tamilnadu Designation: Qty. Surveyor

Resume of Proposed Personnel-6

Position- : EQUIPMENT MAINTENANCE ENGINEER	
Personnel information	Name – Mr. Ravindra Verma Date of birth:-18.01.1967
	Professional qualifications – B.E.(Mechanical Engineering) - 1992
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)
	Telephone: 0124-4852828 Contact (manager / personnel officer) Mr. Pankaj Julka
	Fax No: 0124 - 2340017 E-mail:-pankaj.j@nkcproject.com
	Job title :- Equipment Maintenance Engineer Years with present employer: 07 Months

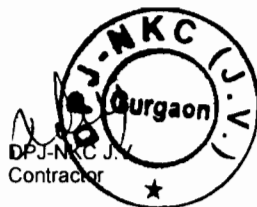
From	To	Company / Project / Position / Relevant technical and management experience
2012	Till Date	Company: NKC Projects Pvt Ltd. Designation: Equipment Maintenance Engineer
2009	2012	Company: Kazstory Service Infrastructure, Project Name: IOCL Paradip Refinery (Rs.2030 Crs), Bhubaneswar Puri Road Project 67 Kms of NHAI(Rs.500 Crs), ONGC Pipeline Grid Project, Tripura(Rs.253 Crs), Designation: General Manager (Plants & Equipment)
2008	2009	Company: Zoom Developers Pvt. Ltd. Project Name: State Govt. Road Project at Kaithal & Karnal, Haryana(3 Road Projects & 1 Project with ROB at Kaithal Railway Station) of Rs.85 Crs., Bhopal Bypass Road Project of NHAI(Rs.450 Crs). Designation: Addl. GM (Plant&Equipment)
2006	2008	Company: Punj Lloyd Ltd., Project Name: RMC Operations in Haryana (Rs. 40 Crs), IMS Medicity (Medanta) at Gurgaon, Haryana (Rs. 1500 Crs) Designation: Dy. GM (Plant & Eqmt.)
2005	2006	Company: D.S. Constructions Ltd. Project Name: Delhi-Gurgaon Highway Project of Rs.850 Crs. Designation: Dy. GM (Plant & Eqmt.)
2003	2005	Company: Indian Infrastructure Equipment Ltd., Gurgaon, Designation: Sr. Manager (Equipment Rentals & Stockyards)
1999	2003	Company: TIL Lt. Designation: Asstt. Mnager (Product Support)
1993	1999	Company: Escorts JCB Ltd., Faridabad Designation: Manager(Product Support)


Resume of Proposed Personnel-7

Position- : ENVIRONMENT & SAFETY ENGINER	
Personnel information	Name – Mr.PRADEEP KUMAR AGRAWAL Date of birth:- 12.11. 1959
	Professional qualifications - B.E.(Civil) - 1986
Present employment	Name of employer- M/S NKC Projects Pvt. Ltd.
	Address of employer – Plot No -63, Udyog Vihar Phase - IV, Gurgaon - 122016(Haryana)
	Telephone: 0124-4852828 Contact (manager / personnel officer) Mr. Pankaj Julka
	Fax No: 0124 - 2340017 E-mail:- pankaj.j@nkcproject.com
	Job title :- Environment & safety Engineer Years with present employer: 03 Years

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and manaerial experience relavant to the project.

From	To	Company / Project / Position / Relevant technical and management experience
2010	Till Date	Company: NKC Projects Pvt Ltd. Designation: Environment & Safety Manager
2007	2010	Company: Hindustan Construction Co. Ltd., Project Name: Construction of LMNHP WB 1&2 (NH-28); Designation: Dy. Manager (Civil)
2006	2007	Company: HCC Ltd., Project Name: Construction of Rajasthan Atomic Power project 5&6. Designation: Safety Manager.
2000	2004	Company: HCC Ltd., Project Name: Construction of Naini Cable Stayed Bridge. Designation: Safety Manager.
1996	2000	Company: HCC Ltd., Project Name: Construction of Malavika Steel Plant, Lucknow. Designation: Works Manager
1990	1996	Company: HCC Ltd., Project Name: Construction of Rajasthan Atomic Power project 3&4. Designation: Sr. Engineer (Civil)
1989	1990	Company: HCC Ltd., Project Name: Construction of Kakrapara(Guj.) Atomic Power project Designation: Engineer (Civil)
1987	1989	Company: HCC Ltd., Project Name: Construction of Rail Coach Factory Kapurthala(Punjab) Designation: Engineer (Civil)




 Chief Engineer
 World Bank Projects, Odisha
 Engineer
 the E.I.C.V (Civil), Odisha
 Shubaneswar.

Corporation Bank

(भारत सरकार का उद्यम)
(A Government of India Enterprise)

6. K. T. शाखा Branch

नियंत्रक कार्यालय का पता Address of the Controlling Office :

सहायक महा प्रबंधक The Asst. General Manager
 आंचलिक प्रबंधक The Zonal Manager
 आंचलिक कार्यालय Zonal Office CORPORATION BANK
 ZONAL OFFICE
 HINDUSTAN TIMES BUILDING
 19th FLOOR, K.G. MARL
 NEW DELHI-110 001

क्रमांक: 2008 No 145677
 Serial

213/200
 03/09/2013
 170427354=10
 04/10/2016

इस आवरण पत्र को गारंटी पत्र में दिनांकित

गारंटी के लिए जो तक वैध है, के साथ अनुबंधित किया जाये जिसे इस कार्यालय द्वारा

- .. (1) श्री / सुश्री
- .. (2) श्री / सुश्री के संयुक्त हस्ताक्षरों में जारी किया गया है।

This covering letter is issued to be annexed to the letter of Guarantee No. PS136/2013/200
 dated 03/09/2013 for amount of Rs. 170427354=10 valid till 04/10/16

issued by this office under the joint signatures of

- .. (1) Mr./Ms. Vijay Kumar (Manager)
- .. (2) Mr./Ms. Abhishek Shukla (Asst. Manager)

- 2. यदि इस गारंटी को पूर्ण की आवश्यकता हो तो इसे उपर्युक्त नियंत्रक कार्यालय में प्राप्त करें।
- 2. Confirmation of this guarantee, if the same is desired should be obtained from the controlling office named above.

दिनांक Date 03/09/2013

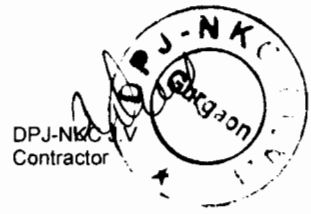
हस्ताक्षर Signatures of CORPORATION BANK
 नाम Name Asst. Manager
 पदनाम Designation Asst. Manager

हिताधिकारी का नाम व पता Beneficiary's name & address:
Chief Engineer, World Bank Projects
Bhubaneswar - 751001
Odisha

कार्पोरेट कार्यालय : मंगलादेवी मंदिर मार्ग, पो. बॉ. सं. 88, मंगलूर - 575 001
 Corporate Office : Mangaladevi Temple Road, P.B. No. 88, Mangalore - 575 001

MPPM/07/2008

- आंचलिक कार्यालय का पूरा पता दें।
- Full address of the Zonal office shall be furnished
- गारंटी करार में हस्ताक्षर करनेवाले अधिकारियों के पूरे नाम व पदनाम का उल्लेख करें।
- Full name and designation of the officials signing the Guarantee Agreement be furnished



[Signature]
 Chief Engineer
 World Bank Projects, Odisha
 O/o Employer

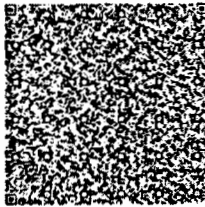


सत्यमेव जयते

INDIA NON JUDICIAL
Government of National Capital Territory of Delhi

e-Stamp

Certificate No. : IN-DL53942551948274L
Certificate Issued Date : 27-Aug-2013 03:51 PM
Account Reference : IMPACC (IV)/ d1827903/ DELHI/ DL-DLH
Unique Doc. Reference : SUBIN-DL82790306472283657206L
Purchased by : CORPORATION BANK
Description of Document : Article Bank Guarantee
Property Description : Not Applicable
Consideration Price (Rs.) : 0
(Zero)
First Party : CORPORATION BANK
Second Party : Not Applicable
Stamp Duty Paid By : CORPORATION BANK
Stamp Duty Amount(Rs.) : 100
(One Hundred only)



Please write or type below this line.

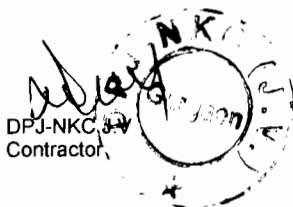
भारतीय वाणिज्य बैंक CORPORATION BANK

Handwritten signature and text in Hindi, including 'अभिषेक शुक्ल' and '5-1080'.

Handwritten signature and text in Hindi, including 'अभिषेक शुक्ल'.

Statutory Alert

- 1. The authenticity of this Stamp Certificate is valid only if verified at www.stamptamp.com. Any discrepancy in the details reported here will be liable to be withdrawn.
2. The onus of checking the authenticity of the certificate is on the purchaser.
3. In case of any discrepancy please inform the Competent Authority.



DPJ-NKC Contractor

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

**Performance Security
(Bank Guarantee)**

Corporation Bank

M- 3 & 4, Greater Kailash Part-II, New Delhi-110048

Beneficiary: Chief Engineer, World Bank Projects.

Bhubaneswar-751001 Odisha

Date: 03.09.2013

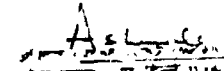
PERFORMANCE GUARANTEE No.: PSBG/2013/500

We have been informed that **DPJ - NKC (JV)** [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. / LOA No. PMU-WB-22/2013-34483 and PMU-WB-22/2013-35928 [reference number of the contract] dated 8th August, 2013 and 21st August, 2013 with you, for the execution of **Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km.49/000 to Km.99/000 of MDR & Km. 45/000 to Km.51/500 of SH-9) Package No.-OSRP-CW-ICB-P04B** [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 Corporation Bank [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of Rs 17.04.27.354/- (Rupees Seventeen Crore Four Lakh Twenty Seven Thousand Three Hundred Fifty Four 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

कृपया वापस करने के लिए CORPORATION BANK


M-34, Greater Kailash Part-II, New Delhi-110048

अरुणेश शrivastava
ARUNESH SHIVASTAVA
S-1090

कृपया वापस करने के लिए CORPORATION BANK


Chief Engineer
World Bank Projects, Odisha
G/O the E.I.C.(Civil), Odisha
Bhubaneswar.

DR - NKC JV
Contractor




Chief Engineer
World Bank Projects, Odisha
World Bank Project
G/O the E.I.C.(Civil), Odisha
Bhubaneswar.

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 4th Day of December, 2016, and any demand for payment under it 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, except that subparagraph (ii) of Sub-article 20 (a) is hereby excluded.

Notwithstanding anything contained herein above, our liability under this guarantee is restricted to Rs 17,04,27,354/- (Rupees Seventeen Crore Four Lakh Twenty Seven Thousand Three Hundred Fifty Four Only) and the guarantee shall remain valid till 4th December, 2016. Unless a claim or a demand in writing is made upon us on or before 4th December, 2016 all our liability under this guarantee shall cease.

बैंक काप्यरशात बँक ऑफ कॉर्पोरेशन बँक

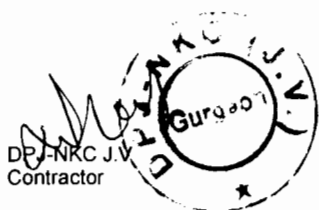
A. S. Gupta

M-34, Group-4, Sector-10, New Delhi-110042

[Signature(s)]

अभिषेक शुक्ला
ABHISEK SHUKLA
5-1095

बैंक काप्यरशात बँक ऑफ कॉर्पोरेशन बँक
M-34, Group-4, Sector-10, New Delhi-110042



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

Form FIN -3 : Financial Resources

D.P. JAIN & CO. INFRASTRUCTURE PVT. LTD
 U-6, Himalaya Accord Apartment, Opp:- Law College, Amravati Road, Nagpur - 440010
 Phone: 0712- 2535357 Fax: 0712-2560836 E-Mail: dpjainco@yahoo.com

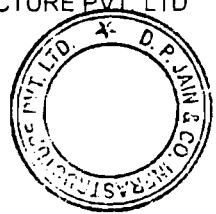
FINANCIAL RESOURCES

Source of Finance	Amount (Rs. In Lacs)	Total Amount (Rs. In Lacs)
1: OWN RESOURCES		
(a) Equity	1909.04	
(b) Reserves & Surplus	2233.97	
(c) Cash & Bank Balance	432.8	
SUB TOTAL		4575.81
2: BANKING FACILITY - FUND BASED		
(a) Bank of India	3000.00	
SUB TOTAL		3000.00
3: BANKING FACILITY - NON FUND BASED		
(a) Bank of India	3000.00	
SUB TOTAL		3000.00
GRAND TOTAL		10575.81

FOR D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD

S. Agrawal

SANDEEP AGRAWAL
 AGM (Contracts & Procurement)



[Handwritten signature]
for

For DPJ - NKC (JV)

[Handwritten signature]
 Pankaj Kumar Gupta
 Vice President (F&A)

[Handwritten signature]
 DPJ-NKC J.V.
 Contractor

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[Handwritten signature]
 Chief Engineer
 World Bank Projects, Odisha
 Chief Engineer
 World Bank Project

बैंक ऑफ़ इंडिया

Bank of India

BOI



NAGPUR MID CORPORATE BRANCH
BANK OF INDIA BUILDING, S.V.PATEL ROAD, NAGPUR - 440001.
Ph.0712-2544095, 2541195 Fax 0712-2542899
IFSC: BKID0008747, SWIFT: BKIDINBBNCB
EMail: mcb.nagpur1@bankofindia.co.in

Date: 18.05.2013

BANK CERTIFICATE

To,
Chief Engineer,
World Bank Projects, Odisha
O/o Engineer-in-Chief (Civil),
Odisha, Nirman Soudha
Keshari nagar, Unit - V
Bhubaneswar - 751001
India

Sub : Letter of Guarantee confirming Bank's undertaking to open a revolving line of credit in favour of M/s. D. P. Jain & Co. Infrastructure Pvt. Ltd., in the event of the award of Contract

Dear Sir,

This is certify that if M/s. D. P. Jain & Co. Infrastructure Pvt. Ltd., U/6, Himalaya Accord Appt., Opp. Law College, Amravati Road, Nagpur-440010 are awarded the contract of Construction for widening & Strengthening of existing carriageway to 2-lane road from Duhuriai to Chandbali (Km. 49/000 to Km 99/000 of SH-9A and Km 45/000 to Km 51/500 of SH-9), they will be provided by us with a revolving line of credit for an amount not less than Rs. 15,00,00,000/- (Rupees Fifteen Crores Only) for the purpose of the execution of the above mentioned contract. This revolving line of credit will be maintained until the whole of the completed works are taken over by Odisha State Road Project. The above credit facility proposed to be extended to the bidder shall be subject to due diligence and approvals from our sanctioning authorities.

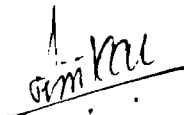


For DPJ - NKC (IV)


Chief Engineer
World Bank Projects, Odisha
Employer

World Bank Project
O/o the E.I.C.(Civil), Co. Sd.
Bhubaneswar

This certificate has been issued at the specific request of M/s D.P. Jain & Co. Infrastructure Pvt. Ltd. without attaching any risk and responsibility on the part of the Bank and /or its official particularly as guarantor(s).

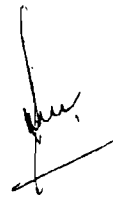
Signature 
Date 18.05.2013
Name and address Ravindra. J
Shirsilgar

Witness

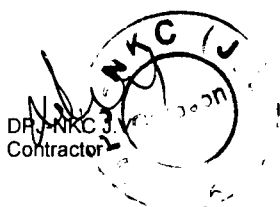
Signature 
Date 18.05.2013
Name and Designation Samarpan
Saha, Relationship Manager.

Seal Guarantor











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For D.P. Jain & Co.

P. Gupta
Vice President (F&A)


Chief Engineer
World Bank Projects, Odisha
Employer
Of the F.I.C.I.C. Odisha
Bhubaneswar

NAME & ADDRESS OF BANKER

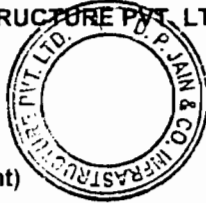
D.P. JAIN & CO. INFRASTRUCTURE PVT. LTD U-6, Himalaya Accord Apartment, Opp:- Law College, Amravati Road, Nagpur - 440010 Phone: 0712- 2535357 Fax: 0712-2560836 E-Mail: dpjainco@yahoo.com
--

NAME & ADDRESS OF APPLICANTS BANKER
--

Name of Banker	BANK OF INDIA
Address of the Banker	Nagpur Mid Corporate Branch, Bank of India Building, Mezzanine Floor, S.V.Patel Marg, Nagpur - 440 001.
Telephone	0712- 2527191
Fax	0712- 2542899
Contact Name and Title	Mr. Raju Unhale (Regional Manager)

FOR D.P.JAIN & CO. INFRASTRUCTURE PVT. LTD

S. Agrawal



SANDEEP AGRAWAL
AGM (Contracts & Procurement)

For DP
P. Gupta (IV)
 P. Gupta
 Vice President (F&A)

[Signature]

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DPJAINCO
Contractor

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

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)

Bidder's Legal Name: DPJ - NKC (JV)
 Joint Venture Party Legal Name: NKC Projects Pvt. Ltd.

Financial Resources		Amount in INR	
No.	Source of financing		
1.	OWN RESOURCES		
	(a) Equity	23,80,750	
	(b) Reserves & Surplus	33,44,50,461	
	(c) Cash & Bank Balance	14,55,51,880	
	SUB TOTAL	48,23,83,091	
2.	BANKING FACILITY		
	(a) Lines of Credit from Corporation Bank (Bank Certificate Enclosed)	30,00,00,000	
	(b) Available Money Bank Guarantee	20,00,00,000	
	SUB TOTAL	50,00,00,000	
	GRAND TOTAL	98,23,83,091	

For DPJ - NKC (JV)
 Vishal Kumar Gupta
 Vice President (F&A)

NKC Projects Pvt Ltd.
 Gurgaon
 Vice President (F & A)

NKC Projects Pvt Ltd.
 Gurgaon
 Contractor

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Corporation Bank
M 3-4, Shopping Centre, M-Block Market, Greater Kailash-II,
New Delhi 110048

To,
Chief Engineer, World Bank Projects,
Odisha, O/o the E.I.C (Civil), Odisha,
Nirman Soudha, Unit-V Bhubaneswar-751001

Bank Certificate

This is to certify that M/s.NKC Projects pvt. Ltd. is dealing with us since 2003 with a good Standing.

If the Contract for the work, Namely "Widening & strengthening of existing carriageway to 2-lane road from Duhuria to Chandbali(Km.49/000 to Km.99/000 of MDR and km.45/000 to Km.51/500 of SH-9) under Invitation for Bids No.OSRP-CW-ICB-PO4B" is awarded to above firm, we shall be provide overdraft/credit facilities to the extent of Rs.30,00,00,000/-(Rupees Thirty Crore Only) to meet their working capital requirement for executing to above contract during the contract period subject to prior approval of the Sanctioning Authority

It is clarified that this information is furnished without any risk and responsibility on our part in any respect whatsoever, more particularly either as guarantor or otherwise. This certificate is issued at the specific request of the party.

कार्पोरेशन बँक For CORPORATION BANK

P. Raju

Asst. Gen. Manager
M 3-4, Greater Kailash-II, New Delhi-110048

Asst. General Manager
Corporation Bank

For DPJ - NKC (JV)

Rohit Kumar Gupta
Rohit Kumar Gupta
Vice President (F&A)

Phone : 29210959,29211940, 29210667(Credit)Fax:29216923
E-mail:cb286@corpbank.co.in Website: www.corpbank.in
IFSC Code : CORP0000286 MICR Code 110017005



294-CAJ

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



NKC PROJECTS PVT. LTD.

(An ISO 9001:2008 Certified Co.)


BANKER ADDRESS:

Name and Address of the Banker : Corporation Bank
M -3 & 4, Greater Kailash Part-II,
New Delhi-110048

Contact Nos. : 011-29210667


Contact Person : Mr. Krishan Kumar, Sr. Manager

For NKC Projects Pvt. Ltd.


Rohit Kumar Gupta
Vice President (F&A)



For DPJ-NKC (IV)


Rohit Kumar Gupta
Vice President (F&A)

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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").

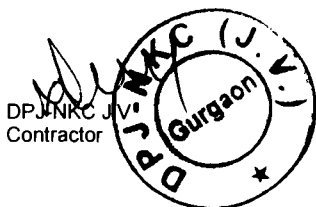
Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ [amount in figures] (_____) [amount in words] is to be made against an advance payment guarantee.

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]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 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, Qutub
Employer
To the E.U.C.O.A. Office
Gurgaon

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."*



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.: _____

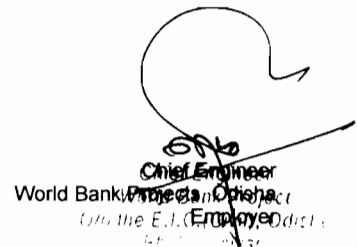
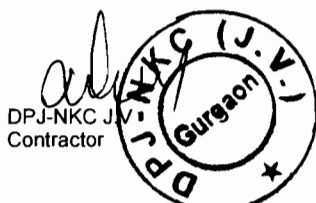
We have been informed that _____ [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ [reference number of the contract] dated _____ with you, for the execution of _____ [name of contract and brief description of Works] (hereinafter called "the Contract").

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

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.



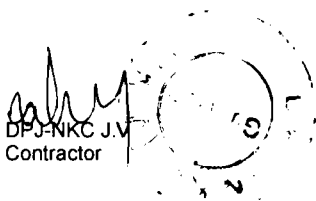
Contractor on its account number _____ at _____ [name and address of Bank].

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.


DPJ-NKC J.V.
Contractor


World Bank
Project: ~~...~~
Grant # ~~...~~
Bhusanetwa



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

CIVIL WORKS CONTRACT

[PACKAGE No. OSRP-CW-ICB-P04B]

For

Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali
(Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH –9)

under

Odisha State Roads Project

between

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

and

M/s DPJ-NKC J.V

Plot No. 63, Udyog Vihar, Phase-IV, Gurgaon-122016, Haryana (India)
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[VOLUME-II: PC & GC of Contract]

Agreement Value: Rs. 170,42,73,538.00

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

Dated: 16th September, 2013

CONTENTS of CONTRACT

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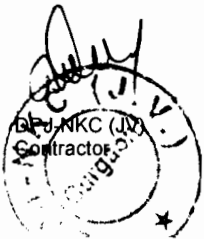
M/s DDU-NKC JV,
Contractor




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

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.



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

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, Nirman Soudha, Unit-V Bhubaneswar – 751 001
Engineer's name and address	1.1.2.4 & 1.3	To be intimated later
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>27 Months</u> <i>Refer to Table: Summary of Sections below</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> 16.100 Kms in different stretches, will be handed over for execution prior to issuance of advance payments under Clause 14.2 as detailed below. <i>Km. 58/600 to Km.62/800, Km 63/600 to Km 65/400, Km. 66/200 to Km. 67/500 & Km. 73/000 to 74/000, km 75/000 to km 77/600 & km 78/100 to km 83/300</i>




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

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, Nirman Soudha, Unit-V Bhubaneswar – 751 001
Engineer's name and address	1.1.2.4 & 1.3	To be intimated later
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>27 Months</u> <i>Refer to Table: Summary of Sections below</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> 16.100 Kms in different stretches, will be handed over for execution prior to issuance of advance payments under Clause 14.2 as detailed below. <i>Km. 58/600 to Km.62/800, Km 63/600 to Km 65/400, Km. 66/200 to Km. 67/500 & Km. 73/000 to 74/000, km 75/000 to km 77/600 & km 78/100 to km 83/300</i>




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

Conditions	Sub-Clause	Data
		<p><u>Section-II</u></p> <p>11.800 Kms in a single stretch, will be handed over for execution within 4 months of date of commencement as detailed below.</p> <p><i>Km 55/000 to Km 58/000, km 62/800 to km 63/600, km 65/400 to km 66/200, km 86/300 to km 91/000, km 91/600 to km 93/500</i></p> <p><u>Section-III</u></p> <p>15.500 Kms in two stretches, will be handed over for execution within 8 months of date of commencement as detailed below.</p> <p><i>Km 49/000 to Km 55/000 , Km 67/500 to Km 73/000, km 74/000 to km 75/000, km 83/300 to km 86/300</i></p> <p><u>Section-IV</u></p> <p>Balance 13.100 Km length of road section in different stretches will be handed over for execution within 12 months of date of commencement as detailed below.</p> <p><i>Km 77/600 to Km 78/100, Km 91/000 to Km 91/600 & Km 93/500 to Km 99/000 of SH-9A and Km 45/000 to Km 51/500 .</i></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>

Conditions	Sub-Clause	Data
Engineer's Duties and Authority	3.1(b)(ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of 2% 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> <p>(a) 5 percent of the Accepted Contract Amount</p> <p>(b) Additional performance security of 5% of the accepted contract amount in case the contractor is a Joint Venture and</p> <p>(c) additional security for unbalanced bids determined in accordance with the Cl.34.5 of ITB</p>
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.
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

Conditions	Sub-Clause	Data
Total advance payment	14.2	<u>5</u> % Percentage of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable in one installment after due acceptance of encumbrance free land of Section-I mentioned in Sub-Clause 2.1 by the contractor. The Bank Guarantee shall be for the amount equivalent to the advance given to the contractor and shall not be an interest bearing advance.
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
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) 1 % of the Accepted Contract Amount till 10% of contract amount is achieved. (ii) 3 % of the Accepted Contract Amount between 10.01% to 85% of contract amount. (ii) 5% of the Accepted Contract Amount beyond 85.01% of contract amount.

Conditions	Sub-Clause	Data
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: a. evidence of insurance. b. relevant policies	18.1	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. 10,000,000 per occurrence with unlimited number of occurrences</i>
Date by which the DB shall be appointed	20.2	84 days 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>



Table: Summary of Sections

The following table shows the time for completion and delay damages for different sections. In case the Contractor delays in any of the sections but completes the total work within total completion period then the liquidated damages deducted for delay in a particular section shall be refunded back to the Contractor.

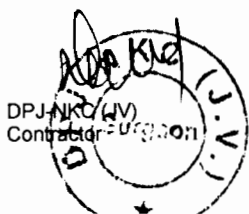
Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 8.7)
Section-I: 16.100 Kms <i>as mentioned in Cl. 2.1</i>	17 (Seventeen) Months from Commencement of Works	<u>INR. 283,000 per day</u>
Section-II: 11.800 Kms	20 (Twenty) Months from Commencement of Works	<u>INR. 236,000 per day</u>
Section-III: 15.500 Kms	23 (Twenty-three) Months from Commencement of Works	<u>INR. 225,000 per day</u>
Section-IV: 13.100 Kms	27 (Twenty-seven) Months from Commencement of Works	<u>INR. 220,000 per day</u>



Part B - Specific Provisions

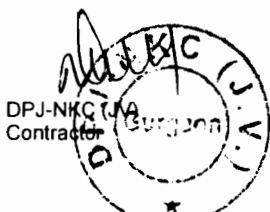
<p>Clause 1.5 Priority of Documents</p>	<p>Delete sub paragraphs (a) to (i) in Sub-Clause 1.5 and substitute with the following:</p> <ul style="list-style-type: none"> a. the Contract Agreement (if any), b. the Letter of Acceptance, c. the record of pre-award clarifications (if any), d. the letter of Tender along with addenda e. the Particular Conditions- Part-A-Contract Data f. the Particular Conditions-Part-B-Specific Provisions, g. the General Conditions h. Works Requirement <ul style="list-style-type: none"> (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. 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> <p>The Contractor shall ensure that his representative or Senior Site</p>

	<p>Representative attends all the periodic review meetings notified by the Engineer / Employer / Employer's representative.</p> <p>As regards to maintenance of road, 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.</p>
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.
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 no case be treated as the employees of the Employer at any point of time. 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.

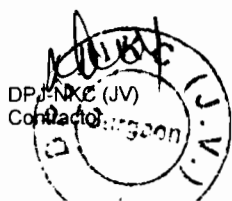


Chief Engineer,
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	The contractor and sub contractor shall comply with the safety and welfare provisions as detailed in Annexure A-II
Sub-Clause 7.3 Inspection	Amend the first line of last para as follows: The Contractor shall give “not less than 48 (forty eight) hours” notice to the Engineer whenever any...
Clause 8.3 Programme	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. Delete sub paragraph (a) of Sub Clause 8.3 and replace with the following: (a) the order in which the Contractor intends to carry out the works including; (i) A detailed works programme indicating the anticipated timing of each stage of construction. The work programme shall be prepared using MS Project or Primavera Project Management software. (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.
Clause 10.1 Taking Over of Works and Sections	Add the following additional paragraph after second paragraph of Sub-Clause 10.1: ‘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.’
Clause 12.3 Evaluation	Replace ‘0.25%’ with ‘1%’ in sub-para (a) (ii) of Sub-Clause 12.3. Delete sub-para (a) (iii) of sub-Clause 12.3 and renumber the sub-para (a) (iv) as (a) (iii) Add the following after sub-para (a) (iii): The new rate fixed by the Engineer shall be applicable only to the quantity exceeding the BOQ quantity. Provided further that 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>Sub-Clause 14.1 The Contract Price</p>	<p><i>Add</i></p> <p>(a) 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-Clause 14.13</p>
<p>Clause 14.15 Currencies of Payment</p>	<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>
<p>17.2 Contractor's Care of the Works</p>	<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</p>




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	<p>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> <ol style="list-style-type: none"> 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 items. 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>(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
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	<p>compounded to Rs. 50,000/- at any single instance</p> <p>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</p> <p>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</p> <p>5. Improper disposal of debris/ residues- Penalty @ Rs. 10,000/- per single violation compounded to Rs. 50,000/- at any single instance</p> <p>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</p> <p>7. Persons not using Personal Protective Equipments (PPE)- Penalty @ Rs. 200/- per single violation per person</p> <p>8. Burrow area/ quarry management not done- Penalty @ Rs. 10,000/- per location per instance.</p>
<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 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</p> <p>“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>

DPJ-NKC (M)
Contractor



Chief Engineer,
World Bank Projects, Odisha
Employer
World Bank
Via the E.I.C. (Civil), Odisha
Bhubaneswar.



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

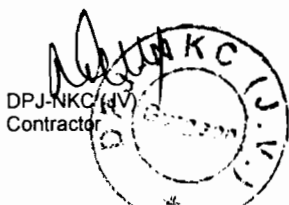
The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor 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.



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The Employer
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(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




(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.

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Contractor



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World Bank Projects, Odisha
Employer
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Bhubaneswar



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.



(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.



(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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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:

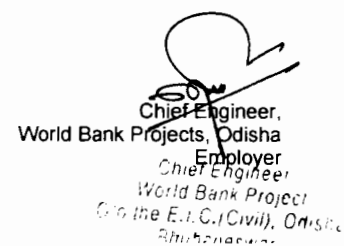
At a place where women are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud floor and wall with wooden planks spread over mud floor and 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



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:

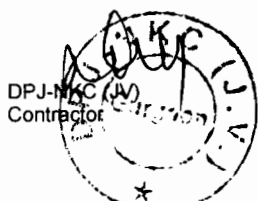
The Employer may, from time to time, add to, or amend these Rules and issue such directions as it may be considered necessary for the proper implementation of these Rules or for the purpose of removing any difficulty, which may arise in the administration thereof



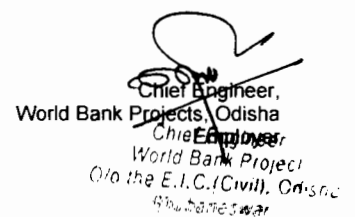
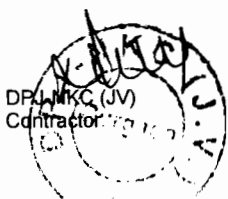
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General Conditions (GC)

Chief Engineer, World Bank Projects, Odisha


on behalf of

Odisha Works Department, Government of Odisha

*Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to
Km. 51/500 of SH -9)
under
Odisha State Roads Project*

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General Conditions

1. 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].

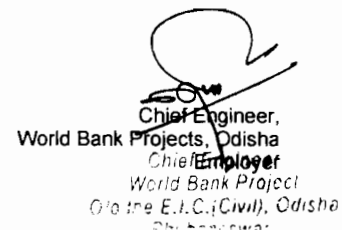
1.1.1.3 “Letter of Acceptance” means the letter of formal acceptance, signed by the Employer, of the Letter of Tender, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression “Letter of Acceptance” means the Contract 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



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

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Chief Employer
World Bank Project
Office E.A.C.(Civil), Odisha
Bhubaneswar.

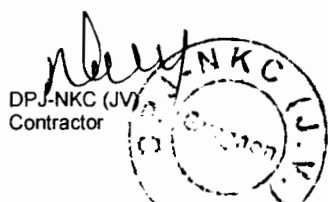


Employer or the Engineer, as Employer's Personnel.


- 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.
- 1.1.3.1 "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.

1.1.3 Dates, Tests, Periods and Completion

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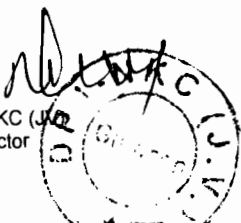


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Bhubaneswar



- 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.
- 1.1.4.1 “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].

1.1.4 Money and Payments



- 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



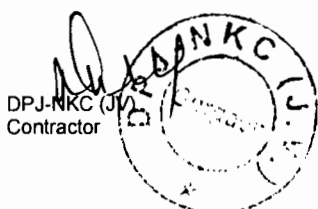
executed by the Contractor under the Contract.

- 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

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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"

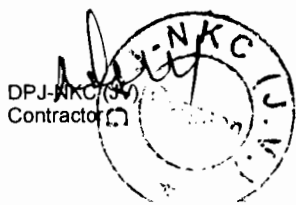
The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

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




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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.



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.

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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.

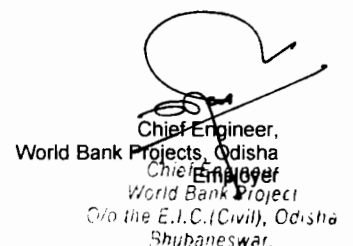
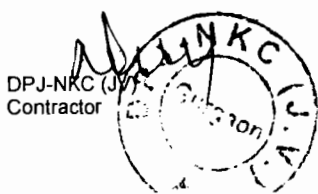
However, if and to the extent that the Engineer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit

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



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:



- (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.

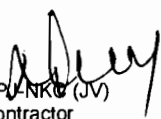
1.14 Joint and Several Liability

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).


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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



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



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



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:

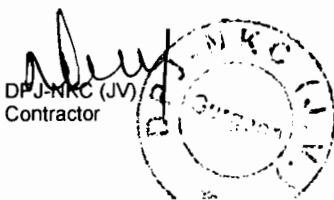
- (a) whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall be deemed to act for the Employer;
- (b) the Engineer has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract; and
- (c) any approval, 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.

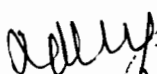
The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer or a delegated assistant:


- (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.


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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.

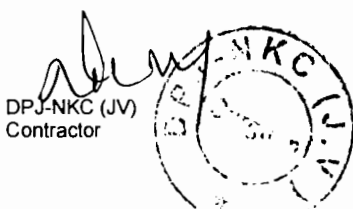
The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

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.

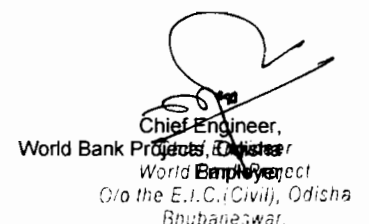
The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of 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.



A handwritten signature in black ink, appearing to be "S. S. S.", written over the printed name of the Chief Engineer.

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.

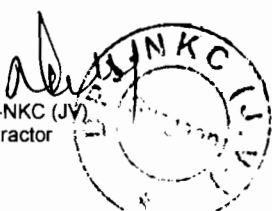
The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a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

4.4 Subcontractors

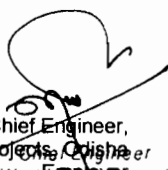
The Contractor shall not subcontract the whole of the Works.

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



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.



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



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



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



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.



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



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



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



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



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.



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




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.

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Contractor

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

**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



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. |



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.



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:

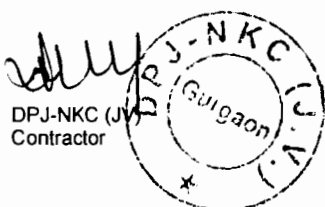
- (a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- (b) additional samples instructed by the Engineer as a Variation.

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



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.

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Contractor



Chief Engineer,
World Bank Projects, Odisha
World Bank Employer
(Via the E.C.(Civil), Odisha,
Rhubaneswar.



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



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:

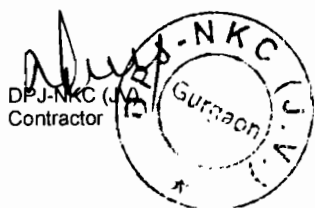
- (a) natural Materials obtained from outside the Site, and
- (b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.

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



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



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



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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Contractor



Chief Engineer
World Bank Projects, Odisha
O/o the E.I. C-10, New
Bhubaneswar.



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.

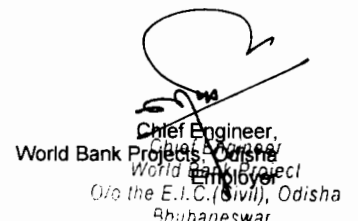
8.8 Suspension of Work

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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Chief Engineer,
World Bank Projects - Odisha
World Bank Project
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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].

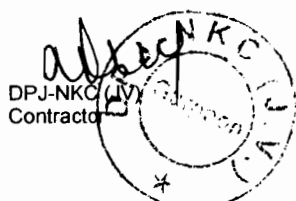
8.10 Payment for Plant and Materials in Event of Suspension

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



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



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:

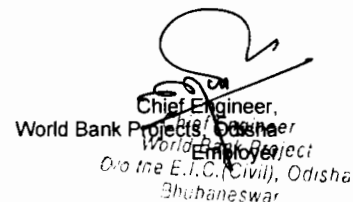
- (a) order further repetition of Tests on Completion under Sub-Clause 9.3;
- (b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided 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



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



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



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.

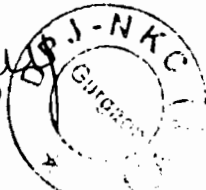
Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.

12. Measurement and Evaluation**12.1 Works to be Measured**

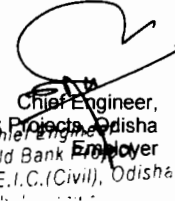
The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement at Completion], and 14.11 [Application for Final Payment Certificate] the quantities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

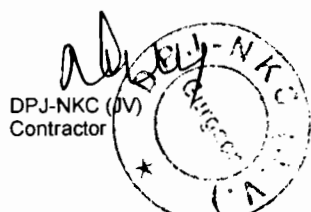
However, a new rate or price shall be appropriate for an item of work if:

- (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.



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



- (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



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



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:

$P_n = a + b L_n / L_o + c E_n / E_o + d M_n / M_o + \dots$ 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.

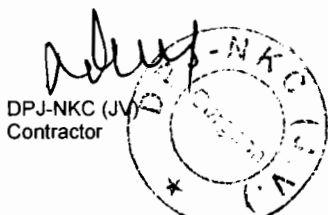
14. Contract Price and Payment

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



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.

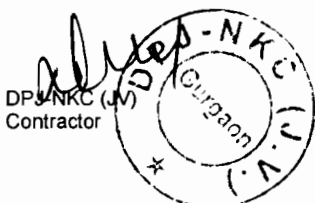
If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Employer], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance 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



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



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.

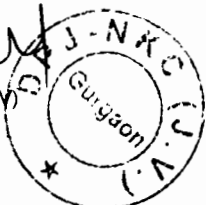
The additional amount to be certified shall be the equivalent of eighty percent of the Engineer's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

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



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.

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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

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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



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



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:



- (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:



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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.



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



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:

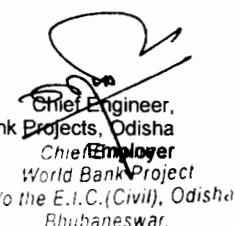
- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party⁷;

⁷ "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.

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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 obligation⁸;
- (iii) “collusive practice” is an arrangement between two or more parties⁹ 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 party¹⁰ 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

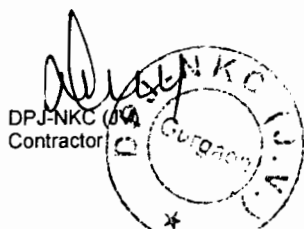
If the Engineer fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Employer fails to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements] or Sub-Clause 14.7 [Payment], the Contractor may, after giving not

⁸ “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.

⁹ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

¹⁰ “Party” refers to a participant in the procurement process or contract execution.

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less than 21 days' notice to the Employer, suspend work (or reduce 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

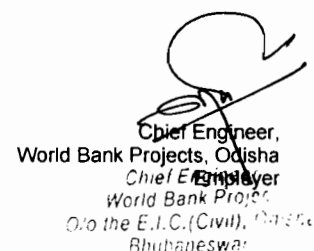
The Contractor shall be entitled to terminate the Contract if:

- 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

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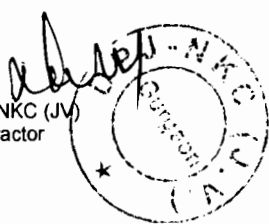



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Employer
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- a failure to comply with Sub-Clause 2.4 [Employer's Financial Arrangements],
- ii) the Engineer fails, within 56 days after receiving a Statement and supporting documents, to issue the 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

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recording the agreement of both Parties on the fulfilment 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:

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- (a) bodily injury, sickness, disease or death, of any person 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 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 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



Contract.

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

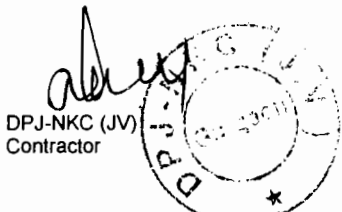
If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

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
Accomoda-
tion/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



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



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



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,



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

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



Personnel

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



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



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



- (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

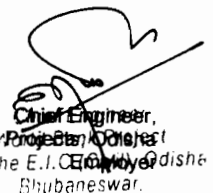
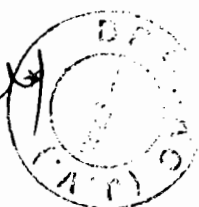
20.1 Contractor's Claims

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



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.

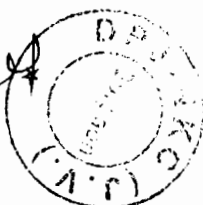
Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes 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



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



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



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



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



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.

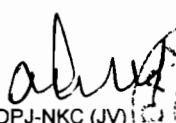
20.7 Failure to Comply with Dispute Board's Decision


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.

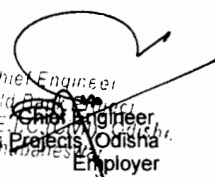
20.8 Expiry of Dispute Board's Appointment

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].


 DPJ-NKC (JV)
 Contractor




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

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



impartiality and independence.

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

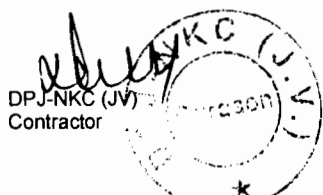
- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

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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Bhubaneswar



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**

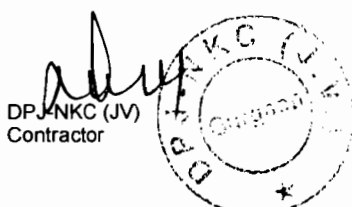
The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the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

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Contractor



Chief Engineer,
World Bank Project, Odisha
Office of the E.P. & C. Odisha
Bhubaneswar



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



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.

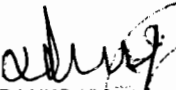
The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the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




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D/O The E.I.C.C.,
Bhimbanswa

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



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.


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Contractor




Chief Engineer
World Bank Projects, Odisha
Employer

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:

- (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.



AGREEMENT No 10 of 2013-14
GOVERNMENT OF ODISHA



WORKS DEPARTMENT
CIVIL WORKS CONTRACT

[PACKAGE No. OSRP-CW-ICB-P04B]

For

Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali
(Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH-9)

under

Odisha State Roads Project

between

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

and

M/s DPJ-NKC J.V

Plot No. 63, Udyog Vihar, Phase-IV, Gurgaon-122016, Haryana (India)
Ph: +91 124 4852828, Fax: +91 124 2340017

[VOLUME-III: Specifications]

Agreement Value: Rs. 170,42,73,538.00

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

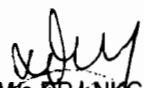
Dated: 16th September, 2013

CONTENTS of CONTRACT

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

CONTENTS of VOLUME - III

SPECIFICATIONS


M/s DPJ-NKC JV,
Contractor


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

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” (FOURTH REVISION – 2001, Reprint 2006), 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 (FOURTH REVISION - 2001, Reprint 2006)” 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 (Fourth Revision – 2001, Reprint 2006) have been amended/modified/added upon 100, 200, 300, 400, 500, 600, 800, 900, 1000, 1500, 1600, 1700, 2000, 2200, 2600 & 2800.
- 1.2.6** The Section 1501 of SPECIFICATIONS FOR RURAL ROADS -2004, developed by “ MINISTRY OF RURAL DEVELOPMENT (MORD)” has been adopted in place of Sub-section 602 of “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” referred to in PART - I.

1.2.6 Additional Specifications

The following Clauses have been added to the 'SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FOURTH REVISION – 2001, Reprint 2006)'.

- A-1 Diversion and filling of existing water courses along the road alignment.
- A-2 Plantation of trees.
- A-3 Void Former.
- A-4 Embankment Construction with Fly Ash Modified Soil

1.2.7 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 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.

1.2.8 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



PART – I

The General Technical Specifications shall be the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” (FOURTH REVISION – 2001, Reprint 2006), 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, testing acceptance or other such aspects not covered by the IRC.

DPJ-NKC (JV)
Contractor

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

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 (This has been renamed as Ministry of Shipping, Road Transport and 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

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 106 (a) Add the following sentence.

“The trial run is to be carried out laying the relevant pavement material and it is not to be part of the permanent works. The trial is to be carried out on prior approval of equipment by the Engineer-in-Charge.”

Clause 106 (b) Add the following sentence.

“The Contractor shall furnish to the engineer the detailed technical literature and other relevant documents regarding the performance of plant/equipment to Engineer for approval prior to its purchase or mobilization on site.”

Clause 107 **Contract Drawings**

Clause 107.1 **Add the following after the end of the para**

Contractor shall ensure that the design and drawings for the bridges and Road Over Bridge are vetted by Engineer through the Employer.

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 21 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.

The Contractor shall prepare detailed construction drawings for each culvert on the basis of the drawings given in Bid Documents and get them approved by the Engineer. The drawings shall be submitted to the engineer at least 7 days before commencement of construction of culverts.

Clause 109 **Setting Out**

Clause 109.8 **Add the following Para in the end of Clause 109.8**
Surveying Equipments and Personnel

The Contractor shall provide the necessary surveying equipment, accessories, and surveyors and labours required for setting out and related measurements, including making available these to the Engineer.

and his representatives at different stages of the work. The surveying equipments shall meet the quality standards and shall be approved by the Engineer, in good working condition, available in adequate numbers and shall include interaila the following.

- i) Precision automatic level with micrometer attachment with tripods and leveling staff reading to 5mm accuracy by direct observation and to 1mm accuracy by estimation or better.
- ii) Total station with 2 spare batteries, charger, tripod, data capturing prisms sufficient for a 1km. range, electronic data recorder, data packs and all necessary software for operation.
- iii) 3 meter straight edge and measuring wedge fitted with handles wedges 100 mm ht. and 1 mm accuracy.
- iv) Field Umbrellas
- v) Ranging rods 50mm dia. 3m long straight with one end each metallic conical and painted alternatively black and white along the length.
- vi) Sprit Levels, plumb bobs
- vii) Invar/Steel tape graduated in meters, centimeter and millimeter.
 - a) 5m long
 - b) 30m long
- viii) Reference markers and pegs

The Contractor shall maintain the surveying equipment in good condition during the full duration of works and replace the ones, which get worn out otherwise become unworkable.

The surveying equipment and related resources shall be provided under the general obligations of the Contractor requiring no separate payment.

Clause 109.10

Add new sub-clause

“Before carrying out any survey work the Contractor shall submit to the Engineer in writing for the approval of programme and methodology for the calibration of all optical and electronic survey equipment to be used on site during construction of the works. The Contractor will maintain calibration records for all such equipment in his site office, available at all times for inspection by the Engineer.”

Clause 110

Public Utilities

Clause 110.2

Revise the clause as under

The Contractor’s programme must take into account the period of notice and duration of diversionary works of each body as existing at site. The Contractor must also allow for any effect or these services and alterations upon the Works and for arranging regular meetings with the various bodies at the commencement of the Contract and throughout the period of the Works in order to maintain the required co-ordination. During the period of the Works, the contractor shall have no objection if the public utility bodies vary their decisions in the execution of their proposals in terms of programme and construction, provided that, in the

opinion of the Engineer, the Contractor has received reasonable notice thereof before the relevant alterations are put in hand.

Clause 110.3 Add the following paragraph at the end of this Sub-clause.

Any utility services likely to be affected by the contractor's work shall be brought to the notice of the Engineer/ employer and such work shall be undertaken only after getting written clearance from 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 borrow 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 borrow pit. The contractor shall operate strictly adhering to the Borrow 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 forest 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 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 manufacture's instructions. The Engineer shall be given at least 7 working day's 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 Control Plan.

The plan shall include:

- i) Typical drawing for temporary diversions in accordance with Sub Clause 112.3
- 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:

Replace the clause as follows

If the existing road is used as diversion, then contractor will maintain it at his cost only.

Most of the carriageway of the project has intermediate/ double lane carriageway. Due to poor in geometries and drainage considerations, the finished road surface require raising. The average formation width in plain terrain is about 8m to 10m and in the hilly terrain about 7m to 10m. None of the roads have granular sub base extending to the full formation width. For strengthening/widening of existing carriage way, part of the existing carriage way & shoulders shall be used for passage of traffic.

For facilitating passage of traffic during construction, following methodology shall be followed. However the contractor may suggest any improved method to be approved by the Engineer. If in the opinion of the Engineer, the arrangement suggested by the Contractor is better and shall ease the traffic movement, the same shall be adopted. But in such case the Contractor shall furnish the full traffic management plan along with the methodology of construction. The method is for general locations and any site specific arrangement shall be finalized in consultation with the Engineer.

The work shall be carried out on half-half basis. The length of widening/strengthening work on one side shall be limited to 500m at a place for which the traffic diversion shall be provided. There should be minimum 20m gap between the two successive patches. In case longer stretches are allowed, trapezoidal passing places of 20m outer edge with granular base course overlaid with surface dressing for additional width of 2.5m shall be provided at every 500m interval. But in no case the total length of work on one side should exceed 1000m except in the case if permitted by the Engineer. The next length of 2000m or less may be planned on the opposite side with a minimum clear distance of 200m from the preceding patch.

The proposed centerline of the alignment shall be marked. The toe line of the embankment shall be marked on both sides of the alignment. After clearing & grubbing, benching the slope & compacting the original ground, earth work in embankment with approved material shall be taken up to the design sub grade level in the side on which the traffic is proposed to be allowed. The type of earth and compaction requirement shall match the requirement of embankment or sub grade for which the section has been planned, as this section shall be retained as part of the road section. GSB (two layers) as per design requirement, conforming to the specification requirement of clause 401 of MORTH shall be provided up to the end of formation level and compacted. Over this granular base lower layer (WMM1) shall be provided up to the end of formation level and compacted. Over this primer and surface dressing shall be provided to allow the vehicles to ply on the prepared surface. During such time the existing carriageway width of minimum 3.5m and one side of treated shoulder (total of 5.0 m) shall be left for plying of vehicles. The prepared surface for traffic flow should be min of 4.0m.

The work for the other side including the carriageway portion shall be taken up, up to the sub base/sub grade/embankment level to match with the sub base of the former side and if decided, continue construction of granular base (two layers). Bituminous work as per design requirement is taken up over the prepared granular base, to allow the vehicles to ply on the prepared surface. The work for the other side from the granular base second layer (upper layer) shall be taken up and constructed till all the layers to reach the proposed formation level. The Contractor in consultation with the Engineer shall decide whether the side allowed to traffic can be taken up for construction of Granular base layer.

The work of providing earth embankment, sub-grade and granular sub-base material so carried out shall be paid under relevant items of bill of quantities. It may be ensured to provide minimum availability of width of 4.0m for plying of vehicles. At the end of diversion, a suitable link with proper gradient should be provided.

The contractor shall maintain the bypass/diversion made with the granular base material during the period of construction by way of watering, compacting, and making good loss of material after filling up of the rutting/depression etc. by additional quantity of granular materials. The cost of maintenance, making good the loss of material, watering, compacting, leveling and dressing along with additional quantity of granular base material shall be considered as incidental to the work.

The side on which the traffic was plying till then shall be made good after rolling, leveling, dressing along with any additional material required to bring the same to the required camber or super-elevation as the case may be and compacted to achieve the desired density to receive the next course of granular sub-base or base to match the other half.

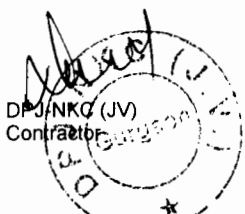
The treated shoulder of the additional width if required to meet the minimum width criteria or passing of vehicles shall be either dismantled or retained. In case of dismantling the debris disposed off or reused as directed by the Engineer.

Where the excavation of the earth is required below the existing ground level, the toe line of the embankment shall be marked on both sides of the alignment. Then excavate the earth till the bottom of proposed sub grade level on one side from existing embankment toe line. Earth work in embankment with approved material shall be taken up to the design sub grade level in the side on which the traffic is proposed to be allowed. The type of earth and compaction requirement shall match the requirement of embankment or sub grade for which the section has been planned. Over this the same construction methodology should be adopted as mentioned above.

The work of providing earth embankment, sub-grade and granular sub-base material so carried out shall be paid under relevant items of bill of quantities. It may be ensured to provide minimum availability of width of 4.0m for plying of vehicles.

2. Traffic Safety Arrangements

The Contractor shall provide, fix in place & position adequate warning signs, speed breakers, barriers, marker posts etc., as per IRC: SP 55 - 2001 as well as other stipulations given in clause 112.4 to ensure safety of the traffic **at each part road location** as per the following table and maintain the same for the construction period. Provision of such traffic safety arrangements is mandatory and incidental to the work. No separate payment will be made on this account and no claim shall be entertained for providing the same. Non-performance of full or part of



such items would lead to deductions pursuant to Clause 37(b) of Contract Data.

Sl. No	Item	Quantity
1.	Sign boards as per Technical Specifications Clause 801 including the Posts. Sheeting will be retro reflective type of high intensively grade with messages / borders/ signs etc.	
	(a) Men at Work (Triangular- 900mm side)	2 Nos
	(b) Overtaking Prohibited (Circular-600mm dia)	2 Nos
	(c) Compulsory turn (Circular-600mm dia)	2 Nos
	(d) Road Closed Take Part Road (Rectangular-1200x700mm)	2 Nos
2.	Wooden bullah delinator of 75mm dia and 2.0m height with white enamel painting with 3nos reflecting sticker in each	84 Nos
3.	Sand bag delinator containing 1 cft sand with 2nos reflecting sticker in each.	84 Nos
4.	Barricading tape	500 Rmt.

The Contractor shall be responsible for the dismantling and removal of all barricade and signage after completion of works.

Clause 112.3

Passage of Traffic along a Temporary Diversion

Replace the clause with following

Temporary diversion to carry traffic, either at the site of cross drainage structures which are to be replaced or at any other locations, shall comply with the following:

- a) Embankments as per clause 305. The use of fly ash in temporary diversions will not be permitted.
- b) Pavement 5.5m wide consisting of 200mm granular sub-base as per clause 401, 225mm granular base course as per clause 404, 405 or 406 and a 20mm premix carpet with seal coat as per clause 511 or mix seal surfacing as per clause 512
- c) Earth shoulders 2.5m wide on both side of the pavement as per clause 407
- d) Minimum horizontal radius on curves 50m
- e) Maximum gradient 5 percent and minimum camber of 2.5 percent
- f) Restriction of maximum speed to 30kmph
- g) Cross drainage structures (if any) shall be adequate to deal with the water flow using adequate numbers of 1.0m dia NP-4 RCC Hume pipes in sufficient rows in all seasons at that location. Care should be taken of the waterway area and other relevant parameters of the existing and proposed replacement structures

as given in the drawings. Causeways may only be overtopped and the road closed to traffic for short periods in extreme flood conditions.

- h) Adequate erosion protection must be provided.
- i) The Contractor shall be responsible for the design of temporary diversions and submit the designs and drawings to the Engineer for his approval.
- j) If the contractor finds it necessary to construct part of any diversion outside the Right of Way the temporary use of additional land shall be arranged for by him at his expense.
- k) Any roadside trees that have to be removed for the construction of temporary diversions shall be the responsibility of the Contractor.
- l) **Traffic Safety Measures:-** The Contractor shall provide, fix in place & position adequate warning signs, speed breakers, barriers, marker posts etc., as per IRC: SP 55 - 2001 as well as other stipulations given in clause 112.4 to ensure safety of the traffic **at each temporary diversion location** as per the following table and maintain the same for the construction period. Provision of such traffic safety arrangements is mandatory and incidental to the work. No separate payment will be made on this account and no claim shall be entertained for providing the same. Non-performance of full or part of such items would lead to deductions pursuant to Clause 37(b) of Contract Data.

Sl. No	Item	Quantity
1.	Sign boards as per Technical Specifications Clause 801 including the Posts. Sheeting will be retro reflective type of high intensively grade with messages / borders/ signs etc.	
	(a) Men at Work (Triangular- 900mm side)	4 Nos
	(b) Diversion Ahead (Rectangular- 1200x700mm)	2 Nos
	(c) Overtaking Prohibited (Circular-600mm dia)	2 Nos
	(d) Compulsory turn (Circular-600mm dia)	2 Nos
	(e) Diversion (Rectangular-1200x700mm)	2 Nos
	(f) Road Close (Rectangular-1200x700mm)	2 Nos
	(g) One Way (Rectangular-1200x700mm)	2 Nos
2.	Type-III Barricade	2 Nos
3.	Wooden bullah delinator of 75mm dia and 2.0m height with white enamel painting with 3nos reflecting sticker in each	68 Nos
4.	Sand bag delinator containing 1 cft sand with 2nos reflecting sticker in each.	68 Nos
5.	Barricading tape	420 Rmt.

- m) The Contractor shall be responsible for the dismantling, removal and disposal of all temporary diversions, barricade and signages when approved by the Engineer.

Clause 112.4 Traffic safety and Control

Add as the continuation of the first paragraph

If there is traffic jams during construction, measures shall be taken to relieve the congestion.

Add the following sub-clauses under 112.4

Clause 112.4.1 Side Roads and Property Accesses

At all times, the Contractor shall provide safe and convenient passage for vehicles pedestrians and livestock to and from side roads.

Clause 112.4.2 Plant and Equipment

“During the day, plant and equipment working in a position adjacent to traffic and having a projection beyond the normal width of the item, for example, a grader blade shall have a fluorescent red marker attached to the outer end of the projection. During poor light conditions an additional traffic controller with an illuminated red marker shall direct traffic around such plant and equipment.

At night, all plant items and similar obstructions shall be removed from the normal path of vehicles, to provide a lateral clearance of at least 6m where practicable, with a minimum clearance of 1.2m.

Plant and equipment, within 6m of the normal path of vehicles, shall be lit by not less than two yellow steady lamps suspended vertically from the point of the obstruction nearest to a traffic lane, and one yellow steady lamp at each end of the obstruction on the side farthest away from the traffic lane”.

Clause 112.6 Measurements for Payments and Rate

Add below the second paragraph as follows

The contract rate also includes traffic safety and control as per clause 112.4 and maintenance of diversion of Traffic control devices as per clause 112.5. Failure to carry out the above activities, contractor shall be liable to be imposed with penalty for the first week of non-compliance report as mentioned in the contract documents. Beyond first week the same work will be carried out by third party, the cost of which is to be deducted from the contractor’s IPC in the same month.

Clause 113

General Rules for the Measurement of Works for Payment:

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Contractor

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Clause 113.2 Measurements for Lead of Materials

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 Item (ii) of clause 114.2 shall read as follows**

A detailed resource based construction programme (using Microsoft Project software) in a form, which facilitate control of the progress of the works and consequences of any changes in terms of time. The programme shall also include detailed network activities for the submission and approval of materials, procurement of critical materials and equipment fabrication of special products/ equipment and their installation and testing and for all activities of the Contractor that are likely to affect the progress of work etc. including updating all such activities on the basis of decisions taken at the periodic site review meetings or as directed by the Engineer. The Contractor shall submit data via electronic media to the engineer in a form approved by the Engineer.

Add the following as item (xvii) 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 settle 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.

Clause 115 Methodology and Sequence of Work

The Clause shall be read as follows

The Contractor shall submit methods statement. The methods statement shall be submitted in two parts.

The General part of the methods statement shall describe the Contractor’s proposals regarding preliminary works, common facilities, and items that require consideration at the early stage of the contract



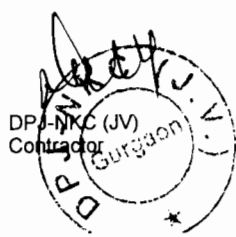
The General part shall be issued along with the first issue of the construction programme (refer clause 114.2) and shall include information on

- a) Sources of materials like coarse aggregate and fine aggregate, quantity and quality of materials available in different sources.
- b) Sources of manufactured materials like cement, steel, bitumen, emulsion, expansion joints, and bearings etc.. The contractor shall identify at least two sources for each of the items, he shall also submit samples/ test certificates of recently manufactured materials for the consideration of the Engineer.
- c) Location of site accommodation facilities, batching plant, hot mix plant, aggregate processing plant, WMM plant, field laboratory.
- d) Details of facilities/approaches for transportation of men, equipment and materials like concrete for construction of pavements, foundations and substructure in river bed.
- e) Information on procedures to be adopted by the contractor for prevention and mitigation of negative environmental impact due to construction activities.
- f) Any other information required by the Engineer subsequent to the scrutiny of method statement submitted along with the bid.

The general part of the Q.A. Program shall accompany the methods statement.

Special parts of the methods statement shall be submitted to the Engineer by the Contractor for each important item of work like construction of embankment and sub-grade, flexible & Rigid pavements, drain, pile foundations, concreting, repair and rehabilitation of existing structures, maintenance of project roads, diversions, concrete superstructure and for any other item as directed by the Engineer. These statements shall be submitted at least **28 days** in advance of the commencement of the activity or item of work, unless otherwise stipulated in the contract. The statement shall give information on

- i) Details of personnel both for execution and quality control of the work.
- ii) Equipment deployment with details of number of units, capacity, standby arrangements.
- iii) Sequence of construction, details of temporary or enabling work like diversions, cofferdams, formwork including specialized formwork for superstructure, details of borrow area, method of construction of embankment and sub-grade, pavements, piles, concreting procedures, details of proprietary process and products (e.g. details of proprietary pilling systems, bearings, expansion joints etc.) and details of equipment to be deployed. Wherever necessary, technical literature, design calculations and drawings shall be included in the methods statement.
- iv) Testing and acceptance procedures including documentation.
- v) Special part of the Q.A. programme referred in clause 105.3 for the particular item of work shall be submitted along with the methods statement for the concerned activity.
- vi) Engineer shall examine and approve the methods statement or direct the contractor to resubmit the statement with required



modifications. The modified statement shall be submitted within **4 days** of receipt of Engineer's comments.

The sole responsibility for the safety and adequacy of the methods adopted by the contractor shall rest on the contractor irrespective of any approval given by the Engineer.

Clause 115.1 Approval of proprietary product/ process/ system

Only proprietary products proven by International usage in comparable projects shall be permitted to be used. Fully authenticated details of licensing and collaboration arrangement shall be submitted by the manufacturer, where relevant.

Within 90 days of award of work the contractor shall submit the following information for all proprietary products for approval by the Engineer.

- i) Name of manufacturer name of product/ process/ system complete details of the manufacturer of the product/ process / system shall be furnished. Details of projects where similar product/ process / system have been successfully used shall be furnished. Authenticated copies of license/ collaboration agreement shall be furnished.
- ii) General features of the product/ product process/ system Detailed write up with methods statements shall be furnished for each product/process/ system. This shall include complete working drawings & installation drawings, technical specifications covering fabrication, materials, system of corrosion protection etc.
- iii) Details of product development and development testing
- iv) Acceptance test and criteria
Manufacturer shall submit the quality assurance procedure. Details of acceptance test and criteria of acceptance shall be furnished in this document.
- v) Installation procedure& demonstration
- vi) Maintenance procedure and schedule
- vii) Warranty proposal

The Engineer may order any additional test for the purpose of accepting the product. The facility for such additional tests shall be made available by the manufacturer. The charges of these additional tests shall be borne by the Employer.

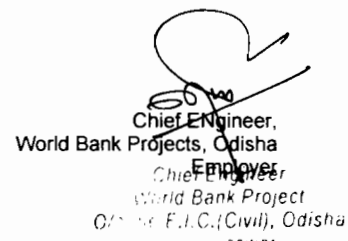
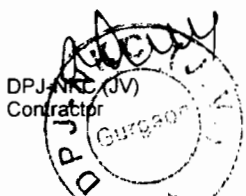
Clause 121 Field Laboratory

Clause 121.1 Add the following at the end of the clause

This facility including its erection, running will be provided and maintained by the Contractor, as incident to work and no separate payment shall be made for this item.

Clause 121.2 Description

Delete this Clause and replace with



“The Contractor shall construct a fully furnished and equipped field laboratory. All equipment shall conform to accepted national and international standards and shall be subject to the approval of the Engineer.

The laboratory will be located at a site approved by the Engineer and must be of adequate size to perform all the tests required under the contract including sufficient light, uninterrupted electricity and water supply etc. Office space of about 30 Sqm must be provided in the laboratory for the exclusive use of the Engineer and Employer / Employer’s representative with adequate facilities such as toilets, Air conditioners, first aid box, uninturrepted power and water supply etc.

The contractor shall provide the field laboratory within one month from the date of the commencement of the work. Prior to this, the contractor must make suitable alternative arrangements for the testing of materials at his cost, which are acceptable to the Engineer.

The Contractor shall be responsible for the provision of adequately experienced and qualified laboratory staff, in sufficient numbers to be able to meet all testing requirements to the approval of the Engineer, and for the supply of all transportation of staff, testing equipment and sample necessary to allow the testing to be performed in a time scale compatible with the needs of the Site.

Contractor shall arrange to maintain the laboratory in satisfactory manner and will carry stocks of spare equipment and laboratory consumables until the issue of Taking Over Certificate.

Clause 121.3

Laboratory Equipment

This Clause shall read as under

“The following items of laboratory equipment procured from reputed manufacturers duly approved by the Engineer shall be provided in the field laboratory.”

Laboratory equipment shall be provided by the Contractor for laboratory, sufficient to carry out all the field and site quality acceptance testing required in the Specifications. It shall include the following:

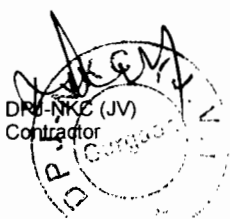
A.

General

i)

Balance

- | | | |
|----|--|-------|
| a) | 10 kg capacity semi-self indicating type – Accuracy 1 gm | |
| | Electronic | 1 No. |
| | Mechanical | 1 No. |
| b) | 500 gm capacity – Accuracy 0.01 gm | |
| | Electronic | 1 No. |
| | Mechanical (semi-self indicating) | 1 No. |



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- c) Chemical balance (electronic) 100 gm capacity
Accuracy 0.001 gm 1 No.
- d) Pan balance 5 kg capacity Accuracy 0.5 gm. 3 Nos.
- e) Platform scale – 300 kg capacity 1 No.
- f) Triple beam balance – 25 kg capacity Accuracy 1 gm 2 Nos.
- ii) Oven-electrically operated, thermostatically controlled (including thermometer), stainless steel interior
- a) Temperature range ambient to 300° C, Sensitivity 1° C, capacity 120 Litre. 1 No.
- b) Temperature range, ambient to 150° C, sensitivity 1° C, capacity 250 Litre. 1 No.
- iii) Sieves : As per IS 460:1962
- a) Test sieve of G.I 450mm internal dia. as per IS complete with lid and pan of hole sizes 75mm, 63mm, 53mm, 37.5mm, 26.5mm, 13.2mm, 9.5mm, 6.7mm, and 4.75mm. 2 Sets
- b) Test sieve set 200mm internal dia (brass frame and steel/or brass wire cloth mesh) as per IS complete with lid and pan of aperture sizes 2.36mm, 2mm, 1.18mm, 600micron, 425micron, 300micron, 150micron ,90 micron and 75micron. 2 Sets
- iv) Sieve shaker capable of taking 200mm and 450mm dia sieves-electrically operated with time switch assembly 1 No.
- v) 200 tonnes compression testing machine electric cum manually operated 2 Nos.
- vi) Stop watches 1/5 sec. accuracy 2 Nos.
- vii) Glassware comprising beakers, pipettes, dishes, measuring cylinders (100 to 1000cc capacity) glass rods and funnels, glass thermometers range 0° C to 100° C and metallic thermometers range upto 300° C. 1 Doz. Each
- viii) Hot plates 200mm dia (1500 watt.) 6 Nos.
- ix) Enamel trays
- a) 600mm x 450mm x 50mm 6 Nos.
- b) 450mm x 300mm x 40mm 6 Nos.
- c) 300mm x 250mm x 40mm 6 Nos.
- d) Circular plates of 250mm dia 6 Nos.
- x) Water still, 3litre/hr. with fittings and accessories 1 Set
- xi) Aluminium Tins
- a) 50mm x 30mm 36 Nos.

b)	55mm x 35mm	36 Nos.
c)	70mm x 45mm	36 Nos.
d)	70mm x 50mm	36 Nos.
e)	80mm x 50mm	36 Nos.
xii)	Riffle box of slot size 50mm	1 No.
xiii)	Spatula set of 100 and 200 long	3 Sets
xiv)	Water testing kit	1 Set
xv)	Chemicals solutions and consumable	As reqd.
xvi)	Chloride Testing kit for chemical analysis of chloride content	1 No.
xvii)	ION Exchange kit for rapid determination of sulphate content	1 No.
xviii)	First aid box	1 Set

B. For Soils and Aggregates

i) Liquid limit and plastic limit

a)	Liquid limit device with Casagrande and grooving tools and as per IS – 2720	2 Nos.
b)	Single point LL device	1 No.
c)	Moisture content cans	50 Nos.
d)	Ground glass plate with rounded edges 600mm x 600mm x 10mm	2 Nos.
ii)	Hydrometer analysis	
a)	High speed stirrer with stainless still beaker	1 No.
b)	Soil hydrometer set including jar	1 Set
iii)	Sampling pipettes fitted with pressure and suction inlets, 10ml. Capacity	1 Set
iv)	Laboratories compaction	
a)	Compaction apparatus (Proctor) complete with collar, base plate & 2.5kg rammer	2 Nos.
b)	Compaction apparatus (heavy) complete with collar, base plate and 4.5kg rammer	3 Nos.
v)	Sand pouring cylinder (150mm) with conical funnel and top and base plate (with 152mm dia of sand cone)	4 Sets
vi)	Sampling tins with lids 100mm dia x 75mm ht. 1/2kg capacity	30 Nos.
vii)	Laboratory C.B.R. testing equipment to the requirements of IS and consisting of following :	1 Set
a)	Floor mounted electro-mechanical load frame 5 tonne capacity with automatic strain control	1 No.
b)	CBR moulds complete with collar, base plate, etc.	18 Nos.
c)	Swell stands for holding dial gauge	9 Nos.
d)	CBR plunger with penetration dial gauge holder	1 No.



e)	Surcharge weight with central hole of 2 kg. weight	40 Nos.
f)	Spacer disc with handle	2 Nos.
g)	Perforated brass swell plate with adjustable cap on handle	18 Nos.
h)	Soaking tank for accommodating 9 CBR moulds	1 No.
i)	High tensile steel calibrated proving rings of 1000 kg, 2500 kg and 5000 kg capacity	1 Set
j)	Dial gauge, 25mm travel-0.01mm/division	12 Nos.
x)	Nuclear gauge for density and moisture content determination	1 Set
xii)	Speedy moisture tester complete with carrying case and supply of reagent	2 Nos.
xiii)	Sand equivalent apparatus complete along with chemicals to the requirements of IS	1 Set
xiv)	Reagent grade Sodium Sulphate for soundness test of aggregate chemical Sodium Sulphate	30 kgs.
xvii)	Core cutter apparatus 10cm dia. 10/15cm length height complete with 20kg hammer	1 Set
xix)	Standard measures of 30, 15, 3 litre capacity along with tamping rod	1 Set
xx)	Unconfined compression test apparatus	1 Set
xxi)	Flakiness index test apparatus	1 No.
xxii)	Elongation index test apparatus	1 No.
xxiii)	Aggregate crushing value / impact test apparatus	1 No.
xxiv)	Los-Angeles abrasion apparatus as per IS 2386 (Part 4) 1963	1 No
xxv)	Standard Penetration equipment	1 No

C. For Bitumen and Bituminous Mixes

i)	Constant temperature water bath for accommodating bitumen test specimen, electrically operated, and thermostatically controlled, stainless steel interior, temperature range ambient to 80° C	1 No.
ii)	Bitumen penetrometer automatic type, including adjustable weight arrangement, and needles	1 Set
iii)	Centrifugal type motorized bitumen extraction apparatus with stock of solvent & filter papers	1 Set
iv)	Bitumen laboratory mixer planetary action, 2 litre capacity, including required accessories electrically operated and fitted with heating jacket	1 No.
v)	Marshall compaction apparatus and complete with electrically operated automatic loading unit, compaction pedestal, heating unit, head breaking assembly, flow meter, load transfer bar, specimen moulds 100mm dia with base plate, collars, specimen extractor, compaction hammer 4.53kg	1 Set

x 457mm fall, (excluding constant temperature bath)

vi)	Digital type thermometer reading 0-300° C range, accuracy 2° C	2 Nos.
viii)	Ring and Ball Apparatus as per IS 1205 - 1978	1 Set
x)	Tar Viscometer IS 1206 (Part III) – 1978	1 Set
xi)	Apparatus for Determination of Ductility Test as per IS 1208 – 1978	1 Set
xii)	Pen Sky – Marten closed Tester for testing flash and fire point as per IS 1209 – 1978	1 Set
xv)	Apparatus for Determination of Loss on Heating IS-1212-1978	1 Set
xvi)	Apparatus of Determination of specific Gravity IS-1202-1978	1 Set
xv)	Automated Asphalt content gauge (Nuclear or equivalent)	1 Set

D. For control of profile and surface evenness

iii)	Towed Fifth Wheel Bump Integrator	1 No.
iv)	Camber templates 3-lane straight run cross-section	4 Sets.

E. For Cement, Cement Concrete and other Materials

i)	Vicat needle apparatus for setting time with plungers, as per IS-269-1968	1Set
ii)	Moulds	
a)	150 mm x 300 mm ht. Cylinder with capping component along with the capping set and compound as per IS	48 Nos.
b)	Cube 150 mm, moulds and 100 mm (each size) as per IS	36 Nos.
c)	Beams 750 mm x 150 mm x 150 mm moulds	18 Nos.
iii)	High frequency mortar cube vibrator for cement testing	1 No.
iv)	Concrete mixer power driven, 1 cu. ft. capacity	1 No.
v)	Variable frequency and amplitude vibrating table as per the relevant IS	1 No.
vi)	Equipment for slump test /compacting factor Apparatus complete	4 Nos.
vii)	Equipment for determination of specific gravity for fine and coarse aggregate as per IS 2386 (Part 3) 1963	4 Nos.
viii)	Flexural attachment to compression testing machine.	1 Nos.
ix)	Core cutting machine with 10cm dia diamond cutting tool	1 No.
x)	Needle vibrator	1 No.
xi)	Air entrainment meter	1 No.
xii)	Le-Chatelier apparatus for Soundness testing of cement	1 Set



xiii) Blain Air Permeability apparatus

1 No.

All equipments shall confirm to accepted National/ International standards and shall be subject to the approval of the Engineer.

Full complement of listed equipment procured from an internationally reputed manufacturer, after procurement and approval of Engineer shall be incidental to the work and no payment shall be made to the Contractor.

Clause 121.3.5 Add New Sub-Clause:

For Control of Profile and Surface Evenness

i) Theodolite	2 sets
ii) Total Station	2 sets
iii) Precision automatic level	4 sets
iv) Precision staff	4 sets
iv) Camber templates full width and half width	
a) Crown type cross-section	4 sets each
b) Straight run cross-section	4 sets each
Invar /Steel Tape a) 3 m long	4 sets
b) 5 m	4 sets
c) 10 m	4 sets
d) 20 m	4 sets
e) 30m	4 sets
f) 50m	4 sets

Clause 121.3.6 Add New Sub-Clause:

In addition to clause 121.3, any equipment which is not mentioned in this clause but which is necessary for the work for complying with the provisions of the contract and Section 900 of MORTH specifications or as required by the engineer shall be provided by the contractor. No extra payment shall be made to the contractor and it will be considered as incidental to the work.

Clause 121.6 Deleted.

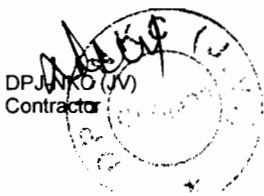
Clause 121.7 Substitute this Sub-Clause by the following:

“There is no separate item in the Bill of Quantities for establishing and maintenance of the laboratory and supply, erection maintenance of equipment and also running cost of testing. The rates quoted for the items in the BOQ by the Contractor shall be deemed to cover the cost of all these items.”

Clause 122 Deleted

Clause 124 Deleted

Clause 125.2 Replace the last but one line with :



The contractor shall supply the digital form of the printed photographs clearly recorded in compact CD.

Clause 125.3 Replace the first para as :

Supply of two copies of colour record photographs mounted in the albums and the digital form of the printed photographs recorded in a CD shall be measured in number of record photographs supplied.

Clause 125.4 Replace the 1st line of the last para

The photographs and materials including digital version in CD shall form a part

Clause 126.1 Replace the last line of the 1st para

The video films in form of DVD shall be of acceptable quality and the file shall be capable of producing colour pictures.

Clause 126.2 Replace this para with :

The measurement shall be by number of sets of edited master DVD each with four copies thereof.

Clause 126.3 Replace the word Cassette with DVD

SECTION 200 SITE CLEARANCE

Clause 201 Clearing and Grubbing

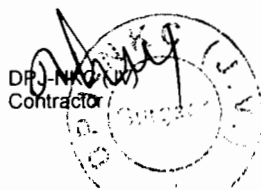
Clause 201.1 Scope


Replace with following para

This work shall consist of cutting removing and disposing of all materials such as trees of girth up to 300 mm bushes shrubs stumps, roots, grass weeds etc. and top soil 150mm minimum thickness rubbish etc. which in the opinion of Engineer is unsuitable for incorporation in the work including draining out stagnant water if any from the area of road land, drain, cross drainage structure and other area as specified in the drawing by Engineer. It shall include necessary excavation by harrow discs or any other suitable equipment back filling of the pits, by suitable soil, resulting from uprooting of trees & stumps and making the surface in proper grade by suitable equipment and compacted by power roller to required compaction as per Clause 300. The work also includes handling salvaging and disposable of cleared material. Clearing and grubbing shall be performed less than one month in advance of earthworks operation and in accordance with requirement of these specification. Areas requiring cleaning and grubbing shall be determined by the Engineer.

Clause 201.5 Measurements for Payment

Add at the end of first para




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“Cutting including removal of foundation of sign boards, hoarding boards, concrete posts, km stones etc. and back filling of pits shall be considered incidental to the clearing and grubbing operations”

Add the following paragraph:

“The removal from site and disposal of all materials obtained from clearing and grubbing operations, which in the opinion of the engineer cannot be used or auctioned shall be included in the Contract unit rate”.

Clause 201.6 Rates

Clause 201.6.1 Replace the second sentence as follows

These will also include removal of stumps of trees of any girth left after cutting of trees carried out by any agency, removal of sign boards, hoarding boards, concrete post, km stones including their foundation, excavation and back filling to required density, where necessary and handling, salvaging and piling and disposing of the cleared materials with all lifts and up to all lead.

Clause 202.5 Disposal of Materials

Replace the para with the following

“All materials obtained by dismantling shall be the property of the contractor. The materials may be reused in the works in part or in full quantity if permitted by the Engineer for which no cost towards value of material, transportation etc. shall be charged to the contractor, nor the contractor shall pay any salvage value to the Employer. The materials which have to be disposed off, shall be done by the contractor at his own cost at the approved location as per direction and approval of the Engineer.

No material , on account of dismantling shall be returned back to the Employer. The dismantled materials shall be completely removed form the site.”

Clause 202.7 Rates

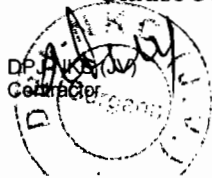
Add the following at the end of the para

“The cost of cartage of materials with no salvage value to disposal sites with all leads is deemed to be included in the rates for dismantling.”

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:



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“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 subgrade shall be removed and replaced with suitable material and compacted in accordance with Clause 305”.

Clause 301.3.11 Disposal of excavated materials

Replace the last 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 Delete item (v) of last para and replace with:

(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 Materials and General Requirements

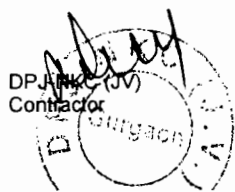
Clause 305.2.1 Physical requirements

Clause 305.2.1.5 Add the following at the end of first sentence

In addition, the material shall satisfy the requirement of 4 day soaked design **CBR of not less than 10%** ,when tested as per IS: 2720 (Part 16) at 97% of maximum laboratory dry density (IS:2720-Part 8).

Clause 305.2.2.2 Borrow materials

The first Para graph of this clause shall be read as under



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World Bank Project
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Bhubaneswar

“No borrow area shall be made available by the Employer for this work and Borrow pits along the road and within the Right of Way (ROW) is prohibited. The arrangement for the source of supply of the material for embankment meeting the prescribed specifications as well as compliance to the different environmental requirements in respect of excavation and borrow areas as stipulated from time to time by the Ministry of Environment and Forest, Government of India and the local bodies, as applicable shall be the sole responsibility of the Contractor.”

Add after the second para

The top soil of the borrow area selected by the contractor shall be removed and preserved for use on embankment slopes and/ or rehabilitation of borrow area. The top soil shall not be permitted to be used in the embankment layers.

Care shall be taken not to create any low lying area; if any borrow pit is created, the same shall be filled up with pond/ fly ash/ inert slag covered with 0.5m thick soil wherever technically feasible. No part of the borrow area shall be left uncovered to expose scar marks. In all cases the top soil shall be placed over the borrow area and watered for three days. The Table 300-2 shall be read as under

Table 300-2: Compaction requirements for embankment and sub-grade

Sl. No.	Type of Work/Material	Relative compaction as % of max. laboratory dry density as per Is: 2720 (Part 8)
1.	Sub-grade and earthen shoulders	Not less than 97
2.	Embankment	
	a) Up to 6m height	Not less than 95
	b) High embankment (exceeding 6m height)	Not less than 97
3.	Expansive clays (DFS <50%)	
	a) Subgrade and 500mm portion just below the subgrade	Not allowed
	b) Remaining portion of the Embankment	Not less than 90

Para 8 of this clause given below Table 300-2 shall read as under
“the contractor shall, at least 7 working days before commencement of compaction, submit the following to the Engineer for approval:

- (i) The values of maximum dry density and optimum moisture content obtained in accordance with IS: 2720 (Part 8) for each fill materials he intends to use.

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- (ii) The graphs showing values of density against moisture content from which each of the values in (i) above of the maximum dry density and optimum moisture content were determined.
- (iii) The dry density –moisture content –CBR relationships for heavy compactive efforts corresponding to IS: 2720 (Part 8) for each of the fill materials he intends to use in the sub-grade,”

Clause 305.4.3 Earth work over existing road surface

Add at the end as (iv)

(iv) Where the existing bituminous layer to be scarified, the scarification shall be done by using suitable equipment as per direction of Engineer.

Dismantled materials shall be re-used in the new pavements if it conforms to the specifications requirements. The following uses of dismantled materials are suggested.

1. The surplus materials, reclaimed from the existing bituminous layer may be used in the sub-grade of service road, intersection and junctions after breaking in to pieces of less than 75mm particle size and as directed by the Engineer. If directed by the Engineer the material shall be mixed with materials brought from borrow area. Compaction shall be carried out to the requirements of clause 305.3.6.
2. The dismantled bituminous material may be used as fill in the earthen shoulder; diversion roads and intersections/ junction of feeder roads provided the material conforms to the relevant clauses of earthwork.

Clause 305.4.4 Embankment and Sub-grade around structures.

Para-3 delete the last line and substitute it with

“compacted thoroughly to 98% MDD”.

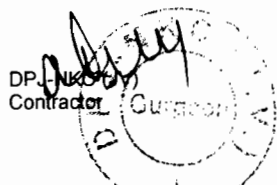
Clause 305.4.6 Embankment construction under water.

Insert the following as the second para

At locations where water table is high and the soil has potential for rapid and relatively great migration of moisture by capillarity, provision of sand blanket of 100mm thickness of approved grain size shall be provided at a level of 200 mm below bottom of subgrade by way of cut off extending across the full width of the embankment so that the same will act as an effective capillary cut off as per IRC:34

Clause 305.4.7 Earth work for High embankment

The second para shall be read as follows



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To ensure stability during construction, it is necessary to control rate of construction especially in both side approaches of ROB's and Bridges which is achieved by stage construction i.e. each period of construction activity is followed by a period of inactive period. The embankment foundation shall be prepared and a drainage layer provided.

No embankment work shall proceed until the foundation have been inspected by the Engineer-in-Charge and approved. In the first month the total height of construction should be limited to maximum 6.0metre only. The balance embankment construction should be done after a rest period of two months for strength gain and consolidation. The rest period need not be given in case the construction of initial 6-metre height of embankment takes more than 4 months time. However, based on the available subsoil data the contractor may suggest his loading schedule or any other method to take care of the excessive settlement problem for approval of the engineer.

Clause 305.9.1 Add "including removal of top soil" after word "materials" appearing in first line of item (v).

Clause 306 Soil Erosion and Sedimentation Control

Clause 306.4 Measurement for payment

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

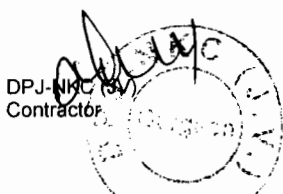
Clause 401.2 Materials
Replace the clause with the following.

The Materials to be used for the work shall be crushed stone aggregate only. The materials shall be free from organic or other deleterious constituent and confirm to Grading I of Table 400-2.

Clause 406. WET MIX MACADAM SUB-BASE/BASE

Clause 406.2. MATERIALS

Clause 406.2.1 Aggregate



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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 Replace first para with :

Wet Mix Macadam shall be prepared in an approved mixing plant of suitable capacity having provision for controlled addition of water and forced/positive mixing arrangement like pugmill.

Add the following at end of 2nd para

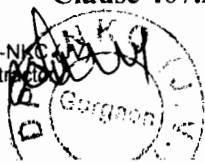
Unless otherwise instructed by the Engineer, the moisture content at the time of compaction shall be between 80% and 120% of the optimum moisture content

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 407 SHOULDERS, ISLANDS AND MEDIAN**Clause 407.2 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 409.3.4 or 409.3.5.

Clause 407.4 Construction Operations**Clause 407.4.1 Shoulder****Add as follows after para 4**

The hard shoulder shall be compacted not less than 98% of maximum laboratory dry density as per IS:2720 (Part-8).

Clause 502 PRIME COAT OVER GRANULAR BASE**Clause 502.1 Scope****Add the clause as follows**

The work shall consist of Priming (spraying) of liquid bituminous materials on the surface of non-bituminous granular base course. Prime coat is not to be regarded as a substitute for tack coat, the objective of which is to ensure a proper bond between the surface being paved and the new bituminous course being placed over it.

Clause 502.2 Materials

Cationic bitumen emulsion SS-1 grade conforming to IS:8887 shall be used as primer. The quantity of bitumen emulsion for WMM types of surfaces shall be 0.7-1.0 Kg/m².

The correct quantity of primer will be the maximum amount that can be absorbed by the surface without causing run-off of excessive primer (some times referred as "finger" to form at the lower edges of the primed area) and is to be decided by the supervising engineer at the site.

Clause 502.3 Weather and Seasonal limitations**Replace the clause as follows**

Bitumen emulsion grade SS-1 as well as Cutback Bitumen as Primer shall not be applied on wet surface. The moisture content in the surface to be primed shall not exceed 3.5%. Primer shall not be applied during



dust storm, rainy, foggy or windy weather. The ambient temperature during priming by bitumen emulsion should be above 10⁰C.

Clause 502.4 Construction

Clause 502.4.1 Equipment

Replace the clause as follows

All equipment required for execution of priming work shall be in good working condition at site. The primer distributor shall be a self propelled or towed bitumen pressure sprayer equipped for spraying the material uniformly at specified rates and temperature. Hand spraying of small areas using pressure hand sprayer may be permitted at specific strategic locations, where distributor is not accessible or if narrow strips of granular surface are to be primed. Pouring of Primer using perforated can should not be permitted. SS-1 grade bitumen emulsion stored at site in the tank shall have arrangement like circulation pump to ensure its proper mixing before withdrawal from tank and transfer to browser.

Clause 502.4.2 Preparation of road surface

Replace the clause as follows

The base course surface to be primed shall be swept clean and made free from dust. All loose material and other foreign material on the surface shall be removed completely. Power brooms or mechanical sweepers may be used for cleaning of surface. The surface to be primed (whether with SS-1 emulsion or cutback bitumen) should be kept dry. If Soil /Moorum binder has been used in the WBM surface, part of this should be brushed and removed up to a depth of 2mm so as to provide good bond.

The dilution of SS-1 bitumen emulsion is not permitted.

Clause 502.4.3 Application of Primer

Replace the clause as follows

After the base to be primed has been prepared as in section 502.4.2, the primer shall be uniformly applied using the appropriate equipment at application rate. The spraying should preferably be carried out using pressure sprayer or distributor. The quantity of primer shall be checked periodically using tray coating test. The method of application of primer will also depend on the type of equipment to be used, size of nozzles, pressure at spray bar and speed of the forward movement of vehicle. A trial section shall be laid to check the efficacy of equipment and penetration depth of the primer.

Temperature of Application of primer

No heating of SS-1 Bitumen Emulsion is permitted at site.



In case of cutback bitumen, temperature of application of primer should be high enough to permit the prime to be sprayed effectively through the jets of the spray bar and to cover the base course surface effectively. The temperature of product at the time of application should be more than 10⁰C.

Clause 502.4.4 Curing of Primer and opening for traffic

Replace the clause as follows

The primed surface shall be allowed to cure for at least 24 hours or such other period as is found to be necessary to allow all the volatiles to evaporate before any subsequent surface treatment or mix is laid. Excessive and unabsorbed primer if any shall be blotted with an application of sand using the minimum quantity possible. A primed surface shall not be opened for traffic other than that necessary to lay the next bituminous course.

Clause 503 Tack Coat

Clause 503.1 Scope

Replace the clause as follows

The work shall consist of a very light application of liquid bituminous material to an existing bituminous, cement concrete or primed granular surface to ensure a bond between the surface being paved and the overlaying course. The tack coat material is not expected to penetrate into pavement and for this reason; the applications should be very light to provide adequate bond strength between two layers.

Clause 503.2 Materials

Replace the clause as follows

The binder used for tack coat shall be Cationic Bitumen Emulsion RS-1 confirming to IS 8887.

Clause 503.3 Weather and Seasonal Limitations

Replace the clause as follows

Bituminous material shall not be applied during a dust storm or when the weather is foggy, rainy or windy or when the ambient temperature is less than 10⁰C.

The surface should be totally dry. However, when using bitumen emulsion as tack coat, the surface should be slightly damp, but not wet.

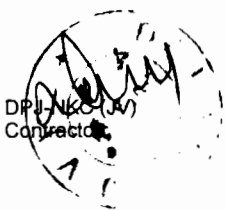
Clause 503.4 Construction

Clause 503.4.3. Application of Tack Coat

Add the following after the end of para:

Heating and dilution of RS-1 Bitumen Emulsion is not permitted.

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The quantity of bitumen emulsion to be applied over primer treated WMM surfaces shall be 0.25-.35 Kg/m².

Clause 503.4.4 Curing the tack coat

Replace the clause as follows

After application of the Emulsion as tack coat, allow the bitumen emulsion to break i.e. turn black before placing the bituminous mixture or overlay. Traffic should be kept off of the area where tack coat is being sprayed. No Plant or vehicles shall be allowed on the tack coat other than those essential for construction.

Clause 503.8 Rate

Replace 0.2 kg /m². with 0.30 kg/m² in fourth line.

Clause 507.3.4 Add the following line at the end of the clause.

The mix shall be produced only in a batch type hot mix plant of required capacity. In no case materials from drum type hot mix plants shall be entertained.

Clause 509.1 Add the following after 2nd line of this para.

Where modified bitumen is specified to be used as a binder shall have a softening point not less than 60⁰ C & specification as prescribed in IRC SP 2002 C1.7 for CRMB or PMB as approved by the Engineer. "Modified bitumen shall be product from the refinery".

Clause 509.2.5 In Table 500.18, for grading 2 ,for 13mm nominal size aggregate, the cumulative % by weight of total aggregate passing against 13.2 sieve will be 90-100 instead of 79-100 .

Clause 509.3 Mixture Design

Clause 509.3.1 The requirements set out in table 500-19 will be replaced by table 500-11(A) & 500-11(B).

SECTION 600 CONCRETE PAVEMENTS

Clause 601 Dry Lean Cement Concrete sub-base

Clause 601.1 Scope

Clause 601.1.1 The para will be replaced as follows:

The work shall consist of construction of dry lean concrete sub base for cement concrete pavement in accordance with the requirements of these Specifications as well as of IRC:15 and in conformity with the lines, grades and cross-sections shown on the drawings or as directed by the Engineer. The work shall include furnishing of all plant and equipment



materials and labour and performing all operations, in connection with the work, as approved by the Engineer.

Clause 601.5. Construction

Clause 601.5.2 Batching and Mixing

Add as new sub-clause

Clause 601.5.2.1 Semi-Mechanised and Labour-Oriented Construction Technique

Clause 601.5.2.1.1 General

Use of very sophisticated paving machines and high capacity concrete batch mixer is not possible in small concrete road projects and also in remote hilly terrains. But with the use of such machineries and plants the end product is always of better quality. Without these advanced equipments concrete roads can be constructed using semi-mechanized and labour-intensive constructions but the resulting quality and surface may not be the same as achieved with mechanized constructions.

Clause 601.5.2.1.2: Forms:

The fixed-forms made of steel channels or fabricated steel sections are generally made use of.

Clause 601.5.3.1 Semi-mechanized method of construction:

Clause 601.5.3.1.2. Plants, equipments and tools:

The plants and equipments considered essential even in semi-mechanized and labour-oriented constructions are:

- i. Tilting type drum mixers of at least 0.2 cum capacity. (The number of mixers to be employed in a project shall be decided on the basis of the size of the project.)
- ii. Vibratory or smooth wheeled roller of 8-10t capacity
- iii. Fixed side forms measuring at least 100-150 m length.
- iv. Stop-end and start-end made of steel or wooden sections.

Clause 602. CEMENT CONCRETE PAVEMENT

Replace this Clause with Technical Specifications provided under Sub-section 1501 (Plain Cement Concrete Pavement) of Specifications for Rural Roads-2004 developed by MORD.

SECTION 800 TRAFFIC SIGNS, MARKING & OTHER ROADS APPURTENANCES

Clause 801 Traffic Signs

Clause 801.1.2. This Clause shall be read as under



"All road signs shall be of retro-reflectorised type with super high-intensity retro-reflective sheeting. The sheeting is typically unmetallised micro-prismatic retro-reflective element material or any other type as approved by the Engineer.

Clause 803.3.2 **This Sub clause is substituted to read as under :**

The road marking shall be laid with appropriate road marking machinery

Clause 803.6.6 **Add as a new clause**

General

Road traffic markings shall be constructed to accuracy within the tolerances given below:

- a) The width of lines and other markings shall not deviate from the specified width by more than 5%.
- b) The position of lines, letters, figures, arrows and other markings shall not deviate from the true position specified by more than 20mm.
- c) The alignment of any edge of a longitudinal line shall not deviate from the true alignment by more than 10 mm. in 15 m.
- d) The length of segments of broken longitudinal lines shall not deviate from the specified length by more than 150 mm.
- e) In broken lines, the length of segments and the gap between segments shall be as indicated on the Drawings. If these lengths are altered by the Engineer, the ratio of the lengths of the painted sections shall remain the same.
- f) Line and curves, whether broken or unbroken, shall not consist of chords but shall follow the correct radius.

Faulty Workmanship or Materials

If any material not complying with the requirements is delivered at the site or used in the Works, or if any sub-standard work is carried out, such material or work shall be removed, replaced or repaired as required by the Engineer, at the Contractor's own cost. Rejected traffic markings and paint that has been splashed or has dripped onto the surfacing, kerbs, structures or other such surfaces shall be removed by the Contractor at his own cost, in such a way that the markings of split paint will not show up again later.

Clause 804.3 **The first sentence of this Clause shall be read as under :**

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**

Tests on Bituminous Constructions



In Table 900-4, Tests mentioned at serial No.4 & 6 for Bituminous Macadam/Dense Bituminous Macadam/Semi Dense Bituminous Concrete and for Bituminous Concrete, **add the following at the end** in the frequency column:

"10% of the density tests shall be done within 300mm width from edges."

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.

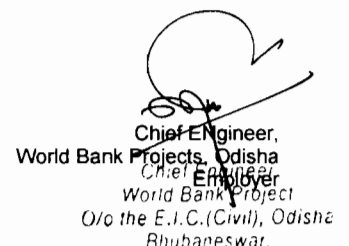
Note: Contractor shall arrange the core extraction machine at his cost and shall take cores of the executed bituminous works jointly with Engineer without any extra cost.

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.

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


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The minimum deduction in the payable rate shall be made for 250 Sqm for each failure.

c) Workmanship Test: Roughness measured longitudinally

Calibration of equipments and measurement of surface unevenness shall be done in accordance with IRC:SP:16-2004.

The finished bituminous 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 required ment	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 Steel For Pre-Stressing

Add (e) to the list of codes to which acceptable prestressing steel shall conform:

- (e) Uncoated Stress relieved low relaxation seven ply strand for prestressed concrete - IS: 14268


Clause 1009.3 Add the following note under table 1000-3

Thermo Mechanically Treated bars (TMT bars) of grade Fe-500 from original manufacturers such as SAIL/ TATA/ RINL/ JINDAL conforming to IS: 1786 shall be used.

Water

Clause 1010

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In para (c), the permissible limit for **Chloride (Cl)** shall be read as "500 mg/lit for Prestressed Concrete / Reinforced Cement Concrete Works."

The lines indicated with * shall be read as

“* In case of structures, for concrete works not containing embedded steel, the permissible limit of chlorides may be increased upto 1000 mg/lit.”

Clause 1012

Concrete Admixtures

Add the following at the end of paragraph 2 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 admixures / 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).

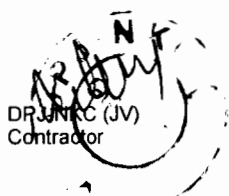
Manufacturer's experts should be available for consultation / trouble shooting of problems associated with their product. The conditions of storage, shelf life etc. as specified by the manufacturer should be strictly observed. The manufacturer's Quality Assurance Plan during process of production should be obtained and field for reference / record.

Clause 1015

Test and Standards of Acceptance

Add following as last paragraph :

Independent testing of prestressing steel shall be carried out by the contractor for each consignment from each source in the laboratory



approved by the Engineer before use. The tests shall be carried out for the properties as listed in clause 7.2.1 of BS-5896:1980. 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

Clause 1503 Design of Form work

Clause 1503.2 The following shall be added to this Clause

"For distribution of load and load transfer to the ground through staging, an appropriately designed base plate must be provided which shall rest on firm sub-stratum. The loading from the form work shall be distributed to the soil or the permanent works below (e.g. pile cap) in such a manner that any total or differential settlement are within acceptable limits."

Clause 1508 Removal of Formwork

Add the following as para 5

For prestressed units, the side forms shall be released, as early as possible and the soffit forms shall permit without restraint deformation of the members, when prestress is applied. Form supports and forms for cast in situ members shall not be removed until sufficient prestress has been applied to carry the dead load and any formwork supported by the member and anticipated construction loads.

Clause 1510 Specialised Formwork

Replace the word "plywood" by "marine plywood" in the fourth paragraph of this clause.

Clause 1513 Rate

Add the following at the end of the first para

"The unit rate shall also include all cost for preparation of erection scheme, designs of false work and formwork and their approval."

SECTION 1600 STEEL REINFORCEMENT (UNTESIONED)

Clause 1605 Placing of Reinforcement

Paragraph (c) (i) of clause 1605 shall read as follows



Cover blocks shall be made of concrete or cement mortar with the same durability and strength properties as the surrounding concrete and with the same type of constituents. In visible surfaces, the cover blocks shall be of the same colour and texture as the surrounding concrete. The contractor's proposal for cover blocks shall be submitted to the engineer for acceptance.

Clause 1606 Bar Splices

Clause 1606.1 First sentence of Clause 1606.1 shall read as follows:

"To the extent possible, all reinforcement shall be furnished in full lengths as indicated in drawings."

Clause 1606.2 Welding

Clause 1606.2.1 Add the following at the end of the paragraph.

In pre-stressed concrete members, when welding of un-tensioned reinforcement is permitted by the Engineer, it shall be carried out before insertion of the pre-stressing tendons.

SECTION 1700 STRUCTURAL CONCRETE

Add the following new clause 1704.6

Clause 1704.6 Materials for pumped concrete:

Materials for pumped concrete shall be batched consistently and uniformly. Maximum size of aggregate shall not exceed one-third of the internal diameter of the pipe.

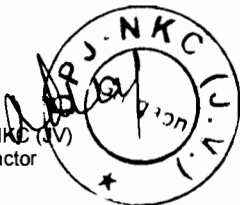
Grading of aggregate shall be continuous and shall have sufficient ultra fine materials (materials finer than 0.25 mm). Proportion of the aggregate passing through 0.25 mm shall be between 15 and 30% and that passing through 0.125 mm sieve shall not be less than 5% of the total volume of aggregate. Admixtures to increase workability can be added. When pumping long distances and in hot weather set retarding admixtures can be use. Fluid mixes can be pumped satisfactory after adding plasticizers and super plasticizers. Suitability of concrete shall be verified by trial mixes and by performing pumping test.

Clause 1707 Equipment

Para 1 of this Clause shall read as under

"Unless specified otherwise, equipment for production, transportation and compaction of concrete shall be as under:

- a) For production of concrete: Batching and mixing of the concrete shall be done in a concrete batching and mixing plant fully automatic of a suitable capacity. The plant shall be approved by the Engineer. The concrete shall be transported in transit mixers taking precaution that the initial setting time of the cement is maintained. In case of far off locations, retarders shall be added to delay the initial setting time. The concrete shall be pumped to the location of



pouring from the transit mixer point using concrete pumps of suitable capacity and efficiency.”

SECTION 2000 BEARINGS

Clause 2001 Description

Add the following as paragraph 2 of this clause

Within 90 days of award of work, the Contractor shall submit detailed specifications, designs and drawings including installation drawings and maintenance manual, for the approval of the Engineer. Designs shall also include review and modifications of designs and drawings of bearing pedestals and other elements required for installation. The installation of bearings shall be carried out under the supervision of the manufacturer of the bearings. The Contractor shall provide a warranty for 15 years from the manufacturers and the bearings shall be repaired or replaced free of cost by the Contractor / manufacturer, if any defects are observed during this period. The Employers decision regarding replacement/ repairs shall be final and binding.

Clause 2005 Elastomeric Bearings

Clause 2005.3 Acceptance Specifications

In para 5, substitute the words "Engineer or his authorized representative" for the word "Inspector".

Clause 2005.3.5 Inspection Certificate

In para 4, substitute the words "Engineer or his authorized representative" for the word "Inspector."

Clause 2009 Measurements for Payment

Add the following after para 2

“POT and POT-cum-PTFE/ Sliding bearings shall be measured in metric tons of vertical load capacity.”

"Paper bearings shall be measured in square metres."

Clause 2011 Add clause 2011 after the clause 2010 as under

Paper bearing

Paper bearing shall be reinforced bitumen laminated Kraft paper conforming to the requirements of IS- 1398.

SECTION 2200 SUB-STRUCTURE

Clause 2204 Piers and Abutments

Add the following paragraph at the end of clause

“Where necessary suitable cofferdams or other means shall be provided to exclude water from the construction area. The Contractor shall provide necessary pumping equipment for dewatering in working areas”.

Clause 2210 Rate

This clause shall be read as follows

The contract rate for masonry, concrete and reinforcement in substructure shall include all works as given in respective sections and cover the cost of incidental items like providing cofferdams, dewatering, providing special formwork, where necessary, and all other items for furnishing and providing substructure as mentioned in this section.”

SECTION 2600 EXPANSION JOINTS

**Clause 2611 A new clause shall be added as 2611 as follows:
Asphaltic Plug Joint**

Asphaltic plug joint shall consist of a polymer modified bitumen binder, carefully selected single size aggregate, closure/bridging metallic plate and heat resistant foam caulking/ backer rod. The specifications for general requirement, material, handling & storage, installation, tests and standards of acceptance etc. shall be as per IRC-SP:69-2005.

SECTION 2800 REPAIR OF STRUCTURE**Clause 2804 Epoxy Mortar for Replacement of Spalled Concrete**

Add the following in Clause 2804.4 at the end as (c)

- (c) If reinforcement is exposed the same shall also be cleaned thoroughly. Sand blasting shall be done to clean the rusting on reinforcement. The reinforcement shall be coated with PMC slurry or epoxy phenolic based / epoxy based protective coating within one hour of cleaning to prevent rusting. The PMC or epoxy based protective coating shall be brush applied on the cleaned reinforcement ensuring that full surface area is covered in accordance with the manufacturers recommendation

Clause 2809 Dismantling of Concrete Wearing Coat**Clause 2809.2 This Clause shall read as follows:**

The removal operations shall be carried out mechanically using pavement breakers and compressors. Removal shall be done carefully to avoid damage to any part of the existing structure. In delicate locations for example around spouts, removal shall be done by manual methods. After removal, the concrete deck surface shall be closely inspected for identifying any distress such as cracks, pockets of loose or honeycombed concrete etc. the deck surface shall be thoroughly cleaned with special efforts to remove any loose material. Expansion joints and spouts shall be removed carefully so that deck concrete is not damaged.

Clause 2809.3 Add the following at the end of Para

Dismantled material shall not be stacked on the deck nor shall it be thrown below the bridge. It shall be neatly piled at points designated by the Engineer with all lifts and lead up to 5000m. Materials, which can be used or auctioned, shall be stored in neat piles at locations designated by Engineer with all lifts and lead up to 2000m.

FOLLOWING NEW CLAUSES SHALL BE ADDED

Clause 2814

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 2815

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.
Flexural strength	- 30-40 MPa at 7 days
Viscosity @ 250C	- 900-1200 cps

Clause 2816

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 2817**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 2818**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 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 2819**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

Clause 2820**Repair of Exposed Surface of Masonry Work**

Exposed masonry surface of existing wing walls / returns, abutments, piers etc. shall be provided with 20mm thick plaster in 1:3 cement mortar as specified in drawings or as directed by Engineer. The work shall be executed in accordance with MORTH specifications of section 1300/1400.

Clause 2821**Gabion Walls**

The Gabion walls shall be provided at locations as specified in drawing or as per direction of Engineer as slope protection / floor protection measures. The work shall be executed in accordance with MORTH Specifications Section 2500 clause 2503. Excavation and back filling shall be done in accordance with MORTH Specifications Section 300.

Clause 2822**Polymer Modified Cementitious Brush Topping**

The polymer latex, which is to be used, should consist of water based acrylic polymer and copolymer dispersion and special purpose chemicals. The polymer solid contents shall be 30 ± 1 percent. The particle shall be of nearly spherical shape with a diameter of 0.35 ± 0.05 micrometer. The manufacturer shall certify the above requirements about solid content and grain size. In order to keep control over the quality, the manufacturer shall provide infra red absorption spectrum analysis for the materials (polymer latex) to be supplied by them.

Portland Cement conforming to IS:8112 shall be used for production of polymer modified cement repair mortar and polymer modified cementitious coating system, which is to be used as a bonding medium concrete substrata.

Acrylic polymer latex shall be used as the polymer for modifying and improving the properties of cement. The same product is to be used for various purposes such as in a slurry form with cement to form a bonding /priming medium and with sand to form PMC repair mortar. However, no additional water is to be added to PMC slurry or PMC repair mortar as the water which is present in the latex is sufficient for cement hydration and for this reason the latex cement ratio remain constant for all applications.

The sand which is to be used for constituting the PMC repair mortar should be Silica sand as the basic material which is categorized in two groups:

- a) Coarse Silica sand
- b) Fine Silica

The gradings of the above groups should follow the limits provided below.

Polymer Modified Cementitious (PMC) Mortar

The specifications for polymer modified cementitious material (PMC) shall be read as under

I. Mix Formulations

COMPONENT	PMC SLURRY	
	PARTS BY WEIGHT	
Cement		100

Acrylic polymer latex 52

PMC REPAIR MORTAR

COMPONENT	PARTS BY WEIGHT
Cement	100
Acrylic polymer latex	52
Coarse Silica Sand	150
Fine Silica Sand	150

Curing of PMC WORK

This specification describes the curing procedures to be followed for PMC Repair Mortar & Slurry

The curing procedures outlined apply to normal weather conditions. Under hot weather conditions take precautions to avoid drying. PMC work should be carried out at a temperature below 35°C

Under unusual weather conditions e.g. high humidity and / or high wind velocity or imposed constraints special curing procedures shall be followed for which approval shall be obtained from the Engineer.

Air-drying shall be considered to be taken place only during favourable uninterrupted weather conditions existing throughout the existing recommended drying period. Some judgement shall be made in this respect and if conditions are deemed unfavourable for drying to occur, then drying must be prolonged for the full-recommended period after weather clears.

As PMC work proceeds, precautions shall be taken to prevent rapid drying of the PMC repair mortar. This is usually accomplished by covering the filled surfaces with an impermeable sheet shortly after the work has been done.

The sheet shall be kept in place until further work is carried out over the mortar or in case where the mortar is likely to be disturbed the sheet shall be kept in place for 24 hours.

No foot traffic for further work shall be allowed over mortar until 12 hours from the time of the completion of work.

Curing compound may also be used as curing membrane. Care shall be taken to ensure complete covering particularly around the interface with the host concrete.

For the first day the repaired concrete patch shall be protected from harsh environment by laying a polythene sheet over it, taping down the edges.

Mixing PMC

To mix PMC, it is necessary to have the following items

- i. A suitable sized mixing container
- ii. A high speed drill with mixing paddles



- iii. Premark batching containers for measuring out components to be mixed

Pour all the liquid polymer latex into mixing container. After shaking the latex to disperse the solids uniformly throughout the liquid before use.

Begin mechanical mixing and while doing so, slowly add the dry components i.e. cement and sand.

Mix for about 5 minutes until solids have been well dispersed. The resulting mix should look uniform, feel creamy and be free from lumps and grits.

Precaution shall be taken not to entrap an excessive amount of air into the mix during mixing.

Since the desired consistency depends on type and brand of cement as well as weather conditions, start a trial mix with a reduced amount of cement. Once all components are mixed, add cement if necessary to achieve the desired consistency. Record the amount of cement required and uses this for subsequent mixes. Do not reduce the quantity of cement noted in the mix proportions.

In case the slurry sets before application of mortar, a fresh coat of slurry shall be applied. Under no circumstances water shall be added in PMC repair mortar mix. Unused mortar or mortar which has partially set shall not be re-mixed and used.

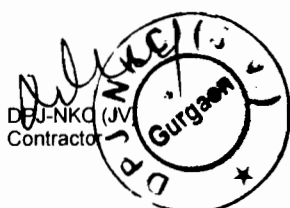
I.S. Sieve No.	Percentage Passing by Weight		
	Coarse	Fine	Combined
10 mm	100	100	100
4.75 mm	95-100	100	98-100
2.36 mm	90-100	100	80-100
1.18 mm	40-60	100	70-80
600 micron	0-10	90-100	45-55
300 micron	0-4	40-60	20-30
150 micron	0-3	0-10	0-5
75 micron	3max	0-3	3max

In the event of using local sand, the sand to be used must satisfy the limits of deleterious materials and the requirements of soundness as given in Cl. 3.2.1 and Cl. 3.6 respectively of IS: 383. Confirmatory tests shall be conducted by the Contractor and sample kept for comparison by the Engineer.

II Mix Formulations

COMPONENT	PARTS BY WEIGHT
Cement	100
Acrylic polymer latex	52
Fine Silica Sand	100

Curing of PMC brush topping



This specification describes the curing procedures to be followed for various PMC systems.

The curing procedures outlined apply to normal weather conditions. Under hot weather conditions take precautions to avoid drying. PMC work should be carried out at a temperature below 35°C.

Under unusual weather conditions e.g. high humidity and/or high wind velocity or imposed constraints special curing procedures shall be followed, for which approval shall be obtained from the Engineer.

Air drying shall be considered to take place only during favourable uninterrupted weather conditions existing throughout the recommended drying period. Some judgement shall be made in this respect and if conditions are deemed unfavourable for drying to occur, then drying must be prolonged for the full-recommended period after the weather clears.

In unexposed and exposed areas the initial air drying of 4 to 6 hours shall be followed by moist curing for 24 hours by spraying or another approved curing method.

Following moist curing, the coating shall be allowed to air dry for 4 to 6 hours prior to the application of finishing coat.

Mixing PMC Slurries

To mix PMC slurries, it is necessary to have the following items:

- i) a suitable sized mixing container
- ii) A high speed drill with mixing paddles
- iii) Premark batching containers for measuring out components to be mixed.

Pour all the liquid polymer latex into the mixing container. Shake the latex to disperse the solids uniformly throughout the liquid before use.

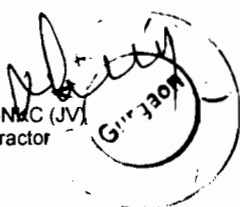
Begin mechanical mixing and while doing so, slowly add the dry components, i.e. cement and sand for brush top coating.

Mix for about 5 minutes until all the solids have been well dispersed. The resulting mix should look uniform, feel creamy and be free from lumps and grit.

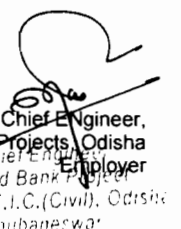
Precaution shall be taken not to entrap an excessive amount of air into the mix during mixing.

Since the desired consistency depends on type and brand of cement as well as weather conditions, start a trial mix with a reduced amount of cement. Once all components are mixed, add cement if necessary to achieve the desired consistency. Record the amount of cement required and use this for the subsequent mixes. Do not reduce the quantity of cement noted in the mix proportions.

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Contractor



Chief Engineer,
World Bank Projects, Odisha
Chief Engineer,
World Bank Projects,
The E.I.C.(Civil), Odisha
Bhubaneswar



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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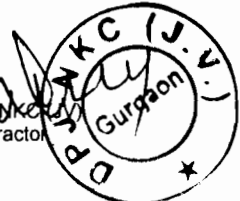


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World Bank Projects, Odisha
Employer
World Bank Project
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Bhubaneswar

PART IV

ENVIRONMENT MANAGEMENT PLAN

DPJ
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A circular stamp with the text "DPJ K.C. Gurraon" around the perimeter and a star at the bottom. A handwritten signature is written across the center of the stamp.



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

ENVIRONMENT 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. 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.	
E.4	Construction Camp/s – Selection, Design and Layout
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	



Shri. K. K. Engineer,
World Bank Project, Odisha,
World Bank Employee,
C/o the E.I.C. Club, Cuttack,
Bhubaneswar

S. No.	Environmental Issue/Aspect	Management Measures
		<p>to avoid conflicts and stress on the local infrastructure facilities and natural resources.</p> <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>
E.5	Construction Vehicles, Equipment and Machinery	<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</p>



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World Bank Project, Odisha
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S. No.	Environmental Issue/Aspect	Management Measures
		<p>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; 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.</p>



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Management Measures	
S. No.	Environmental Issue/Aspect
	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.
E.9	<p>Arrangement for Construction Water</p> <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 nalas 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	<p>Clearing and Grubbing</p> <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	<p>Stripping, stacking and preservation of top soil</p> <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> <p>➤ Covering reclamation sites or other disturbed areas including burrow areas (other than those in barren areas)</p>

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World Bank Projects, Odisha
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S. No.	Environmental Issue/Aspect	Management Measures
E.12	Labour Camp Management	<ul style="list-style-type: none"> ➤ 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. <p>Residual topsoil, if there is any, will be utilized for the plantation works along the road corridor.</p> <p>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.</p>
E.12.1	Accommodation	<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>
12.2	Potable Water	<p>The Contractor shall ensure the fulfillment of the following conditions:</p> <ul style="list-style-type: none"> 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. 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>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>
12.3	Sanitation and Sewage System	<p>The Contractor shall ensure that -</p> <ul style="list-style-type: none"> 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. d) Separate toilets and bathrooms for women workers wherever required, screened from those of men, are provided with markings in vernacular language. e) All such facilities must have adequate water supply with proper drainage and disposal facility. f) All toilets in workplaces are to be maintained, cleaned and disinfected daily using proper disinfectants. 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.



Management Measures	
S. No.	Environmental Issue/Aspect
	<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. All these facilities shall be inspected on a weekly basis by the Engineer to check the hygiene standards.</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>
E.14 Worksite Safety Management	
14.1	<p>Traffic Diversions</p> <p>This shall be done according to the provisions of Technical Specifications Cl. 112.</p>
14.2	<p>Traffic Safety</p> <p>This shall be done according to the provisions of Technical Specifications Cl. 112</p>
14.3	<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"> Protective footwear and protective goggles to all workers employed handling asphalt materials, cement, mortar, concrete, blasting and crusher operations. Welder's protective eye-shields and protective footwear to workers engaged in welding works. Earplugs to workers exposed to high noise levels.




DPJ-NKC (JV)
Contractor

S. No.	Environmental Issue/Aspect	Management Measures
		<p>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.</p> <p>e) Protective goggles and clothing to workers engaged in stone breaking activities.</p> <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 claded 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 life saving 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.



Management Measures	
S. No.	Environmental Issue/Aspect
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> <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>




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

S. No.	Environmental Issue/Aspect	Management Measures
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> <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	Siltation of Water Bodies and Degradation of Water Quality	<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	Water Pollution from Fuel, Lubricants and	<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-fuelling) and maintained in</p>



DPJ-NKC
Contractor

Management Measures	
S. No.	Environmental Issue/Aspect
	<p>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> <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>
18.4	<p style="text-align: center;">Noise Pollution</p> <p>The Contractor shall ensure the following:</p> <ol 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	<p style="text-align: center;">Drainage and Flood Control</p> <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</p>



DPJ-NKC
Contractor

Management Measures	
S. No.	Environmental Issue/Aspect
	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.
E.20	<p>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</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



DPJ-NKC
Contractor

Management Measures	
S. No.	Environmental Issue/Aspect
	<p>rammed clay so as to eliminate the possibility of leaching of wastes into the ground water.</p> <ul style="list-style-type: none"> ▪ 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. ▪ Non-bituminous wastes may be dumped in burrow pits (preferably located in barren lands) where such burrow pits are not suitable to develop as a 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>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 Camp/s 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;</p>


 DPJ-NKC
 Contractor

S. No.	Environmental Issue/Aspect	Management Measures
		<p>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>

DPJ-NKZ (07)
Contractor




Chief Engineer
World Bank Projects, Odisha
c/o the E.C. Engineer
Bhubaneswar

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 (Totalno.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

Signature.....

Name.....

Designation.....

[Handwritten Signature]
DPJ-NKC (JV)
Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer

[Handwritten Signature]
Chief Engineer,
World Bank Project, OCSHA
O/o the E.I.C. Employer,
Bhubaneswar

SETTING-UP CONSTRUCTION CAMP AND STORAGE AREA

[One Time Format, 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	
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 Attached/ Not Attached
- Drawings of dwelling units with allied facilities Attached/ Not Attached

Remarks

Submitted

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer



Form P3

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)	Before		

- Photograph of Proposed Site Attached/ Not Attached
- Location Map Attached/ Not Attached
- Agreement with Land Owner Attached/ Not Attached

Submitted

Signature.....
Name.....
Designation.....
Contractor

Checked

Signature.....
Name.....
Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....
Name.....
Resident Engineer



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	



Form P5

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,
Construction Supervision Consultant

Resident Engineer

DPJ-NKC (JV)
Contractor


Chief Engineer,
World Bank Project, Odisha
Employer
World Bank Project
U/o the E & C (Civil), Odisha
Bhubaneswar.

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.....
Construction Supervision Consultant

Approved

Signature.....

Name.....

Designation.....
Resident Engineer



[Signature]
 Chief Engineer,
 World Bank Project, Disha,
 World Bank Employee,
 C/o the E.I.C.(Civil), Dir
 Bhubaneswar

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.....

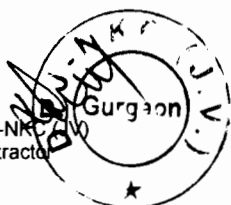
Name.....

Environmental Engineer.
Construction Supervision Consultant**Approved**

Signature.....

Name.....

Resident Engineer



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

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer

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



DPJ-NKC
Contractor


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

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

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

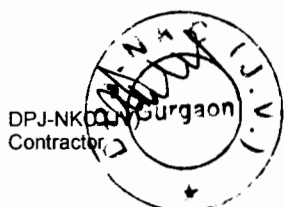
Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer



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

Attached/ Not

Remarks

Submitted

Signature.....

Name.....

Designation.....
Contractor**Checked**

Signature.....

Name.....

Environmental Engineer.
Construction Supervision Consultant**Approved**

Signature.....

Name.....

Resident Engineer

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 / fuelling 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



DPJ-NKC (G.O.)
 Contractor

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

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



DPJ-NKC
Contractor

(Signature)
 Chief Engineer,
 World Bank Projects, Odisha
 Chief Engineer
 World Bank Project
 (Or) the E.I.C.(Civil), Odisha
 Bhubaneswar

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			

A: Adequate at time of Inspection ; B: Needs Improvement ; C: Needs Immediate Attention

Remarks

Submitted

Signature.....

Name.....

Designation.....

Contractor

Checked

Signature.....

Name.....

Environmental Engineer.

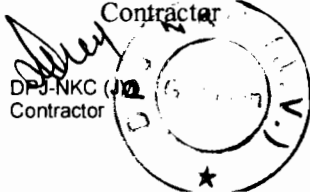
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer



World Bank Project
 Chief Engineer,
 Employer
 World Bank Project
 E.I.C.(Civil), Odisha
 Bhubaneswar.

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		

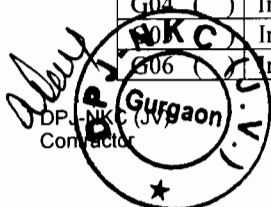
Agent Involved in Accident

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, sllnter 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)
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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



POLLUTION MONITORING

(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				

DPJ-MKC (JV)
Contractor

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

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



(Signature)
Chief Engineer,
World Bank Projects, Balisha
D/o the E.L.C. Employees
Rhubaneswar

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

Signature.....

Name.....

Designation.....
Contractor

Checked

Signature.....

Name.....

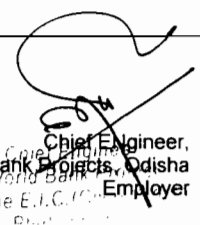
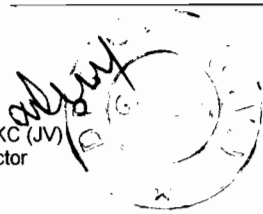
Environmental Engineer.
Construction Supervision Consultant

Approved

Signature.....

Name.....

Resident Engineer



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)

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	
	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)



SUMMARY SHEET

Form PMU 3

Chief Engineer,
World Bank Projects, Odisha
World Bank Employer,
On the E.C.C.

[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	
	Amount of Waste disposed	
	Type of waste disposed	
	No. of sites Rehabilitated	
9	Road Safety	

Sl. No.	Description	Remarks
	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

Signature.....

Name.....

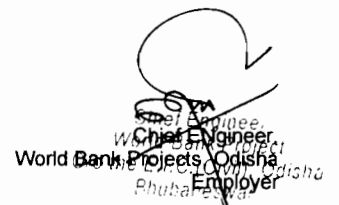
Resident Engineer
Construction Supervision Consultant

Countersigned

Signature.....

Name.....

Executive Engineer (PMU)





GOVERNMENT OF ODISHA
WORKS DEPARTMENT

CIVIL WORKS CONTRACT

[PACKAGE No. OSRP-CW-ICB-P04B]

For

Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali
(Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH –9)

under

Odisha State Roads Project

between

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

and

M/s DPJ-NKC J.V

Plot No. 63, Udyog Vihar, Phase-IV, Gurgaon-122016, Haryana (India)
Ph: +91 124 4852828, Fax: +91 124 2340017

[VOLUME-IV: DRAWINGS]

Agreement Value: Rs. 170,42,73,538.00

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

Dated: 16th September, 2013

CONTENTS of CONTRACT

Volume – I	:	Letter of Acceptance, Letter 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	Plan & profile, Specifications, Utility Shifting & Environment Drawings from JAGATPUR TO DUHURIA (0/0 to 49/0 Km. of MDR)	1 to 151
2	Bridge and Culvert Drawings	152-200

M/s DPJ-NKC JV,
Contractor




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

**GOVERNMENT OF ODISHA
WORKS DEPARTMENT**

**ODISHA STATE ROAD PROJECT
(UNDER WORLD BANK ASSISTANCE)**

**DUHURIA TO CHANDBALI
KM.49.000 TO KM.106.000**

**VOLUME - IV
DRAWINGS**

DPJ - NKC JV
Contractor
Gurgaon

Chief Engineer
World Bank Project
Odisha Project
O/o M.S.E.C.(Civil), Cuttack
Gurgaon




DPJ - NKC (JV),
Contractor

INDEX OF HIGHWAYS

SL.	DESCRIPTION	DRAWING NO.
1	Cover Sheet	
INDEX SHEETS		
2	Index of Highway Drawings (1 of 2)	OSRP/CEG/SH-9A & SH-9/INDEX/01
3	Index of Highway Drawings (2 of 2)	OSRP/CEG/SH-9A & SH-9/INDEX/02
4	Index of Standard Drawings	OSRP/CEG/SH-9A & SH-9/INDEX/03
5	Index of Bridge Drawings	OSRP/CEG/SH-9A & SH-9/INDEX/05
6	List of Structure (Culverts) (1 of 3)	OSRP/CEG/SH-9A & SH-9/LOC/01
7	List of Structure (Culverts) (2 of 3)	OSRP/CEG/SH-9A & SH-9/LOC/02
8	List of Structure (Bridge) (3 of 3)	OSRP/CEG/SH-9A & SH-9/LOC/05
HORIZONTAL CURVE DETAILS		
9	Horizontal Curve Details (1 of 3)	OSRP/CEG/SH-9A & SH-9/HC/01
10	Horizontal Curve Details (2 of 3)	OSRP/CEG/SH-9A & SH-9/HC/02
11	Horizontal Curve Details (3 of 3)	OSRP/CEG/SH-9A & SH-9/HC/03
VERTICAL CURVE DETAILS		
12	Vertical Curve Details (1 of 3)	OSRP/CEG/SH-9A & SH-9/VC/01
13	Vertical Curve Details (2 of 3)	OSRP/CEG/SH-9A & SH-9/VC/02
14	Vertical Curve Details (3 of 3)	OSRP/CEG/SH-9A & SH-9/VC/03

Sl. No.	DESCRIPTION PLAN & PROFILE	DRAWING NO.
15	Plan & Profile Km. 49/000 to Km. 49/500	OSRP/CEG/DC-57km/P & P/01
16	Plan & Profile Km. 49/500 to Km. 50/000	OSRP/CEG/DC-57km/P & P/02
17	Plan & Profile Km. 50/000 to Km. 50/250	OSRP/CEG/DC-57km/P & P/03
18	Plan & Profile Km. 50/250 to Km. 51/000	OSRP/CEG/DC-57km/P & P/04
19	Plan & Profile Km. 51/000 to Km. 51/750	OSRP/CEG/DC-57km/P & P/05
20	Plan & Profile Km. 51/750 to Km. 52/500	OSRP/CEG/DC-57km/P & P/06
21	Plan & Profile Km. 52/500 to Km. 53/250	OSRP/CEG/DC-57km/P & P/07
22	Plan & Profile Km. 53/250 to Km. 54/000	OSRP/CEG/DC-57km/P & P/08
23	Plan & Profile Km. 54/000 to Km. 54/750	OSRP/CEG/DC-57km/P & P/09
24	Plan & Profile Km. 54/750 to Km. 55/500	OSRP/CEG/DC-57km/P & P/10
25	Plan & Profile Km. 55/500 to Km. 56/250	OSRP/CEG/DC-57km/P & P/11
26	Plan & Profile Km. 56/250 to Km. 57/000	OSRP/CEG/DC-57km/P & P/12
27	Plan & Profile Km. 57/000 to Km. 57/750	OSRP/CEG/DC-57km/P & P/13
28	Plan & Profile Km. 57/750 to Km. 58/500	OSRP/CEG/DC-57km/P & P/14
29	Plan & Profile Km. 58/500 to Km. 59/250	OSRP/CEG/DC-57km/P & P/15
30	Plan & Profile Km. 59/250 to Km. 60/000	OSRP/CEG/DC-57km/P & P/16
31	Plan & Profile Km. 60/000 to Km. 60/750	OSRP/CEG/DC-57km/P & P/17
32	Plan & Profile Km. 60/750 to Km. 61/500	OSRP/CEG/DC-57km/P & P/18
33	Plan & Profile Km. 61/500 to Km. 62/250	OSRP/CEG/DC-57km/P & P/19
34	Plan & Profile Km. 62/250 to Km. 63/000	OSRP/CEG/DC-57km/P & P/20
35	Plan & Profile Km. 63/000 to Km. 63/750	OSRP/CEG/DC-57km/P & P/21
36	Plan & Profile Km. 63/750 to Km. 64/500	OSRP/CEG/DC-57km/P & P/22
37	Plan & Profile Km. 64/500 to Km. 65/250	OSRP/CEG/DC-57km/P & P/23
38	Plan & Profile Km. 65/250 to Km. 66/000	OSRP/CEG/DC-57km/P & P/24
39	Plan & Profile Km. 66/000 to Km. 66/750	OSRP/CEG/DC-57km/P & P/25
40	Plan & Profile Km. 66/750 to Km. 67/500	OSRP/CEG/DC-57km/P & P/26

INDEX OF HIGHWAY DRAWINGS (Sheet 1 of 2)			
PROJECT:-	DRG NO.	REV. NO	REV. R1
ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	OSRP/CEG/INDEX/02	PREPARED BY: CEG Ltd.	PREPARED BY: EE/PMU
	SH. NO.	DATE : 12/12/2012	APPROVED
	SCALE	REV : R1	CE, World Bank Projects


 Chief Engineer,
 World Bank Projects, Odisha,
 (Engineer)
 World Bank Project
 Orissa State Road Project



INDEX OF HIGHWAYS

Sl. No.	DESCRIPTION	DRAWING NO.
41	Plan & Profile Km. 67/500 to Km. 68/250	OSRP/CEG/DC-57km/P & P/27
42	Plan & Profile Km. 68/250 to Km. 69/000	OSRP/CEG/DC-57km/P & P/28
43	Plan & Profile Km. 69/000 to Km. 69/750	OSRP/CEG/DC-57km/P & P/29
44	Plan & Profile Km. 69/750 to Km. 70/500	OSRP/CEG/DC-57km/P & P/30
45	Plan & Profile Km. 70/500 to Km. 71/250	OSRP/CEG/DC-57km/P & P/31
46	Plan & Profile Km. 71/250 to Km. 72/000	OSRP/CEG/DC-57km/P & P/32
47	Plan & Profile Km. 72/000 to Km. 72/750	OSRP/CEG/DC-57km/P & P/33
48	Plan & Profile Km. 72/750 to Km. 73/500	OSRP/CEG/DC-57km/P & P/34
49	Plan & Profile Km. 73/500 to Km. 74/250	OSRP/CEG/DC-57km/P & P/35
50	Plan & Profile Km. 74/250 to Km. 75/000	OSRP/CEG/DC-57km/P & P/36
51	Plan & Profile Km. 75/000 to Km. 75/750	OSRP/CEG/DC-57km/P & P/37
52	Plan & Profile Km. 75/750 to Km. 76/500	OSRP/CEG/DC-57km/P & P/38
53	Plan & Profile Km. 76/500 to Km. 77/250	OSRP/CEG/DC-57km/P & P/39
54	Plan & Profile Km. 77/250 to Km. 78/000	OSRP/CEG/DC-57km/P & P/40
55	Plan & Profile Km. 78/000 to Km. 78/750	OSRP/CEG/DC-57km/P & P/41
56	Plan & Profile Km. 78/750 to Km. 79/500	OSRP/CEG/DC-57km/P & P/42
57	Plan & Profile Km. 79/500 to Km. 80/250	OSRP/CEG/DC-57km/P & P/43
58	Plan & Profile Km. 80/250 to Km. 81/000	OSRP/CEG/DC-57km/P & P/44
59	Plan & Profile Km. 81/000 to Km. 81/750	OSRP/CEG/DC-57km/P & P/45
60	Plan & Profile Km. 81/750 to Km. 82/500	OSRP/CEG/DC-57km/P & P/46
61	Plan & Profile Km. 82/500 to Km. 83/250	OSRP/CEG/DC-57km/P & P/47
62	Plan & Profile Km. 83/250 to Km. 84/000	OSRP/CEG/DC-57km/P & P/48
63	Plan & Profile Km. 84/000 to Km. 84/750	OSRP/CEG/DC-57km/P & P/49
64	Plan & Profile Km. 84/750 to Km. 85/500	OSRP/CEG/DC-57km/P & P/50
65	Plan & Profile Km. 85/500 to Km. 86/250	OSRP/CEG/DC-57km/P & P/51
66	Plan & Profile Km. 86/250 to Km. 87/000	OSRP/CEG/DC-57km/P & P/52
67	Plan & Profile Km. 87/000 to Km. 87/750	OSRP/CEG/DC-57km/P & P/53
68	Plan & Profile Km. 87/750 to Km. 88/500	OSRP/CEG/DC-57km/P & P/54
69	Plan & Profile Km. 88/500 to Km. 89/250	OSRP/CEG/DC-57km/P & P/55
70	Plan & Profile Km. 89/250 to Km. 90/000	OSRP/CEG/DC-57km/P & P/56

Sl. No.	DESCRIPTION	DRAWING NO.
71	Plan & Profile Km. 90/000 to Km. 90/750	OSRP/CEG/DC-57km/P & P/57
72	Plan & Profile Km. 90/750 to Km. 91/500	OSRP/CEG/DC-57km/P & P/58
73	Plan & Profile Km. 91/500 to Km. 92/250	OSRP/CEG/DC-57km/P & P/59
74	Plan & Profile Km. 92/250 to Km. 93/000	OSRP/CEG/DC-57km/P & P/60
75	Plan & Profile Km. 93/000 to Km. 93/750	OSRP/CEG/DC-57km/P & P/61
76	Plan & Profile Km. 93/750 to Km. 94/500	OSRP/CEG/DC-57km/P & P/62
77	Plan & Profile Km. 94/500 to Km. 95/250	OSRP/CEG/DC-57km/P & P/63
78	Plan & Profile Km. 95/250 to Km. 96/000	OSRP/CEG/DC-57km/P & P/64
79	Plan & Profile Km. 96/000 to Km. 96/750	OSRP/CEG/DC-57km/P & P/65
80	Plan & Profile Km. 96/750 to Km. 97/500	OSRP/CEG/DC-57km/P & P/66
81	Plan & Profile Km. 97/500 to Km. 98/250	OSRP/CEG/DC-57km/P & P/67
82	Plan & Profile Km. 98/250 to Km. 99/000	OSRP/CEG/DC-57km/P & P/68
83	Plan & Profile Km. 99/000 to Km. 99/750	OSRP/CEG/DC-57km/P & P/69
84	Plan & Profile Km. 99/750 to Km. 100/500	OSRP/CEG/DC-57km/P & P/70
85	Plan & Profile Km. 100/500 to Km. 101/250	OSRP/CEG/DC-57km/P & P/71
86	Plan & Profile Km. 101/250 to Km. 102/000	OSRP/CEG/DC-57km/P & P/72
87	Plan & Profile Km. 102/000 to Km. 102/750	OSRP/CEG/DC-57km/P & P/73
88	Plan & Profile Km. 102/750 to Km. 103/500	OSRP/CEG/DC-57km/P & P/74
89	Plan & Profile Km. 103/500 to Km. 104/250	OSRP/CEG/DC-57km/P & P/75
90	Plan & Profile Km. 104/250 to Km. 105/000	OSRP/CEG/DC-57km/P & P/76
91	Plan & Profile Km. 105/000 to Km. 105/575	OSRP/CEG/DC-57km/P & P/77
MAJOR JUNCTIONS		
92	69+700 (Right) T-Jn.	OSRP/CEG/SH-9A & SH-9MJ/69+700
93	71+500 (Right) Y-Jn.	OSRP/CEG/SH-9A & SH-9MJ/71+500

INDEX OF HIGHWAY DRAWINGS Sheet 2 of 2)			
PROJECT:-	DRG NO.	OSRP/CEG/INDEX/02	REV R1
	SH NO.	DATE : 12/12/2012	PREPARED BY: EE/PNU
ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	SCALE	REV :	APPROVED
		R1	CE, World Bank Projects.

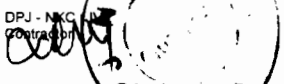
Chief Engineer,
 World Bank Projects/Orissa
 World Bank Project
 (to the F. C. (Civil), C. &
 B. P. S.

INDEX OF STANDARD DRAWINGS

SL. NO	DESCRIPTION	DRAWING NO.
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94	Subschedule of Road Sign Post (1 of 11)	OSRP/CEG/DC-57KM/SCH/01
95	Subschedule of Road Sign Post (2 of 11)	OSRP/CEG/DC-57KM/SCH/02
96	Subschedule of Road Sign Post (3 of 11)	OSRP/CEG/DC-57KM/SCH/03
97	Subschedule of Road Sign Post (4 of 11)	OSRP/CEG/DC-57KM/SCH/04
98	Subschedule of Road Sign Post (5 of 11)	OSRP/CEG/DC-57KM/SCH/05
99	Subschedule of Road Sign Post (6 of 11)	OSRP/CEG/DC-57KM/SCH/06
100	Subschedule of Road Sign Post (7 of 11)	OSRP/CEG/DC-57KM/SCH/07
101	Subschedule of Road Sign Post (8 of 11)	OSRP/CEG/DC-57KM/SCH/08
102	Subschedule of Road Sign Post (9 of 11)	OSRP/CEG/DC-57KM/SCH/09
103	Subschedule of Road Sign Post (10 of 11)	OSRP/CEG/DC-57KM/SCH/10
104	Subschedule of Road Sign Post (11 of 11)	OSRP/CEG/DC-57KM/SCH/11
105	Schedule of Extra Widening	OSRP/CEG/DC-57KM/DR
106	Schedule for Pavement Composition (1 of 2)	OSRP/CEG/DC-57KM/PAV/01
107	Subschedule for Pavement Composition (2 of 2)	OSRP/CEG/DC-57KM/PAV/02
108	Pavement schedule with type of TC	OSRP/CEG/DC-57/PAV/03
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109	Typical Cross Sections	OSRP/CE/TCS/02 & 10
110	Typical Cross Sections	OSRP/CE/TCS/9 & 18
111	Typical Cross Sections	OSRP/CE/TCS/32 & 36
112	Typical Cross Sections	OSRP/CE/TCS/34 & 35
113	Typical Cross Sections	OSRP/CE/TCS/30 & 37
114	Typical Slope Protection work	OSRP/CEG/PW
115	Standard Drawings of Retaining Wall	OSRP/CEG/RW
116	Typical Detail of Dowel Bar & Tie Bar Arrangement	OSRP/CEG/RIGID/01
117	Typical Details of Transition Slab Between Rigid & Flexible Pavement	OSRP/CEG/RIGID/02
118	Typical Details of Transition of Different Road Section	OSRP/CEG/TR
119	Standard Drawings Details of Drains & Kerf	OSRP/CEG/DR
120	Details of Application of Super Elevation	OSRP/CEG/SE
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121	Typical 4-Legged Intersection with Single Lane BT Road	OSRP/CEG/JN/01
122	Typical T-Junction with Single Lane BT Road	OSRP/CEG/JN/02
123	Typical Y-Junction With Single Lane BT/Earthen Road	OSRP/CEG/JN/03
124	Standard Drawings Typical - Cross Drain Single Lane BT Road/Earthen Road	OSRP/CEG/CD-JN
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125	Standard Drawings Details of Road Humps & Rumble Strip	OSRP/CEG/RH & RS
126	Schedule of Humps & Rumble	OSRP/CEG/SCH-RH&RS
127	Standard Drawings Details of Footpath Barrier	OSRP/CEG/FB
128	Standard Drawings Metal Beam Crash Barrier Detail	OSRP/CEG/CB
129	Standard Drawings Typical KM Stone & 5th KM Stone	OSRP/CEG/KM/01

NO	DESCRIPTION	DRAWING NO.
130	Standards Drawings Typical Details of 200m Stone & Guard post	OSRP/CEG/KM & GP
131	Schedule of Guard Posts	OSRP/CEG/SCH-GP
132	Standards Drawings Details of Road Delimiters	OSRP/CEG/RD
133	Standards Drawings Details of RPMs & Chevron Markers	OSRP/CEG/RPM
134	Schedule of RPMs	OSRP/CEG/RM/01
135	Standards Drawings Typical Road Marking Details (Sheet 1 of 2)	OSRP/CEG/RM/01
136	Standards Drawings Typical Road Marking Details (Sheet 2 of 2)	OSRP/CEG/RM/02
137	Schedule of Pedestrian Crossing	OSRP/SCH-P.Xing
138	Standards Drawings Typical Road Signs (Sheet 1 of 4)	OSRP/CEG/RS/01
139	Standards Drawings Typical Road Signs (Sheet 2 of 4)	OSRP/CEG/RS/02
140	Standards Drawings Typical Road Signs (Sheet 3 of 4)	OSRP/CEG/RS/03
141	Standards Drawings Typical Road Signs (Sheet 4 of 4)	OSRP/CEG/RS/04
142	Standards Drawings Typical Bus Bay SHEET - I	OSRP/CEG/BB/01
143	Standards Drawings Typical Bus Bay SHEET - II	OSRP/CEG/BB/02
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144	Toe Wall for Water Bodies	OSRP/CEG/ENV-03
145	Interception Barricade for Institutions	OSRP/CEG/ENV-05
146	Typical arrangement for Reptile Under Pass	OSRP/CEG/ENV-14
147	Typical Arrangement for Utility Duct	OSRP/ENV/15
148	Typical Drawing for Silt Fence Sediment Arrestor	OSRP/PMU/ENV - 01
149	Erosion Control Blanket on Slope	OSRP/PMU/ENV - 04
150	Oil & Grease Trap for Plant Site	OSRP/CEG/ENV/06
151	Cattle Underpass	OSRP/CEG/DC-57km/BOX/CUP-01ENV/07

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PROJECT:- ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	REV R1 PREPARED BY EE, PMU
DRG NO. OSRP/CEG/INDEX/03 SH.NO. SCALE	DATE 12/12/2012 REV R1
Approved Chief Engineer, World Bank Projects	



Chief Engineer
 World Bank Projects Office
 Project Office
 O/o the Chief Engineer
 (Civil)

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181	Reinforcement Details	OSRP/CEG/DC-57km/BR/103+855/2
182	Site plan	OSRP/CEG/DC-57km/BR/103+855/03
	REHABILITATION DRAWINGS	
	BRIDGE AT PROPOSED CH. 51+589	
183	Rehabilitation Bridge Details	OSRP/CEG/DC-57km/BR/51+700/01
	BRIDGE AT PROPOSED CH. 56+491	
184	Rehabilitation Bridge Details	OSRP/CEG/DC-57km/BR/56+350/01
	BRIDGE AT PROPOSED CH. 78+642	
185	Rehabilitation Bridge Details	OSRP/CEG/DC-57km/BR/78+800/01
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186	Rehabilitation Bridge Details	OSRP/CEG/DC-57km/BR/98+500/01
	CULVERTS	
187	For R.C.C. Single pipe culverts (1x1.0m Dia)	OSRP/CEG/DC-57km/PIPE CUL-01
188	For R.C.C. Single pipe culverts (1x1.2m Dia)	OSRP/CEG/DC-57km/PIPE CUL-02
189	For R.C.C. Double pipe culverts (2x1.0m Dia)	OSRP/CEG/DC-57km/PIPE CUL-03
190	For R.C.C. Double pipe culverts (2x1.2m Dia)	OSRP/CEG/DC-57km/PIPE CUL-04
191	Typical Widening Arrangement by Extension of Pipe	OSRP/PIPE CELL EXT-05
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192	General Arrangement Drawing	OSRP/CEG/DC-57km/BOX CUL-01
193	GAD Cattle Under Pass	OSRP/CEG/DC-57km/BOX CUL-02
194	Reinforcement Details of Single cell Box	OSRP/CEG/DC-57km/BOX CUL-03
195	General Arrangement Drawing_ Skew	OSRP/CEG/DC-57km/BOX CUL-04
196	Reinforcement Details	OSRP/CEG/DC-57km/BOX CUL-05
197	Details of Crash	OSRP/BR/RW/MISC-01
198	Details of Cantilever Return wall	OSRP/BR/RW/MISC-02
199	GAD:Typical Details of floor protection wall	OSRP/BR/FPW/01
200	GAD:Typical Details of CURTAINWALL	OSRP/BR/SCW/01

SL. NO	DRAWING TITLE	DRAWING NO.
152	General Notes (For Bridges)	OSRP/CEG/DC-57km/BR/NOTES/02
153	Details of Widening Methodology of Minor Bridges	OSRP/CEG/DC-57km/BR-WD/01
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154	General Arrangement Drawing	OSRP/BR/61+281/01
155	Site plan (Sheet 1 of 2) K.M. 61+261	OSRP/BR/61+200/03
156	Site plan (Sheet 2 of 2) K.M. 61+261	OSRP/BR/61+200/03
	BRIDGE AT PROPOSED CH. 63+647	
157	General Arrangement Drawing	OSRP/BR/63+400/01
158	Dimension & Reinforcement Details of sub structure	OSRP/BR/63+400/02
159	Site plan (Sheet 1 of 2)	OSRP/BR/63+400/03
160	Site plan (Sheet 2 of 2)	OSRP/BR/63+400/04
	BRIDGE AT PROPOSED CH. 66+767	
161	General Arrangement Drawing	OSRP/BR/66+700/01
162	Site plan (Sheet 1 of 2)	OSRP/BR/66+700/02
163	Site plan (Sheet 2 of 2)	
	BRIDGE AT PROPOSED CH. 69+733	
164	General Arrangement Drawing	OSRP/CEG/DC-57km/BR/69+900/01
165	Dimension & Reinforcement Details For Pile & Pile Cap	OSRP/CEG/DC-57km/BR/69+900/02
166	Reinforcement Details For Abutment & Abutment Cap	OSRP/CEG/DC-57km/BR/69+900/03
167	Dimension & Reinforcement Details For Pile & Pile Cap	OSRP/CEG/DC-57km/BR/69+900/04
168	Reinforcement Details For Pier & Pier Cap	OSRP/CEG/DC-57km/BR/69+900/05
169	Site plan (Sheet 1 of 2)	OSRP/CEG/DC-57km/BR/69+900/06
170	Site plan (Sheet 2 of 2)	OSRP/CEG/DC-57km/BR/69+900/06
	BRIDGE AT PROPOSED CH. 70/100 & 71+064	
171	General Arrangement Drawing	OSRP/CEG/DC-57km/BR/FIVE CELL/01
172	Reinforcement Details for Box Cell	OSRP/CEG/DC-57km/BR/FIVE CELL/71+064
173	Site plan of 71+100	OSRP/CEG/DC-57km/BR/70+100/03
174	Site plan (Sheet 1 of 2)	OSRP/CEG/DC-57km/BR/71+064/03
175	Site plan (Sheet 2 of 2)	OSRP/CEG/DC-57km/BR/71+064/04
	BRIDGE AT PROPOSED CH. 93+285	
176	General Arrangement Drawing	OSRP/CEG/DC-57km/BR/TRIPLE CELL/01
177	Dimension & Reinforcement Details	OSRP/CEG/DC-57km/BR/TRIPLE CELL/93+
178	Site plan (Sheet 1 of 2)	OSRP/CEG/DC-57km/BR/93+285/02
179	Site Plan (Sheet 2 of 2)	OSRP/CEG/DC-57km/BR/93+285/03

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DRG NO.	OSRP/CEG/INDEX/02	REV R0	REV R1
SH.NO.	DATE	PREPARED BY:	EE/PAU
SCALE		CEG Ltd.	
PROJECT:-		APPROVED	CE, World Bank Projects.
ORISSA STATE ROAD PROJECT			
UNDER WORLD BANK ASSISTANCE			



LIST OF CULVERTS, DUHURIA - CHANDBALI

Sl. No.	Existing Chaining	Design Chaining	Existing Span Arrangement	Type of Existing Culvert	Now Proposed	Type of Structure	Remarks in New Proposal
1	-	49400			1x1.2	Pipe	
2	-	49600			1x1.2	Pipe	
3	-	49800			1x1.2	Pipe	
4	-	50085			1x1.0	Pipe	
5	50/200	50350	5 x 1.0	Pipe	Widening	Pipe	5 x 1.0
6	-	50850			1x1.0	Pipe	
7	-	51240			1x1.0	Pipe	
8	-	51950			1x1.2	Pipe	
9	52/300	52220	1 x 0.25	Pipe	1x1.2	Pipe	
10	52/500	52532	-	Choked	2x1.2	Pipe	
11	52/700	52795	1 x 1.3	Slab	2x1.2	Pipe	
12	52/900	52950	1 x 0.45	Pipe	1x1.2	Pipe	
13	53/500	53370	1 x 0.3	Pipe	1x1.0	Pipe	
14	53/800	53719	1 x 0.9	Slab	1x1.0	Pipe	
15	54/300	54170	-	Choked	2x1.0	Pipe	
16	-	54460			1x1.0	Pipe	
17	54/500	54760	2 x 0.6	Pipe	2x1.0	Pipe	
18	-	55080			1x1.0	Pipe	
19	-	55425			1x1.0	Pipe	
20	-	55600			1x1.0	Pipe	
21	-	55920			1x1.0	Pipe	
22	-	56860			1x1.0	Pipe	
23	57/300	57485	1 x 4.7	Slab	4x1.2	Pipe	skew 15°
24	-	57850			1x1.0	Pipe	
25	58/600	58556	2 x 1.3	Arch	2x1.2	Pipe	
26	-	58760			1x1.2	Pipe	
27	-	58980			1x1.2	Pipe	
28	-	59180			1x1.2	Pipe	
29	59/300	59392	1 x 0.6	Pipe	1x1.2	Pipe	
30	-	59620			1x1.2	Pipe	
31	-	59820			1x1.2	Pipe	
32	-	60020			1x1.2	Pipe	
33	-	60220			1x1.2	Pipe	
34	-	60420			1x1.2	Pipe	
35	-	60620			1x1.2	Pipe	
36	-	60820			1x1.2	Pipe	
37	61/100	61075	1 x 4.6	Slab	2x1.2	Pipe	skew 15°
38	-	61580			1x1.2	Pipe	
39	-	61780			1x1.2	Pipe	
40	61/900	61975	1 x 0.6	Pipe	1x1.2	Pipe	
41	-	62180			1x1.2	Pipe	
42	62/250	62388	2 x 0.6	Pipe	2x1.2	Pipe	
43	62/950	62983	2 x 1.0	Arch	2x1.0	Pipe	
44	63/300	63358	1 x 0.6	Pipe	1x1.2	Pipe	
45	-	63960			1x1.2	Pipe	
46	64/100	64162	1 x 0.6	Pipe	1x1.2	Pipe	
47	-	64360			1x1.2	Pipe	
48	-	64580			1x1.2	Pipe	
49	64/850	64783	1 x 1.0	Pipe	1x1.2	Pipe	
50	-	64980			1x1.2	Pipe	

LIST OF CULVERTS, DUHURIA - CHANDBALI

Sl. No.	Existing Chaining	Design Chaining	Existing Span Arrangement	Type of Existing Culvert	Now Proposed	Type of Structure	Remarks in New Proposal
51	-	65280			1x1.2	Pipe	
52	-	65900			1x1.0	Pipe	
53	65/925	65958	1 x 1.5	Slab	1/22/0	RCC Box	
54	-	66160			1x1.2	Pipe	
55	-	66460			1x1.2	Pipe	
56	-	67000			1x1.2	Pipe	
57	-	67200			1x1.2	Pipe	
58	67/500	67400	2 x 0.6	Pipe	2x1.2	Pipe	
59	67/580	67482	-	Canal	1x1.2	Pipe	
60	-	67680			1x1.2	Pipe	
61	-	67880			1x1.2	Pipe	
62	68/005	68080	1 x 0.6	Pipe	1x1.2	Pipe	
63	68/040	68167	1 x 4.0	Choked	4x1.2	Pipe	skew 15°
64	68/150	68184	5x1.0	Pipe	X Delete		
65	68450	68450			2x1.2	Pipe	Additional
66	68/900	68967	2 x 1.2	Slab	2x1.2	Pipe	
67	69/300	69371	2 x 1.3	Pipe	2x1.2	Pipe	
68	69/310	69385	1 x 0.6	Slab	1x1.2	Pipe	
69	-	69840			2x1.2	Pipe	
70	-	70240			2x1.2	Pipe	Additional
71	-	70440			2x1.2	Pipe	
72	-	70640			2x1.2	Pipe	
73	70/900	70640	1 x 1.4	Pipe	2x1.2	Pipe	
74	-	71160			2x1.2	Pipe	
75	71/600	71243	1 x 0.6	Slab	1x1.2	Pipe	
76	-	71500			1x1.0	Pipe	
77	-	72000			1x1.0	Pipe	
78	72/850	72456	-	Slab	2x1.0	Pipe	
79	-	72660			1x1.0	Pipe	
80	-	72870			2x1.2	Pipe	
81	73/600	73070	1 x 3.0	Slab	2x1.2	Pipe	
82	-	73270			1x1.2	Pipe	
83	-	73540			3/33/0	RCC Box	Additional
84	-	74720			1x1.2	Pipe	
85	-	75180			1x1.2	Pipe	
86	-	75410			2x1.2	Pipe	
87	-	75660			2x1.2	Pipe	
88	76/100	75917	1 x 4.0	Slab	2x1.2	Pipe	
89	-	76120			2x1.2	Pipe	
90	-	76320			2x1.2	Pipe	
91	-	76600			2x1.2	Pipe	
92	-	76800			2x1.2	Pipe	
93	-	77000			2x1.2	Pipe	
94	77/350	77200	1 x 1.2	Arch	2x1.2	Pipe	
95	-	77400			2x1.2	Pipe	
96	-	77940			2x1.2	Pipe	
97	-	78300			2x1.2	Pipe	
98	-	78980			2x1.2	Pipe	
99	-	79260			1x1.0	Pipe	
100	79/750	79621	1 x 3.0	Slab	2x1.2	Pipe	

NOTE:
1) FOR DETAILS REFER STRUCTURAL DRAWINGS.

LIST OF STRUCTURE (1 of 3)

(DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/JC-106/KM/LOS/02	DATE	REV	RI	SCALE	NTS
S/N						
DESIGNED (A)	CEG					
DRAWN (B)	CEG					
REVISION (C)	E.E., PMU					
APPROVED (D)	C.E., WBP					

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CLIENT :-
 WORKS DEPARTMENT
 GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE



PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE

LIST OF CULVERTS, DUHURIA - CHANDBALI

Sl. No.	Existing Chainage	Design Chainage	Existing Span Arrangement	Type of Existing Culvert	Now Proposed	Type of Structure	Remarks in New Proposal
101	79/800	79655	1 x 0.6	Pipe	2x1.2	Pipe	
102	80/200	80089	1 x 0.6	Pipe	2x1.2	Pipe	
103	-	80280	-	Pipe	2x1.2	Pipe	
104	-	80480	-	Pipe	2x1.2	Pipe	
105	-	80680	-	Pipe	2x1.2	Pipe	
106	81/036	80880	1 x 0.6	Pipe	2x1.2	Pipe	
107	-	81080	-	Pipe	2x1.2	Pipe	
108	-	81280	-	Pipe	2x1.2	Pipe	
109	81/720	81720	1x1.0	Pipe	1x1.0	Pipe	
110	051/28	71028	6.0 x 1	epip	0.1x1	epip	
111	-	82300	-	Pipe	2x1.2	Pipe	
112	-	82560	-	Pipe	2x1.2	Pipe	
113	83/015	82844	1 x 0.6	Pipe	2x1.2	Pipe	
114	-	83040	-	Pipe	2x1.2	Pipe	
115	-	83240	-	Pipe	2x1.2	Pipe	
116	-	83570	-	Pipe	1x1.0	Pipe	
117	84/500	84416	1 x 1.0	Arch	1x1.2	Pipe	
118	-	84915	-	Pipe	1x1.0	Pipe	
119	-	85500	-	Pipe	1x1.0	Pipe	
120	86/150	85826	1 x 0.3	Pipe	1x1.0	Pipe	
121	86/300	86050	1 x 4.5	Slab	1/63/0	RCC Box	
122	86/950	86434	1 x 1.0	Arch	1/43/0	RCC Box skew	
123	-	86640	-	Pipe	2x1.2	Pipe	
124	-	86840	-	Pipe	2x1.2	Pipe	
125	-	87160	1x1.0	NP3 Pipe	Widening	Pipe	Widening
126	-	87400	1x1.0	NP3 Pipe	Widening	Pipe	Widening
127	-	87600	1x1.0	NP3 Pipe	Widening	Pipe	Widening
128	-	87850	1x1.0	NP3 Pipe	Widening	Pipe	Widening
129	-	88100	1x1.0	NP3 Pipe	Widening	Pipe	Widening
130	-	88300	1x1.0	NP3 Pipe	Widening	Pipe	Widening
131	-	88600	1x1.0	NP3 Pipe	Widening	Pipe	Widening
132	-	88700	2x1.0	NP3 Pipe	Widening	Pipe	Widening
133	-	89000	1x1.0	NP3 Pipe	Widening	Pipe	Widening
134	-	89930	1x1.0	NP3 Pipe	Widening	Pipe	Widening
135	-	90300	1x1.0	NP3 Pipe	Widening	Pipe	Widening
136	-	90500	1x1.0	NP3 Pipe	Widening	Pipe	Widening
137	-	90800	1x1.0	NP3 Pipe	Widening	Pipe	Widening
138	-	91140	-	Pipe	2x1.2	Pipe	
139	-	91580	-	Pipe	2x1.2	Pipe	
140	-	91800	-	Pipe	2x1.2	Pipe	Additional
141	-	92000	-	Pipe	2x1.2	Pipe	Additional
142	-	92200	-	Pipe	2x1.2	Pipe	Additional
143	-	92400	-	Pipe	2x1.2	Pipe	Additional
144	-	92600	-	Pipe	2x1.2	Pipe	Additional
145	-	92800	-	Pipe	2x1.2	Pipe	Additional
146	-	93000	-	Pipe	2x1.2	Pipe	Additional
147	-	93200	-	Pipe	2x1.2	Pipe	Additional
148	94/500	93600	-	Pipe	2x1.2	Pipe	Additional
149	-	93780	-	Pipe	2x1.2	Pipe	Additional
150	-	93800	-	Pipe	2x1.2	Pipe	Additional

LIST OF CULVERTS, DUHURIA - CHANDBALI

Sl. No.	Existing Chainage	Design Chainage	Existing Span Arrangement	Type of Existing Culvert	Now Proposed	Type of Structure	Remarks in New Proposal
151	-	93980	-	X_Delete	X_Delete		
152	94/380	94140	-	Pipe	1x1.2	Pipe	
153	-	94600	-	Pipe	1x1.0	Pipe	Additional
154	-	95300	-	Pipe	1x1.0	Pipe	Additional
155	-	95460	-	Pipe	1x1.0	Pipe	
156	96/500	95652	-	Pipe	2x1.2	Pipe	Additional
157	-	95900	-	Pipe	2x1.2	Pipe	
158	96/600	96120	-	Pipe	2x1.2	Pipe	
159	-	96320	-	Pipe	2x1.2	Pipe	
160	-	96520	-	Pipe	2x1.2	Pipe	
161	-	96720	-	Pipe	2x1.2	Pipe	
162	-	96920	-	Pipe	2x1.2	Pipe	
163	-	97120	-	Pipe	2x1.2	Pipe	
164	-	97320	-	Pipe	2x1.2	Pipe	
165	98/300	97634	-	Stew	1/63/0	Box	
166	98/400	97778	-	Arch	1x1.0	Pipe	
167	45/200	105375	1 x 1.5	Arch	2x1.0	Pipe	
168	-	104300	-	Pipe	1x1.0	Pipe	
169	-	103500	-	Pipe	1x1.0	Pipe	
170	-	103206	-	Pipe	1x1.0	Pipe	
171	-	103092	-	Pipe	1x1.0	Pipe	
172	-	102940	-	Pipe	1x1.0	Pipe	
173	48/010	102500	1 x 1.5	Slab	2x1.0	Pipe	
174	50/100	100424	1 x 1.0	Arch	2x1.0	Pipe	
175	50/440	100065	1 x 6.0	Box	1/63/0	RCC Box	

NOTE:-
 1) FOR DETAILS REFER STRUCTURAL DRAWINGS.

LIST OF STRUCTURE (2 of 3)
 (DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/JC-106KAM/LOS/03	DESIGNED (A)	DRAWN (B)	REVISION-1	APPROVED (D)
SH. NO.	B	DATE	REV	RI	
SCALE			CEG	CEG	E.E., PMU C.E., WBP

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CLIENT :-
 WORKS DEPARTMENT
 GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE

Chief Engineer
 World Bank Project Office

Project Bank Project
 (To be E.I. Civil) On
 Photo...



(Handwritten signature)

LIST OF STRUCTURES (BRIDGES) (DUHURIA - CHANDBALI)

Sl. No.	Existing Chainage	Proposed Chainage	Existing Span Arrangement	Proposed Span Arrangement	Revised Span arrangement	Carriageway Width (m)	Final Overall Width of Bridge (m)	Remarks
Duhuria - Chandabali								
1	51700	51589	2 x 33.0	-	-	10	7	Gobani bridge. Good. Rehabilitation required. Road to be constructed.
2	56350	56491	3 x 8.5	-	-	7	7	Bridge over Gobani drainage cut. Rehabilitation required. To be widened to 12m.
3	61200	61261	1 x 7.0	2 x 8.0 m RCC Box	1/85.0	7	12	Bridge over Gobani drainage System. Reconstruction due to poor condition and narrow width. Considering existing vent reduced from 2/85.0 to 1/85.0.
4	63400	63647	3 x 4.7	2 x 8.0 m RCC Box	2/85.0	7	12	Reconstruction due to raise in proposed road level, vent is adequate as per site condition
5	66700	66767	2 x 4.4	1 x 8.0 m RCC Box	1/85.0	7	12	Reconstruction due to submergence and poor condition
6	69900	69733	-	(2 x 12.6) + (1 x 16.6) m	4x10m slab, 5% skew, in 1.5% grade	7	12	New Construction due to construction of bypass. Span arrangement changed to accommodate the junction before the bridge.
7	-	70100	-	1 x 14.6 m RCC Girder	5/85.0 30% skew	7	12	New Construction due to construction of bypass. Span arrangement changed to accommodate the skew flow in the stream.
8	-	71064	-	1 x 14.6 m RCC Girder	5/85.0 30% skew	7	12	New Construction due to construction of bypass. Span arrangement changed to accommodate the skew flow in the stream.
9	74000	74061	(1 x 7.0) + (3 x 116.0) + (1 x 7.0)	(1 x 7.0) + (3 x 116.0) + (1 x 7.0)	-	7	7	Brahmani bridge. Good. Rehabilitation required.
01	00887	24687	0.7 x 4	-	-	7	7	deriuger notanibaher, docG
11	89500	89329	(4 x 40.0) + (1 x 7.0) + (3 x 104.0) + (1 x 7.0)	(4 x 40.0) + (1 x 7.0) + (3 x 104.0) + (1 x 7.0)	-	7	-	Khanashmia. Good, nothing to be do
12	90900	90900	1 x 20.0	1 x 20.0	-	7	7	Ganesh Mallah. Rehabilitation reqd
13	-	93285	-	1 x 8.0 m RCC Box	3/85.0 Skew 34°	7	12	New Construction. Revised from DPR provisions to 3/85.0 after flood in October, 2011
14	97000	98342	(1 x 7.0) + (2 x 106) + (1 x 7.0) + (2 x 33.0)	(1 x 7.0) + (2 x 106) + (1 x 7.0) + (2 x 33.0)	-	7	7	Batarni. Good, nothing to be done
15	98500	99195	1 x 6.85	-	-	7	7	Good, Rehabilitation required
Chandabali - Bhadrak								
16	46700	103855	10 x 0.45	2 rows of (11 x 1.0) + (12 x 1.0) m series of pipe	2/85.0	7	12	Vented causeway has been replaced with box culvert now.

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GOVT. OF ODISHA

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LIST OF STRUCTURE (3 of 3)
(DUHURIA TO CHANDBALI)

DRG. NO.	OSRP/CEG/JC-106/KM/LOS/04	DESIGNED (A)	DRAWN (D)	REVISION (I)	APPROVED (D)
SH. NO.	C	DATE	REV	RI	
SCALE				NTS	
			CEG	CEG	E.E., PMU C.E., WBP

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORK BANK ASSISTANCE

(Handwritten signature)
Chief Engineer
Employer

HORIZONTAL CURVE DETAILS (DUHURIA - CHANDBALL)

Curve No.	Curve Direction	Transition Start Chainage TS	Curve Start Chainage SC	HIP Details			Total Deflection Angle D	Design Speed V (Km/hr)	Curve Radius R (m)	Transition Length Ls (m)	Circular Curve Length Lc (m)	Tangent Distance Ts (m)	Apex Distance Es (m)	Radial Shift S	Super Elevation e (%)
				Chainage	Easting	Northing									
1	Left		49052.069	49071.106	435324.097	2268657.408	0d 26' 10.7"	100	5000	38	19.15	0.037	0.0		
2	Right		49494.914	49606.936	435868.782	2268692.418	5d 7' 52.6"	100	2500	224	19.04	0.036	0.0	-2.50	
3	Right		49945.749	49976.153	436228.041	2268683.490	0d 41' 48.4"	100	5000	61	112.02	2.509	0.0	-2.50	
4	Right		50598.982	50624.935	436876.395	2268659.921	0d 17' 50.6"	100	10000	52	30.40	0.092	0.0	-2.50	
5	Left		51363.446	51458.237	437708.980	2268625.328	10d 49' 47.6"	65	1000	189	25.95	0.034	0.0	-2.50	
6	Left		51615.882	51680.717	437929.602	2268658.106	9d 17' 42.6"	65	800	130	94.79	4.483	0.0	-2.50	
7	Right		52024.854	52041.460	438273.452	2268768.145	0d 57' 5.0"	100	2000	33	65.04	2.639	0.0	-2.50	
8	Left		52871.371	52940.749	439134.386	2269027.985	9d 54' 46.6"	65	800	138	16.61	0.069	0.0	-2.50	
9	Right	53308.929	53378.929	53393.404	439542.002	2269224.386	33d 19' 32.6"	65	170	29	86.19	8.703	1.3	7.00	
10	Left		53812.529	53851.643	439997.552	2269179.330	5d 35' 53.7"	65	800	78	39.11	0.956	0.0	-2.50	
11	Left	54522.583	54582.583	54602.379	440748.179	2269169.278	15d 50' 38.9"	80	360	40	80.15	3.889	0.4	7.00	

HORIZONTAL CURVE DETAILS (1 OF 3)

(DUHURIA TO CHANDBALL)

DRG NO.	OSRP/CEG/SI-9A & SI-9/IC-01	DESIGN(D)	CEG	APPROVED(D)	C.E., WBP
SH. NO.		DATE	REV	RI	E.E., PMU
SCALE		NTS	CEG		

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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORKD BANK ASSISTANCE



[Signature]
 Chief Engineer
 World Bank Project Office
 Engineer

HORIZONTAL CURVE DETAILS (DUHURIA - CHANDBALI)

Curve No.	Curve Direction	Transition Start Chainage	Curve Start Chainage	HIP Details			Total Deflection Angle	Design Speed V (km/hr)	Curve Radius R (m)	Transition Length Ls (m)	Circular Curve Length Lc (m)	Tangent Distance Ts (m)	Apex Distance Es (m)	Radial Shift S	Super Elevation e (%)
				Chainage	Easting	Northing									
12	Left	55444.532	55504.532	55527.258	441642.028	2269406.097	164 46' 25.3"	80	360	60	45	83.13	4.313	0.4	7.00
13	Right	55797.048	55797.048	55817.487	441891.043	2269555.101	1d 10' 15.9"	100	2000	41	2000	20.44	0.10	0.00	-2.50
14	Left	56001.321	56071.321	56075.315	442110.196	2269690.316	26d 17' 4.1"	65	170	70	8	74.92	5.80	1.20	7.00
15	Left	56360.161	56395.161	56416.197	442300.425	2269972.715	12d 15' 32.6"	65	360	35	42	56.17	2.21	0.10	5.22
16	Right	56568.141	56568.141	56568.141	442365.987	2270124.741	25d 3' 35.0"	65	200	60	27	74.59	5.65	0.80	-2.50
17	Left	56923.951	56923.951	56929.779	442612.927	2270369.475	0d 20' 2.0"	100	2000	12	186	5.83	0.01	0.00	-2.50
18	Left	57158.49	57158.49	57188.628	442798.360	2270550.080	0d 10' 21.6"	100	20000	60	60	30.14	0.02	0.00	-2.50
19	Right	57526.106	57526.106	57562.907	443065.694	2270812.028	0d 25' 18.1"	100	10000	74	74	36.80	0.07	0.00	-2.50
20	Left	58097.258	58097.258	58190.300	443517.039	2271247.815	5d 19' 37.3"	100	2000	186	31	93.04	2.16	0.00	-2.50
21	Right	58692.631	58692.631	59007.947	444050.070	2271868.011	0d 10' 31.8"	100	10000	36	36	17.91	0.01	0.00	-2.50
22	Right	59587.149	59587.149	59587.060	444428.882	2272306.046	0d 6' 9.5"	100	20000	36	322	160.98	3.24	0.00	-2.50
23	Right	59936.8	59936.8	60097.780	444763.646	2272691.749	4d 36' 33.3"	100	4000	54	54	61.95	1.04	0.10	2.84
24	Left	60656.826	60656.826	60683.747	445181.701	2273102.585	5d 5' 22.4"	80	1000	99	99	49.73	0.62	0.00	-2.50
25	Right	61129.289	61129.289	61179.021	445503.713	2273478.900	2d 50' 56.0"	100	2000	42	42	20.91	0.04	0.00	-2.50
26	Left	61621.668	61621.668	61642.574	445821.784	2273816.140	0d 28' 44.9"	100	5000	75	30	90.87	5.48	0.80	7.00
27	Right	61930.372	61930.372	61945.587	446031.358	2274034.722	20d 7' 51.0"	80	300	20	20	10.22	0.01	0.00	-2.50
28	Right	62286.627	62286.627	62296.845	446341.797	2274198.696	0d 14' 3.1"	100	5000	11	11	5.69	0.00	0.00	-2.50
29	Left	62660.689	62660.689	62666.378	446671.667	2274365.251	0d 7' 49.4"	100	5000	45	52	72.94	8.79	0.60	7.00
30	Right	63021.807	63021.807	63048.076	447014.445	2274532.381	37d 3' 19.7"	50	150	35	55	62.84	1.80	0.10	4.74
31	Left	63452.932	63452.932	63480.697	447441.718	2274463.439	8d 38' 28.2"	80	600	30	11	35.34	0.61	0.10	4.69
32	Right	64108.565	64108.565	64113.883	448074.661	2274445.204	5d 49' 14.8"	65	400	50	106	105.99	13.71	0.50	7.00
33	Left	64234.318	64234.318	64338.178	448297.786	2274424.536	37d 14' 1.4"	65	240	75	93	124.13	13.01	0.80	7.00
34	Right	64841.545	64841.545	64916.545	448633.573	2274722.783	32d 8' 33.1"	80	300	15	15	7.30	0.01	0.00	-2.50
35	Right	65364.765	65364.765	65372.080	449257.802	2274715.899	0d 25' 4.7"	100	2000	297	297	149.58	11.13	0.00	-2.50
36	Left	65538.937	65538.937	65688.516	449573.702	2274701.315	17d 0' 51.8"	65	1000	83	83	41.50	0.17	0.00	-2.50
37	Right	66219.563	66219.563	66261.060	450130.459	2274983.983	0d 57' 3.7"	100	1200	48	48	23.96	0.24	0.00	-2.50
38	Left	66634.216	66634.216	66658.175	450516.730	2274936.159	2d 17' 15.1"	100	2000	47	14	6.97	0.00	0.00	-2.50
39	Right	66743.336	66743.336	66766.711	450821.218	2274965.548	1d 20' 21.1"	100	20000	115	115	57.37	0.08	0.00	-2.50
40	Left	66884.174	66884.174	66891.139	450741.755	2274996.429	0d 2' 23.7"	100	20000	318	318	159.35	4.23	0.00	-2.50
41	Right	67747.296	67747.296	67804.670	451626.547	2275223.768	0d 19' 43.4"	100	3000	25	31	15.70	0.01	0.00	-2.50
42	Right	68127.815	68127.815	68287.166	452094.545	2275341.157	6d 4' 51.7"	100	10000	114	114	82.30	4.90	0.10	3.76
43	Left	68894.104	68894.104	68909.799	452711.415	2275509.449	15d 53' 34.0"	65	500	215	215	107.95	4.85	0.00	-2.50
44	Left	69141.823	69141.823	69175.079	453644.013	2275675.839	10d 16' 49.3"	80	1200	172	172	86.27	1.86	0.00	-2.50
45	Left	69389.823	69389.823	69775.079	453644.013	2275675.839	10d 16' 49.3"	100	2000	286	286	143.02	3.41	0.00	-2.50
46	Right	70194.431	70194.431	70280.705	453972.807	2275900.574	4d 56' 24.3"	100	2000	101	101	50.63	0.64	0.00	-2.50
47	Right	70632.341	70632.341	70775.363	454403.798	2276143.554	5d 27' 32.0"	100	3000	142	142	71.00	1.26	0.00	-2.50
48	Left	71241.753	71241.753	71292.378	454876.480	2276353.552	2d 53' 59.8"	100	2000	42	42	50.88	1.70	0.10	4.69
49	Right	71577.241	71577.241	71648.236	455193.982	2276514.311	4d 3' 57.6"	100	2000	50	50	58.68	2.78	0.40	7.00
50	Right	72039.001	72039.001	72059.795	455573.901	2276672.669	10d 14' 55.4"	65	400	31	31	76.50	6.07	0.80	7.00
51	Left	72212.833	72212.833	72271.249	455779.415	2276722.235	15d 57' 12.8"	65	240	8	8	95.08	6.56	1.40	7.00
52	Right	72376.042	72376.042	72451.618	455941.367	2276801.116	26d 5' 44.0"	65	200	57	57	68.77	4.16	0.20	6.26
53	Left	72853.17	72853.17	72947.316	456435.507	2276833.521	23d 27' 55.9"	80	240	102	102	51.06	1.63	0.00	-2.50
54	Left	73383.327	73383.327	73411.729	456854.554	2277032.659	18d 27' 21.0"	65	300	126	126	62.93	2.47	0.00	-2.50
55	Right	73618.667	73618.667	73669.724	457041.146	2277210.980	7d 18' 12.3"	65	800	42	42	21.11	0.11	0.00	-2.50
56	Left	74219.448	74219.448	74282.381	457530.447	2277579.900	8d 59' 45.4"	65	800	102	102	50.84	0.07	0.00	-2.50
57	Left	74578.055	74578.055	74599.162	457750.637	2277808.002	1d 12' 33.5"	100	2000	102	102	50.84	0.07	0.00	-2.50
58	Right	74950.009	74950.009	75000.852	458023.457	2278102.833	0d 17' 28.7"	100	20000	94	94	46.76	0.06	0.00	-2.50
59	Left	75305.778	75305.778	75352.997	458263.625	2278399.745	0d 16' 4.5"	100	20000	68	68	34.14	0.03	0.00	-2.50
60	Left	75918.856	75918.856	75952.540	458671.623	2278800.299	0d 11' 44.2"	100	20000	216	216	138.97	8.54	0.00	-2.50
61	Right	76294.619	76294.619	76433.333	458998.241	2279152.480	15d 41' 6.2"	80	900						3.16

HORIZONTAL CURVE DETAILS (2 OF 3)

(DUHURIA TO CHANDBALI)

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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE

DRG. NO.	OSRP/CEG/SI-9A & SI-9/HC/02	DESIGNED (A)	DRAWN (B)	REVISION-I	APPROVED (D)
SH. NO.	DATE	REV	RI	E.E., PMU	C.E., WBP
SCALE	NTS			CEG	CEG

HORIZONTAL CURVE DETAILS (DUHURIA - CHANDBALI)

Curve No.	Curve Direction	Transition Start Chainage	Curve Start Chainage	HIP Details			Total Deflection Angle	Design Speed V (Km/hr)	Curve Radius R (m)	Transition Length Ls (m)	Circular Curve Length Lc (m)	Tangent Distance Ts (m)	Apex Distance Es (m)	Radial Shift S	Super Elevation e (%)
				Chainage	Easting	Northing									
62	Left	77387.852	77457.852	77608.547	459993.134	227979.674	30d 1' 40.3"	100	700	70	222.82	25.04	0.30	6.35	
63	Left	78145.471	78169.741	78169.741	460268.592	2280273.648	1d 23' 25.8"	100	2000	49	24.27	0.15	0.00	-2.50	
64	Right	78373.686	78405.767	78405.767	460375.263	2280484.186	1d 50' 16.5"	100	2000	64	32.08	0.26	0.00	-2.50	
65	Left	78887.827	78910.749	78910.749	460617.881	2280927.084	1d 3' 2.3"	100	2500	46	22.92	0.11	0.00	-2.50	
66	Left	79428.2	79453.943	79453.943	460870.056	2281406.197	1d 10' 47.8"	100	2500	51	25.74	0.13	0.00	-2.50	
67	Right	79659.213	79680.890	79680.890	461080.340	2281790.681	5d 21' 20.6"	80	1200	112	56.13	1.31	0.00	-2.50	
68	Right	79877.351	79899.028	79899.028	461293.327	2282045.643	8d 15' 31.6"	80	500	27	58.61	1.47	0.20	5.69	
69	Left	80124.062	80133.325	80133.325	461806.907	2283030.808	1d 1' 3.0"	100	2500	197	99.06	5.44	0.00	-2.50	
70	Left	81311.126	81333.325	81333.325	461806.907	2283030.808	1d 1' 3.0"	100	2500	44	22.20	0.10	0.00	-2.50	
71	Right	81682.01	81716.962	81716.962	461978.182	2283374.091	1d 36' 7.2"	100	2500	70	34.95	0.24	0.00	-2.50	
72	Left	82151.759	82226.354	82226.354	462218.256	2283823.367	0d 51' 17.2"	100	10000	149	74.60	0.28	0.00	-2.50	
73	Left	82555.038	82610.038	82610.038	462425.463	2284240.544	31d 7' 34.7"	80	360	162	138.99	15.55	0.30	7.00	
74	Right	82920.168	82980.168	82980.168	462415.440	2284589.696	28d 17' 8.3"	80	360	118	120.81	11.68	0.40	7.00	
75	Left	83445.383	83500.383	83500.383	462620.958	2285071.676	25d 36' 5.7"	80	400	55	118.45	10.52	0.30	7.00	
76	Right	83919.978	83934.897	83934.897	462618.827	2285444.683	0d 10' 15.4"	100	10000	30	14.92	0.01	0.00	-2.50	
77	Right	84256.563	84291.563	84291.563	462618.827	2285977.702	57d 48' 11.9"	65	360	328	216.32	51.38	0.20	5.22	
78	Left	85328.867	85371.892	85371.892	463390.408	2286493.780	6d 9' 24.9"	65	800	86	43.03	1.16	0.00	-2.50	
79	Right	85592.71	85632.71	85632.71	463651.468	2286700.549	34d 43' 21.1"	65	300	142	113.86	14.55	0.20	6.26	
80	Left	85850.013	85902.807	85902.807	463898.126	2286739.409	47d 50' 20.4"	65	150	40	107.22	16.03	1.90	7.00	
81	Left	86104.279	86129.279	86129.279	464038.109	2286902.154	11d 45' 46.1"	65	500	25	64.01	2.70	0.10	3.76	
82	Right	86475.114	86492.440	86492.440	464180.153	2287193.805	1d 59' 33.7"	100	2000	35	17.33	0.08	0.00	-2.50	
83	Left	86761.469	86778.213	86778.213	464308.788	2287448.991	0d 57' 33.5"	100	2000	33	16.74	0.07	0.00	-2.50	
84	Right	86931.413	87026.593	87026.593	464426.354	2287666.814	42d 6' 55.0"	65	150	30	98.34	12.63	1.90	7.00	
85	Left	87393.268	87408.985	87408.985	464775.578	2287820.517	0d 54' 1.7"	100	2000	31	15.72	0.06	0.00	-2.50	
86	Right	87621.049	87658.261	87658.261	465005.051	2287917.888	2d 7' 54.7"	100	2000	74	37.21	0.35	0.00	-2.50	
87	Left	88216.358	88262.358	88262.358	465569.557	2288133.009	6d 34' 54.4"	65	800	92	46.00	1.32	0.00	-2.50	
88	Left	88621.641	88776.859	88776.859	466017.969	2288384.463	72d 41' 32.3"	65	260	280	216.60	63.30	0.50	7.00	
89	Right	89610.97	89756.073	89756.073	466872.322	2289382.334	63d 17' 22.9"	65	200	161	153.70	35.81	0.90	7.00	
90	Left	91027.592	91154.894	91154.894	466980.336	2290248.542	54d 23' 10.3"	65	200	130	133.12	25.70	0.80	7.00	
91	Right	91501.153	91596.779	91596.779	466993.850	2290693.854	40d 44' 11.5"	65	170	51	98.51	12.62	1.30	7.00	
92	Right	92553.219	92593.219	92593.219	467642.730	2291491.820	20d 1' 58.2"	65	300	40	65	73.02	4.87	0.20	6.26
93	Left	92968.147	93026.780	93026.780	467986.959	2291697.828	3d 21' 30.4"	100	2000	117	58.63	0.86	0.00	-2.50	
94	Left	93294.302	93369.302	93371.973	468271.731	2291892.771	15d 20' 39.3"	80	300	5	78.00	3.50	0.80	7.00	
95	Left	93797.318	93828.836	93828.836	468572.991	2292336.068	1d 48' 20.7"	100	2000	63	31.52	0.25	0.00	-2.50	
96	Right	94135.965	94166.026	94166.026	468785.329	2292498.007	1d 43' 20.1"	100	2000	60	30.06	0.23	0.00	-2.50	
97	Left	94680.905	94811.920	94811.920	469206.961	2292987.305	12d 27' 42.1"	80	1200	261	131.02	7.13	0.00	-2.50	
98	Right	95062.623	95137.611	95137.611	469363.084	2293274.300	14d 16' 00.0"	65	500	100	75.15	3.96	0.10	3.76	
99	Left	95264.525	95286.874	95286.874	469463.204	2293385.436	3d 12' 1.8"	65	800	45	22.35	0.31	0.00	-2.50	
100	Right	95758.962	95802.286	95802.286	469790.171	2293783.875	4d 8' 7.3"	80	1200	87	43.32	0.78	0.00	-2.50	
101	Left	96066.656	96164.922	96164.922	470039.856	2294046.913	5d 37' 32.4"	100	2000	196	98.27	2.41	0.00	-2.50	
102	Left	97510.959	97585.959	97644.849	470940.084	2295221.071	36d 32' 9.4"	80	300	75	136.77	16.74	0.80	7.00	
103	Left	98024.485	98064.485	98064.485	470958.342	2295665.085	16d 43' 58.6"	65	300	40	64.15	3.45	0.20	6.26	
104	Right	98511.936	98581.936	98675.070	470831.105	2296235.772	87d 52' 31.8"	65	155	70	168	185.56	62.08	1.80	7.00
105	Left	98918.778	99029.185	99029.185	471172.208	2296381.801	45d 28' 50.5"	65	200	60	99	114.12	17.67	0.80	7.00
106	Right	99294.244	99354.244	99354.244	471361.018	2296706.286	44d 46' 51.7"	65	200	60	96	112.68	17.12	0.80	7.00
107	Right	99822.037	99857.037	99857.037	471866.609	2296880.129	22d 8' 4.9"	65	500	35	158	115.32	9.58	0.10	3.76
108	Left	100106.769	100176.428	100176.428	472107.247	2296881.127	22d 43' 6.1"	65	200	19	70.31	4.76	0.80	7.00	
109	Left	100543.049	100556.554	100556.554	472466.433	2296994.120	24d 54' 53.9"	65	200	27	74.33	5.59	0.80	7.00	
110	Left	100765.798	100832.197	100832.197	472668.970	2297180.795	4d 13' 30.7"	80	1800	133	66.40	1.22	0.00	-2.50	
111	Left	101269.328	101359.727	101359.727	473022.446	2297572.466	5d 45' 0.5"	80	1800	181	90.40	2.27	0.00	-2.50	
112	Right	101716.55	101833.900	101833.900	473003.357	2297954.662	7d 27' 36.8"	80	1800	234	117.35	3.82	0.00	-2.50	
113	Left	103078.758	103143.758	103322.663	474326.705	2299036.157	33d 59' 37.5"	100	700	350	246.54	32.24	0.30	6.35	
114	Left	104352.215	104440.479	104440.479	474527.036	2300143.326	3d 22' 13.7"	100	3000	176	88.26	1.30	0.00	-2.50	
115	Left	104744.654	104852.286	104852.286	474573.028	2300552.607	0d 14' 48.0"	100	5000	215	107.63	0.12	0.00	-2.50	
116	Left	105440.896	105515.257	105515.257	474644.224	2301211.745	0d 5' 6.8"	100	10000	149	74.36	0.03	0.00	-2.50	

HORIZONTAL CURVE DETAILS (3 OF 3)

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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE

DRG NO.	OSRP/CEG/SH-9A & SH-9/HC/03	DESIGNED BY	CEG	CEG	CEG
SH. NO.	DATE	REV	RI	NTS	
SCALE					



Chief Engineer,
 World Bank Projects, Odisha
 (Signature)

VERTICAL CURVE DETAILS (DUHURIA - CHANDBALI)

Curve No.	Curve Type	VIP Details		Curve Length m	K	Curve Start		Curve End		Start Gradient %	End Gradient %	Grade Difference %
		Chainage	Level			Chainage	Level	Chainage	Level			
1	Hog	49233.847	10.807	200	843.64	49133.847	10.530	49333.847	10.847	0.28	0.04	0.24
2	Hog	49822.712	11.041	300	495.14	49672.712	10.982	49972.712	10.192	0.04	-0.57	0.61
3	Sag	50079.459	9.588	150	234.11	50004.459	10.012	50154.459	9.644	-0.57	0.08	-0.64
4	Sag	50538.364	9.930	150	740.68	50463.364	9.874	50613.364	10.138	0.08	0.28	-0.20
5	Hog	50750.860	10.519	150	497.90	50675.860	10.311	50825.860	10.501	0.28	-0.02	0.30
6	Sag	51249.400	10.399	200	238.75	51149.400	10.423	51349.400	11.212	-0.02	0.81	-0.84
7	Hog	51497.105	12.414	110	135.21	51442.105	11.967	51552.105	12.414	0.81	0.00	0.81
8	Hog	51663.913	12.414	90	38.60	51618.913	12.414	51708.913	11.365	0.00	-2.33	2.33
9	Sag	51830.759	8.523	100	42.51	51780.759	9.689	51880.759	8.534	-2.33	0.02	-2.35
10	Sag	52170.724	8.594	100	246.02	52120.724	8.584	52220.724	8.808	0.02	0.43	-0.41
11	Hog	52410.538	9.619	150	335.60	52335.538	9.298	52485.538	9.604	0.43	-0.02	0.45
12	Hog	52922.024	9.518	200	5506.40	52822.024	9.538	53022.024	9.462	-0.02	-0.06	0.04
13	Sag	53295.091	9.309	100	5353.43	53245.091	9.337	53345.091	9.290	-0.06	-0.04	-0.02
14	Hog	54735.252	8.771	150	1034.55	54660.252	8.799	54810.252	8.634	-0.04	-0.18	0.15
15	Sag	55078.075	8.146	150	843.34	55003.075	8.283	55153.075	8.143	-0.18	0.00	-0.18
16	Sag	56229.289	8.095	150	206.58	56154.289	8.098	56304.289	8.636	0.00	0.72	-0.73
17	Hog	56413.781	9.426	100	138.57	56363.781	9.065	56463.781	9.426	0.72	0.00	0.72
18	Hog	56547.017	9.426	70	62.23	56512.017	9.426	56582.017	9.032	0.00	-1.13	1.13
19	Sag	56666.458	8.082	100	87.79	56616.458	8.645	56716.458	8.090	-1.13	0.01	-1.14

DPU/ NKC (JV)
Contractor



World Bank Project
Chief Engineer

World Bank Project
To the F.I.C. Dept. Odisha

PROJECT :-

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UNDER WORLD BANK ASSISTANCE

CLIENT :-

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VERTICAL CURVE DETAILS (1 OF 3)

(DUHURIA TO CHANDBALI)

DRG. NO.	OSRP/CEG/SI-9A & SI-9/VC/01	DESIGNED (A)	DRAWN (B)	REVISION-1	APPROVED (D)
SH. NO.	DATE	REV	RI	CEG	CEG
SCALE	NTS			CEG	C.E., WBP

VERTICAL CURVE DETAILS (DUHURIA - CHANDBALLI)

Curve No.	Curve Type	VIP Details		Curve Length m	K	Curve Start		Curve End		Start Gradient	End Gradient	Grade Difference %
		Chainage	Level			Chainage	Level	Chainage	Level			
20	Sag	57373.713	8.183	150	340.23	57298.713	8.173	57448.713	8.525	0.01	0.46	-0.44
21	Hog	57719.642	9.758	400	476.34	57519.642	8.848	57919.642	8.989	0.46	-0.39	0.84
22	Sag	58281.113	7.598	500	672.93	58031.113	8.560	58531.113	8.495	-0.39	0.36	-0.74
23	Hog	58793.310	9.434	250	639.99	58668.310	8.986	58918.310	9.394	0.36	-0.03	0.39
24	Hog	59787.262	9.114	100	6422.88	59737.262	9.130	59837.262	9.090	-0.03	-0.05	0.02
25	Sag	61369.595	8.358	150	471.80	61294.595	8.394	61444.595	8.561	-0.05	0.27	-0.32
26	Hog	61625.328	9.049	150	536.59	61550.328	8.847	61700.328	9.042	0.27	-0.01	0.28
27	Hog	62608.994	8.957	150	432.54	62533.994	8.964	62683.994	8.690	-0.01	-0.36	0.35
28	Sag	62794.184	8.297	150	451.41	62719.184	8.564	62869.184	8.279	-0.36	-0.02	-0.33
29	Sag	63280.127	8.181	150	397.29	63205.127	8.199	63355.127	8.447	-0.02	0.35	-0.38
30	Hog	63511.614	9.000	150	424.11	63436.614	8.735	63586.614	9.000	0.35	0.00	0.35
31	Hog	63803.343	9.000	100	379.16	63753.343	9.000	63853.343	9.132	0.00	0.26	-0.26
32	Hog	63971.509	9.444	100	372.07	63921.509	9.312	64021.509	9.441	0.26	-0.01	0.27
33	Hog	65085.008	9.388	150	326.58	65010.008	9.391	65160.008	9.039	-0.01	-0.46	0.46
34	Sag	65382.227	8.008	200	469.99	65282.227	8.472	65482.227	7.969	-0.46	-0.04	-0.43
35	Sag	65886.563	7.812	150	305.48	65811.563	7.841	65961.563	8.151	-0.04	0.45	-0.49
36	Hog	66100.099	8.778	150	337.98	66025.099	8.438	66175.099	8.784	0.45	0.01	0.44
37	Sag	67000.118	8.853	150	5410.24	66925.118	8.847	67075.118	8.881	0.01	0.04	-0.03
38	Hog	67482.667	9.028	150	3500.20	67407.667	9.001	67557.667	9.023	0.04	-0.01	0.04
39	Hog	68414.388	8.965	150	309.61	68339.388	8.970	68489.388	8.597	-0.01	-0.49	0.48
40	Sag	68639.452	7.860	150	263.73	68564.452	8.228	68714.452	7.918	-0.49	0.08	-0.57
41	Sag	68926.504	8.083	200	773.45	68826.504	8.005	69026.504	8.419	0.08	0.34	-0.26
42	Hog	69365.065	9.557	200	767.44	69265.065	9.221	69465.065	9.632	0.34	0.08	0.26
43	Sag	69579.239	9.719	70	36.63	69544.239	9.692	69614.239	10.414	0.08	1.99	-1.91
44	Hog	69673.438	11.590	70	35.24	69638.438	10.895	69708.438	11.590	1.99	0.00	1.99
45	Hog	69867.010	11.590	200	1610.04	69767.010	11.590	69967.010	11.466	0.00	-0.12	0.12
46	Sag	70614.070	10.662	800	6440.18	70214.070	11.159	71014.070	10.662	-0.12	0.00	-0.12
47	Hog	71160.420	10.662	150	679.36	71085.420	10.662	71235.420	10.496	0.00	-0.22	0.22
48	Sag	71562.113	9.775	200	802.47	71462.113	9.996	71662.113	9.804	-0.22	0.03	-0.25
49	Sag	72513.736	10.046	150	385.92	72438.736	10.024	72588.736	10.359	0.03	0.42	-0.39
50	Hog	72735.852	10.972	150	336.65	72660.852	10.659	72810.852	10.951	0.42	-0.03	0.45
51	Sag	73705.180	10.696	150	50.63	73630.180	10.718	73780.180	12.897	-0.03	2.93	-2.96
52	Hog	74057.296	21.029	340	57.69	73887.296	16.040	74227.296	15.998	2.93	-2.96	5.89
53	Sag	74460.994	9.081	200	68.42	74360.994	12.041	74560.994	9.045	-2.96	-0.04	-2.92
54	Hog	74702.975	8.994	200	2051.00	74602.975	9.030	74802.975	8.860	-0.04	-0.13	0.10
55	Sag	75157.315	8.385	200	207.74	75057.315	8.519	75257.315	9.214	-0.13	0.83	-0.96
56	Hog	75372.232	10.167	150	186.33	75297.232	9.545	75447.232	10.185	0.83	0.02	0.81
57	Hog	76242.075	10.375	150	2413.80	76167.075	10.357	76317.075	10.346	0.02	-0.04	0.06
58	Hog	76928.264	10.112	150	315.19	76853.264	10.141	77003.264	9.726	-0.04	-0.51	0.48
59	Sag	77232.760	8.547	150	254.14	77157.760	8.932	77307.760	8.604	-0.51	0.08	-0.59
60	Sag	77905.132	9.058	150	223.93	77830.132	9.001	77980.132	9.617	0.08	0.75	-0.67
61	Hog	78090.040	10.437	150	181.66	78015.040	9.878	78165.040	10.377	0.75	-0.08	0.83
62	Sag	78491.421	10.117	150	1879.93	78416.421	10.177	78566.421	10.117	-0.08	0.00	-0.08
63	Sag	78773.218	10.117	150	7355.47	78698.218	10.117	78848.218	10.132	0.00	0.02	-0.02
64	Hog	79135.145	10.191	150	237.28	79060.145	10.176	79210.145	9.732	0.02	-0.61	0.63
65	Sag	79367.081	8.772	150	212.62	79292.081	9.231	79442.081	8.842	-0.61	0.09	-0.71
66	Sag	80016.618	9.381	150	344.81	79941.618	9.310	80091.618	9.777	0.09	0.53	-0.44
67	Hog	80269.201	10.716	150	270.39	80194.201	10.320	80344.201	10.697	0.53	-0.03	0.56
68	Hog	81295.665	10.449	150	285.30	81220.665	10.469	81370.665	10.035	-0.03	-0.55	0.53
69	Sag	81483.114	9.415	150	304.71	81408.114	9.829	81558.114	9.370	-0.55	-0.06	-0.49

VERTICAL CURVE DETAILS (2 OF 3)

(DUHURIA TO CHANDBALLI)

DRG NO.	OSRP/CEG/SII-9A & SII-9/VC/02	DESIGN(DIA)	DRAWN(D)	REVISION(I)	APPROVED(D)
SH. NO.	DATE	REV	R1	E.E., PMU	C.E., WBP
SCALE	NTS		CEG	CEG	

CONSULTING ENGINEERS GROUP LTD.
 E-12, Moji Colony, Malviya Nagar, Jaipur-17
 Tel: +91-141-2520899, 2521899, 2520556
 Fax: 2521348, e-mail: ceg@ceginidia.com

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE



World Bank Project
 Odisha State Road Project

VERTICAL CURVE DETAILS (DUHURIA - CHANDRALI)

Curve No.	Curve Type	VIP Details		Curve Length m	K	Curve Start		Curve End		Start Gradient %	End Gradient %	Grade Difference %
		Chainage	Level			Chainage	Level	Chainage	Level			
70	Sag	82016.869	9.097	150	216.31	81941.869	9.142	82091.869	9.573	-0.06	0.63	-0.69
71	Hog	82236.310	10.488	150	247.62	82161.310	10.013	82311.310	10.509	0.63	0.03	0.61
72	Hog	83281.600	10.783	150	220.50	83206.600	10.761	83356.600	10.294	0.03	-0.65	0.68
73	Sag	83740.228	7.792	300	196.04	83590.228	8.770	83890.228	9.109	-0.65	0.88	-1.53
74	Hog	84013.574	10.192	150	171.82	83938.574	9.534	84088.574	10.196	0.88	0.01	0.87
75	Hog	84701.026	10.228	150	217.45	84626.026	10.224	84776.026	9.714	0.01	-0.69	0.69
76	Sag	84899.787	8.867	150	217.62	84824.787	9.380	84974.787	8.870	-0.69	0.01	-0.69
77	Hog	85706.349	8.904	150	541.70	85631.349	8.900	85781.349	8.700	0.01	-0.27	0.28
78	Sag	86237.531	7.458	150	162.84	86162.531	7.662	86312.531	7.944	-0.27	0.65	-0.92
79	Hog	87409.366	9.569	150	281.46	87334.366	9.552	87484.366	9.546	0.02	-0.03	0.05
80	Hog	88729.831	9.160	200	80.68	88629.831	9.191	88829.831	11.608	-0.03	2.45	-2.48
81	Sag	88995.333	15.660	160	65.36	88915.333	13.702	89075.333	15.660	2.45	0.00	2.45
82	Hog	89650.315	15.660	140	60.37	89580.315	15.660	89720.315	14.037	0.00	-2.32	2.32
83	Hog	89861.112	10.771	150	65.16	89786.112	12.511	89936.112	10.758	-2.32	-0.02	-2.30
84	Sag	90729.349	10.621	200	213.37	90629.349	10.638	90829.349	9.667	-0.02	-0.96	0.94
85	Hog	91049.380	7.566	200	196.59	90949.380	8.521	91149.380	7.629	-0.96	0.06	-1.02
86	Sag	91510.917	7.855	150	336.54	91435.917	7.808	91585.917	8.237	0.06	0.51	-0.45
87	Hog	91736.535	9.003	150	308.69	91661.535	8.621	91811.535	9.019	0.51	0.02	0.49
88	Hog	92782.664	9.238	150	1832.45	92707.664	9.221	92857.664	9.193	0.02	-0.06	0.08
89	Sag	93183.181	9.000	150	2526.55	93108.181	9.045	93258.181	9.000	-0.06	0.00	-0.06
90	Sag	93403.999	9.000	200	1996.51	93303.999	9.000	93503.999	9.100	0.00	0.10	-0.10
91	Hog	94062.462	9.660	150	285.08	93987.462	9.584	94137.462	9.340	0.10	-0.43	0.53
92	Sag	94344.635	8.458	200	453.95	94244.635	8.884	94444.635	8.472	-0.43	0.02	-0.44
93	Hog	95084.393	8.565	150	792.33	95009.393	8.554	95159.393	8.434	0.02	-0.18	0.19
94	Sag	95378.278	8.052	150	194.65	95303.278	8.183	95453.278	8.499	-0.18	0.60	-0.77
95	Hog	95682.714	9.866	150	254.14	95607.714	9.419	95757.714	9.870	0.60	0.01	0.59
96	Hog	96566.404	9.916	400	7605.62	96366.404	9.905	96766.404	9.822	-0.01	-0.05	0.05
97	Sag	97753.452	9.359	200	90.81	97653.452	9.406	97853.452	11.515	-0.05	2.16	-2.20
98	Hog	98091.309	16.642	200	92.78	97991.309	14.486	98191.309	16.642	2.16	0.00	2.16
99	Hog	98595.012	16.642	220	67.20	98485.012	16.642	98705.012	13.041	0.00	-3.27	3.27
100	Sag	98884.286	7.172	200	57.56	98784.286	10.446	98984.286	7.373	-3.27	0.20	-3.48
101	Hog	99097.237	7.600	100	497.24	99047.237	7.499	99147.237	7.600	0.20	0.00	0.20
102	Sag	99296.202	7.600	100	407.11	99246.202	7.600	99346.202	7.723	0.00	0.25	-0.25
103	Hog	99507.824	8.120	150	391.04	99432.824	7.936	99582.824	8.016	0.25	-0.14	0.38
104	Sag	99765.021	7.765	150	653.05	99690.021	7.868	99840.021	7.834	-0.14	0.09	-0.23
105	Hog	100710.683	8.632	150	1218.29	100635.683	8.564	100785.683	8.794	0.09	0.22	-0.12
106	Sag	101299.048	9.897	500	1402.81	101049.048	9.360	101549.048	9.543	0.22	-0.14	0.36
107	Hog	102068.921	8.807	300	1184.62	101918.921	9.019	102218.921	8.974	-0.14	0.11	-0.25
108	Sag	102363.454	9.136	200	1103.74	102263.454	9.024	102463.454	9.066	0.11	-0.07	0.18
109	Hog	103888.789	8.075	150	2111.58	103813.789	8.127	103963.789	8.076	-0.07	0.00	-0.07
110	Sag	104752.577	8.088	150	2933.70	104677.577	8.087	104827.577	8.128	0.00	0.05	-0.05
111	Sag	105460.249	8.461	150	1074.63	105385.249	8.421	105535.249	8.605	0.05	0.19	-0.14
112	Hog	105740.797	9.000	70	167.09	105705.797	8.933	105775.797	8.921	0.19	-0.23	0.42

VERTICAL CURVE DETAILS (3 OF 3)
(DUHURIA TO CHANDBALI)

CONSULTING ENGINEERS GROUP LTD.
E-12, Waj Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegidia.com

CLIENT :-
WORKS DEPARTMENT GOVT. OF ODISHA

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORKD BANK ASSISTANCE

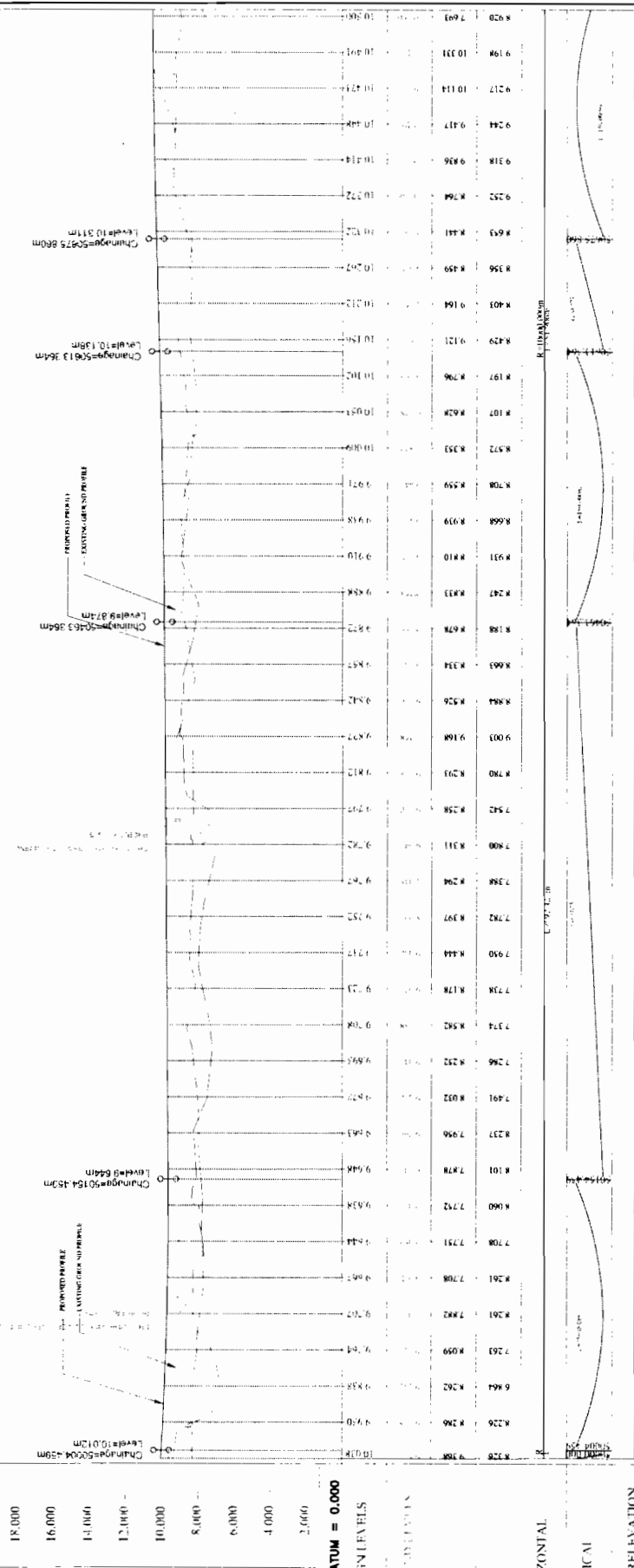
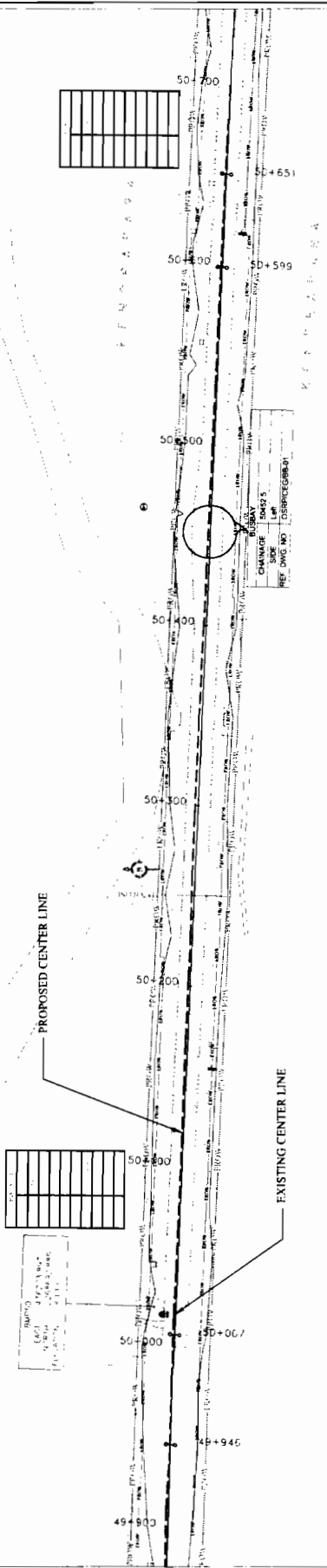
DRG NO.	OSR/CEG/dc-5TKM/V2/03	DESIGNED (A)	CEG	CEG	CEG	APPROVED (D)	C.E., WBP
SH. NO.		DATE	REV	R1	NTS		
SCALE							



Signature of Engineer/Inspector

TO CHANDBALI →

← TO JAGATPUR



STATION	CHANGING	VERTICAL	HORIZONTAL
0+00	18.000	18.000	18.000
0+10	16.000	16.000	16.000
0+20	14.000	14.000	14.000
0+30	12.000	12.000	12.000
0+40	10.000	10.000	10.000
0+50	8.000	8.000	8.000
0+60	6.000	6.000	6.000
0+70	4.000	4.000	4.000
0+80	2.000	2.000	2.000
0+90	0.000	0.000	0.000
10+00	0.000	0.000	0.000

WIDENING AND STRENGTHENING TO TWO LANE
PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI Km 50/000 TO Km 50/250

CONSULTANT:
ENGINEERS GROUP LTD.
 10/1, G. S. Road, Sector 10, Gurgaon, Haryana
 Ph: 01299-231141, Fax: 01299-231142, Email: info@egroup.com

CLIENT:
WORKS DEPT.
GOVT. OF ORISSA

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 WORKS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

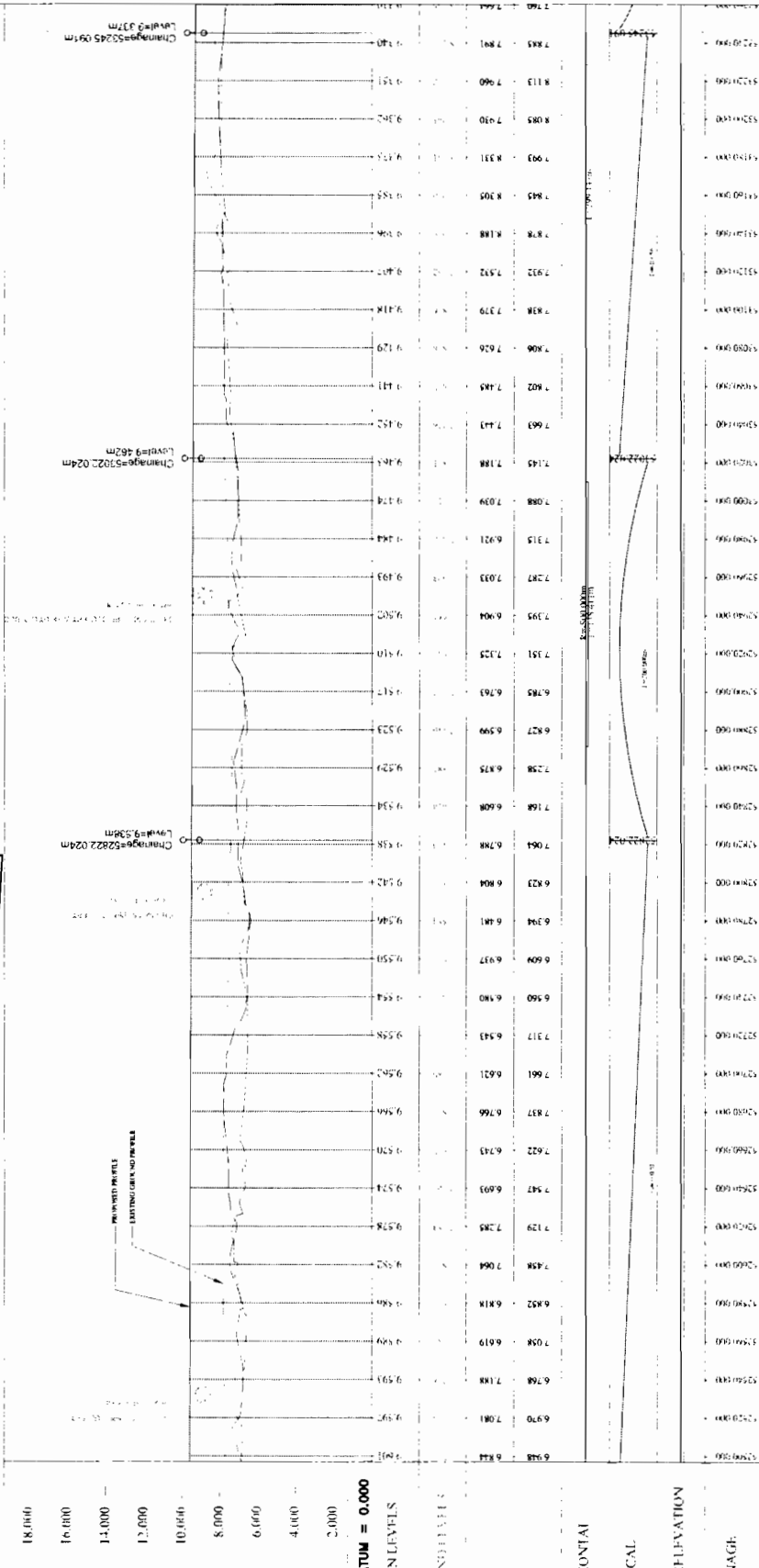
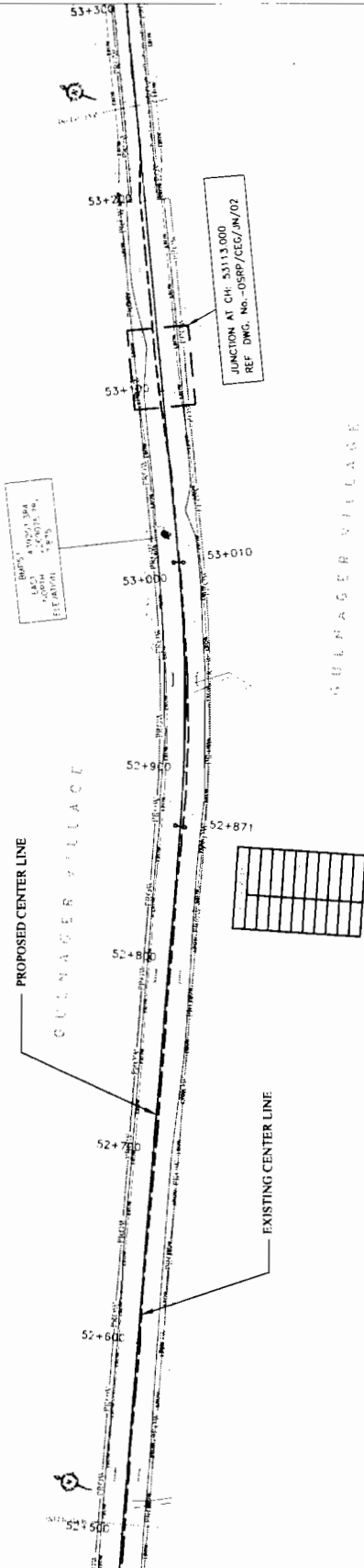
LEGEND:

- 1. Proposed Center Line
- 2. Existing Center Line
- 3. Proposed Road Width
- 4. Existing Road Width
- 5. Proposed Road Level
- 6. Existing Road Level
- 7. Proposed Road Profile
- 8. Existing Road Profile
- 9. Proposed Road Cross-section
- 10. Existing Road Cross-section



TO JAGATPUR

TO CHANDBALI



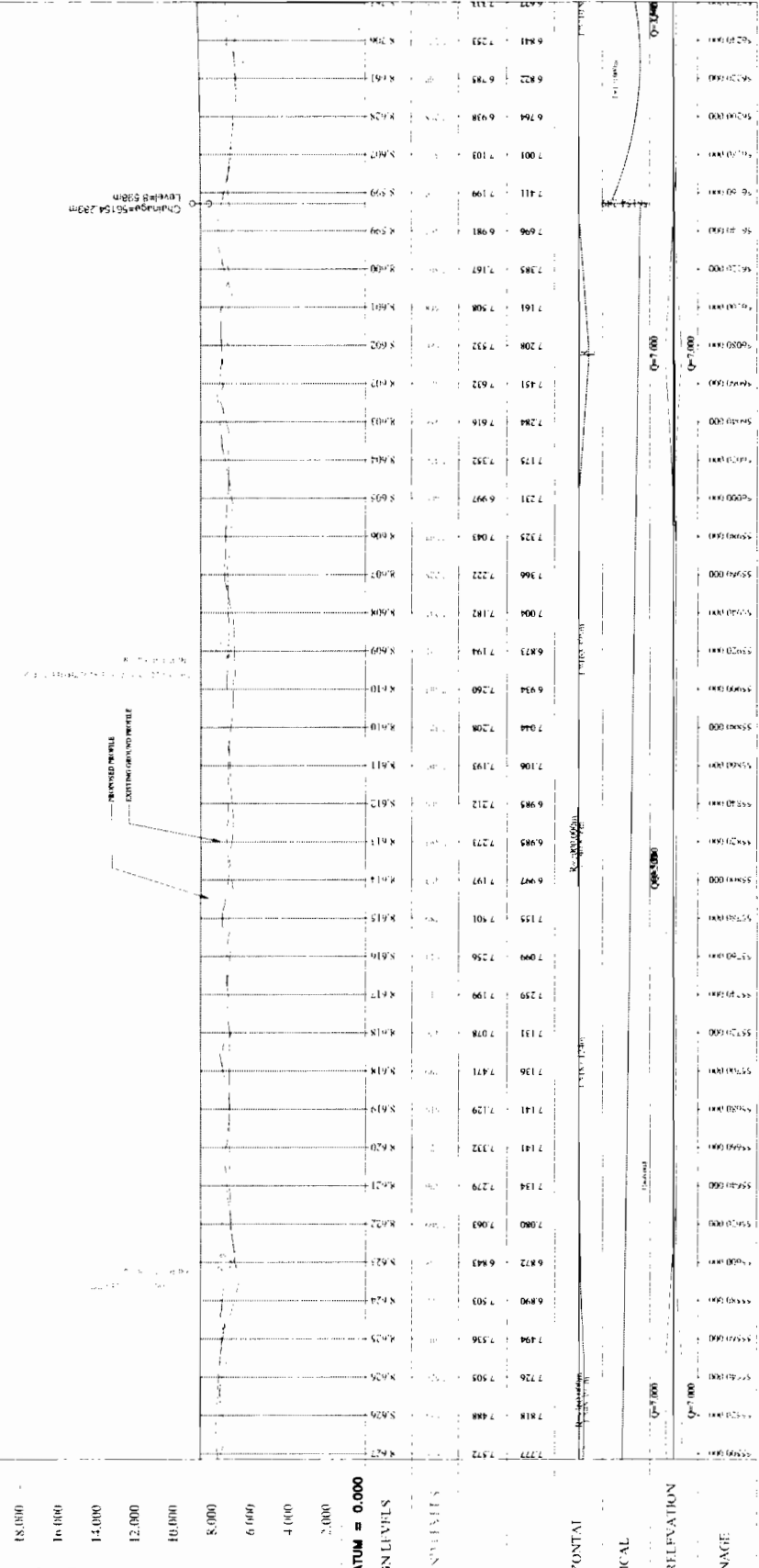
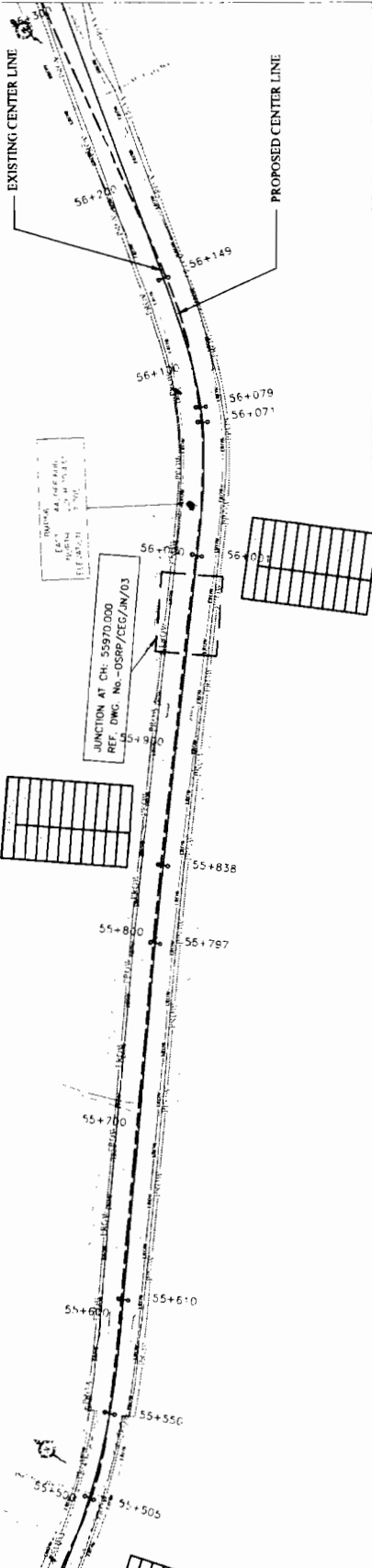
CONSULTANT:		WORKS DEPT.		GOVT. OF ORISSA.	
PROJECT:		CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND		DETAILED PROJECT PREPARATION OF PHASE - II	
PROJECT:		ROADS FOR ORISSA STATE ROAD PROJECT UNDER		WORLD BANK ASSISTANCE	
DATE	SCALE	DATE	SCALE	DATE	SCALE
12/27/11	1:1	12/27/11	1:1	12/27/11	1:1
REV	BY	REV	BY	REV	BY
7	CEG	7	CEG	7	CEG
DRAWN		CHECKED		APPROVED	
SHEETS		SHEETS		SHEETS	
NO. OF SHEETS		NO. OF SHEETS		NO. OF SHEETS	
NO. OF SHEETS		NO. OF SHEETS		NO. OF SHEETS	

DPJ - NKC (JV)
Contractor

Chief Engineer
World Bank Project Office
Employer

TO CHANDBALI

TO JAGATPUR



Station	Horizontal Elevation	Vertical Elevation	Super-elevation	Chainage
7.377	7.377	7.377	0.000	0+000
7.412	7.412	7.412	0.000	0+040
7.447	7.447	7.447	0.000	0+080
7.482	7.482	7.482	0.000	0+120
7.517	7.517	7.517	0.000	0+160
7.552	7.552	7.552	0.000	0+200
7.587	7.587	7.587	0.000	0+240
7.622	7.622	7.622	0.000	0+280
7.657	7.657	7.657	0.000	0+320
7.692	7.692	7.692	0.000	0+360
7.727	7.727	7.727	0.000	0+400
7.762	7.762	7.762	0.000	0+440
7.797	7.797	7.797	0.000	0+480
7.832	7.832	7.832	0.000	0+520
7.867	7.867	7.867	0.000	0+560
7.902	7.902	7.902	0.000	0+600
7.937	7.937	7.937	0.000	0+640
7.972	7.972	7.972	0.000	0+680
8.007	8.007	8.007	0.000	0+720
8.042	8.042	8.042	0.000	0+760
8.077	8.077	8.077	0.000	0+800
8.112	8.112	8.112	0.000	0+840
8.147	8.147	8.147	0.000	0+880
8.182	8.182	8.182	0.000	0+920
8.217	8.217	8.217	0.000	0+960
8.252	8.252	8.252	0.000	1+000
8.287	8.287	8.287	0.000	1+040
8.322	8.322	8.322	0.000	1+080
8.357	8.357	8.357	0.000	1+120
8.392	8.392	8.392	0.000	1+160
8.427	8.427	8.427	0.000	1+200
8.462	8.462	8.462	0.000	1+240
8.497	8.497	8.497	0.000	1+280
8.532	8.532	8.532	0.000	1+320
8.567	8.567	8.567	0.000	1+360
8.602	8.602	8.602	0.000	1+400
8.637	8.637	8.637	0.000	1+440
8.672	8.672	8.672	0.000	1+480
8.707	8.707	8.707	0.000	1+520
8.742	8.742	8.742	0.000	1+560
8.777	8.777	8.777	0.000	1+600
8.812	8.812	8.812	0.000	1+640
8.847	8.847	8.847	0.000	1+680
8.882	8.882	8.882	0.000	1+720
8.917	8.917	8.917	0.000	1+760
8.952	8.952	8.952	0.000	1+800
8.987	8.987	8.987	0.000	1+840
9.022	9.022	9.022	0.000	1+880
9.057	9.057	9.057	0.000	1+920
9.092	9.092	9.092	0.000	1+960
9.127	9.127	9.127	0.000	2+000
9.162	9.162	9.162	0.000	2+040
9.197	9.197	9.197	0.000	2+080
9.232	9.232	9.232	0.000	2+120
9.267	9.267	9.267	0.000	2+160
9.302	9.302	9.302	0.000	2+200
9.337	9.337	9.337	0.000	2+240
9.372	9.372	9.372	0.000	2+280
9.407	9.407	9.407	0.000	2+320
9.442	9.442	9.442	0.000	2+360
9.477	9.477	9.477	0.000	2+400
9.512	9.512	9.512	0.000	2+440
9.547	9.547	9.547	0.000	2+480
9.582	9.582	9.582	0.000	2+520
9.617	9.617	9.617	0.000	2+560
9.652	9.652	9.652	0.000	2+600
9.687	9.687	9.687	0.000	2+640
9.722	9.722	9.722	0.000	2+680
9.757	9.757	9.757	0.000	2+720
9.792	9.792	9.792	0.000	2+760
9.827	9.827	9.827	0.000	2+800
9.862	9.862	9.862	0.000	2+840
9.897	9.897	9.897	0.000	2+880
9.932	9.932	9.932	0.000	2+920
9.967	9.967	9.967	0.000	2+960
10.002	10.002	10.002	0.000	3+000
10.037	10.037	10.037	0.000	3+040
10.072	10.072	10.072	0.000	3+080
10.107	10.107	10.107	0.000	3+120
10.142	10.142	10.142	0.000	3+160
10.177	10.177	10.177	0.000	3+200
10.212	10.212	10.212	0.000	3+240
10.247	10.247	10.247	0.000	3+280
10.282	10.282	10.282	0.000	3+320
10.317	10.317	10.317	0.000	3+360
10.352	10.352	10.352	0.000	3+400
10.387	10.387	10.387	0.000	3+440
10.422	10.422	10.422	0.000	3+480
10.457	10.457	10.457	0.000	3+520
10.492	10.492	10.492	0.000	3+560
10.527	10.527	10.527	0.000	3+600
10.562	10.562	10.562	0.000	3+640
10.597	10.597	10.597	0.000	3+680
10.632	10.632	10.632	0.000	3+720
10.667	10.667	10.667	0.000	3+760
10.702	10.702	10.702	0.000	3+800
10.737	10.737	10.737	0.000	3+840
10.772	10.772	10.772	0.000	3+880
10.807	10.807	10.807	0.000	3+920
10.842	10.842	10.842	0.000	3+960
10.877	10.877	10.877	0.000	4+000

CONSULTANT:
CEG ENGINEERS GROUP LTD.

CLIENT:
WORKS DEPT. GOVT. OF ORISSA.

PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

DESIGNER:
S. K. SINGH
S. K. SINGH
S. K. SINGH
S. K. SINGH
S. K. SINGH

CHECKER:
S. K. SINGH
S. K. SINGH
S. K. SINGH
S. K. SINGH
S. K. SINGH

DATE: 13/07/2014

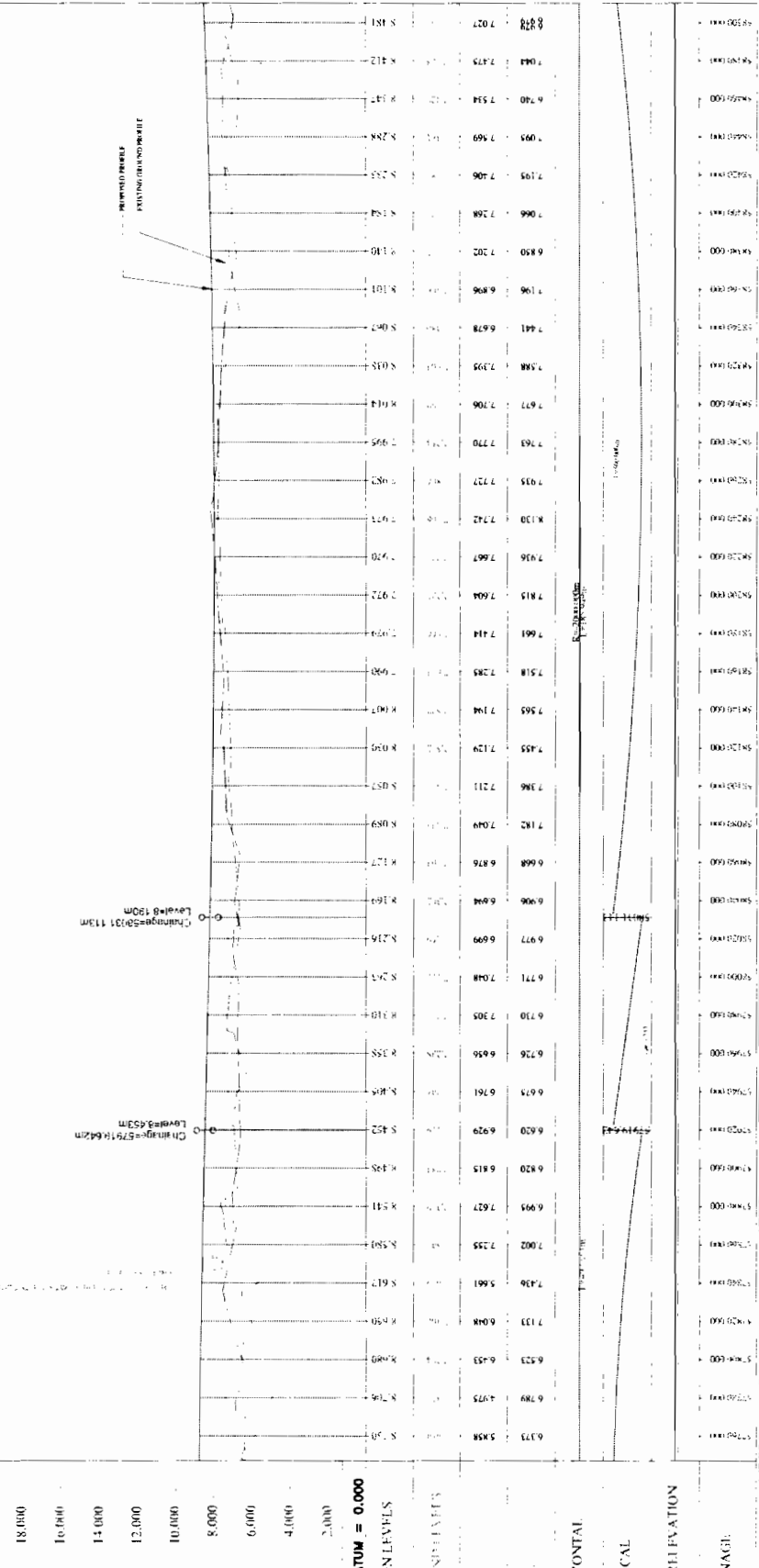
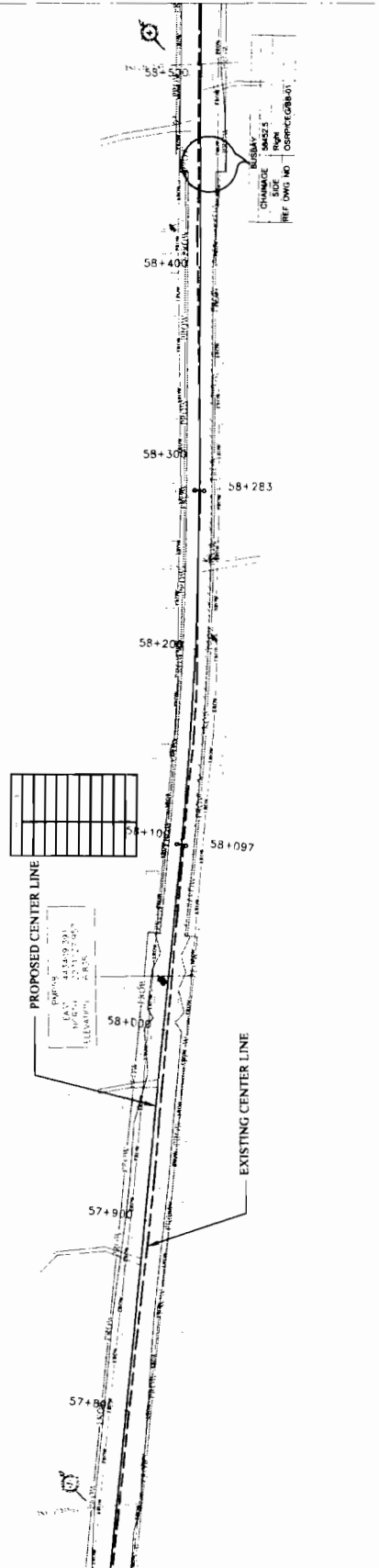
SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100

DPJ - NKC (JV)
Contractor

World Bank
Chief Engineer
Projects Division
Employer

TO CHANDBALI

TO JAGATPUR



CLIENT:
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II BRIDGES FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

CONSULTANT:
CE ENGINEERS GROUP LTD.
Plot No. 22/23/24, Sector-17, Phase-1, Gurgaon, Haryana-122006, India. www.cegroupindia.com

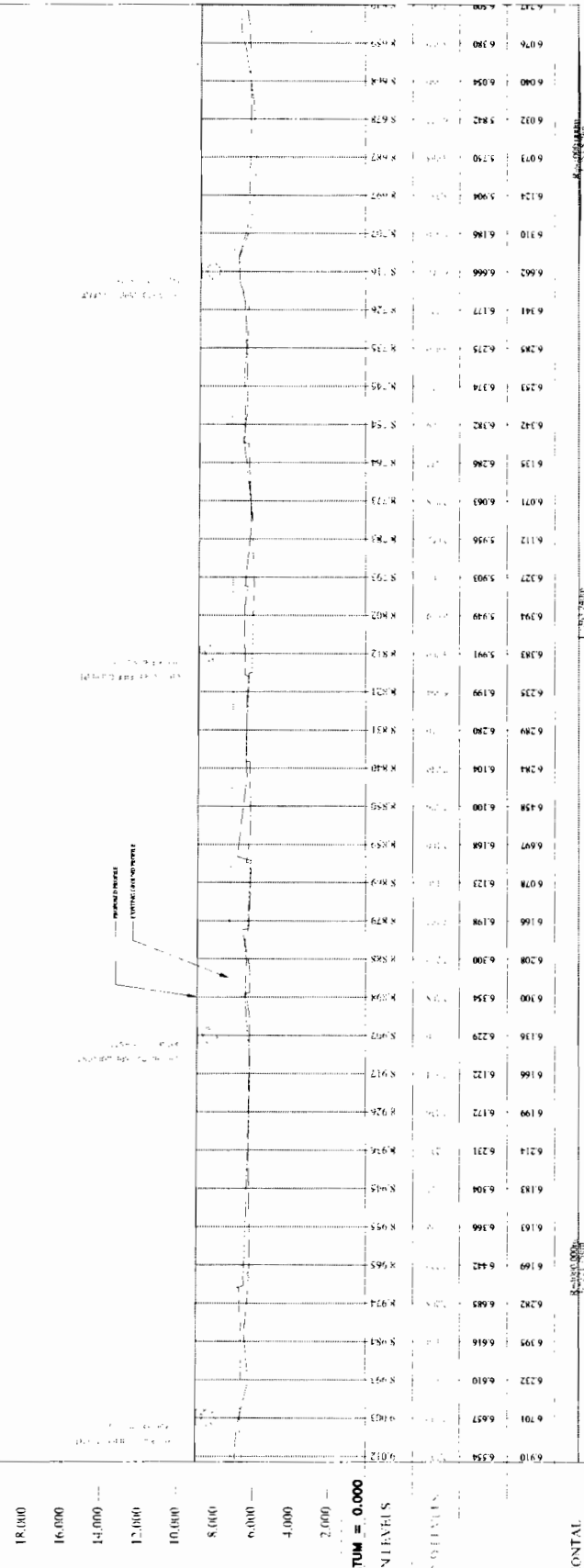
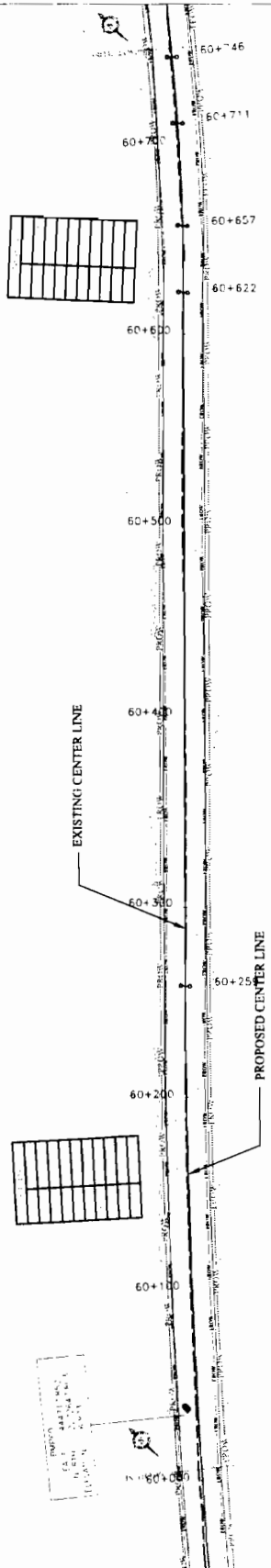
WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km.57750 To Km.581500

DWG. NO. CSB/CC/08/01/14
DATE 12/12/14
REV. NO. 1
SCALE: HORIZONTAL: 1:5000, VERTICAL: 1:1000

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]

← TO JAGATPUR

TO CHANDBALI →



STATION	EXISTING ELEVATION (M)	PROPOSED ELEVATION (M)	VERTICAL CURVE DATA
60+100	6.554	6.554	
60+110	6.657	6.571	
60+120	6.610	6.522	
60+130	6.616	6.495	
60+140	6.427	6.472	
60+150	6.366	6.452	
60+160	6.304	6.436	
60+170	6.231	6.422	
60+180	6.172	6.410	
60+190	6.122	6.400	
60+200	6.078	6.392	
60+210	6.039	6.385	
60+220	6.000	6.380	
60+230	5.968	6.376	
60+240	5.942	6.374	
60+250	5.921	6.373	
60+260	5.903	6.373	
60+270	5.889	6.374	
60+280	5.879	6.375	
60+290	5.872	6.377	
60+300	5.868	6.380	
60+310	5.866	6.384	
60+320	5.866	6.389	
60+330	5.868	6.396	
60+340	5.871	6.403	
60+350	5.875	6.412	
60+360	5.879	6.422	
60+370	5.884	6.432	
60+380	5.889	6.442	
60+390	5.894	6.452	
60+400	5.899	6.462	
60+410	5.904	6.472	
60+420	5.909	6.482	
60+430	5.914	6.492	
60+440	5.919	6.502	
60+450	5.924	6.512	
60+460	5.929	6.522	
60+470	5.934	6.532	
60+480	5.939	6.542	
60+490	5.944	6.552	
60+500	5.949	6.562	
60+510	5.954	6.572	
60+520	5.959	6.582	
60+530	5.964	6.592	
60+540	5.969	6.602	
60+550	5.974	6.612	
60+560	5.979	6.622	
60+570	5.984	6.632	
60+580	5.989	6.642	
60+590	5.994	6.652	
60+600	5.999	6.662	
60+610	6.004	6.672	
60+620	6.009	6.682	
60+630	6.014	6.692	
60+640	6.019	6.702	
60+650	6.024	6.712	
60+660	6.029	6.722	
60+670	6.034	6.732	
60+680	6.039	6.742	
60+690	6.044	6.752	
60+700	6.049	6.762	
60+710	6.054	6.772	
60+720	6.059	6.782	
60+730	6.064	6.792	
60+740	6.069	6.802	
60+746	6.074	6.807	

LEGEND

Proposed Road
 Existing Road
 Proposed Center Line
 Existing Center Line
 Proposed Right of Way
 Existing Right of Way
 Proposed Left of Way
 Existing Left of Way
 Proposed Right of Way
 Existing Right of Way
 Proposed Left of Way
 Existing Left of Way

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 ROADS FROM ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

CLIENT:-
 WORKS DEPT.
 GOVT. OF ORISSA.

CONSULTANT:-
 C E ENGINEERS GROUP LTD.
 Plot No. 10, Industrial Area, Phase II, Bhubaneswar
 Dist. Khurda, Orissa - 751 005

**WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km 60/000 TO Km 60/750**

DIR. NO. _____
 SH. NO. _____
 DATE _____
 SCALE _____
 REV. _____
 C.E. _____
 P.E. _____
 C.S.W.P. _____

DPJ - NKC (JV), Contractor

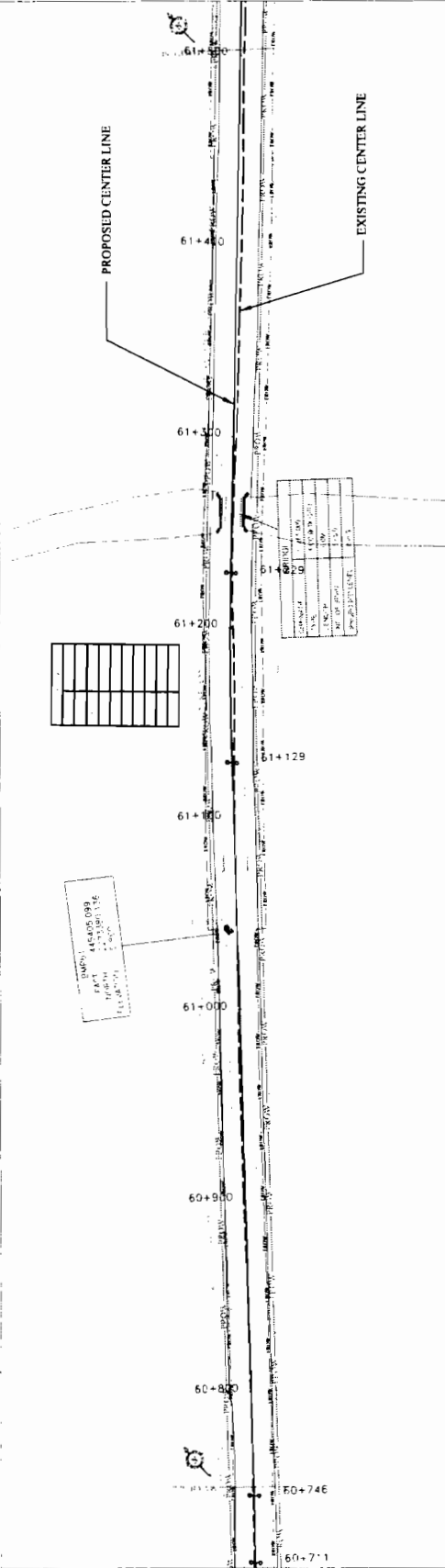
World Bank Project
 Chief Engineer
 Employer



[Handwritten Signature]

TO JAGATPUR

TO CHANDBALI



CHAINAGE	DESIGN LEVELS	PROPOSED LEVELS	EXISTING LEVELS	PROPOSED SUPERELEVATION	EXISTING SUPERELEVATION
60+7.1	6.500	6.500	6.500	0.000	0.000
60+8.0	6.500	6.500	6.500	0.000	0.000
60+9.0	6.500	6.500	6.500	0.000	0.000
60+19.0	6.500	6.500	6.500	0.000	0.000
61+0.0	6.500	6.500	6.500	0.000	0.000
61+19.0	6.500	6.500	6.500	0.000	0.000
61+20.0	6.500	6.500	6.500	0.000	0.000
61+4.0	6.500	6.500	6.500	0.000	0.000

CHAINAGE	DESIGN LEVELS	PROPOSED LEVELS	EXISTING LEVELS	PROPOSED SUPERELEVATION	EXISTING SUPERELEVATION
61+4.0	6.500	6.500	6.500	0.000	0.000
61+5.0	6.500	6.500	6.500	0.000	0.000
61+6.0	6.500	6.500	6.500	0.000	0.000
61+7.0	6.500	6.500	6.500	0.000	0.000
61+8.0	6.500	6.500	6.500	0.000	0.000
61+9.0	6.500	6.500	6.500	0.000	0.000
61+10.0	6.500	6.500	6.500	0.000	0.000
61+11.0	6.500	6.500	6.500	0.000	0.000
61+12.0	6.500	6.500	6.500	0.000	0.000
61+13.0	6.500	6.500	6.500	0.000	0.000
61+14.0	6.500	6.500	6.500	0.000	0.000
61+15.0	6.500	6.500	6.500	0.000	0.000
61+16.0	6.500	6.500	6.500	0.000	0.000
61+17.0	6.500	6.500	6.500	0.000	0.000
61+18.0	6.500	6.500	6.500	0.000	0.000
61+19.0	6.500	6.500	6.500	0.000	0.000
61+20.0	6.500	6.500	6.500	0.000	0.000
61+21.0	6.500	6.500	6.500	0.000	0.000
61+22.0	6.500	6.500	6.500	0.000	0.000
61+23.0	6.500	6.500	6.500	0.000	0.000
61+24.0	6.500	6.500	6.500	0.000	0.000
61+25.0	6.500	6.500	6.500	0.000	0.000
61+26.0	6.500	6.500	6.500	0.000	0.000
61+27.0	6.500	6.500	6.500	0.000	0.000
61+28.0	6.500	6.500	6.500	0.000	0.000
61+29.0	6.500	6.500	6.500	0.000	0.000
61+30.0	6.500	6.500	6.500	0.000	0.000
61+31.0	6.500	6.500	6.500	0.000	0.000
61+32.0	6.500	6.500	6.500	0.000	0.000
61+33.0	6.500	6.500	6.500	0.000	0.000
61+34.0	6.500	6.500	6.500	0.000	0.000
61+35.0	6.500	6.500	6.500	0.000	0.000
61+36.0	6.500	6.500	6.500	0.000	0.000
61+37.0	6.500	6.500	6.500	0.000	0.000
61+38.0	6.500	6.500	6.500	0.000	0.000
61+39.0	6.500	6.500	6.500	0.000	0.000
61+40.0	6.500	6.500	6.500	0.000	0.000
61+41.0	6.500	6.500	6.500	0.000	0.000
61+42.0	6.500	6.500	6.500	0.000	0.000
61+43.0	6.500	6.500	6.500	0.000	0.000
61+44.0	6.500	6.500	6.500	0.000	0.000
61+45.0	6.500	6.500	6.500	0.000	0.000
61+46.0	6.500	6.500	6.500	0.000	0.000
61+47.0	6.500	6.500	6.500	0.000	0.000
61+48.0	6.500	6.500	6.500	0.000	0.000
61+49.0	6.500	6.500	6.500	0.000	0.000
61+50.0	6.500	6.500	6.500	0.000	0.000
61+51.0	6.500	6.500	6.500	0.000	0.000
61+52.0	6.500	6.500	6.500	0.000	0.000
61+53.0	6.500	6.500	6.500	0.000	0.000
61+54.0	6.500	6.500	6.500	0.000	0.000
61+55.0	6.500	6.500	6.500	0.000	0.000
61+56.0	6.500	6.500	6.500	0.000	0.000
61+57.0	6.500	6.500	6.500	0.000	0.000
61+58.0	6.500	6.500	6.500	0.000	0.000
61+59.0	6.500	6.500	6.500	0.000	0.000
61+60.0	6.500	6.500	6.500	0.000	0.000
61+61.0	6.500	6.500	6.500	0.000	0.000
61+62.0	6.500	6.500	6.500	0.000	0.000
61+63.0	6.500	6.500	6.500	0.000	0.000
61+64.0	6.500	6.500	6.500	0.000	0.000
61+65.0	6.500	6.500	6.500	0.000	0.000
61+66.0	6.500	6.500	6.500	0.000	0.000
61+67.0	6.500	6.500	6.500	0.000	0.000
61+68.0	6.500	6.500	6.500	0.000	0.000
61+69.0	6.500	6.500	6.500	0.000	0.000
61+70.0	6.500	6.500	6.500	0.000	0.000
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61+74.0	6.500	6.500	6.500	0.000	0.000
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61+77.0	6.500	6.500	6.500	0.000	0.000
61+78.0	6.500	6.500	6.500	0.000	0.000
61+79.0	6.500	6.500	6.500	0.000	0.000
61+80.0	6.500	6.500	6.500	0.000	0.000
61+81.0	6.500	6.500	6.500	0.000	0.000
61+82.0	6.500	6.500	6.500	0.000	0.000
61+83.0	6.500	6.500	6.500	0.000	0.000
61+84.0	6.500	6.500	6.500	0.000	0.000
61+85.0	6.500	6.500	6.500	0.000	0.000
61+86.0	6.500	6.500	6.500	0.000	0.000
61+87.0	6.500	6.500	6.500	0.000	0.000
61+88.0	6.500	6.500	6.500	0.000	0.000
61+89.0	6.500	6.500	6.500	0.000	0.000
61+90.0	6.500	6.500	6.500	0.000	0.000
61+91.0	6.500	6.500	6.500	0.000	0.000
61+92.0	6.500	6.500	6.500	0.000	0.000
61+93.0	6.500	6.500	6.500	0.000	0.000
61+94.0	6.500	6.500	6.500	0.000	0.000
61+95.0	6.500	6.500	6.500	0.000	0.000
61+96.0	6.500	6.500	6.500	0.000	0.000
61+97.0	6.500	6.500	6.500	0.000	0.000
61+98.0	6.500	6.500	6.500	0.000	0.000
61+99.0	6.500	6.500	6.500	0.000	0.000
61+100.0	6.500	6.500	6.500	0.000	0.000

CONSULTANT:
CONSULTANTS ENGINEERS GROUP LTD.
10/12, Jayaprakash Nagar, Cuttack - 753001
Ph: +91-674-2523000, 2523055
Fax: +91-674-2523000, 2523055
E-mail: info@cegroup.com

CLIENT:
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
DETAILED PROJECT PREPARATION OF PHASE - II
ROADS FOR ORISSA STATE ROAD PROJECT UNDER
WORLD BANK ASSISTANCE

REVISIONS:

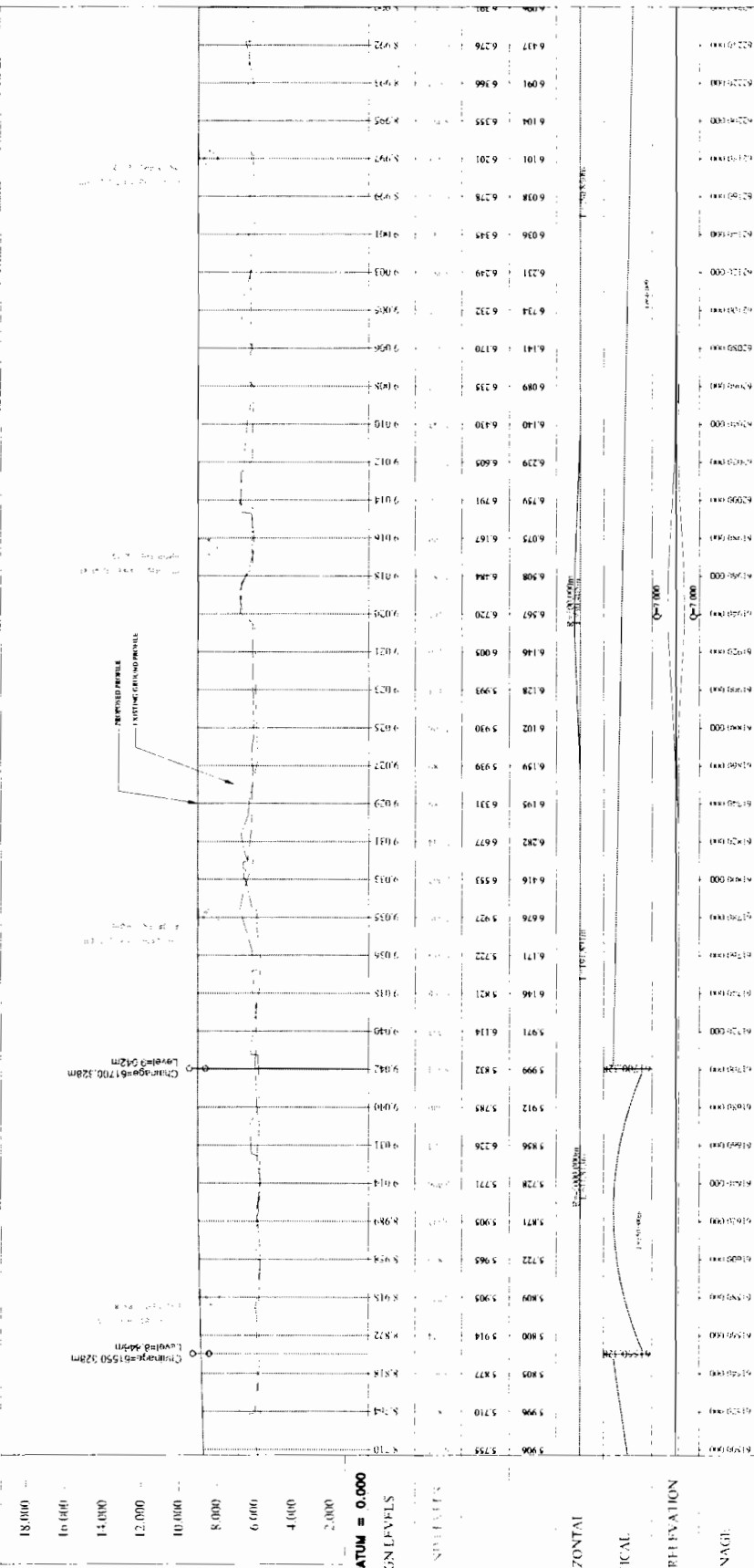
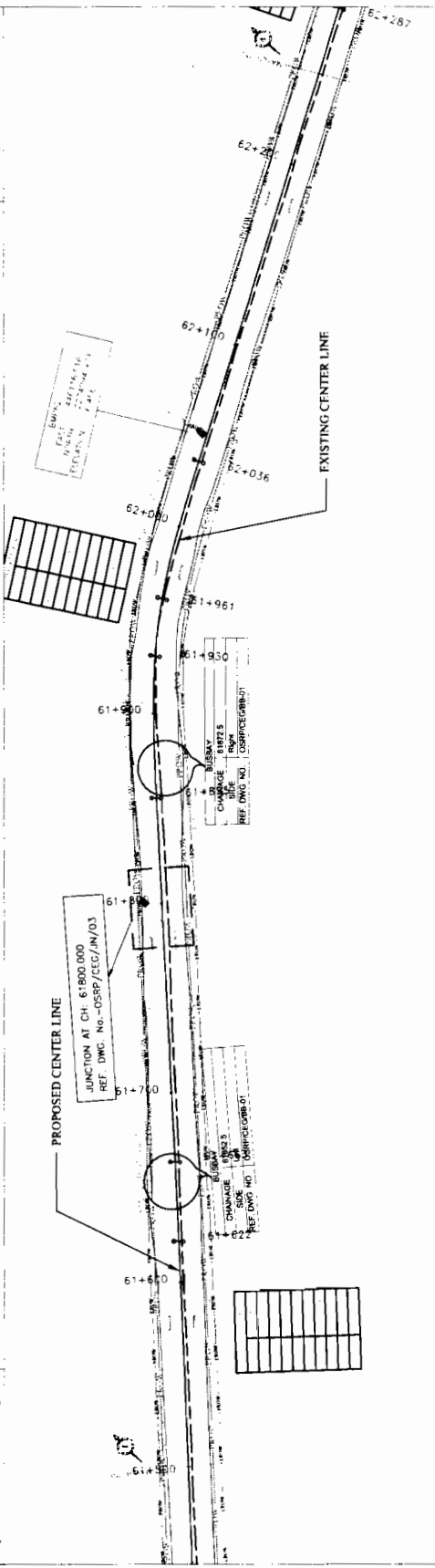
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DPJ - NKC (JV),
Contractor

Chief Engineer,
Orissa
World Bank Project
O/o the E.A.C.I. (Orissa) Dept.

TO CHANDBALI

TO JAGATPUR



Station	Ground Level	Proposed Profile	Chainage
61+00	18000	18000	0+00
61+10	17500	17500	0+10
61+20	17000	17000	0+20
61+30	16500	16500	0+30
61+40	16000	16000	0+40
61+50	15500	15500	0+50
61+60	15000	15000	0+60
61+70	14500	14500	0+70
61+80	14000	14000	0+80
61+90	13500	13500	0+90
62+00	13000	13000	1+00
62+10	12500	12500	1+10
62+20	12000	12000	1+20
62+30	11500	11500	1+30
62+40	11000	11000	1+40
62+50	10500	10500	1+50
62+60	10000	10000	1+60
62+70	9500	9500	1+70
62+80	9000	9000	1+80
62+90	8500	8500	1+90
63+00	8000	8000	2+00
63+10	7500	7500	2+10
63+20	7000	7000	2+20
63+30	6500	6500	2+30
63+40	6000	6000	2+40
63+50	5500	5500	2+50
63+60	5000	5000	2+60
63+70	4500	4500	2+70
63+80	4000	4000	2+80
63+90	3500	3500	2+90
64+00	3000	3000	3+00
64+10	2500	2500	3+10
64+20	2000	2000	3+20
64+30	1500	1500	3+30
64+40	1000	1000	3+40
64+50	500	500	3+50
64+60	0	0	3+60

CLIENT:-
 WORKS DEPT.
 GOVT. OF ORISSA

CONSULTANT:-
 C.E.G. ENGINEERS GROUP LTD.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY, STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (B) ROAD FOR ORISSA STATE ROAD PROJECT UNDER SACRED BANK ASSISTANCE

LEGEND:

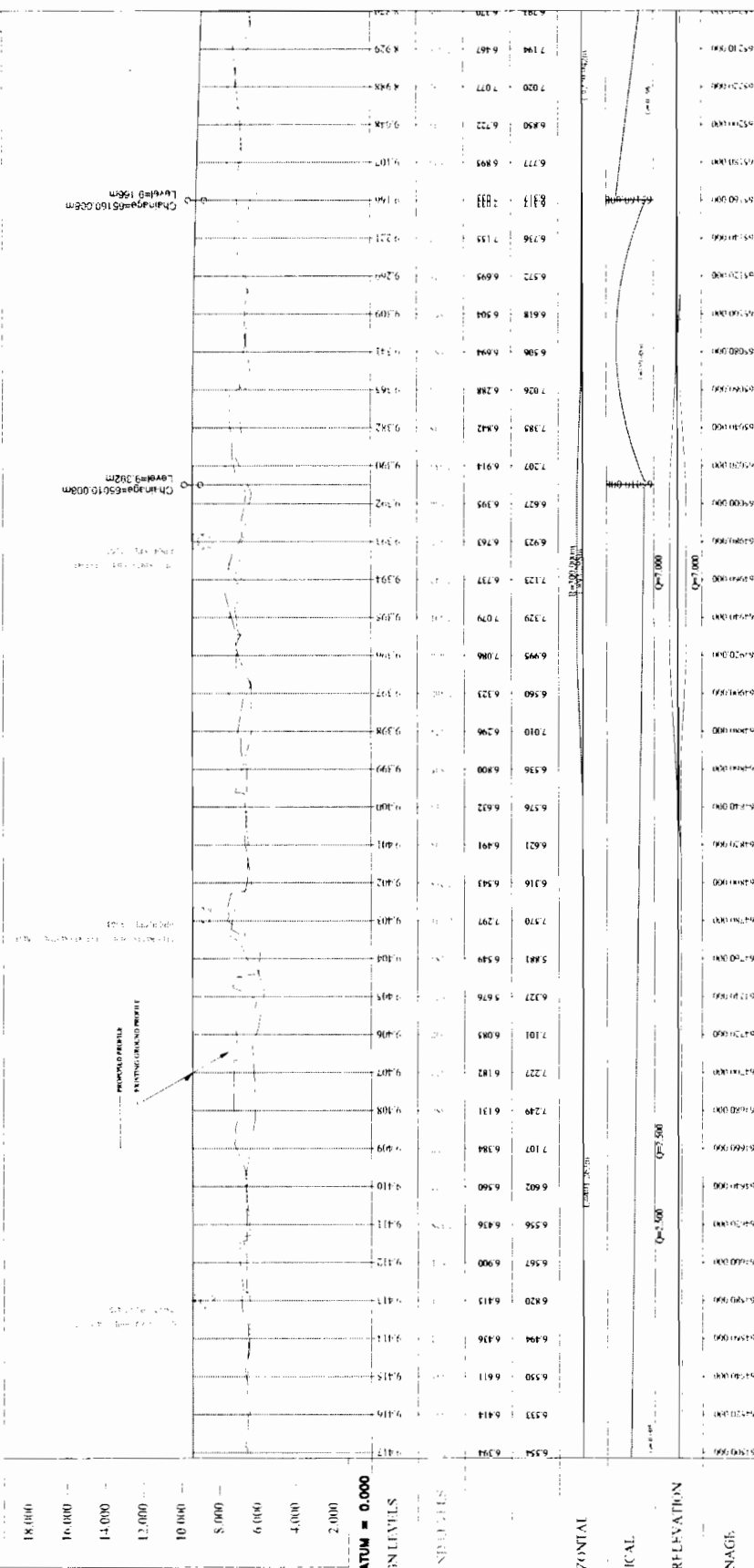
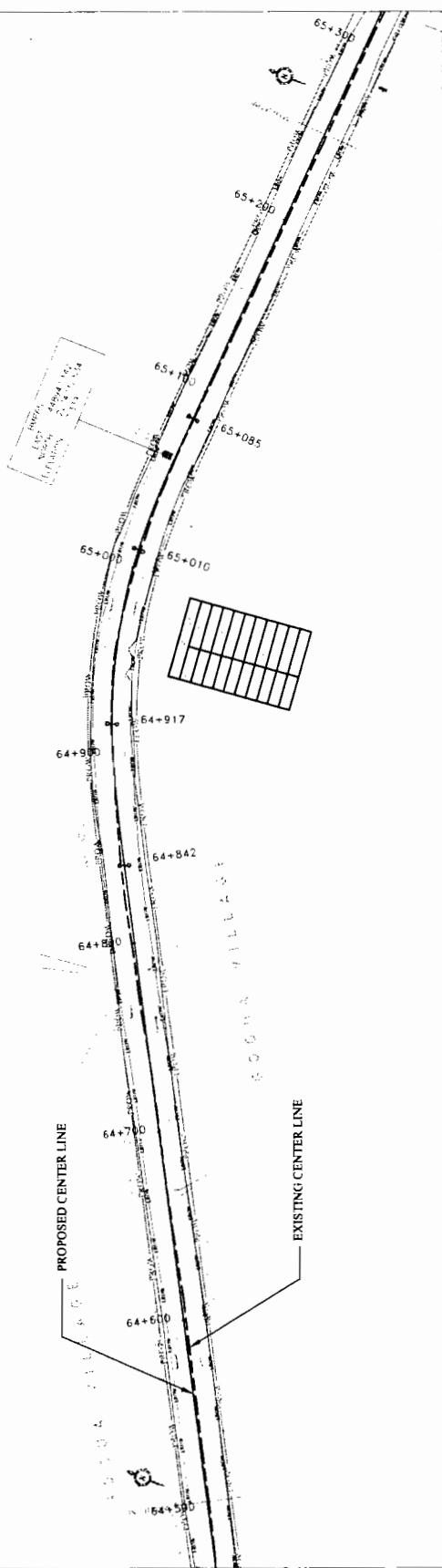
- 1. Proposed Profile
- 2. Existing Ground Profile
- 3. Chainage
- 4. Vertical Curve
- 5. Horizontal Curve
- 6. Right of Way
- 7. Road Width
- 8. Road Bed
- 9. Road Surface
- 10. Road Shoulder
- 11. Road Edge
- 12. Road Center Line
- 13. Road Axis
- 14. Road Boundary
- 15. Road Marking
- 16. Road Sign
- 17. Road Light
- 18. Road Drain
- 19. Road Bridge
- 20. Road Tunnel
- 21. Road Overpass
- 22. Road Underpass
- 23. Road Culvert
- 24. Road Viaduct
- 25. Road Flyover
- 26. Road Interchange
- 27. Road Junction
- 28. Road Roundabout
- 29. Road T-junction
- 30. Road X-junction
- 31. Road Y-junction
- 32. Road Z-junction
- 33. Road W-junction
- 34. Road V-junction
- 35. Road U-junction
- 36. Road T-junction
- 37. Road X-junction
- 38. Road Y-junction
- 39. Road Z-junction
- 40. Road W-junction
- 41. Road V-junction
- 42. Road U-junction
- 43. Road T-junction
- 44. Road X-junction
- 45. Road Y-junction
- 46. Road Z-junction
- 47. Road W-junction
- 48. Road V-junction
- 49. Road U-junction
- 50. Road T-junction

Chief Engineer,
 World Bank Project Orissa
 Engineer

DPJ - NKC (JV),
 Contractor

TO CHANDBALI →

← TO JAGATPUR



STATION	PROPOSED ELEVATION	GROUND LEVEL
64+500	6.54	6.94
64+510	6.53	6.84
64+520	6.50	6.71
64+530	6.49	6.56
64+540	6.48	6.43
64+550	6.47	6.30
64+560	6.46	6.17
64+570	6.45	6.04
64+580	6.44	5.91
64+590	6.43	5.78
64+600	6.42	5.65
64+610	6.41	5.52
64+620	6.40	5.39
64+630	6.39	5.26
64+640	6.38	5.13
64+650	6.37	5.00
64+660	6.36	4.87
64+670	6.35	4.74
64+680	6.34	4.61
64+690	6.33	4.48
64+700	6.32	4.35
64+710	6.31	4.22
64+720	6.30	4.09
64+730	6.29	3.96
64+740	6.28	3.83
64+750	6.27	3.70
64+760	6.26	3.57
64+770	6.25	3.44
64+780	6.24	3.31
64+790	6.23	3.18
64+800	6.22	3.05
64+810	6.21	2.92
64+820	6.20	2.79
64+830	6.19	2.66
64+842	6.18	2.53
64+850	6.17	2.40
64+860	6.16	2.27
64+870	6.15	2.14
64+880	6.14	2.01
64+890	6.13	1.88
64+900	6.12	1.75
64+917	6.11	1.62
64+920	6.10	1.49
64+930	6.09	1.36
64+940	6.08	1.23
64+950	6.07	1.10
64+960	6.06	0.97
64+970	6.05	0.84
64+980	6.04	0.71
64+990	6.03	0.58
65+000	6.02	0.45
65+010	6.01	0.32
65+020	6.00	0.19
65+030	5.99	0.06
65+040	5.98	-0.07
65+050	5.97	-0.20
65+060	5.96	-0.33
65+070	5.95	-0.46
65+080	5.94	-0.59
65+090	5.93	-0.72
65+100	5.92	-0.85
65+110	5.91	-0.98
65+120	5.90	-1.11
65+130	5.89	-1.24
65+140	5.88	-1.37
65+150	5.87	-1.50
65+160	5.86	-1.63
65+170	5.85	-1.76
65+180	5.84	-1.89
65+190	5.83	-2.02
65+200	5.82	-2.15
65+210	5.81	-2.28
65+220	5.80	-2.41
65+230	5.79	-2.54
65+240	5.78	-2.67
65+250	5.77	-2.80
65+260	5.76	-2.93
65+270	5.75	-3.06
65+280	5.74	-3.19
65+290	5.73	-3.32
65+300	5.72	-3.45

DATE	12/21/12
SCALE	HORIZONTAL: 1:1000 VERTICAL: 1:100
DESIGNED BY	
CHECKED BY	
APPROVED BY	

CONSULTANT:
C ENGINEERS GROUP LTD.
12/21/12
12/21/12

CLIENT:
**WORKS DEPT.
GOVT. OF ORISSA.**

PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
DETAILED PROJECT PREPARATION OF PHASE - II
ROADS FOR ORISSA STATE ROAD PROJECT UNDER
WORLD BANK ASSISTANCE

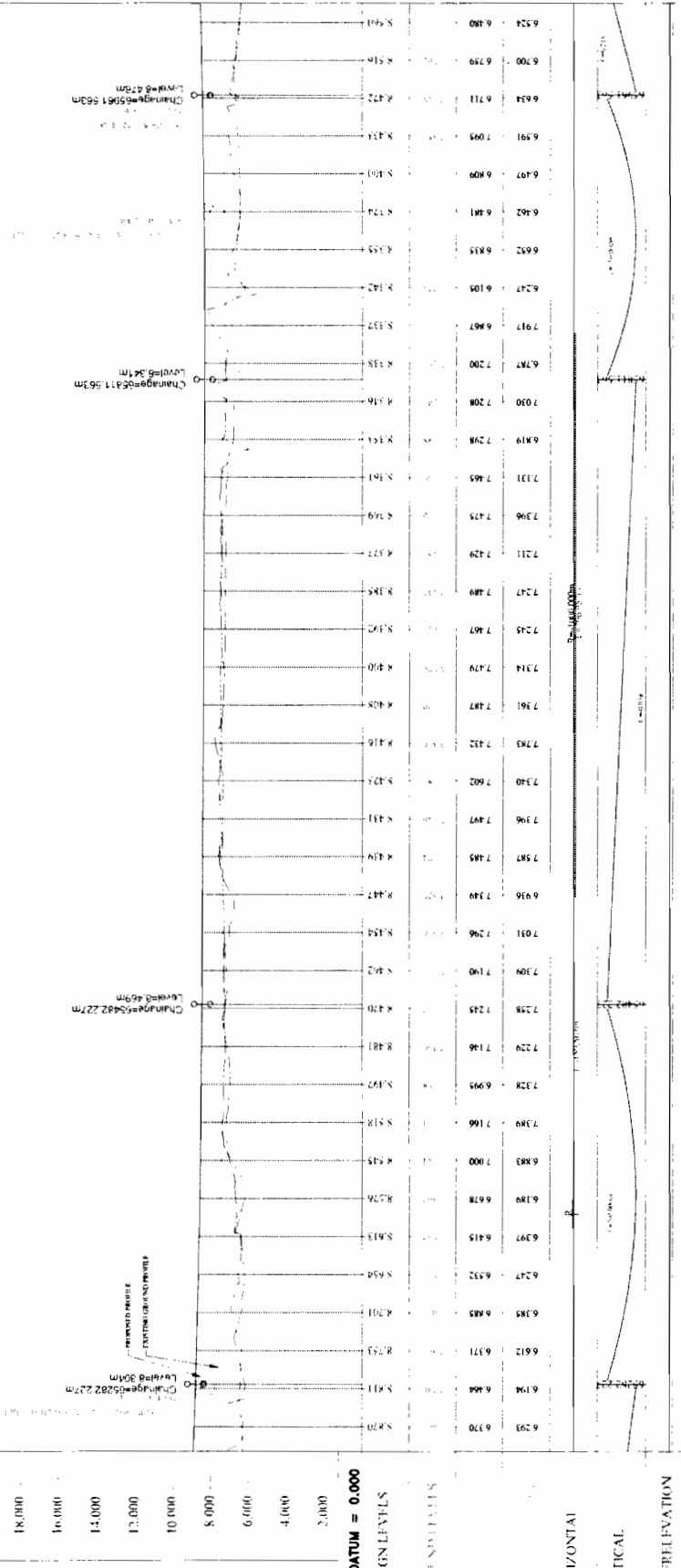
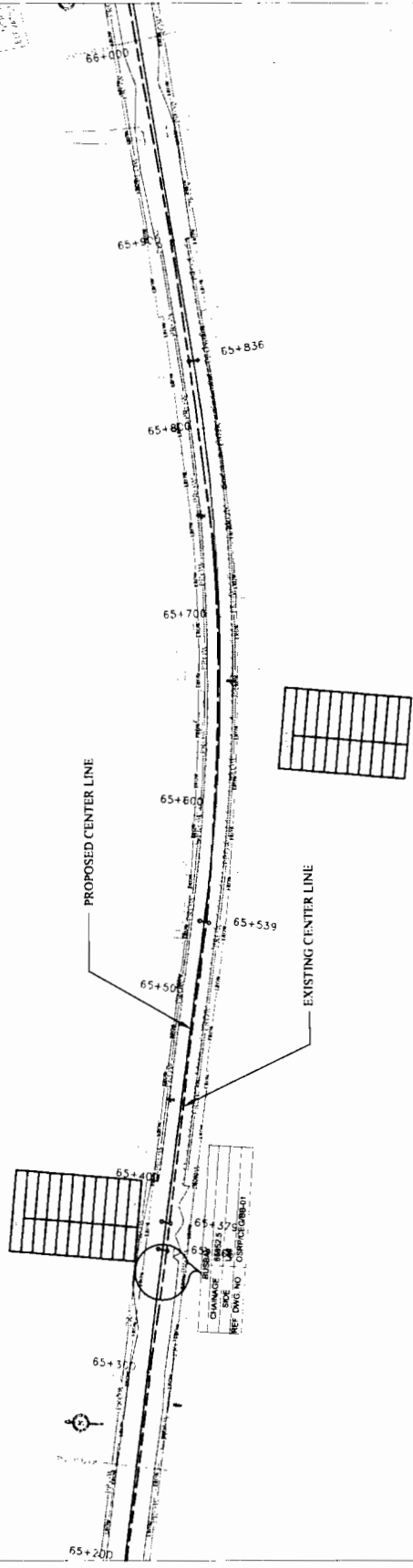
DPJ - NKC (JV),
Contractor

Volume-IV: Page 37 of 200

Chief Engineer
World Bank Project
Employer

TO JAGATPUR

TO CHANDBALI



Station	Proposed Level	Ground Level
65+200	6.291	6.370
65+250	6.194	6.464
65+300	6.612	6.371
65+350	6.385	6.485
65+400	6.247	6.532
65+450	6.971	6.415
65+500	6.189	6.678
65+550	6.883	7.000
65+600	7.389	7.166
65+650	7.328	6.995
65+700	7.229	7.146
65+750	7.258	7.248
65+800	7.209	7.190
65+850	7.091	7.206
65+900	6.936	7.349
65+950	7.587	7.485
66+000	7.396	7.497
66+050	7.340	7.602
66+100	7.783	7.432
66+150	7.361	7.387
66+200	7.314	7.479
66+250	7.245	7.467
66+300	7.247	7.489
66+350	7.211	7.429
66+400	7.296	7.475
66+450	7.131	7.465
66+500	6.819	7.298
66+550	7.030	7.208
66+600	6.787	7.200
66+650	6.971	6.867
66+700	6.247	6.105
66+750	6.657	6.835
66+800	6.462	6.841
66+850	6.497	6.809
66+900	6.591	7.095
66+950	6.839	6.711
67+000	6.700	6.759
67+050	6.524	6.480

CONSULTANT:-
C E ENGINEERS GROUP LTD.
 CONSULTING ENGINEERS GROUP LTD.
 10/1, B-1, Sector-10, Gurgaon, Haryana-122002, India
 Tel: +91-122-2521418, Fax: +91-122-2521419, Email: ce@ce-engineers.com

CLIENT:-
WORKS DEPT. GOVT. OF ORISSA.

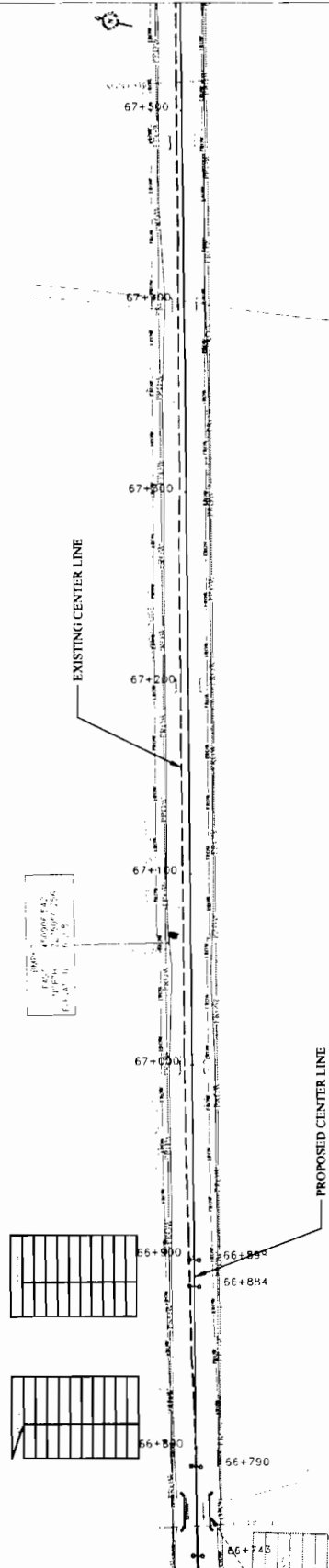
PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DURGURIA TO CHANDBALI Km.65/250 TO Km.66/000

DRG NO	OR/CE/06/03/17/AM/004
SH NO	24
DATE	27/07/17
REV	B-1
SCALE	HORIZONTAL: 1:1000 VERTICAL: 1:100
CPG	CPG
CHK	CHK
APP'D	APP'D
DESIGNER	DESIGNER
DATE	DATE
REV	REV
SCALE	SCALE
CPG	CPG
CHK	CHK
APP'D	APP'D
DESIGNER	DESIGNER
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SCALE	SCALE
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CHK	CHK
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TO CHANDBALI →

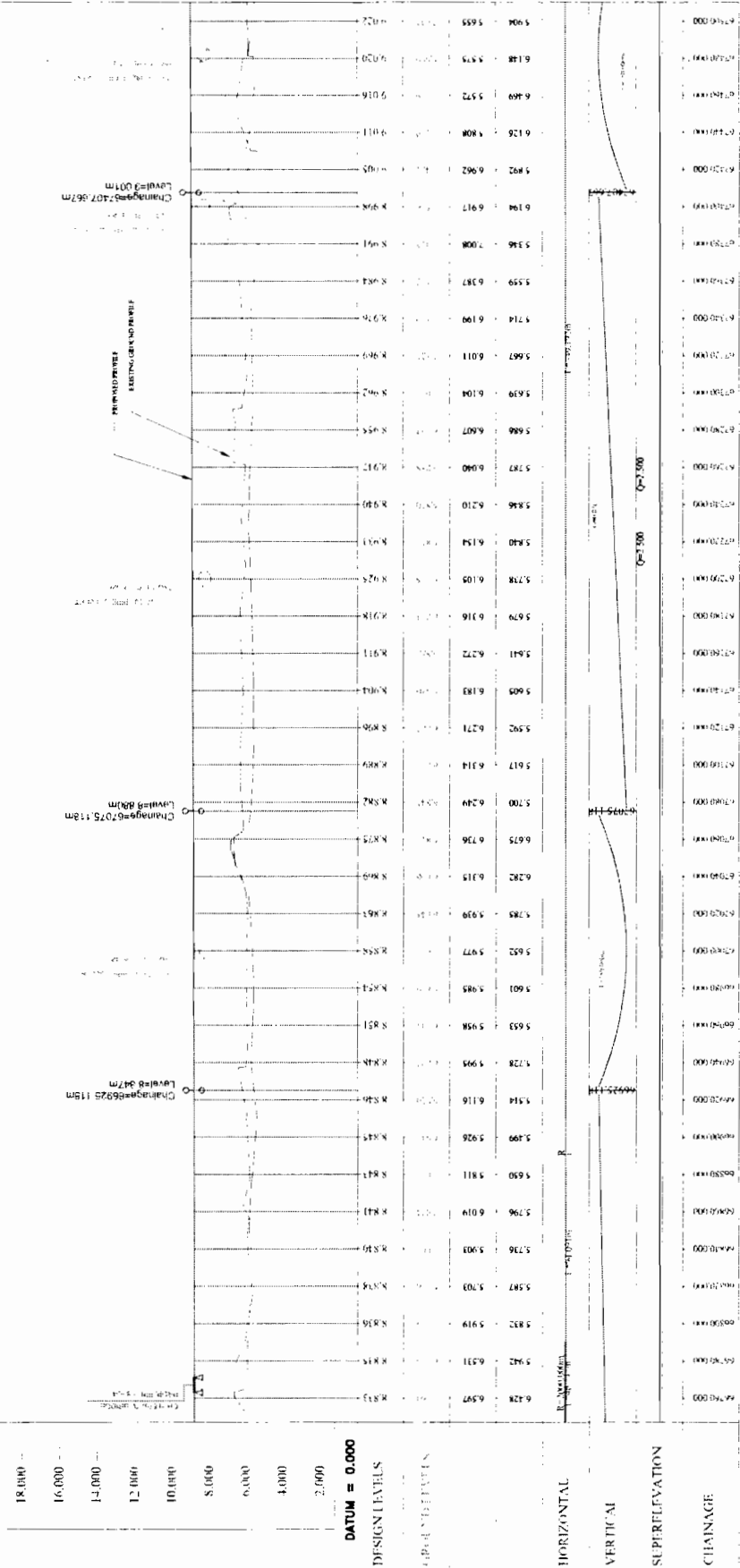
← TO JAGATPUR



Change = 0.07m
Level = 8.001m

Change = 0.75m
Level = 8.00m

Change = 0.75m
Level = 8.00m



DATUM = 0.000

DESIGN LEVELS

GRADIENTS

HORIZONTAL

VERTICAL

SUPERELEVATION

CHANGE

BRNO	OSR/EGG/STAMP/PR	DATE	REV	BY	CHK	APP
01		12/12/17	1			
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WIDENING AND STRENGTHENING TO TWO LANE
PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI Km.66/750 TO Km.67/500

CONSULTANT:-
C E ENGINEERS GROUP LTD.
1/1, 2/1, 3/1, 4/1, 5/1, 6/1, 7/1, 8/1, 9/1, 10/1, 11/1, 12/1, 13/1, 14/1, 15/1, 16/1, 17/1, 18/1, 19/1, 20/1, 21/1, 22/1, 23/1, 24/1, 25/1, 26/1, 27/1, 28/1, 29/1, 30/1, 31/1, 32/1, 33/1, 34/1, 35/1, 36/1, 37/1, 38/1, 39/1, 40/1, 41/1, 42/1, 43/1, 44/1, 45/1, 46/1, 47/1, 48/1, 49/1, 50/1, 51/1, 52/1, 53/1, 54/1, 55/1, 56/1, 57/1, 58/1, 59/1, 60/1, 61/1, 62/1, 63/1, 64/1, 65/1, 66/1, 67/1, 68/1, 69/1, 70/1, 71/1, 72/1, 73/1, 74/1, 75/1, 76/1, 77/1, 78/1, 79/1, 80/1, 81/1, 82/1, 83/1, 84/1, 85/1, 86/1, 87/1, 88/1, 89/1, 90/1, 91/1, 92/1, 93/1, 94/1, 95/1, 96/1, 97/1, 98/1, 99/1, 100/1

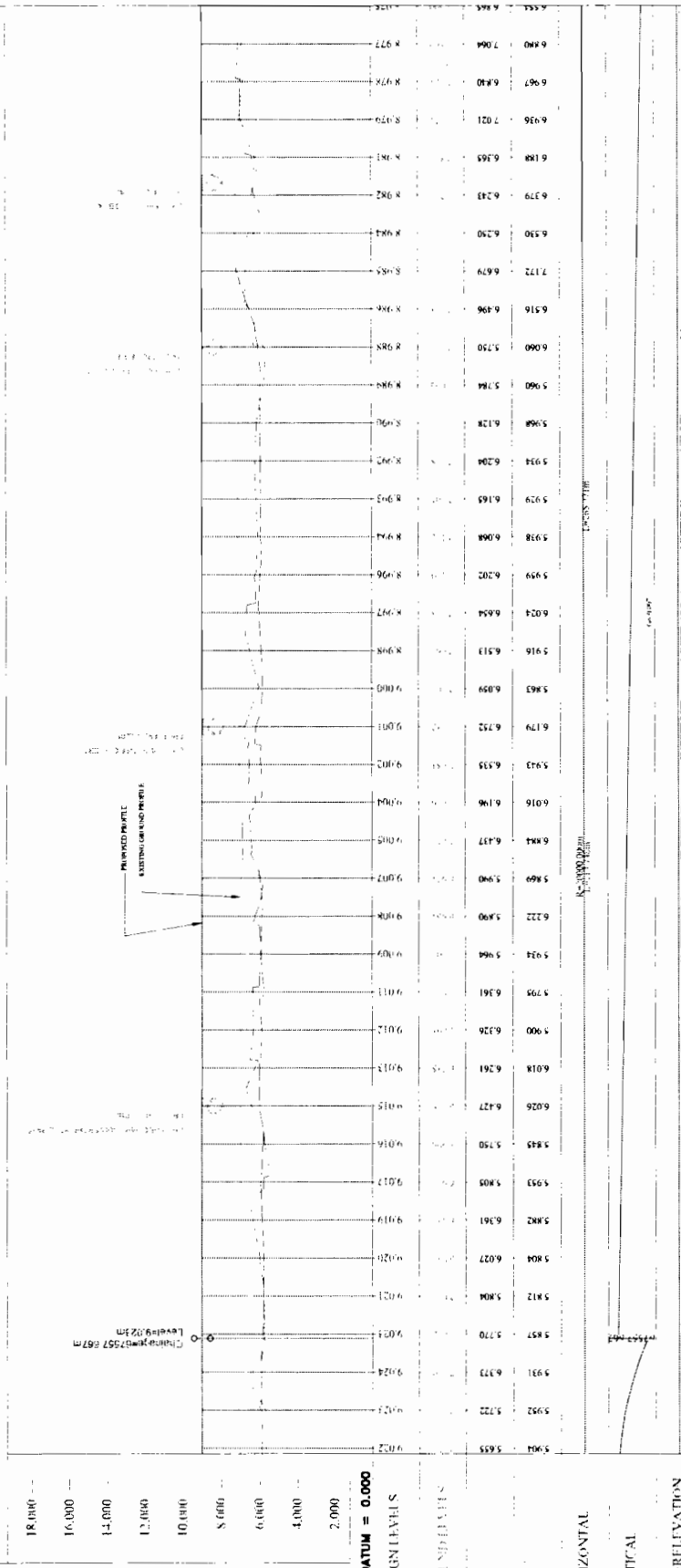
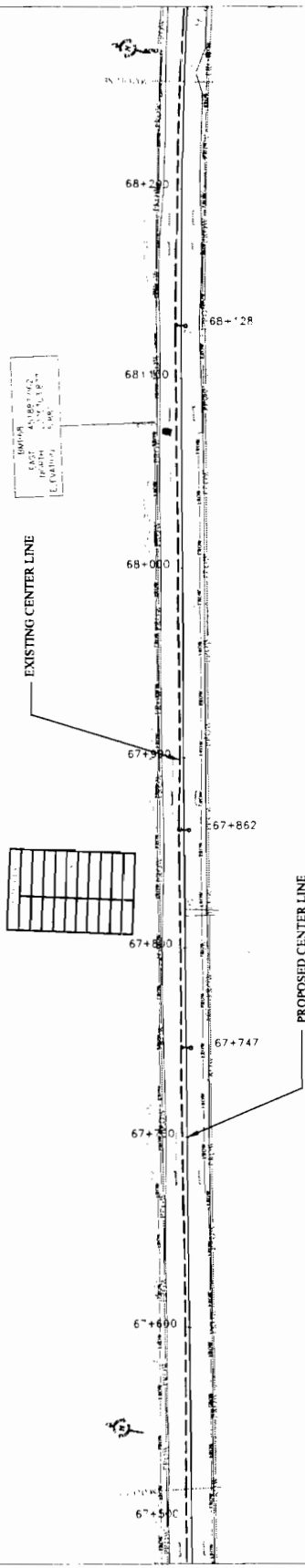
CLIENT:-
**WORKS DEPT.
GOVT. OF ORISSA.**

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
DETAILED PROJECT PREPARATION OF PHASE - II
ROADS FOR ORISSA STATE ROAD PROJECT (ORSSP)
WORLD BANK ASSISTANCE

LEGEND
REVISIONS
DATE
BY
CHK
APP

TO JAGATPUR

TO CHANDBALI



STATION	EXISTING ELEVATION (M)	PROPOSED ELEVATION (M)	VERTICAL CURVE DATA
67+9.9	5.655	5.904	
67+12.5	5.922	5.722	
67+15.1	5.931	6.173	
67+17.7	5.857	5.770	
67+20.3	5.812	5.804	
67+22.9	5.804	6.027	
67+25.5	5.882	6.361	
67+28.1	5.933	5.805	
67+30.7	5.843	5.750	
67+33.3	6.025	6.427	
67+35.9	6.018	6.761	
67+38.5	5.900	6.320	
67+41.1	5.795	6.161	
67+43.7	5.924	5.864	
67+46.3	6.222	5.890	
67+48.9	5.869	5.990	
67+51.5	6.884	6.437	
67+54.1	6.016	6.196	
67+56.7	5.943	6.535	
67+59.3	6.179	6.752	
67+61.9	5.863	6.059	
67+64.5	5.916	6.513	
67+67.1	6.024	6.654	
67+69.7	5.959	6.202	
67+72.3	5.938	6.008	
67+74.9	5.979	6.165	
67+77.5	5.934	6.204	
67+80.1	5.868	6.128	
67+82.7	5.960	5.784	
67+85.3	6.060	5.750	
67+87.9	6.516	6.496	
67+90.5	7.172	6.679	
67+93.1	6.530	6.250	
67+95.7	6.379	6.243	
67+98.3	6.188	6.165	
67+100.9	6.936	7.021	
67+103.5	6.961	6.840	
67+106.1	7.004	7.004	
67+108.7	6.884	6.884	

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI Km 67/500 TO Km 68/250

DRG NO: DSR/CEG/06/31048/027
 SH NO: 27
 DATE: 27/07/18
 REV: B.1

SCALE: HORIZONTAL: 1:1000 VERTICAL: 1:100

APPROVED: [Signature]
 PREPARED BY: [Signature]
 CHECKED BY: [Signature]
 DATE: [Signature]

CONSULTANT:
CON S U L T I N G
ENGINEERS GROUP LTD.
 12, May Sabzalok, Hoop, Jaipur-302004
 Ph: +91-141-2524894, 2524895
 Fax: +91-141-2524896, 2524898
 E-mail: coneg@rediffmail.com

CLIENT:
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

REVISIONS:

NO.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	27/07/18
2	AS PER COMMENTS	27/07/18
3	AS PER COMMENTS	27/07/18
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50	AS PER COMMENTS	27/07/18

LEGEND:

EXISTING CENTER LINE: Solid line

PROPOSED CENTER LINE: Dashed line

EXISTING ROAD WIDTH: Dotted line

PROPOSED ROAD WIDTH: Dotted line

EXISTING GRADE: Solid line

PROPOSED GRADE: Dashed line

EXISTING GROUND SURFACE: Solid line

PROPOSED GROUND SURFACE: Dashed line

EXISTING PAVED PROFILE: Solid line

PROPOSED PAVED PROFILE: Dashed line

EXISTING UNPAVED PROFILE: Solid line

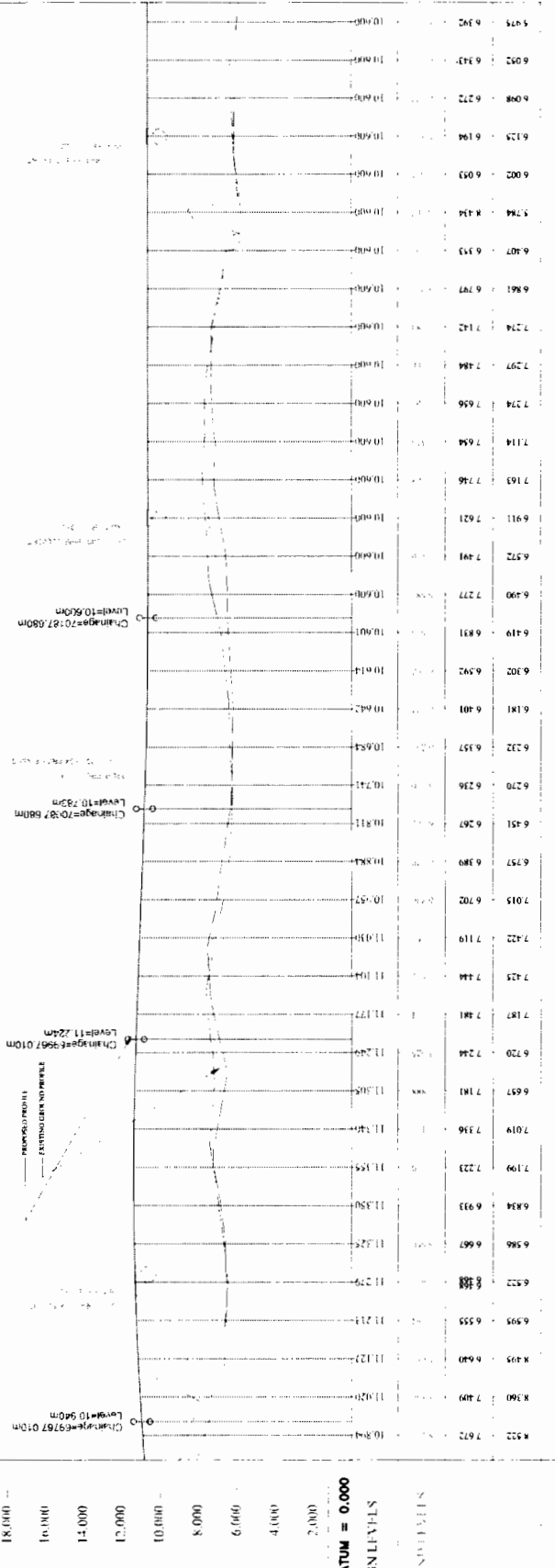
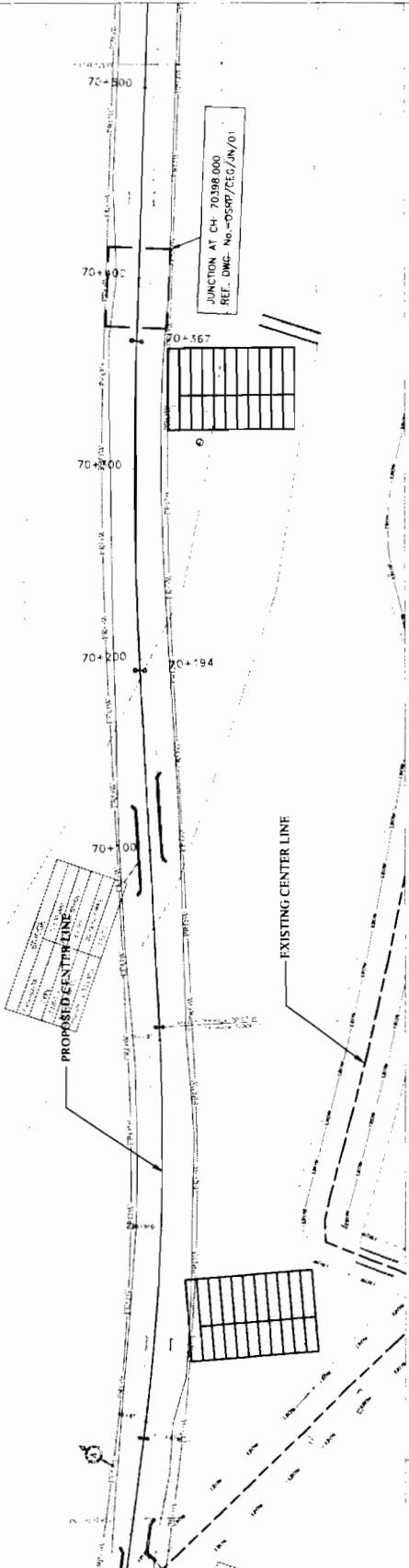
PROPOSED UNPAVED PROFILE: Dashed line

EXISTING LAND PROFILE: Solid line

PROPOSED LAND PROFILE: Dashed line

TO CHANDBALI →

← TO JAGATPUR



Stationing	Profile Elevation (m)	Grade (%)	Vertical Curve Data
70+00	10.940	0.00	
70+10	10.940	0.00	
70+20	10.940	0.00	
70+30	10.940	0.00	
70+40	10.940	0.00	
70+50	10.940	0.00	
70+60	10.940	0.00	
70+70	10.940	0.00	
70+80	10.940	0.00	
70+90	10.940	0.00	
70+100	10.940	0.00	

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI Km.69/750 TO Km.70/500

CONSULTANT:-
C ENGINEERS GROUP LTD.
 Plot No. 10, Sector 10, Gurgaon, Haryana
 Ph: +91-122-2228999, 2228996, 2228995
 Fax: +91-122-2228998, 2228997, 2228996

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

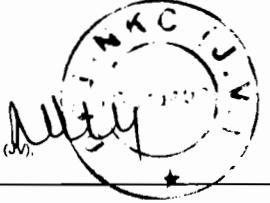
PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

DESIGN LEVELS
 DATUM = 0.000

LEGEND

REVISIONS

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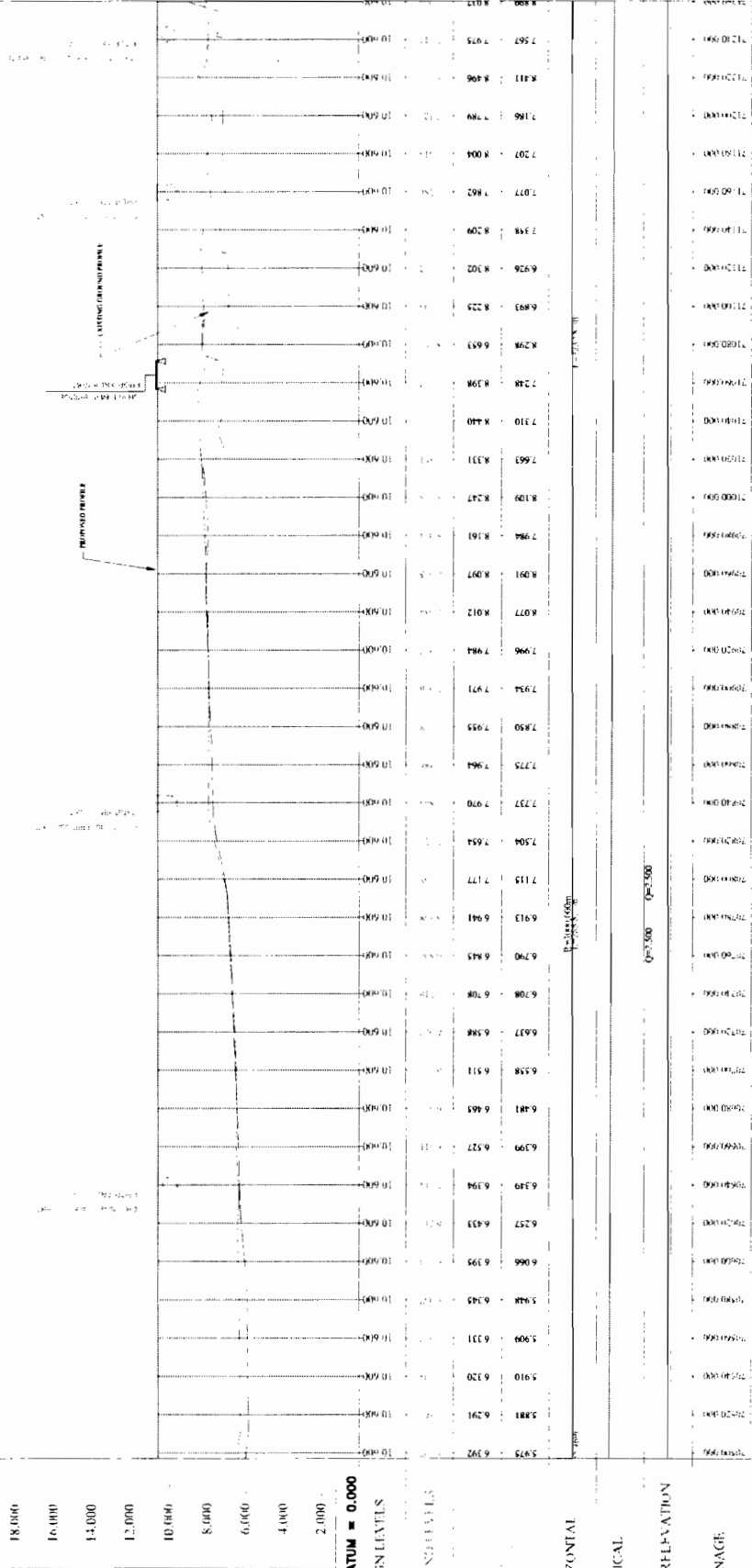
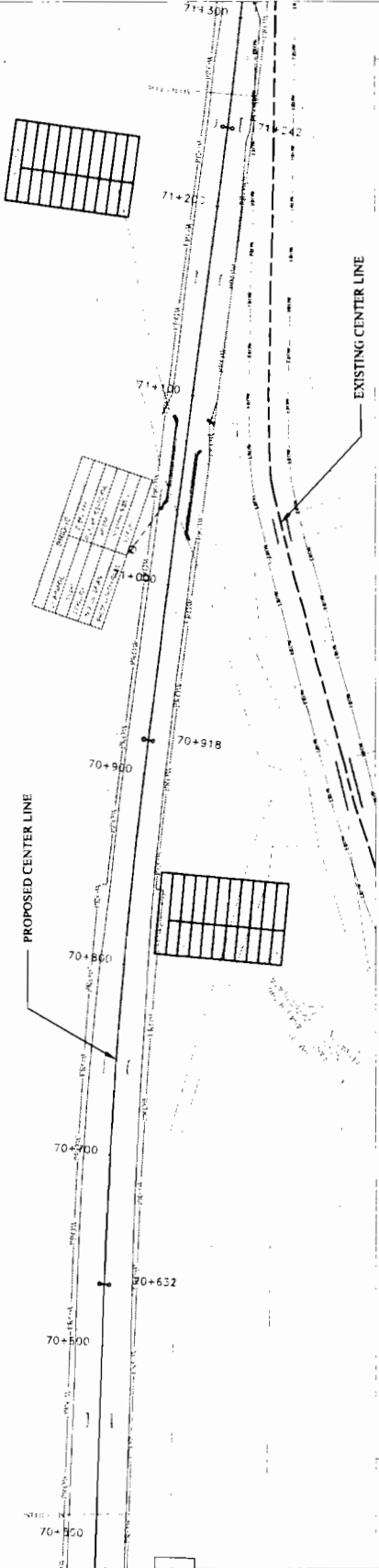


DPJ - NKC (JV),
Contractor

Chief Engineer
 World Bank Projects, Orissa
 O/o the E.C. (Civil), Govt.
 Bhubaneswar

TO JAGATPUR

TO CHANDBALI



Station	Level	Grade (%)	Curve Length (m)	Curve Type
70+500	18.000	0.00	0.00	None
70+520	16.000	-11.11	0.00	None
70+540	14.000	-14.29	0.00	None
70+560	12.000	-14.29	0.00	None
70+580	10.000	-14.29	0.00	None
70+600	8.000	-14.29	0.00	None
70+620	6.000	-14.29	0.00	None
70+640	4.000	-14.29	0.00	None
70+660	2.000	-14.29	0.00	None
70+680	2.000	0.00	100.00	Vertical Curve
70+700	2.000	11.11	100.00	Vertical Curve
70+720	2.000	14.29	100.00	Vertical Curve
70+740	2.000	14.29	100.00	Vertical Curve
70+760	2.000	14.29	100.00	Vertical Curve
70+780	2.000	14.29	100.00	Vertical Curve
70+800	2.000	14.29	100.00	Vertical Curve
70+820	2.000	14.29	100.00	Vertical Curve
70+840	2.000	14.29	100.00	Vertical Curve
70+860	2.000	14.29	100.00	Vertical Curve
70+880	2.000	14.29	100.00	Vertical Curve
70+900	2.000	14.29	100.00	Vertical Curve
70+920	2.000	14.29	100.00	Vertical Curve
70+940	2.000	14.29	100.00	Vertical Curve
70+960	2.000	14.29	100.00	Vertical Curve
70+980	2.000	14.29	100.00	Vertical Curve
71+000	2.000	14.29	100.00	Vertical Curve
71+020	2.000	14.29	100.00	Vertical Curve
71+040	2.000	14.29	100.00	Vertical Curve
71+060	2.000	14.29	100.00	Vertical Curve
71+080	2.000	14.29	100.00	Vertical Curve
71+100	2.000	14.29	100.00	Vertical Curve
71+120	2.000	14.29	100.00	Vertical Curve
71+140	2.000	14.29	100.00	Vertical Curve
71+160	2.000	14.29	100.00	Vertical Curve
71+180	2.000	14.29	100.00	Vertical Curve
71+200	2.000	14.29	100.00	Vertical Curve
71+220	2.000	14.29	100.00	Vertical Curve
71+240	2.000	14.29	100.00	Vertical Curve
71+260	2.000	14.29	100.00	Vertical Curve
71+280	2.000	14.29	100.00	Vertical Curve
71+300	2.000	14.29	100.00	Vertical Curve

Scale	Horizontal	Vertical
Scale	1:1000	1:1000
Date	12/20/20	12/20/20
Rev	1	1

CONSULTANT: **C O N S U L T I N G ENGINEERS GROUP LTD.**

CLIENT: **WORKS DEPT. GOVT. OF ORISSA.**

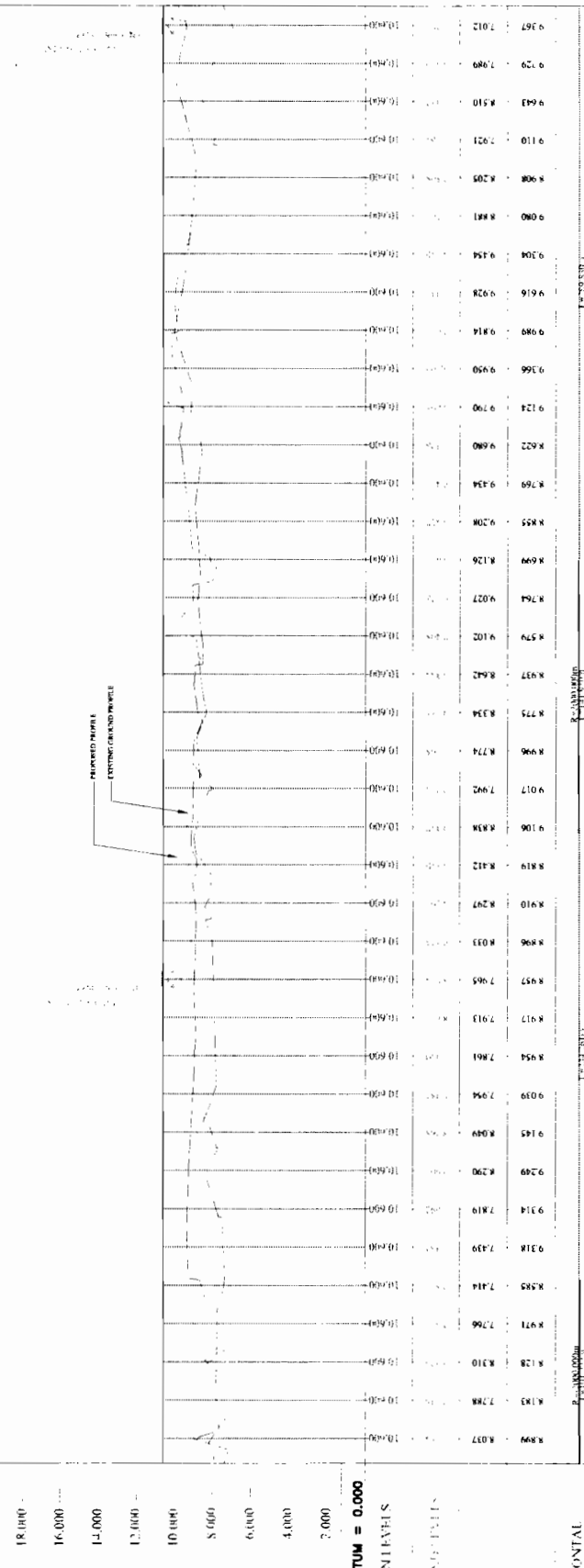
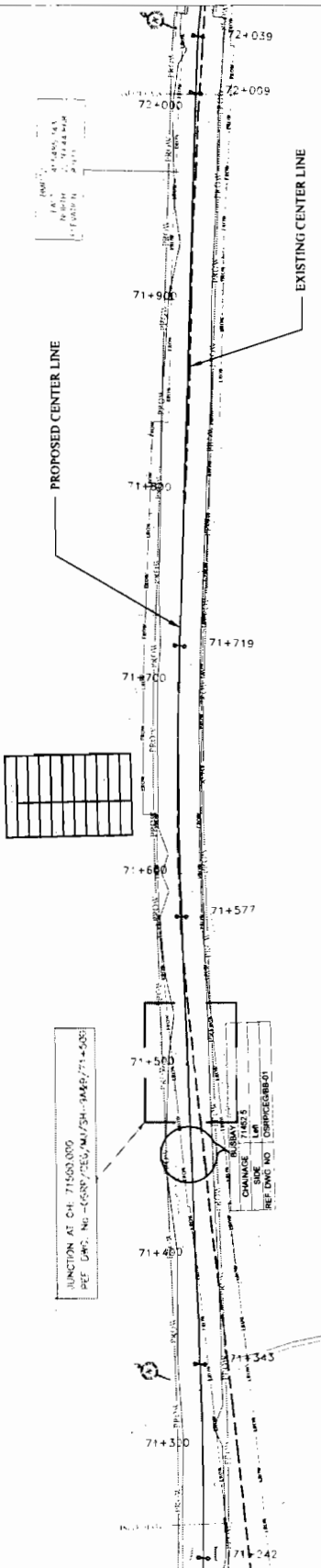
PROJECT: **CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE**



World Bank Project Officer
Employer

TO JAGATPUR

TO CHANDBALI



71+242	8.899	8.037
71+250	8.183	7.788
71+260	8.128	8.310
71+270	8.971	7.666
71+280	8.585	7.814
71+290	9.318	7.439
71+300	9.314	7.819
71+310	9.249	8.290
71+320	9.145	8.049
71+330	9.039	7.954
71+340	8.954	7.861
71+350	8.917	7.913
71+360	8.957	7.965
71+370	8.966	8.033
71+380	8.910	8.297
71+390	8.819	8.412
71+400	9.100	8.838
71+410	9.017	7.992
71+420	8.906	8.774
71+430	8.755	8.334
71+440	8.937	8.642
71+450	8.579	9.102
71+460	8.764	9.027
71+470	8.909	8.126
71+480	8.955	9.208
71+490	8.769	9.434
71+500	8.222	9.680
71+510	9.123	9.790
71+520	9.166	9.950
71+530	9.983	9.814
71+540	9.916	9.928
71+550	9.304	9.458
71+560	9.080	8.881
71+570	9.806	8.205
71+580	9.110	7.921
71+590	9.443	8.510
71+600	9.674	8.674
71+610	9.201	8.101
71+620	9.674	8.674
71+630	9.201	8.101
71+640	9.674	8.674
71+650	9.201	8.101
71+660	9.674	8.674
71+670	9.201	8.101
71+680	9.674	8.674
71+690	9.201	8.101
71+700	9.674	8.674
71+710	9.201	8.101
71+720	9.674	8.674
71+730	9.201	8.101
71+740	9.674	8.674
71+750	9.201	8.101
71+760	9.674	8.674
71+770	9.201	8.101
71+780	9.674	8.674
71+790	9.201	8.101
71+800	9.674	8.674
71+810	9.201	8.101
71+820	9.674	8.674
71+830	9.201	8.101
71+840	9.674	8.674
71+850	9.201	8.101
71+860	9.674	8.674
71+870	9.201	8.101
71+880	9.674	8.674
71+890	9.201	8.101
71+900	9.674	8.674
71+910	9.201	8.101
71+920	9.674	8.674
71+930	9.201	8.101
71+940	9.674	8.674
71+950	9.201	8.101
71+960	9.674	8.674
71+970	9.201	8.101
71+980	9.674	8.674
71+990	9.201	8.101
72+000	9.674	8.674
72+010	9.201	8.101
72+020	9.674	8.674
72+030	9.201	8.101
72+039	9.674	8.674

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

CONSULTANT:-
ENGINEERS GROUP LTD.
11/1, Bhubaneswar Road, Bhubaneswar
Orissa - 751005, India. Phone: 0674-2531101, 2531102, 2531103
Fax: 0674-2531104, 2531105, 2531106, 2531107
E-mail: info@egcltd.com, sales@egcltd.com

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
DETAILED PROJECT PREPARATION OF PHASE - I & II
ROADS FOR ORISSA STATE ROAD PROJECT UNDER
WORLD BANK ASSISTANCE

**WIDENING AND STRENGTHENING TO TWO LANE
PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI Km 71/250 TO Km 72/000**

DRG. NO. | 08/PR/EGC/STAMP/022 | SHEET NO. | 1/1 | DATE | 12/12/12 | REV | 01 | C/S | P.F. | P.M. | C.E. | S.P. |

SCALE
HORIZONTAL: 1:2500
VERTICAL: 1:1000

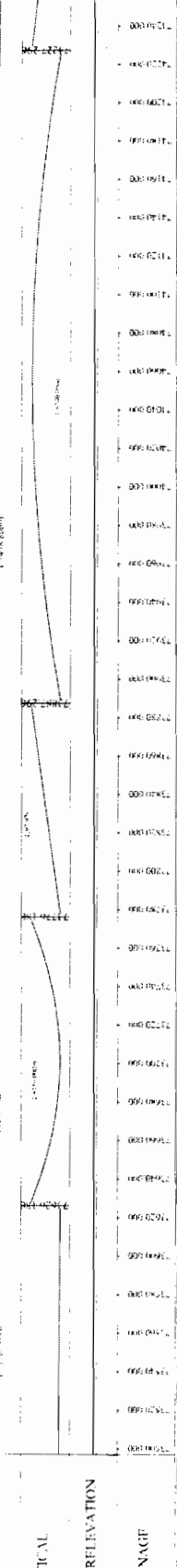
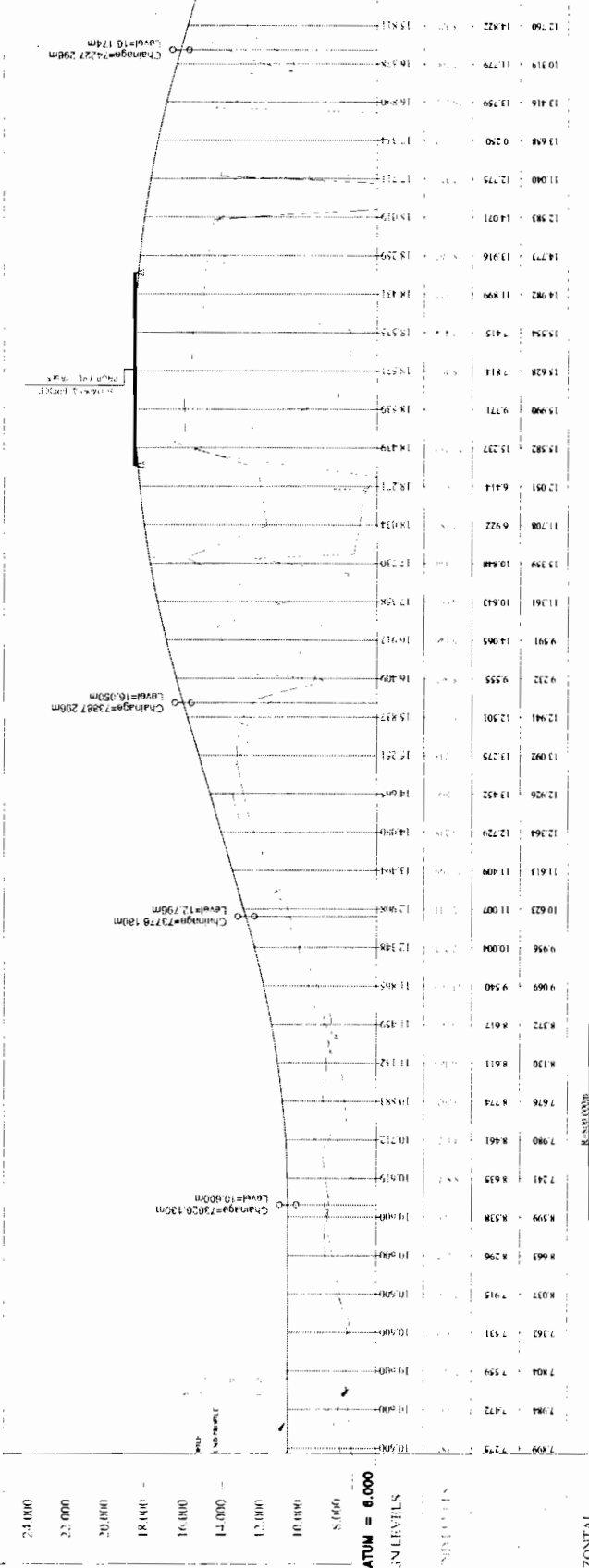
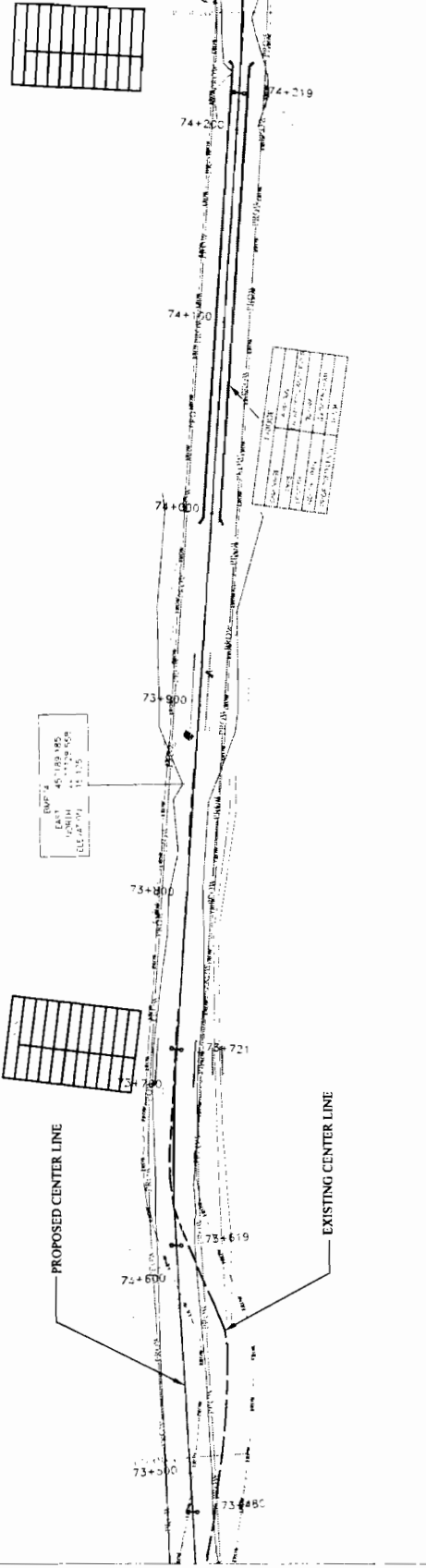


DPJ - NKC (JV)
Contractor

Chief Engineer,
World Bank Project
070 the E.I.C. (Civil), Cuttack,
Bhubaneswar

TO JAGATPUR

TO CHANDBALI



CHAINAGE	VERTICAL	HORIZONTAL	SCALE	DATE	REV	BY	CHK	APP	CE/WRP
70+00	10.000	70+00	1:100	10/2/12	1				
70+50	10.500	70+50	1:100						
71+00	11.000	71+00	1:100						
71+50	11.500	71+50	1:100						
72+00	12.000	72+00	1:100						
72+50	12.500	72+50	1:100						
73+00	13.000	73+00	1:100						
73+50	13.500	73+50	1:100						
74+00	14.000	74+00	1:100						

DPJ - NKC (JV), Contractor

(Signature)

NKC
NATIONAL KAYAKI CONSTRUCTION CO. LTD.

Chief Engineer
World Bank Project
Bhubaneswar

(Signature)

CONSULTANT:-
CE ENGINEERS GROUP LTD.
11, 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

CLIENT:-
WORKS DEPT. GOVT. OF ORISSA.

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (II) ROAD IN ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km. 73/500 TO Km 74/250

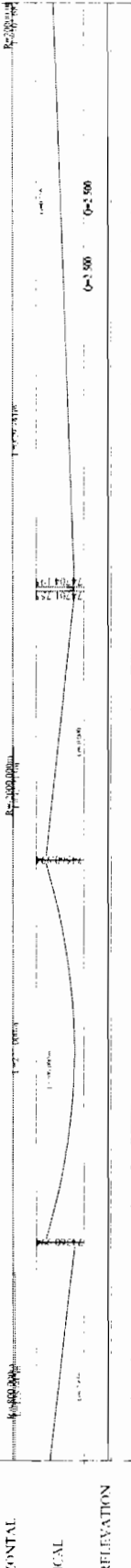
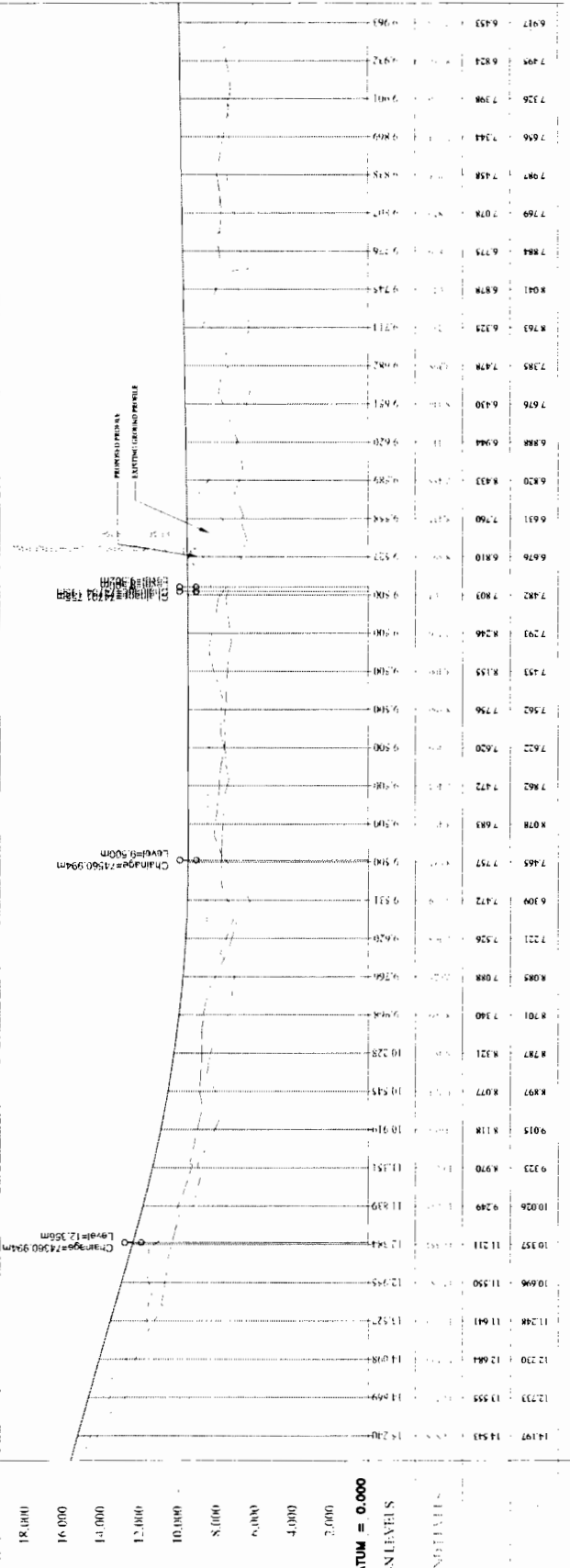
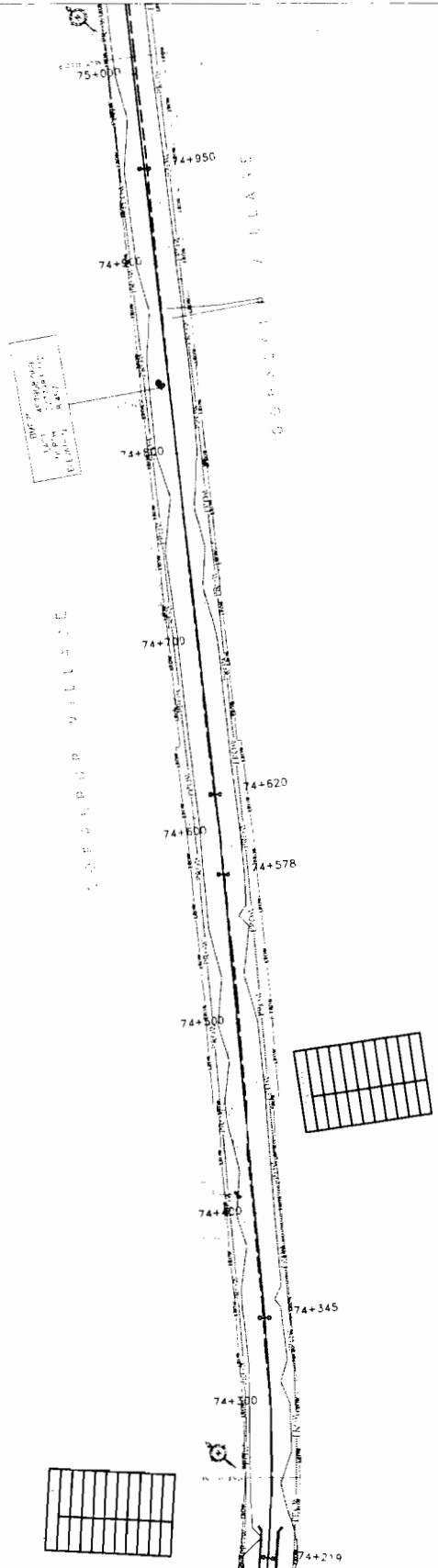
DRG NO: OSR/CE/002/ST/AM/002/003
SH NO: 35
DATE: 10/2/12
SCALE: HORIZONTAL: 1:100 VERTICAL: 1:100

LEGEND

1	PROPOSED CENTER LINE
2	EXISTING CENTER LINE
3	PROPOSED ROAD WIDTH
4	EXISTING ROAD WIDTH
5	PROPOSED ROAD CROSS SECTION
6	EXISTING ROAD CROSS SECTION
7	PROPOSED ROAD GRADE
8	EXISTING ROAD GRADE
9	PROPOSED ROAD SURFACE
10	EXISTING ROAD SURFACE
11	PROPOSED ROAD DRAINAGE
12	EXISTING ROAD DRAINAGE
13	PROPOSED ROAD STRUCTURE
14	EXISTING ROAD STRUCTURE
15	PROPOSED ROAD BRIDGE
16	EXISTING ROAD BRIDGE
17	PROPOSED ROAD TUNNEL
18	EXISTING ROAD TUNNEL
19	PROPOSED ROAD CUT
20	EXISTING ROAD CUT
21	PROPOSED ROAD FILL
22	EXISTING ROAD FILL
23	PROPOSED ROAD EMBANKMENT
24	EXISTING ROAD EMBANKMENT
25	PROPOSED ROAD DITCH
26	EXISTING ROAD DITCH
27	PROPOSED ROAD GULLY
28	EXISTING ROAD GULLY
29	PROPOSED ROAD CULVERT
30	EXISTING ROAD CULVERT
31	PROPOSED ROAD UNDERPASS
32	EXISTING ROAD UNDERPASS
33	PROPOSED ROAD OVERPASS
34	EXISTING ROAD OVERPASS
35	PROPOSED ROAD VIADUCT
36	EXISTING ROAD VIADUCT
37	PROPOSED ROAD BRIDGE
38	EXISTING ROAD BRIDGE
39	PROPOSED ROAD TUNNEL
40	EXISTING ROAD TUNNEL
41	PROPOSED ROAD CUT
42	EXISTING ROAD CUT
43	PROPOSED ROAD FILL
44	EXISTING ROAD FILL
45	PROPOSED ROAD EMBANKMENT
46	EXISTING ROAD EMBANKMENT
47	PROPOSED ROAD DITCH
48	EXISTING ROAD DITCH
49	PROPOSED ROAD GULLY
50	EXISTING ROAD GULLY
51	PROPOSED ROAD CULVERT
52	EXISTING ROAD CULVERT
53	PROPOSED ROAD UNDERPASS
54	EXISTING ROAD UNDERPASS
55	PROPOSED ROAD OVERPASS
56	EXISTING ROAD OVERPASS
57	PROPOSED ROAD VIADUCT
58	EXISTING ROAD VIADUCT
59	PROPOSED ROAD BRIDGE
60	EXISTING ROAD BRIDGE
61	PROPOSED ROAD TUNNEL
62	EXISTING ROAD TUNNEL
63	PROPOSED ROAD CUT
64	EXISTING ROAD CUT
65	PROPOSED ROAD FILL
66	EXISTING ROAD FILL
67	PROPOSED ROAD EMBANKMENT
68	EXISTING ROAD EMBANKMENT
69	PROPOSED ROAD DITCH
70	EXISTING ROAD DITCH
71	PROPOSED ROAD GULLY
72	EXISTING ROAD GULLY
73	PROPOSED ROAD CULVERT
74	EXISTING ROAD CULVERT
75	PROPOSED ROAD UNDERPASS
76	EXISTING ROAD UNDERPASS
77	PROPOSED ROAD OVERPASS
78	EXISTING ROAD OVERPASS
79	PROPOSED ROAD VIADUCT
80	EXISTING ROAD VIADUCT
81	PROPOSED ROAD BRIDGE
82	EXISTING ROAD BRIDGE
83	PROPOSED ROAD TUNNEL
84	EXISTING ROAD TUNNEL
85	PROPOSED ROAD CUT
86	EXISTING ROAD CUT
87	PROPOSED ROAD FILL
88	EXISTING ROAD FILL
89	PROPOSED ROAD EMBANKMENT
90	EXISTING ROAD EMBANKMENT
91	PROPOSED ROAD DITCH
92	EXISTING ROAD DITCH
93	PROPOSED ROAD GULLY
94	EXISTING ROAD GULLY
95	PROPOSED ROAD CULVERT
96	EXISTING ROAD CULVERT
97	PROPOSED ROAD UNDERPASS
98	EXISTING ROAD UNDERPASS
99	PROPOSED ROAD OVERPASS
100	EXISTING ROAD OVERPASS

TO CHANDBALI

TO JAGATPUR



STATION	PROPOSED ROAD LAYOUT (ORIGIN) PROFILE	VERTICAL CURVE	SUPERELEVATION	CHAINAGE
74+210	14.197	14.543	14.197	14.543
74+220	12.233	13.555	12.233	13.555
74+230	11.248	11.641	11.248	11.641
74+240	10.696	11.550	10.696	11.550
74+250	10.357	11.211	10.357	11.211
74+260	10.228	10.748	10.228	10.748
74+270	10.211	10.285	10.211	10.285
74+280	10.200	9.822	10.200	9.822
74+290	10.194	9.359	10.194	9.359
74+300	10.192	8.896	10.192	8.896
74+310	10.194	8.433	10.194	8.433
74+320	10.200	7.970	10.200	7.970
74+330	10.211	7.507	10.211	7.507
74+340	10.228	7.044	10.228	7.044
74+350	10.250	6.581	10.250	6.581
74+360	10.277	6.118	10.277	6.118
74+370	10.309	5.655	10.309	5.655
74+380	10.346	5.192	10.346	5.192
74+390	10.388	4.729	10.388	4.729
74+400	10.435	4.266	10.435	4.266
74+410	10.487	3.803	10.487	3.803
74+420	10.544	3.340	10.544	3.340
74+430	10.606	2.877	10.606	2.877
74+440	10.673	2.414	10.673	2.414
74+450	10.745	1.951	10.745	1.951
74+460	10.822	1.488	10.822	1.488
74+470	10.904	1.025	10.904	1.025
74+480	10.991	0.562	10.991	0.562
74+490	11.083	0.099	11.083	0.099
74+500	11.180	0.000	11.180	0.000
74+510	11.282	0.099	11.282	0.099
74+520	11.389	0.196	11.389	0.196
74+530	11.501	0.293	11.501	0.293
74+540	11.618	0.390	11.618	0.390
74+550	11.740	0.487	11.740	0.487
74+560	11.867	0.584	11.867	0.584
74+570	12.000	0.681	12.000	0.681
74+580	12.138	0.778	12.138	0.778
74+590	12.281	0.875	12.281	0.875
74+600	12.429	0.972	12.429	0.972
74+610	12.582	1.069	12.582	1.069
74+620	12.740	1.166	12.740	1.166
74+630	12.903	1.263	12.903	1.263
74+640	13.071	1.360	13.071	1.360
74+650	13.244	1.457	13.244	1.457
74+660	13.422	1.554	13.422	1.554
74+670	13.605	1.651	13.605	1.651
74+680	13.793	1.748	13.793	1.748
74+690	13.986	1.845	13.986	1.845
74+700	14.184	1.942	14.184	1.942
74+710	14.387	2.039	14.387	2.039
74+720	14.595	2.136	14.595	2.136
74+730	14.808	2.233	14.808	2.233
74+740	15.026	2.330	15.026	2.330
74+750	15.249	2.427	15.249	2.427
74+760	15.477	2.524	15.477	2.524
74+770	15.710	2.621	15.710	2.621
74+780	15.948	2.718	15.948	2.718
74+790	16.191	2.815	16.191	2.815
74+800	16.439	2.912	16.439	2.912
74+810	16.692	3.009	16.692	3.009
74+820	16.950	3.106	16.950	3.106
74+830	17.213	3.203	17.213	3.203
74+840	17.481	3.300	17.481	3.300
74+850	17.754	3.397	17.754	3.397
74+860	18.032	3.494	18.032	3.494
74+870	18.315	3.591	18.315	3.591
74+880	18.603	3.688	18.603	3.688
74+890	18.896	3.785	18.896	3.785
74+900	19.194	3.882	19.194	3.882
74+910	19.497	3.979	19.497	3.979
74+920	19.805	4.076	19.805	4.076
74+930	20.118	4.173	20.118	4.173
74+940	20.436	4.270	20.436	4.270
74+950	20.759	4.367	20.759	4.367
74+960	21.087	4.464	21.087	4.464
74+970	21.420	4.561	21.420	4.561
74+980	21.758	4.658	21.758	4.658
74+990	22.101	4.755	22.101	4.755
75+000	22.449	4.852	22.449	4.852

CONSULTANT:-
CONSULTING ENGINEERS GROUP LTD.
 12, May Colony, New Delhi - 110029
 Tel: 2610111, 2610112, 2610113, 2610114
 Fax: 2610115, e-mail: ceg@cegroup.com

CLIENT:-
WORKS DEPT. GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

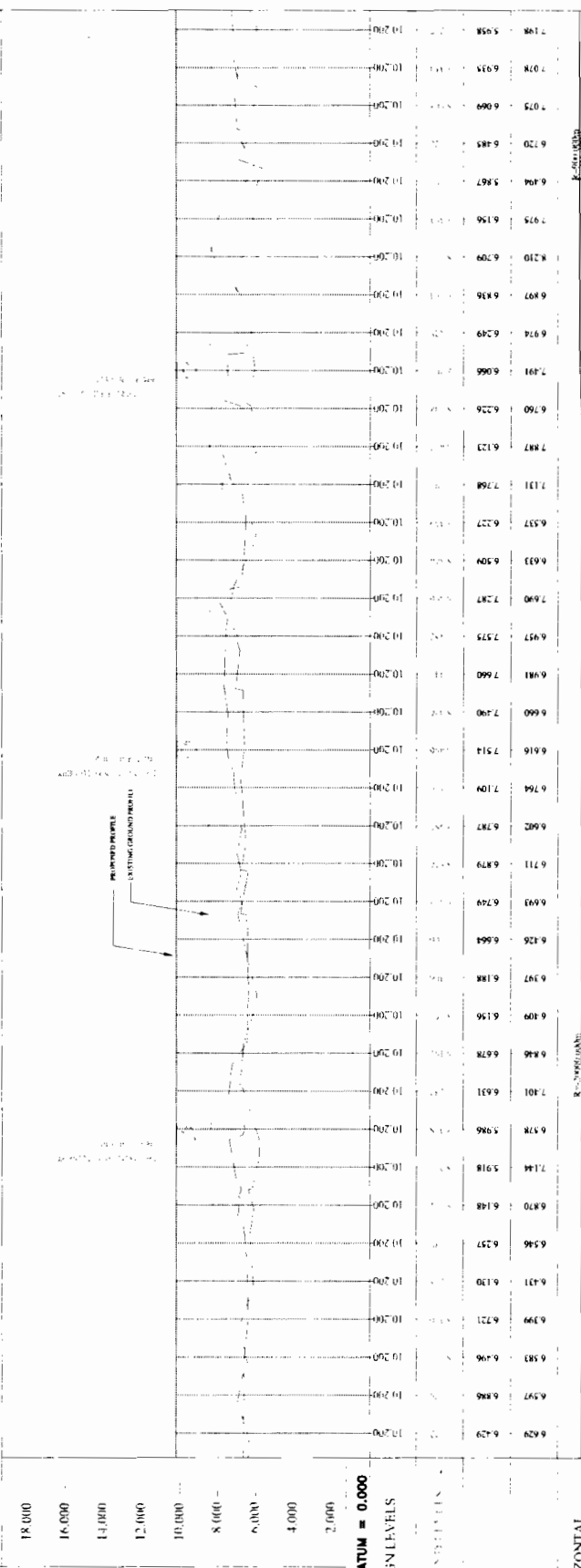
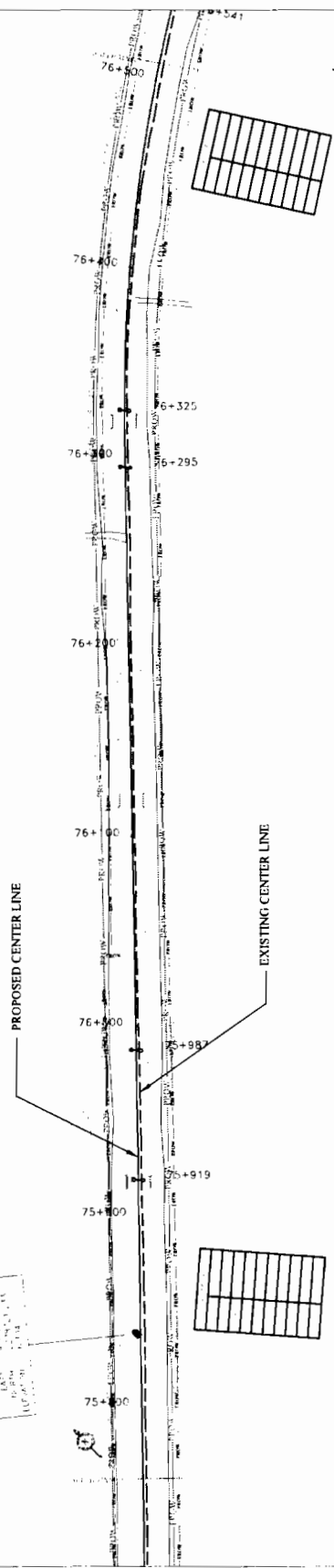
WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km.74/250 TO Km.75/000

DRGNO: DS/PC/EG/ST/001/01/01
 SR. NO. 36 DATE 12/07/01 REV. 01
 HORIZONTAL SCALE: 1:1000
 VERTICAL SCALE: 1:100

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

TO CHANDBALI →

← TO JAGATPUR



STATION	PROPOSED PROFILE (ELEVATION)	EXISTING GROUND PROFILE (ELEVATION)
75+00	6.429	6.429
75+100	6.597	6.496
75+200	6.583	6.496
75+300	6.399	6.211
75+400	6.130	6.130
75+500	6.546	6.237
75+600	6.870	6.148
75+700	7.144	5.918
75+800	6.738	5.986
75+900	7.401	6.631
76+000	6.846	6.678
76+100	6.400	6.156
76+200	6.188	6.188
76+300	6.126	6.664
76+400	6.693	6.749
76+500	6.711	6.879
76+600	6.802	6.787
76+700	6.764	7.109
76+800	6.616	7.514
76+900	6.660	7.490
77+000	6.981	7.660
77+100	6.957	7.575
77+200	7.690	7.287
77+300	6.933	6.909
77+400	6.537	6.227
77+500	7.133	7.768
77+600	7.887	6.123
77+700	6.760	6.226
77+800	6.966	6.066
77+900	6.914	6.249
78+000	6.836	6.836
78+100	6.210	6.709
78+200	7.975	6.156
78+300	6.404	5.867
78+400	6.485	6.485
78+500	7.075	6.690
78+600	6.934	6.934
78+700	7.198	5.958

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

CONSULTANT:-
ENGINEERS GROUP LTD.
220/1A, A.C. Road, Bhubaneswar, Orissa-751004.

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II: ROAD FOR CROSSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE.

LEGEND

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km.75/750 TO Km.76/500

DRG NO: 08/REG/03/ST/MS/03
SH NO: 38
DATE: 12/27/13
REV: R.1
SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100

APPROVED BY: [Signature]
DATE: [Date]

PROJECT NO: [Number]
SHEET NO: [Number]

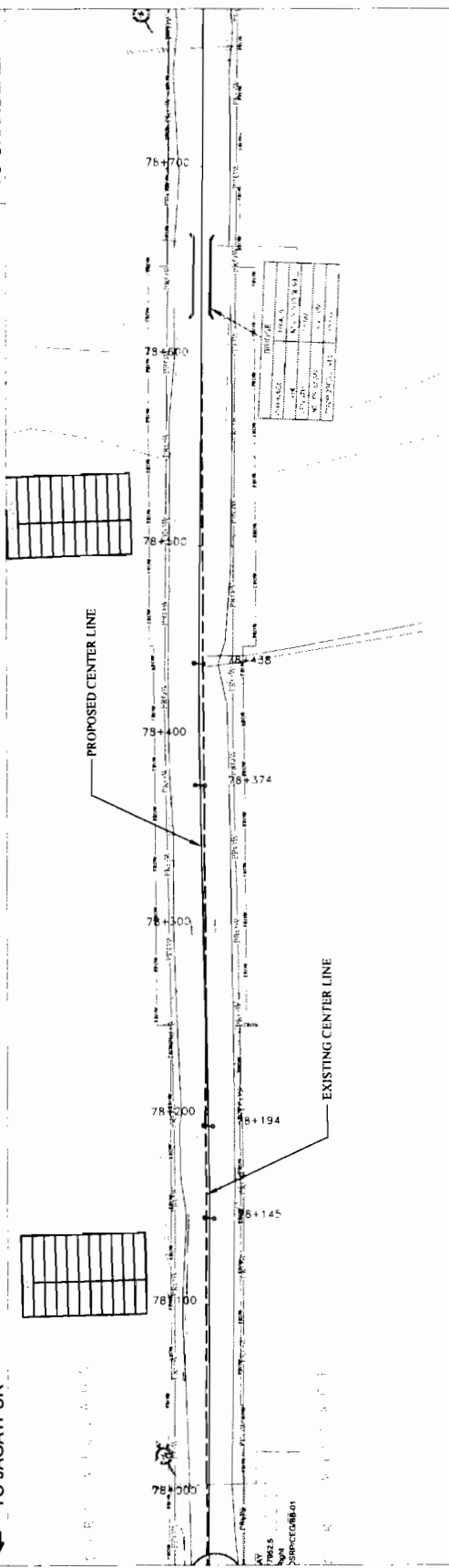
DPJ - NKC (JV), Contractor

NKC (JV) Gurgaon

Chief Engineer
World Bank Project
W.B. Bank Project
O/o the E.C.(Civil), Odisha
Bhubaneswar

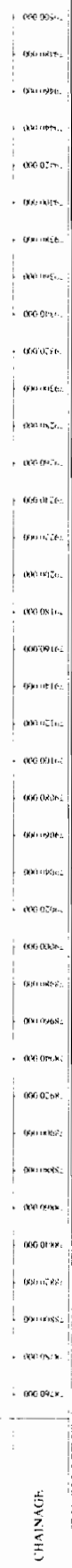
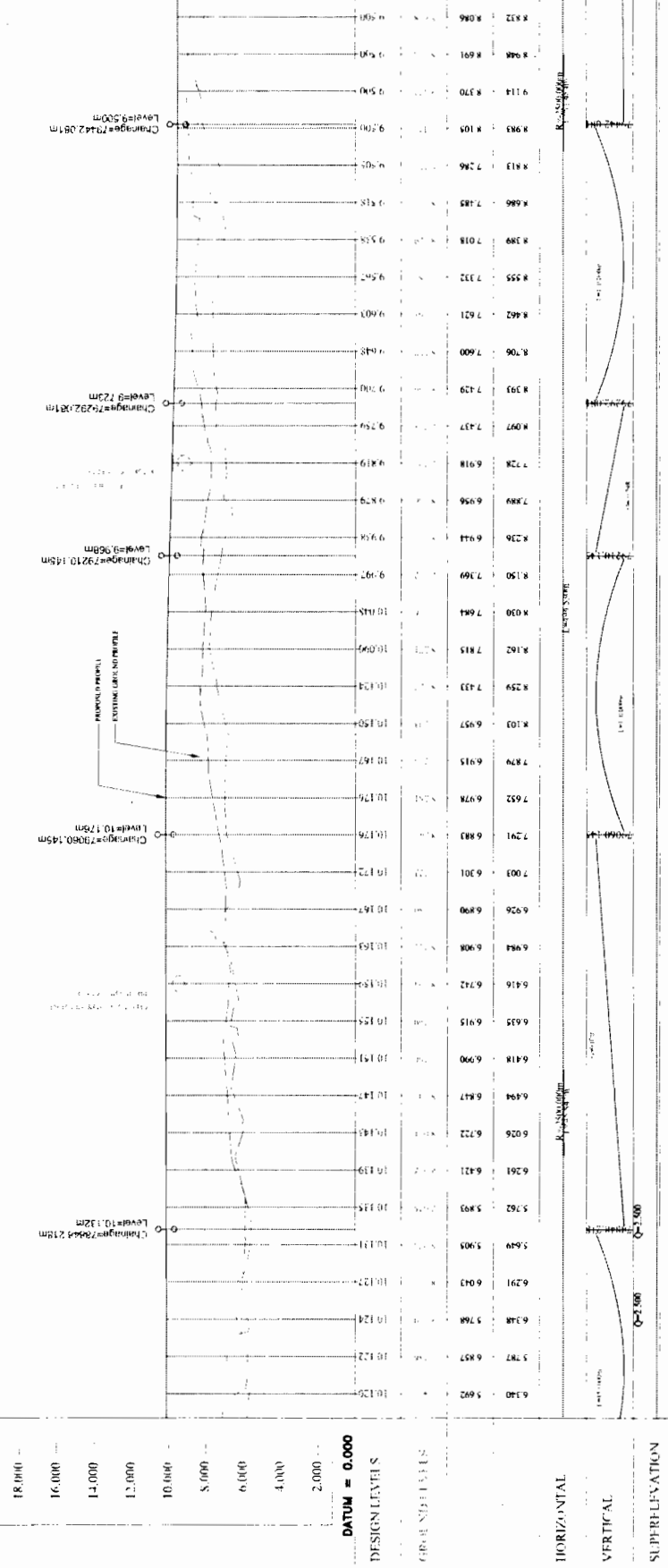
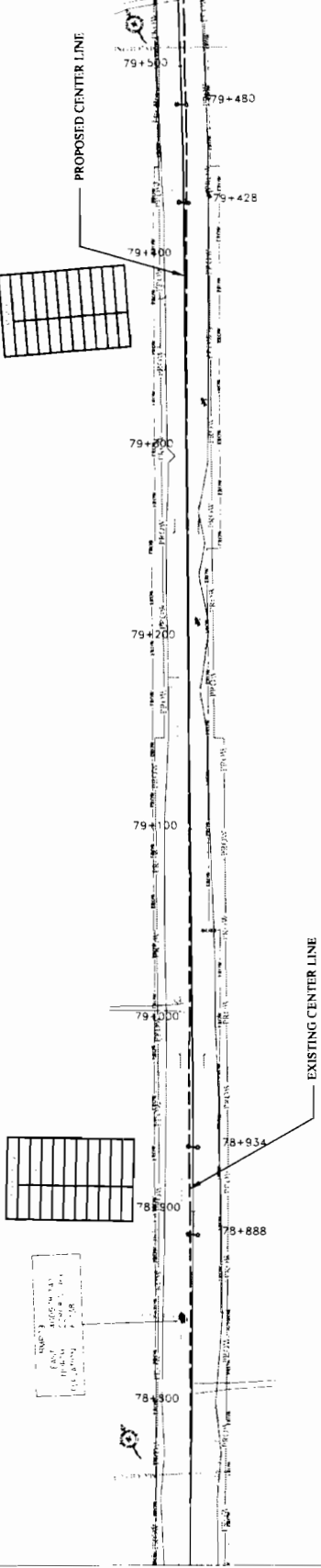
TO JAGATPUR

TO CHANDBALI

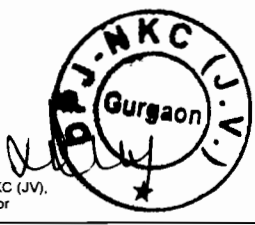


TO JAGATPUR

TO CHANDBALI



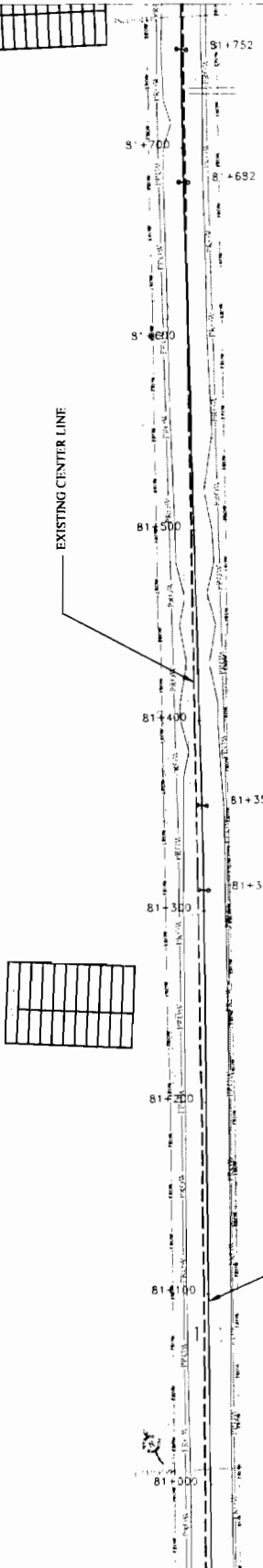
PROJECT:		CLIENT:		CONSULTANT:	
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II		WORKS DEPT. GOVT. OF ORISSA		CONSULTING ENGINEERS GROUP LTD.	
ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE				DUHURIA TO CHANDBALI Km/78/750 to Km/79/500	
PROJECT NO. 2013/AS		SCALE		DRAWING NO. DSBR/REGD/STAMP/PAZ	
DATE 12/12/12		REV. R-1		DATE 12/12/12	
DRAWN BY		CHECKED BY		DATE 12/12/12	
DESIGNED BY		APPROVED BY		DATE 12/12/12	
CALCULATED BY		SCALE		SCALE	
CHECKED BY		SCALE		SCALE	
APPROVED BY		SCALE		SCALE	
DATE 12/12/12		SCALE		SCALE	



Chief Engineer
 Bank Project
 (Civil), Odisha
 Employee

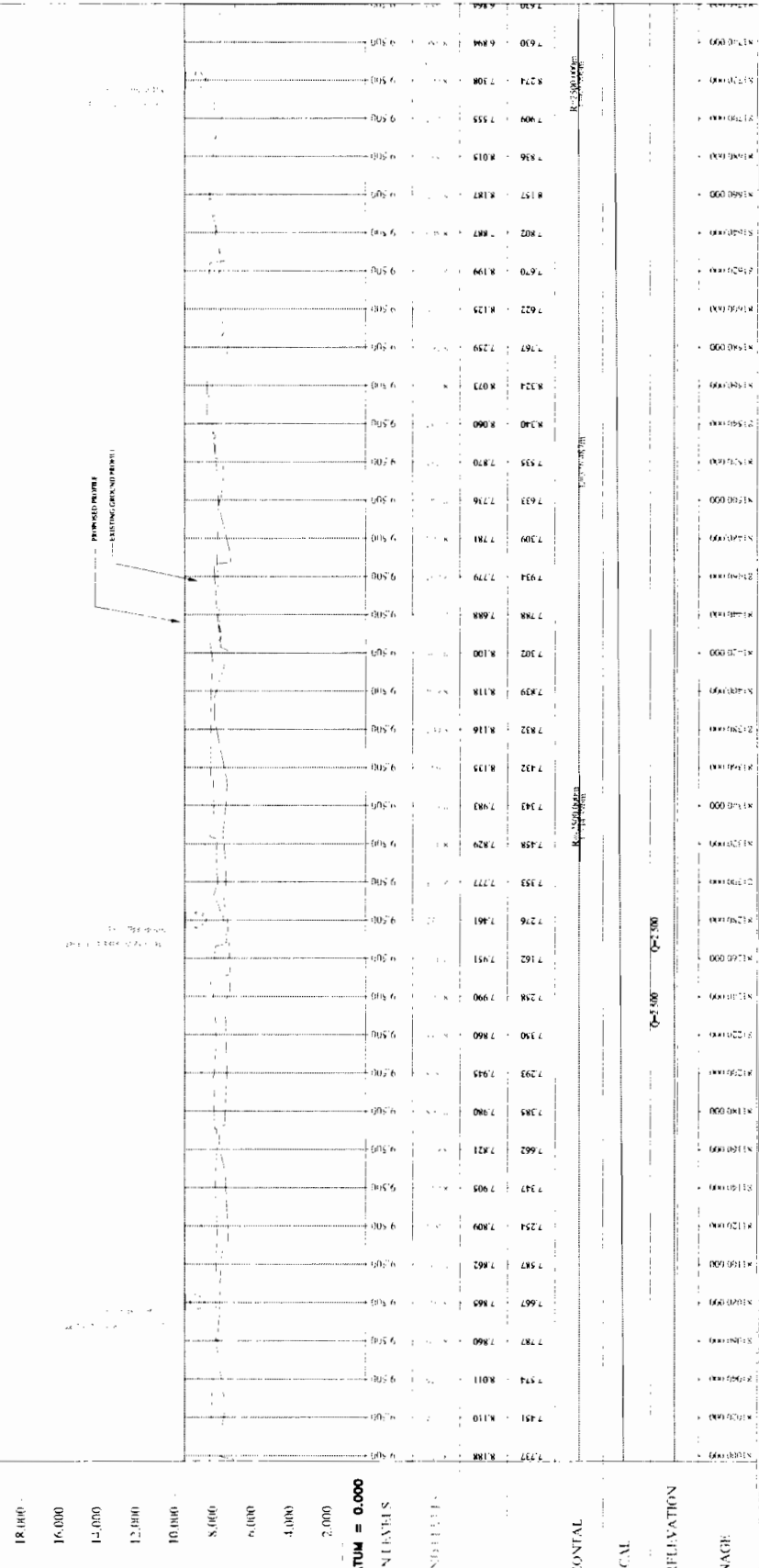
TO JAGATPUR

TO CHANDBALI



PROPOSED CENTER LINE

EXISTING CENTER LINE



DATUM = 0.000

DESIGN LEVELS

GRADIENTS

HORIZONTAL

VERTICAL

SUPERELEVATION

CHAINAGE

CHAINAGE	ELEVATION	GRADIENT	VERTICAL CURVE DATA
81+752	8.188	0.000	
81+747	8.110	0.000	
81+744	8.011	0.000	
81+740	7.960	0.000	
81+737	7.960	0.000	
81+734	7.960	0.000	
81+731	7.960	0.000	
81+728	7.960	0.000	
81+725	7.900	0.000	
81+722	7.905	0.000	
81+719	7.905	0.000	
81+716	7.905	0.000	
81+713	7.905	0.000	
81+710	7.905	0.000	
81+707	7.905	0.000	
81+704	7.905	0.000	
81+701	7.905	0.000	
81+698	7.905	0.000	
81+695	7.905	0.000	
81+692	7.905	0.000	
81+689	7.905	0.000	
81+686	7.905	0.000	
81+683	7.905	0.000	
81+680	7.905	0.000	
81+677	7.905	0.000	
81+674	7.905	0.000	
81+671	7.905	0.000	
81+668	7.905	0.000	
81+665	7.905	0.000	
81+662	7.905	0.000	
81+659	7.905	0.000	
81+656	7.905	0.000	
81+653	7.905	0.000	
81+650	7.905	0.000	
81+647	7.905	0.000	
81+644	7.905	0.000	
81+641	7.905	0.000	
81+638	7.905	0.000	
81+635	7.905	0.000	
81+632	7.905	0.000	
81+629	7.905	0.000	
81+626	7.905	0.000	
81+623	7.905	0.000	
81+620	7.905	0.000	
81+617	7.905	0.000	
81+614	7.905	0.000	
81+611	7.905	0.000	
81+608	7.905	0.000	
81+605	7.905	0.000	
81+602	7.905	0.000	
81+599	7.905	0.000	
81+596	7.905	0.000	
81+593	7.905	0.000	
81+590	7.905	0.000	
81+587	7.905	0.000	
81+584	7.905	0.000	
81+581	7.905	0.000	
81+578	7.905	0.000	
81+575	7.905	0.000	
81+572	7.905	0.000	
81+569	7.905	0.000	
81+566	7.905	0.000	
81+563	7.905	0.000	
81+560	7.905	0.000	
81+557	7.905	0.000	
81+554	7.905	0.000	
81+551	7.905	0.000	
81+548	7.905	0.000	
81+545	7.905	0.000	
81+542	7.905	0.000	
81+539	7.905	0.000	
81+536	7.905	0.000	
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81+521	7.905	0.000	
81+518	7.905	0.000	
81+515	7.905	0.000	
81+512	7.905	0.000	
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81+488	7.905	0.000	
81+485	7.905	0.000	
81+482	7.905	0.000	
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81+329	7.905	0.000	
81+326	7.905	0.000	
81+323	7.905	0.000	
81+320	7.905	0.000	
81+317	7.905	0.000	
81+314	7.905	0.000	
81+311	7.905	0.000	
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81+119	7.905	0.000	
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81+113	7.905	0.000	
81+110	7.905	0.000	
81+107	7.905	0.000	
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81+89	7.905	0.000	
81+86	7.905	0.000	
81+83	7.905	0.000	
81+80	7.905	0.000	
81+77	7.905	0.000	
81+74	7.905	0.000	
81+71	7.905	0.000	
81+68	7.905	0.000	
81+65	7.905	0.000	
81+62	7.905	0.000	
81+59	7.905	0.000	
81+56	7.905	0.000	
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81+50	7.905	0.000	
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81+17	7.905	0.000	
81+14	7.905	0.000	
81+11	7.905	0.000	
81+8	7.905	0.000	
81+5	7.905	0.000	
81+2	7.905	0.000	
0+000	7.905	0.000	

CONSULTANT:-
C E ENGINEERS GROUP LTD.
 C-10, Sector-10, Gurgaon, Haryana
 Ph: 01299-228888, 228889, 228890
 Fax: 01299-228888, 228889, 228890
 Email: ce@cegroup.com

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 ROADS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

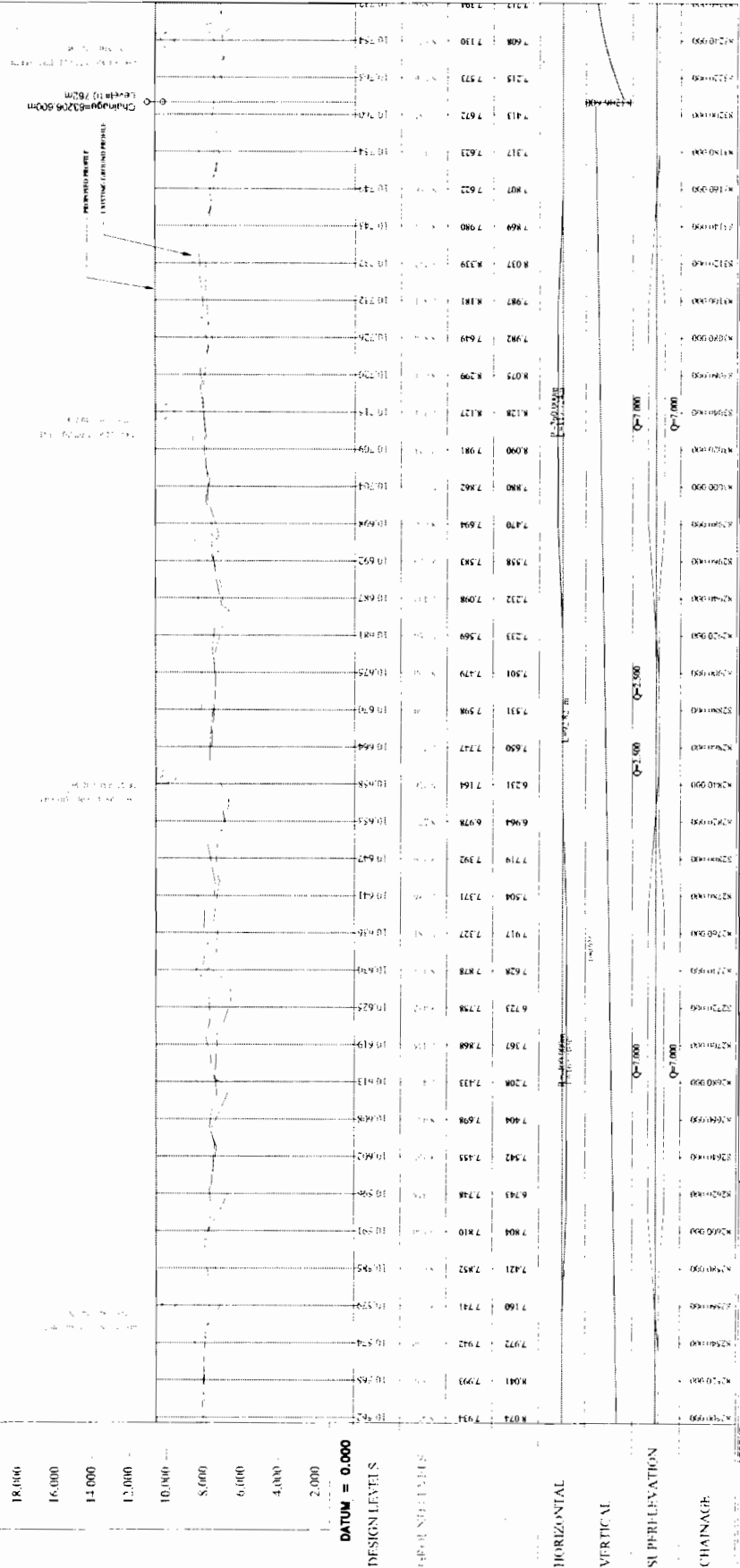
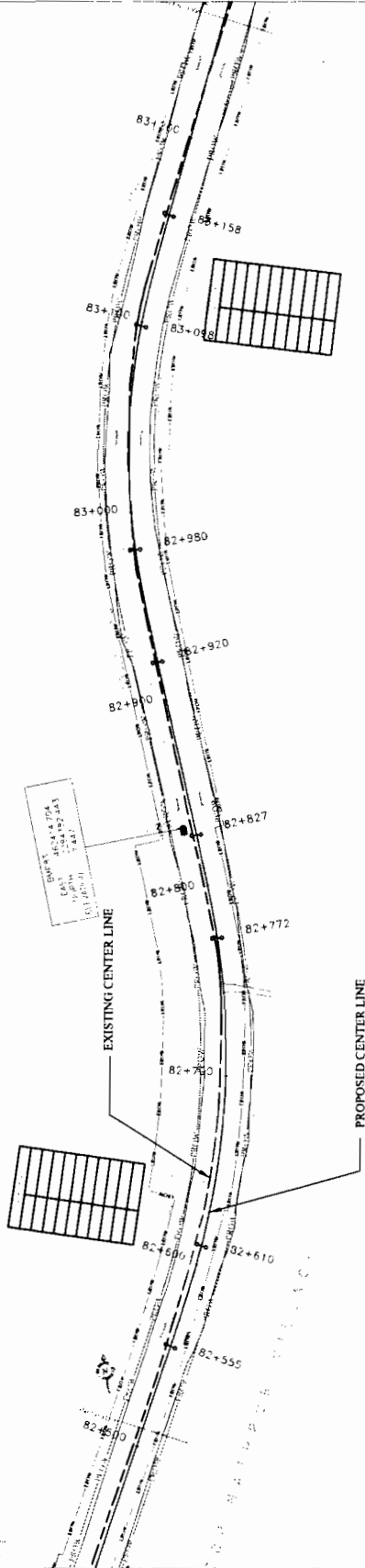
**WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.81000 TO Km.81750**

DRG NO: 08R/08/001/ST/001/001
 SH NO: 10
 DATE: 20/02/2010
 SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100

NO.	DATE	REVISION	BY	CHKD	APPD
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					

TO JAGATPUR

TO CHANDBALI



CHAINAGE	ELEVATION	PERCENT GRADE	VERTICAL CURVE DATA
82+550	18.914	0.00	
82+600	18.942	0.15	
82+650	18.955	0.30	
82+700	18.978	0.45	
82+727	18.988	0.50	
82+750	18.995	0.55	
82+800	19.010	0.60	
82+827	19.015	0.65	
82+850	19.020	0.70	
82+900	19.030	0.75	
82+920	19.035	0.80	
82+950	19.040	0.85	
83+000	19.045	0.90	

CONSULTANT:-
ENGINEERS GROUP LTD.
 10, 11, 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

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 ROAD FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

**WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.82/500**

DATE: 22/02/12
SCALE: HORIZONTAL: 1"=100', VERTICAL: 1"=20'

DESIGN LEVELS:
 18.000
 16.000
 14.000
 12.000
 10.000
 8.000
 6.000
 4.000
 2.000

DATUM = 0.000

LEGEND

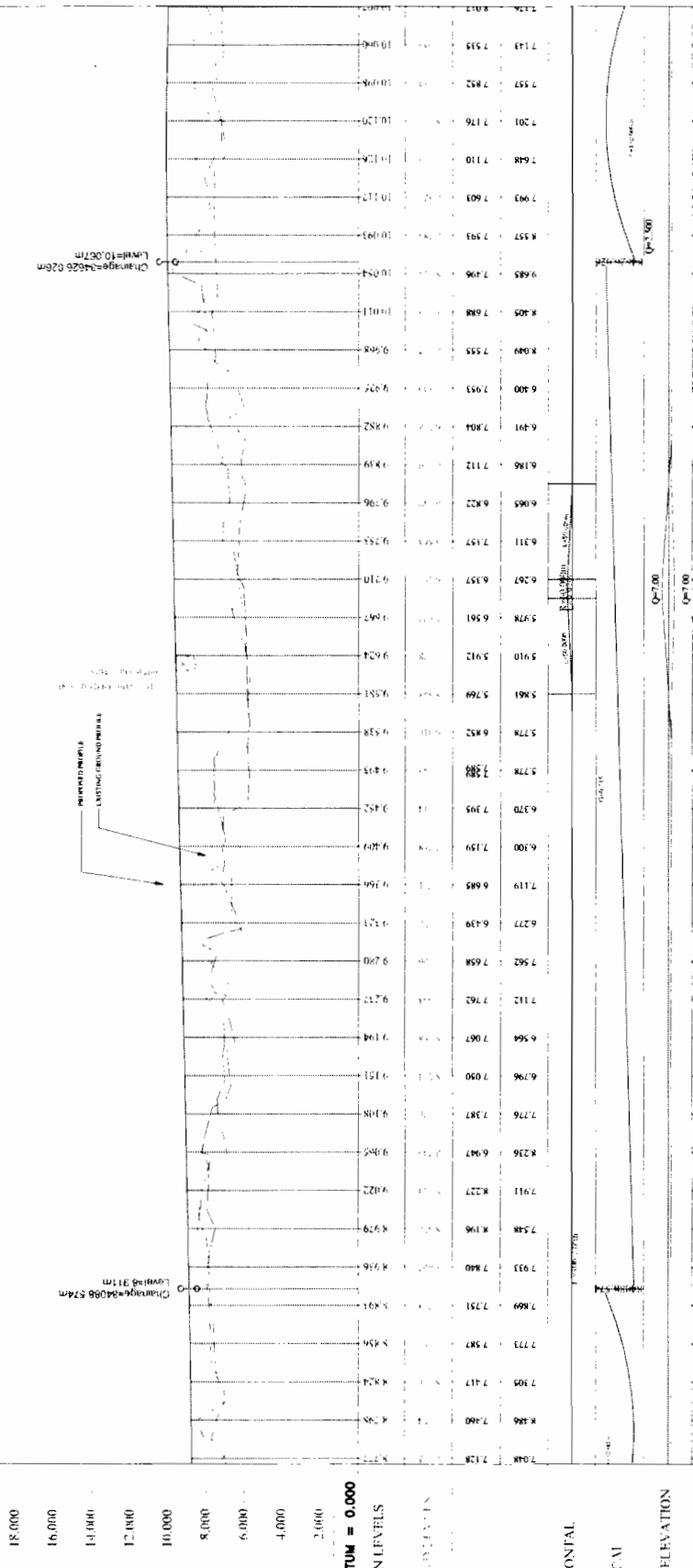
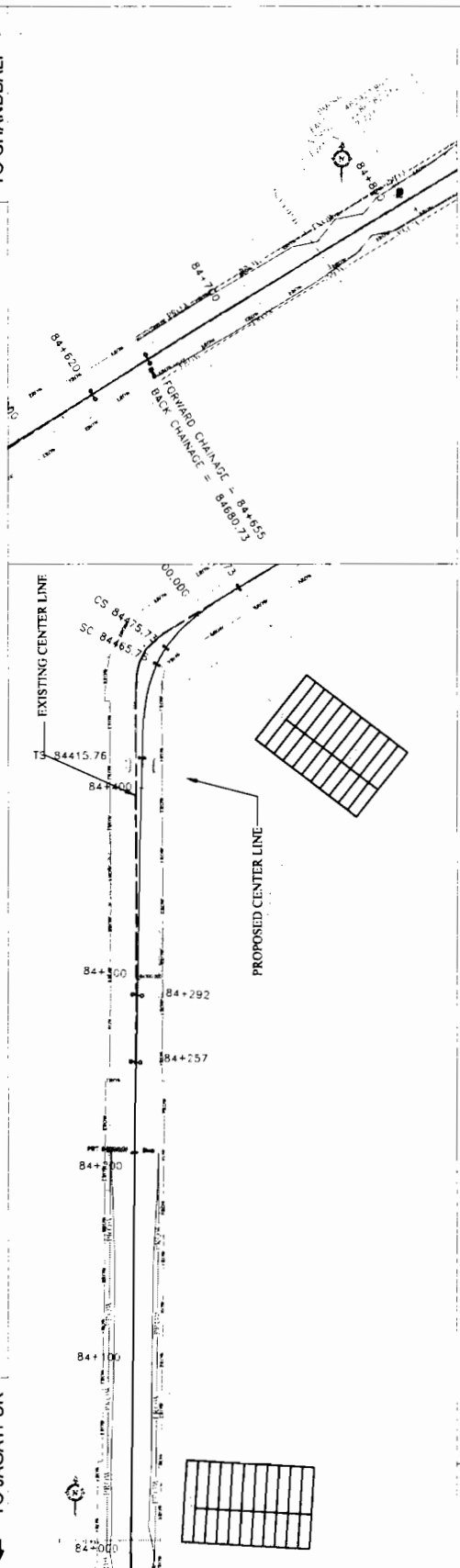


DPJ - NKC (JV),
 Contractor

Chief Engineer
 World Bank Project
 Odisha
 Employer

TO CHANDBALI

TO JAGATPUR



Station	Ground Level (m)	Design Level (m)	Vertical Curve Data
7.048	7.128	7.128	
7.108	7.147	7.147	
7.195	7.187	7.187	
7.273	7.287	7.287	
7.351	7.387	7.387	
7.429	7.487	7.487	
7.507	7.587	7.587	
7.585	7.687	7.687	
7.663	7.787	7.787	
7.741	7.887	7.887	
7.819	7.987	7.987	
7.897	8.087	8.087	
7.975	8.187	8.187	
8.053	8.287	8.287	
8.131	8.387	8.387	
8.209	8.487	8.487	
8.287	8.587	8.587	
8.365	8.687	8.687	
8.443	8.787	8.787	
8.521	8.887	8.887	
8.599	8.987	8.987	
8.677	9.087	9.087	
8.755	9.187	9.187	
8.833	9.287	9.287	
8.911	9.387	9.387	
8.989	9.487	9.487	
9.067	9.587	9.587	
9.145	9.687	9.687	
9.223	9.787	9.787	
9.301	9.887	9.887	
9.379	9.987	9.987	
9.457	10.087	10.087	
9.535	10.187	10.187	
9.613	10.287	10.287	
9.691	10.387	10.387	
9.769	10.487	10.487	
9.847	10.587	10.587	
9.925	10.687	10.687	
10.003	10.787	10.787	
10.081	10.887	10.887	
10.159	10.987	10.987	
10.237	11.087	11.087	
10.315	11.187	11.187	
10.393	11.287	11.287	
10.471	11.387	11.387	
10.549	11.487	11.487	
10.627	11.587	11.587	
10.705	11.687	11.687	
10.783	11.787	11.787	
10.861	11.887	11.887	
10.939	11.987	11.987	
11.017	12.087	12.087	
11.095	12.187	12.187	
11.173	12.287	12.287	
11.251	12.387	12.387	
11.329	12.487	12.487	
11.407	12.587	12.587	
11.485	12.687	12.687	
11.563	12.787	12.787	
11.641	12.887	12.887	
11.719	12.987	12.987	
11.797	13.087	13.087	
11.875	13.187	13.187	
11.953	13.287	13.287	
12.031	13.387	13.387	
12.109	13.487	13.487	
12.187	13.587	13.587	
12.265	13.687	13.687	
12.343	13.787	13.787	
12.421	13.887	13.887	
12.499	13.987	13.987	
12.577	14.087	14.087	
12.655	14.187	14.187	
12.733	14.287	14.287	
12.811	14.387	14.387	
12.889	14.487	14.487	
12.967	14.587	14.587	
13.045	14.687	14.687	
13.123	14.787	14.787	
13.201	14.887	14.887	
13.279	14.987	14.987	
13.357	15.087	15.087	
13.435	15.187	15.187	
13.513	15.287	15.287	
13.591	15.387	15.387	
13.669	15.487	15.487	
13.747	15.587	15.587	
13.825	15.687	15.687	
13.903	15.787	15.787	
13.981	15.887	15.887	
14.059	15.987	15.987	
14.137	16.087	16.087	
14.215	16.187	16.187	
14.293	16.287	16.287	
14.371	16.387	16.387	
14.449	16.487	16.487	
14.527	16.587	16.587	
14.605	16.687	16.687	
14.683	16.787	16.787	
14.761	16.887	16.887	
14.839	16.987	16.987	
14.917	17.087	17.087	
15.000	17.187	17.187	

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION
DUHURIA TO CHANDBALI - Km 84/000 TO Km 84/750

DRG NO: DS/RR/EGG/ST/MB/04/04
 SH NO: 49
 DATE: 12/12/11
 REV: 01
 SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

CONSULTANT:-
C E ENGINEERS GROUP LTD.
 112, Main Road, Kharakpur, Jharkhand
 Ph: 91-9380429292, 9380429296
 Fax: 91-9380429296

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

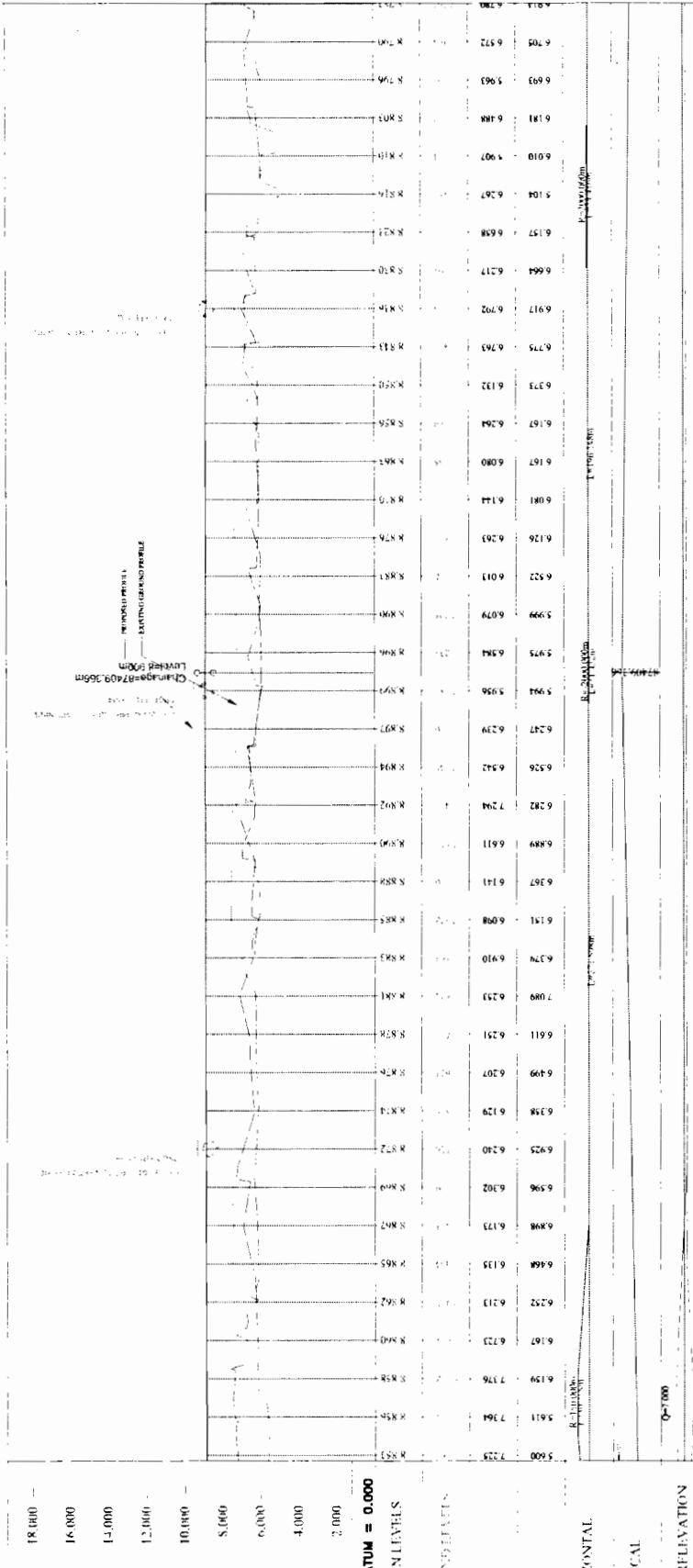
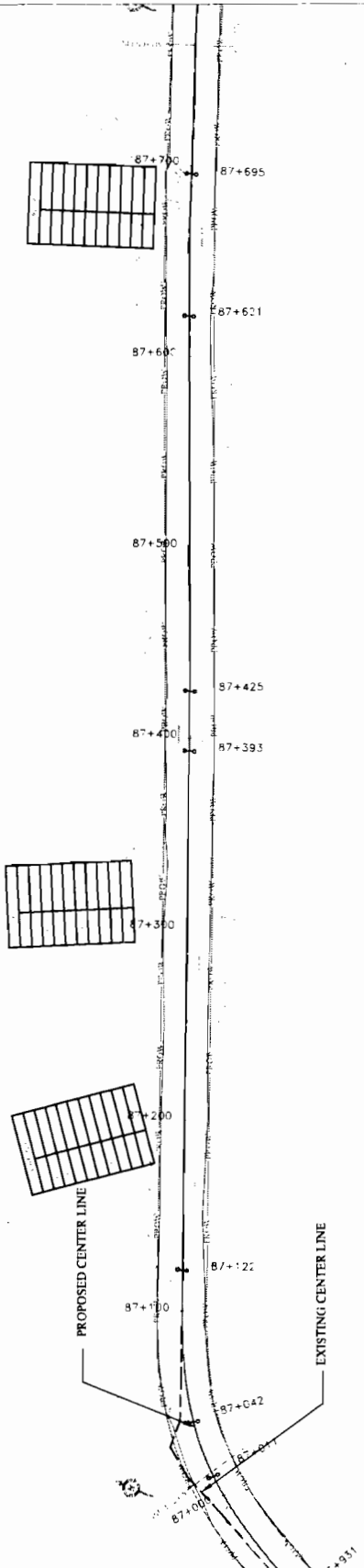
PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY, STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (II) ROAD FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE.

LEGEND

EXISTING CENTER LINE	PROPOSED CENTER LINE
EXISTING GROUND PROFILE	DESIGN LEVEL
EXISTING ROAD WIDTH	PROPOSED ROAD WIDTH
EXISTING ROAD GRADE	PROPOSED ROAD GRADE
EXISTING ROAD CROSS SECTION	PROPOSED ROAD CROSS SECTION
EXISTING ROAD SURFACE	PROPOSED ROAD SURFACE
EXISTING ROAD DRAINAGE	PROPOSED ROAD DRAINAGE
EXISTING ROAD STRUCTURE	PROPOSED ROAD STRUCTURE
EXISTING ROAD FENCE	PROPOSED ROAD FENCE
EXISTING ROAD SIGNAGE	PROPOSED ROAD SIGNAGE
EXISTING ROAD LIGHTING	PROPOSED ROAD LIGHTING
EXISTING ROAD LANDSCAPE	PROPOSED ROAD LANDSCAPE
EXISTING ROAD UTILITIES	PROPOSED ROAD UTILITIES
EXISTING ROAD OBSTACLES	PROPOSED ROAD OBSTACLES
EXISTING ROAD ENVIRONMENT	PROPOSED ROAD ENVIRONMENT
EXISTING ROAD HISTORY	PROPOSED ROAD HISTORY
EXISTING ROAD RECORDS	PROPOSED ROAD RECORDS
EXISTING ROAD DATA	PROPOSED ROAD DATA
EXISTING ROAD INFORMATION	PROPOSED ROAD INFORMATION
EXISTING ROAD KNOWLEDGE	PROPOSED ROAD KNOWLEDGE
EXISTING ROAD EXPERIENCE	PROPOSED ROAD EXPERIENCE
EXISTING ROAD PRACTICE	PROPOSED ROAD PRACTICE
EXISTING ROAD STANDARDS	PROPOSED ROAD STANDARDS
EXISTING ROAD REGULATIONS	PROPOSED ROAD REGULATIONS
EXISTING ROAD POLICIES	PROPOSED ROAD POLICIES
EXISTING ROAD STRATEGIES	PROPOSED ROAD STRATEGIES
EXISTING ROAD TRENDS	PROPOSED ROAD TRENDS
EXISTING ROAD ISSUES	PROPOSED ROAD ISSUES
EXISTING ROAD CHALLENGES	PROPOSED ROAD CHALLENGES
EXISTING ROAD OPPORTUNITIES	PROPOSED ROAD OPPORTUNITIES
EXISTING ROAD SOLUTIONS	PROPOSED ROAD SOLUTIONS
EXISTING ROAD RECOMMENDATIONS	PROPOSED ROAD RECOMMENDATIONS
EXISTING ROAD CONCLUSIONS	PROPOSED ROAD CONCLUSIONS
EXISTING ROAD REFERENCES	PROPOSED ROAD REFERENCES
EXISTING ROAD SOURCES	PROPOSED ROAD SOURCES
EXISTING ROAD AUTHORITIES	PROPOSED ROAD AUTHORITIES
EXISTING ROAD CONTACTS	PROPOSED ROAD CONTACTS
EXISTING ROAD NETWORKS	PROPOSED ROAD NETWORKS
EXISTING ROAD SYSTEMS	PROPOSED ROAD SYSTEMS
EXISTING ROAD INFRASTRUCTURES	PROPOSED ROAD INFRASTRUCTURES
EXISTING ROAD FACILITIES	PROPOSED ROAD FACILITIES
EXISTING ROAD SERVICES	PROPOSED ROAD SERVICES
EXISTING ROAD OPERATIONS	PROPOSED ROAD OPERATIONS
EXISTING ROAD MAINTENANCES	PROPOSED ROAD MAINTENANCES
EXISTING ROAD REPAIRS	PROPOSED ROAD REPAIRS
EXISTING ROAD REPLACEMENTS	PROPOSED ROAD REPLACEMENTS
EXISTING ROAD UPGRADES	PROPOSED ROAD UPGRADES
EXISTING ROAD MODIFICATIONS	PROPOSED ROAD MODIFICATIONS
EXISTING ROAD ALTERATIONS	PROPOSED ROAD ALTERATIONS
EXISTING ROAD ADJUSTMENTS	PROPOSED ROAD ADJUSTMENTS
EXISTING ROAD CORRECTIONS	PROPOSED ROAD CORRECTIONS
EXISTING ROAD IMPROVEMENTS	PROPOSED ROAD IMPROVEMENTS
EXISTING ROAD ENHANCEMENTS	PROPOSED ROAD ENHANCEMENTS
EXISTING ROAD OPTIMIZATIONS	PROPOSED ROAD OPTIMIZATIONS
EXISTING ROAD EFFICIENCIES	PROPOSED ROAD EFFICIENCIES
EXISTING ROAD EFFECTIVENESS	PROPOSED ROAD EFFECTIVENESS
EXISTING ROAD PRODUCTIVITIES	PROPOSED ROAD PRODUCTIVITIES
EXISTING ROAD QUALITIES	PROPOSED ROAD QUALITIES
EXISTING ROAD QUANTITIES	PROPOSED ROAD QUANTITIES
EXISTING ROAD CHARACTERISTICS	PROPOSED ROAD CHARACTERISTICS
EXISTING ROAD ATTRIBUTES	PROPOSED ROAD ATTRIBUTES
EXISTING ROAD FEATURES	PROPOSED ROAD FEATURES
EXISTING ROAD PROPERTIES	PROPOSED ROAD PROPERTIES
EXISTING ROAD BEHAVIORS	PROPOSED ROAD BEHAVIORS
EXISTING ROAD PERFORMANCES	PROPOSED ROAD PERFORMANCES
EXISTING ROAD RESULTS	PROPOSED ROAD RESULTS
EXISTING ROAD OUTCOMES	PROPOSED ROAD OUTCOMES
EXISTING ROAD IMPACTS	PROPOSED ROAD IMPACTS
EXISTING ROAD EFFECTS	PROPOSED ROAD EFFECTS
EXISTING ROAD CONSEQUENCES	PROPOSED ROAD CONSEQUENCES
EXISTING ROAD IMPLICATIONS	PROPOSED ROAD IMPLICATIONS
EXISTING ROAD SIGNIFICANCES	PROPOSED ROAD SIGNIFICANCES
EXISTING ROAD IMPORTANCES	PROPOSED ROAD IMPORTANCES
EXISTING ROAD RELEVANCES	PROPOSED ROAD RELEVANCES
EXISTING ROAD RELIANCES	PROPOSED ROAD RELIANCES
EXISTING ROAD DEPENDANCES	PROPOSED ROAD DEPENDANCES
EXISTING ROAD NEEDANCES	PROPOSED ROAD NEEDANCES
EXISTING ROAD WANTANCES	PROPOSED ROAD WANTANCES
EXISTING ROAD DESIRES	PROPOSED ROAD DESIRES
EXISTING ROAD HOPEANCES	PROPOSED ROAD HOPEANCES
EXISTING ROAD BELIEFANCES	PROPOSED ROAD BELIEFANCES
EXISTING ROAD TRUSTANCES	PROPOSED ROAD TRUSTANCES
EXISTING ROAD CONFIDENCES	PROPOSED ROAD CONFIDENCES
EXISTING ROAD ASSURANCES	PROPOSED ROAD ASSURANCES
EXISTING ROAD SECURANCES	PROPOSED ROAD SECURANCES
EXISTING ROAD SAFETANCES	PROPOSED ROAD SAFETANCES
EXISTING ROAD HEALTHANCES	PROPOSED ROAD HEALTHANCES
EXISTING ROAD WELFAREANCES	PROPOSED ROAD WELFAREANCES
EXISTING ROAD PROSPERANCES	PROPOSED ROAD PROSPERANCES
EXISTING ROAD FLOURISHANCES	PROPOSED ROAD FLOURISHANCES
EXISTING ROAD THRIVANCES	PROPOSED ROAD THRIVANCES
EXISTING ROAD PROGRESSANCES	PROPOSED ROAD PROGRESSANCES
EXISTING ROAD ADVANCEANCES	PROPOSED ROAD ADVANCEANCES
EXISTING ROAD IMPROVEMENTANCES	PROPOSED ROAD IMPROVEMENTANCES
EXISTING ROAD BENEVOLENCES	PROPOSED ROAD BENEVOLENCES

TO CHANDBALI

TO JAGATPUR



18 1000 —
16 000 —
14 000 —
12 000 —
10 000 —
8 000 —
6 000 —
4 000 —
2 000 —
DATUM = 0.000
DESIGN LEVELS

Station	Proposed Elevation	Ground Elevation
87+700	6.500	6.500
87+695	6.500	6.500
87+690	6.500	6.500
87+685	6.500	6.500
87+680	6.500	6.500
87+675	6.500	6.500
87+670	6.500	6.500
87+665	6.500	6.500
87+660	6.500	6.500
87+655	6.500	6.500
87+650	6.500	6.500
87+645	6.500	6.500
87+640	6.500	6.500
87+635	6.500	6.500
87+630	6.500	6.500
87+625	6.500	6.500
87+620	6.500	6.500
87+615	6.500	6.500
87+610	6.500	6.500
87+605	6.500	6.500
87+600	6.500	6.500
87+595	6.500	6.500
87+590	6.500	6.500
87+585	6.500	6.500
87+580	6.500	6.500
87+575	6.500	6.500
87+570	6.500	6.500
87+565	6.500	6.500
87+560	6.500	6.500
87+555	6.500	6.500
87+550	6.500	6.500
87+545	6.500	6.500
87+540	6.500	6.500
87+535	6.500	6.500
87+530	6.500	6.500
87+525	6.500	6.500
87+520	6.500	6.500
87+515	6.500	6.500
87+510	6.500	6.500
87+505	6.500	6.500
87+500	6.500	6.500
87+495	6.500	6.500
87+490	6.500	6.500
87+485	6.500	6.500
87+480	6.500	6.500
87+475	6.500	6.500
87+470	6.500	6.500
87+465	6.500	6.500
87+460	6.500	6.500
87+455	6.500	6.500
87+450	6.500	6.500
87+445	6.500	6.500
87+440	6.500	6.500
87+435	6.500	6.500
87+430	6.500	6.500
87+425	6.500	6.500
87+420	6.500	6.500
87+415	6.500	6.500
87+410	6.500	6.500
87+405	6.500	6.500
87+400	6.500	6.500
87+395	6.500	6.500
87+390	6.500	6.500
87+385	6.500	6.500
87+380	6.500	6.500
87+375	6.500	6.500
87+370	6.500	6.500
87+365	6.500	6.500
87+360	6.500	6.500
87+355	6.500	6.500
87+350	6.500	6.500
87+345	6.500	6.500
87+340	6.500	6.500
87+335	6.500	6.500
87+330	6.500	6.500
87+325	6.500	6.500
87+320	6.500	6.500
87+315	6.500	6.500
87+310	6.500	6.500
87+305	6.500	6.500
87+300	6.500	6.500
87+295	6.500	6.500
87+290	6.500	6.500
87+285	6.500	6.500
87+280	6.500	6.500
87+275	6.500	6.500
87+270	6.500	6.500
87+265	6.500	6.500
87+260	6.500	6.500
87+255	6.500	6.500
87+250	6.500	6.500
87+245	6.500	6.500
87+240	6.500	6.500
87+235	6.500	6.500
87+230	6.500	6.500
87+225	6.500	6.500
87+220	6.500	6.500
87+215	6.500	6.500
87+210	6.500	6.500
87+205	6.500	6.500
87+200	6.500	6.500
87+195	6.500	6.500
87+190	6.500	6.500
87+185	6.500	6.500
87+180	6.500	6.500
87+175	6.500	6.500
87+170	6.500	6.500
87+165	6.500	6.500
87+160	6.500	6.500
87+155	6.500	6.500
87+150	6.500	6.500
87+145	6.500	6.500
87+140	6.500	6.500
87+135	6.500	6.500
87+130	6.500	6.500
87+125	6.500	6.500
87+120	6.500	6.500
87+115	6.500	6.500
87+110	6.500	6.500
87+105	6.500	6.500
87+100	6.500	6.500

Station	Proposed Elevation	Ground Elevation
87+195	6.500	6.500
87+190	6.500	6.500
87+185	6.500	6.500
87+180	6.500	6.500
87+175	6.500	6.500
87+170	6.500	6.500
87+165	6.500	6.500
87+160	6.500	6.500
87+155	6.500	6.500
87+150	6.500	6.500
87+145	6.500	6.500
87+140	6.500	6.500
87+135	6.500	6.500
87+130	6.500	6.500
87+125	6.500	6.500
87+120	6.500	6.500
87+115	6.500	6.500
87+110	6.500	6.500
87+105	6.500	6.500
87+100	6.500	6.500
87+95	6.500	6.500
87+90	6.500	6.500
87+85	6.500	6.500
87+80	6.500	6.500
87+75	6.500	6.500
87+70	6.500	6.500
87+65	6.500	6.500
87+60	6.500	6.500
87+55	6.500	6.500
87+50	6.500	6.500
87+45	6.500	6.500
87+40	6.500	6.500
87+35	6.500	6.500
87+30	6.500	6.500
87+25	6.500	6.500
87+20	6.500	6.500
87+15	6.500	6.500
87+10	6.500	6.500
87+05	6.500	6.500
87+00	6.500	6.500



DP - MNC JV
Contractor

Chief Engineer:
World Bank Project
Chief Engineer:
Civil, Odisha
Engineer

CONSULTANT:-
CONSULTING ENGINEERS GROUP LTD.
GOVT. OF ORISSA.

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km.87/000 To Km.87/750

DRG NO: 08/REG/OD/ST/04/003
SHEET NO: 1/1
DATE: 12/27/2014
REV: 01

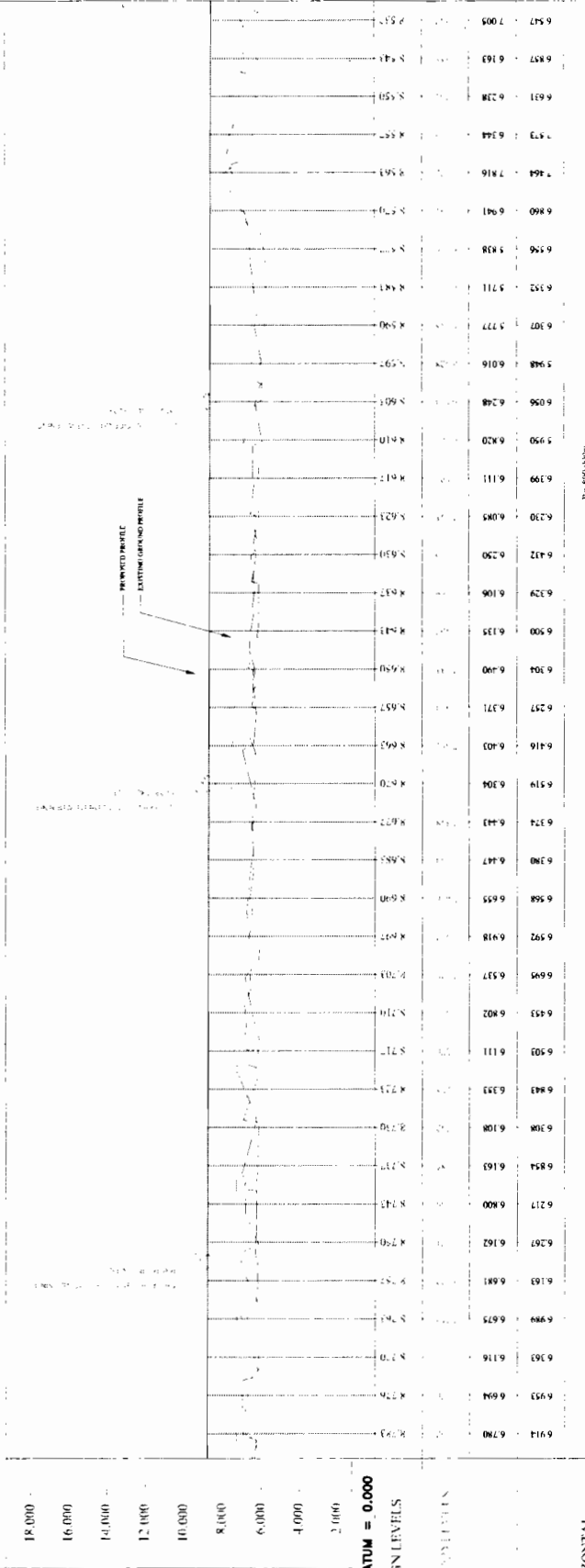
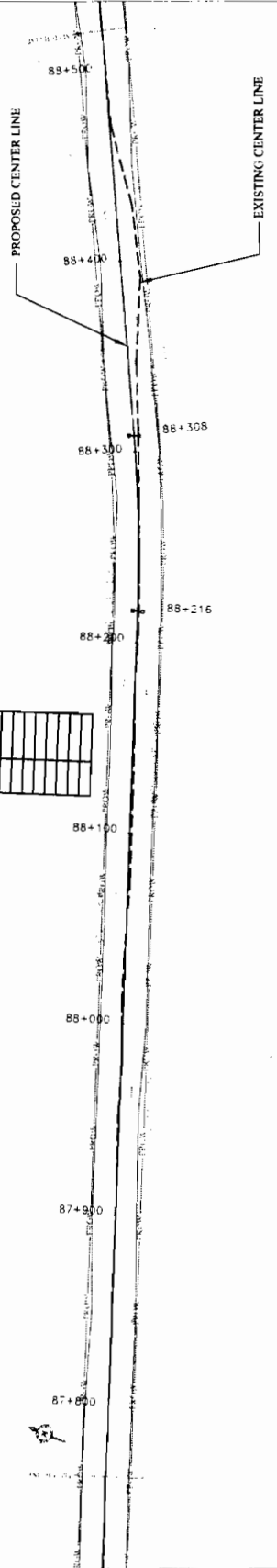
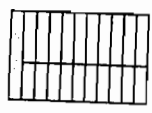
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DESIGNED BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]

Station	Proposed Elevation	Ground Elevation
87+195	6.500	6.500
87+190	6.500	6.500
87+185	6.500	6.500
87+180	6.500	6.500
87+175	6.500	6.500
87+170	6.500	6.500
87+165	6.500	6.500
87+160	6.500	6.500
87+155	6.500	6.500
87+150	6.500	6.500
87+145	6.500	6.500
87+140	6.500	6.500
87+135	6.500	6.500
87+130	6.500	6.500
87+125	6.500	6.500
87+120	6.500	6.500
87+115	6.500	6.500
87+110	6.500	6.500
87+105	6.500	6.500
87+100	6.500	6.500
87+95	6.500	6.500
87+90	6.500	6.500
87+85	6.500	6.500
87+80	6.500	6.500
87+75	6.500	6.500
87+70	6.500	6.500
87+65	6.500	6.500
87+60	6.500	6.500
87+55	6.500	6.500
87+50	6.500	6.500
87+45	6.500	6.500
87+40	6.500	6.500
87+35	6.500	6.500
87+30	6.500	6.500
87+25	6.500	6.500
87+20	6.500	6.500
87+15	6.500	6.500
87+10	6.500	6.500
87+05	6.500	6.500
87+00	6.500	6.500

← TO JAGATPUR

TO CHANDBALI →



DATUM = 0.000

DESIGN LEVELS

GRADE LEVELS

18.000
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000

6.914	6.790	6.793	6.774	6.694	6.774	6.716	6.854	6.308	6.108	6.443	6.374	6.519	6.304	6.403	6.257	6.371	6.457	6.540	6.490	6.500	6.135	6.329	6.106	6.417	6.250	6.045	6.250	6.111	6.199	6.420	6.950	6.820	6.561	6.377	5.948	6.016	6.307	6.377	6.390	6.484	6.352	6.311	6.484	6.350	6.456	6.438	6.860	6.941	7.464	7.816	6.473	6.344	6.557	6.238	6.631	6.238	6.551	6.441	6.547	7.005	6.551
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HORIZONTAL

VERTICAL

SUPERELEVATION

CHANGING

Q=+3.00

Q=-3.00

CONSULTANT:
ENGINEERS GROUP LTD.
 CONSULTANTS
 10, 11, 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

CLIENT:
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 ROADS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

**WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.87750 TO Km.88500**

DRG NO: 08/01/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100

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DATE: 12/20/11, REV: R.1

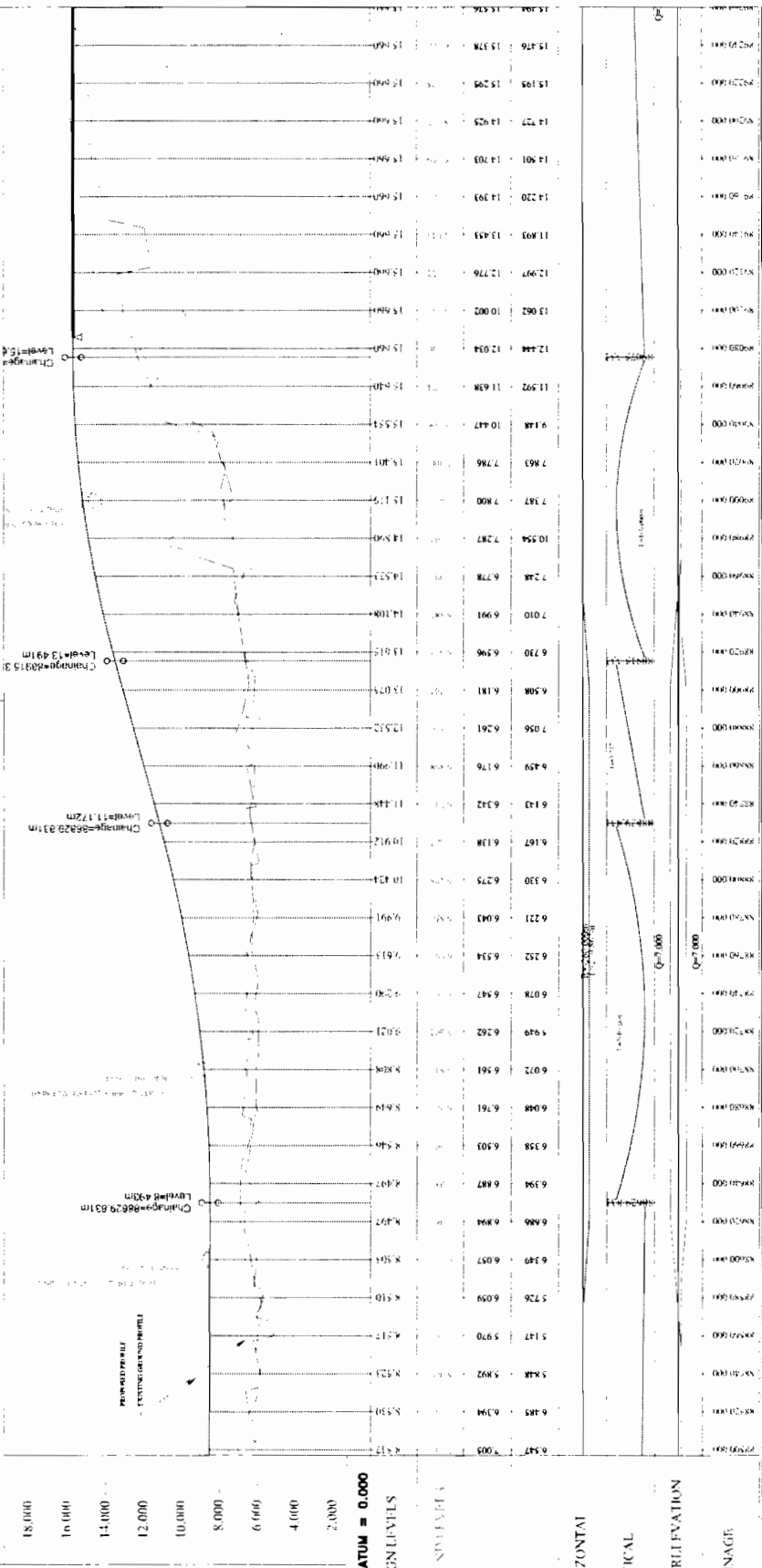
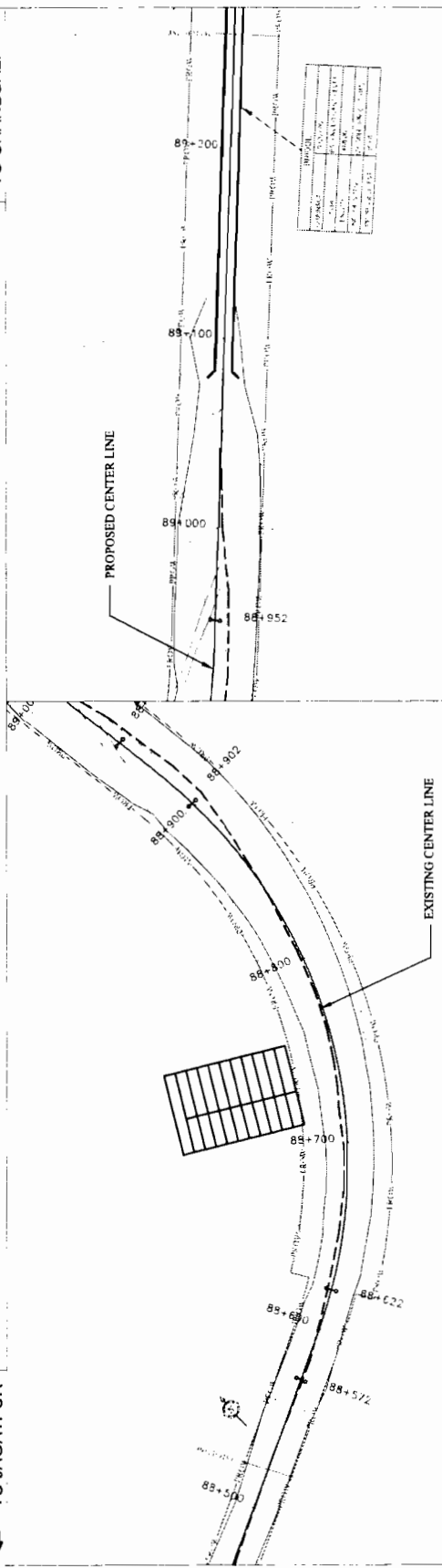
DESIGNED BY: C.F.G., CHECKED BY: C.F.G., DRAWN BY: C.F.P.M., VERIFIED BY: C.F.W.P.

DPJ - NKC (JV),
 Contractor

Chief Engineer
 World Bank Project
 Chief Engineer
 Orissa State Road Project

← TO JAGATPUR

TO CHANDBALI →



Station	Level (m)	Change (m)
88+58	15.600	0.000
88+59	15.600	0.000
88+60	15.600	0.000
88+61	15.600	0.000
88+62	15.600	0.000
88+63	15.600	0.000
88+64	15.600	0.000
88+65	15.600	0.000
88+66	15.600	0.000
88+67	15.600	0.000
88+68	15.600	0.000
88+69	15.600	0.000
88+70	15.600	0.000
88+71	15.600	0.000
88+72	15.600	0.000
88+73	15.600	0.000
88+74	15.600	0.000
88+75	15.600	0.000
88+76	15.600	0.000
88+77	15.600	0.000
88+78	15.600	0.000
88+79	15.600	0.000
88+80	15.600	0.000
88+81	15.600	0.000
88+82	15.600	0.000
88+83	15.600	0.000
88+84	15.600	0.000
88+85	15.600	0.000
88+86	15.600	0.000
88+87	15.600	0.000
88+88	15.600	0.000
88+89	15.600	0.000
88+90	15.600	0.000
88+91	15.600	0.000
88+92	15.600	0.000

LEGEND

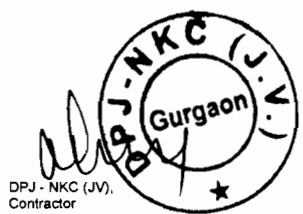
- Existing Center Line
- Proposed Center Line
- Proposed Profile
- Existing Ground Profile

CLIENT:
WORKS DEPT.
GOVT. OF ORISSA

CONSULTANT:
CE ENGINEERS GROUP LTD.

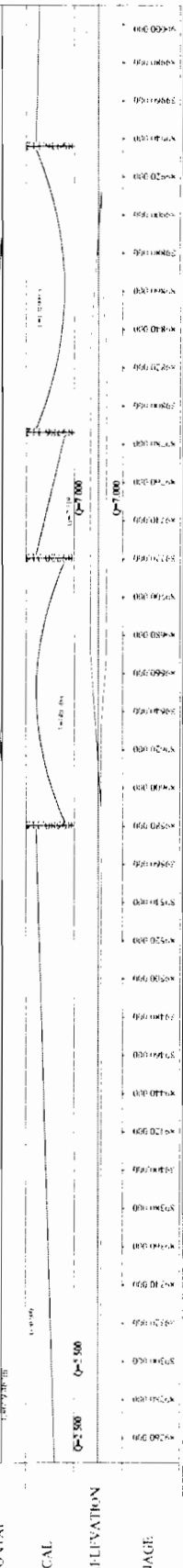
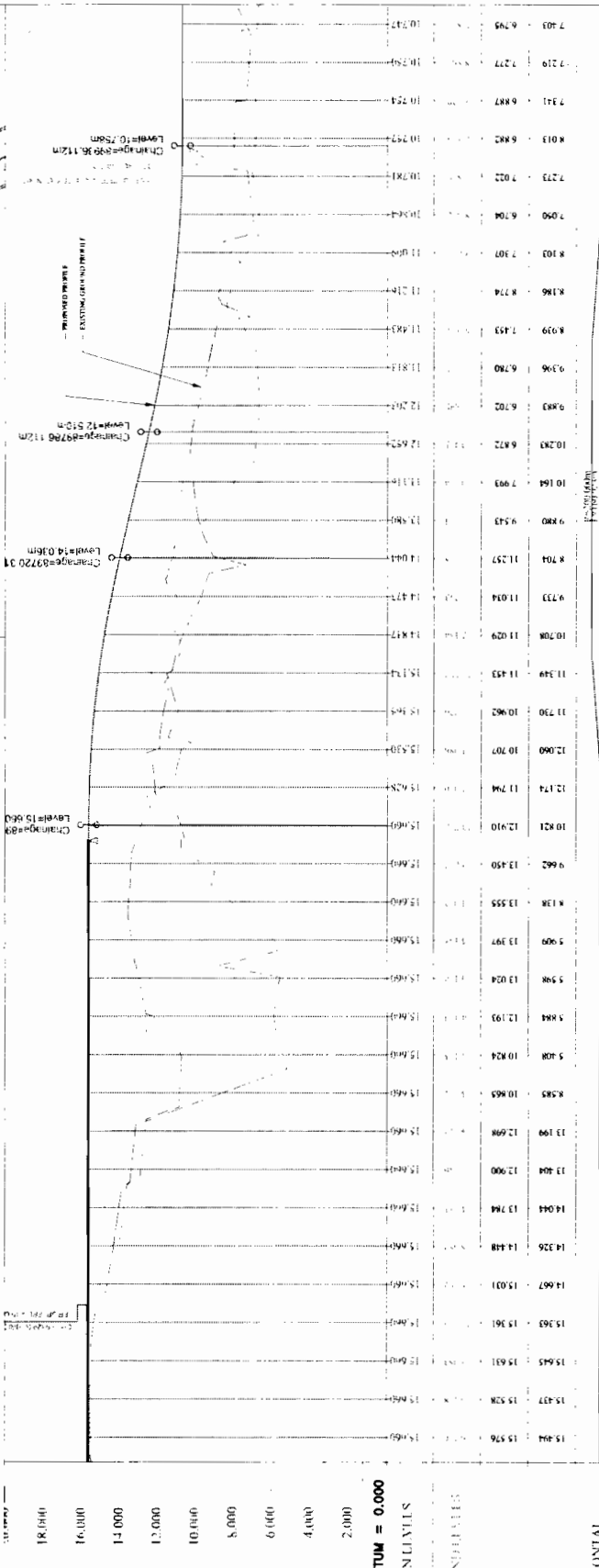
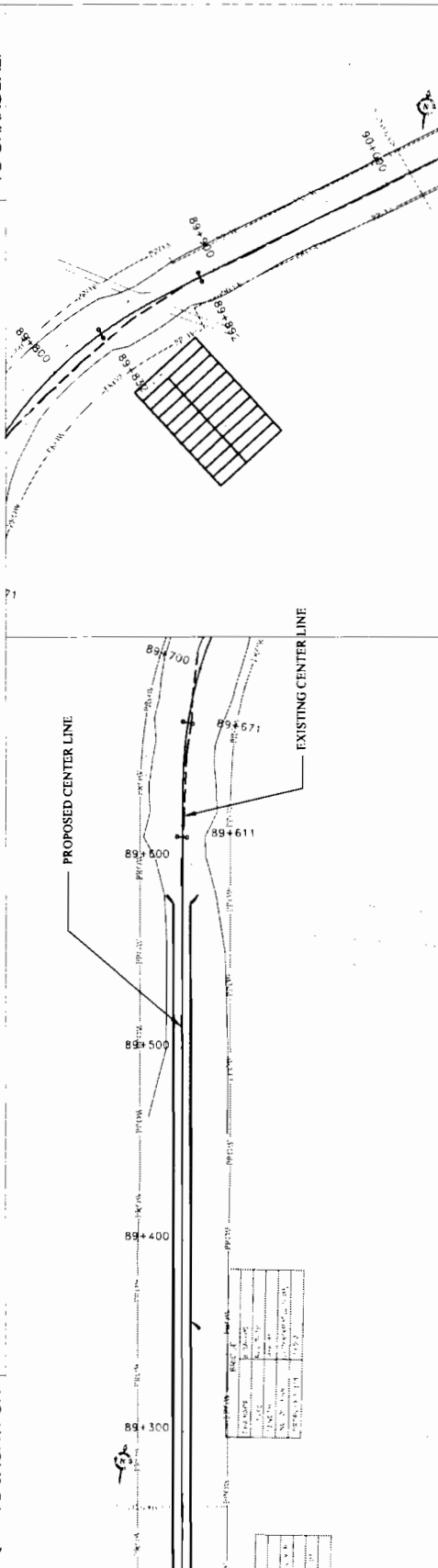
PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (B) WORKS FOR ORISSA STATE ROAD PROJECT IPSE-4 WORLD BANK ASSISTANCE

Chief Engineer
World Bank Project
Shri C. (Civil) Orissa
Employer



TO CHANDBALI

TO JAGATPUR



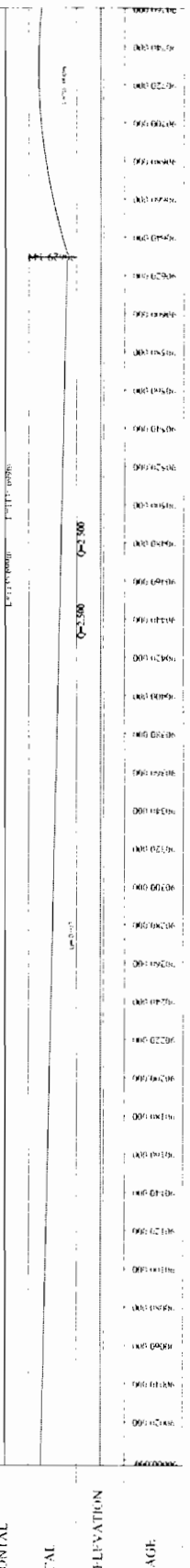
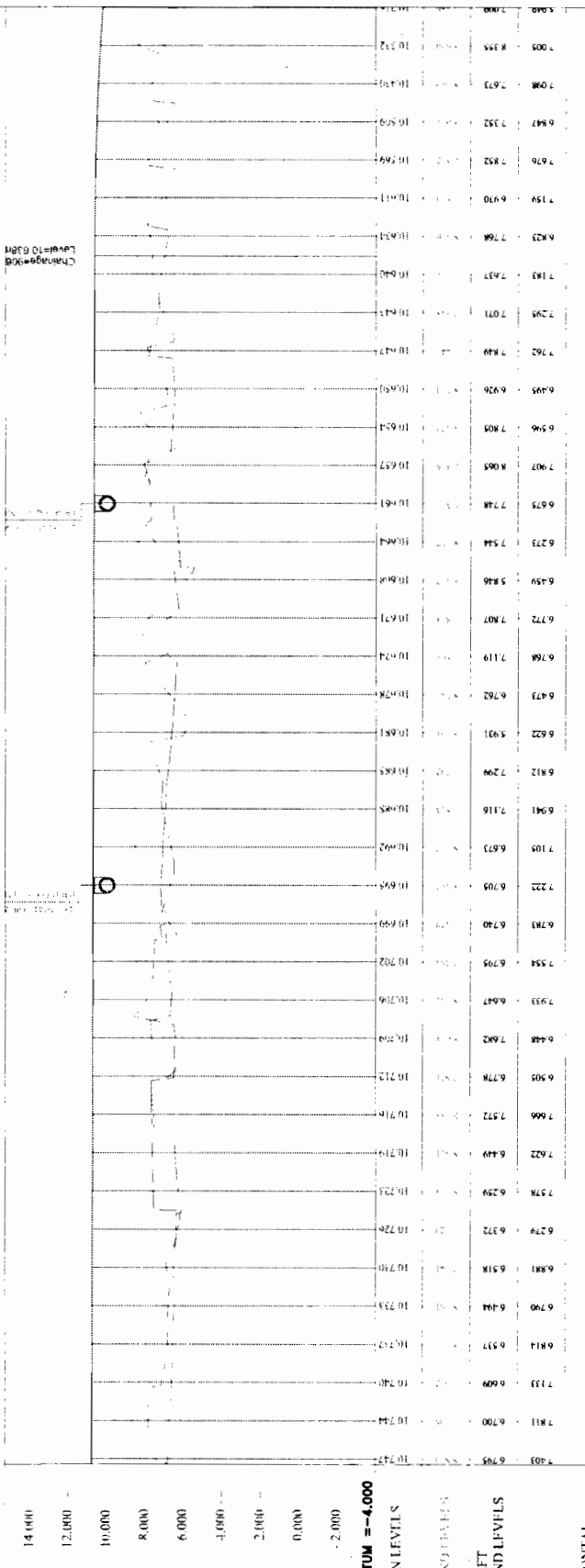
Stationing	Proposed Profile	Existing Profile	Change (m)	Length (m)
15.460	15.460	15.460	+0.89	13.00
15.600	15.600	15.600	+0.72	13.00
15.740	15.740	15.740	+0.55	13.00
15.880	15.880	15.880	+0.38	13.00
16.020	16.020	16.020	+0.21	13.00
16.160	16.160	16.160	+0.04	13.00
16.300	16.300	16.300	-0.13	13.00
16.440	16.440	16.440	-0.30	13.00
16.580	16.580	16.580	-0.47	13.00
16.720	16.720	16.720	-0.64	13.00
16.860	16.860	16.860	-0.81	13.00
17.000	17.000	17.000	-0.98	13.00
17.140	17.140	17.140	-1.15	13.00
17.280	17.280	17.280	-1.32	13.00
17.420	17.420	17.420	-1.49	13.00
17.560	17.560	17.560	-1.66	13.00
17.700	17.700	17.700	-1.83	13.00
17.840	17.840	17.840	-2.00	13.00
17.980	17.980	17.980	-2.17	13.00
18.120	18.120	18.120	-2.34	13.00
18.260	18.260	18.260	-2.51	13.00
18.400	18.400	18.400	-2.68	13.00
18.540	18.540	18.540	-2.85	13.00
18.680	18.680	18.680	-3.02	13.00
18.820	18.820	18.820	-3.19	13.00
18.960	18.960	18.960	-3.36	13.00
19.100	19.100	19.100	-3.53	13.00
19.240	19.240	19.240	-3.70	13.00
19.380	19.380	19.380	-3.87	13.00
19.520	19.520	19.520	-4.04	13.00
19.660	19.660	19.660	-4.21	13.00
19.800	19.800	19.800	-4.38	13.00
19.940	19.940	19.940	-4.55	13.00
20.080	20.080	20.080	-4.72	13.00
20.220	20.220	20.220	-4.89	13.00

TO CHANDBALI →

← TO JAGATPUR

PROPOSED CENTER LINE

EXISTING CENTER LINE



CHAINAGE	HORIZONTAL	VERTICAL	SUPERELEVATION	CHANGAGE
7+00	7.95	10.74		
7+10	6.70	10.74		
7+20	6.47	10.74		
7+30	6.47	10.74		
7+40	6.47	10.74		
7+50	6.47	10.74		
7+60	6.47	10.74		
7+70	6.47	10.74		
7+80	6.47	10.74		
7+90	6.47	10.74		
8+00	6.47	10.74		
8+10	6.47	10.74		
8+20	6.47	10.74		
8+30	6.47	10.74		
8+40	6.47	10.74		
8+50	6.47	10.74		
8+60	6.47	10.74		
8+70	6.47	10.74		
8+80	6.47	10.74		
8+90	6.47	10.74		
9+00	6.47	10.74		

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II PROJECT FOR CROSS-STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA

CONSULTANT:-
CONSULTING ENGINEERS GROUP LTD.

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km.90/000 TO Km.90/750

SCALE: HORIZONTAL: 1:1000 VERTICAL: 1:100

DATE: 15/07/17 REV: 01

DESIGNED BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]

PROJECT NO: [Blank] DRAWING NO: [Blank] SHEET NO: [Blank]

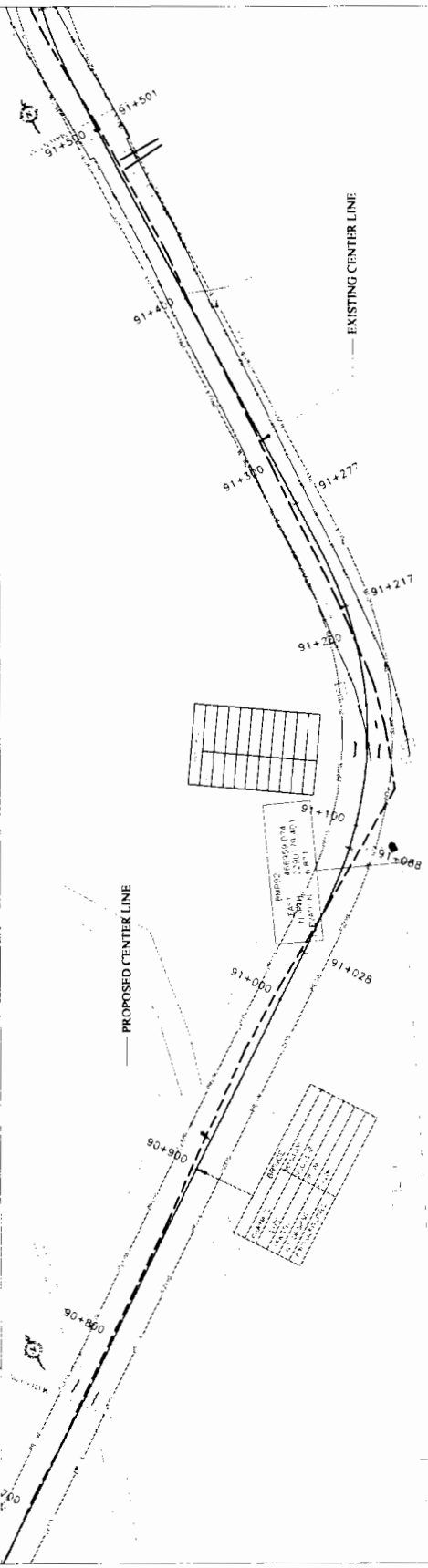


DPJ - NKC (JV), Contractor

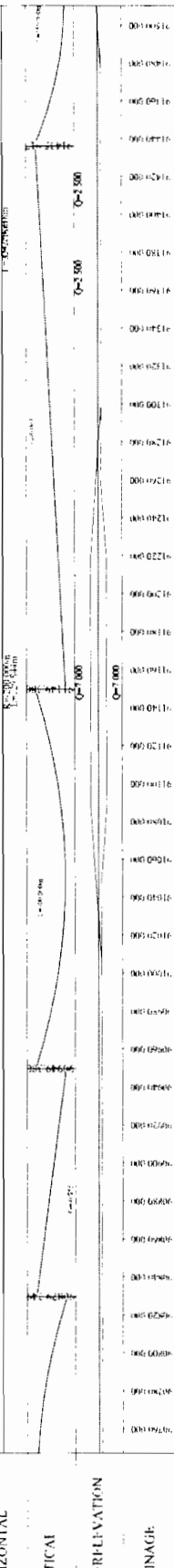
Chief Engineer
World Bank Project
E.I.C. (Civil), Odisha
Bhubaneswar

TO CHANDBALI

TO JAGATPUR



10m LEFT GROUND LEVELS	10m RIGHT GROUND LEVELS	PROPOSED GROUND LEVELS	VERTICAL CURVE DATA
7.009	7.009	7.009	
7.158	7.158	7.158	
7.453	7.453	7.453	
7.612	7.612	7.612	
7.715	7.715	7.715	
7.750	7.750	7.750	
7.806	7.806	7.806	
7.926	7.926	7.926	
8.074	8.074	8.074	
8.216	8.216	8.216	
8.358	8.358	8.358	
8.497	8.497	8.497	
8.637	8.637	8.637	
8.737	8.737	8.737	
8.812	8.812	8.812	
8.912	8.912	8.912	
9.026	9.026	9.026	
9.126	9.126	9.126	
9.216	9.216	9.216	
9.316	9.316	9.316	
9.416	9.416	9.416	
9.516	9.516	9.516	
9.616	9.616	9.616	
9.716	9.716	9.716	
9.816	9.816	9.816	
9.916	9.916	9.916	
10.016	10.016	10.016	
10.116	10.116	10.116	
10.216	10.216	10.216	
10.316	10.316	10.316	
10.416	10.416	10.416	
10.516	10.516	10.516	
10.616	10.616	10.616	
10.716	10.716	10.716	
10.816	10.816	10.816	
10.916	10.916	10.916	
11.016	11.016	11.016	
11.116	11.116	11.116	
11.216	11.216	11.216	
11.316	11.316	11.316	
11.416	11.416	11.416	
11.516	11.516	11.516	
11.616	11.616	11.616	
11.716	11.716	11.716	
11.816	11.816	11.816	
11.916	11.916	11.916	
12.016	12.016	12.016	
12.116	12.116	12.116	
12.216	12.216	12.216	
12.316	12.316	12.316	
12.416	12.416	12.416	
12.516	12.516	12.516	
12.616	12.616	12.616	
12.716	12.716	12.716	
12.816	12.816	12.816	
12.916	12.916	12.916	
13.016	13.016	13.016	
13.116	13.116	13.116	
13.216	13.216	13.216	
13.316	13.316	13.316	
13.416	13.416	13.416	
13.516	13.516	13.516	
13.616	13.616	13.616	
13.716	13.716	13.716	
13.816	13.816	13.816	
13.916	13.916	13.916	
14.016	14.016	14.016	



CHAINAGE	PROPOSED GROUND LEVELS	VERTICAL CURVE DATA
906+06	7.009	
907+06	7.158	
908+06	7.453	
909+06	7.612	
910+06	7.715	
911+06	7.750	
912+06	7.806	
913+06	7.926	
914+06	8.074	
915+06	8.216	
916+06	8.358	
917+06	8.497	
918+06	8.637	
919+06	8.737	
920+06	8.812	
921+06	8.912	
922+06	9.026	
923+06	9.126	
924+06	9.216	
925+06	9.316	
926+06	9.416	
927+06	9.516	
928+06	9.616	
929+06	9.716	
930+06	9.816	
931+06	9.916	
932+06	10.016	
933+06	10.116	
934+06	10.216	
935+06	10.316	
936+06	10.416	
937+06	10.516	
938+06	10.616	
939+06	10.716	
940+06	10.816	
941+06	10.916	
942+06	11.016	
943+06	11.116	
944+06	11.216	
945+06	11.316	
946+06	11.416	
947+06	11.516	
948+06	11.616	
949+06	11.716	
950+06	11.816	
951+06	11.916	
952+06	12.016	
953+06	12.116	
954+06	12.216	
955+06	12.316	
956+06	12.416	
957+06	12.516	
958+06	12.616	
959+06	12.716	
960+06	12.816	
961+06	12.916	
962+06	13.016	
963+06	13.116	
964+06	13.216	
965+06	13.316	
966+06	13.416	
967+06	13.516	
968+06	13.616	
969+06	13.716	
970+06	13.816	
971+06	13.916	
972+06	14.016	
973+06	14.116	
974+06	14.216	
975+06	14.316	
976+06	14.416	
977+06	14.516	
978+06	14.616	
979+06	14.716	
980+06	14.816	
981+06	14.916	
982+06	15.016	
983+06	15.116	
984+06	15.216	
985+06	15.316	
986+06	15.416	
987+06	15.516	
988+06	15.616	
989+06	15.716	
990+06	15.816	
991+06	15.916	
992+06	16.016	
993+06	16.116	
994+06	16.216	
995+06	16.316	
996+06	16.416	
997+06	16.516	
998+06	16.616	
999+06	16.716	
1000+06	16.816	

LEGEND

- Proposed Center Line
- Existing Center Line
- Right of Way
- Proposed Road
- Proposed Drainage
- Proposed Structure
- Proposed Level
- Proposed Elevation
- Proposed Chainage
- Proposed Stationing
- Proposed Direction
- Proposed Scale
- Proposed Date
- Proposed Author
- Proposed Reviewer
- Proposed Approver
- Proposed Signatory
- Proposed Seal
- Proposed Stamp
- Proposed Marking
- Proposed Label
- Proposed Annotation
- Proposed Note
- Proposed Detail
- Proposed Section
- Proposed View
- Proposed Plan
- Proposed Elevation
- Proposed Section
- Proposed View
- Proposed Plan

CONSULTANT:-
CONSULTING ENGINEERS GROUP LTD.

CLIENT:-
WORKS DEPT. GOVT. OF ORISSA.

PROJECT:-
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

Chief Engineer
World Bank Project
to the E.I.C.(Civil), Odisha
Bhubaneswar



DPJ - NKC (JV),
Contractor

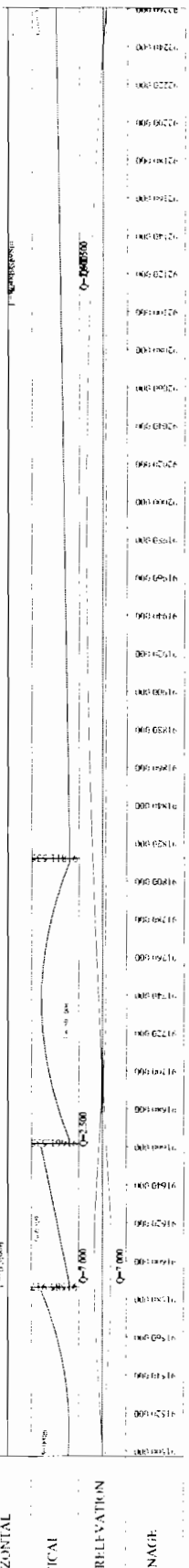
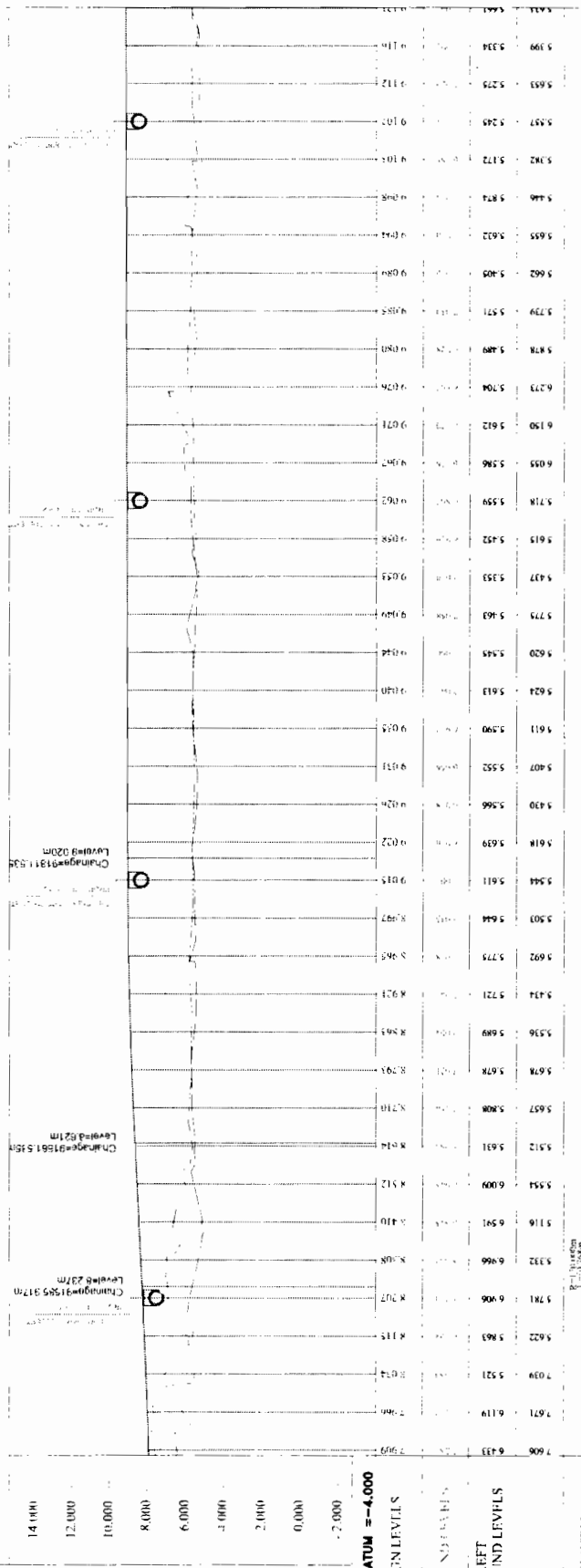
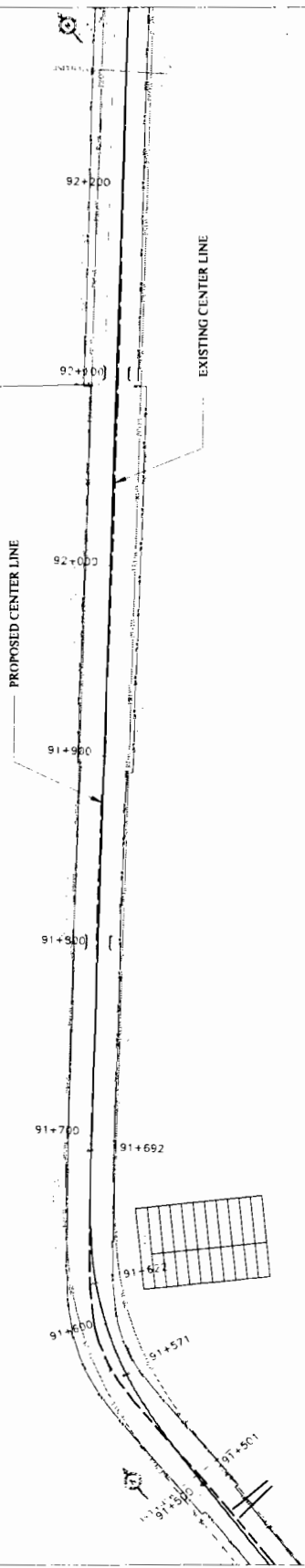
World Bank Project
Employer

TO CHANDBALI

TO JAGATPUR

LEGEND

- PROPOSED CENTER LINE
- EXISTING CENTER LINE
- EXISTING ROAD
- EXISTING CHANNEL
- EXISTING FENCE
- EXISTING UTILITY



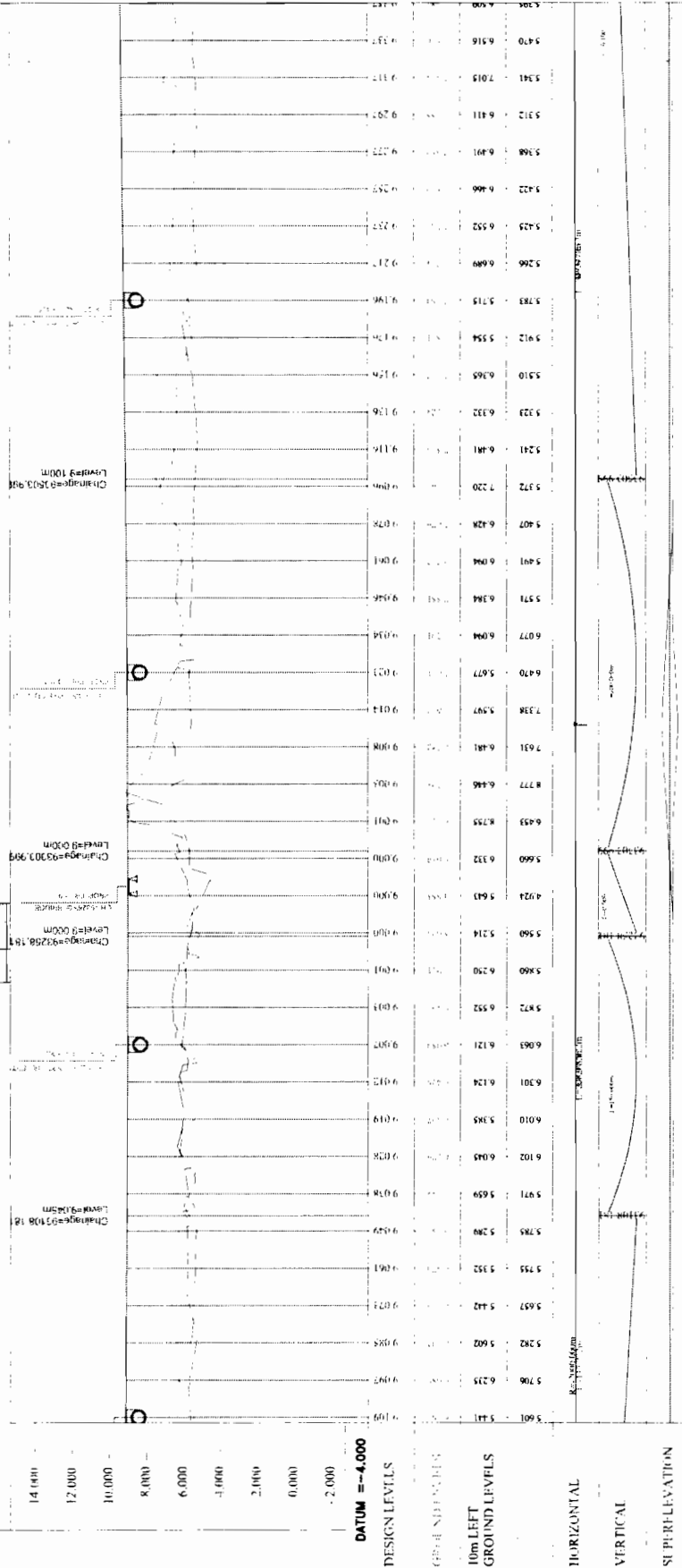
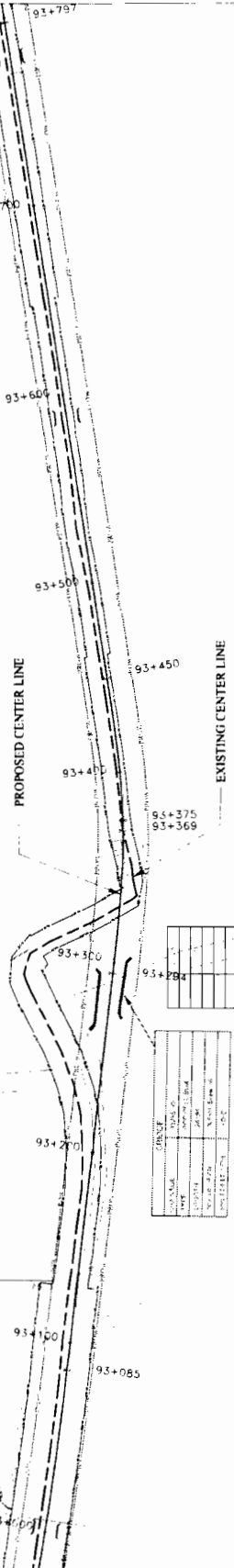
CHAINAGE	10m LEFT GROUND LEVELS	10m LEFT DESIGN LEVELS
0+000	7.606	7.606
0+100	7.671	7.671
0+200	7.709	7.709
0+300	7.822	7.822
0+400	8.006	8.006
0+500	8.307	8.307
0+600	8.666	8.666
0+700	9.108	9.108
0+800	9.678	9.678
0+900	10.308	10.308
1+000	11.000	11.000
1+100	11.750	11.750
1+200	12.550	12.550
1+300	13.400	13.400
1+400	14.300	14.300
1+500	15.250	15.250
1+600	16.250	16.250
1+700	17.300	17.300
1+800	18.400	18.400
1+900	19.550	19.550
2+000	20.750	20.750
2+100	22.000	22.000
2+200	23.300	23.300
2+300	24.650	24.650
2+400	26.050	26.050
2+500	27.500	27.500
2+600	29.000	29.000
2+700	30.550	30.550
2+800	32.150	32.150
2+900	33.800	33.800
3+000	35.500	35.500
3+100	37.250	37.250
3+200	39.050	39.050
3+300	40.900	40.900
3+400	42.800	42.800
3+500	44.750	44.750
3+600	46.750	46.750
3+700	48.800	48.800
3+800	50.900	50.900
3+900	53.050	53.050
4+000	55.250	55.250
4+100	57.500	57.500
4+200	59.800	59.800
4+300	62.150	62.150
4+400	64.550	64.550
4+500	67.000	67.000
4+600	69.500	69.500
4+700	72.050	72.050
4+800	74.650	74.650
4+900	77.300	77.300
5+000	80.000	80.000
5+100	82.750	82.750
5+200	85.550	85.550
5+300	88.400	88.400
5+400	91.300	91.300
5+500	94.250	94.250
5+600	97.250	97.250
5+700	100.300	100.300
5+800	103.400	103.400
5+900	106.550	106.550
6+000	109.750	109.750
6+100	113.000	113.000
6+200	116.300	116.300
6+300	119.650	119.650
6+400	123.050	123.050
6+500	126.500	126.500
6+600	130.000	130.000
6+700	133.550	133.550
6+800	137.150	137.150
6+900	140.800	140.800
7+000	144.500	144.500
7+100	148.250	148.250
7+200	152.050	152.050
7+300	155.900	155.900
7+400	159.800	159.800
7+500	163.750	163.750
7+600	167.750	167.750
7+700	171.800	171.800
7+800	175.900	175.900
7+900	180.050	180.050
8+000	184.250	184.250
8+100	188.500	188.500
8+200	192.800	192.800
8+300	197.150	197.150
8+400	201.550	201.550
8+500	206.000	206.000
8+600	210.500	210.500
8+700	215.050	215.050
8+800	219.650	219.650
8+900	224.300	224.300
9+000	229.000	229.000
9+100	233.750	233.750
9+200	238.550	238.550

PROJECT:	CONSULTANT:	CLIENT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARE-TYPICAL PHASE - IIB	CONSULTING ENGINEERS GROUP LTD.	WORKS DEPT. GOVT. OF ORISSA.
PROJECT:	CONSULTANT:	CLIENT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARE-TYPICAL PHASE - IIB	CONSULTING ENGINEERS GROUP LTD.	WORKS DEPT. GOVT. OF ORISSA.
PROJECT:	CONSULTANT:	CLIENT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARE-TYPICAL PHASE - IIB	CONSULTING ENGINEERS GROUP LTD.	WORKS DEPT. GOVT. OF ORISSA.

Chief Engineer
World Bank Project
The E.C. (Civil) Dept.
Rhubani

TO JAGATPUR

TO CHANDBALI



Station	Ground Level (m)	Proposed Level (m)
93+316	5.601	5.601
93+336	5.706	5.706
93+356	5.823	5.823
93+376	5.971	5.971
93+396	6.124	6.124
93+416	6.275	6.275
93+436	6.446	6.446
93+450	6.631	6.631
93+470	6.831	6.831
93+490	7.044	7.044
93+510	7.269	7.269
93+530	7.514	7.514
93+550	7.777	7.777
93+570	8.056	8.056
93+590	8.349	8.349
93+610	8.654	8.654
93+630	8.971	8.971
93+650	9.298	9.298
93+670	9.634	9.634
93+690	9.979	9.979
93+710	10.332	10.332
93+730	10.691	10.691
93+750	11.054	11.054
93+770	11.421	11.421
93+790	11.791	11.791
93+810	12.164	12.164

DATE: 10/10/2011
 DRAWN BY: S. K. SINGH
 CHECKED BY: S. K. SINGH
 SCALE: 1:1000

ITEM	DESCRIPTION	QUANTITY	UNIT
1	Gravel	1000	m ³
2	Crushed Stone	1000	m ³
3	Subgrade	1000	m ³
4	Earthwork	1000	m ³
5	Concrete	1000	m ³
6	Reinforcement	1000	m ³
7	Formwork	1000	m ²
8	Paint	1000	m ²
9	Signage	1000	m ²
10	Drainage	1000	m ²

Change=93250.184
 Levelled 000m

Change=93303.099
 Levelled 000m

Change=93503.898
 Levelled 100m

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE- II
 ROADS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

CLIENT:
 WORKS DEPT.
 GOVT. OF ORISSA.

CONSULTANT:
 CONSULTING
 ENGINEERS GROUP LTD.
 CEG

**WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.93/000 TO Km.93/750**

SCALE: HORIZONTAL 1:1000, VERTICAL 1:100

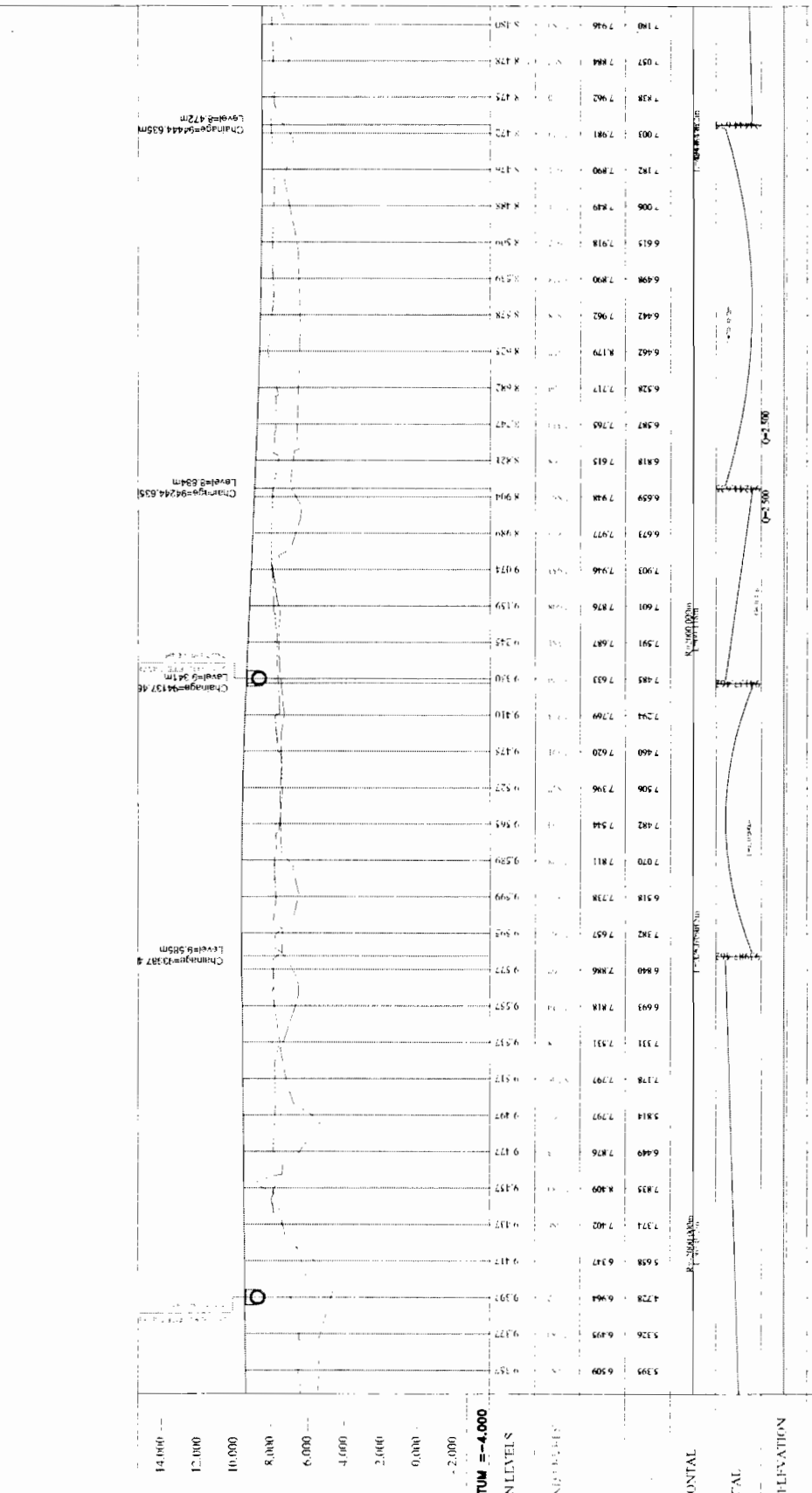
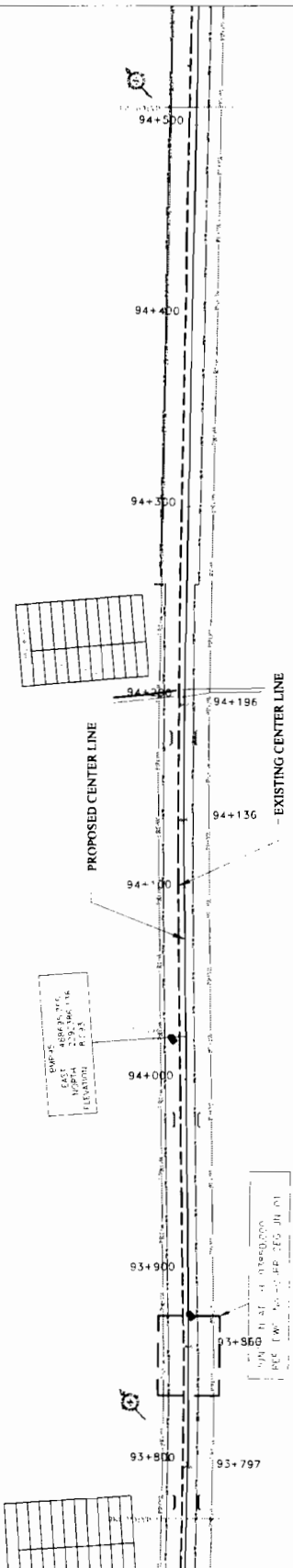


DPJ - NKC (P)
 Contractor

Chief Engineer
 World Bank Project
 Chief Engineer
 E.I.C. (Civil), Orissa
 World Bank Projects, Orissa
 Employer

TO CHANDBALI →

← TO JAGATPUR



CHAINAGE	PROPOSED ELEVATION	EXISTING ELEVATION
9444.635	8.472	8.472
9424.655	6.64	6.64
9417.46	6.41	6.41
9287.8	6.585	6.585
9137.46	6.57	6.57
9096.5	6.57	6.57
8937.46	6.57	6.57
8778.46	6.57	6.57
8619.46	6.57	6.57
8460.46	6.57	6.57
8301.46	6.57	6.57
8142.46	6.57	6.57
7983.46	6.57	6.57
7824.46	6.57	6.57
7665.46	6.57	6.57
7506.46	6.57	6.57
7347.46	6.57	6.57
7188.46	6.57	6.57
7029.46	6.57	6.57
6870.46	6.57	6.57
6711.46	6.57	6.57
6552.46	6.57	6.57
6393.46	6.57	6.57
6234.46	6.57	6.57
6075.46	6.57	6.57
5916.46	6.57	6.57
5757.46	6.57	6.57
5598.46	6.57	6.57
5439.46	6.57	6.57
5280.46	6.57	6.57
5121.46	6.57	6.57
4962.46	6.57	6.57
4803.46	6.57	6.57
4644.46	6.57	6.57
4485.46	6.57	6.57
4326.46	6.57	6.57
4167.46	6.57	6.57
4008.46	6.57	6.57
3849.46	6.57	6.57
3690.46	6.57	6.57
3531.46	6.57	6.57
3372.46	6.57	6.57
3213.46	6.57	6.57
3054.46	6.57	6.57
2895.46	6.57	6.57
2736.46	6.57	6.57
2577.46	6.57	6.57
2418.46	6.57	6.57
2259.46	6.57	6.57
2100.46	6.57	6.57
1941.46	6.57	6.57
1782.46	6.57	6.57
1623.46	6.57	6.57
1464.46	6.57	6.57
1305.46	6.57	6.57
1146.46	6.57	6.57
987.46	6.57	6.57
828.46	6.57	6.57
669.46	6.57	6.57
510.46	6.57	6.57
351.46	6.57	6.57
192.46	6.57	6.57
33.46	6.57	6.57

CONSULTANT:-
C E G
 CONSULTING ENGINEERS GROUP LTD.

CLIENT:-
 WORKS DEPT.
 GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - (B)
 ROADS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

DATE OF ISSUE	15/05/2011
SCALE	HORIZONTAL: 1:5000 VERTICAL: 1:1000
PROJECT NO.	ORISSA STATE ROAD PROJECT
SECTION NO.	DUHURIA TO CHANDBALI
REV.	1
DATE	15/05/2011
BY	[Signature]
CHECKED	[Signature]
APPROVED	[Signature]

Chief Engineer
 World Bank Project
 the E.L.C.(Civil), Odisha
 Bhubaneswar

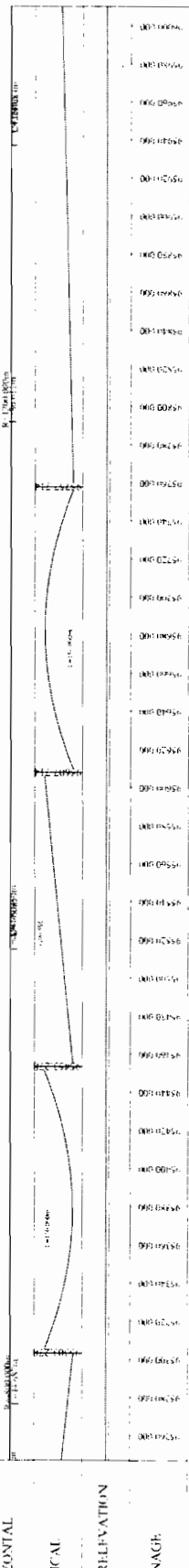
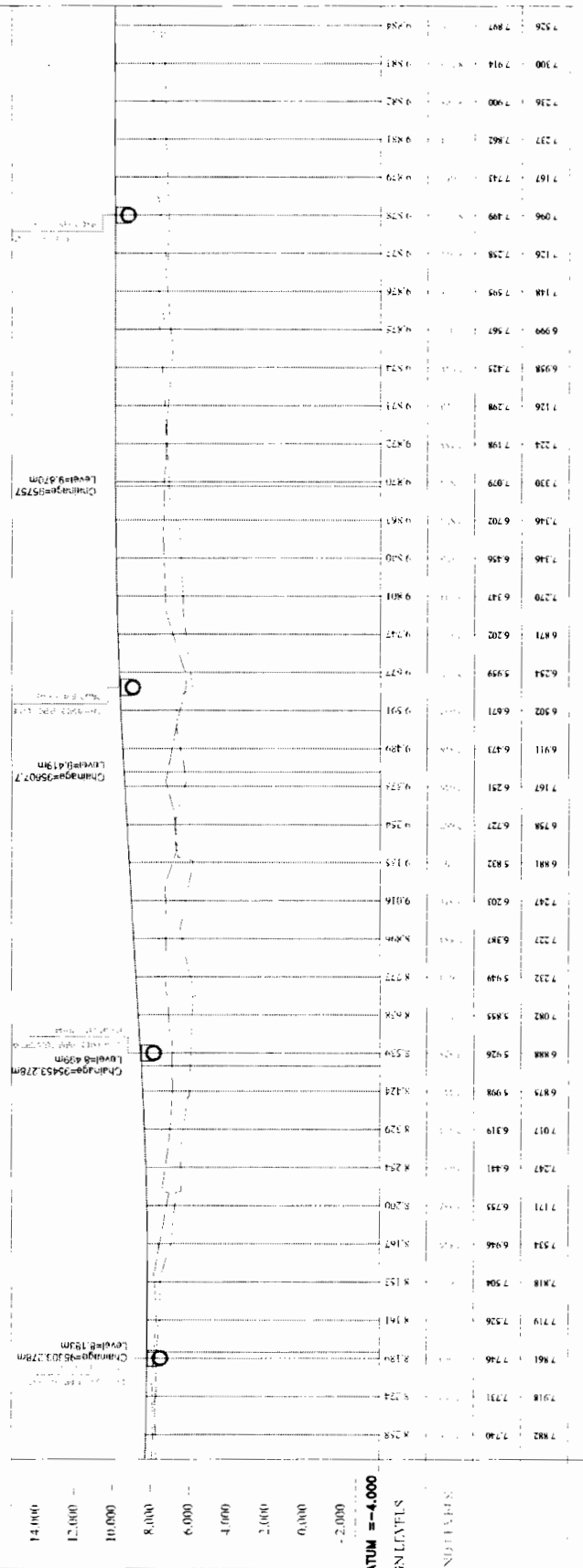
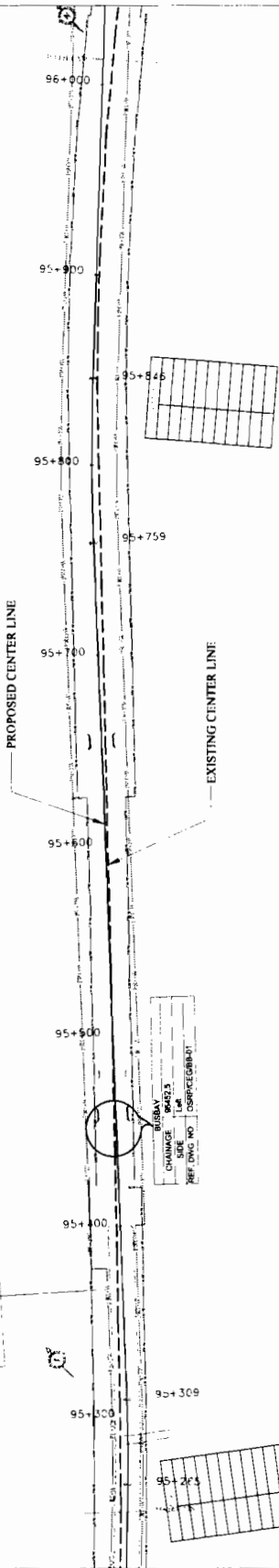


DPJ - NKC (JV)
 Contractor

World Bank Projects Odisha
 Employer

TO CHANDBALI

TO JAGATPUR



7.526	7.807	7.900	7.914	7.926	7.937	7.947	7.957	7.966	7.975	7.984	7.993	8.002	8.011	8.020	8.029	8.038	8.047	8.056	8.065	8.074	8.083	8.092	8.101	8.110	8.119	8.128	8.137	8.146	8.155	8.164	8.173	8.182	8.191	8.200	8.209	8.218	8.227	8.236	8.245	8.254	8.263	8.272	8.281	8.290	8.299	8.308	8.317	8.326	8.335	8.344	8.353	8.362	8.371	8.380	8.389	8.398	8.407	8.416	8.425	8.434	8.443	8.452	8.461	8.470	8.479	8.488	8.497	8.506	8.515	8.524	8.533	8.542	8.551	8.560	8.569	8.578	8.587	8.596	8.605	8.614	8.623	8.632	8.641	8.650	8.659	8.668	8.677	8.686	8.695	8.704	8.713	8.722	8.731	8.740	8.749	8.758	8.767	8.776	8.785	8.794	8.803	8.812	8.821	8.830	8.839	8.848	8.857	8.866	8.875	8.884	8.893	8.902	8.911	8.920	8.929	8.938	8.947	8.956	8.965	8.974	8.983	8.992	9.001	9.010	9.019	9.028	9.037	9.046	9.055	9.064	9.073	9.082	9.091	9.100	9.109	9.118	9.127	9.136	9.145	9.154	9.163	9.172	9.181	9.190	9.199	9.208	9.217	9.226	9.235	9.244	9.253	9.262	9.271	9.280	9.289	9.298	9.307	9.316	9.325	9.334	9.343	9.352	9.361	9.370	9.379	9.388	9.397	9.406	9.415	9.424	9.433	9.442	9.451	9.460	9.469	9.478	9.487	9.496	9.505	9.514	9.523	9.532	9.541	9.550	9.559	9.568	9.577	9.586	9.595	9.604	9.613	9.622	9.631	9.640	9.649	9.658	9.667	9.676	9.685	9.694	9.703	9.712	9.721	9.730	9.739	9.748	9.757	9.766	9.775	9.784	9.793	9.802	9.811	9.820	9.829	9.838	9.847	9.856	9.865	9.874	9.883	9.892	9.901	9.910	9.919	9.928	9.937	9.946	9.955	9.964	9.973	9.982	9.991	10.000
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PROJECT:
CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
DETAILED PROJECT PREPARATION OF PHASE - II
PROJECT FOR ORISSA STATE ROAD PROJECT UNDER
WORLD BANK ASSISTANCE

CONSULTANT:
ENGINEERS GROUP LTD.
GOVT. OF ORISSA

WIDENING AND STRENGTHENING TO TWO LANE
DUJHURIA TO CHANDBALI Km 95/250 TO Km 96/000

DPJ - NKC (JV),
Contractor



Chief Engineer
World Bank Project
Chief Engineer
E.L.C. (Civil), Odisha
Employer

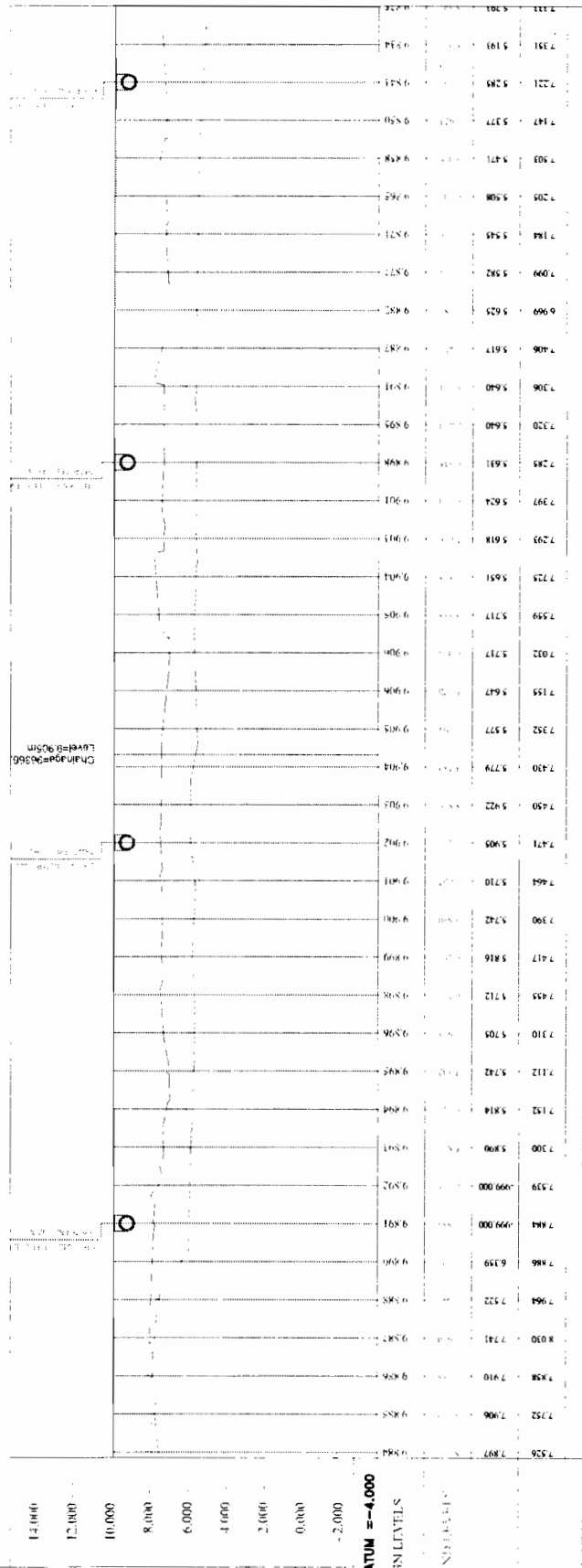
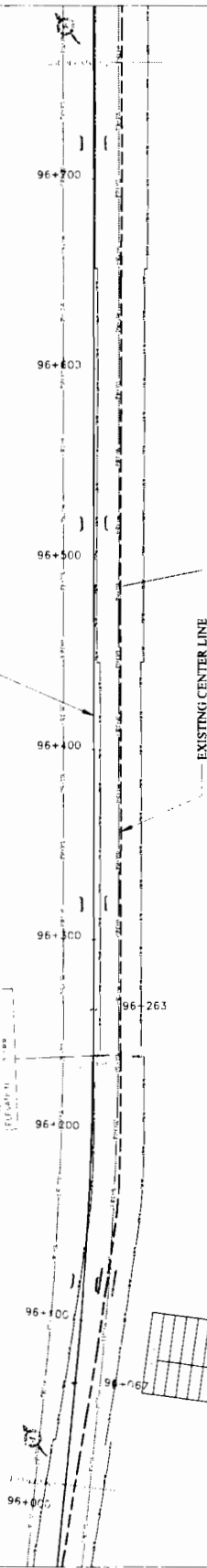
TO CHANDBALI →

← TO JAGATPUR

DRAWN BY: ANAND K. SINGH
 CHECKED BY: P. K. SINGH
 DATE: 22/08/2015
 SCALE: 1:1000

PROPOSED CENTER LINE

EXISTING CENTER LINE



14.000
 12.000
 10.000
 8.000
 6.000
 4.000
 2.000
 0.000
 -2.000

DATUM = -4.000

DESIGN LEVELS

GREEN LEVELS

HORIZONTAL

VERTICAL

SUPPERELEVATION

CHAINAGE

LEGEND

1	Proposed Center Line
2	Existing Center Line
3	Proposed Road Profile
4	Existing Ground Level
5	Proposed Road Width
6	Proposed Road Shoulder
7	Proposed Road Drainage
8	Proposed Road Structure
9	Proposed Road Marking
10	Proposed Road Signage

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DURGURIA TO CHANDBALI Km.96/000 TO Km.96/750

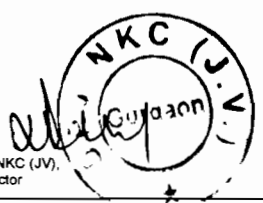
DRG NO.	DATE	REV
SH. NO.	AS	BY
SCALE	HORIZONTAL	VERTICAL
DATE	10/12/12	REV
SCALE	HORIZONTAL	VERTICAL

CONSULTANT:-
C CONSULTING
C ENGINEERS GROUP LTD.
CEG

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - III ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

1	Proposed Center Line
2	Existing Center Line
3	Proposed Road Profile
4	Existing Ground Level
5	Proposed Road Width
6	Proposed Road Shoulder
7	Proposed Road Drainage
8	Proposed Road Structure
9	Proposed Road Marking
10	Proposed Road Signage

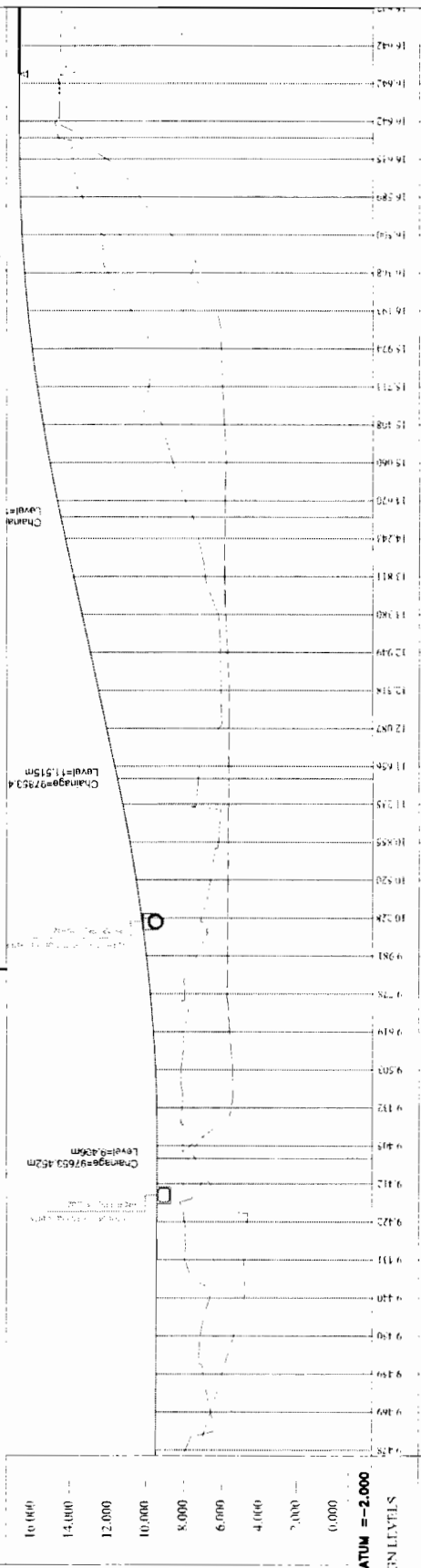
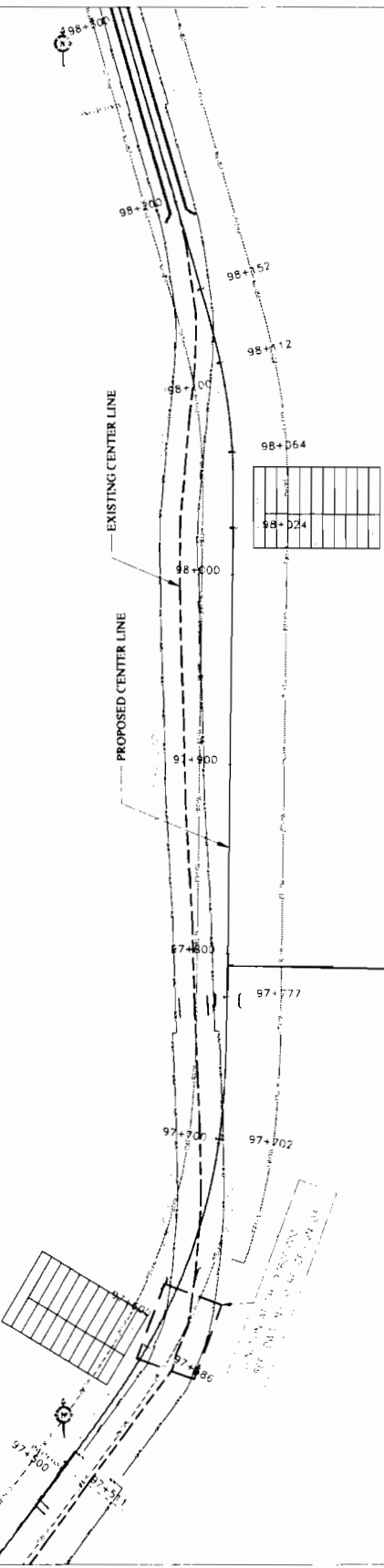


DPJ - NKC (JV),
Contractor

Chief Engineer
 World Bank Project
 The E.I.C. (Civil), Odisha
 Chief Engineer,
 World Bank Project, Odisha,
 Employer

TO CHANDBALI →

← TO JAGATPUR



CHAINAGE	SUPERELEVATION	VERTICAL	HORIZONTAL
96+00	0.000	14.713	14.713
96+05	0.000	14.713	14.713
96+10	0.000	14.713	14.713
96+15	0.000	14.713	14.713
96+20	0.000	14.713	14.713
96+25	0.000	14.713	14.713
96+30	0.000	14.713	14.713
96+35	0.000	14.713	14.713
96+40	0.000	14.713	14.713
96+45	0.000	14.713	14.713
96+50	0.000	14.713	14.713
96+55	0.000	14.713	14.713
96+60	0.000	14.713	14.713
96+65	0.000	14.713	14.713
96+70	0.000	14.713	14.713
96+75	0.000	14.713	14.713
96+80	0.000	14.713	14.713
96+85	0.000	14.713	14.713
96+90	0.000	14.713	14.713
96+95	0.000	14.713	14.713
97+00	0.000	14.713	14.713
97+05	0.000	14.713	14.713
97+10	0.000	14.713	14.713
97+15	0.000	14.713	14.713
97+20	0.000	14.713	14.713
97+25	0.000	14.713	14.713
97+30	0.000	14.713	14.713
97+35	0.000	14.713	14.713
97+40	0.000	14.713	14.713
97+45	0.000	14.713	14.713
97+50	0.000	14.713	14.713
97+55	0.000	14.713	14.713
97+60	0.000	14.713	14.713
97+65	0.000	14.713	14.713
97+70	0.000	14.713	14.713
97+75	0.000	14.713	14.713
97+80	0.000	14.713	14.713
97+85	0.000	14.713	14.713
97+90	0.000	14.713	14.713
97+95	0.000	14.713	14.713
98+00	0.000	14.713	14.713

WIDENING AND STRENGTHENING TO TWO LANE PLAN AND LONGITUDINAL SECTION DUHURIA TO CHANDBALI Km 97/500 TO Km 98/250

CONSULTANT:-
CONSULTING ENGINEERS GROUP LTD.
CEG

CLIENT:-
WORKS DEPT.
GOVT. OF ORISSA.

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II PROJECT FOR CROSSA STATE ROAD PROJECT UDSBP WORLD BANK ASSISTANCE

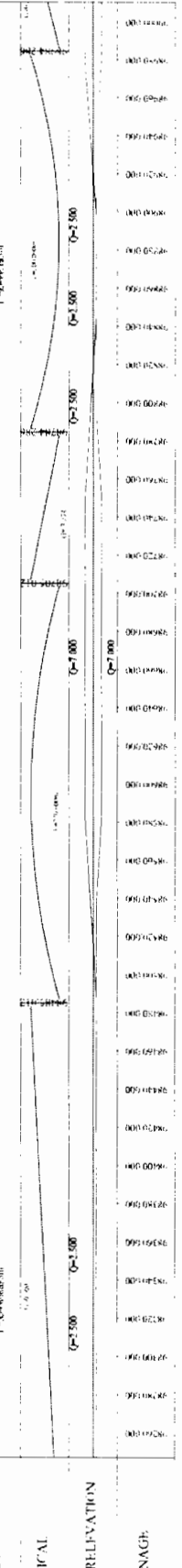
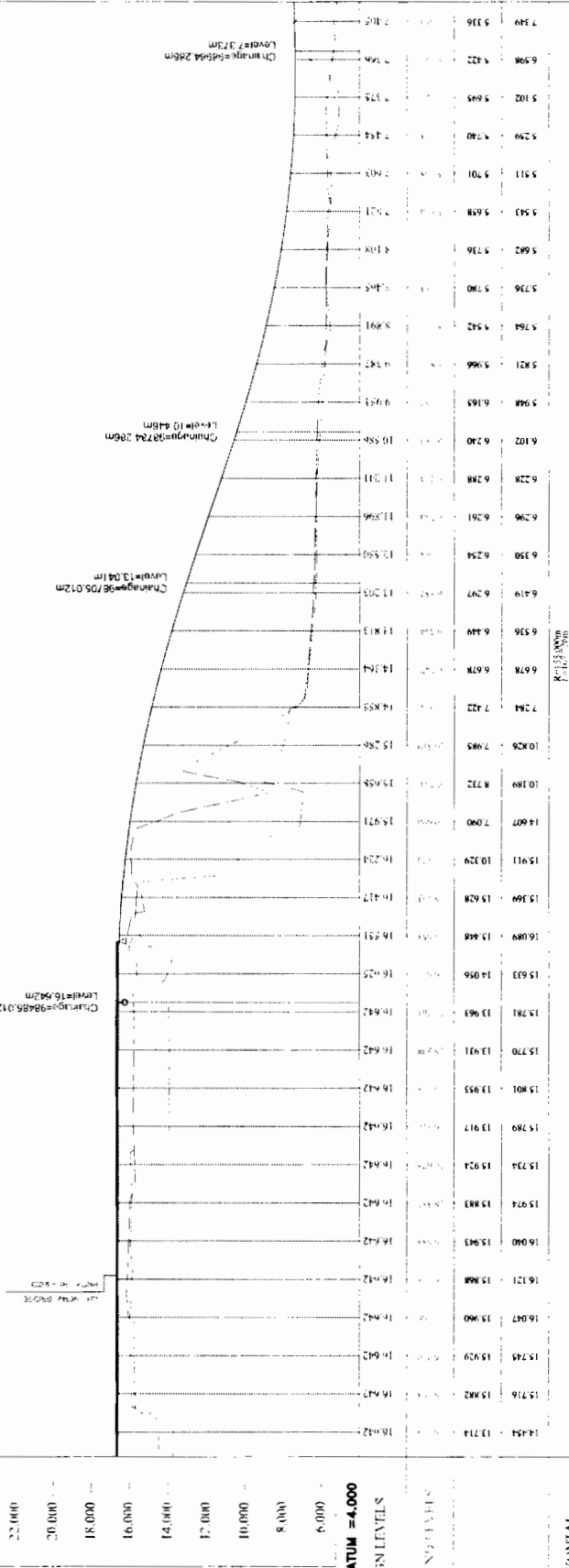
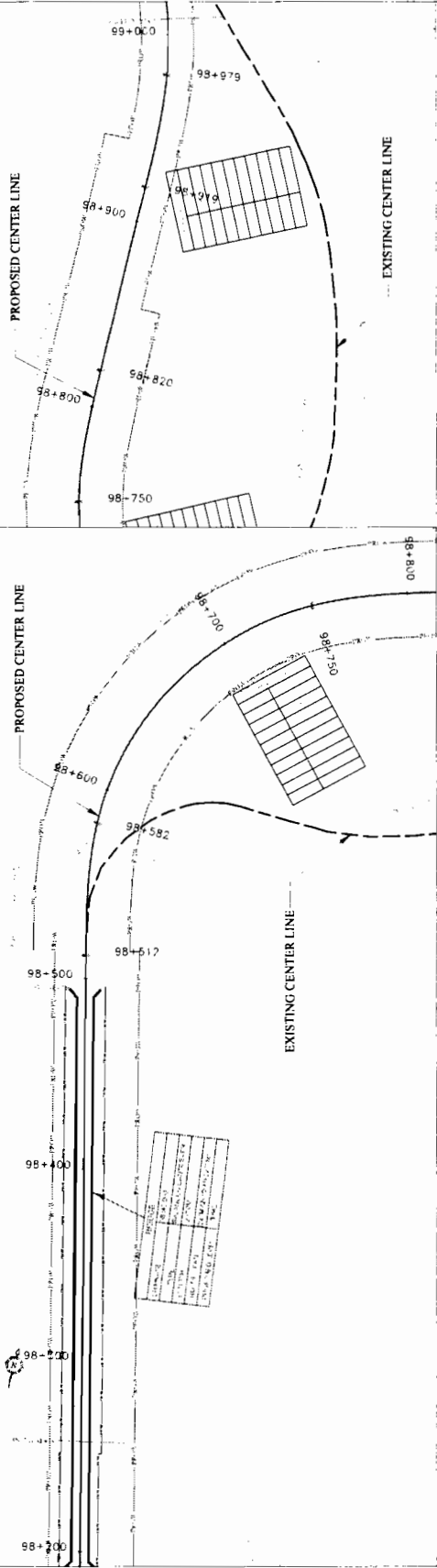
DATE: 13/03/2012
REV: 01
SCALE: HORIZONTAL: 1:5000 VERTICAL: 1:1000

DRG. NO.: 00000000000000000000
SR. NO.: 00000000000000000000
DATE: 13/03/2012
REV: 01
SCALE: HORIZONTAL: 1:5000 VERTICAL: 1:1000

APPROVED BY: [Signature]
Chief Engineer
World Bank Project
Chief Engineer
World Bank Project
Employer

TO JAGATPUR

TO CHANDBALI



Station	Level (m)
00+00	16.42
00+10	16.42
00+20	16.42
00+30	16.42
00+40	16.42
00+50	16.42
00+60	16.42
00+70	16.42
00+80	16.42
00+86	16.42

DESIGN DATA

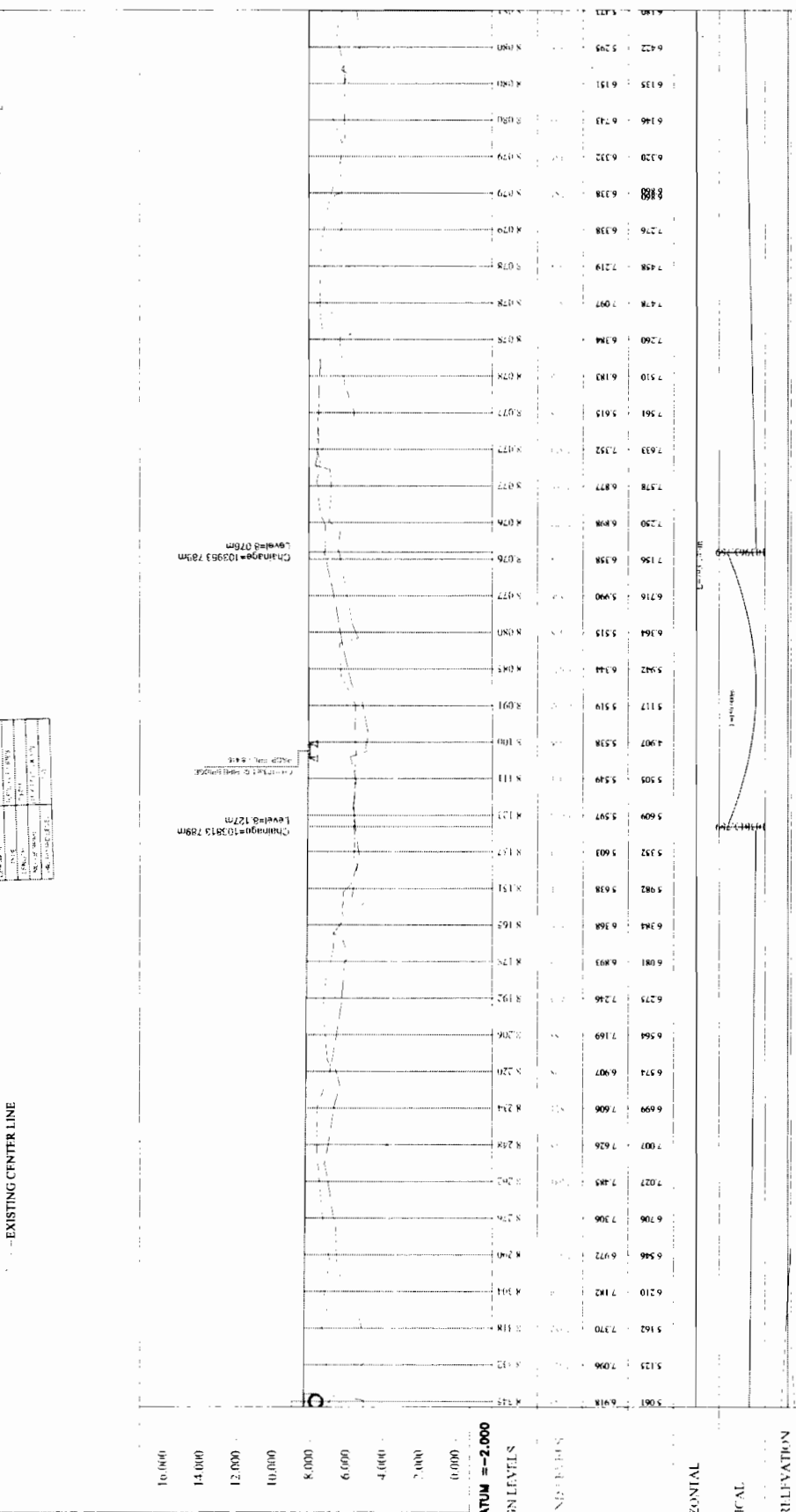
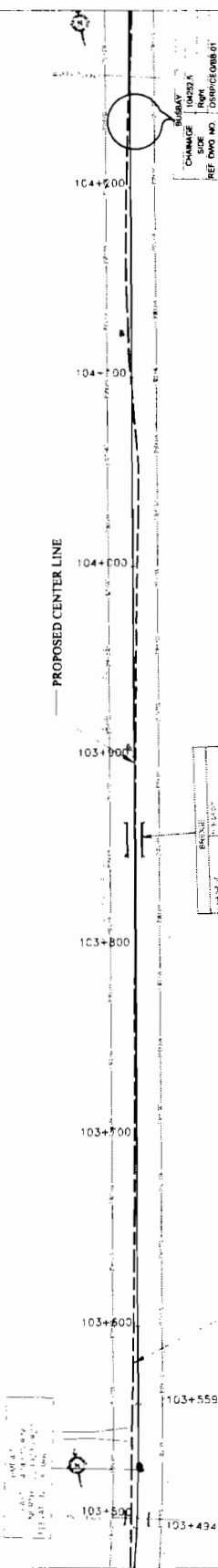
DATE: 13/10/13
 SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100
 PROJECT: WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUJHURIA TO CHANDBALI Km 98/250 TO Km 99/000
 CONSULTANT: CON S U L T I N G ENGINEERS GROUP LTD.
 CLIENT: WORKS DEPT. GOVT. OF ORISSA.
 PROJECT: CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - II PROJECT FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

DPJ - NKC (P), Contractor

Chief Engineer
 World Bank Project
 Chief Engineer, I.C.C. (Civil), Odisha
 World Bank Projects Odisha
 Employer

TO CHANDBALI →

← TO JAGATPUR



Station	Ground Level (m)	Proposed Road Level (m)
103+434	103455.5	103455.5
103+450	103455.5	103455.5
103+465	103455.5	103455.5
103+480	103455.5	103455.5
103+495	103455.5	103455.5
103+510	103455.5	103455.5
103+525	103455.5	103455.5
103+540	103455.5	103455.5
103+555	103455.5	103455.5
103+570	103455.5	103455.5
103+585	103455.5	103455.5
103+600	103455.5	103455.5
103+615	103455.5	103455.5
103+630	103455.5	103455.5
103+645	103455.5	103455.5
103+660	103455.5	103455.5
103+675	103455.5	103455.5
103+690	103455.5	103455.5
103+705	103455.5	103455.5
103+720	103455.5	103455.5
103+735	103455.5	103455.5
103+750	103455.5	103455.5
103+765	103455.5	103455.5
103+780	103455.5	103455.5
103+795	103455.5	103455.5
103+810	103455.5	103455.5
103+825	103455.5	103455.5
103+840	103455.5	103455.5
103+855	103455.5	103455.5
103+870	103455.5	103455.5
103+885	103455.5	103455.5
103+900	103455.5	103455.5
103+915	103455.5	103455.5
103+930	103455.5	103455.5
103+945	103455.5	103455.5
103+960	103455.5	103455.5
103+975	103455.5	103455.5
103+990	103455.5	103455.5
104+000	104000.0	104000.0
104+015	104000.0	104000.0
104+030	104000.0	104000.0
104+045	104000.0	104000.0
104+060	104000.0	104000.0
104+075	104000.0	104000.0
104+090	104000.0	104000.0
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104+135	104000.0	104000.0
104+150	104000.0	104000.0
104+165	104000.0	104000.0
104+180	104000.0	104000.0
104+195	104000.0	104000.0
104+210	104000.0	104000.0
104+225	104000.0	104000.0
104+240	104000.0	104000.0
104+255	104000.0	104000.0
104+270	104000.0	104000.0
104+285	104000.0	104000.0
104+300	104000.0	104000.0
104+315	104000.0	104000.0
104+330	104000.0	104000.0
104+345	104000.0	104000.0
104+360	104000.0	104000.0
104+375	104000.0	104000.0
104+390	104000.0	104000.0
104+405	104000.0	104000.0
104+420	104000.0	104000.0
104+435	104000.0	104000.0
104+450	104000.0	104000.0
104+465	104000.0	104000.0
104+480	104000.0	104000.0
104+495	104000.0	104000.0
104+500	104000.0	104000.0

WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.103/500 TO Km.104/250

DATE: 10/12/21
 SCALE: HORIZONTAL: 1:1000, VERTICAL: 1:100

CONSULTANT:
CONSULTING ENGINEERS GROUP LTD.

CLIENT:
 WORKS DEPT.
 GOVT. OF ORISSA.

PROJECT:
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 FUND FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

NO.	REVISION	DATE
1	ISSUED FOR TENDER	10/12/21
2	FOR APPROVAL	10/12/21
3	FOR APPROVAL	10/12/21
4	FOR APPROVAL	10/12/21
5	FOR APPROVAL	10/12/21
6	FOR APPROVAL	10/12/21
7	FOR APPROVAL	10/12/21
8	FOR APPROVAL	10/12/21
9	FOR APPROVAL	10/12/21
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22	FOR APPROVAL	10/12/21
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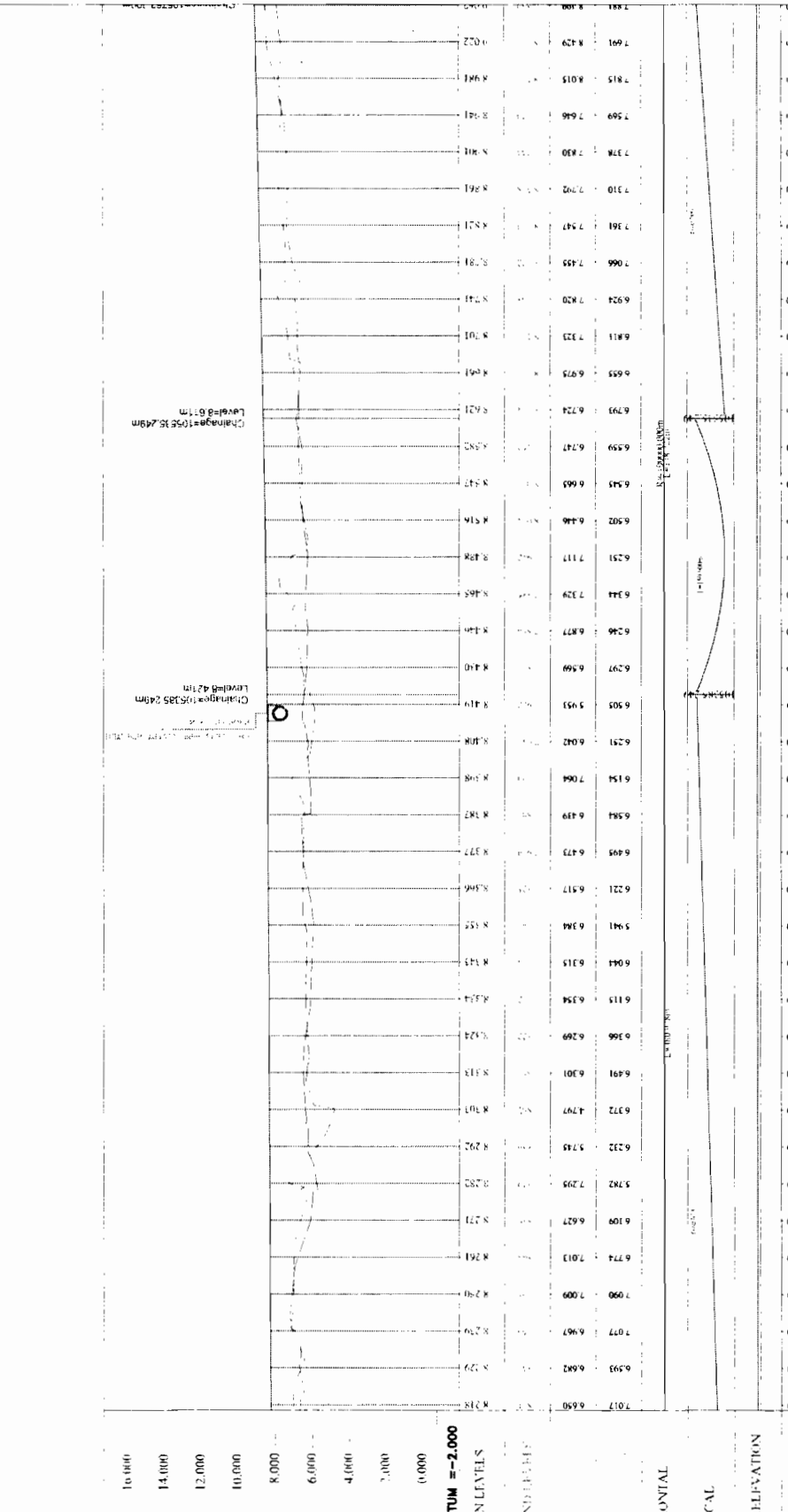
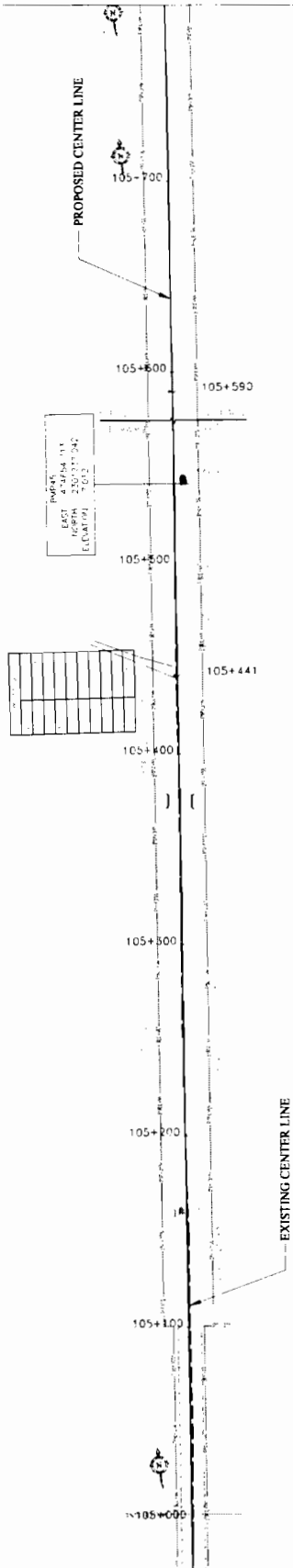


DPJ - NKC (JV)
 Contractor

Chief Engineer
 World Bank Project
 Employer

TO CHANDBALI

TO JAGATPUR



CHAINAGE	ELEVATION
105+501	8.650
105+502	8.717
105+503	8.779
105+504	8.829
105+505	8.877
105+506	8.924
105+507	8.967
105+508	9.009
105+509	9.047
105+510	9.082
105+511	9.115
105+512	9.146
105+513	9.174
105+514	9.200
105+515	9.224
105+516	9.245
105+517	9.263
105+518	9.278
105+519	9.290
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105+521	9.305
105+522	9.308
105+523	9.308
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105+526	9.290
105+527	9.278
105+528	9.263
105+529	9.245
105+530	9.224
105+531	9.200
105+532	9.174
105+533	9.146
105+534	9.115
105+535	9.082
105+536	9.047
105+537	9.009
105+538	8.967
105+539	8.924
105+540	8.877
105+541	8.829
105+542	8.779
105+543	8.724
105+544	8.650

WIDENING AND STRENGTHENING TO TWO LANE
 PLAN AND LONGITUDINAL SECTION
 DUHURIA TO CHANDBALI Km.105/000 TO Km.105/575

CONSULTANT:-
C O N S U L T I N G
C E N G I N E E R S G R O U P L T D.

CLIENT:-
 WORKS DEPT.
 GOVT. OF ORISSA.

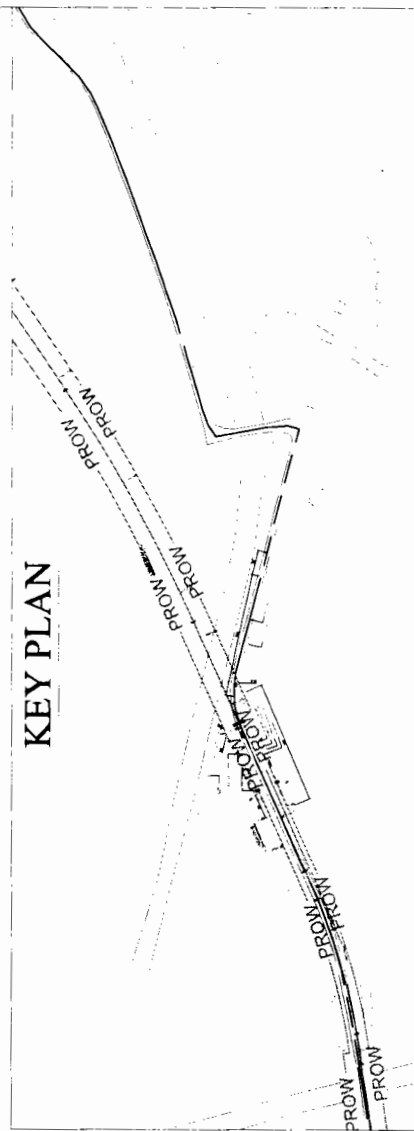
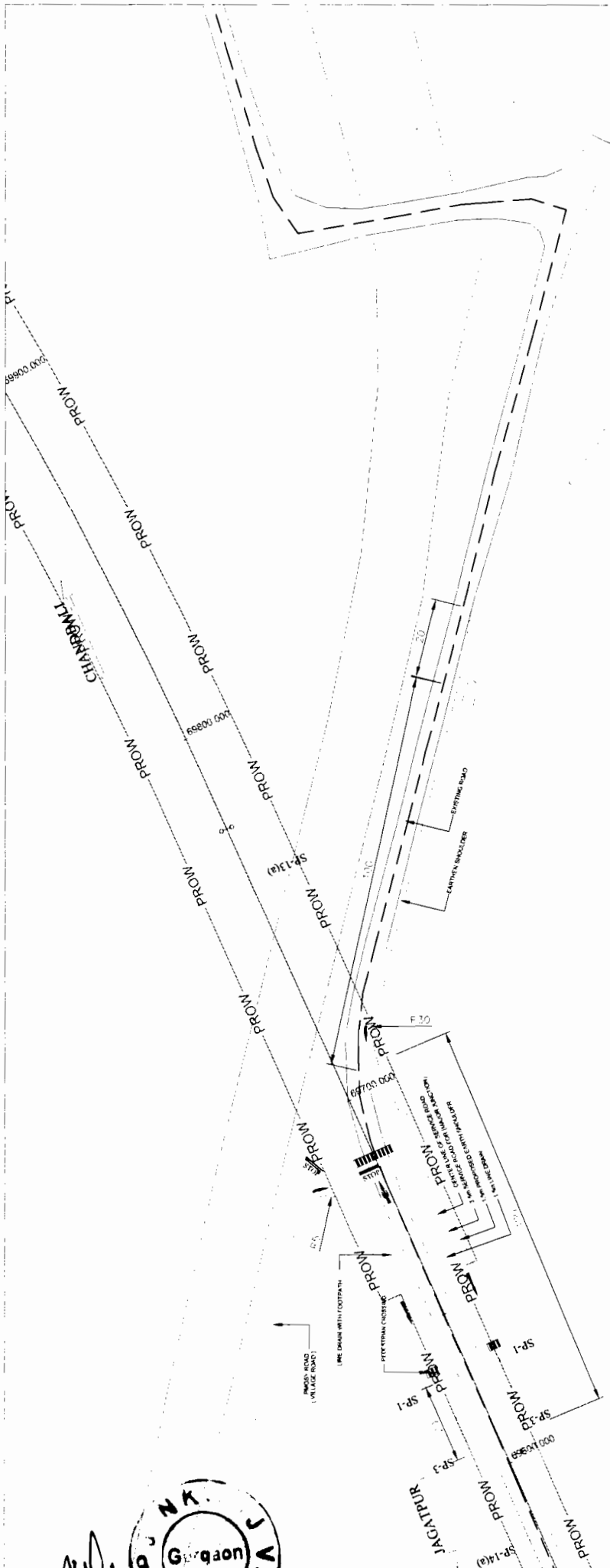
PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND
 DETAILED PROJECT PREPARATION OF PHASE - II
 ROADS FOR ORISSA STATE ROAD PROJECT UNDER
 WORLD BANK ASSISTANCE

1	Checked by	1	Checked by
2	Checked by	2	Checked by
3	Checked by	3	Checked by
4	Checked by	4	Checked by
5	Checked by	5	Checked by
6	Checked by	6	Checked by
7	Checked by	7	Checked by
8	Checked by	8	Checked by
9	Checked by	9	Checked by
10	Checked by	10	Checked by



DPJ - NKCC (JV),
 Contractor

Chief Engineer
 World Bank Project
 Employer
 Chief Engineer
 World Bank Project
 Employer
 Chief Engineer
 World Bank Project
 Employer



CLIENT:-
WORKS DEPT.
GOVT. OF ODISHA

CONSULTING ENGINEERS GROUP LTD.
CEG

PROJECT:-
 CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE.

WIDENING AND STRENGTHENING TO TWO LANE PLAN FOR MAJOR JUNCTION

DRG NO. 108P-GEODR-143-70
 SHEET NO. 143
 SCALE 1:200

REV. 1
 REV. 2
 REV. 3

DATE 10/08/2014

PROJECT NO. 108P-GEODR-143-70

CEG (M/J)

CE/WRP

NOTES:

1. ALL DIMENSIONS ARE IN METERS.
2. THE PROPOSED ROAD IS TO BE WIDENED TO 12.00 METERS (39'-6") FROM 6.00 METERS (19'-8").
3. THE EXISTING ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.
4. THE PROPOSED ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.
5. THE PROPOSED ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.
6. THE PROPOSED ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.
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9. THE PROPOSED ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.
10. THE PROPOSED ROAD IS TO BE GRADED TO THE PROPOSED ROAD PROFILE.

LEGEND

- PROPOSED EARTH WORK
- PROPOSED GROUND
- PROPOSED DRAINAGE
- PROPOSED UTILITY
- PROPOSED STRUCTURE
- PROPOSED ROAD
- PROPOSED SIDEWALK
- PROPOSED CURB
- PROPOSED PAVEMENT
- PROPOSED GRASS
- PROPOSED PLANTING
- PROPOSED LIGHTING
- PROPOSED SIGNAGE
- PROPOSED FENCE
- PROPOSED BARRIER
- PROPOSED SAFETY
- PROPOSED SECURITY
- PROPOSED MAINTENANCE
- PROPOSED INSPECTION
- PROPOSED MONITORING
- PROPOSED EVALUATION
- PROPOSED REPORTING
- PROPOSED ARCHIVING
- PROPOSED ACCESSIBILITY
- PROPOSED SUSTAINABILITY
- PROPOSED RESILIENCE
- PROPOSED ADAPTABILITY
- PROPOSED FLEXIBILITY
- PROPOSED INNOVATION
- PROPOSED LEADERSHIP
- PROPOSED PARTNERSHIP
- PROPOSED COLLABORATION
- PROPOSED COOPERATION
- PROPOSED SUPPORT
- PROPOSED ASSISTANCE
- PROPOSED GUIDANCE
- PROPOSED COUNSELING
- PROPOSED TRAINING
- PROPOSED EDUCATION
- PROPOSED RESEARCH
- PROPOSED ANALYSIS
- PROPOSED DESIGN
- PROPOSED CONSTRUCTION
- PROPOSED OPERATION
- PROPOSED MAINTENANCE
- PROPOSED REPAIR
- PROPOSED REPLACEMENT
- PROPOSED UPGRADE
- PROPOSED MODERNIZATION
- PROPOSED RECONSTRUCTION
- PROPOSED DEMOLITION
- PROPOSED DISPOSAL
- PROPOSED RECYCLING
- PROPOSED WASTE MANAGEMENT
- PROPOSED ENVIRONMENTAL PROTECTION
- PROPOSED SOCIAL RESPONSIBILITY
- PROPOSED ETHICAL CONDUCT
- PROPOSED INTEGRITY
- PROPOSED HONESTY
- PROPOSED TRANSPARENCY
- PROPOSED ACCOUNTABILITY
- PROPOSED RESPONSIBILITY
- PROPOSED COMMITMENT
- PROPOSED DEDICATION
- PROPOSED PASSION
- PROPOSED PERSEVERANCE
- PROPOSED COURAGE
- PROPOSED BRAVERY
- PROPOSED DETERMINATION
- PROPOSED RESOLVE
- PROPOSED WILLPOWER
- PROPOSED STRENGTH
- PROPOSED CONFIDENCE
- PROPOSED BELIEF
- PROPOSED FAITH
- PROPOSED HOPE
- PROPOSED LOVE
- PROPOSED KINDNESS
- PROPOSED COMPASSION
- PROPOSED MERCY
- PROPOSED GRACE
- PROPOSED PATIENCE
- PROPOSED TOLERANCE
- PROPOSED FORGIVENESS
- PROPOSED HUMILITY
- PROPOSED MODESTY
- PROPOSED SINCERITY
- PROPOSED GENUINENESS
- PROPOSED OPENNESS
- PROPOSED TRANSPARENT
- PROPOSED HONESTY
- PROPOSED INTEGRITY
- PROPOSED ETHICAL
- PROPOSED MORAL
- PROPOSED PRINCIPLES
- PROPOSED VALUES
- PROPOSED BELIEFS
- PROPOSED OPINIONS
- PROPOSED ATTITUDES
- PROPOSED BEHAVIORS
- PROPOSED ACTIONS
- PROPOSED DECISIONS
- PROPOSED CHOICES
- PROPOSED PREFERENCES
- PROPOSED INTERESTS
- PROPOSED NEEDS
- PROPOSED WANTS
- PROPOSED DESIRES
- PROPOSED GOALS
- PROPOSED VISIONS
- PROPOSED MISSIONS
- PROPOSED PURPOSES
- PROPOSED REASONS
- PROPOSED MOTIVATIONS
- PROPOSED DRIVES
- PROPOSED ENERGIES
- PROPOSED PASSIONS
- PROPOSED ENTHUSIASMS
- PROPOSED ENERGIES
- PROPOSED DETERMINATIONS
- PROPOSED RESOLUTIONS
- PROPOSED COMMITMENTS
- PROPOSED DEDICATIONS
- PROPOSED SACRIFICES
- PROPOSED SURRENDERS
- PROPOSED SUBMISSIONS
- PROPOSED OBEDIENCES
- PROPOSED RESPECTS
- PROPOSED HONORS
- PROPOSED GLORIES
- PROPOSED REVERENCES
- PROPOSED WORSHIPS
- PROPOSED DEVOTIONS
- PROPOSED SACRIFICES
- PROPOSED SURRENDERS
- PROPOSED SUBMISSIONS
- PROPOSED OBEDIENCES
- PROPOSED RESPECTS
- PROPOSED HONORS
- PROPOSED GLORIES
- PROPOSED REVERENCES
- PROPOSED WORSHIPS
- PROPOSED DEVOTIONS

DPJ - NKC (JV),
 Contractor

(Signature)

GOVERNMENT OF ODISHA

World Bank Projects, Odisha

Chief Engineer
 World Bank
 Odisha

Employer

SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID SP-1	DESCRIPTION OF SIGN BOARD STOP	CHAINAGE	LEFT LANE		RIGHT LANE		CR (L)	CR (R)
			Y		Y			
49020	STOP	49020					Y	Y
49044	STOP	49044	Y				Y	Y
49126	STOP	49126		Y			Y	Y
50013	STOP	50013	Y	Y			Y	Y
50848	STOP	50848	Y				Y	Y
50857	STOP	50857	Y				Y	Y
51012	STOP	51012		Y			Y	Y
51112	STOP	51112		Y			Y	Y
51287	STOP	51287		Y			Y	Y
51438	STOP	51438	Y				Y	Y
51463	STOP	51463		Y			Y	Y
51632	STOP	51632	Y				Y	Y
51647	STOP	51647	Y				Y	Y
51764	STOP	51764		Y			Y	Y
51882	STOP	51882	Y				Y	Y
51956	STOP	51956	Y				Y	Y
51956	STOP	51956		Y			Y	Y
52516	STOP	52516		Y			Y	Y
52943	STOP	52943		Y			Y	Y
53112	STOP	53112		Y			Y	Y
53507	STOP	53507		Y			Y	Y
53587	STOP	53587		Y			Y	Y
53724	STOP	53724	Y				Y	Y
54609	STOP	54609		Y			Y	Y
54854	STOP	54854	Y				Y	Y
55337	STOP	55337	Y				Y	Y
55480	STOP	55480	Y				Y	Y
55711	STOP	55711	Y				Y	Y
55970	STOP	55970		Y			Y	Y
56727	STOP	56727		Y			Y	Y
56945	STOP	56945		Y			Y	Y
57213	STOP	57213		Y			Y	Y
57282	STOP	57282	Y				Y	Y
57286	STOP	57286		Y			Y	Y
57732	STOP	57732		Y			Y	Y
57878	STOP	57878	Y				Y	Y
57972	STOP	57972		Y			Y	Y
58244	STOP	58244	Y				Y	Y
58475	STOP	58475		Y			Y	Y
58492	STOP	58492		Y			Y	Y
58628	STOP	58628		Y			Y	Y
61237	STOP	61237	Y				Y	Y
61278	STOP	61278	Y				Y	Y
61800	STOP	61800	Y				Y	Y
62403	STOP	62403	Y				Y	Y
62767	STOP	62767	Y				Y	Y
62994	STOP	62994	Y				Y	Y
63073	STOP	63073	Y				Y	Y
63933	STOP	63933		Y			Y	Y
64122	STOP	64122		Y			Y	Y
64412	STOP	64412		Y			Y	Y
64665	STOP	64665		Y			Y	Y
64779	STOP	64779		Y			Y	Y
65493	STOP	65493	Y				Y	Y
65493	STOP	65493		Y			Y	Y
66097	STOP	66097	Y				Y	Y
66120	STOP	66120		Y			Y	Y
67818	STOP	67818		Y			Y	Y

1. CR (R) - RIGHT ROAD RIGHT
 2. CR (L) - LEFT LANE
 3. CR (R) - RIGHT LANE
 4. CR (L) - LEFT LANE
 5. STOP POST SHALL BE INSTALLED AT A POINT OF 10 METRES FROM THE LEFT OF THE ROAD WAY

DRG. NO.	OSR/PC/EG/JC-106KM/SCH/05	DESIGNER(S)	CEG	DRAWN (D)	CEG	APPROVED (D)	C.E., WBP
SH. NO.	146	DATE	REV	R1	CEG	REVISION(S)	E.E., PMU
SCALE	NTS						

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

CONSULTING ENGINEERS GROUP LTD.
 E-12, Moj Colony, Malviya Nagar, Jaipur-17
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 Fax: 2521348, e-mail: ceg@cegroupindia.com

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

SCHEDULE OF SIGN POST (1 of 11)
(DUHURIA TO CHANDBALI)



Chief Engineer
 Chief Engineer
 Chief Engineer

SCHEDULE OF TRAFFIC SIGNS (DUHURJA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE		RIGHT LANE		CR (L)	CR (R)
			Y	N	Y	N		
SP-1	STOP	93854						
		94202						
		94700						
		95150						
		95288						
		95288						
		96480						
		97468						
		97485						
		97485						
		97588						
		100128						
		100560						
		100766						
		100853						
		100997						
		101175						
		101188						
		101257						
		101257						
		101385						
		101726						
		101800						
		101935						
		101939						
		102471						
		102743						
		103007						
		103543						
		104325						
		104662						
		105443						
SP-2A	RESTRICTION ENDS	51333						
		51775						
		52841						
		53921						
		56041						
		56626						
		62992						
		63104						
		64079						
		64420						
		65509						
		68385						
		68866						
		69559						
		72009						
		72497						
		73353						
		74375						
		80094						
		80351						
		84262						
		86237						
		86981						
		87072						
		88186						
		92688						
		93854						
		94202						
		94700						
		95150						
		95288						
		95288						
		96480						
		97468						
		97485						
		97485						
		97588						
		100128						
		100560						
		100766						
		100853						
		100997						
		101175						
		101188						
		101257						
		101257						
		101385						
		101726						
		101800						
		101935						
		101939						
		102471						
		102743						
		103007						
		103543						
		104325						
		104662						
		105443						
SP-6	SCHOOL ZONE	50270						
		50460						
		57242						
		57453						
		58316						
		58353						
		58526						
		58533						
		62897						
		63120						
		72145						
		72363						
		74800						
		75026						
		95860						
		96040						
		102610						
		102655						
		102827						
		102890						
		104203						
		104410						

SCALE: 1:1000
 4 CROSS-ROAD RIGHT
 5 POSITION OF SIGNS ON THE ROAD IN STANDARD DRAWING
 6 POSITION SHALL BE INSTALLED AT AN OFFSET DISTANCE OF 2M FROM THE END OF CARRIAGE WAY

DRG NO. OSRP/CEG/JC-106/KM/SCH/06		DESIGNER/IA	DRAWN/ID	REVISION-I	APPROVED/ID
SH. NO. 147	DATE	REV	R1	E.E., PMU	C.E., WBP
SCALE		NTS		CEG	CEG

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 Fax: 2521348, e-mail: ceg@cegroupindia.com

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID SP-7	DESCRIPTION OF SIGN BOARD COMPULSORY SOUND HORN	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
		49050		Y		
		49014	Y			
		49074		Y		
		49096	Y			
		49983	Y			
		50878	Y			
		50827		Y		
		51042	Y			
		51142	Y			
		51317	Y			
		51468	Y			
		51433	Y			
		51662	Y			
		51617	Y			
		51794	Y			
		51852	Y			
		51926	Y			
		51986	Y			

SIGN POST ID SP-7	DESCRIPTION OF SIGN BOARD COMPULSORY SOUND HORN	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
		52546		Y		
		52973		Y		
		53142		Y		
		53537		Y		
		53617		Y		
		53694	Y			
		54639	Y			
		54824	Y			
		55307	Y			
		55450	Y			
		55681	Y			
		56000		Y		
		56757	Y			
		57243	Y			
		57252	Y			
		57316	Y			
		57762		Y		
		57848	Y			
		57942	Y			
		58274		Y		
		58445	Y			
		58522		Y		
		59658		Y		
		61207	Y			
		61248	Y			
		61770	Y			
		62373	Y			
		62737	Y			
		62964	Y			
		63043	Y			
		63903	Y			
		64092	Y			
		64382	Y			
		64695		Y		
		64809		Y		
		65463	Y			
		65523		Y		
		66067	Y			
		66150		Y		
		67848		Y		
		68483		Y		
		68800		Y		
		69475	Y			
		69675	Y			
		69739	Y			
		69799		Y		
		70367	Y			
		70427		Y		
		72010		Y		
		72228	Y			
		72510		Y		
		72462	Y			
		72768		Y		
		72828		Y		
		74188	Y			
		74248		Y		
		74290		Y		
		74528	Y			
		74903		Y		

4 LANE CROSS ROAD
 2 FOR LEFT OF ROAD SIGN (LEFT LANE) IN STANDARD DRAWING
 2 SIGN POST SHALL BE INSTALLED AT A DISTANCE OF 10 M FROM THE CENTER OF ROAD

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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

SCHEDULE OF SIGN POST (3 of 11)
 (DUHURIA TO CHANDBALI)

DRG NO.	OSR/PC/CEG/JC-106KM/SCH/07	DESIGNER (A)	DRAWN (B)	REVISION (A)	APPROVED (D)
SH. NO.	149	DATE	REV	CEG	E.E., PMU
SCALE	NTS		CEG	CEG	C.E., WBP

DPJ - NKC (JV)
 Contractor



Chief Engineer
 World Bank Project
 Odisha State Road Project
 Bhubaneswar

SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP-7	COMPULSORY SOUND HORN	75149	Y	Y		
		75226	Y	Y		
		76227	Y	Y		
		76413	Y	Y		
		77334	Y	Y		
		77282	Y	Y		
		77862	Y	Y		
		78469	Y	Y		
		78838	Y	Y		
		78977	Y	Y		
		79507	Y	Y		
		79595	Y	Y		
		79915	Y	Y		
		79858	Y	Y		
		80225	Y	Y		
		80620	Y	Y		
		80686	Y	Y		
		81760	Y	Y		
		81964	Y	Y		
		82776	Y	Y		
		83387	Y	Y		
		83670	Y	Y		
		84095	Y	Y		
		85222	Y	Y		
		85195	Y	Y		
		85882	Y	Y		
		85942	Y	Y		
		86153	Y	Y		
		87660	Y	Y		
		88400	Y	Y		
		88460	Y	Y		
		88940	Y	Y		
		89085	Y	Y		
		89145	Y	Y		
		89833	Y	Y		
		89893	Y	Y		
		91424	Y	Y		
		91508	Y	Y		
		93270	Y	Y		
		93361	Y	Y		
		93824	Y	Y		
		93884	Y	Y		
		94172	Y	Y		
		94232	Y	Y		
		94670	Y	Y		
		94730	Y	Y		
		95120	Y	Y		
		95258	Y	Y		
		95318	Y	Y		
		96510	Y	Y		
		97498	Y	Y		
		97455	Y	Y		
		97515	Y	Y		
		97618	Y	Y		
		100098	Y	Y		
		100590	Y	Y		
		100796	Y	Y		
		100803	Y	Y		
		100967	Y	Y		
		101205	Y	Y		

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP-7	COMPULSORY SOUND HORN	101138	Y	Y		
		101227	Y	Y		
		101287	Y	Y		
		101415	Y	Y		
		101606	Y	Y		
		101830	Y	Y		
		101965	Y	Y		
		101969	Y	Y		
		102501	Y	Y		
		102773	Y	Y		
		102977	Y	Y		
		103513	Y	Y		
		104355	Y	Y		
		104632	Y	Y		
		105413	Y	Y		
		49014	Y	Y		
		49074	Y	Y		
		51926	Y	Y		
		51986	Y	Y		
		65463	Y	Y		
		65523	Y	Y		
		69739	Y	Y		
		69799	Y	Y		
		69799	Y	Y		
		70367	Y	Y		
		70427	Y	Y		
		72768	Y	Y		
		72828	Y	Y		
		72828	Y	Y		
		74188	Y	Y		
		74248	Y	Y		
		85882	Y	Y		
		85942	Y	Y		
		88400	Y	Y		
		88460	Y	Y		
		89085	Y	Y		
		89085	Y	Y		
		89145	Y	Y		
		89145	Y	Y		
		89833	Y	Y		
		89893	Y	Y		
		93824	Y	Y		
		93824	Y	Y		
		93884	Y	Y		
		93884	Y	Y		
		94172	Y	Y		
		94232	Y	Y		
		94232	Y	Y		
		94670	Y	Y		
		94730	Y	Y		
		95258	Y	Y		

CROSS ROAD

SCALE CROSS ROAD 1:1111
 1:1000 SCALE OF ROAD SIGNS 1:1000 FOR P.W.C. IN STANDARD DRAWING
 1: SIGN POST SHALL BE INSTALLED AT AN OFFSET DISTANCE OF 2M FROM THE EDGE OF A CARRIAGE WAY

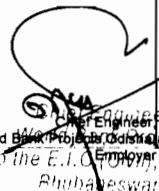
CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

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SCHEDULE OF SIGN POST (4 of 11)
(DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/JC-106KM/SC/108	DRAWN (D)	CEG	APPROVED (D)	C.E., WBP
SH. NO.	150	DATE	REV	REVISION-I	E.E., PMU
SCALE	NTS		CEG	CEG	



SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
93318				Y		
97455			Y			
97515			Y			
101227			Y			
101287			Y			
50043			Y			
50982			Y			
51082			Y			
51493			Y			
51602			Y			
51912			Y			
53082			Y			
53754			Y			
54579			Y			
55367			Y			
55510			Y			
55940			Y			
56697			Y			
57183			Y			
57702			Y			
58214			Y			
58305			Y			

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
61267				Y		
61308				Y		
63103				Y		
64152				Y		
66090			Y			
72450			Y			
72522			Y			
74843			Y			
75166			Y			
75209			Y			
76287			Y			
76353			Y			
77274			Y			
77342			Y			
77802			Y			
78409			Y			
78778			Y			
79037			Y			
79535			Y			
79855			Y			
79918			Y			
80626			Y			
81700			Y			
81904			Y			
86093			Y			
91364			Y			
91448			Y			
95180			Y			
100158			Y			
100736			Y			
100863			Y			
101027			Y			
101218			Y			
101355			Y			
101756			Y			
101905			Y			
101969			Y			
102441			Y			
102713			Y			
103573			Y			
104295			Y			

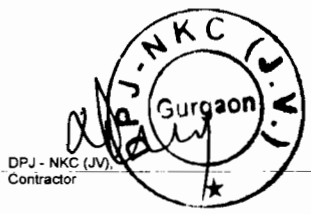
4. CRIP - CROSS ROAD SHEET
 5. FOR DETAILS OF ROAD MARKINGS REFER DRAWING STANDARD DRAWING
 6. SIGN POSTS SHALL BE INSTALLED AT AN OFFSET FROM (LANE) OF 2M FROM THE EDGE OF CARRIAGE WAY

SCHEDULE OF SIGN POST (5 of 11)		(DUHURIA TO CHANDBALI)	
DRG NO.	OSRP/CEG/JC-106/KM/SC/109	DESIGN(D)	DRAWN(D)
SH. NO.	IS1	DATE	REV
SCALE			NTS
		CEG	CEG
		E.E., PMU	C.E., WBP
		APPROVED(D)	

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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE



Chief Engineer,
 Works Department,
 Govt. of Odisha,
 Cuttack.

SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP - 08	LEFT SIDE ROAD - T	49983	Y			
		51042		Y		
		51142	Y	Y		
		51433		Y		
		51662	Y	Y		
		51852	Y	Y		
		53142	Y	Y		
		53694	Y	Y		
		54639	Y	Y		
		55307	Y	Y		
		55450	Y	Y		
		56000	Y	Y		
		56757	Y	Y		
		57243	Y	Y		
		57762	Y	Y		
		58274	Y	Y		
		58445	Y	Y		
		61248	Y	Y		
		61207	Y	Y		
		63043	Y	Y		
		64092	Y	Y		
		66150	Y	Y		
		72462	Y	Y		
		72510	Y	Y		
		74903	Y	Y		
		75149	Y	Y		
		75226	Y	Y		
		76227	Y	Y		
		76413	Y	Y		
		77282	Y	Y		
		77334	Y	Y		
		77862	Y	Y		
		78469	Y	Y		
		78838	Y	Y		
		78977	Y	Y		
		79595	Y	Y		
		79858	Y	Y		
		79915	Y	Y		
		80686	Y	Y		
		81760	Y	Y		
		81964	Y	Y		

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
		86153		Y		
		91424		Y		
		91308		Y		
		95120	Y	Y		
		100098	Y	Y		
		100796	Y	Y		
		100803	Y	Y		
		100967	Y	Y		
		101158	Y	Y		
		101415	Y	Y		
		101696	Y	Y		
		101909	Y	Y		
		101965	Y	Y		
		102501	Y	Y		
		102773	Y	Y		
		103513	Y	Y		
		104355	Y	Y		
		53279	Y	Y		
		54712	Y	Y		
		55640	Y	Y		
		56179	Y	Y		
		60776	Y	Y		
		61825	Y	Y		
		62947	Y	Y		
		63573	Y	Y		
		64812	Y	Y		
		69584	Y	Y		
		73071	Y	Y		
		73510	Y	Y		
		76265	Y	Y		
		77855	Y	Y		
		79802	Y	Y		

SP - 10A RIGHT HAND CURVE

4. CRIP: CHONG ROAD SIBBI
 5. FROM DEHURIA TO ROAD SIGNPOST FOR CHANDBALI IN STATE ROAD 210P, W. SIDE
 6. RIGHT SIDE SIGN BOARD FOR CHANDBALI IN STATE ROAD 210P, W. SIDE FROM THE END OF CARRIAGE WAY

SCHEDULE OF SIGN POST (6 of 11)			
(DUHURIA TO CHANDBALI)			
DRG NO.	OSRP/CEG/JC-106KM/SCE/10	DATE	SCALE
132			NTS
SH. NO.	REV	RI	APPROVED (D)
			E.E., PMU
			C.E., WBP

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 Fax: 2521348, e-mail: ceg@cegroupindia.com

CLIENT :-
 WORKS DEPARTMENT
 GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORK BANK ASSISTANCE

SCALE:
 1:1 (FIELD USE)
 2:1 (OFFICE USE)
 1:400 (CRGS ROAD SIBBI)

Chief Engineer,
 World Bank Project, Odisha
 the E.C.C. (Civil) Emply
 Bhubaneswar



SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)	SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP - 10A	RIGHT HAND CURVE	83709		Y			SP - 10E	RIGHT REVERSE BEND	84685		Y		
		84227	Y						86074		Y		
		86262	Y						87152		Y		
		86901	Y						88342		Y		
		88982	Y						89922		Y		
		89581	Y						90998		Y		
		91307	Y						91722		Y		
		91471	Y						92728		Y		
		92523	Y						93764		Y		
		93480	Y						95242		Y		
		95033	Y						97381		Y		
		97807	Y						97994		Y		
		98182	Y						99541		Y		
		100660	Y						100453		Y		
103589	Y				103049		Y						
53508	Y				56512		Y						
54493	Y				64039		Y						
55415	Y				82867		Y						
55971	Y				85553		Y						
60592	Y				98472		Y						
62066	Y				99782		Y						
63149	Y				56320		Y						
63388	Y				64189		Y						
65115	Y				82515		Y						
69360	Y				85855		Y						
72823	Y				98860		Y						
73313	Y				100090		Y						
76601	Y												
77358	Y												
79979	Y												
83415	Y												
SP - 10B	LEFT HAND CURVE		Y				SP - 10F	LEFT REVERSE BEND		Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			
			Y							Y			

NOTE:
1. LEFT LANE
2. RIGHT LANE
3. BOTH LANE ROAD

4. CHAINAGE IN METRE
5. FOR THE LANE OF ROAD SIGN PREP DRAWING STANDARDS DRAWINGS
6. SIGN POST SHALL BE POSITIONED AT A DISTANCE OF 10 M
FROM THE EDGE OF CARRIAGE WAY

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORKD BANK ASSISTANCE

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

CEG
CONSULTING ENGINEERS GROUP LTD.
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Fax: 2521348, e-mail: ceg@cegroupindia.com

SCHEDULE OF SIGN POST (7 of 11)
(DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/JC-106/KM/SCH/11	DESIGNER(A)	DRANK(B)	APPROVED(D)
SH. NO.	153	DATE	REV	RI
SCALE	NTS		CEG	CEG
			E.E., PMU	C.E., WBP

SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP-14C	RIGHT SIDE ROAD - Y	49156	Y	Y		
		50818	Y	Y		
		50887	Y	Y		
		51257	Y	Y		
		51408	Y	Y		
		51677	Y	Y		
		51734	Y	Y		
		52486	Y	Y		
		52913	Y	Y		
		53477	Y	Y		
		53557	Y	Y		
		54884	Y	Y		
		55741	Y	Y		
		56915	Y	Y		
		57256	Y	Y		
		57312	Y	Y		
		57908	Y	Y		
		58002	Y	Y		
		58462	Y	Y		
		59598	Y	Y		
		61830	Y	Y		
		62433	Y	Y		
		62797	Y	Y		
		63024	Y	Y		
		63963	Y	Y		
		64442	Y	Y		
		64635	Y	Y		
		64749	Y	Y		
		66127	Y	Y		
		67788	Y	Y		
		68423	Y	Y		
		68740	Y	Y		
		69535	Y	Y		
		69735	Y	Y		
		71950	Y	Y		
		72288	Y	Y		
		74230	Y	Y		
		74588	Y	Y		
		79567	Y	Y		
		80165	Y	Y		
		80680	Y	Y		
		82716	Y	Y		
		83327	Y	Y		
		83610	Y	Y		
		84155	Y	Y		
		85162	Y	Y		
		85255	Y	Y		
		87720	Y	Y		
		89000	Y	Y		
		93301	Y	Y		
		93330	Y	Y		
		96450	Y	Y		
		97438	Y	Y		
		97558	Y	Y		
		100530	Y	Y		
		101145	Y	Y		
		101770	Y	Y		
		103037	Y	Y		
		104692	Y	Y		
		105473	Y	Y		
		51506	Y	Y		
		51672	Y	Y		
		56425	Y	Y		
		56550	Y	Y		
		73837	Y	Y		
		74283	Y	Y		
		78572	Y	Y		
		78712	Y	Y		
		89032	Y	Y		
		89625	Y	Y		
		98150	Y	Y		
		98545	Y	Y		
		99145	Y	Y		
		99255	Y	Y		
		71969	Y	Y		
		72370	Y	Y		
		50270	Y	Y		
		50460	Y	Y		
		57242	Y	Y		
		57453	Y	Y		
		58316	Y	Y		
		58353	Y	Y		
		58526	Y	Y		
		58533	Y	Y		
		62897	Y	Y		
		63120	Y	Y		
		72145	Y	Y		
		72363	Y	Y		
		74800	Y	Y		
		75026	Y	Y		
		95860	Y	Y		
		96040	Y	Y		
		102610	Y	Y		
		102655	Y	Y		
		102827	Y	Y		
		102890	Y	Y		
		104203	Y	Y		
		104410	Y	Y		

4 CURVED ROAD BEYOND BUSH
 5 FOR DETAIL SEE ROAD SIGNS BEHIND DRAWING STANDARD DRAWINGS
 6 SIGN POST SHALL BE INSULATED & GROUND THROUGHLY
 FROM THE FOOT OF CURBING OR SW

SCHEDULE OF SIGN POST (10 of 11)
 (DUHURIA TO CHANDBALI)



DWG NO.	OSRP/CEG/JC-106KM/SC/1/14	DESIGN ID (A)	CEG	CEG	CEG	APPROVED (D)
SH. NO.	157	DATE	REV	RI	REVISION (H)	E.E., PMU
SCALE			NTS			C.E., WBP


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CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

DPJ - NKC (A) Contractor



World Bank Project Employer
 Govt. of Odisha


SCHEDULE OF TRAFFIC SIGNS (DUHURIA - CHANDBALI)

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
SP-17	STATE ROUTE MARKER SIGN	51000	Y	Y		
		56000	Y	Y		
		61000	Y	Y		
		66000	Y	Y		
		71000	Y	Y		
		76000	Y	Y		
		81000	Y	Y		
		86000	Y	Y		
		91000	Y	Y		
		96000	Y	Y		
		101000	Y	Y		
		105000	Y	Y		
SP-22	PETROL BUNK	49850	Y	Y		
		50085	Y	Y		
		50652	Y	Y		
		50870	Y	Y		
		82242	Y	Y		
		82422	Y	Y		
		83868	Y	Y		
		84048	Y	Y		
		101164	Y	Y		
		101344	Y	Y		
		101382	Y	Y		
		101595	Y	Y		

SIGN POST ID	DESCRIPTION OF SIGN BOARD	CHAINAGE	LEFT LANE	RIGHT LANE	CR (L)	CR (R)
49020					Y	
49044			Y		Y	
49044			Y		Y	
49126			Y		Y	
50848			Y		Y	
50857			Y		Y	
51012			Y		Y	
51112			Y		Y	
51287			Y		Y	
51438			Y		Y	
51632			Y		Y	
51764			Y		Y	
51956			Y		Y	
53112			Y		Y	
53587			Y		Y	
54609			Y		Y	
55970			Y		Y	
56727			Y		Y	
57213			Y		Y	
57282			Y		Y	
57732			Y		Y	
61278			Y		Y	
61800			Y		Y	
63073			Y		Y	
65493			Y		Y	
66097			Y		Y	
66120			Y		Y	
68770			Y		Y	
69505			Y		Y	
69769			Y		Y	
70397			Y		Y	
71980			Y		Y	
72258			Y		Y	
72480			Y		Y	
72492			Y		Y	
72798			Y		Y	
74218			Y		Y	
74260			Y		Y	
74558			Y		Y	
75196			Y		Y	
77832			Y		Y	
79565			Y		Y	
79885			Y		Y	
83357			Y		Y	
84125			Y		Y	
85102			Y		Y	
85225			Y		Y	
85912			Y		Y	
89115			Y		Y	
93300			Y		Y	
93854			Y		Y	
94700			Y		Y	
95150			Y		Y	
95288			Y		Y	
96480			Y		Y	
97485			Y		Y	
97588			Y		Y	
100128			Y		Y	
100560			Y		Y	
100766			Y		Y	
101257			Y		Y	

4 CROSS CROSS BRIGHT
 5 BOUNDARY CROSS BRIGHT
 6 SIGN BOARD FOR ROAD SIGN BRIGHT
 7 SIGN BOARD FOR ROAD SIGN BRIGHT AT ANGLE DISTANCE
 8 SIGN BOARD FOR ROAD SIGN BRIGHT AT ANGLE DISTANCE

SCHEDULE OF SIGN POST (11 of 11)

(DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/JC-106/KM/SC/1/15	DATE	REV	RI	CEG	CEG	REVISION-I	APPROVED (D)
SHE. NO.							E.E., PMU	C.E., WBP
SCALE								

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 Tel: +91-141-2520899, 2521899, 2520556
 For: 2521348, e-mail: ceg@ceginfol.com

CLIENT :-
 WORKS DEPARTMENT
 GOVT. OF ODISHA

PROJECT :-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE



World Bank Projects, Odisha
 Chief Engineer
 W.B.A. Employer
 O/o the Chief Engineer, W.B.A.
 Bhubaneswar

SCHEDULE OF EXTRA WIDENING - DUHURIA TO CHANDBALI

SL NO	CURVE START	CURVE END	RADIUS	TRANSITION	EXTRA WIDENING
1	53378.929	53407.808	170	70	0.6
2	56071.321	56079.308	170	70	0.6
3	56568.141	56595.616	200	60	0.6
4	61930.372	61960.777	300	75	0.6
5	63021.807	63073.818	150	45	0.6
6	64284.318	64390.282	240	50	0.6
7	64916.545	65009.843	300	75	0.6
8	72262.833	72279.659	240	50	0.6
9	72436.042	72467.132	200	60	0.6
10	72943.170	72951.462	240	90	0.6
11	73383.327	73439.961	300	40	0.6
12	85632.710	85774.516	300	40	0.6
13	85930.013	85975.255	150	80	0.6
14	87011.413	87041.670	150	80	0.6
15	88621.641	88901.508	260	50	0.6
16	89670.970	89831.892	200	60	0.6
17	91087.592	91217.435	200	60	0.6
18	91571.153	91622.021	170	70	0.6
19	92593.219	92658.111	300	40	0.6
20	93369.302	93374.644	300	75	0.6
21	97585.959	97702.261	300	75	0.6
22	98064.485	98112.098	300	40	0.6
23	98581.936	98749.662	155	70	0.6
24	98978.778	99077.535	200	60	0.6
25	99354.244	99450.560	200	60	0.6
26	100166.769	100186.072	200	60	0.6
27	100543.049	100570.018	200	60	0.6

DPJ - NKC
Contractor



World Bank Project, Odisha
Go to the E.I. (Employer)
Rajdhani, Bhubaneswar

(Signature)

<p>PROJECT :- ODISHA STATE ROAD PROJECT UNDER WORKD BANK ASSISTANCE</p>	<p>CLIENT :- WORKS DEPARTMENT GOVT. OF ODISHA</p>	<p>CONSULTING ENGINEERS GROUP LTD. E-12, MeJ Colony, Malviya Nagar, Jaipur-17 Tel: +91-141-2520899, 2521899, 2520556 Fax: 2521348, e-mail: ceg@egindia.com</p>	<p align="center">SCHEDULE OF EXTRA WIDENING (DUHURIA TO CHANDBALI)</p>			
			<p>DRG NO. OSRP/CEG/DC-37KM/SCH/16</p>	<p>DATE 12/12/12</p>	<p>REV. RI</p>	<p>DESIGNED (A) CEG</p>
<p>SCALE</p>		<p>NTS</p>		<p>CEG</p>		<p>CEG</p>

SCHEDULE FOR PAVEMENT COMPOSITION

Sl. No.	Chainage		Length in Km	Type of Area	TCS No.	Crust Details					
	From	To				BC	DBM	WMM1	WMM2	GSB	Subgrade
1	54.000	55.100	1.100	Open	2	40	50	125	125	200	-
2	55.550	56.600	1.050	Open	18	40	50	125	125	200	500
3	56.850	57.200	0.350	Open	9	40	50	125	125	200	500
4	57.400	58.050	0.650	Open	9	40	50	125	125	200	500
5	58.450	62.950	4.500	Open	18	40	50	125	125	200	500
6	63.200	65.400	2.200	Open	18	40	50	125	125	200	500
7	65.900	69.400	3.500	Open	18	40	50	125	125	200	500
8	69.650	72.050	2.400	Open	10	40	50	125	125	200	500
9	72.450	78.850	6.400	Open	10	40	50	125	125	200	500
10	78.850	79.900	1.050	Open	18	40	50	125	125	200	500
11	79.900	81.500	1.600	Open	10	40	50	125	125	200	-
12	81.500	82.000	0.500	Open	2	40	50	125	125	200	-
13	82.000	83.550	1.550	Open	10	40	50	125	125	200	500
14	83.550	83.850	0.300	Open	2	40	50	125	125	200	500
15	83.850	84.950	1.100	Open	10	40	50	125	125	200	500
16	85.550	94.750	9.200	Open	10	40	50	125	125	200	500
17	95.400	99.000	3.600	Open	10	40	50	125	125	200	500
18	99.000	99.400	0.400	Open	2	40	75	125	125	200	-
19	99.400	99.800	0.400	Open	10	40	75	125	125	200	500
20	102.200	104.950	2.750	Open	2	40	75	125	125	200	-
21	105.100	105.550	0.450	Open	2	40	75	125	125	200	-
			Total	45.050							

NOTE:

1. The TCS(Typical Cross sections) mentioned above should be confirmed on the ground before execution on the basis of technical, social & environmental parameters.
2. If necessary, they may be suitably modified. For details of TCSs, refer to the standard drawings available in this document
3. Suitable transitions shall be provided between different TCSs in consultation with the Engineer
4. The pavement design has been designed based on IRC: 37-2001 & IRC: 81-1997.
5. The borrowed CBR(Not less than 10% shall be used for embankment & subgrade
6. Existing subgrade shall be used wherever it is technically sufficient

PROJECT:- ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	SCHEDULE FOR PAVEMENT COMPOSITION	
	DRG NO.	REV/RI APPROVED
	SH.NO.	PREPARED BY EE/PMU
	SCALE	CE, WBP





Chief Engineer
World Bank Projects
Civil Engineer
World Bank Projects, Odisha
On the E.P.C. (Civil) Employer
G. Ghoshswal

S No	Chainage		Length	Thickness Design (IRC: 58-2002) - RIGID PAVEMENT			Remarks		
	From	To		Seperarti on layer, Micron	Subbase (DLC) mm	Subbase GSB mm		Subgrade mm	Embankment mm
1	49.00	49.20	0.20	125	150	150	500	1600	DFS
2	49.20	53.20	4.00	125	150	150	-	1100	-
3	53.20	54.00	0.80	125	150	150	-	1100	-
4	55.10	55.55	0.45	125	150	150	500	1600	DFS
5	56.60	56.85	0.25	125	150	150	500	1600	DFS
6	57.20	57.40	0.20	125	150	150	500	1600	DFS
7	58.05	58.45	0.40	125	150	150	500	1600	DFS
8	62.95	63.20	0.25	125	150	150	500	1600	DFS
9	65.40	65.90	0.50	125	150	150	500	1600	DFS
10	69.40	69.65	0.25	125	150	150	500	1600	DFS
11	72.05	72.45	0.40	125	150	150	500	1600	DFS
12	84.95	85.55	0.60	125	150	150	500	1100	-
13	94.75	95.40	0.25	125	150	150	500	1600	DFS
14	99.80	102.20	0.30	125	150	150	500	1100	-
15	104.95	105.10	0.30	125	150	150	500	1100	-

FOR SERVICE LANE

Sl.No.	Proposed Chainage		Distance in KMS	Crust Details				Total Thickness	
	From	To		Surface Course	Base	Sub Base	Sub grade		Embankment t Fill
1	49.200	53.200	4.000	PC	BM	WMM2	125	500	970
2	69.550	69.650	0.100	20	50	100	175	500	970
				20	50	100	175	500	970

PROJECT :-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CLIENT :-

WORKS DEPARTMENT
GOVT. OF ODISHA

CEG
CONSULTING ENGINEERS GROUP LTD.
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Tel: +91-141-2520899, 2521899, 2520556
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SCHEDULE FOR PAVEMENT COMPOSITION AND TYPE OF CONSTRUCTION
(DUHURIA TO CHANDBALI)

DRG NO.	OSRP/CEG/PA/V/02	DRAWN (B)	CEG	APPROVED (D)	C.E., WBP
SH. NO.	170	DATE	12/12/12	REV	RJ
SCALE	NTS				

TYPICAL CROSS SECTIONS OF HIGH WAY

Sl. No.	Chainage		Length in Km	Type of Construction	Type of Area	TCS No.
	From	To				
1	49.000	49.200	0.200	Rigid Pavement with saucer drains	Built up	32
2	49.200	52.200	3.000	Rigid Pavement with service lanes, saucer drains	Built up	30
3	52.200	53.200	1.000	Rigid Pavement with service lanes, saucer drains	Semi Builtup	30
4	53.200	54.000	0.800	Rigid Pavement with saucer drains	Built up	35
5	54.000	55.100	1.100	New Construction, retaining the existing subgrade	Open	2
6	55.100	55.550	0.450	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
7	55.550	56.600	1.050	New Construction, with Sand core in high DFS zone	Open	18
8	56.600	56.850	0.250	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
9	56.850	57.200	0.350	New Construction, with Sand core in high DFS zone	Open	9
10	57.200	57.400	0.200	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
11	57.400	58.050	0.650	New Construction, with Sand core in high DFS zone	Open	9
12	58.050	58.450	0.400	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
13	58.450	62.950	4.500	New Construction, with Sand core in high DFS zone	Open	18
14	62.950	63.200	0.250	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
15	63.200	65.400	2.200	New Construction, with Sand core in high DFS zone	Open	18
16	65.400	65.900	0.500	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
17	65.900	69.400	3.500	New Construction, with Sand core in high DFS zone	Open	18
18	69.400	69.550	0.150	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
19	69.550	69.650	0.100	Rigid Pavement with service lanes at different grades	Built up	36
20	69.650	72.050	2.400	New Construction, with Sand core	Open	10
21	72.050	72.450	0.400	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
22	72.450	78.850	6.400	New Construction, with Sand core	Open	10
23	78.850	79.900	1.050	New Construction, with Sand core in high DFS zone	Open	18
24	79.900	81.500	1.600	New Construction, with Sand core	Open	10
25	81.500	82.000	0.500	New Construction, retaining the existing subgrade	Open	2
26	82.000	83.550	1.550	New Construction, with Sand core	Open	10
27	83.550	83.550	0.300	New Construction, retaining the existing subgrade	Open	2
28	83.850	84.950	1.100	New Construction, with Sand core	Open	10
29	84.950	85.550	0.600	Rigid Pavement with saucer drain and box type drain on two sides	Built up	37
30	85.550	94.750	9.200	New Construction, with Sand core	Open	10
31	94.750	95.400	0.650	Rigid Pavement with saucer drains in expansive clay zone	Built up	32
32	95.400	99.000	3.600	New Construction, with Sand core	Open	10
33	99.000	99.400	0.400	New Construction, retaining the existing subgrade	Open	2
34	99.400	99.800	0.400	New Construction, with Sand core	Open	10
35	99.800	100.500	0.700	Rigid Pavement with saucer drain on village side and retaining wall on river side	Built up	34
36	100.500	102.200	1.700	Rigid Pavement with saucer drains	Built up	35
37	102.200	104.950	2.750	New Construction, retaining the existing subgrade	Open	2
38	104.950	105.100	0.150	Rigid Pavement with saucer drains	Built up	35
39	105.100	105.550	0.450	New Construction, retaining the existing subgrade	Open	2

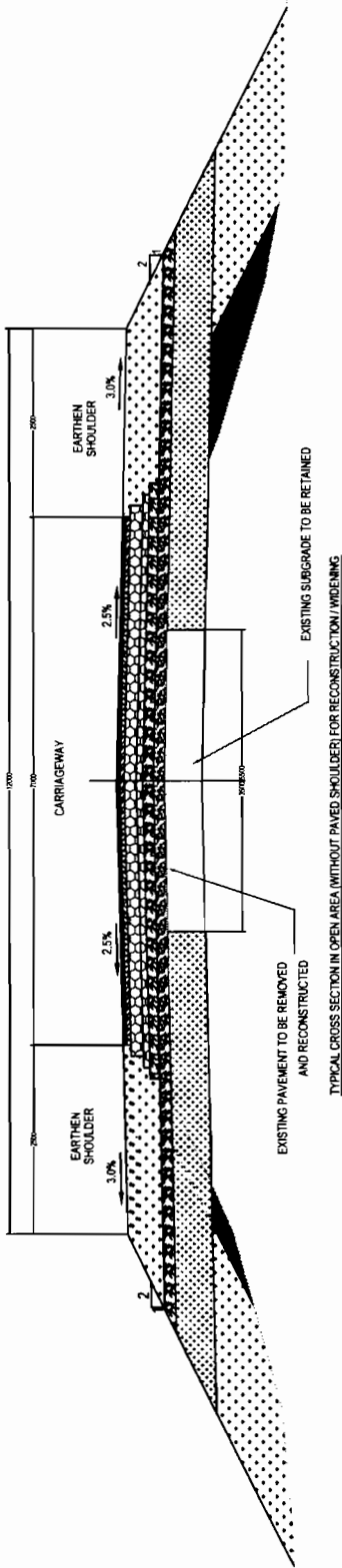
NOTE: 1. The TCS(Typical Cross sections) mentioned above should be confirmed on the ground before execution on the basis of technical, social & environmental parameters.

2. If necessary, they may be suitably modified. For details of TCSs, refer to the standard drawings available in this document.

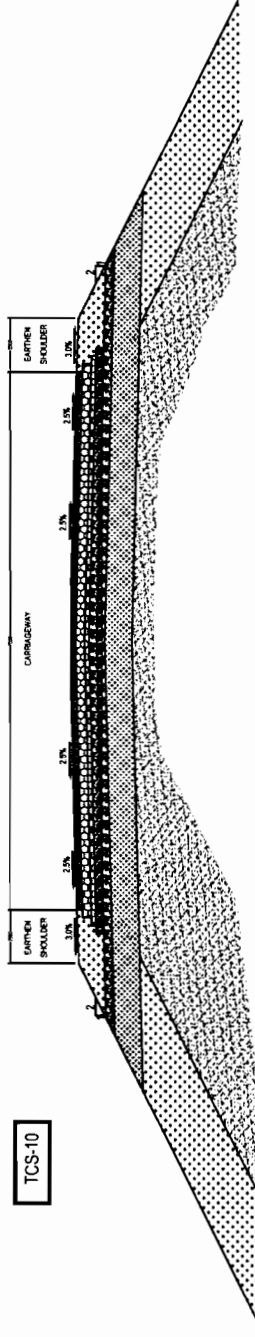
3. Suitable transitions shall be provided between different TCSs in consultation with the Engineer.

PROJECT:-		OSRP/CEG/PAV/03	REV R1
ODISHA STATE ROAD PROJECT		DRG NO.	APPROVED
UNDER WORLD BANK ASSISTANCE		SH.NO.	PREPARED BY
		SCALE	EE/PMU
		NTS	CE, WBP

TCS-02



TCS-10



LEGENDS

- 1) BC
- 2) DBM
- 3) WMM
- 4) GSB
- 5) SUBGRADE
- 6) DLC
- 7) PCC
- 8) EARTH FILL
- 9) SAND FILL
- 10) E - Electricity Cable
- 11) T - Telecom Cable
- 12) W - Water Supply Line
- 13) G - Gas Line
- 14) S - Sewer

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

TYPICAL CROSS-SECTION

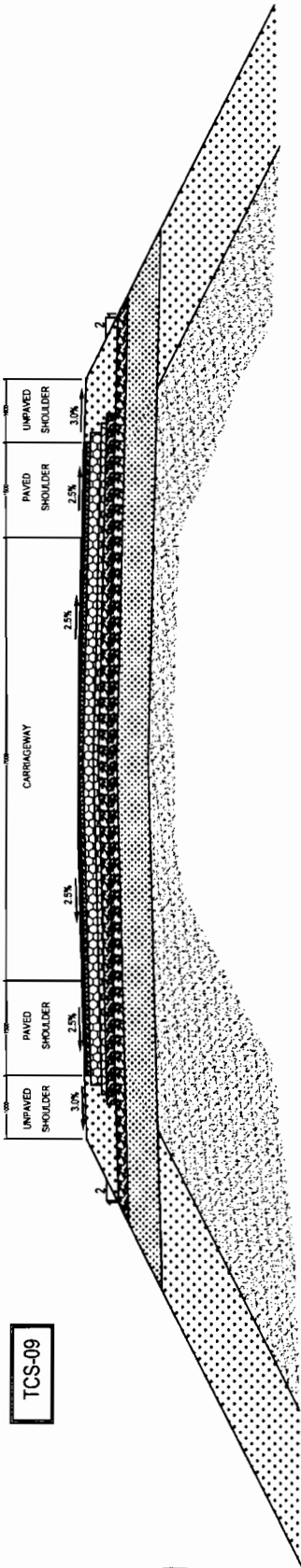
TCS - 02 & TCS - 10
(DUHURIA - CHANDBALI)

DRG NO.	02SP/CE/10/20/10	DESIGNED BY	CEG	APPROVED
SH. NO.	01	DRAWN BY	CEG	PREPARED BY
DATE	12/12/12	REV	R-1	EE(PMU)
SCALE	NTS		CEG	CE.WBP

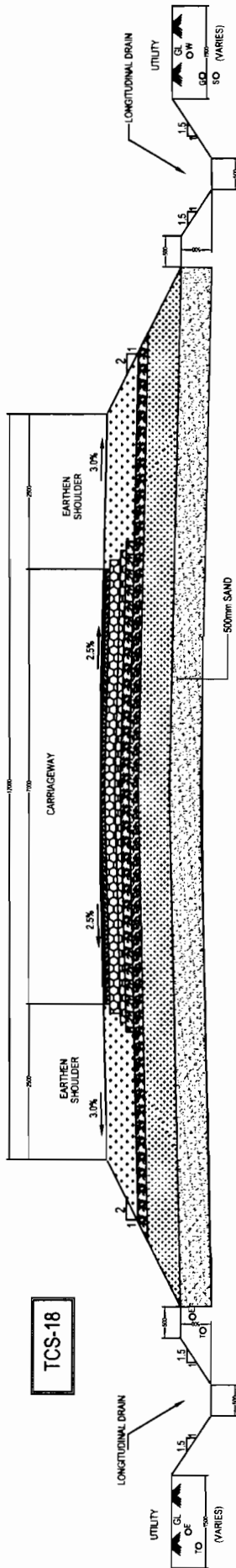
CONSULTING ENGINEERS GROUP LTD.
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Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegindia.com



Chief Engineer
World Bank Project
G/O to: Chief Engineer
World Bank Project, Odisha,
Bhubaneswar Employer



TYPICAL CROSS SECTION IN OPEN AREA (WITH PAVED SHOULDER) FOR NEW CONSTRUCTION



TYPICAL CROSS SECTION IN OPEN AREA (WITHOUT PAVED SHOULDER) FOR NEW CONSTRUCTION IN EXPANSIVE CLAYS

LEGENDS

1) BC	6) D/C	11) W - Water Supply Line
2) DBM	7) PCC	12) G - Gas Line
3) HMM	8) EARTH FILL	13) S - Sewer
4) OSB	9) SAND FILL	
5) SUBGRADE	10) E - Electricity Cable	
	10) T - Telecom Cable	

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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Fax: 2521348, e-mail: ceg@cegroupindia.com

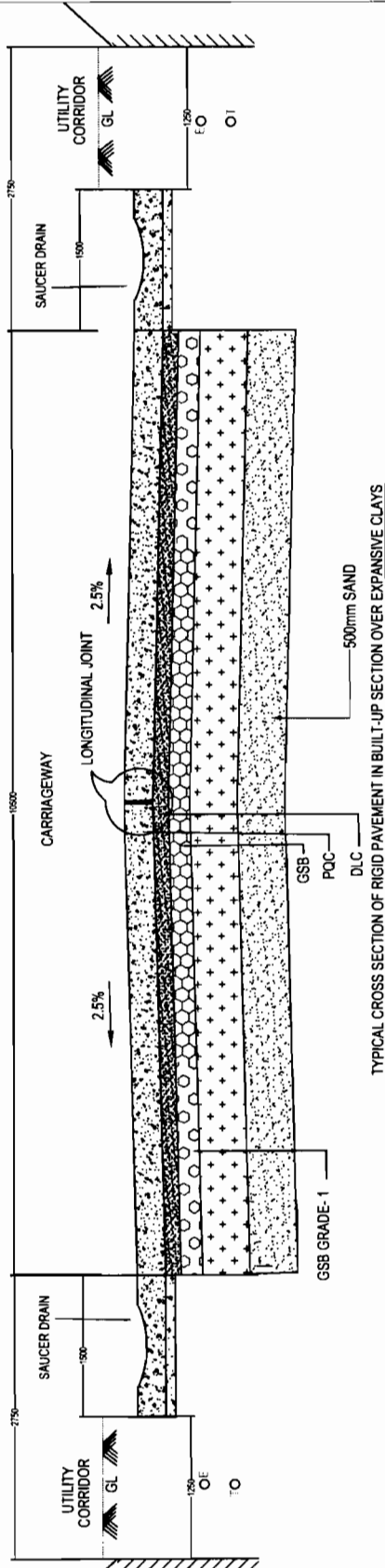


Chief Engineer,
World Bank Project, Odisha,
On the Behalf of Employer
Bhubaneswar

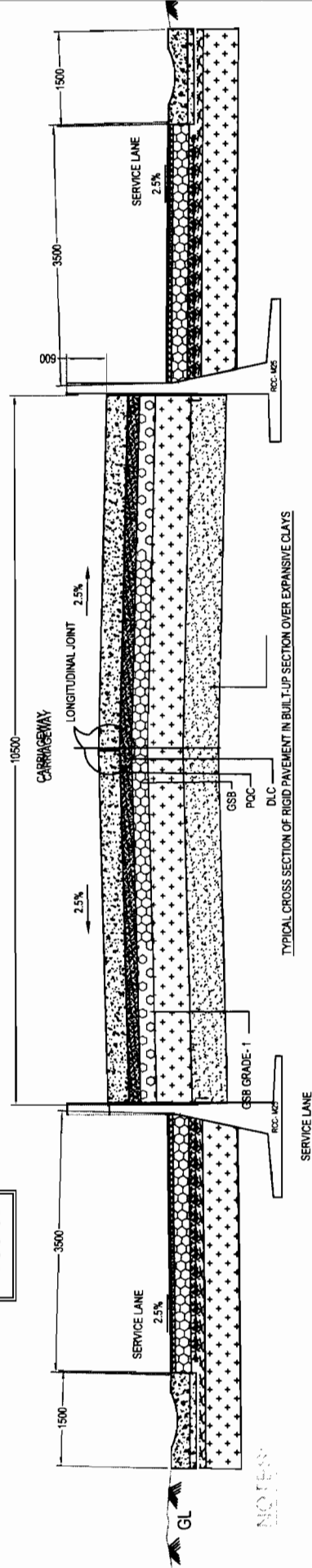
DRG NO. ORP/CEG/03/09 A/18		DESIGNED BY	CEG	CEG	CEG	APPROVED
SH. NO.	03	DATE	12/12/12	REV	R-1	REVISION
SCALE						
		NTS		CEG	EE(PMU)	CE(WBP)

TYPICAL CROSS-SECTION
TCS - 09 & TCS - 18
(DUHURIA - CHANDBALI)

TCS-32



TCS-36



LEGENDS

1) BC	6) DLC	11) W. Heavy Supply Lane
2) DM	7) PCC	12) G. Gas Lane
3) WMM	8) EMPT (FLL)	13) S - Sewer
4) GSB	9) E. Electricity Cable	
5) SUBGRADE	10) T. Heavy Clays	

TYPICAL CROSS-SECTION

TCS - 32 & TCS - 36
(DUHURIA - CHANDBALI)

DRG NO.	06	DATE	12/12/12	REV	R-1	DESIGNED BY	CEG	DRAWN BY	CEG	APPROVED	CE.MBP
SH. NO.											
SCALE											

PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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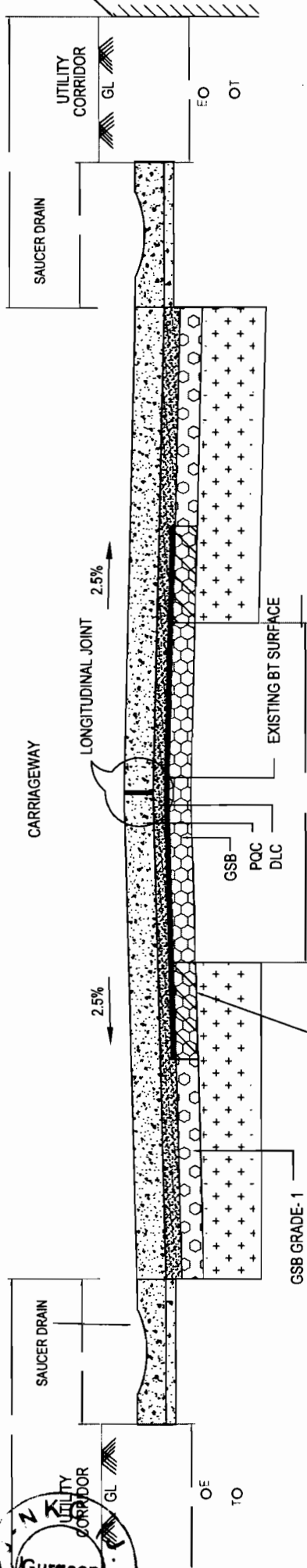
CEG



Chief Engineer
World Bank Project
Over the E.I.C. (ODR)
Chief Engineer,
World Bank Projects Odisha,
Employer

TCS-35

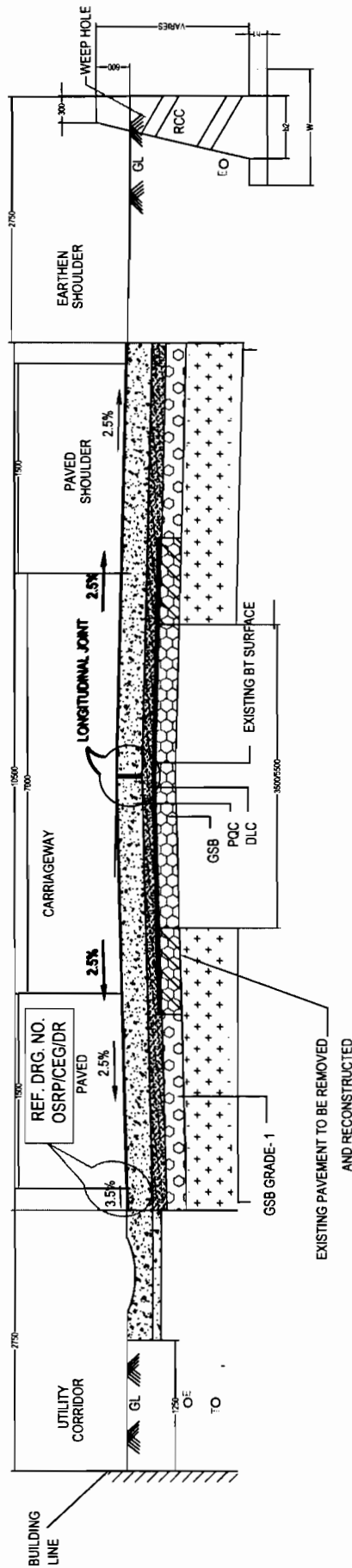
DPJ - NCC (JV)
Consultant



EXISTING PAVEMENT TO BE REMOVED

TCS-34

TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION



EXISTING PAVEMENT TO BE REMOVED AND RECONSTRUCTED

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

STANDARD DRAWINGS PROTECTION WORK &
TCS-34 & TCS-35
(DUHURIA - CHANDBALI)

DRG NO.	OSR/CEG/PMW	DESIGNED BY	DRAWN BY	REV/RT	APPROVED
SH. NO.	11	DATE	12/12/12	REV	R-1
SCALE				CEG	CEG
				NTS	EE(PMU)
					CE.WBP

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Chief Engineer,
World Bank Project,
World Bank Projects, Odisha,
State Engineering
Employer

TCS-30

TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION

TCS-37

TYPICAL CROSS SECTION OF RIGID PAVEMENT IN BUILT-UP SECTION WITH SAUCER ON ONE SIDE & BOX ON OTHER SIDE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOR DRAIN DETAILS REFER DRAWING NO. OSR/PC/EG/DR
3. FOR LAYER THICKNESS DETAILS REFER 'SCHEDULE OF WIDENING AND LAYER THICKNESS DETAILS'
4. THE CROSS SECTIONS SHALL BE READ WITH DETAILS OF TRANSITION BETWEEN RIGID AND FLEXIBLE REFER DRAWING NO. OSR/PC/EG/RIGID 02.
5. FOR PAVEMENT EDGE DETAILS REFER DRAWING NO. OSR/PC/EG/OD
6. PCC-PROFILE CORRECTIVE COURSE WITH THE MATERIAL SAME AS THAT OF OVERLAYING LAYER ABOVE IT.
7. IN CASE THE UTILITIES/TREES OBSTRUCTING THE LONGITUDINAL DRAINS, THE DRAINS MAY BE DIVERTED AS PER ENGINEERS DIRECTIONS

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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Fax: 2521348, e-mail: ceg@ceginodia.com

TYPICAL CROSS-SECTION

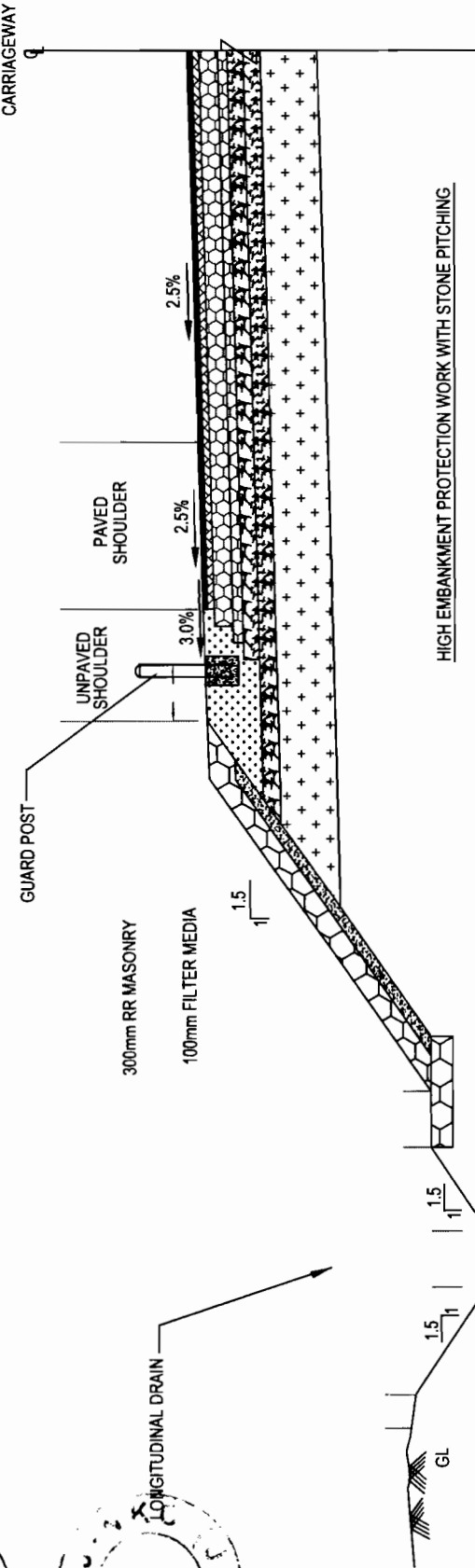
TCS - 30-37
(DUHURIA - CHANDBALI)

DRG NO.	OSR/PC/TCS/30 & 37	DATE	12/12/12	REV	R-1	APPROVED	CE.WBP
SH. NO.	05	DATE	12/12/12	REV	R-1	PREPARED BY	EE(PMU)
SCALE	NTS						

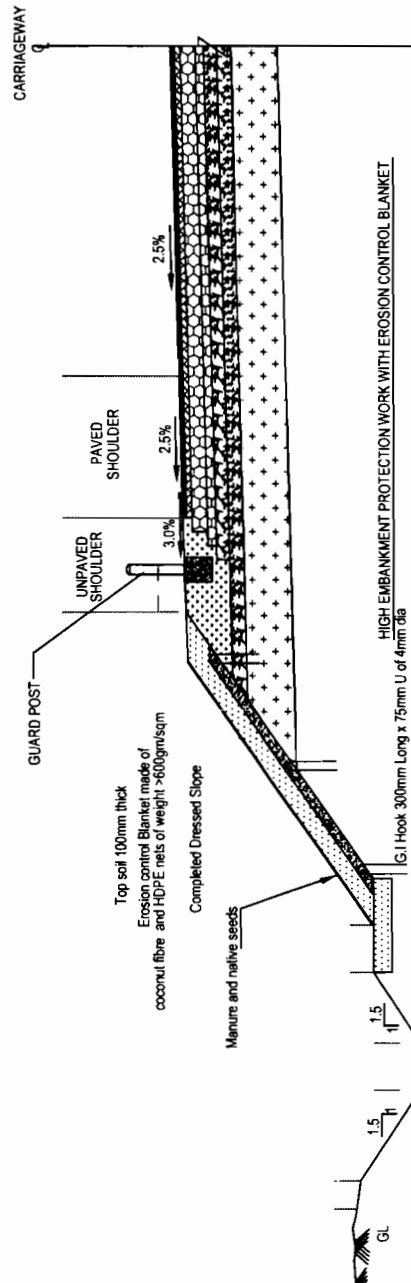
DPJ - NKC (JV) Contractor

Volume-IV: Page 113 of 200

Chief Engineer,
World Bank Project, Odisha,
Or the E.I.C. (Civil), Odisha,
Bhubaneswar



HIGH EMBANKMENT PROTECTION WORK WITH STONE PITCHING.



HIGH EMBANKMENT PROTECTION WORK WITH EROSION CONTROL BLANKET.

SCHEDULE

Sl. No.	Chainage		Length	Sides
	From	To		
1	69800	71000	1200	BOTH
2	75200	77000	1800	BOTH

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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Fax: 2521348, e-mail: ceg@cegroupindia.com



STANDARD DRAWINGS PROTECTION WORK &
WITH EROSION BLANKET
(DUHURIA - CHANDBALI)

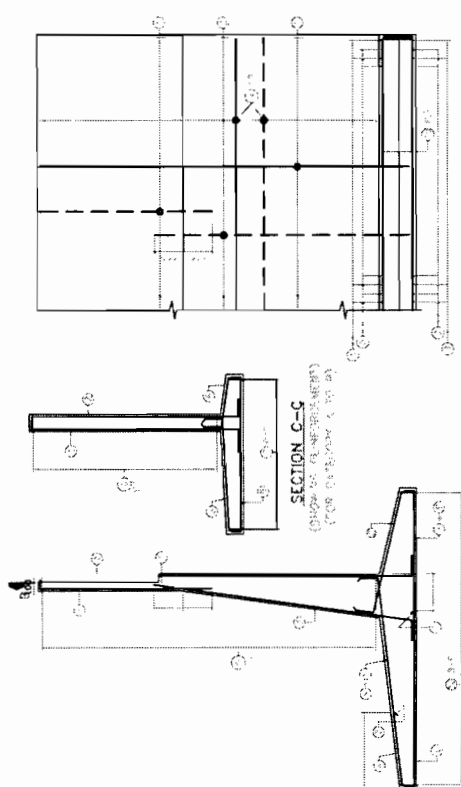
DRG NO.	OSR/CEG/PMU	DESIGNED BY	CEG	DATE	12/12/12	REV	R-1	SCALE	NTS
SH. NO.	11	DRAWN BY	CEG	APPROVED		PREPARED BY	EE(PMU)	CE.WBP	

NOTES

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
2. DO NOT SCALE THE DIMENSIONS. ONLY SWITCH DIMENSIONS TO METERS.
3. RANGE OF CONC. FOR R.C.C. WORKS - 100.
4. ALL HYD BARS IS COMPARED TO IS 1786 GRADE F₄₂₆.
5. CLEAR COVER TO ANY REIN. IN BASE PART & BIRTH FACE = 75 mm.
6. OTHER DIMENSIONS - AS SHOWN.
7. LOCATIONS MENTIONED HERE ARE TENTATIVE. EXACT LOCATIONS SHALL BE INCORPORATED IN THE WORKING DRAWINGS BEFORE SUBMISSION FOR APPROVAL.
8. THE BARRING CEMENT SHALL NOT BE LESS THAN THE FOLLOWING:
 - CATEGORY - A - 70/m²
 - CATEGORY - B - 100/m²
 - CATEGORY - C - 120/m²
 - CATEGORY - D - 150/m²
 - CATEGORY - E - 180/m²
 - CATEGORY - F - 180/m²
 - CATEGORY - G - 150/m²

SCHEDULE OF RETAINING WALLS

Sl. No.	From	To	Side	Length (M)	Total Length	Ht. from Ground	Remarks
1	50.000	52.000	2	270	440	3,000	Kendrapara
2	52.000	53.200	2	210	420	2,500	Kendrapara
3	59.600	59.750	1	150	150	2,500	
4	69.550	69.650	2	100	200	4,000	Before Patamunda Bypass
5	74.218	74.288	1	70	70	5,000	Brahmani Bridge approach
6	74.218	74.288	1	70	70	5,000	Brahmani Bridge approach
7	74.870	74.930	1	60	60	2,000	
8	75.195	75.265	1	70	70	4,000	
9	79.885	79.955	1	70	70	3,000	
10	84.135	84.205	1	70	70	1,500	
11	89.195	89.265	1	70	70	1,000	
12	96.480	97.020	1	540	540	2,500	
13	98.040	98.100	1	60	60	9,000	
14	97.455	97.525	1	70	70	4,000	
15	97.780	97.800	1	20	20	4,000	
16	97.860	97.920	1	60	60	7,000	
17	97.860	97.920	1	60	60	7,000	
18	98.040	98.110	1	70	70	6,000	
19	98.120	98.190	1	70	70	3,000	
20	100.100	100.500	1	400	400	4,000	Baitarani River
				Total Length	3040		



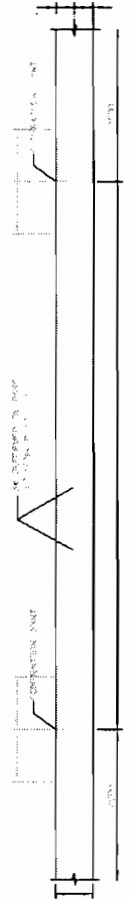
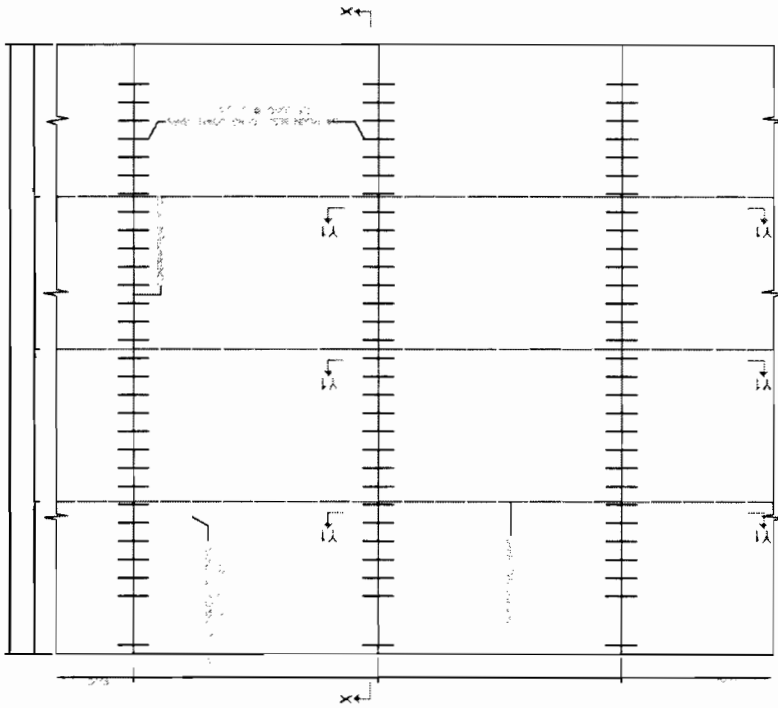
LEGENDS:

LENGTH OF CURTAINMENT

Category	Length (m)
A	70
B	100
C	120
D	150
E	180
F	180
G	150

REINFORCEMENT DETAILS

Sl. No.	From	To	Side	Length (M)	Total Length	Ht. from Ground	Remarks
1	50.000	52.000	2	270	440	3,000	Kendrapara
2	52.000	53.200	2	210	420	2,500	Kendrapara
3	59.600	59.750	1	150	150	2,500	
4	69.550	69.650	2	100	200	4,000	Before Patamunda Bypass
5	74.218	74.288	1	70	70	5,000	Brahmani Bridge approach
6	74.218	74.288	1	70	70	5,000	Brahmani Bridge approach
7	74.870	74.930	1	60	60	2,000	
8	75.195	75.265	1	70	70	4,000	
9	79.885	79.955	1	70	70	3,000	
10	84.135	84.205	1	70	70	1,500	
11	89.195	89.265	1	70	70	1,000	
12	96.480	97.020	1	540	540	2,500	
13	98.040	98.100	1	60	60	9,000	
14	97.455	97.525	1	70	70	4,000	
15	97.780	97.800	1	20	20	4,000	
16	97.860	97.920	1	60	60	7,000	
17	97.860	97.920	1	60	60	7,000	
18	98.040	98.110	1	70	70	6,000	
19	98.120	98.190	1	70	70	3,000	
20	100.100	100.500	1	400	400	4,000	Baitarani River

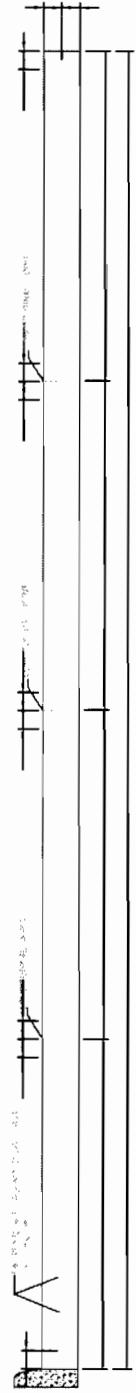


SECTION Y1-Y1 (SHOWING TIE BAR ARRANGEMENT BETWEEN CARRIAGEWAYS)

NOTATIONS

T1	Pavement Thickness
T2	D/C 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. CESP/CEG/AS/76.
 3. FOR PAVEMENT THICKNESS AND OTHER DIMENSIONS REFER PAVEMENT SCHEDULE FOR RIGID PAVEMENT.
 4. ALL REINFORCEMENTS SHALL BE CONFIRMED TO FE-500



SECTION X-X (SHOWING DOWEL BAR ARRANGEMENT)

PROJECT:-

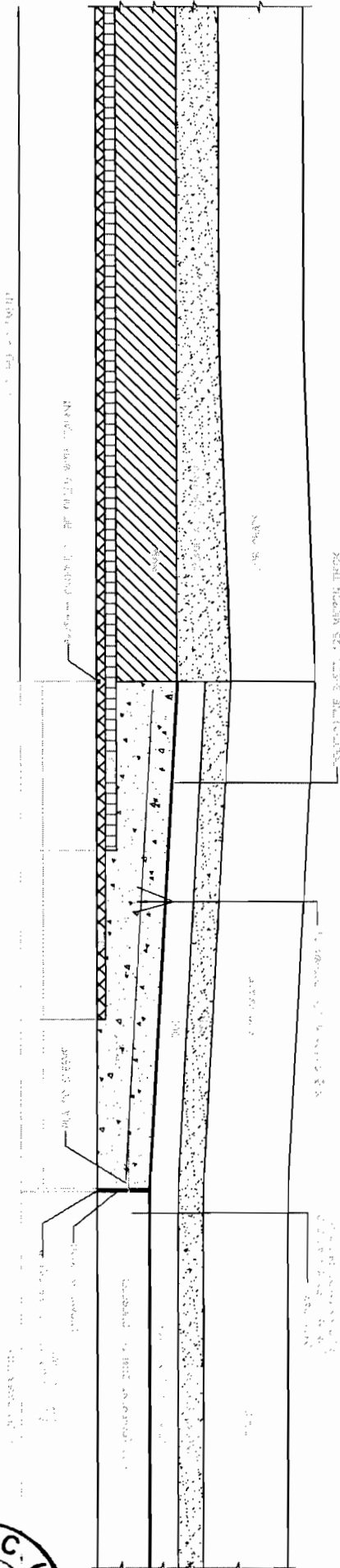
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegingdia.com



TYPICAL DETAILS OF DOWEL BAR AND TIE BAR ARRANGEMENT (DUHURIA - CHANDBALI)

DRG NO.	DESIGNED BY	DRAWN BY	APPROVED
SH. NO.	DATE	REV	PREPARED BY
SCALE	11	12/12/12	EE(PMU)
		R-1	CEG
		CEG	CEG
		NTS	CEG



TYP. DETAILS OF TRANSITION SLAB BETWEEN RIGID & FLEXIBLE PAVEMENT

NOTES:
1. The reinforcement shall be provided in the transition slab as shown in the detail.
2. The reinforcement shall be provided in the transition slab as shown in the detail.
3. The reinforcement shall be provided in the transition slab as shown in the detail.
4. The reinforcement shall be provided in the transition slab as shown in the detail.

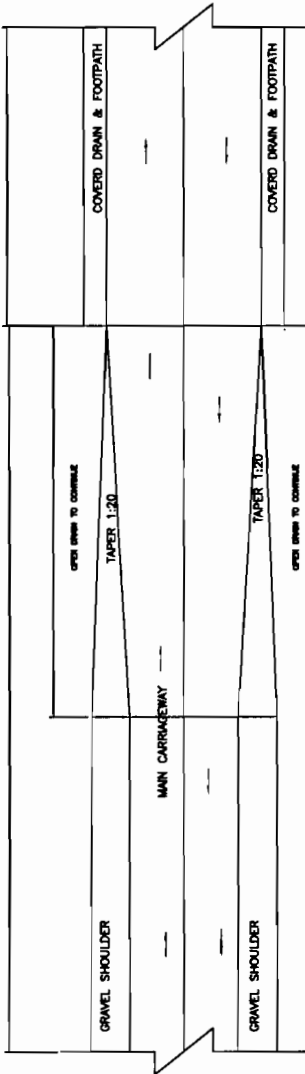
TYPICAL DETAILS OF TRANSITION SLAB
BETWEEN RIGID AND FLEXIBLE PAVEMENT
(DUHURIA - CHANDBALI)

PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

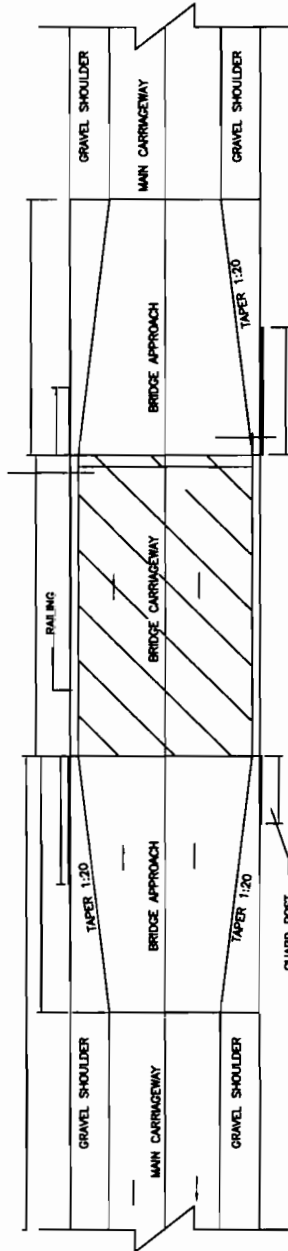
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Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@ceindia.com

CEG

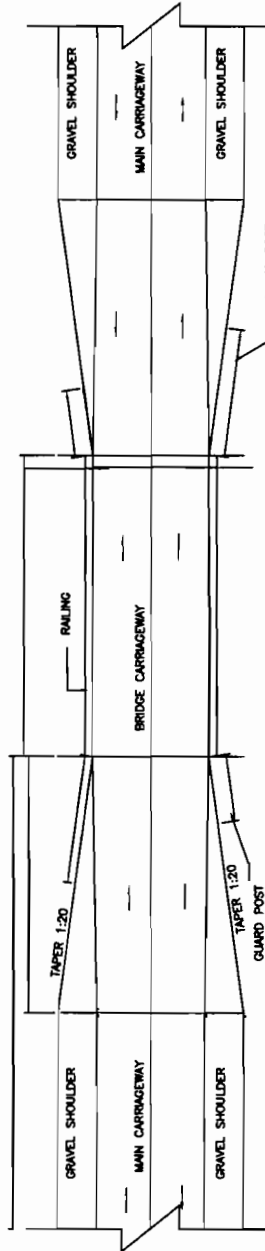
DRG. NO.	DESIGNED BY	REV. #1	APPROVED
SH. NO.	DATE	REV	PREPARED BY
SCALE	NTS	R-1	EE(PMU)
		CEG	CE.WBP



TRANSITION BETWEEN RURAL 12m SECTION TO VILLAGE 10m WITH DRAIN SECTION 10m



TRANSITION BETWEEN RURAL 12m SECTION TO BRIDGES WITH 11m CLEAR CARRIAGEWAY



TRANSITION BETWEEN RURAL 12m SECTION TO NARROW EXISTING BRIDGE SECTION

- NOTE**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS INDICATED OTHERWISE.
 2. FOR DETAILS OF STRUCTURES REFER STRUCTURAL DRS.
 3. GUARD POSTS ARE INSTALLED WHERE EMBANKMENT HEIGHT IS MORE THAN 3 METRES & AT BRIDGE APPROACHES.
 4. FOR GUARD POST DETAIL REFER DWG. NO. OSRP/CEG/104 & GP.
 5. FOR HAZARD MARKER DETAIL REFER TYPICAL ROAD SIGN & DETAILS OF ROAD DELINEATORS.
 6. DRAWING TO BE READ WITH TCS- 1 TO TCS-16 AND DWG. NO. OSRP/CEG/104/02.

TYPICAL DETAILS OF TRANSITION OF DIFFERENT ROAD SECTION (DUHURIA - CHANDBALI)

PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

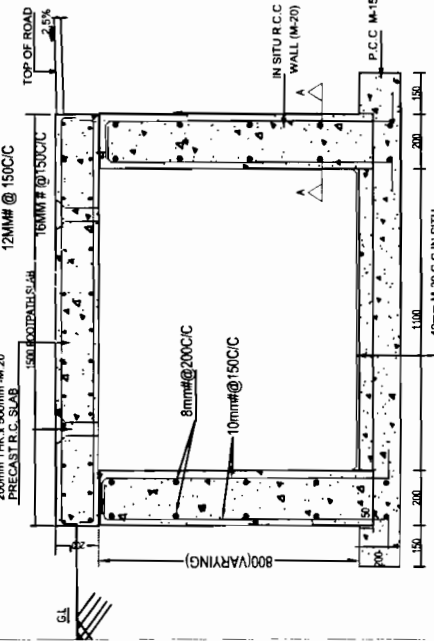
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Fax: 2521348, e-mail: ceg@cegroupindia.com



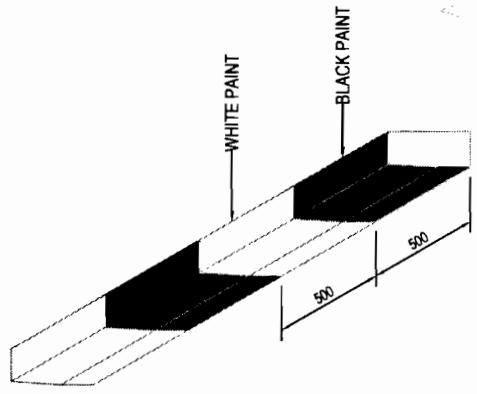
DRG NO.	OSRP/CEG/104	DESIGNED BY	CEG	APPROVED	
SH NO.	15	DATE	12/12/12	REV	R-1
SCALE	NTS		CEG	PREPARED BY	EE(PMU)
			CEG	APPROVED	CE.WBP

S. No.	Change#	From	To	TYPE OF DRAIN	Length of SAUCER DRAIN BOX DRAIN	TOTAL LENGTH
1.00		48,100.00	49,200.00	BOTH SAUCER	100.00	
2.00		50,000.00	52,000.00	BOTH SAUCER	2,000.00	
3.00		53,200.00	54,000.00	BOTH SAUCER	800.00	
4.00		55,100.00	55,300.00	BOTH SAUCER	200.00	
5.00		56,600.00	56,850.00	BOTH SAUCER	250.00	
6.00		57,200.00	57,400.00	BOTH SAUCER	200.00	
7.00		58,050.00	58,450.00	BOTH SAUCER	400.00	
8.00		61,950.00	63,200.00	BOTH SAUCER	2,250.00	
9.00		65,400.00	65,900.00	BOTH SAUCER	500.00	
10.00		65,400.00	67,650.00	BOTH SAUCER	2,250.00	
11.00		72,450.00	72,450.00	BOTH SAUCER	0.00	
12.00		84,950.00	86,450.00	LEFT SAUCER	1,500.00	
13.00		84,950.00	86,450.00	RIGHT SAUCER	1,500.00	
14.00		94,750.00	95,000.00	LEFT SAUCER	250.00	
15.00		95,000.00	95,000.00	LEFT SAUCER	0.00	
16.00		95,000.00	95,400.00	BOTH SAUCER	400.00	
17.00		99,800.00	100,100.00	LEFT SAUCER	300.00	
18.00		101,400.00	101,750.00	LEFT SAUCER	350.00	
19.00		101,400.00	101,750.00	RIGHT SAUCER	350.00	
20.00		102,000.00	102,000.00	BOTH SAUCER	0.00	
21.00		102,000.00	102,200.00	LEFT SAUCER	200.00	
22.00		104,500.00	104,700.00	RIGHT SAUCER	200.00	
23.00		104,500.00	105,100.00	RIGHT SAUCER	600.00	

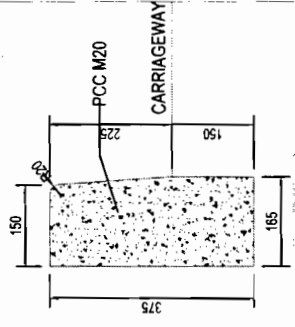
- NOTE:**
- FOR DETAILS OF LINED DRAINS REFER DWG. NO. OSRP/ET/DK
 - THE PROVISION AND LENGTH OF THE LINED DRAIN SHALL BE REASSESSED DURING THE TIME OF CONSTRUCTION
 - FOOTPATH BARRIERS SHALL BE PROVIDED AS PER DWG. NO. OSRP/CF/EB
 - FOR BARRICADES OPENING SHALL BE PROVIDED
 - LINED DRAIN SCHEDULE SUPPRESSED THE PLAN
 - ALL KINOR MARKINGS SHALL BE CONTINUED TO FF-500



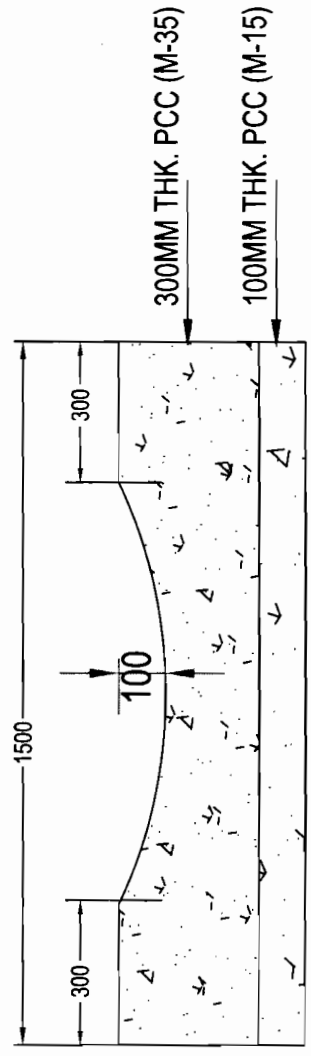
DETAIL OF BOX DRAIN



KERB MARKING



PCC M20 CARRIAGEWAY



PRECAST SAUCER DRAIN

PROJECT:-

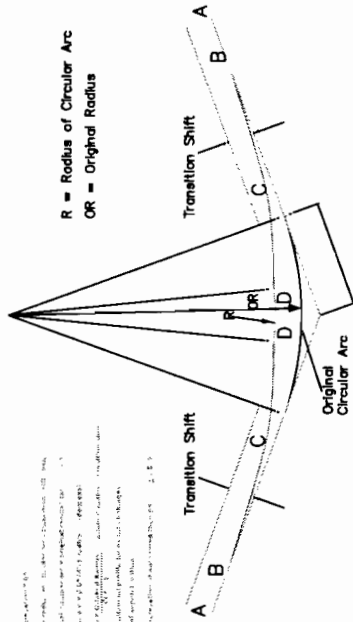
**ODISHA STATE ROAD PROJECT
UNDER WORLD BANK**

**STANDARD DRAWINGS
DETAILS OF DRAIN AND KERB
(DUHURIA - CHANDBALI)**

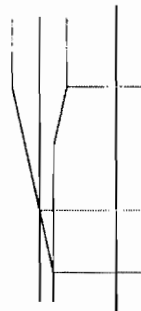
DRG NO.	OSRP/CE/DR	DESIGNED BY	CEG	DRAWN BY	CEG	REVISED BY	CEG	APPROVED	CE/WBP
SH. NO.	16	DATE	12/12/12	REV	R-1	PREPARED BY	EE(PMU)		
SCALE		NTS							

CEG CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar, Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegindia.com

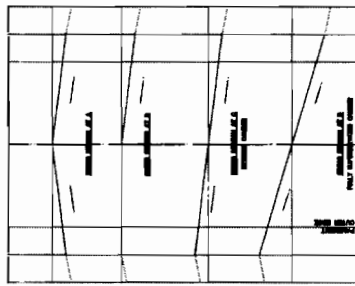
Chief Engineer
World Bank Project
O/o the E.C.C. Civil Works Employer
Rhubaneswar



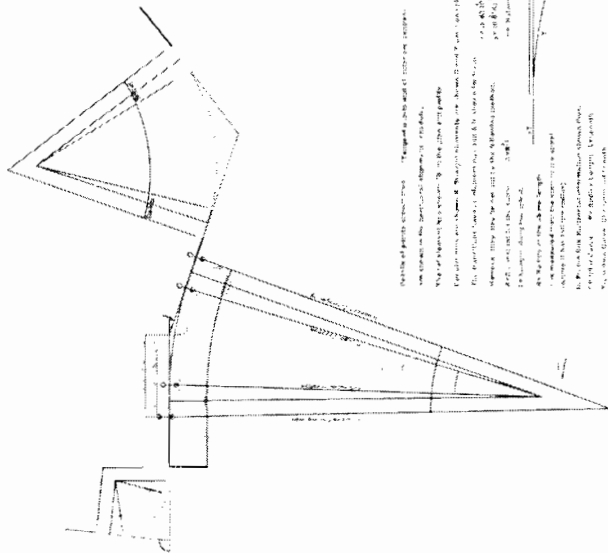
APPLICATION OF SUPERELEVATION



LONGITUDINAL SECTION THROUGH HORIZONTAL CURVE



- 1. Maximum transition length (L)
- 2. Distance from the center of the circular arc to the start of the transition curve (S)
- 3. Length of the original circular arc (R)
- 4. Length of the transition curve (L)
- 5. Length of the original circular arc (R)
- 6. Length of the transition curve (L)
- 7. Length of the original circular arc (R)
- 8. Length of the transition curve (L)



Maximum length of transition curve (L) = 100 m

Distance from the center of the circular arc to the start of the transition curve (S) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

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Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

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Length of the original circular arc (R) = 100 m

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Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

Length of the transition curve (L) = 100 m

Length of the original circular arc (R) = 100 m

PROJECT:-

**ODISHA STATE ROAD PROJECT
UNDER WORLD BANK**

**CONSULTING
ENGINEERS GROUP LTD.**
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@ceindia.com



Chief Engineer,
World Bank Project, Odisha,
to the E.J.C. (Civil),
Rhubani, War.

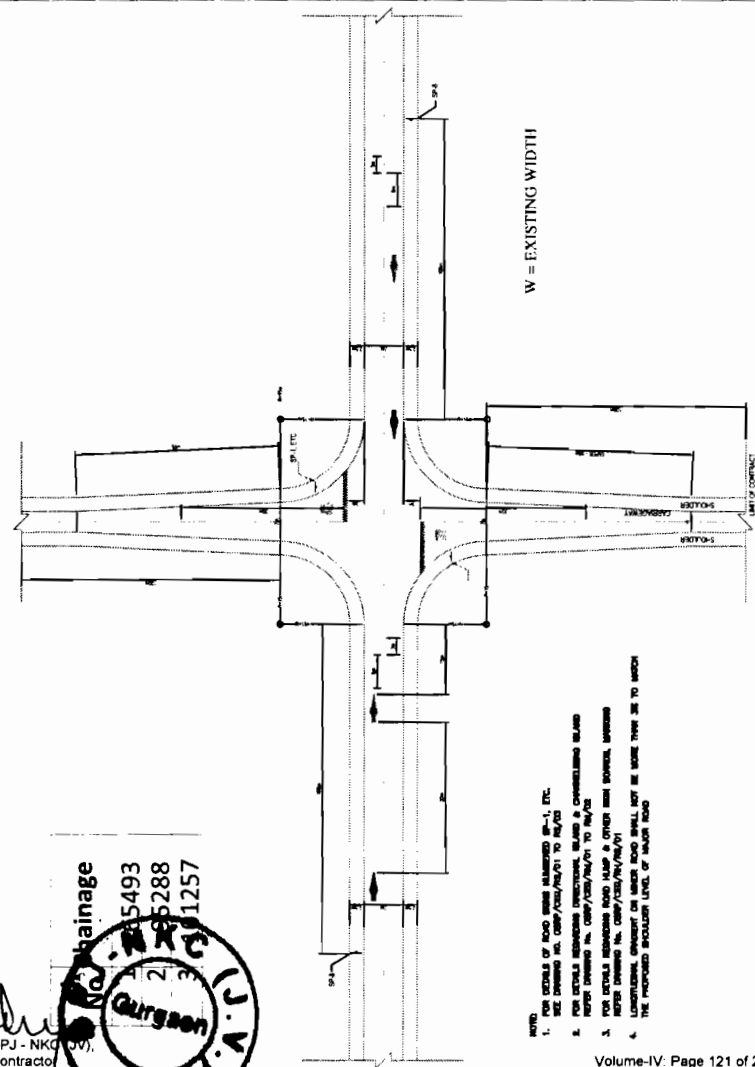
DETAILS OF APPLICATION OF SUPERELEVATION

DRG NO.	OSR/CEGE	DESIGNED BY	CEG	DRAWN BY	CEG	REV/RT	APPROVED
SH. NO.	17	DATE	12/12/12	REV	R-1	PREPARED BY	EE(PMU)
SCALE	NTS						CE.WBP

DPJ - NKQ (JV),
Contractor

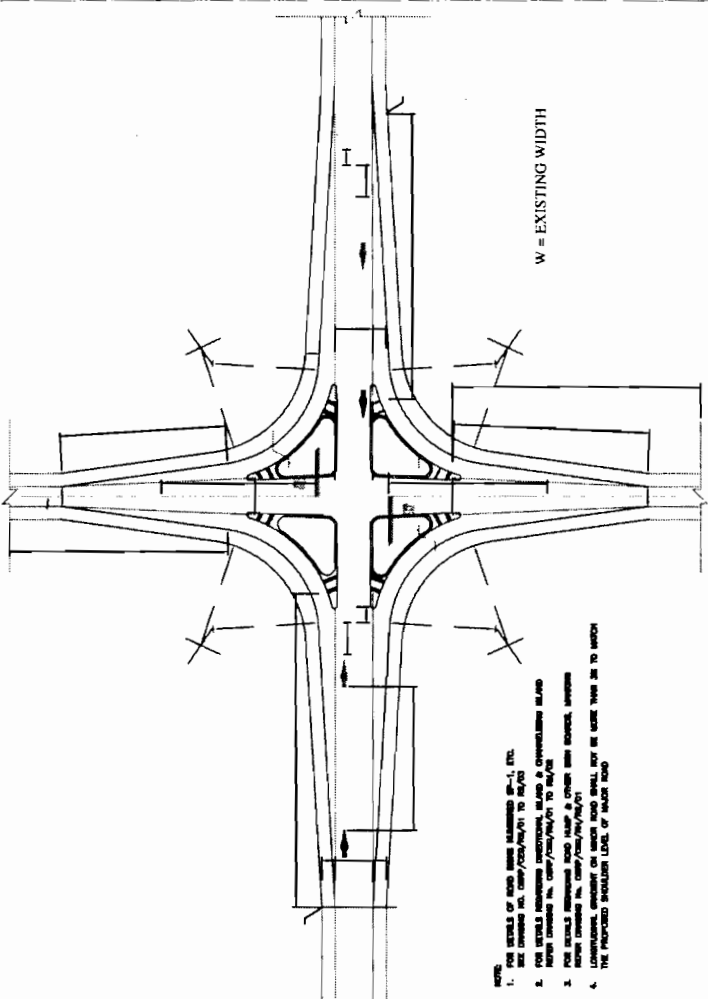
Chainage
5493
5288
51257

Garison



- NOTE:
1. FOR DETAILS OF ROAD MARKS REFERRED TO IN 1, ETC. SEE DRAWING NO. CEG/200/PA/01 TO PA/03
 2. FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELIZED ISLAND REFERRED TO IN CEG/200/PA/01 TO PA/02
 3. FOR DETAILS REGARDING ROAD MARKS & OTHER ROAD SIGNALS REFERRED TO IN CEG/200/PA/01
 4. LUMBERING, GRADIENT ON MAIN ROAD SHALL BE SAME THAN AS TO MATCH THE PROPOSED BROADENING LEVEL OF MAIN ROAD

W = EXISTING WIDTH



- NOTE:
1. FOR DETAILS OF ROAD MARKS REFERRED TO IN 1, ETC. SEE DRAWING NO. CEG/200/PA/01 TO PA/03
 2. FOR DETAILS REGARDING DIRECTIONAL ISLAND & CHANNELIZED ISLAND REFERRED TO IN CEG/200/PA/01 TO PA/02
 3. FOR DETAILS REGARDING ROAD MARKS & OTHER ROAD SIGNALS REFERRED TO IN CEG/200/PA/01
 4. LUMBERING, GRADIENT ON MAIN ROAD SHALL BE SAME THAN AS TO MATCH THE PROPOSED BROADENING LEVEL OF MAIN ROAD

W = EXISTING WIDTH

Sl. No.	Chainage
1	49044
2	49044
3	51956
4	70397
5	72798
6	74218
7	79885
8	85912
9	89115
10	93854
11	94200
12	94700
13	97485

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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



Chief Engineer,
World Bank Projects, Odisha,
Employer

STANDARD DRAWINGS
TYPICAL 4-LEGGED INTERSECTION WITH
WITH SINGLE LANE BT ROAD
(DUHURIA - CHANDBALI)

DRG. NO.	OSR/PA/CEG/INT/	DESIGNED BY	CEG	APPROVED	CE/WBP
SH. NO.	18	DATE	12/12/12	REV	R-1
SCALE				PREPARED BY	EE(PMU)
				DRAWN BY	CEG
					NTS

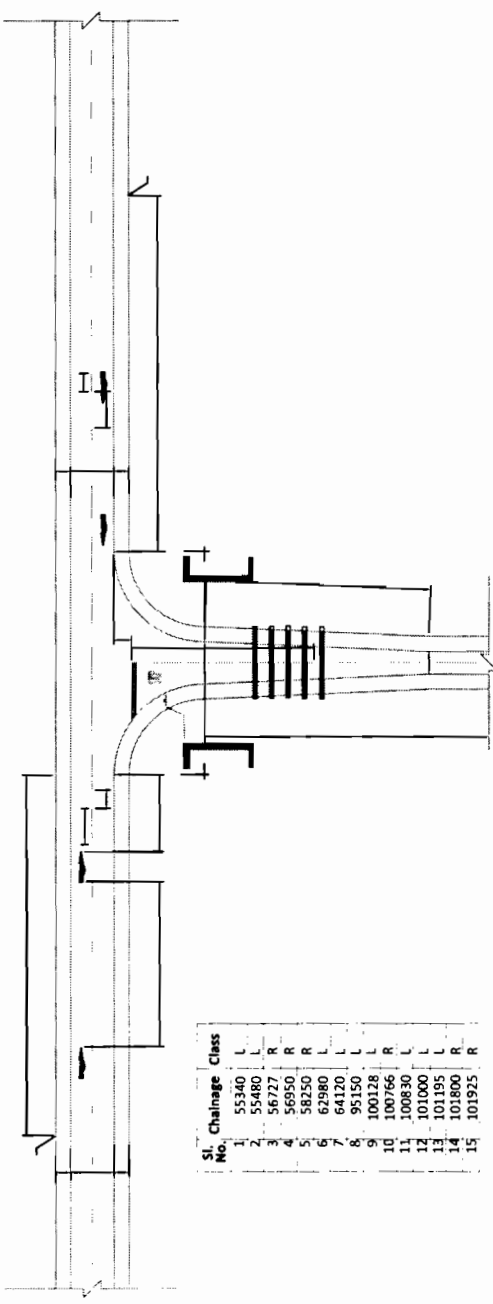


CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Teli: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegroupindia.com

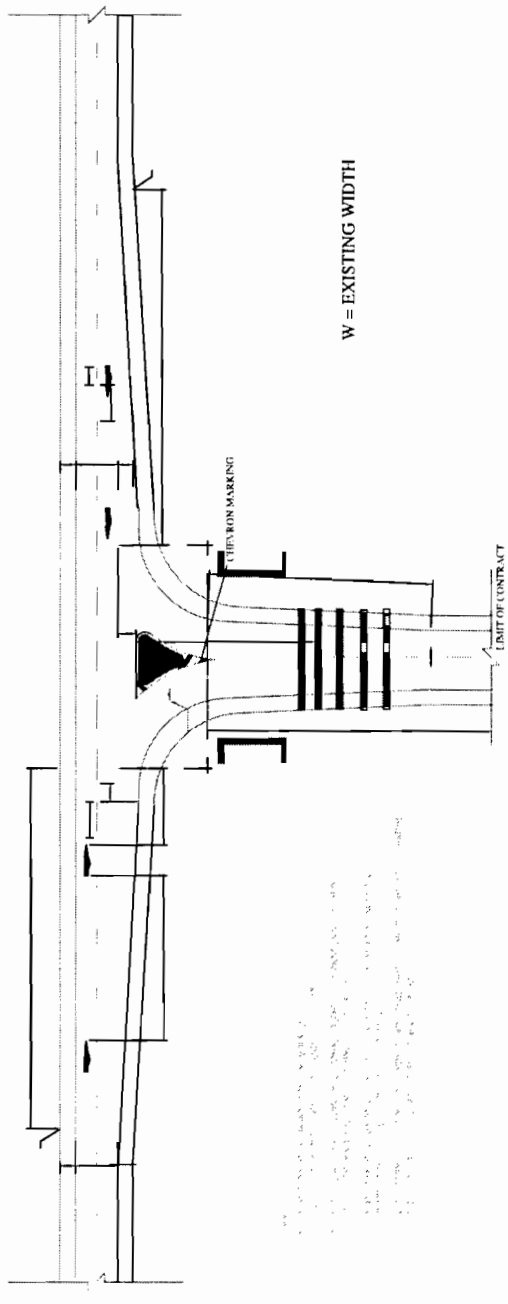
PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

STANDARD DRAWINGS
TYPICAL T-JUNCTION
WITH SINGLE LANE BT ROAD
(DUHURIA - CHANDBALI)

DRG NO.	OSR/PC/EG/AMZ	DESIGNED BY	DRAWN BY	REV. BY	APPROVED
SH. NO.	19	DATE	12/12/12	REV	R-1
SCALE	NTS				
		CEG	CEG	EE(PMU)	CE(WBP)



TYPE - A



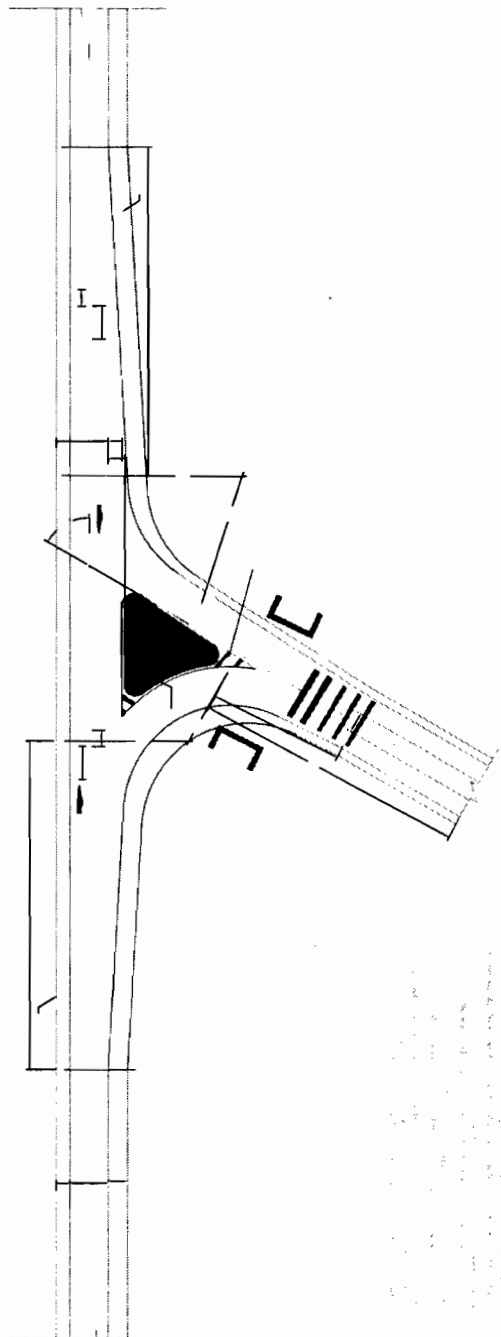
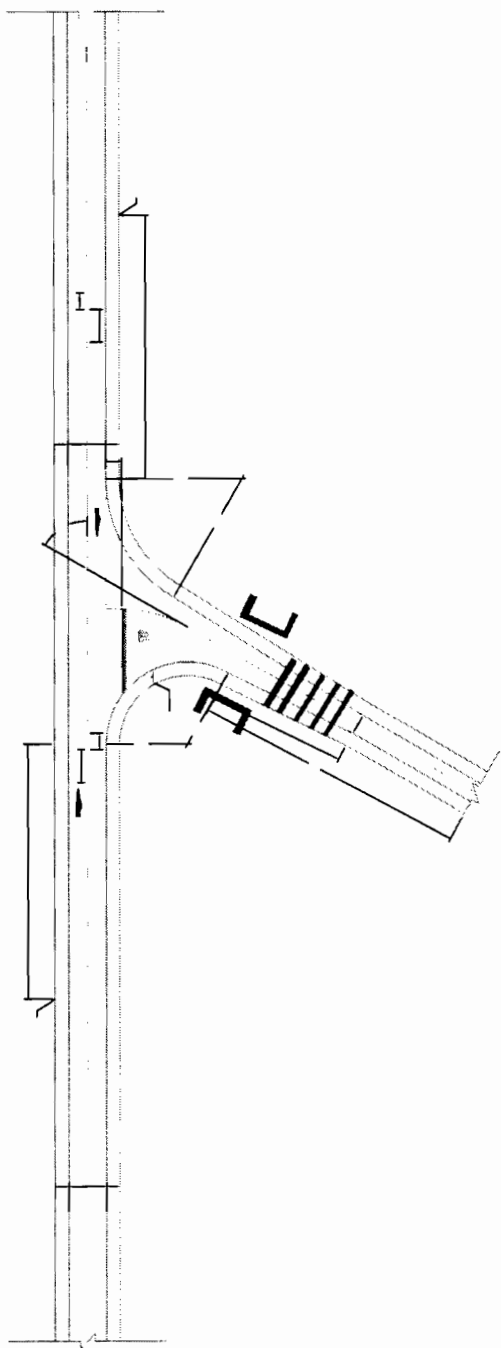
W = EXISTING WIDTH

LIMIT OF CONTRACT

D.P. NKC (Pvt.)
Contractor



Sl. No.	Change	Direction
1	49126	Left
2	63950	Left
3	64420	Left
4	64660	Right
5	64720	Right
6	72258	Left
7	85192	Right
8	85225	Left
9	100560	Right
10	101185	Right



Sl. No.	Change	Direction
1	89020	Right
2	89848	Right
3	91287	Right
4	91287	Right
5	91338	Right
6	91764	Right
7	93587	Right
8	97287	Left
9	97287	Left
10	92800	Left
11	92780	Left
12	96097	Right
13	98845	Right
14	99725	Left
15	99520	Left
16	71980	Right
17	74260	Right
18	74558	Left
19	79530	Left
20	81367	Right
21	81367	Right
22	84125	Left
23	87695	Left
24	88410	Left
25	88410	Right
26	88952	Right
27	88952	Right
28	91395	Right
29	93300	Left
30	93300	Right
31	96480	Right
32	96480	Right
33	103000	Right
34	103445	Left

Chief Engineer
World Bank Projects, Odisha
O/o the E.I. & C. Unit, Employer

PROJECT:-

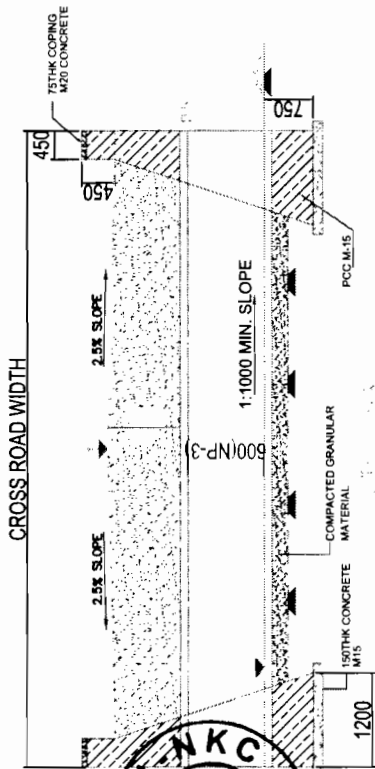
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

**STANDARD DRAWINGS
TYPICAL Y- JUNCTION WITH
SINGLE LANE BT ROAD/EARTHEN ROAD
(DUHURIA - CHANDBALI)**

DRG NO. (SHP/CE/IND)	DESIGNED BY	APPROVED
SH. NO.	DATE	REV
SCALE	REV	PREPARED BY
	NTS	EE(PMU)
	CEG	CE,WBP

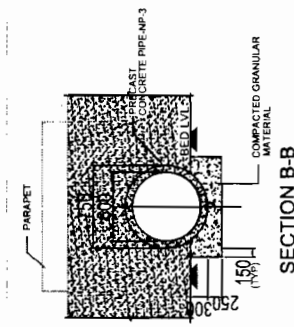
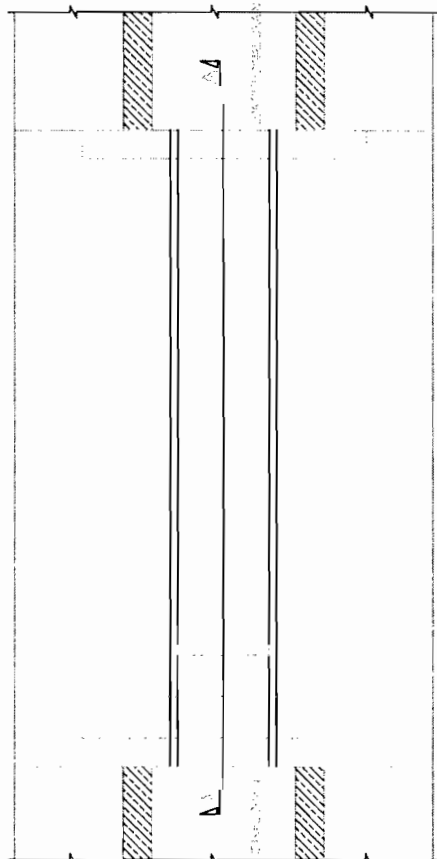
**CONSULTING
ENGINEERS GROUP LTD.**
E-12, Moji Colony, Malviya Nagar, Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegindia.com





DRP, NKC
Gurgaon
V.V.

DPJ - NKC
Contractor



TYPE A - Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	49126	Left
2	63950	Left
3	64420	Left
4	64660	Right
5	64770	Right
6	72258	Left
7	85192	Right
8	85235	Left
9	100560	Right
10	101185	Right

TYPE B - Y-JUNCTIONS		
Sl. No.	Chainage	Direction
1	49020	Right
2	50885	Right
3	51287	Right
4	51438	Right
5	51764	Right
6	53587	Right
7	57282	Left
8	61800	Left
9	62760	Left
10	66097	Left
11	68445	Right
12	68470	Right
13	68475	Right
14	69505	Left
15	73980	Right
16	74558	Left
17	74558	Left
18	79530	Left
19	83357	Right
20	83357	Left
21	87425	Left
22	87425	Left
23	88410	Left
24	88410	Right
25	89850	Right
26	89852	Right
27	89852	Right
28	91395	Right
29	93300	Right
30	93300	Right
31	97588	Right
32	97588	Right
33	103000	Left
34	105445	Left

T-JUNCTION TYPE-B		
Sl. No.	Chainage	Direction
1	50005	Left
2	51012	Right
3	51112	Right
4	51632	Right
5	53112	Right
6	54609	Right
7	55720	Left
8	55970	Right
9	57213	Right
10	57732	Right
11	57960	Left
12	58475	Right
13	58950	Right
14	61237	Left
15	61278	Left
16	63073	Left
17	65290	Left
18	66120	Right
19	67820	Right
20	72480	Right
21	72492	Left
22	75196	Right
23	76260	Left
24	76380	Right
25	77300	Right
26	77305	Left
27	77825	Right
28	78438	Right
29	78802	Right
30	79000	Left
31	79565	Right
32	80195	Right
33	80650	Left
34	80655	Right
35	81730	Right
36	82750	Right
37	91485	Right
38	101720	Left
39	101930	Left
40	102420	Right
41	102725	Right
42	103225	Left
43	104300	Left
44	104660	Right

4-LEGGED TYPE-A		
Sl. No.	Chainage	Class
1	55340	L
2	55480	L
3	56727	R
4	56950	R
5	58250	R
6	62980	L
7	64120	L
8	95150	L
9	100128	L
10	100766	R
11	100830	L
12	101000	L
13	101195	L
14	101800	R
15	101925	R

4-LEGGED TYPE-B		
Sl. No.	Chainage	Class
1	49044	L
2	49044	R
3	51956	L
4	70397	L
5	72798	L
6	74218	R
7	79885	L
8	85912	L
9	89115	L
10	93854	L
11	94200	L
12	94700	L
13	97485	L

SCHEDULE OF MAJOR JUNCTIONS			
Sl. No.	Chainage	Type of Junction	Direction
1	67-700	T-Jn	Right
2	71-500	Y-Jn	Right
3		Y-Jn	Right
4		Y-Jn	Right

PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

STANDARD DRAWINGS
TYPICAL - CROSS DRAIN
SINGLE LANE BT ROAD/EARTHEN ROAD
(DUHURIA - CHANDBALI)

CEG ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@ceginia.com

CEG

DRG NO. 06SP/CEG/CD	DATE 21/12/12	REV R-1	SCALE NTS
SH. NO. 21	DESIGNED BY CEG	DRAWN BY CEG	APPROVED EE (PMU) CE (WRP)

Chief Engineer
World Bank Project Engineer
O/e the Employer
Employer



Chief Engineer,
World Bank Project
Gurgaon, Haryana, India

Chief Engineer,
World Bank Project
Employer

SCHEDULE OF HUMPS AT BUILTUP AREAS

Sl. No.	Location	Remarks
1	50365	SCHOOL
2	57347.5	SCHOOL
3	58421	SCHOOL
4	58443	SCHOOL
5	63008.5	SCHOOL
6	72254	SCHOOL
7	74913	SCHOOL
8	95950	SCHOOL
9	102718.5	SCHOOL
10	102772.5	SCHOOL
11	2327.5	HOSPITAL
12	18147.5	HOSPITAL
13	19534.5	HOSPITAL
14	19611	HOSPITAL
15	20077	HOSPITAL
16	24041	HOSPITAL
17	26648	HOSPITAL
18	26734	HOSPITAL
19	27446	HOSPITAL
20	35622	HOSPITAL
21	48062	HOSPITAL
22		

AT 4-LEGGED TYPE-A

Sl. No.	Chainage
1	65493
2	95288
3	101257

AT 4-LEGGED TYPE-B

Sl. No.	Chainage
1	49044
2	49044
3	51956
4	70397
5	72798
6	74218
7	79885
8	85912
9	89115
10	93854
11	94200
12	94700
13	97485

ATT-JUNCTION_TYPE-A

Sl. No.	Chainage	Class
1	55340	L
2	55480	L
3	56727	R
4	56950	R
5	58250	R
6	62980	L
7	64120	L
8	95150	L
9	100128	L
10	100766	R
11	100830	L
12	101000	L
13	101195	L
14	101800	R
15	101925	R

SCHEDULE OF RUMBLE STRIPS
ATT-JUNCTION_TYPE-B

Sl. No.	Chainage	Direction
1	50005	Left
2	51012	Right
3	50875	Left
4	51112	Right
5	51632	Right
6	53112	Right
7	54609	Right
8	55720	Left
9	55970	Right
10	57213	Right
11	57960	Left
12	58475	Left
13	58950	Right
14	61237	Left
15	61278	Left
16	63073	Left
17	65290	Left
18	66120	Right
19	67820	Right
20	72480	Right
21	72492	Left
22	75196	Right
23	76260	Left
24	76380	Right
25	77300	Right
26	77305	Left
27	7825	Right
28	78438	Right
29	78802	Right
30	79000	Left
31	79565	Right
32	80195	Right
33	80650	Left
34	80655	Right
35	81730	Right
36	82750	Right
37	91485	Right
38	101720	Left
39	101830	Left
40	102420	Right
41	102725	Right
42	103525	Left
43	104300	Right
44	104660	Left
45	49126	Left
46	63950	Left
47	64420	Left
48	64660	Right
49	64770	Right
50	72258	Left
51	85192	Right
52	85225	Left
53	100560	Right
54	101185	Right

AT TYPE-B_X-JUNCTIONS

Sl. No.	Chainage	Direction
1	49020	Right
2	50875	Left
3	51287	Right
4	51438	Right
5	51764	Right
6	53587	Right
7	57282	Left
8	61800	Left
9	62400	Left
10	62760	Left
11	66097	Left
12	68445	Right
13	68770	Right
14	69505	Left
15	71380	Right
16	74260	Right
17	74538	Left
18	79530	Left
19	81375	Right
20	81735	Left
21	87495	Left
22	88410	Left
23	88410	Right
24	89850	Left
25	89852	Right
26	91395	Right
27	93300	Left
28	93300	Right
29	96480	Right
30	97588	Right
31	103000	Left
32	103000	Right
33	105445	Left
34		

SCHEDULE OF RUMBLE STRIPS AT MAJOR JUNCTIONS

Sl no	Chainage	Type of Junction	Direction	Nos.
1	69+700	T - Jn	Right	4 Sides
2	71+500	Y - Jn	Right	4 Sides

SCHEDULE OF HUMPS & RUMBLERS

DRG NO.	OSRP/CEG/SCII/RI&RS	DESIGN/ID	DRAWN/ID	REVISION/1	APPROVED/ID
SH. NO.	167	DATE	REV	RI	
SCALE		NTS		CEG	CEG
				E.E., PMU	C.E., WBP

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

CONSULTING
ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2520556
Fax: 2521348, e-mail: ceg@egindia.com

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CLASS-B, GI 40 MM DIA PIPE

GI 30 MM DIA PIPE

BASE PLATE 150MM

ELEVATION OF FOOTPATH BARRIER

NOTE : Leave openings for entrances to properties and spur roads

SCHEDULE OF FOOTPATH BARRIERS (BOTH SIDES)

Sl. No.	From	To	Chainage
1	49,100.00	49,200.00	
2	50,000.00	52,000.00	
3	53,200.00	54,000.00	
4	55,100.00	55,300.00	
5	55,300.00	55,550.00	
6	56,600.00	56,850.00	
7	57,200.00	57,400.00	
8	58,050.00	58,450.00	
9	62,950.00	63,200.00	
10	65,400.00	65,900.00	
11	69,400.00	69,650.00	
12	72,050.00	72,450.00	
13	84,950.00	85,550.00	
14	94,750.00	95,000.00	
15	95,400.00	95,400.00	
16	99,800.00	100,100.00	
17	100,100.00	101,400.00	
18	101,400.00	101,750.00	
19	101,750.00	102,000.00	
20	102,000.00	102,200.00	
21	104,500.00	104,700.00	
22	104,950.00	105,100.00	
TOTAL LENGTH			10750.00

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@egindia.com

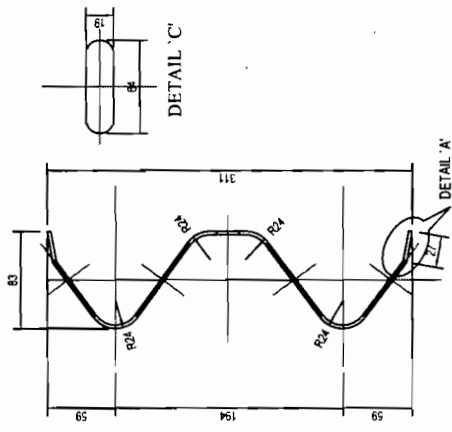


STANDARD DRAWINGS
DETAILS OF FOOTPATH BARRIERS

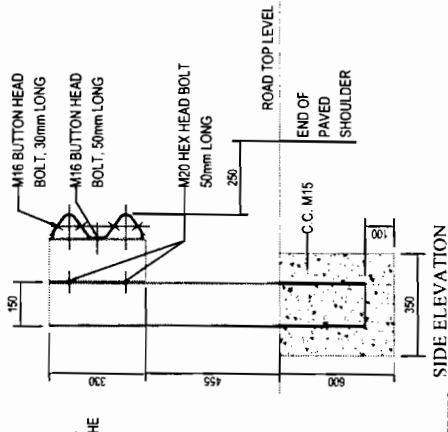
(DUHURIA - CHANDBALI)

DRG NO.	DBR/CE/PM	DESIGNED BY	CEG	DRAWN BY	CEG	REV R1	APPROVED
SH. NO.	23	DATE	12/12/12	REV	R-1	PREPARED BY	EE(PMU)
SCALE	NTS					CE.WBP	

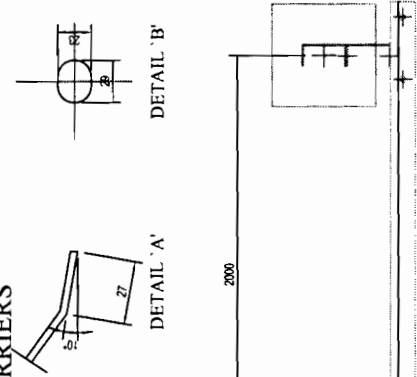
DETAILS OF W-BEAM CRASH BARRIERS



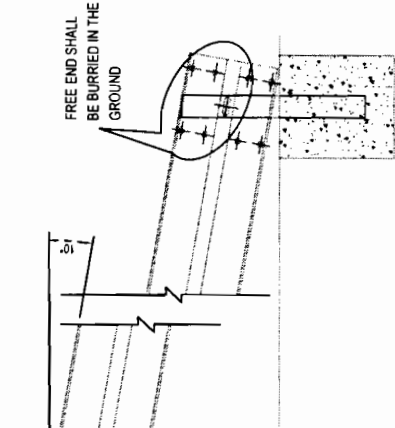
BEAM SECTION



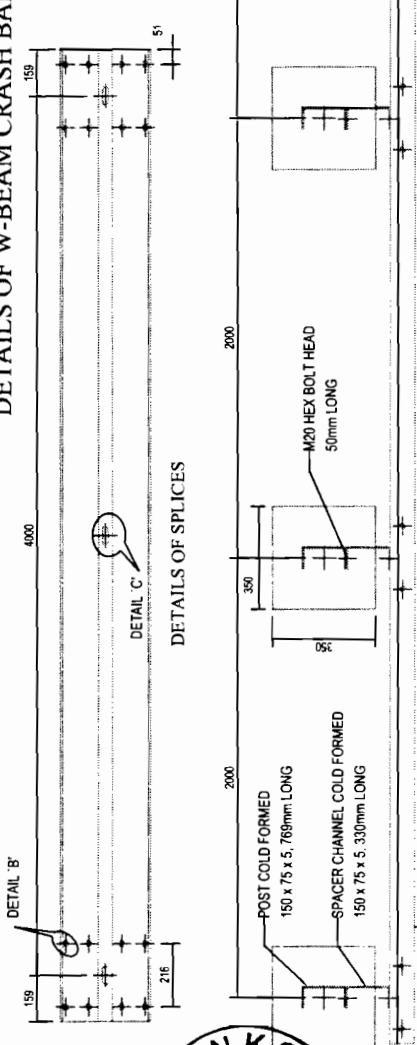
SIDE ELEVATION



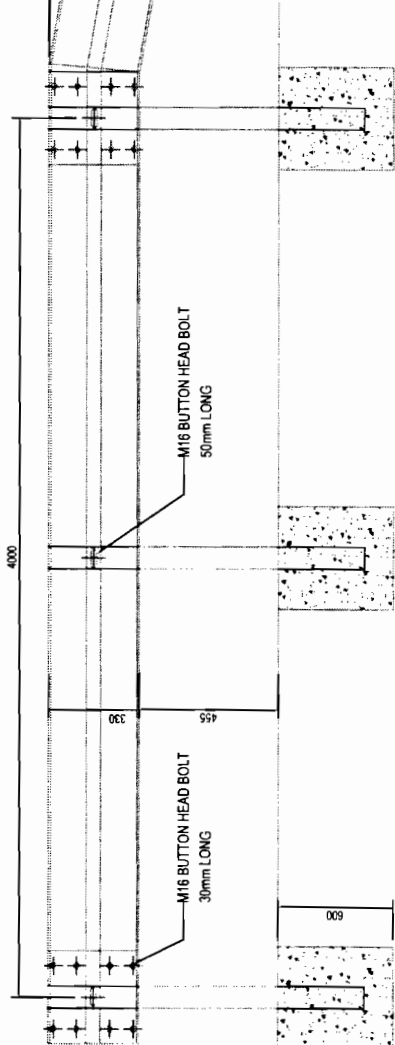
PLAN



FRONT ELEVATION



DETAILS OF SPLICES



FRONT ELEVATION

10. THE BEAM ELEMENTS SHALL BE FORMED SHEETS HAVING NOMINAL WIDTH OF 483mm.
11. THE BASE MATERIAL OF THE CORRUGATED BEAM SHALL COMPLY TO FOLLOWING MECHANICAL PROPERTIES:
 - I. TENSILE STRENGTH, MIN=483 MPA.
 - II. ELONGATION, IN 2 INCHES, MIN = 12%
 - III. YIELD, MIN=345 MPA.
12. ALL MEMBERS OF THE SYSTEM SHOULD BE HOT DIPPED GALVANIZED AND TO HAVE A MINIMUM COATING OF 550g/sq m. EACH FACE IN CONFORMANCE TO M.O.R.T & H. SPECIFICATIONS (CLAUSE 810).
13. BEAMS TO BE ERRECTED ON A RADIUS OF 46m (150') OR LESS SHALL BE SHAPE CURVED TO APPROPRIATE CURVATURE.
14. CRASH BARRIERS ARE POSTED ON ALL SECTION OF EMBANKMENT WHOSE HEIGHT IS >= TO 3m. HORIZONTAL CURVES OF RADIUS < 170m AND ALSO AT ALL BRIDGE APPROACHES FOR LENGTH OF 20m ON BOTH SIDES.
15. BEAM SURFACE FACING THE TRAFFIC IS PAINTED WITH ALTERNATE BANDS (600mm WIDE) OF BLACK & YELLOW COLOR REFLECTORRIED PAINT CONFORMING CL. 803.5 OF M.O.R.T & H SPEC.

SCHEDULE
 AT 3 MAJOR BRIDGES : 250M AT 2 SIDES ON BOTH WAYS
 AT 10 MINOR BRIDGES : 80M AT 2 SIDES ON BOTH WAYS
 FROM KM 69.760 TO KM 71.200&KM.88.700 TO KM 89.100 ON BOTH SIDES.

DRG NO.	08/PROC/CEB	DESIGNED BY	CEG	DRAWN BY	REV.01	APPROVED	CE/WBP
SH. NO.	24	DATE	12/21/12	REV	R-1	PREPARED BY	EE(PMU)
SCALE	NTS		CEG				

STANDARD DRAWINGS
METAL BEAM CRASH BARRIER DETAILS
(DUHURIA- CHANDBALI)

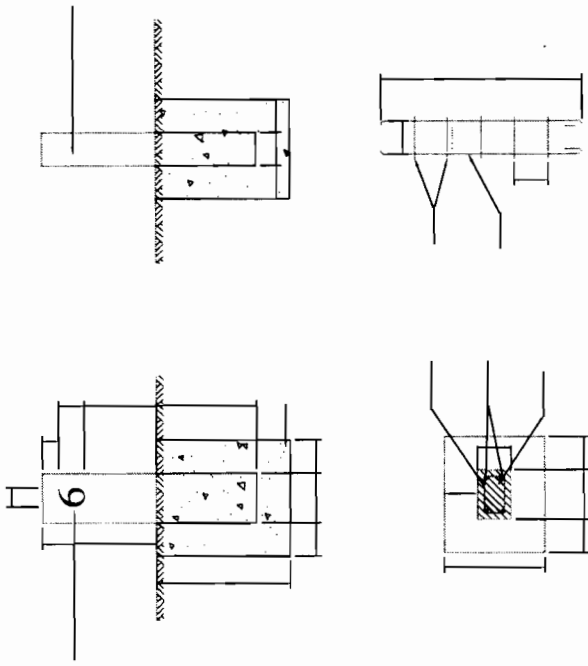
PROJECT:-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK

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

CEG

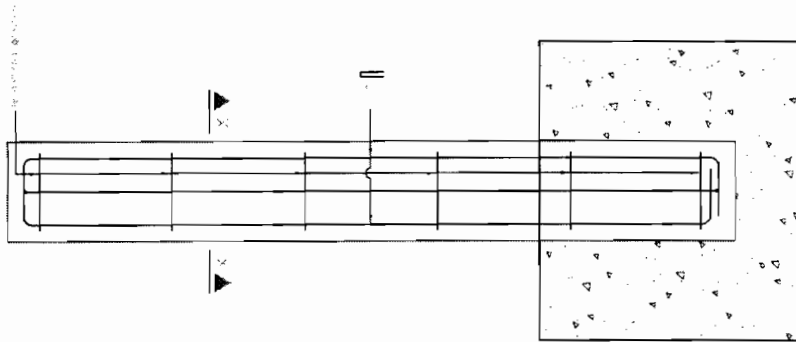
DPJ - NKC Contractor
 DPJ-NKC (P)VT
 Gurgaon

Chief Engineer
 World Bank Project
 the E.I.C (Civil), Odisha
 Chief Engineer
 World Bank Projects, Odisha
 Employer

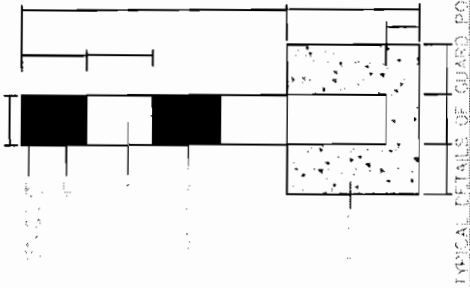


TYPICAL DETAILS OF 200MM STONE & GUARD POST

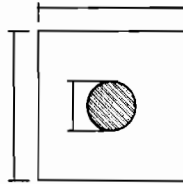
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFLECTORISED PAINT SHALL BE IN ACCORDANCE WITH CL 803.5 OF M.O.R.T & H SPEC.
3. FOR TYPE & STYLE SIZE OF LETTERING RELEVANT IRC CODE OF PRACTICE SHALL BE REFERED.
4. LETTERING IS DONE WITH APPROVED QUALITY BLACK ENAMEL PAINT USING STENCIL



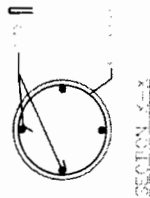
REINFORCEMENT DETAIL OF GUARD POST



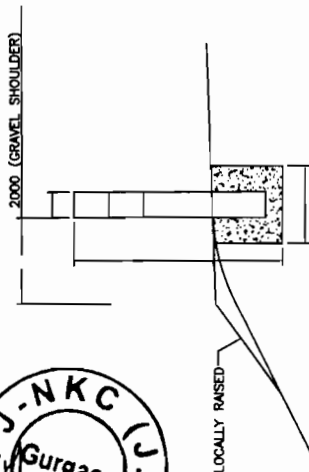
TYPICAL DETAILS OF GUARD POST



PLAN OF GUARD POST



SECTION OF GUARD POST



FIXING DETAILS OF GUARD POST

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED.
2. R.C.C. GUARD POSTS IS INSTALLED WHERE EMBANKMENT HEIGHT IS GREATER THAN 3 M AT OTHER HAZARD LOCATIONS

3. FOR SCHEDULE REFER DRAWING NO. OSRP/CEG/DC-57KM/SCH-GP

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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E-12, Moj Colony, Malviya Nagar Jaipur-17
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Fax: 2521348, e-mail: ceg@ceindia.com



STANDARD DRAWINGS
TYPICAL DETAILS OF 200MM STONE & GUARD POST
(DUHURIA - CHANDBALI)

DRG NO.	CORPORATION L.P.	DESIGNED BY	DRAWN BY	REV A1	APPROVED
SH. NO.	26	DATE	12/12/12	REV	R-1
SCALE			NTS	CEG	CEG
				PREPARED BY	EE (PMU)
					CE.WBP



Chief Engineer
World Bank Project
The E.N. Ganga
Bhubaneswar,
Chief Engineer
World Bank Project
Odisha
Employer

SCHEDULE OF GUARD POSTS

LEFT SIDE			RIGHT SIDE			RIGHT SIDE			
SI.No.	Chainage		Distance	SI.No.	Chainage		Distance	Chainage	
	From	To			From	To		From	To
1	4900	4995	50	26	7845	7905	600		
2	5145	5100	50	27	8025	8095	725		
3	5160	5100	100	28	8110	8125	150		
4	5765	5700	50	29	8255	8285	30		
5	6155	6175	200	30	8261	8273	123		
6	6359	6365	64	31	8278	8299	204		
7	6436	6440	37	32	8315	8330	150		
8	6655	6671	163	33	8428	8456	287		
9	6680	6700	200	34	8470	8475	50		
10	6705	6735	275	35	8650	8711	611		
11	6748	6785	367	36	8730	8755	250		
12	6800	6850	50	37	8765	8785	200		
13	6962	6971	48	38	8800	8835	350		
14				39	8850	8860	100		
15				40					
16				41	8945	8976	313		
17	7297	7310	124	42	8984	8987	30		
18	7343	7385	42	43	8989	9075	858		
19	7340	7343	30	44	9161	9163	20		
20	7375	7375	45	45	9166	9200	339		
21	7387	7400	113	46	9210	9253	453		
22	7410	7423	135	47	9259	9267	78		
23	7529	7635	1053	48	9268	9278	85		
24	7642	7720	775	49	9285	9310	258		
25	7795	7841	466	50	9320	9330	104		
				51	9342	9380	388		
				52	9565	9583	33		
				53	9580	9585	50		
				54	9767	9819	516		
				55	9862	9882	200		
				56	10013	10025	114		
				57	10035	10040	50		
				58	10347	10343	17		
				59	10347	10353	61		

SCHEDULE OF GUARD POSTS

LEFT SIDE			RIGHT SIDE			
SI.No.	Chainage		Distance	SI.No.	Chainage	
	From	To			From	To
25	8095	8019	100			
26	8030	8040	100			
27	8070	8090	200			
28	8261	8268	75			
29	8275	8298	230			
30	8315	8328	135			
31	8420	8425	50			
32	8427	8433	65			
33	8438	8446	80			
34	8450	8452	20			
35	8653	8699	455			
36	8705	8720	150			
37	8735	8780	450			
38	8790	8800	100			
39	8810	8825	150			
40	8830	8835	50			
41	8855	8861	65			
42						
43	8960	8985	250			
44	8987	9073	860			
45	9169	9225	555			
46	9235	9259	245			
47	9270	9311	410			
48	9325	9328	39			
49	9337	9345	80			
50	9355	9375	200			
51	9555	9575	200			
52	9610	9740	1300			
53	9753	9764	110			
54	9785	9815	305			
55	9855	9885	300			

SCHEDULE OF GUARD POSTS

(DUHURIA TO CHANDBALI)

DRG. NO.	OSR/CEG/SC/1-GP	DATE	SCALE
SH. NO.	164	DATE	SCALE
APPROVED BY	REVISIONS	DRAWN BY	PROJECT ED/UD
		CEG	C.E., WBP
		CEG	E.E., PMU
		NTS	

CONSULTING ENGINEERS GROUP LTD.
E-12, Moj Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegltdia.com



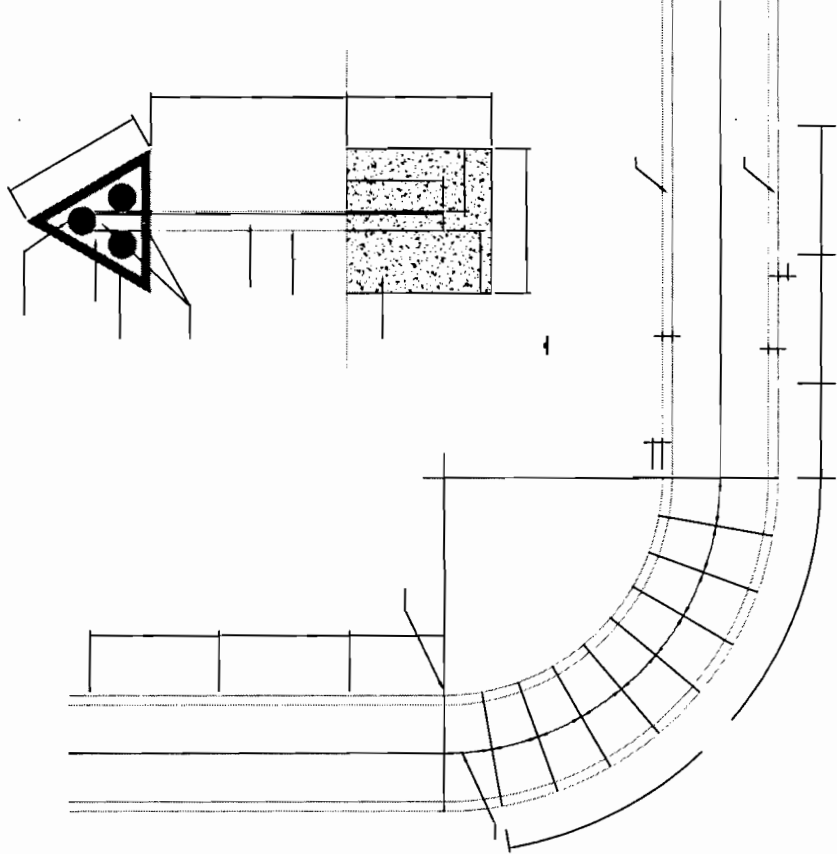
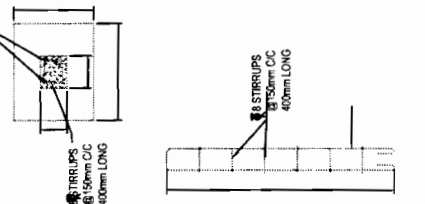
CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

SCHEDULE OF DELINEATORS

Curve Start	Curve End	Radius	Spacing	Outer Side	Inner Side	Total
1	510.682	1745.467	45	6	4	10
2	971.131	1000.782	45	6	4	10
3	1309.008	1700.000	45	6	4	10
4	1438.000	1000.000	45	6	4	10
5	1462.134	360	25	5	4	9
6	15549.924	360	25	5	4	9
7	16079.108	170	12	4	3	7
8	16471.186	360	25	5	4	9
9	16595.616	200	20	4	4	8
10	16960.777	700	25	4	8	12
11	17071.818	150	12	7	5	12
12	17302.422	600	38	4	4	8
13	17419.201	400	30	3	7	10
14	17430.282	240	20	8	6	14
15	17430.282	240	20	8	6	14
16	17430.282	240	20	8	6	14
17	17430.282	240	20	8	6	14
18	17430.282	240	20	8	6	14
19	17430.282	240	20	8	6	14
20	17430.282	240	20	8	6	14
21	17430.282	240	20	8	6	14
22	17430.282	240	20	8	6	14
23	17430.282	240	20	8	6	14
24	17430.282	240	20	8	6	14
25	17430.282	240	20	8	6	14
26	17430.282	240	20	8	6	14
27	17430.282	240	20	8	6	14
28	17430.282	240	20	8	6	14
29	17430.282	240	20	8	6	14
30	17430.282	240	20	8	6	14
31	17430.282	240	20	8	6	14
32	17430.282	240	20	8	6	14
33	17430.282	240	20	8	6	14
34	17430.282	240	20	8	6	14
35	17430.282	240	20	8	6	14
36	17430.282	240	20	8	6	14
37	17430.282	240	20	8	6	14
38	17430.282	240	20	8	6	14
39	17430.282	240	20	8	6	14
40	17430.282	240	20	8	6	14
41	17430.282	240	20	8	6	14
42	17430.282	240	20	8	6	14
43	17430.282	240	20	8	6	14
44	17430.282	240	20	8	6	14
45	17430.282	240	20	8	6	14
46	17430.282	240	20	8	6	14
47	17430.282	240	20	8	6	14
48	17430.282	240	20	8	6	14
49	17430.282	240	20	8	6	14
50	17430.282	240	20	8	6	14
51	17430.282	240	20	8	6	14
52	17430.282	240	20	8	6	14
53	17430.282	240	20	8	6	14
54	17430.282	240	20	8	6	14

NOTE:
 1. FOR THE DETAILS OF ROAD DELINEATORS REFER DWG NO OSR/PC/CEG RD
 2. ROAD DELINEATORS SHALL BE PROVIDED AS PER THE GUIDELINES IN IRC (79:198)



Sl. No.	RADIUS OF CURVE (METRES)	SPACING ON CURVE S (METRES)
1	30	6
2	50	8
3	100	12
4	200	20
5	300	25
6	400	30
7	500	35
8	600	38
9	700	42
10	800	45
11	900	48
12	1000	50

- NOTES
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
 2. DELINEATORS SHALL BE PROVIDED AT THE END OF THE ROAD AND AT THE END OF THE CURVE.
 3. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 4. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 5. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 6. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 7. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 8. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 9. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 10. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 11. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.
 12. DELINEATORS SHALL BE PROVIDED AT THE END OF THE CURVE.

STANDARD DRAWINGS
DETAILS OF ROAD DELINEATORS

DESIGNED BY: (DUHURIA - CHANDBALI)

DRG NO. OSR/PC/CEG
 SH. NO. 27 DATE 12/12/12 REV R-1
 SCALE NTS

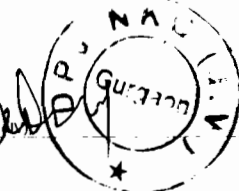
APPROVED: EE(PMU) CE/WBP
 PREPARED BY: CEG

PROJECT:-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK

CONSULTING ENGINEERS GROUP LTD.
 E-12, Moji Colony, Malviya Nagar Jaipur-17
 Tel: +91-141-2520899, 2520556
 Fax: 2521348, e-mail: ceg@egindia.com

CEG

Chief Engineer
 World Bank
 Chief Engineer
 World Bank
 Chief Engineer
 World Bank



Chief Engineer,
Ward Bank Project, Odisha
Employer

PROJECT :-
ODISHA STATE ROAD PROJECT
UNDER WORKD BANK ASSISTANCE

CLIENT :-
WORKS DEPARTMENT
GOVT. OF ODISHA

CEG
CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Maivija Nagar Jaipur-17
Tel: +91-141-2520899, 2520556
Fax: 2521348, e-mail: ceg@ceindia.com

SCHEDULE OF RPMS

DRG NO.	OSRP/CEG/RPM/01	DATE	REV	RI	APPROVAL ID
SHEET NO.	172	DATE	REV	RI	E.E., PMU
SCALE					C.E., WBP

SCHEDULE OF RPMS AT BUILTUP AREAS

Sl No	Chainage	From	To	Length
1	48	100.00	49,200.00	100.00
2	50	100.00	52,000.00	2,000.00
3	53	200.00	54,000.00	800.00
4	55	100.00	55,300.00	100.00
5	55	300.00	55,550.00	250.00
6	56	600.00	56,850.00	250.00
7	57	200.00	57,400.00	200.00
8	58	050.00	58,450.00	400.00
9	62	950.00	63,200.00	250.00
10	65	400.00	65,900.00	500.00
11	69	400.00	69,650.00	400.00
12	72	050.00	72,450.00	400.00
13	84	950.00	85,550.00	600.00
14	84	750.00	85,000.00	325.00
15	85	000.00	85,400.00	200.00
16	89	800.00	100,100.00	150.00
17	100	100.00	101,400.00	1,300.00
18	101	400.00	101,750.00	350.00
19	101	750.00	103,000.00	250.00
20	104	000.00	104,200.00	100.00
21	104	500.00	104,700.00	100.00
22	104	500.00	105,100.00	150.00
TOTAL LENGTH				48370.00

SCHEDULE OF RPPMS ALONG SHARP CURVES TWO SIDES

Sl No	LOCATIONS	Length	Sl No	LOCATIONS	Length
1	53300	170	7	85850	210
2	50770	150	8	87010	190
3	56500	150	9	89610	200
4	62975	150	10	91025	250
5	72375	150	11	91500	170
6	84410	110	12	98510	220

SCHEDULE OF RPPMS AT MAJOR JUNCTIONS

Sl no	Chainage	Type of Junction	Direction	Nos.
1	69+700	T - Jn	Right	4 Sides
2	71+500	Y - Jn	Right	4 Sides

SCHEDULE OF RPPMS

Sl. No.	Chainage	Type-A	Type-B
1	55340	L	Left
2	55480	L	Right
3	56727	R	Right
4	56950	R	Right
5	58250	R	Right
6	62980	L	Right
7	64120	L	Left
8	95150	L	Right
9	100128	L	Right
10	100766	R	Right
11	100830	L	Left
12	101000	L	Left
13	101195	L	Left
14	101800	R	Left
15	101925	R	Left
16	63073	Left	Left
17	65290	Left	Left
18	66120	Right	Right
19	67820	Right	Right
20	72480	Right	Right
21	72492	Left	Left
22	75196	Right	Right
23	76260	Left	Left
24	76380	Right	Right
25	77300	Right	Right
26	77305	Left	Left
27	77825	Right	Right
28	78438	Right	Right
29	78802	Right	Right
30	79000	Left	Left
31	79565	Right	Right
32	80195	Right	Right
33	80650	Left	Left
34	80655	Right	Right
35	81730	Right	Right
36	82750	Right	Right
37	91485	Right	Right
38	101720	Left	Left
39	101930	Left	Left
40	102420	Right	Right
41	102725	Right	Right
42	103525	Left	Left
43	104300	Right	Right
44	104660	Left	Left

AT T-JUNCTION TYPE-A

Sl. No.	Chainage	Class
1	55340	L
2	55480	L
3	56727	R
4	56950	R
5	58250	R
6	62980	L
7	64120	L
8	95150	L
9	100128	L
10	100766	R
11	100830	L
12	101000	L
13	101195	L
14	101800	R
15	101925	R

AT 4-LEGGED TYPE-B

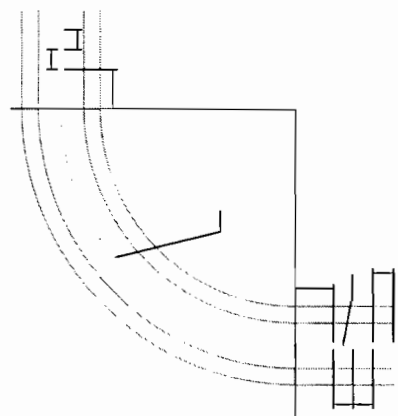
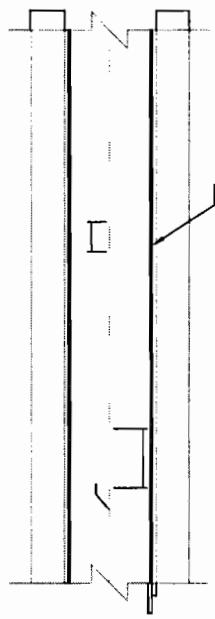
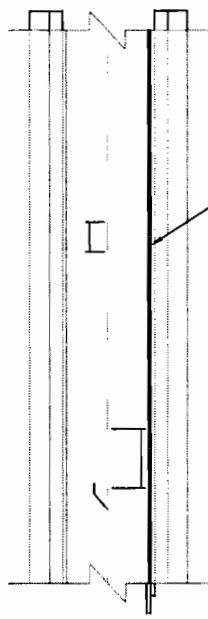
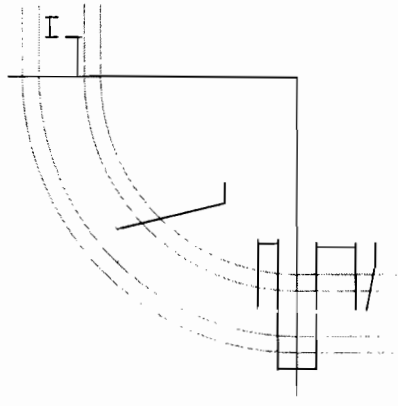
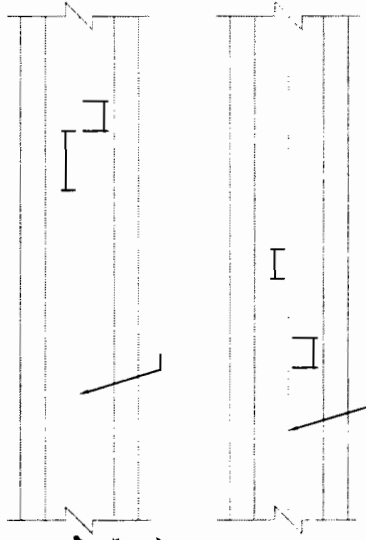
Sl. No.	Chainage
1	49044
2	49044
3	51956
4	70397
5	72798
6	74218
7	79885
8	85912
9	89115
10	93854
11	94200
12	94700
13	97485

AT TYPE -A Y-JUNCTIONS

Sl. No.	Chainage	Direction
1	49126	Left
2	63950	Left
3	64420	Left
4	64660	Right
5	64770	Right
6	72258	Right
7	85192	Right
8	85225	Left
9	100560	Right
10	101185	Right

AT TYPE -B Y-JUNCTIONS

Sl. No.	Chainage	Direction
1	49020	Right
2	50848	Right
3	50857	Left
4	51287	Right
5	51438	Right
6	51764	Right
7	53587	Right
8	57282	Left
9	61000	Left
10	62160	Left
11	62607	Left
12	66097	Right
13	68445	Right
14	68770	Right
15	69505	Left
16	71980	Right
17	74260	Right
18	74558	Left
19	79530	Left
20	81920	Right
21	83357	Right
22	84125	Left
23	87695	Left
24	88410	Left
25	88410	Right
26	89850	Left
27	89852	Right
28	91395	Right
29	93300	Left
30	93300	Right
31	96480	Right
32	97588	Right
33	103000	Left
34	105445	Left



NOTES

1. EDGE LINE MARKINGS SHOULD NOT BE CARRIED ACROSS THE MOUTHS OF SIDE ROADS
2. CENTRE LINE & EDGE MARK SHALL END AT THE TOP LINE & SHALL NOT BE CONTINUED
3. ROAD MARKING SHOULD BE DONE WITH THERMOPLASTIC PAINT CONFORMING TO CL. 803.4 OF M.O.R.T. & H SPECIFICATIONS
4. DETAILS OF ROAD MARKING ARE AS PER IRC: 35-1987, CODE OF PRACTICE FOR ROAD MARKINGS

DRG NO.	DATE	REV	DESIGNED BY	DRAWN BY	REVISED BY	APPROVED (D)
SH. NO.	29	12/12/12	R-1	CEG	CEG	EE(PMU)
SCALE	NTS					

STANDARD DRAWINGS
TYPICAL ROAD MARKING DETAILS
(SHEET 1 OF 2)

PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CEG
ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegindia.com

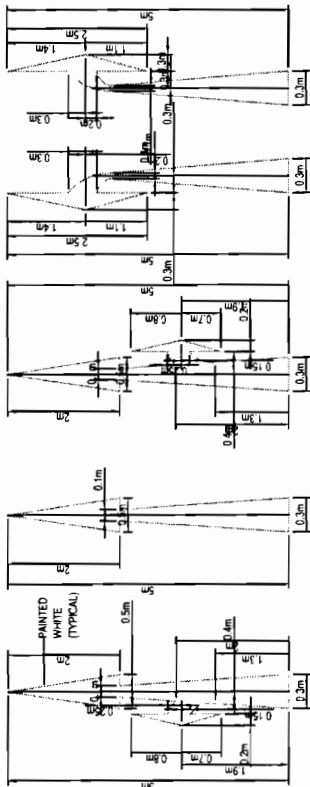
DPJ-NKC
Contractor

Chief Engineer
World Bank Project Engineer,
On the E.I.C. (Civil), Odisha,
Bhubaneswar
Employer



Chief Engineer,
World Bank Project,
Odisha, India
Employer
Rhubaneswar

DIRECTIONAL ARROWS



DIAGONAL MARKINGS

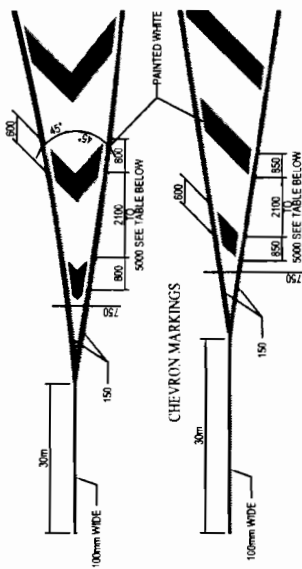


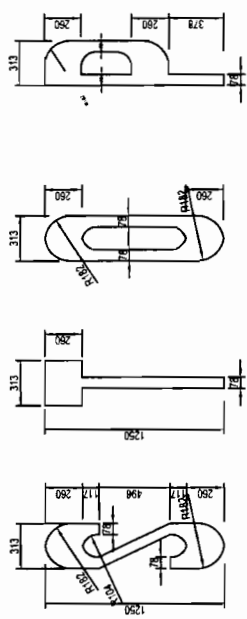
TABLE - SPACING BETWEEN DIAGONAL CHEVRONS

TOTAL LENGTH OF MARKING (m)	SPEED (km/h)	SPEED (m/s)
<6	2000	5.6
6 TO 22	3000	8.3
22 TO 40	5000	13.9
>40	6000	16.7

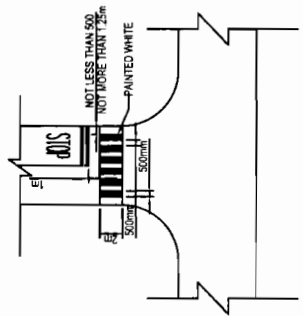
SCHEDULE OF MAJOR JUNCTIONS

Sl no	Chamage	Type of Junction	Direction
1	69+700	T - Jn	Right
2	71+500	Y - Jn	Right

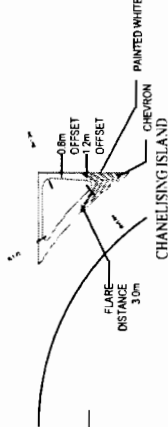
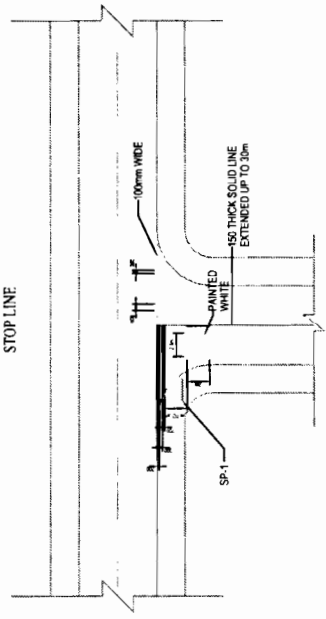
SIZE OF LETTERS



PEDESTRIAN CROSSING



STOP LINE



NOTE:

1. ALL LENGTHS AND SPACINGS IN THE TABLE ARE MEASURED PARALLEL TO ROAD CENTRE LINE.
2. FIRST DIAGONAL OR CHEVRON IS TO BE SO LOCATED THAT ITS LENGTH IS AT LEAST EQUAL TO ITS WIDTH.
3. WIDTH OF ALL DIAGONALS/CHEVRONS MEASURED AT RIGHT ANGLES TO THE DIAGONALS OR CHEVRONS IS 600mm.
4. FOR CENTERLINE AND EDGE LINE MARKING AT BUS BAY LOCATION REFER DRAWING NO. OSR/CEG/BB/01.
5. ROAD MARKING SHOULD BE DONE WITH THERMOPLASTIC PAINT CONFORMING TO CL 863.4 OF M.O.R.T & H SPECIFICATIONS.
6. DETAILS OF MARKING AT INTERSECTIONS ARE AS PER M.O.R.T & H TYPE DESIGNS FOR INTERSECTIONS ON NATIONAL HIGHWAYS.

C D A-A

FOR SCHEDULE OF PEDESTRIAN XING REFER DRAWING NO: OSR/CEG/ISCH-P.Xing

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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**STANDARD DRAWINGS
TYPICAL ROAD MARKING & CHEVRON MARKING DETAILS
(SHEET 2 OF 2)**

DRG NO.	OSR/CEG/ISCH-P/002	DESIGNED BY	DRAWN BY	REV. / R	APPROVED
SH. NO.	30	DATE	12/12/12	REV	R-1
SCALE			NTS	CEG	CEG
				PREPARED BY	EE(PMU)
					CE/WBP

SCHEDULE OF PEDESTRIAN CROSSING

SL.NO.	CHAINAGE	DESCRIPTION
1	49252.5	BB RIGHT SCHOOL
2	50365	BB LEFT SCHOOL
3	50452.5	BB RIGHT SCHOOL
4	53852.5	BB LEFT SCHOOL
5	55252.5	BB RIGHT SCHOOL
6	57347.5	BB LEFT SCHOOL
7	58421	BB RIGHT SCHOOL
8	58443	BB LEFT SCHOOL
9	58452.5	BB RIGHT SCHOOL
10	61652.5	BB LEFT SCHOOL
11	61872.5	BB RIGHT SCHOOL
12	62902.5	BB LEFT SCHOOL
13	63008.5	BB RIGHT SCHOOL
14	63252.5	BB LEFT SCHOOL
15	65352.5	BB RIGHT SCHOOL
16	71452.5	BB LEFT SCHOOL
17	72254	BB RIGHT SCHOOL
18	74913	BB LEFT SCHOOL
19	77552.5	BB RIGHT SCHOOL
20	77952.5	BB LEFT SCHOOL
21	79802.5	BB RIGHT SCHOOL
22	84872.5	BB LEFT SCHOOL
23	85602.5	BB RIGHT SCHOOL
24	94882.5	BB LEFT SCHOOL
25	95452.5	BB RIGHT SCHOOL
26	95950	BB LEFT SCHOOL
27	102718.5	BB RIGHT SCHOOL
28	102772.5	BB LEFT SCHOOL
29	103072.5	BB RIGHT SCHOOL
30	104306.5	BB LEFT SCHOOL
31	104472.5	BB RIGHT SCHOOL



DPJ - NKC (N.K.C.)
Contractor

Chief Engineer,
World Bank Project, Odisha
the E.I.C.(Civil), Odisha Employer
Bhubaneswar

[Handwritten Signature]

<p>PROJECT :- ODISHA STATE ROAD PROJECT UNDER WORKD BANK ASSISTANCE</p>	<p>CLIENT :- WORKS DEPARTMENT GOVT. OF ODISHA</p>	<p>SCHEDULE OF PEDESTRIAN CROSSING</p>			
<p>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</p>					
<p>DRG NO. OSR/PC/EG/DC-57/KM/SCH-P.X/ing</p>	<p>DATE: 12/12/12</p>	<p>DESIGNED BY: CEG</p>	<p>DRAWN BY: CEG</p>	<p>REVISION: I</p>	<p>APPROVED (D): C.E., WBP</p>
<p>SIT. NO.</p>	<p>SCALE</p>	<p>NTS</p>			

SP-1



STOP

SP-2



COMPULSORY
KEEP LEFT

SP-2(a)



RESTRICTION ENDS

SP-3



GIVE WAY

SP-4(a)



SPEED LIMIT

SP-4(b)



SPEED LIMIT

SP-4(c)



SPEED LIMIT

SP-4(d)



SPEED LIMIT

SP-4(e)



SPEED LIMIT

SP-5(a)



OVERTAKING
PROHIBITED

SP-5(b)



ONE WAY

SP-5(c)



ONE WAY

SP-6



SCHOOL ZONE

SP-7



COMPULSORY
SOUND HORN

SP-8



CROSS ROAD

SP-9(a)



RIGHT SIDE ROAD

SP-9(b)



LEFT SIDE ROAD

SP-10(a)



RIGHT HAND
CURVE

SP-10(b)



LEFT HAND
CURVE

SP-10(c)



RIGHT HAIR PIN
BEND

SP-10(d)



LEFT HAIR PIN
BEND

SP-10(e)



RIGHT REVERSE
BEND

SP-10(f)



LEFT REVERSE
BEND

SP-11



T-INTERSECTION

SP-12



PEDESTRIAN
CROSSING

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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



STANDARD DRAWINGS

TYPICAL ROAD SIGNS (SHEET 1 OF 4)

DRG NO.	DATE	REV	DESIGNED BY	DRAWN (B)	REV (R)	APPROVED
SH. NO.	31	12/12/12	CEG	CEG	CEG	EE(PMU)
SCALE	NTS			CEG	CEG	EE(PMU)

SP-13(a)



STAGGERED INTERSECTION

SP-13(b)



STAGGERED INTERSECTION

SP-13(c)



MAJOR ROAD AHEAD

SP-13(d)



MAJOR ROAD AHEAD

SP-14(a)



Y-INTERSECTION

SP-14(b)



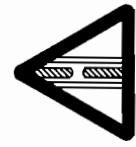
Y-INTERSECTION

SP-14(c)



Y-INTERSECTION

SP-14(d)



GAP IN MEDIAN

SP-14(e)



OVERHEAD CABLE

SP-15(a)



NARROW BRIDGE

SP-15(b)



DUAL C' WAY STARTS

SP-15(c)



DUAL C' WAY ENDS

SP-15(d)



SERIES OF BENDS

SP-16(a)



HUMP OR ROUGH ROAD

SP-16(b)



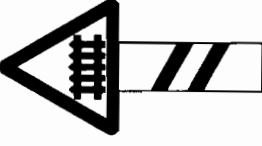
BARRIER AHEAD

SP-17



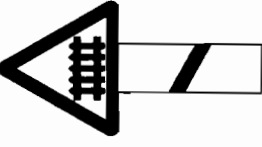
STATE ROUTE MARKER SIGN

SP-18(a)



GUARDED RAILWAY CROSSING AT 200m

SP-18(b)



GUARDED RAILWAY CROSSING AT 50-100m

SP-22



PETROL BUNK

SP-23



HOSPITAL

SP-24



PUBLIC TELEPHONE

SP-26



EATING PLACE

SP-25



DISPENSARY

LEGEND

○	WHITE SHEET
■	BLACK SHEET
■	RED SHEET
■	BLUE SHEET

- NOTES:
1. DETAILS OF ROAD SIGNS ARE AS PER IS: 1724/1994
 2. DETAILS OF RAILWAY CROSSING SIGNS ARE AS PER IS: 1725/1994
 3. ALL MANDATORY AND CAUTIONARY SIGNS SHOULD BE HIGH INTENSITY WIDE ANGLE MIRROR FINISH (H.W.A.M.F.) CONFORMING TO IS: 1724/1994 SPECIFICATION
 4. ALL MANDATORY SIGNS SHOULD CONFORM TO IS: 1724/1994 SPECIFICATION
 5. ALL CAUTIONARY SIGNS SHOULD CONFORM TO IS: 1725/1994 SPECIFICATION

STANDARD DRAWINGS

TYPICAL ROAD SIGNS (SHEET 2 OF 4)

DIRG NO.	OSR/CEG/RS/02	DESIGNED BY	CEG	CEG	APPROVED
SH. NO.	32	DATE	12/12/12	REV	R-1
SCALE		NTS		CEG	EE(PMU), CE,WBP

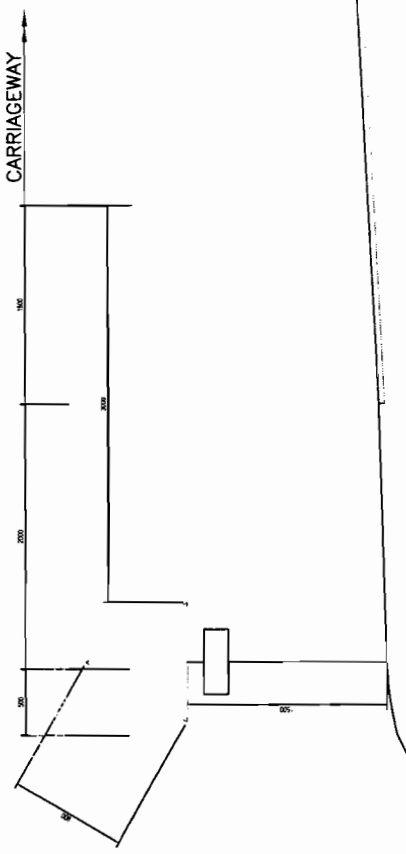
PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

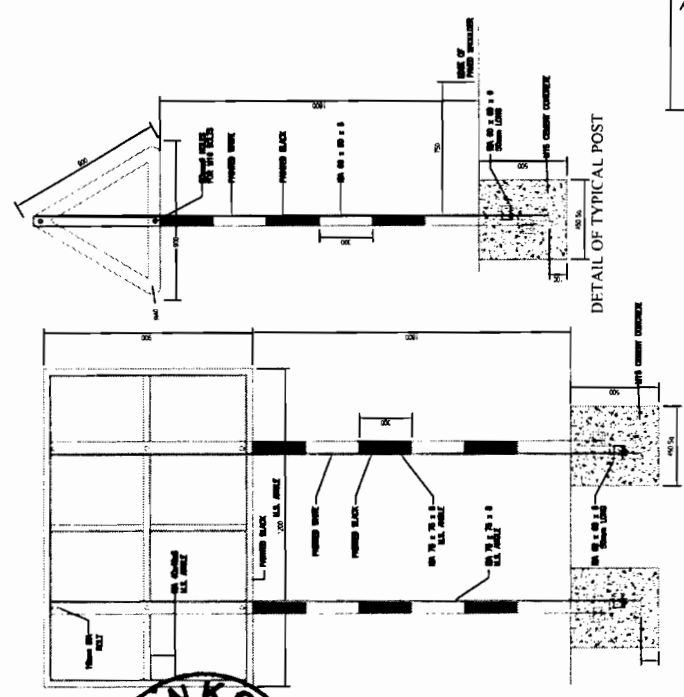
CEG CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegroupindia.com

CEG

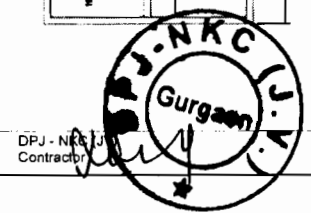
Chief Engineer
World Bank Project
Co the E.I.C. Civil
Employer



MINIMUM CLEARANCE OF SIGNS
IN UNKERBED SECTIONS

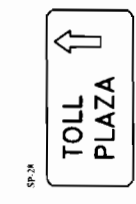
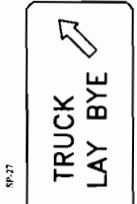
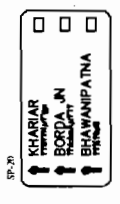
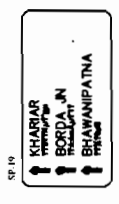
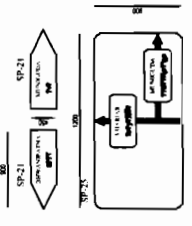


MINIMUM CLEARANCE OF SIGNS
IN KERBED SECTIONS



DPJ - NKC
Contractor

Chief Engineer
World Bank Project
Chief Engineer
World Bank Projects, Odisha,
Employer



NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS INDICATED OTHERWISE.
2. ROAD SIGNS, SIZES OF ARROWS, LETTERS & NUMERALS IS AS PER IRC:87-2001.
3. ALL ROAD SIGNS ARE NORMALLY BE PLACED AT RIGHT ANGLES TO THE LINE OF TRAVEL OF THE APPROACHING TRAFFIC.
4. ALL WARNING SIGNS ARE NORMALLY BE LOCATED AT 120m IN ADVANCE OF THE HAZARD MARKED AGAINST IN NON-URBAN LOCATIONS. IN URBAN LOCATIONS, THE WARNING SIGNS ARE LOCATED AT ABOUT 50m AWAY FROM THE POINT OF HAZARD.
5. ALL ROAD SIGNS ARE RETRO-REFLECTIVE SHEET OF HIGH INTENSITY GRADE WITH ENCAPSULATED LENSES FIXED OVER ALUMINIUM SHEET AS PER MORTH SPECIFICATIONS.
6. ROUTE MARKER SIGN FOR 1M IS AS PER IRC:2-1968.
7. SIGNS WITH AN AREA UP TO 0.9sq. m. SHALL BE MOUNTED ON A SINGLE POST, AND FOR GREATER AREA TWO OR MORE SUPPORTS SHALL BE PROVIDED.
8. POST ANGLES USED TO SUPPORT THE SIGN BOARD SHALL BE PAINTED WITH (2-COATS) APPROVED QUALITY (ANTI-CORROSIVE) ENAMEL PAINT OVER TWO COATS OF GOOD QUALITY PRIMER.

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK

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Fax: 2521348, e-mail: ceg@cegroupindia.com



STANDARD DRAWINGS
TYPICAL ROAD SIGNS (SHEET 3 OF 4)

DRG NO.	DATE	REV	DESIGNED BY	DRAWN (B)	REV R1	APPROVED
SH. NO.	33	12/12/12	R-1	CEG	CEG	EE(PMU)
SCALE	NTS			CEG	EE(PMU)	CE,WBP



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

STANDARD DRAWINGS
TYPICAL ROAD SIGNS (SHEET 4 OF 4)

DRG NO.	OSR/CE/SP/SM	DESIGNED BY	DRAWN (B)	REV/RT	APPROVED
SH. NO.	34	DATE	12/12/12	REV	R-1
SCALE	NTS			CEG	CEG
				PREPARED BY	EE(PMU), CE(WBP)

SP-29

SP-30

SP-31

SP-32

SP-33

SP-34

SP-35

SP-36

SP-37

SP-38

SP-39

SP-40

SP-41

SP-42

SP-43

SP-44

SP-45

SP-46

SP-47

SP-48

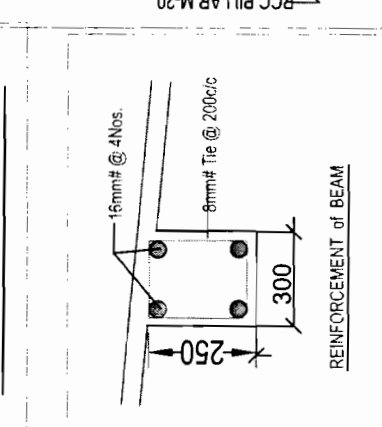
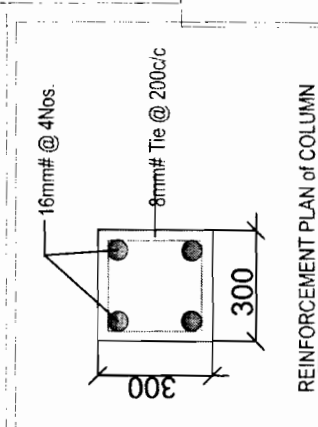
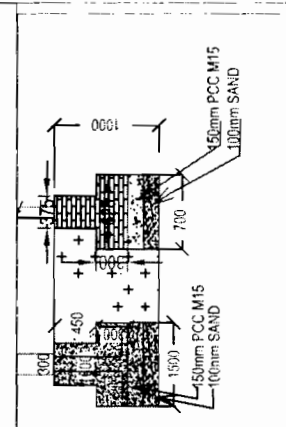
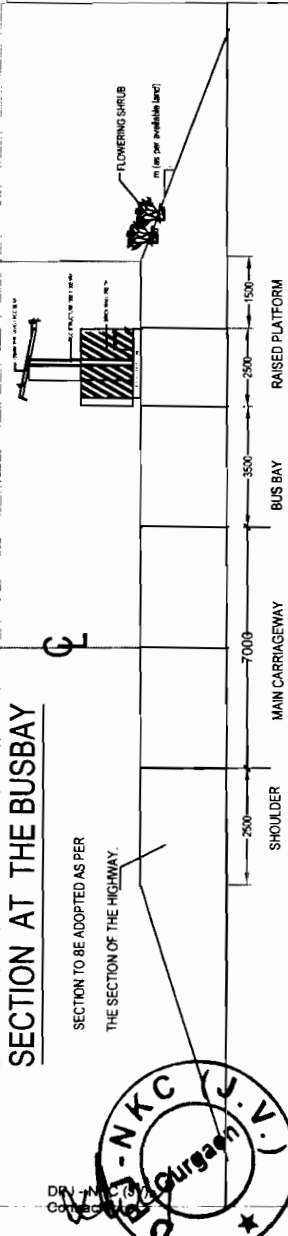
SP-49

SP-50

SP-51

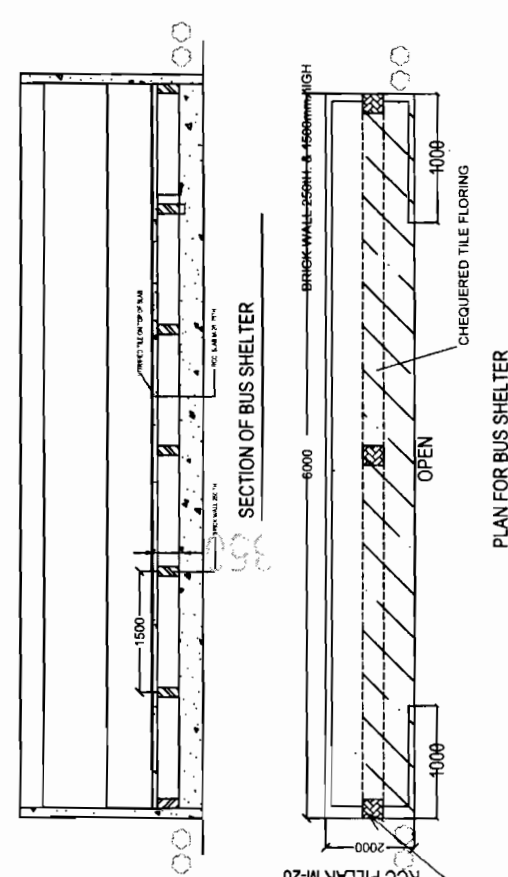
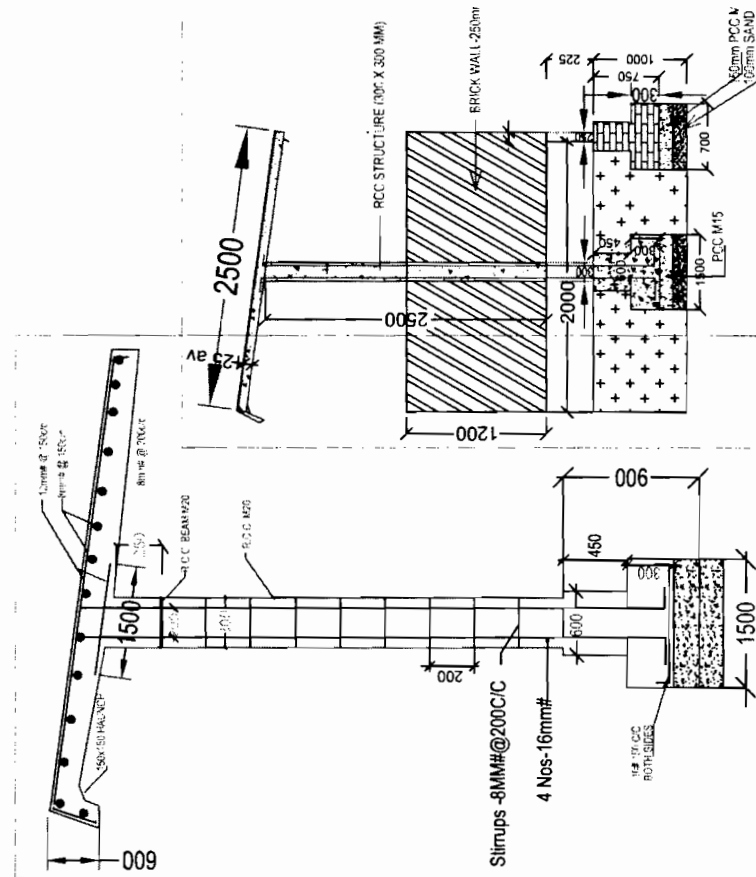
1. DETAILS OF ROAD SIGNS ARE AS PER I.P.C. - 1/2004 & I.C.E. - 1/1995
2. DETAILS OF STATUES OF TRAFFIC SIGNS AS PER I.P.C.
3. ALL MANDATORY AND CAUTIONARY SIGNS SHOULD BE HIGHLY REFLECTIVE WHEN USED IN PROGRESSIVE SETTINGS.
4. ALL INFORMATION SIGNS SHOULD CONFORM TO STANDARDS OF HIGH INTENSITY ENCAPSULATION FOR BETTER REFLECTIVE EFFECTS AS PER CURRENT TECHNICAL SPECIFICATION.

SECTION AT THE BUSBAY



SCHEDULE OF BUS BAYS

Sl. No.	Chainage	side
1	50400	L
2	51850	L
3	54550	R
4	55200	R
5	51250	R
6	51880	R
7	51880	R
8	53800	R
9	54600	R
10	57350	R
11	58400	R
12	61820	R
13	62850	R
14	72710	R
15	74631	R
16	77500	R
17	77900	R
18	84820	R
19	93865	R
20	95400	R
21	103020	R
22	93800	R
23	94830	R
24	101600	R
25	104180	R



PROJECT:-
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CEG
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 E-12, Moji Colony, Malviya Nagar Jaipur-17
 Tel: +91-141-2520899, 2521899, 2520556
 Fax: 2521348, e-mail: ceg@cegroupindia.com

TYPICAL BUS BAY SHEET - 2
(JAGATPUR - CHANDBALI)

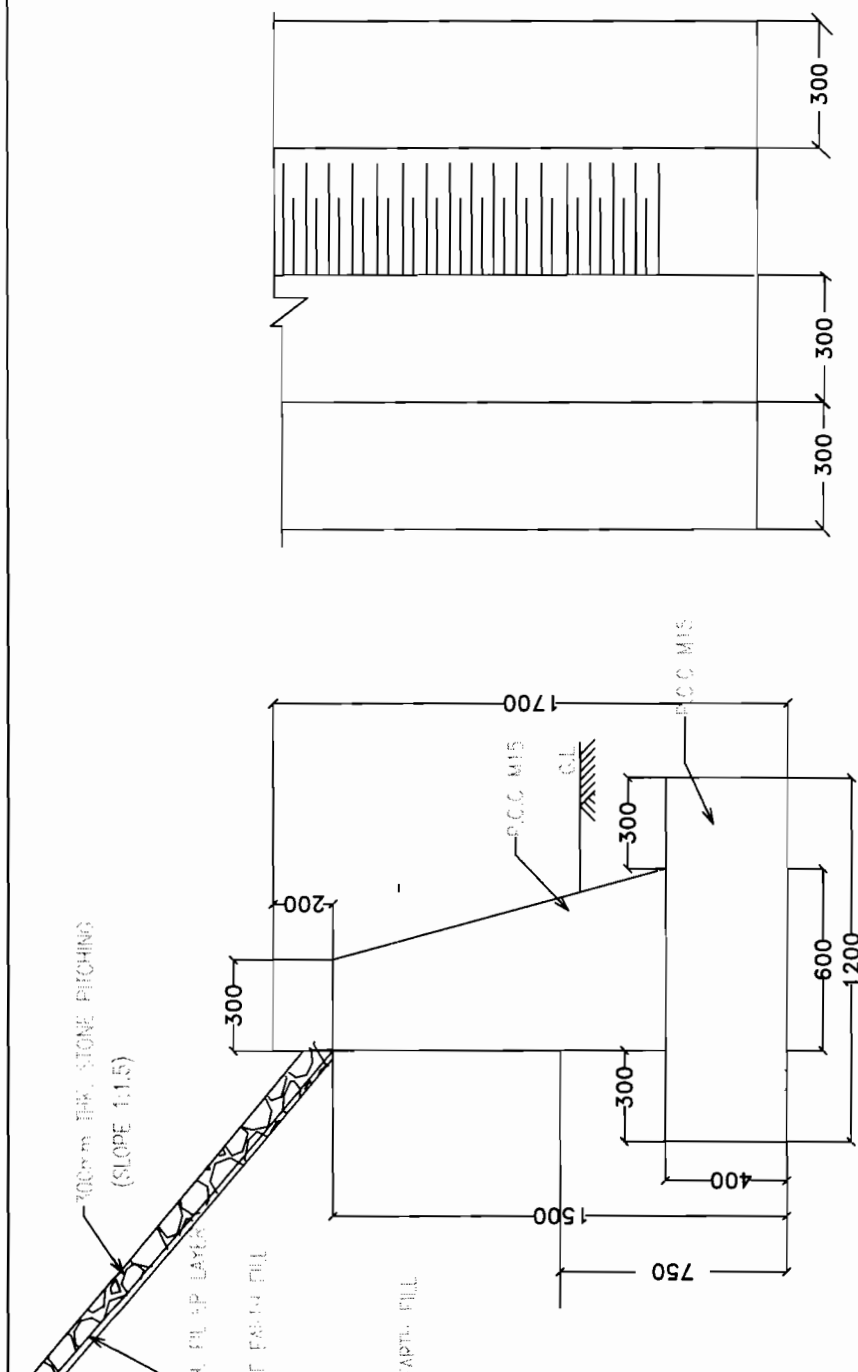
DESIGNED BY: CEG
 CHECKED BY: CEG
 DRAWN BY: CEG
 REVISION: 1
 APPROVED (D): CE/WB

DRG NO. 08/PRICE/08/047
 SH. NO. 36
 DATE
 REV R-1
 SCALE NTS

- NOTE:**
1. THE DETAILS OF BUS BAYS REFER TO THE ORIGINAL DESIGN AND NOT TO THIS DRAWING.
 2. THE DETAILS OF THE BRICK WALLS AND RCC STRUCTURES SHALL BE AS PER THE REVISIONS.
 3. ALL DIMENSIONS SHALL BE IN METERS UNLESS OTHERWISE SPECIFIED.
 4. REQUIRED SLOPE PROTECTION RETAINING WALL SHALL BE ADAPTED AT STAND.
 5. THE REVISIONS NUMBERED IN THE ORDER MUST BE ADHERED TO.
 6. ALL REVISIONS SHALL BE CONFIRMED BY THE NO.

Chief Engineer
 World Bank Projects, Odisha
 (Civil), Orissa
 ph: 0674-2520899

Sl. No.	Items	Change of bed	Location left/right	Length of toe wall in meters
1	Pond	53.374	R	15
2	Pond	54.724	L	25
3	Pond	57.162	L	30
4	Pond	57.8	R	15
5	Pond	57.83	L	15
6	Pond	63.221	R	20
7	Pond	63.381	R	50
8	Pond	63.927	L	20
9	Pond	64.044	L	35
10	Pond	65.932	L	20
11	Pond	66.763	L	25
12	Pond	67.362	R	20
13	Pond	69.57	L	70
14	Pond	72.5	L	30
15	Pond	76.305	R	50
16	Pond	76.4	L	35
17	Pond	77.239	L	25
18	Pond	79.682	L	35
19	Pond	81.879	L	20
20	Pond	82.012	R	15
21	Pond	82.823	R	20
22	Pond	91.351	L	30
23	Pond	91.532	L	50
24	Pond	93.3	L	25
25	Pond	96.113	L	80
26	Pond	97.212	R	200
27	Pond	102.4	L	30
28	Pond	102.65	R	19
29	Pond	102.926	L	45
30	Pond	104.033	L	65
31	Pond	104.485	L	25
32	Pond	104.575	L	80
33	Pond	104.670	L	35
34	Pond	104.668	R	45
35	Pond	104.776	L	100
36	Pond	105.120	L	40



PLAN OF TOE WALL FOR WATER BODY

TOE WALL FOR POND
(CROSS SECTION)

TO MINIMISE IMPACT ON STORAGE CAPACITY & WATER SPREAD OF PONDS, WATER BODY, NALA BED, TOE WALLS TO BE ERECTED SUCH THAT IT PREVENTS ACCIDENTAL FALL INTO THE DEPRESSION AND WASHING OF VEHICLES/BATHING/WASHING ON THE ROAD SIDE

DESIGNED BY		DRAWN BY		PREPARED BY	
CEG		CEG		EE, PMU	
DATE 12/12/12		REV R-1		CEG, WBP	
SCALE		NTS			

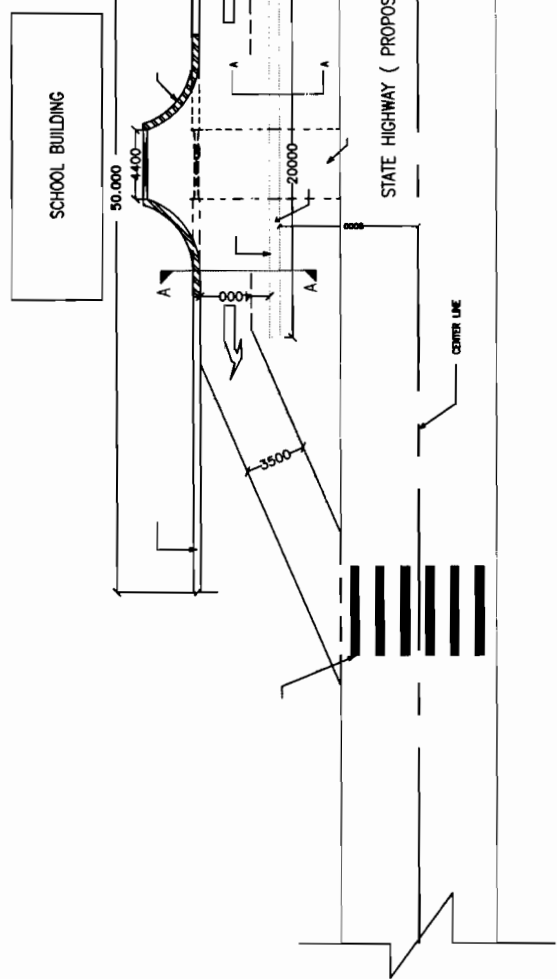
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
E-12, Moji Colony, Malviya Nagar, Jaipur-17
Tel: +91-141-2520899, 2521899, 2520556
Fax: 2521348, e-mail: ceg@cegindia.com



DPJ
 Controlling
 No. 100
 (J.V.)
 Date 12/12/12

Item	Chainage	Location L/R	Affected Length in mtrs
School	50.36	Right	10
School, Kendrapara	51.736	Right	90
School	58.407	Left	29
School	62.987	Right	40
School	102.7	Left	36
School	102.745	Left	58
Hospital	2.3	Left	78
Hospital	26.695	Left	15
Temple	6.120	Left	31
Temple	50.076	Left	19
Temple	104.061	Right	



- 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

METAL BARRICADES FOR EDUCATIONAL AND MEDICAL INSTITUTIONAL APPROACHES AS ENVIRONMENTAL MITIGATION PLAN.
 (JAGATPUR - CHANDBALI)

DRG NO. OSRP/CEG/SH/ENV/05	DESIGNED BY DRAWN BY	PREPARED BY APPROVED
SH. NO. DATE 12/12/12 REV R-1	CEG	EE, PMU
SCALE	NTS	CE, WBP

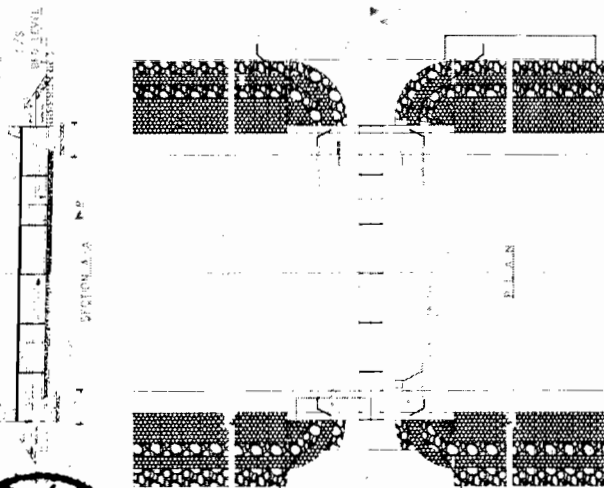
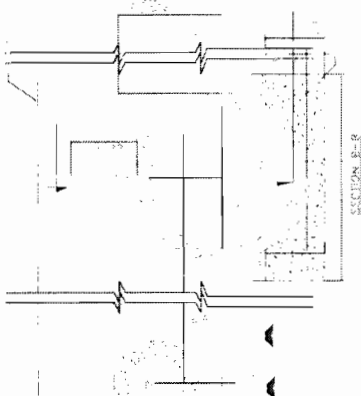
PROJECT:-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

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

CEG

Chief Engineer
 World Bank Projects
 On the E.L.C. (Civil),
 Chandrapur

REPTILE UNDER PASS



SCHEDULE

Sl. No	Proposed Chainage
1	51+240
2	60+820
3	63+358
4	64+783
5	67+680
6	70+040
7	71+243
8	74+720
9	76+600
10	78+300
11	80+880
12	83+240
13	86+640
14	92+200
15	94+140
16	96+120
17	97+778
18	102+940

REPTILE UNDER PASS+PIPE CULVERT (GEN)

Rev No: DATE: DEC, 2012

DRG.NO.: OSR/PM/14

SCALE:

MTS

PREPARED BY

EE/PMU

APPROVED

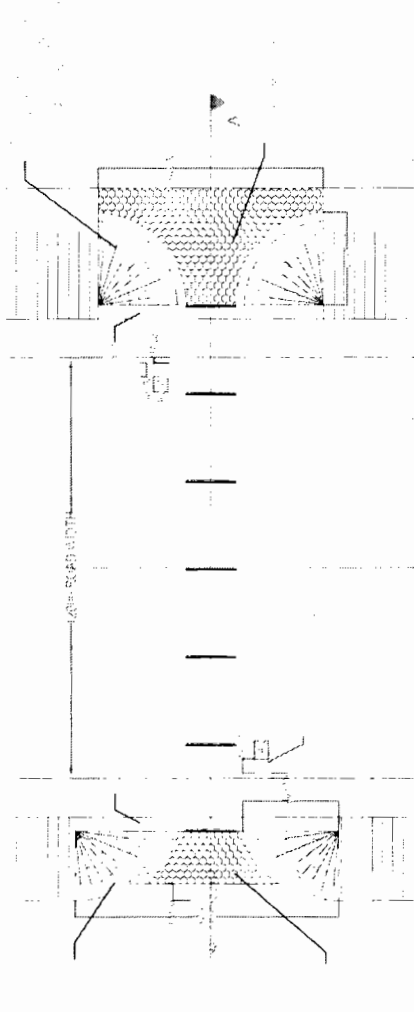
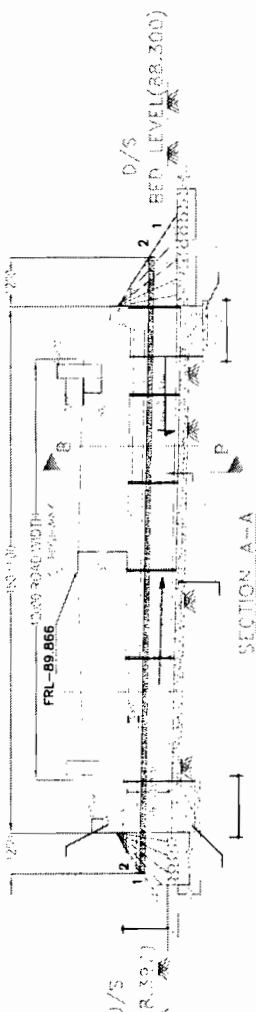
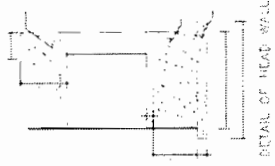
CE/WRP

OSISHA STATE ROADS PROJECT
Works Department, Govt. of Orissa

Contractor
Gurgaon

Chief Engineer
World Bank Project
Chief Engineer
Employer

NOTES:



SCHEDULE FOR UTILITY DUCTS

Sl No.	Design Chainage	Now proposed	Type of Structure
1	49400	1x1.2	Pipe
2	49800	1x1.2	Pipe
3	50085	1x1.0	Pipe
4	50850	1x1.0	Pipe
5	51950	1x1.2	Pipe
6	52950	1x1.2	Pipe
7	55080	1x1.0	Pipe
8	55970	1x1.0	Pipe
9	56860	1x1.0	Pipe
10	57850	1x1.0	Pipe
11	62983	2x1.0	Pipe
12	65280	1x1.2	Pipe
13	65900	1x1.0	Pipe
14	69385	1x1.2	Pipe
15	72456	2x1.0	Pipe
16	77940	2x1.2	Pipe
17	84915	1x1.0	Pipe
18	85826	1x1.0	Pipe
19	94600	1x1.0	Pipe
20	95460	1x1.0	Pipe
21	105375	2x1.0	Pipe
22	104300	1x1.0	Pipe
23	102500	2x1.0	Pipe

Contractor: **P. K. GARGAON (S.V.V.)**

Chief Engineer, World Bank Projects, Odisha, E.I.C. (Civil), Odisha, Raghunagar

UTILITY DUCT+PIPE CULVERT (GEN.)

OSISHA STATE ROADS PROJECT
Works Department, Govt. of Orissa

Rev No.: DATE: DEC, 2012

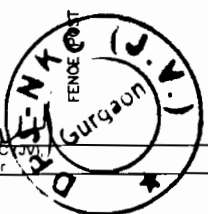
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SCALE: NTS

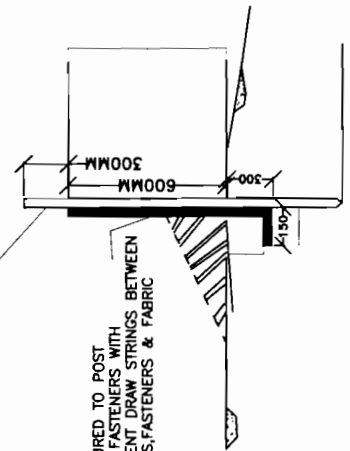
PREPARED BY: EE, PMU

APPROVED: CE, WBP

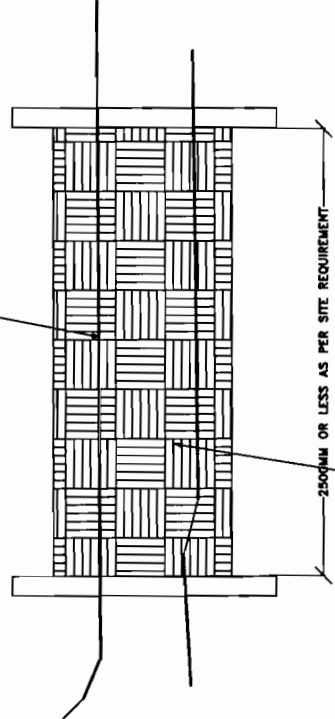
Contractor



FENCE POST 75MM DIA @ 2500MM C/C



DRAW STRING RUNNING THROUGH FABRIC



SHEET MADE OF COCONUT FIBER WITH HDPE NETS OF WEIGHT > 600GM/SQM

SILT FENCE SEDIMENT BARRIER

NO SCALE

PROJECT:-

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

TYPICAL STANDARD DRAWING FOR SILT FENCE

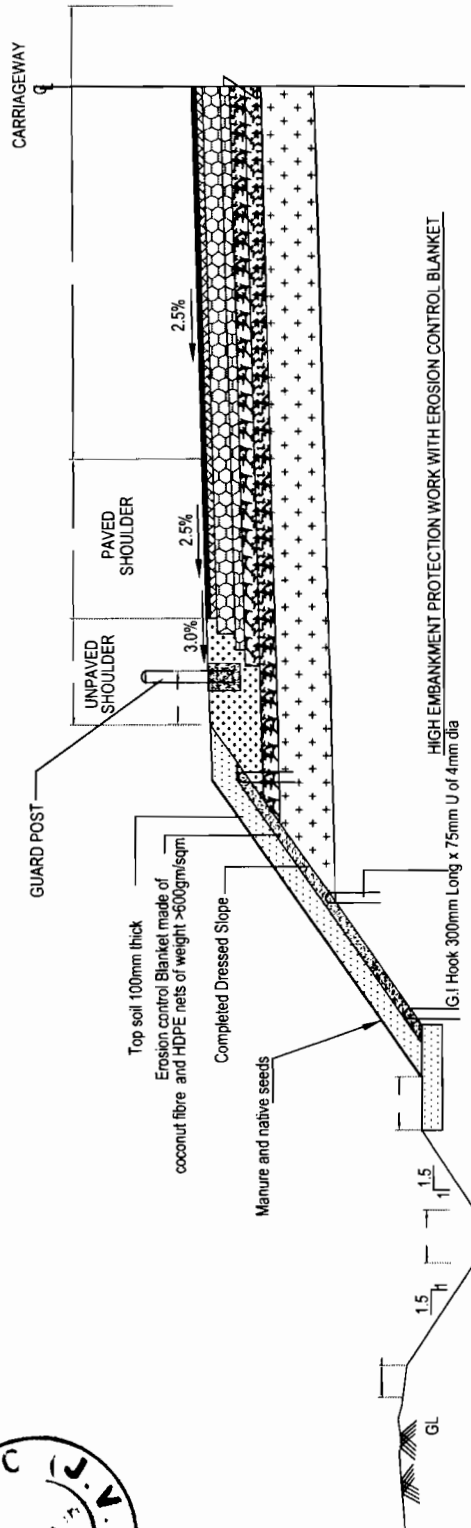
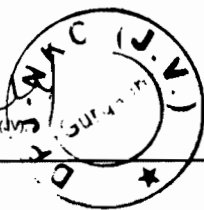
(DUJHURIA - CHANDBALI)

DRG NO.	OSRP/CEG/SH/ENV/03	DESIGNED BY	CEG	CEG	PREPARED BY	APPROVED
SH. NO.		DATE	12/12/12	REV	R-1	EE, PMU
SCALE		NTS				CE, WBP

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



Chief Engineer
World Bank
the Education
Employer



SCHEDULE OF EROSION BLANKET

Sl. No.	Chainage		Length	Sides
	From	To		
1	69800	71000	1200	BOTH
2	75200	77000	1800	BOTH

EROSION CONTROL BLANKET AT EMBANKMENT

DRG NO :

DATE : DEC. 2012

Rev No.:

OSISHA STATE ROADS PROJECT
Works Department, Govt. of Orissa

OSR/PIENV-04

SCALE:

NTS

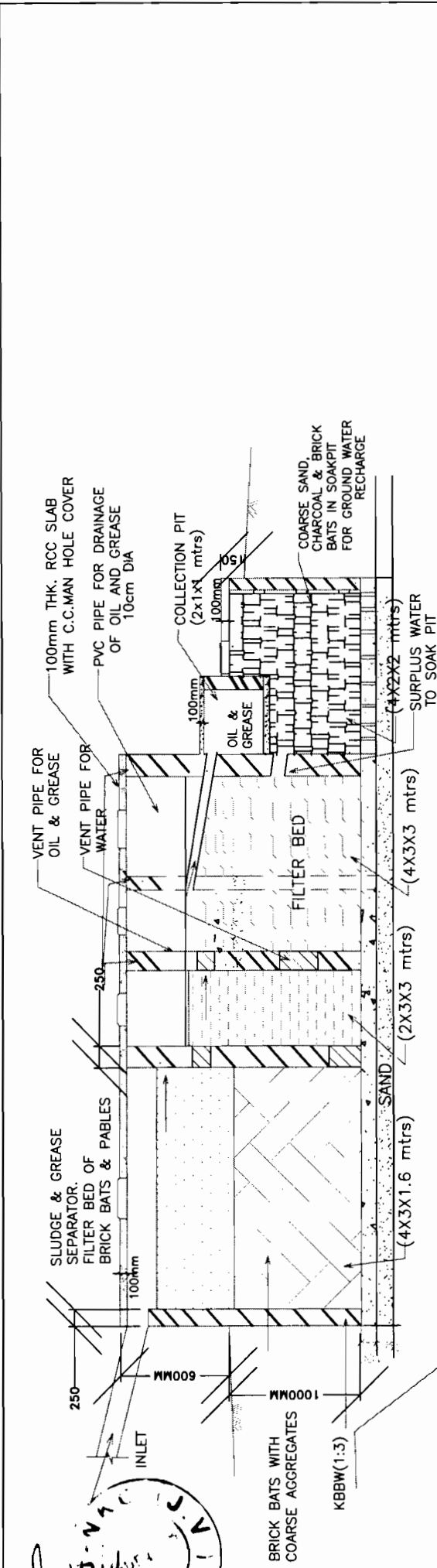
PREPARED BY

EE, PMU

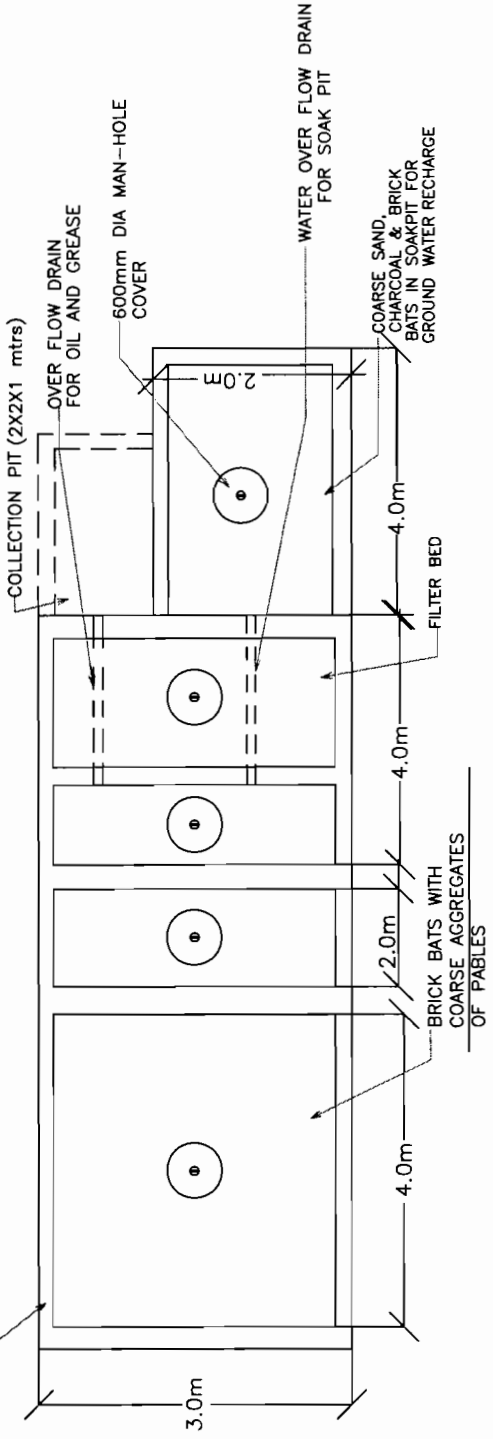
APPROVED

CE, WBP

Chief Engineer
Works Department, Govt. of Orissa
2-15-12
2012



SECTION OF SOAK PIT



PLAN OF SOAK PIT

NOTE: PROVIDE AT CONTRACTOR'S PLANT SITE.

OIL & GREASE TRAP FOR PLANT SITE

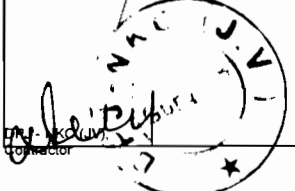
PROJECT:-
 ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
 E-12, Moj Colony, Malviya Nagar, Jaipur-17
 Tel: +91-141-2520899, 2521899, 2520556
 Fax: 2521348, e-mail: ceg@cegroupindia.com



(DUHURIA - CHANDBALI)

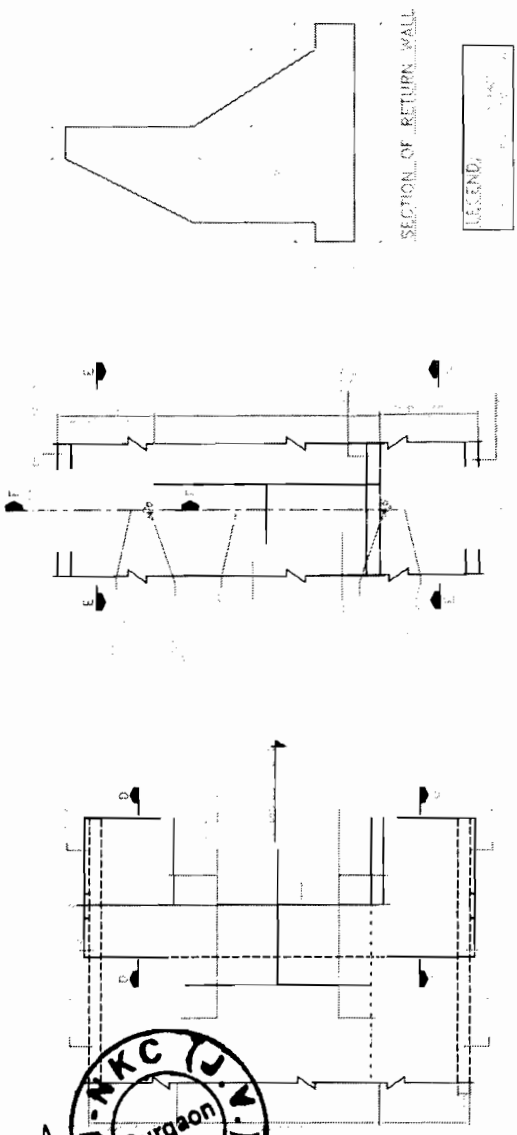
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SH. NO.		DATE	12/12/12	REV	R-1
SCALE	NTS				



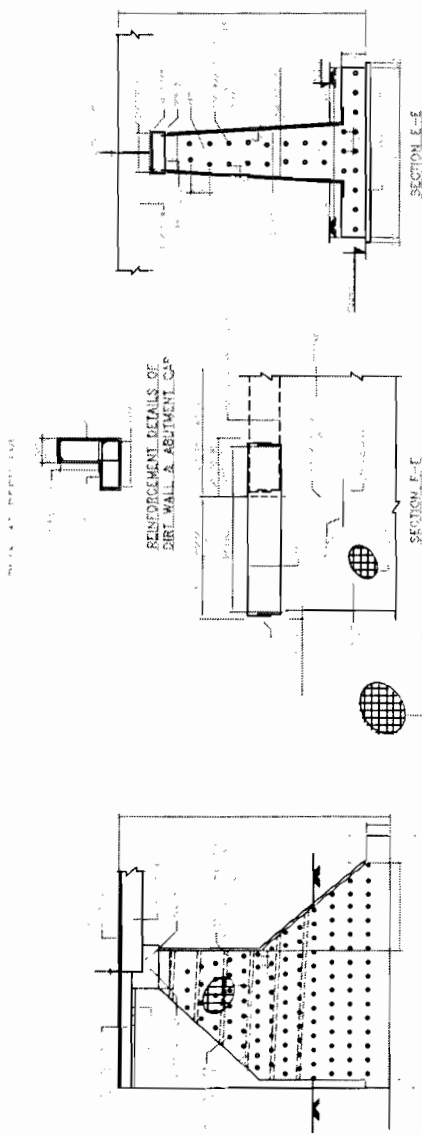
Chief Engineer
 World Bank Projects Deptt.
 G/O the E.I.C.O. Employer
 Bhubaneswar

NOTES:

WIDENING OF EXISTING BRIDGES			
Sl. No	Location/Chainage	Design Span/Chainage	Existing Span/Arrangement
1	56/350	56/491	3 x 8.50
2	78/800	78/642	4 x 7.0
3	98/500	99/195	1 x 6.85



WIDENING METHODOLOGY FOR ABUTMENT

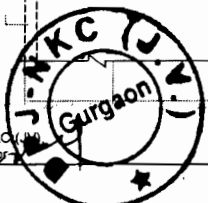


FOR PIERS

FOR ABUTMENT/PIER PILES

FOR APPROACH SLAB

DRJ - NKD



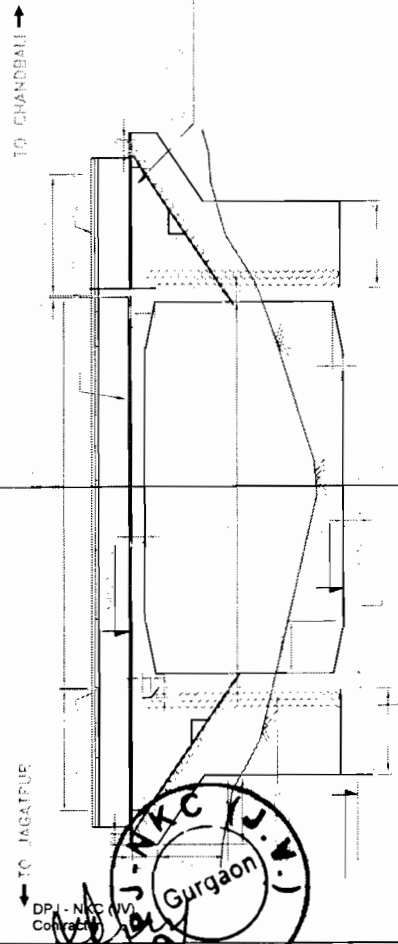
Chief Engineer
World Bank Project
Odisha
Chief Engineer
World Bank Projects, Odisha
Employer

CONSULTING ENGINEERS GROUP LTD.
E-12, 1st Colony, Bhubaneswar, Odisha
Tel: 251-141, 251-0289, 251-1800, 251-0550
Fax: 251-148, E-mail: ceg@cegroupindia.com

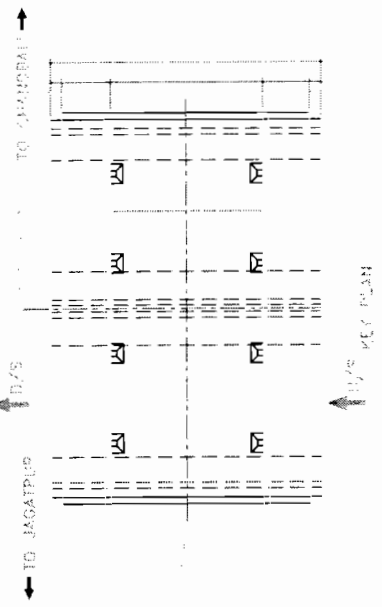
ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

DETAILS FOR WIDENING
METHODOLOGY OF MINOR BRIDGES
DURHURIA - CHANDBALI-57KM

DATE	ISSUE NO.	REVISION	BY	CHKD	DATE



SECTION A A

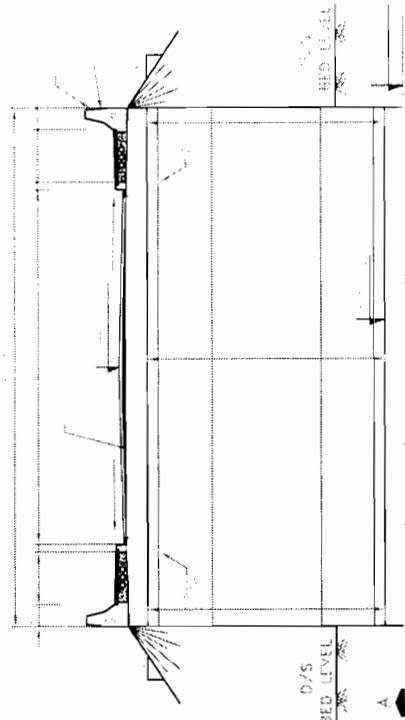


KEY PLAN

NOTES

REFERENCE DRAWINGS

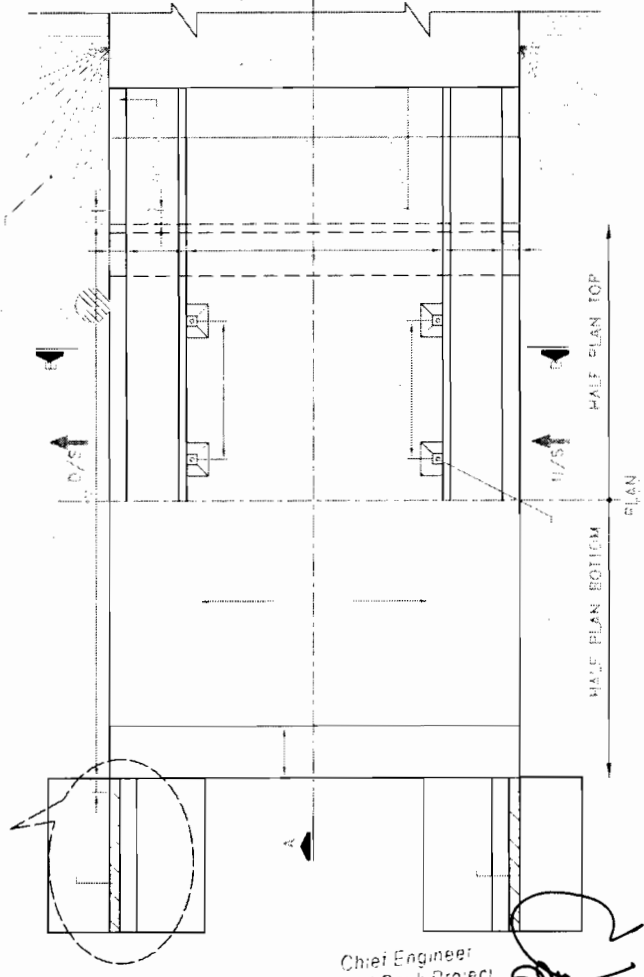
BOX LEVELS DETAILS



SECTION BBS

HYDROLOGICAL DATA

NOTE:



PLAN

LOCATION PLAN OF BRIDGE AT JAGATPUR BRIDGE NO.3/200

BT-1

EL. 14.00	EL. 14.00
0.40	0.40
1.00	1.00
3.00	3.00
4.00	4.00
6.00	6.00
7.00	7.00
8.00	8.00
10.00	10.00
11.00	11.00
12.00	12.00
13.00	13.00
14.00	14.00

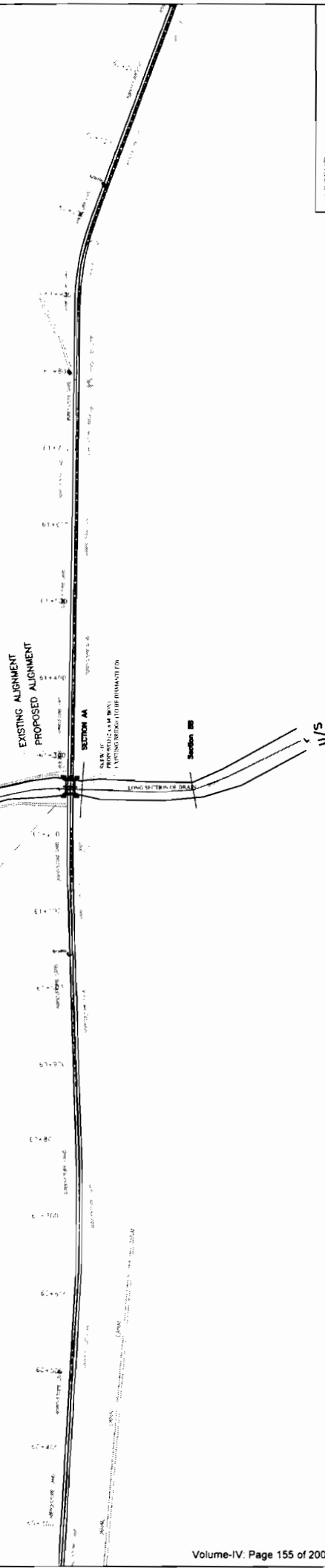
	CONSULTING ENGINEERS GROUP LTD. E-13, 1st Colony, Malviya Nagar, Jaipur-17 Tel: +91-141-2520886, 2521889, 2520558 Fax: 2521348, e-mail: ceg@cegindia.com	PROJECT ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	GENERAL ARRANGEMENT DRAWING BRIDGE AT PROPOSED KM.61 +261	DRAWING NO.: CEG/PC/PC-370/00/001/01/01 DATE: DEC. 2011 DRAWN BY: CS CHECKED BY: CS APPROVED BY: CS DATE: 12.08.11
	Chief Engineer World Bank Project O/c the E.I.C. World Bank Projects, Odisha, Bhubaneswar	Chief Engineer, Employer	Chief Engineer, Employer	Chief Engineer, Employer

TO JAGATPUR

TO CHANDBALI



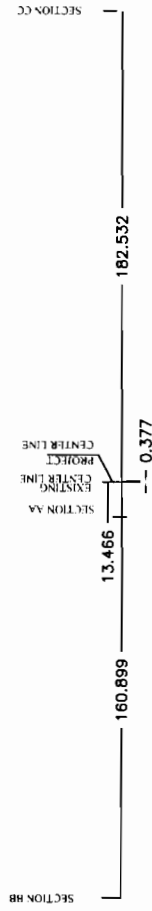
25 KEM INLET @ SHIL SHIL
PROPOSED AT NEW TAD LANE
BRIDGE AT PROPOSED CH. 61+261



LEGEND:
--- EXISTING ALIGNMENT
--- PROPOSED CENTER LINE

SCALE = 1 : 5000

SITE PLAN



D/S

U/S

ELEVATION CHANGE

SCALE HOR. = 1 : 2000
VER = 1 : 200

Chief Engineer,
World Bank Project
Civil Engineer,
World Bank Projects, Odisha,
Bhubaneswar
Employer

LONG SECTION ALONG LL'

PROJECT: CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

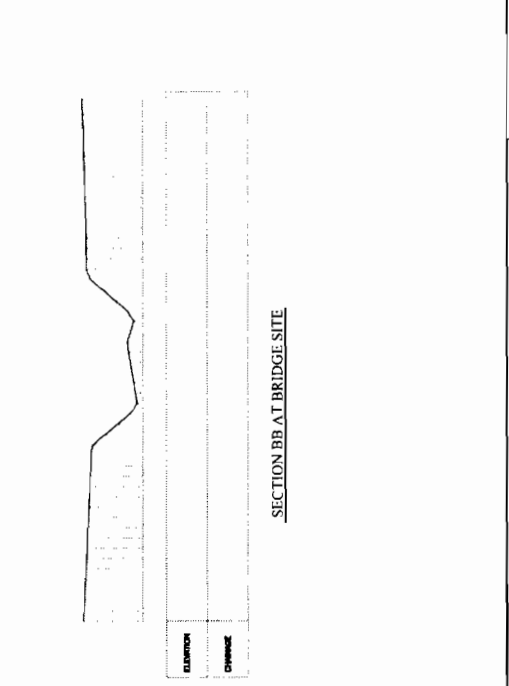
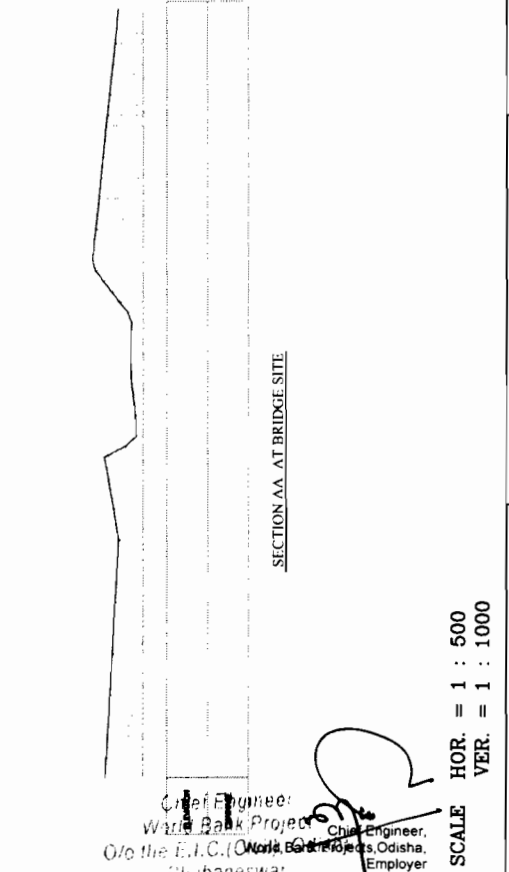
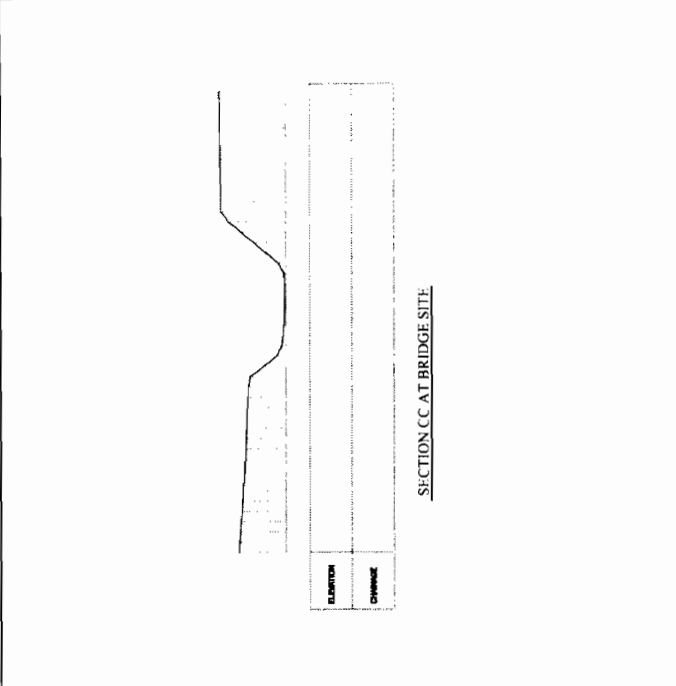
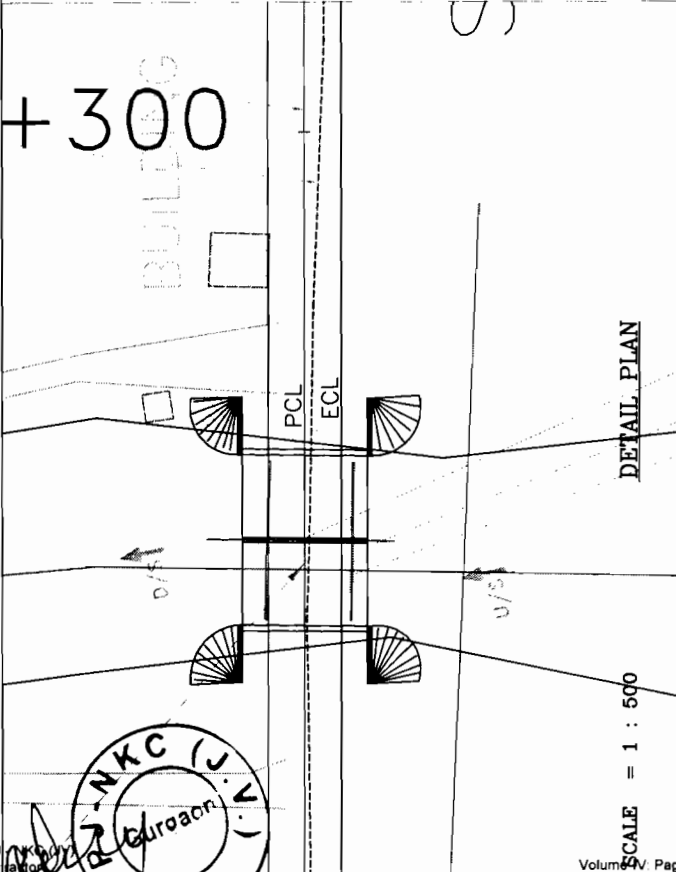
CONSULTING ENGINEERS GROUP LTD
E-12, Major Colony, Mahaya Nagar, Jagtun-17
Tel. 251-181 - 2520899, 2521886, 2520566
Fax. 2521346, E-mail: engpgrp@rediffmail.com

SITE PLAN
BRIDGE AT PROPOSED CH. 61+261

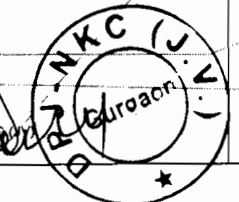
DATE	REVISION	BY	CHKD

TO JAGATPUR

TO CHANDBALLI



NOTE:



Chief Engineer:
 With Bank Project
 O/o the E.I.C. (Odisha) Projects, Odisha,
 Bhubaneswar

Chief Engineer,
 Employer

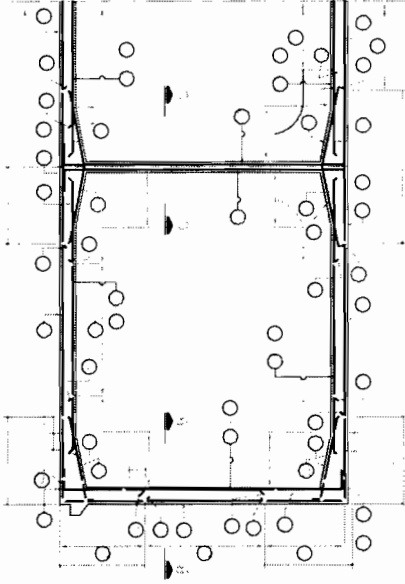
SCALE HOR. = 1 : 500
 VER. = 1 : 1000

<p>CONSULTING ENGINEERS GROUP LTD. E-12/46/1 Colony/Indira Nagar, Jajpur-17 Tel: 491-141 - 2520509, 2521590, 2520506 Fax: 2521348, E-mail: ceg@cegindia.com</p>		<p>PROJECT:</p>
<p>ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE</p>		<p>SITE PLAN</p>
<p>BRIDGE AT PROPOSED CH. 61+261</p>		<p>DATE: 10.02.2010 DRAWN BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]</p>

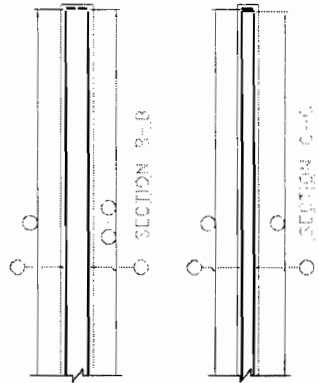
SCALE

REFERENCE DRAWINGS:

LEGEND:

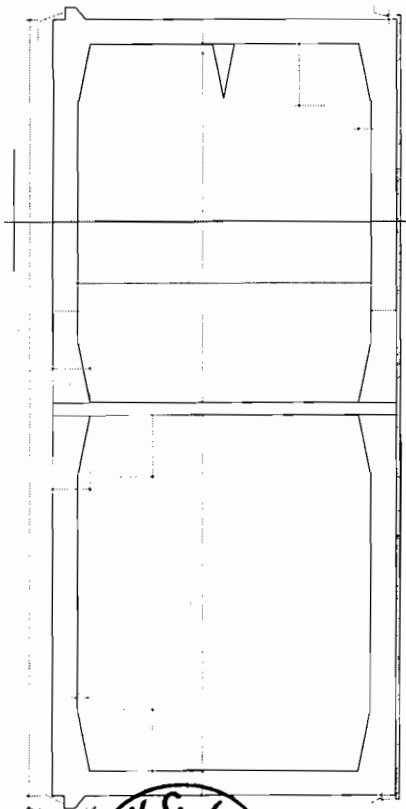


SECTION A-A (SHOWING REINFORCEMENT)

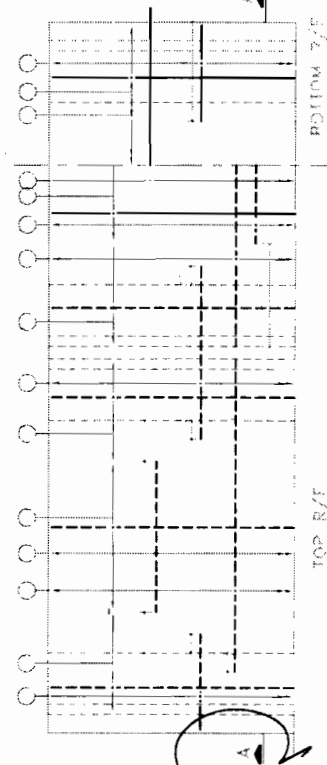
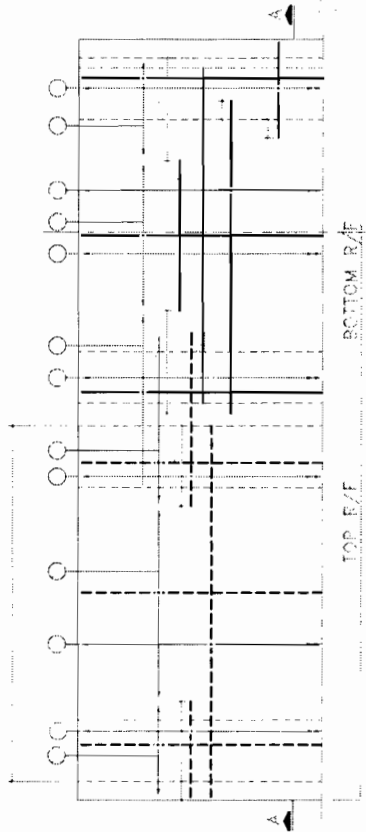


REINFORCEMENT DETAILS

NO.	DESCRIPTION	QUANTITY	UNIT
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SECTION A-A (SHOWING DIMENSIONS)



DIMENSION AND REINFORCEMENT DETAILS
DOUBLE CELL R.C.C. BOX BRIDGES
KM 63+647

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

C.O.H.S. CONSULTING ENGINEERS GROUP LTD.
10/1, 10/2, 10/3, 10/4, 10/5, 10/6, 10/7, 10/8, 10/9, 10/10, 10/11, 10/12, 10/13, 10/14, 10/15, 10/16, 10/17, 10/18, 10/19, 10/20, 10/21, 10/22, 10/23, 10/24, 10/25, 10/26, 10/27, 10/28, 10/29, 10/30, 10/31, 10/32, 10/33, 10/34, 10/35, 10/36, 10/37, 10/38, 10/39, 10/40, 10/41, 10/42, 10/43, 10/44, 10/45, 10/46, 10/47, 10/48, 10/49, 10/50, 10/51, 10/52, 10/53, 10/54, 10/55, 10/56, 10/57, 10/58, 10/59, 10/60, 10/61, 10/62, 10/63, 10/64, 10/65, 10/66, 10/67, 10/68, 10/69, 10/70, 10/71, 10/72, 10/73, 10/74, 10/75, 10/76, 10/77, 10/78, 10/79, 10/80, 10/81, 10/82, 10/83, 10/84, 10/85, 10/86, 10/87, 10/88, 10/89, 10/90, 10/91, 10/92, 10/93, 10/94, 10/95, 10/96, 10/97, 10/98, 10/99, 10/100

PROJECT NO. 10/100

DATE: 10/10/2017

SCALE: 1:100

BY: [Signature]

CHECKED BY: [Signature]

APPROVED BY: [Signature]

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

DATE: 10/10/2017

SCALE: 1:100

BY: [Signature]

CHECKED BY: [Signature]

APPROVED BY: [Signature]

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

DATE: 10/10/2017

SCALE: 1:100

BY: [Signature]

DPJ - NKC
Contractor



Chief Engineer,
World Bank Project
Chief Engineer,
World Bank Project
G. the E. C. C. W. M. S.
Bhubaneswar

[Signature]

TO JAGATPUR

TO CHANDBALI



U/S

D/S

PROPOSED NEW TWO LANE BRIDGE AT KM 63+647 SPAN 28M SINGLE CELL SKEW ANGLE 0°

EXISTING ALIGNMENT
PROPOSED ALIGNMENT

PROPOSED BRIDGE
EXISTING BRIDGE

LEGEND:

--- EXISTING ALIGNMENT

--- PROPOSED CENTER LINE

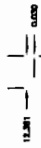
SCALE = 1 : 5000

SITE PLAN

U/S

D/S

SECTION AA
PROJECT CENTER LINE
EXISTING CENTER LINE



ELEVATION
CHANGE



SCALE HOR. = 1 : 2000
VER = 1 : 200

LONG SECTION ALONG LL'

Chief Engineer
World Bank Project
O/o the E.P.O. Odisha
Bhubaneswar

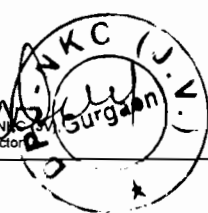
Chief Engineer,
World Bank Projects, Odisha,
Employer

CONSULTING ENGINEERS GROUP LTD.
E-12, Indraprastha Colony, New Delhi-110 028
Tel: +91-11-2620050, 2621895, 2620056
Fax: 2621843, E-mail: ce@cegroupindia.com

PROJECT: CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

SITE PLAN
BRIDGE AT PROPOSED CH. 63+647

NO. OF SHEETS	NO. OF SHEETS	NO. OF SHEETS	NO. OF SHEETS
1	1	1	1
DATE	DATE	DATE	DATE
10/01/2009	10/01/2009	10/01/2009	10/01/2009
DESIGNED	CHECKED	APPROVED	APPROVED



TO JAGATPUR

TO CHANDBALI

63+600

63+700

NOTE:

HOUSE

A

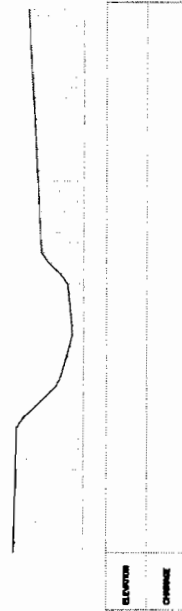
A

ECL
PCL



DETAIL PLAN

SCALE = 1 : 500



SECTION AA AT BRIDGE SITE

[Handwritten signature and stamp]

[Handwritten signature]
Chief Engineer,
Employer

SCALE
HOR. = 1 : 500
VER. = 1 : 1000

World Bank Project
Employer

Go to the E.T.C. (Civil), Orissa
file number

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT
PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

PROJECT

CONSULTING
ENGINEERS GROUP LTD
E-12, 6/3, Chhatrapati Rajguru Marg, Jaipur-17
Ph: 2271341, 2271342, 2271343
Fax: 2271344, E-mail: egr@egroup.com



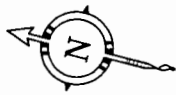
SITE PLAN

BRIDGE AT PROPOSED CH. 63+647

DATE	BY	CHECKED	APPROVED
DATE	BY	CHECKED	APPROVED

TO JAGATPUR

TO CHANDBALI



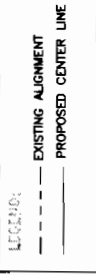
PROPOSED NEW TWO LANE BRIDGE AT KM 66+767 SPAN 1x8.0m SINGLE CELL SKEW ANGLE 0°

EXISTING ALIGNMENT
PROPOSED ALIGNMENT

66+300
66+400
66+500
66+600
66+700
66+800
66+900
67+000
67+100
67+200

SKEW 0°
EXISTING BRIDGE (TO BE DISMANTLED)
PROPOSED (1x8 M. BOX)

U/S
D/S



SCALE = 1 : 2500

SITE PLAN



D/S

U/S

ELEVATION	CHANGE

LONG SECTION ALONG LL'

SCALE HOR. = 1 : 2000
VER. = 1 : 200

DESIGNED	NO. 25/2017/CEG/2017	DATE	15/07/2017
CHECKED		DATE	
APPROVED		DATE	

SITE PLAN
BRIDGE AT PROPOSED CH. 66+767

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
E-12, 1st Floor, Colony, Jagatpur - 751017
Tel: 991-141-250089, 250189, 250556
Fax: 2503340, E-mail: ceg@cegroupindia.com

Chief Engineer,
World Bank Project
Odisha
Civil (Civil), Odisha

TO JAGATPUR

TO CHANDBALI

+700

+800

AGRICULTURE

AGRICULTURE LAND

LONG SECTION

ECL
PCL

POND
P/S

P/S

DETAIL PLAN

SCALE = 1 : 500

SCALE HOR. = 1 : 500
VER. = 1 : 1000

Chief Engineer,
World Bank Projects Odisha
Employer

World Bank Project
To the E.L.D. Civil, Odisha

NOTE:

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT
PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

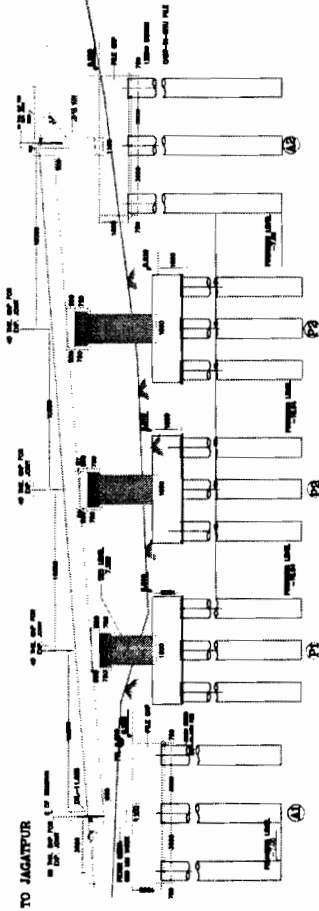
CONSULTING
ENGINEERS GROUP LTD
E-12, 1st Colony, Bhubaneswar, Odisha - 751002
Tel: 491-141, 2520869, 2521899, 2520598
Fax: 2521348, E-mail: ceg@cegroup.co

SITE PLAN
BRIDGE AT PROPOSED CH. 66+767

DATE	REVISION	BY	CHKD

TO CHANDIBALI

TO JAGATPUR



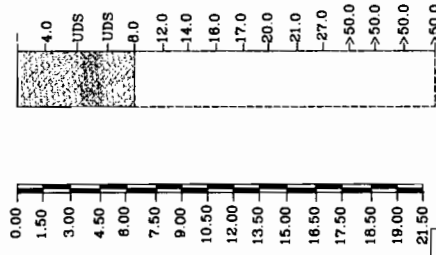
LONGITUDINAL SECTIONAL ELEVATION



KEY PLAN

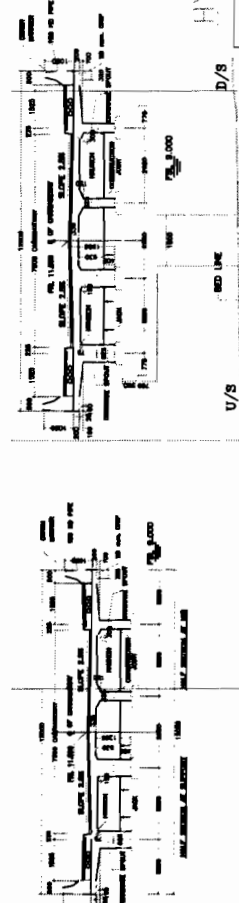
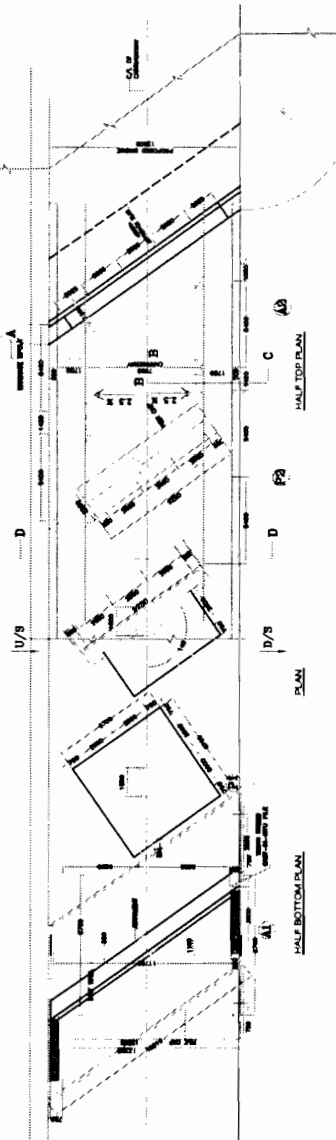
**SUBSOIL FIELD BORE HOLE FROM JAGATPUR TO CHANDIBALI
(SH-8A) AT CH-89/800, PROPOSED 89/733**

BH - 1
PROFILE N VALUE
RL-B.963M



HYDROLOGICAL DATA

Design Discharge in (cum/sec)	Abutment Max. scour Level in (mts)	Pier Max. scour Level in (mts)
15.00	17.50	18.50



Chief Engineer,
World Bank Projects, Odisha,

Chief Engineer,
World Bank Project,
Orissa State Road Project,
Under World Bank Assistance.

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. LEVELS ARE IN METRES.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. LOAD CARRYING CAPACITY OF PILE AT ABUTMENT LOCATION AT A DEPTH OF 13.5M BELOW CUTOFF LEVEL SHALL NOT BE LESS THAN 160.0T AND AT PIER LOCATION AT A DEPTH OF 15.0M BELOW CUTOFF LEVEL IT SHALL NOT BE LESS THAN 200.0T.

4. GRADE OF CONCRETE :
PILE & PILE CAP - M-35
ABUTMENT/ABUTMENT CAP - M-25
PIER CAP - M-30
PIER WALL - M-25
DIRT WALL - M-25
APPROACH SLAB - M-30
GRADER - M-25
CRASH BARRIER - M-40
RETURN WALL - M-25
PEDESTAL - M-35

5. ALL REINFORCEMENT STEEL SHALL BE H.Y.S.D. BAR (GRADE 500) CONFORM TO IS:1786
6. FOR DETAIL OF CRASH BARRIER REFER DRAWING NO. OSRP/CEG/BR/MISC-01
7. ELASTOMERIC BEARING OF SIZE (500 X 250 X 48) SHALL BE PROVIDED AS PER IRC-83 PART-2-1987
8. COMPRESSION SEAL TYPE EXPANSION JOINT SHALL BE PROVIDED

9. FOR SUPER STRUCTURE REFER M.O.S.T. STANDARD PLANS FOR HIGHWAY BRIDGES FOR R.C.C. T-BEAM AND SLAB SUPERSTRUCTURE DRG. NO.SD/241, 243 TO 245,SD/247 (SH 1 & 2) FOR 16.0M SPAN AND SD/281,283 TO 285, SD/287 (SH 1 & 2) FOR 12.0M SPAN

10. THE BRIDGE HAS BEEN DESIGNED BY FOR 70R (W) + CLASS A AND 3 LANES OF I.R.C. CLASS-A VEHICLE WHICH EVER GOVERNS

11. ADEQUATE NOS. OF WEEP HOLES SHALL BE PROVIDED IN THE ABUTMENT & RETURN WALL AS PER I.R.C. SPECIFICATION

12. BACK FILL PARAMETERS ASSUMED ARE C-0 & # 30 IN PILE, PILE CAP = 75mm IN ALL OTHER COMPONENTS = 40mm

13. CLEAR COVER TO ANY REINFORCEMENT IN PILE, PILE CAP

14. FOR GENERAL NOTES REFER DRW. NO. OSRP/CEG/SH-9A/BR/NOTES/02

15. SITE PLAN ON SEPARATE SHEET.

16. HYDROLOGICAL DATA FOR CANAL HAS BEEN TAKEN FROM DATA PROVIDED BY P.U.

- REFERENCE DRAWINGS:-
1. OSRP/CEG/SH-9A/BR/89+900/02
 2. OSRP/CEG/SH-9A/BR/89+900/03
 3. OSRP/CEG/SH-9A/BR/89+900/04
 4. OSRP/CEG/SH-9A/BR/89+900/05
 5. OSRP/CEG/SH-9A/BR/89+900/06 (2 SHEETS)
 6. OSRP/CEG/BR/MISC-01

GENERAL ARRANGEMENT DRAWING

BRIDGE AT PROPOSED CH. 89+733
(PATAMUNDAL CANAL ON BYEPASS)

ORISSA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

PROJECT NO.

PROJECT NO.

DATE

SCALE

DATE

SCALE

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS IN METRE
2. GRADE OF CONCRETE :
 PILE & PILE CAP - M-35
 ABUTMENT - M-25
 ABUTMENT CAP - M-25
3. ALL REINFORCEMENT STEEL SHALL BE H.Y.S.D. BAR (GRADE 500) CONFORM TO IS:1786
4. CLEAR COVER TO REINFORCEMENT FOR PILE AND PILE CAP - 75mm
 ALL OTHER COMPONENT - 40mm
5. LAPS SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY LOCATION
 LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE NO.304.6 OF IRC-21-2000
6. LOAD CARRYING CAPACITY OF PILE AT ABUTMENT LOCATION AT A DEPTH OF 13.5M BELOW CUTOFF LEVEL SHALL NOT BE LESS THAN 1600T

REFERENCE DRAWINGS:

1. OSRP/CEG/SH-9A/BR/68+900/01
2. OSRP/CEG/SH-9A/BR/69+900/03
3. OSRP/CEG/SH-9A/BR/68+900/04
4. OSRP/CEG/SH-9A/BR/69+900/05

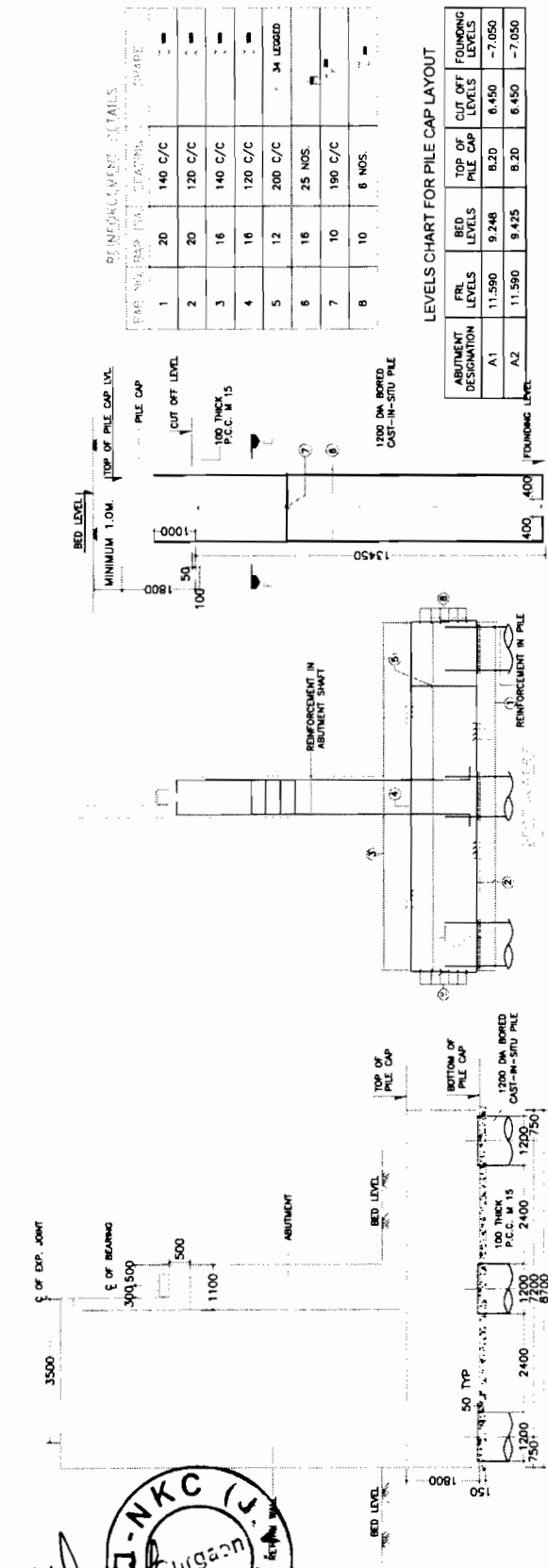
REINFORCEMENT DETAILS

BAR NO./BAR DIA.	SPACING	NO.	140 C/C	120 C/C	140 C/C	120 C/C	200 C/C	25 NOS.	190 C/C	8 NOS.
1	20	140 C/C	-	-	-	-	-	-	-	-
2	20	120 C/C	-	-	-	-	-	-	-	-
3	16	140 C/C	-	-	-	-	-	-	-	-
4	16	120 C/C	-	-	-	-	-	-	-	-
5	12	200 C/C	-	-	-	-	-	-	-	-
6	16	25 NOS.	-	-	-	-	-	-	-	-
7	10	190 C/C	-	-	-	-	-	-	-	-
8	10	8 NOS.	-	-	-	-	-	-	-	-

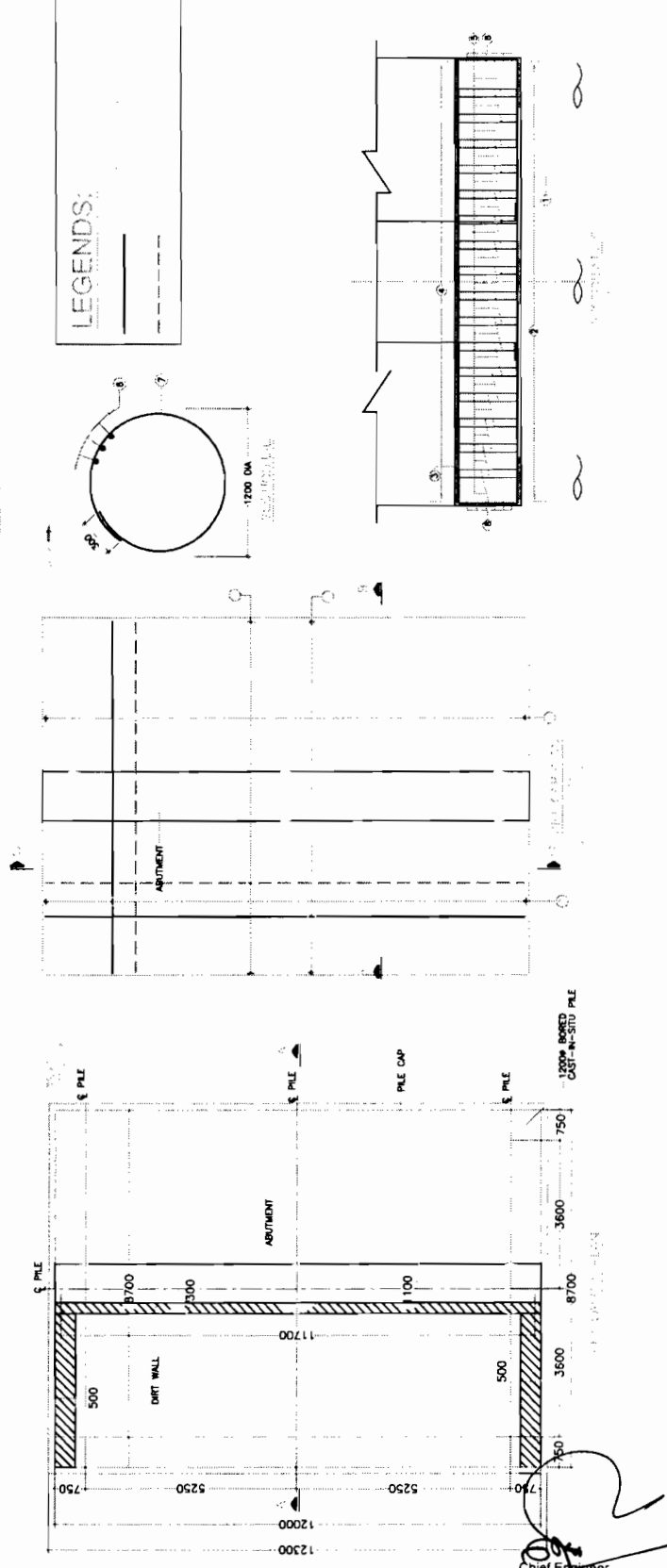
LEVELS CHART FOR PILE CAP LAYOUT

ABUTMENT DESIGNATION	FTL LEVELS	BED LEVELS	TOP OF PILE CAP	CUT OFF FLOORING LEVELS
A1	11.590	9.248	8.20	6.450 -7.050
A2	11.590	9.425	8.20	6.450 -7.050

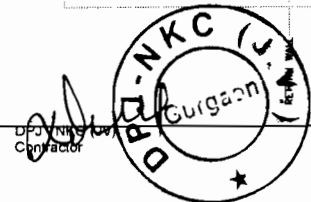
LEGENDS:



SECTION THROUGH PILE CAP



PLAN OF PILE CAP



World Bank Project
 Chief Engineer,
 G.O. the E.I. Civil Engineer
 Bhubaneswar

CONSULTING ENGINEERS GROUP LTD
 E-12, (M-3) Colony, Acharya Nagar, Jagturai-17
 Tel: 897-141, 2528899, 2527899, 2529056
 Fax: 2527348, E-Mail: ceg@cegroupindia.com

PROJECT:
 GROUP 11417 - P.P.P. PHASE 2
 (P.P.P. 2A) - BILWAJI ROSSBY P.L.C.

DESIGNED BY: _____
CHECKED BY: _____
DATE: _____

DRAWING NO.: OSRP/CEG/SH-9A/BR/68+900/01

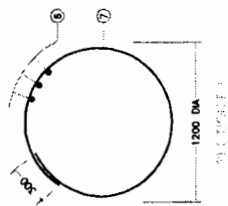
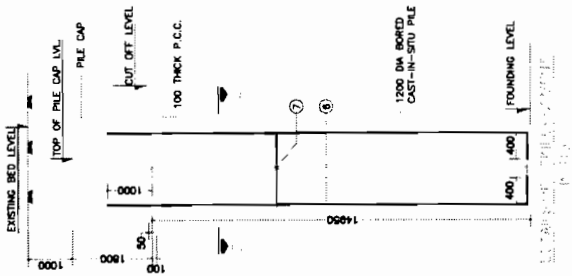
SCALE: _____

TITLE: DIMENSION & REINFORCEMENT DETAIL FOR PILE & PILE CAP FOR ABUTMENT BRIDGE AT PROPOSED CH. 69+733 (PATAMUNDAL CANAL)

1. ALL DIMENSION ARE IN MM & LEVELS ARE IN METERS
2. GRADE OF CONCRETE :
 PILE & PILE CAP - M-35
 PIER - M-30
 PIER CAP - M-35
3. CLEAR COVER TO REINFORCEMENT FOR
 PILE AND PILE CAP - 75mm
 ALL OTHER COMPONENT - 40MM
4. ALL REINFORCEMENT STEEL SHALL BE H.Y.S.D. BAR (GRADE 500) CONFORM TO IS:1785
5. ALL REINFORCEMENT STEEL SHALL BE H.Y.S.D. BAR (GRADE 415) CONFORM TO IS:1785
6. LAPS SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY LOCATION
 LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE NO.304.6 OF IRC-21-2000
7. LOAD CARRING CAPACITY OF PILE AT PIER LOCATION AT A DEPTH OF 15.0M BELOW CUTOFF LEVEL SHALL NOT BE LESS THAN 200.0T

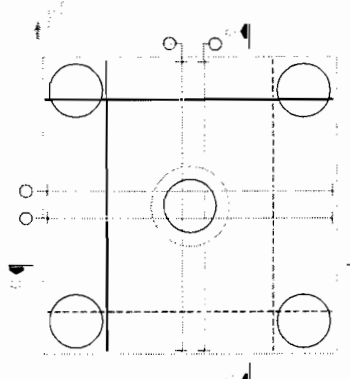
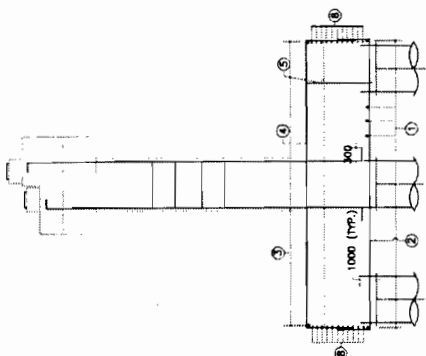
1. OSRP/CEG/SH-9A/BR/89+900/01
2. OSRP/CEG/SH-9A/BR/89+900/02
3. OSRP/CEG/SH-9A/BR/89+900/03
4. OSRP/CEG/SH-9A/BR/89+900/05

PROPOSED DRAWING



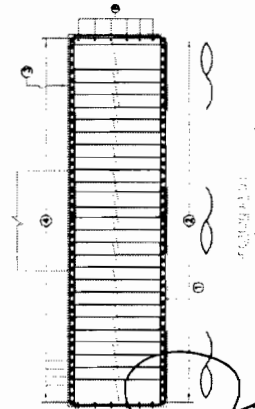
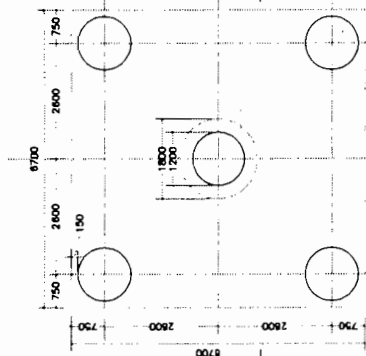
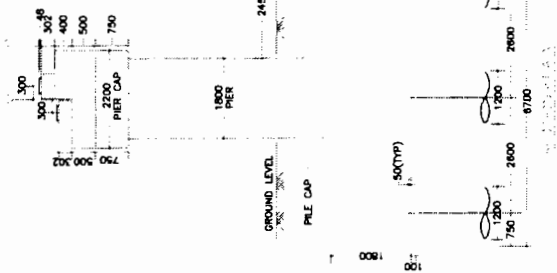
REINFORCEMENT DETAILS

BAR NO.	BAR DIA.	SPACING	NO. OF BARS
1	25	150 C/C	8
2	25	150 C/C	8
3	16	150 C/C	8
4	16	150 C/C	8
5	10	200 C/C	28 LEGGED
6	16	25 NOS.	8
7	10	190 C/C	8
8	10	6 NOS.	8



TON	FORMATION LEVELS	BED LEVELS	TOP OF PILE CAP LEVELS	CUT OFF LEVELS	FOUNDING LEVELS
	11.590	7.222	5.810	4.060	-10.940
	11.590	7.994	5.810	4.060	-10.940

LEGENDS



DIMENSION & REINFORCEMENT DETAIL FOR PILE & PILE CAP FOR PIER

INDIA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

PACKAGE

CONSULTING ENGINEERS GROUP LTD. E-12, 1st Floor, Connaught Place, New Delhi-17
 Tel: +91-11-2520880, 2521889, 2520556
 Fax: 2521348, E-Mail: ceg@cegroup.com

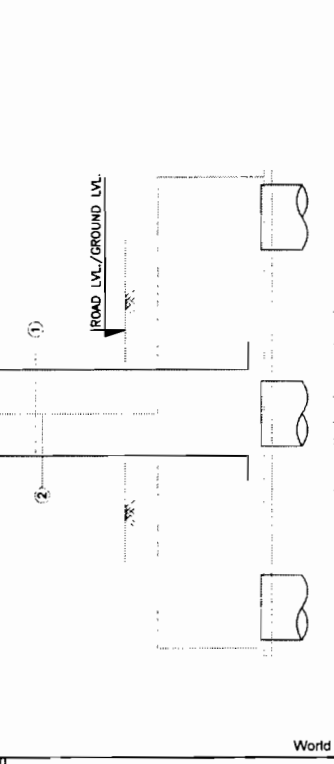
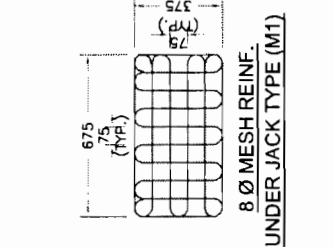
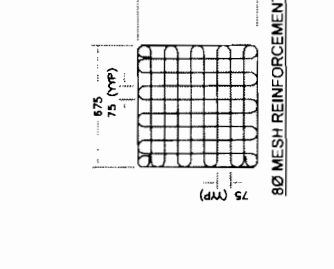
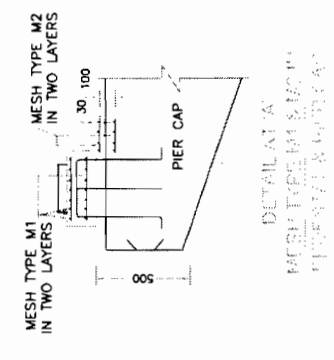
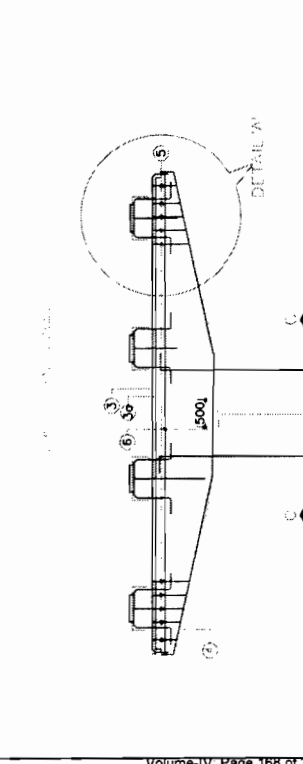
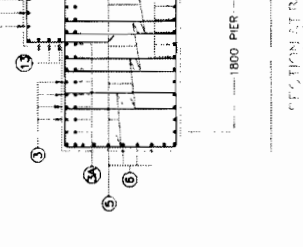
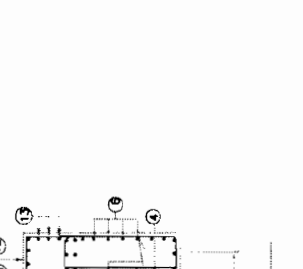
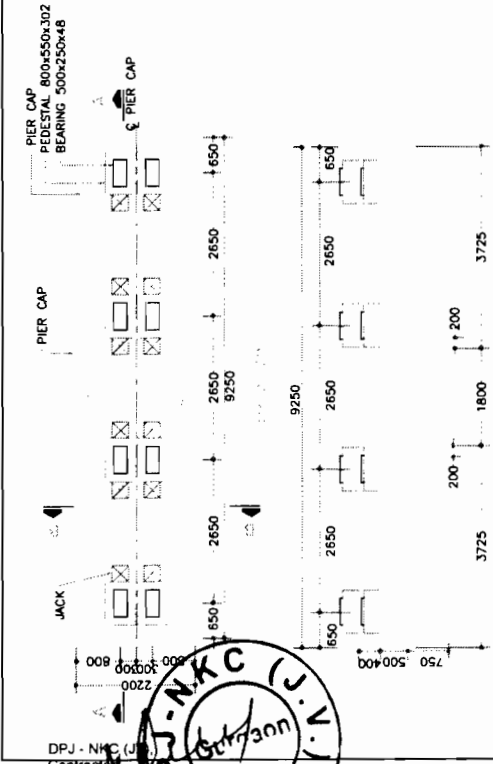
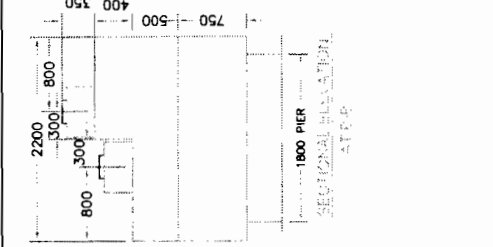
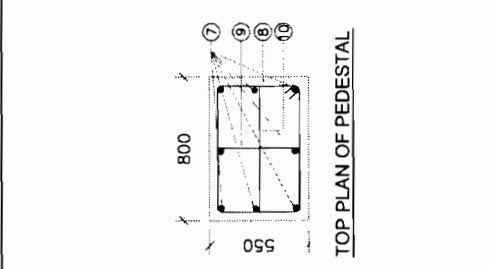
17

NOTES:

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS
2. DO NOT SCALE THE DIMENSIONS. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED
3. GRADE OF CONCRETE :
PILE & PILE CAP - M-35
PIER CAP - M-35
4. ALL REINFORCEMENT STEEL SHALL BE H.Y.S.D. BAR (GRADE 500) CONFORM TO IS:1786
5. CLEAR COVER TO REINFORCEMENT FOR PILE AND PILE CAP - 75mm
ALL OTHER COMPONENT - 40MM
6. LAPS SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY LOCATION
LAP LENGTH SHALL BE PROVIDED AS PER CLAUSE NO.304.6 OF IRC-21-2000

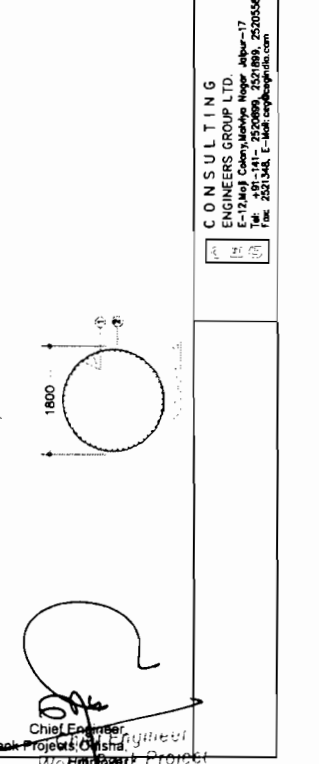
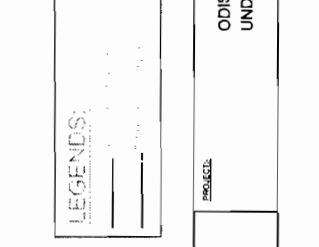
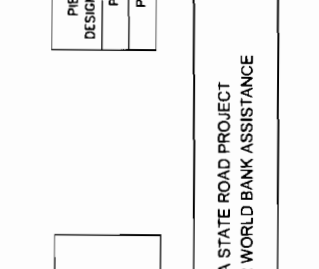
REINFORCEMENT DETAILS

NO.	NO. OF BARS	SPACING	GRADE
1	20	35 NOS.	150 C/C
2	10	150 C/C	
3	32	16 NOS.	
3A	32	16 NOS.	
4	20	16 NOS.	
5	10	200 C/C	
6	16	150 C/C	
7	16	8 NOS.	
8	10	150 C/C	
9	10	150 C/C	
10	10	150 C/C	
11	16	10 NOS.	
12	12	150 C/C	
13	16	3 NOS.	



LEVELS CHART FOR PIERS

PIER DESIGNATION	FINISHED ROAD LEVELS	GROUND LEVELS	PIER CAP TOP LEVELS
P1	11.590	7.222	9.918
P2	11.590	7.994	9.918



DPJ - NKC (J.V.V.)
Contractor

Volume-IV Page 168 of 200

Chief Engineer
World Bank Project

CONSULTING ENGINEERS GROUP LTD.
E-12, 1st Colony, Mahave Nagar, Jaipur-17
Tel: 491-141, 2570899, 2571889, 2520556
Fax: 2521548, E-Mail: enge@engineersgroup.com

REINFORCEMENT DETAILS FOR PIER & PIER CAP

NO.	NO. OF BARS	SPACING	GRADE
1	20	35 NOS.	150 C/C
2	10	150 C/C	
3	32	16 NOS.	
3A	32	16 NOS.	
4	20	16 NOS.	
5	10	200 C/C	
6	16	150 C/C	
7	16	8 NOS.	
8	10	150 C/C	
9	10	150 C/C	
10	10	150 C/C	
11	16	10 NOS.	
12	12	150 C/C	
13	16	3 NOS.	

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

REINFORCEMENT DETAILS FOR PIER & PIER CAP

CONSULTING ENGINEERS GROUP LTD.
E-12, 1st Colony, Mahave Nagar, Jaipur-17
Tel: 491-141, 2570899, 2571889, 2520556
Fax: 2521548, E-Mail: enge@engineersgroup.com

TO JAGATPUR

TO CHANDBALLI

70+000

PROPOSED ALIGNMENT
006+69
008+69

069+800

069+700

PATTAMUNDALAI
069+600

69+500

PATTAMUNDALAI

EXISTING ALIGNMENT



SCALE = 1 : 2500

U/S

D/S



ELEVATION

CHANGE

LONG SECTION ALONG LL'

SCALE HOR. = 1 : 2000
VER = 1 : 200

Chief Engineer
World Bank Projects, Odisha
Engineering Bank Project
E.T.C. (Civil) Odisha

[Signature]

G/O Mr. E.T.C. (Civil) Odisha
Dharmeswar

DRAWING NO. ORISSA/2007/1100/110000/0000	
SHEET NO. 1 OF 7	
DATE	APPROVED
DESIGN	CHECKED
DRAWING	DATE
PROJECT	A.C. NO.

SITE PLAN
BRIDGE AT PROPOSED CH. 69+733

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT
PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
E-12/14/3 Colony, Bhubaneswar, Odisha-751005
Tel: +91-674-2520060, 2521891, 2520656
Fax: 2521348, E-Mail: ce@cegindia.com

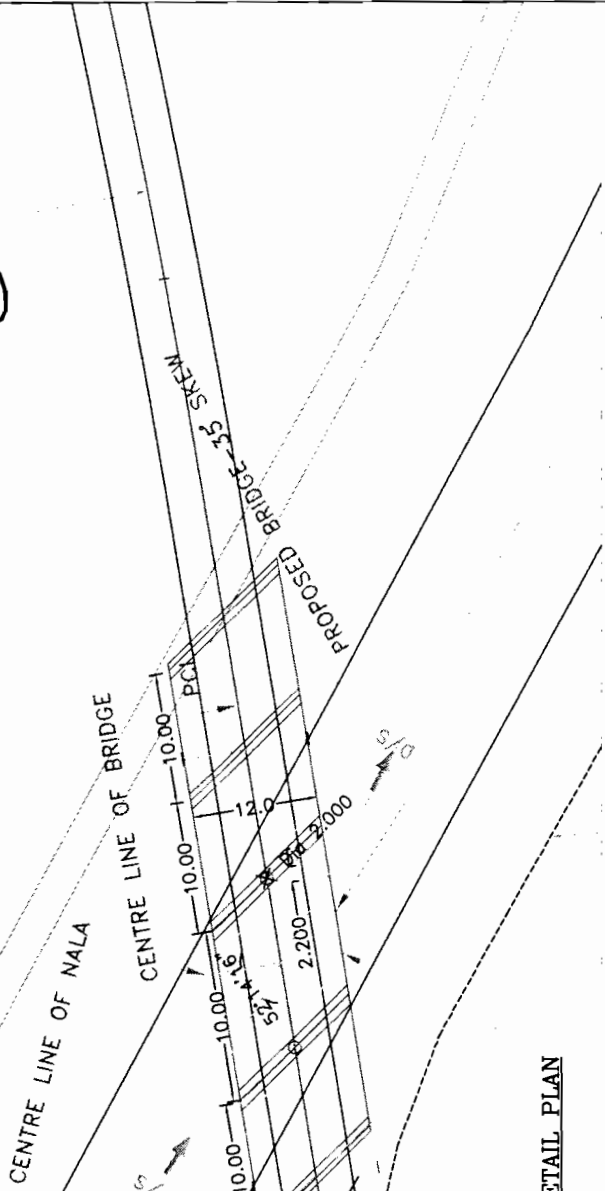
TO JAGATPUR

TO CHANDBALI

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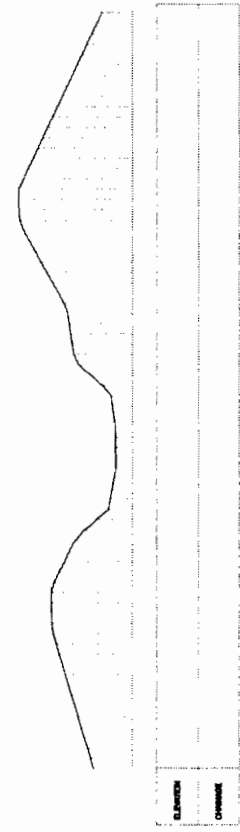
69+700

NOTE:
1. SECTION DISTANCES ARE WITH RESPECT TO PROPOSED BRIDGE SITE



DETAIL PLAN

SCALE = 1 : 500



SECTION AA (49.240M US FROM BRIDGE SITE)

Chief Engineer
World Bank Projects, Orissa
Employer

HOR. = 1 : 500
VER. = 1 : 1000

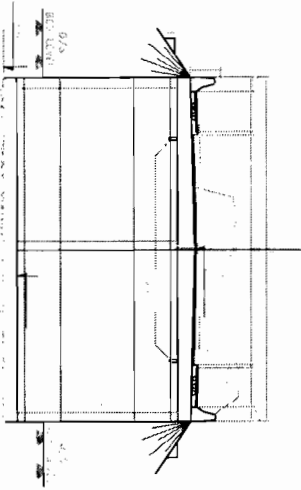
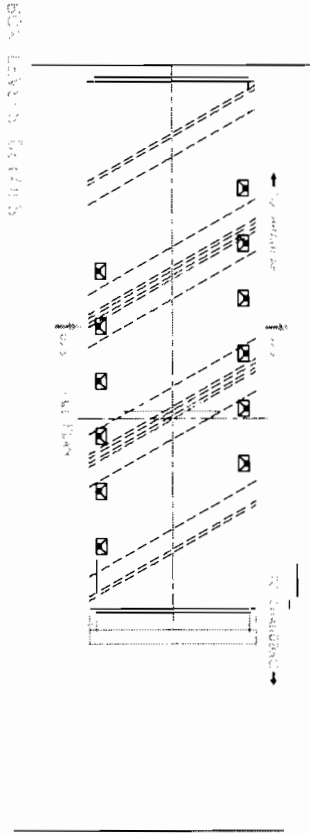
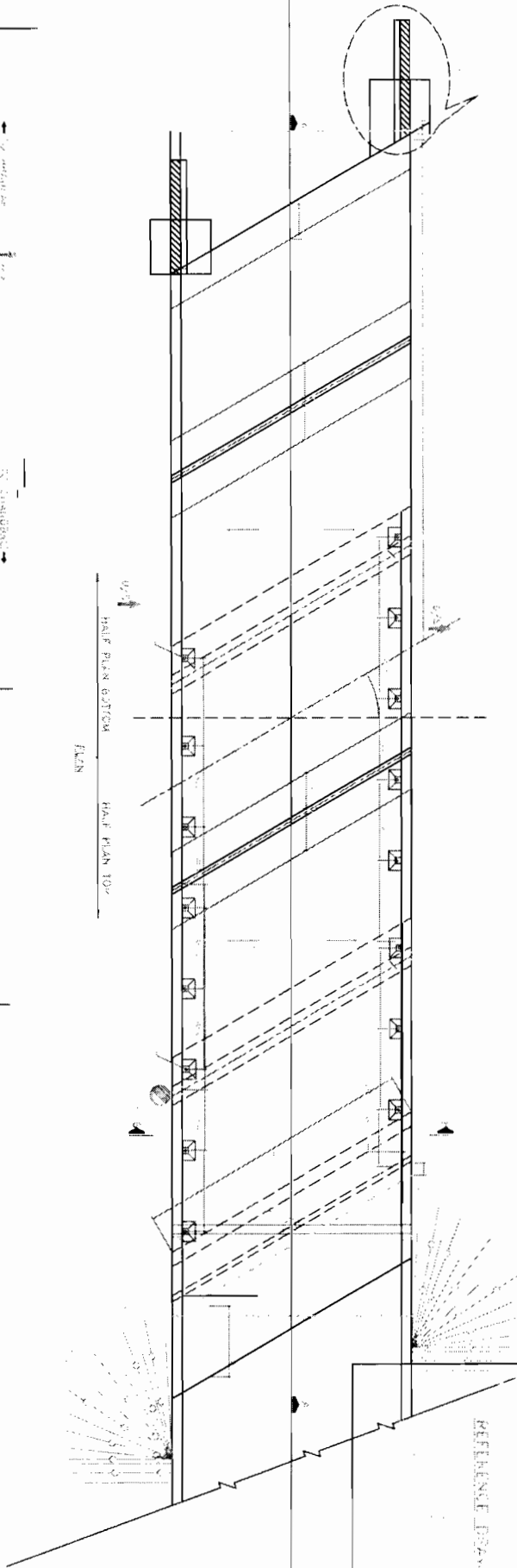
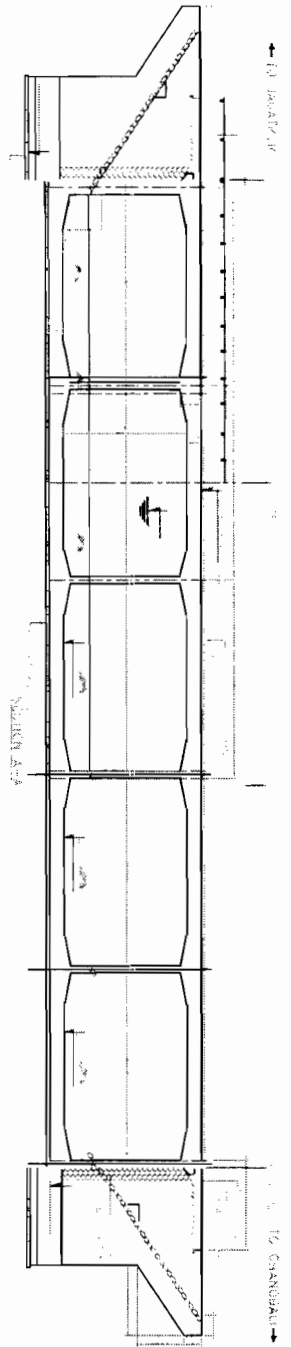
DESIGNED	MULBAPATI ET AL. (PVT) LTD. (M/100/01160/00006)
DATE	10.07.2007
SCALE	(AS SHOWN)
REVISION	
NO.	DATE
1	10.07.07

SITE PLAN
BRIDGE AT PROPOSED CH. 69+733

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
E-12, 1st Colony, Kharaha Nagar, Bhubaneswar-751004
Tel: +91-674-2520589, 2520590, 2520591, 2520592
Fax: 2521346, E-mail: ce@cegroupindia.com

Orissa State Road Project
Bhubaneswar



NOTES:

REFERENCE DRAWINGS

[Signature]
 Chief Engineer
 World Bank Project, District Engineer
 Employer
 World Bank Project
 Upto the E.I.C.(Civil), Odisha
 Bhubaneswar.

PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

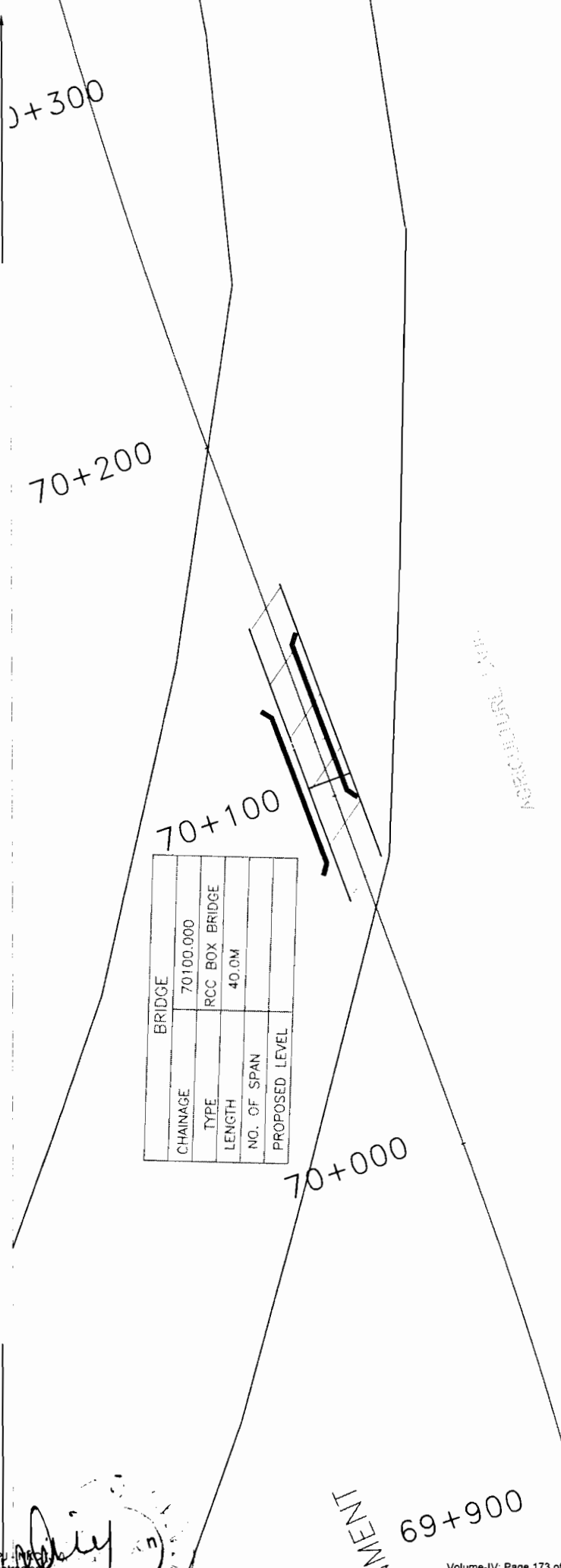
GENERAL ARRANGEMENT DRAWING
 FIVE CELL R.C.C. BOX BRIDGES (KM. 71+064.8
 70+100KM-5 X8m (WITH OUT EARTH CUSHION))

DRAWING NO. OR/CE/EC-318/1/1/1
 DATE: 10.01.2011



TO JAGATPUR

TO CHANDBALI



BRIDGE	
CHAINAGE	70100.000
TYPE	RCC BOX BRIDGE
LENGTH	40.0M
NO. OF SPAN	
PROPOSED LEVEL	

SCALE = 1 : 2500

SITE PLAN

U/S 74.456 35.023 D/S

ELEVATION	CHAINAGE
5.762	0.000
5.752	10.000
5.742	20.000
5.732	30.000
5.722	40.000
5.712	50.000
5.702	60.000
5.692	70.000
5.682	80.000
5.666	90.000
5.644	100.000
5.622	110.000
5.602	120.000
5.582	130.000
5.559	140.000
5.533	150.000
5.507	160.000
5.481	170.000
5.456	180.000

LONG SECTION ALONG LL'

SCALE
 HOR. = 1 : 2000
 VER. = 1 : 200

CONSULTING ENGINEERS GROUP LTD.
 E-12(A6) Colony, Khandwa Nagar, Jabalpur-17
 Tel: +91-141-2520589, 2521981, 2520590
 Fax: 2521948, E-mail: cepg@rediffmail.com

ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

SITE PLAN
 BRIDGE AT PROPOSED CH. 70+100

PROJECT NO: ORR/2008/0001-01/001
 SHEET NO: 1011
 DATE: 10/11/08
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

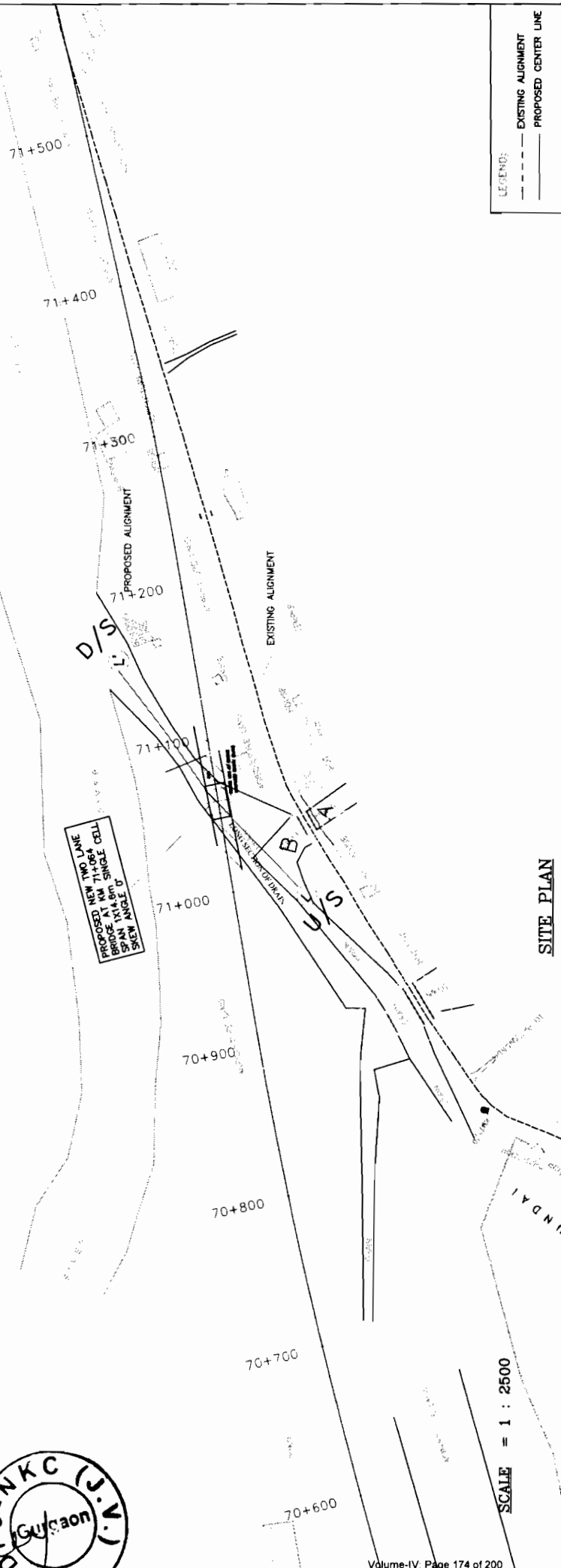
Chief Engineer
 World Bank Project
 Odisha
 (Via the E.O. Civilj), Odisha
 Jhansu

TO JAGATPUR

TO CHANDBALI



Contract No. J.N.K.C. (I.N.V.)



SCALE = 1 : 2500

SITE PLAN

U/S 74.456 35.023 D/S

ELEVATION	CHANGE
0.000	5.762
10.000	5.752
20.000	5.742
30.000	5.732
40.000	5.722
50.000	5.712
60.000	5.702
70.000	5.692
80.000	5.682
90.000	5.672
100.000	5.664
110.000	5.622
120.000	5.602
130.000	5.582
140.000	5.558
150.000	5.533
160.000	5.507
170.000	5.481
180.000	5.455

LONG SECTION ALONG LL'

SCALE HOR. = 1 : 2000
VER = 1 : 200

CONSULTING ENGINEERS GROUP LTD.
E-12/13 Connaught Place, New Delhi-110054
Phone: 2531348, E-mail: ceg@cegroupindia.com

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

SITE PLAN
BRIDGE AT PROPOSED CH. 71+064

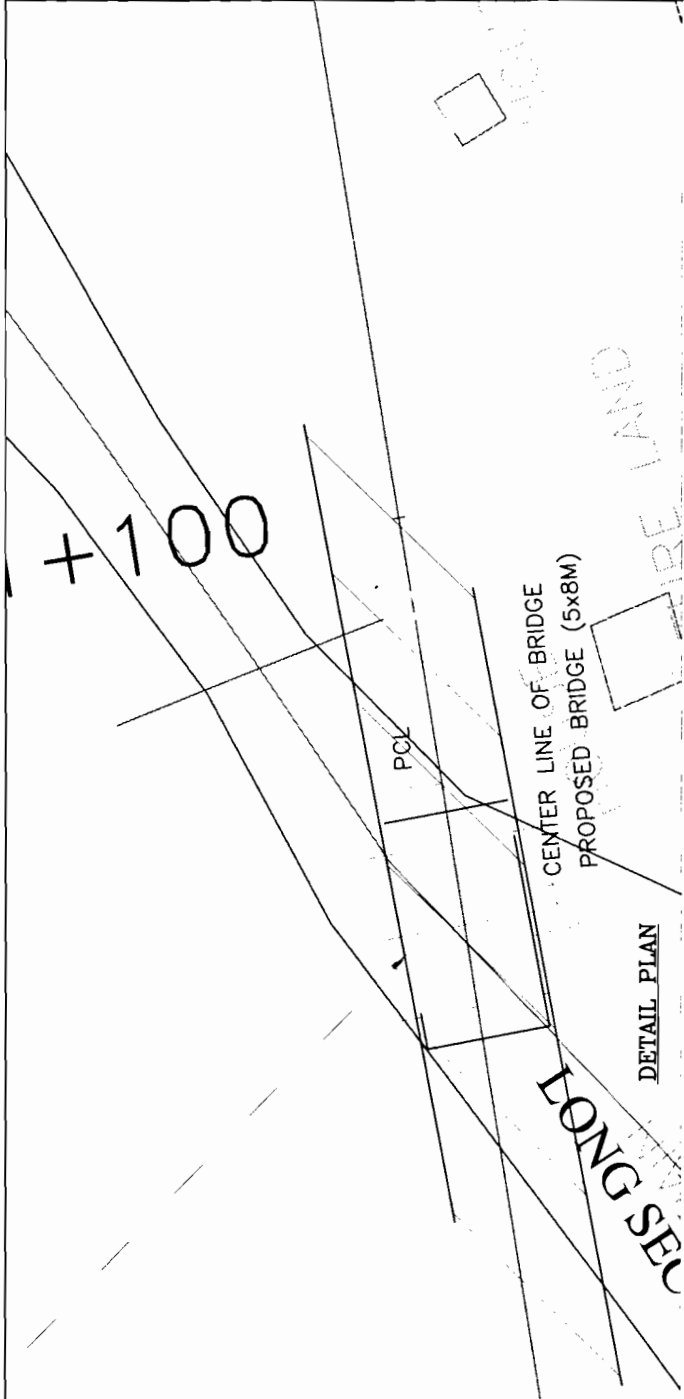
DESIGNED BY	DATE	SCALE	PROJECT
CHKD BY	DATE	SCALE	PROJECT
APPROVED BY	DATE	SCALE	PROJECT

Chief Engineer
Project Office
World Bank Project
E.C.C. (Civil), Odisha
Bhubaneswar

TO JAGATPUR

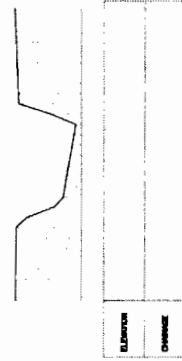
TO CHANDBALI

NOTE:



SCALE = 1 : 500

DETAIL PLAN



SECTION AA (5.023M FROM BRIDGE SITE)

HOR. = 1 : 500
SCALE
VER. = 1 : 1000

Chief Engineer
World Bank Projects, Odisha
World Bank, Bhubaneswar
For the E.J.C. (P) Ltd., Odisha
Bhubaneswar

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

PROJECT:

CONSULTING
ENGINEERS GROUP LTD.
E-12, 1st floor, Market, Cuttack - 751006
Tel: 499-141-252009, 2521098, 2520056
Fax: 2521348, E-Mail: ceg@cegroupindia.com

DATE: 10/01/2011

TIME: 10:00 AM

SCALE: 1 : 500

VER. = 1 : 1000

DATE: 10/01/2011

TIME: 10:00 AM

SCALE: 1 : 500

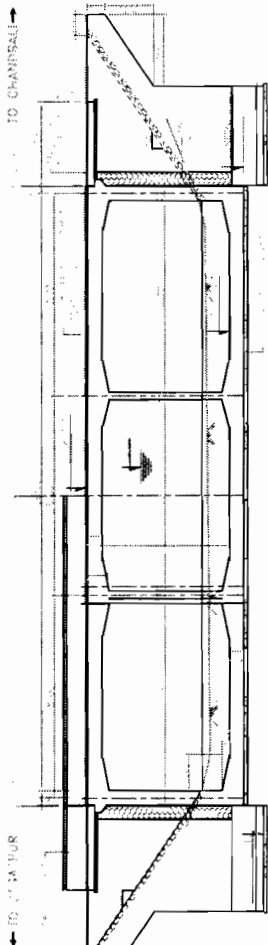
VER. = 1 : 1000

DATE: 10/01/2011	TIME: 10:00 AM	SCALE: 1 : 500	VER. = 1 : 1000
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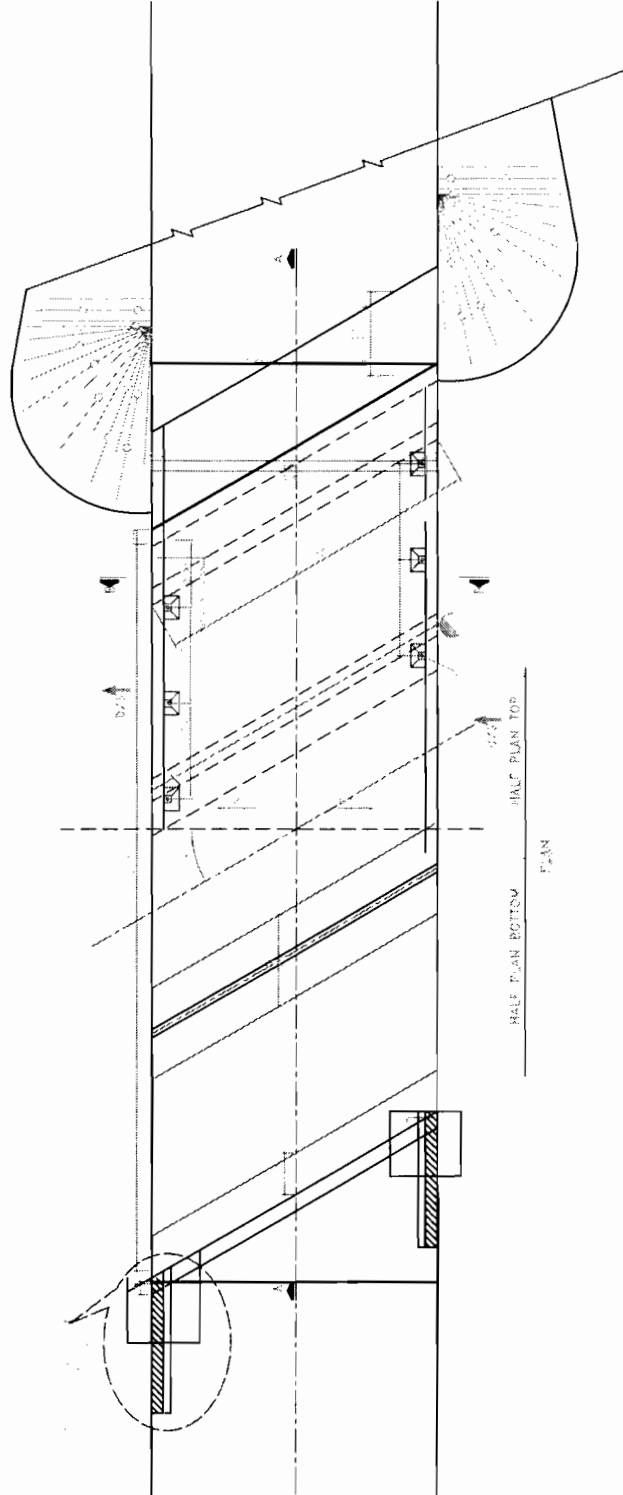
SITE PLAN
BRIDGE AT PROPOSED CH. 71 + 064

NOTES:

REFERENCE DRAWINGS



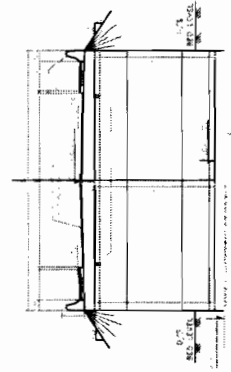
SECTION A-A



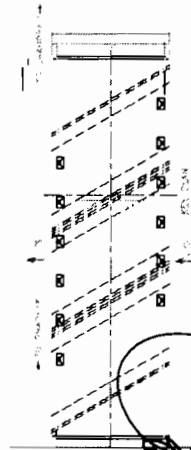
HALF PLAN BOTTOM

PLAN

HALF PLAN TOP



BOX LEVELS DETAILS



TO CHANISALI

Chief Engineer,
World Bank Project, Odisha,
Employer

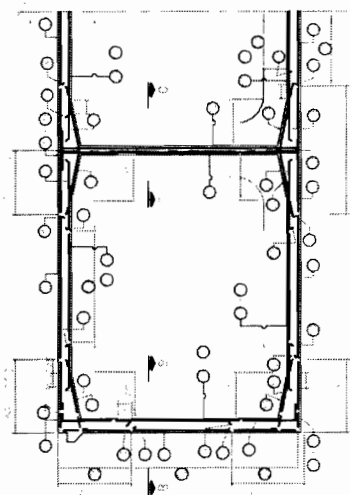
World Bank Project,
the E.I.C. (Civil, District,
Bhubaneswar)

PROJECT: ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	GENERAL ARRANGEMENT DRAWING TRIPLE CELL R.C.C. BOX BRIDGES 3m X 8m (WITH OUT EARTH CUSHION)		DRAWING NO.: DPJ/03/02/03-STRM/1004/02/01 DATE: DEC. 2012
	CHECKED BY: CSJ DESIGNED BY: CSJ	REVIEWED BY: CSJ APPROVED BY: CSJ	REV: 1-1 DATE: 02/04/13

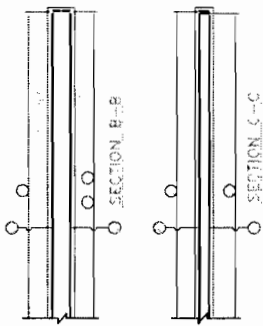
DPJ - N/C (U),
 Copy No. 1



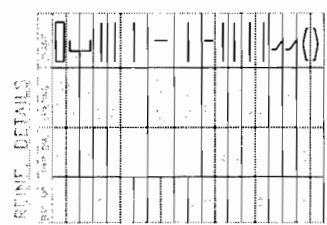
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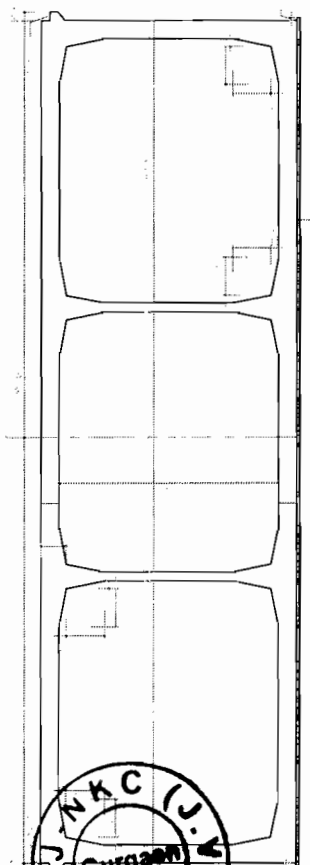
SECTION_A-A (SHOWING REINFORCEMENT)



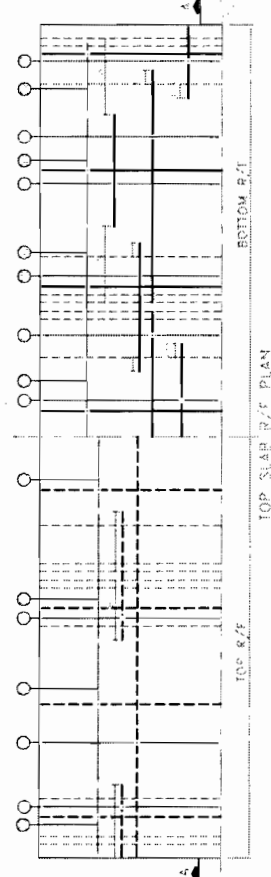
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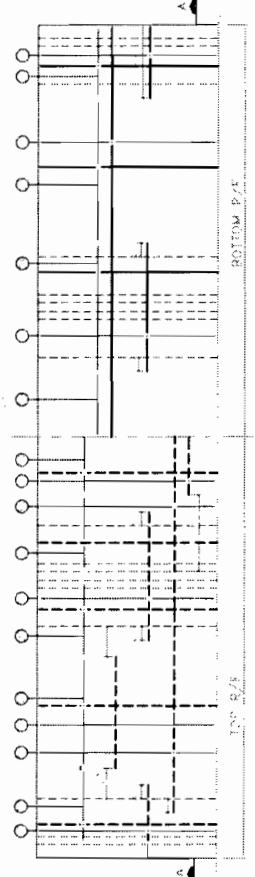
REINFORCEMENT DETAILS



SECTION_A-A (CLEAVING DIMENSIONS)



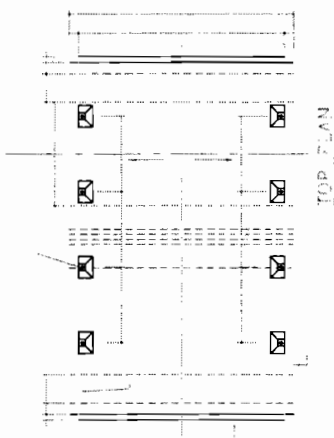
TOP SLAB R/F PLAN



BOTTOM SLAB R/F PLAN



Chief Engineer
 World Bank Project Office
 Bhubaneswar



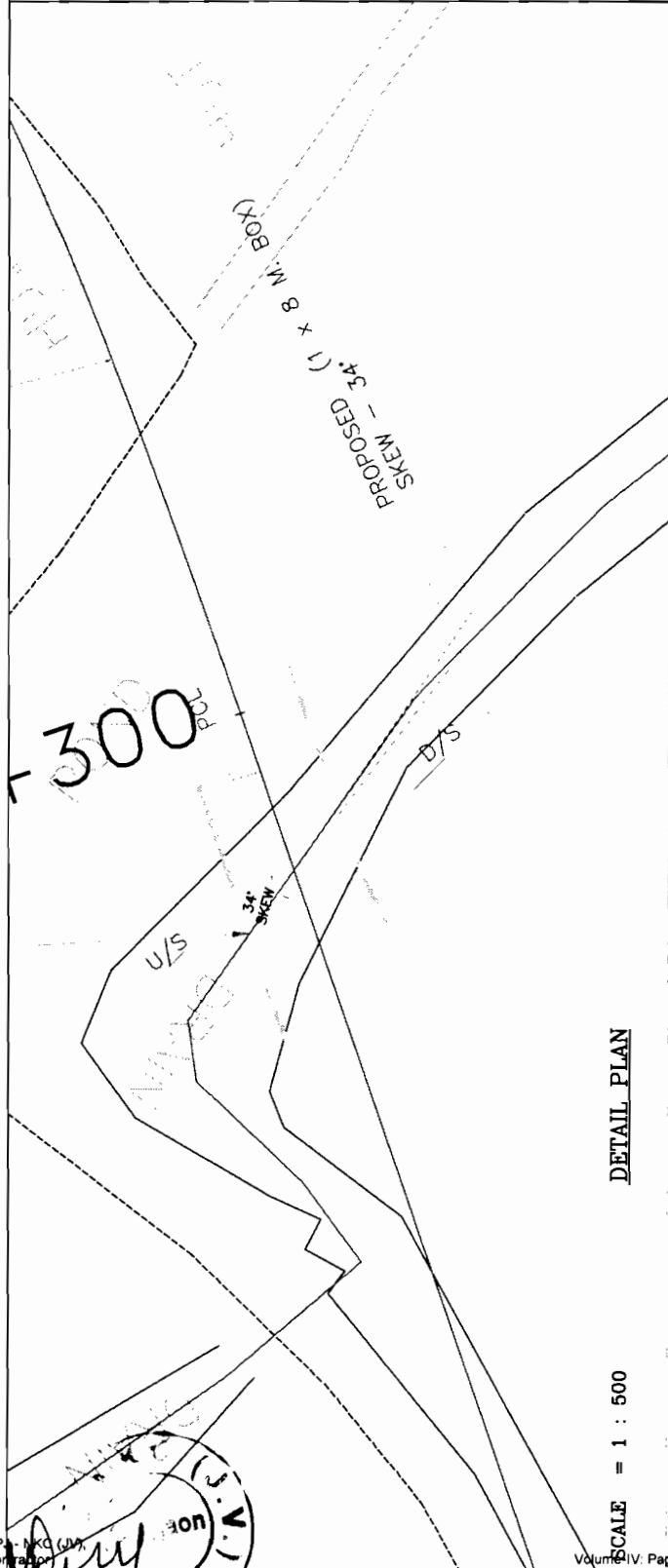
TOP PLAN

CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	DIMENSION AND REINFORCEMENT DETAILS TRIPLE CELL R.C.C. BOX BRIDGES (WITHOUT EARTH CUSHION)	DRAWING NO : ORR/CED/RC-3704/001/140/02 DATE : 02.01.2011 CHECKED BY : DESIGNED BY : CDS CD CD/PA CD/OP
	CONSULTING ENGINEERS GROUP LTD. (A MEMBER OF THE CONSULTING ENGINEERS GROUP OF INDIA) 11, 25/2/78, 4th Floor, Jagatpuri, Gurgaon, Haryana	ORISSA STATE ROAD PROJECT PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

TO JAGATPUR

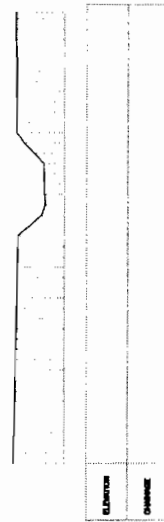
TO CHANDBALI

NOTE:



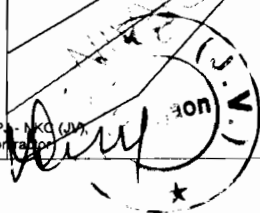
DETAIL PLAN

SCALE = 1 : 500



SECTION AA (44.12M FROM BRIDGE SITE)

HOR. = 1 : 500
VER. = 1 : 1000



Chief Engineer,
Odisha State Road Project,
World Bank Project,
C/o the E.L.O. (Civil), Odisha
Bhubaneswar

CONSULTING
ENGINEERS GROUP LTD.
E-12, 1st Floor, Connaught Place, New Delhi-110028
Tel: +91-11-2520209, 2521990, 2520256
Fax: 2521348, E-Mail: ceg@cegroupindia.com

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

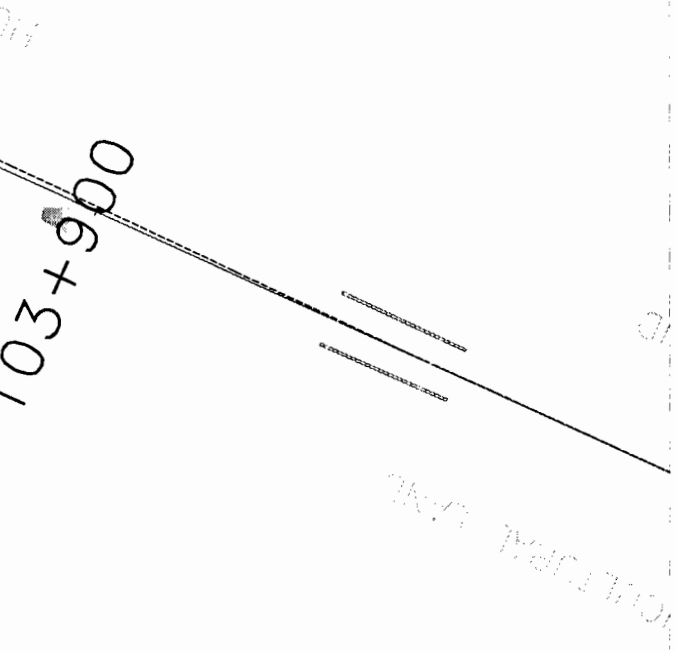
SITE PLAN

BRIDGE AT PROPOSED CH. 93+285

DATE	SCALE	NO. OF SHEETS	TOTAL SHEETS
19.08.11	1:500	1	1
DESIGNED BY	CHECKED BY	APPROVED BY	DATE

TO JAGATPUR

TO CHANDBALI



NOTE:

DETAIL PLAN

SCALE = 1 : 500

HOR. = 1 : 500
VER. = 1 : 1000



World Bank Project Consultant
 Chief Engineer
 On the E.T.O. (Civil) Office
 Bhubaneswar

CONSULTING
 ENGINEERS GROUP LTD
 E-12/2, Connaught Place, New Delhi-110028
 Phone: 2621248, E-Mail: enegroup@yahoo.com

ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

BRIDGE AT PROPOSED CH. 103+885

SITE PLAN

DATE	SCALE	PROJECT	CLIENT
10/11/2007	1:500	BRIDGE AT PROPOSED CH. 103+885	ODISHA STATE ROAD PROJECT

NOTES:

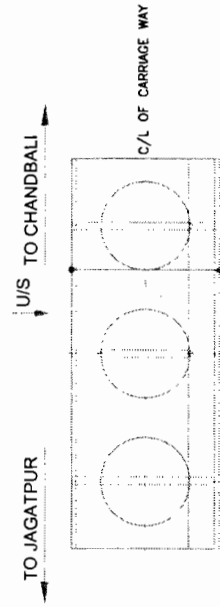
EXISTING BRIDGE DETAILS

1	Existing Chainage	51/700
2	Proposed Chainage	51/589
3	Name of the nallah	Gobari Bridge
4	Year of construction	1987
5	Type of bridge	High level Bridge
6	Existing span arrangement	2 x 33.0 m
7	Existing carriageway width	7.3 m
8	Thickness of superstructure	2.3 m
9	Type of foundation	Well foundation
10	Type of substructure	RCC wall type
11	Type of superstructure	RCC Box Girder
12	Existing Formation Level	12.414 m
13	Final Formation Level	12.414 m
14	Bed Level	4.460 m
15	Distance of PCL w.r.t ECL	0.26 m Right

REHABILITATION MEASURES SUGGESTED

SI. No.	Items	Rehabilitation Measures	Reference Drawings
1	Expansion joint	Expansion joint burried due to over lay of BT and shall be replaced by compression seal type	OSRP/CEG/BR/MISC-01
2	Wearing Coat	Existing wearing coat to be removed and 50mm BC laid over 6mm thick mastic asphalt shall be provided	OSRP/CEG/BR/MISC-01
3	Bearings	The existing Elastomeric pads of 40 mm thick shall be replaced by 3 nos. of Neoprene bearing of size (520 x 380 x 96) mm at each abutment locations and 6 nos. at pier location shall be placed at each web of RCC twin box girder type of superstructure. The super-structure shall be lifted through **freysinet flat jacks 3 nos. below near each web on both sides of the span of capacity 100T each.	

The suggested scheme shall be prepared during execution.



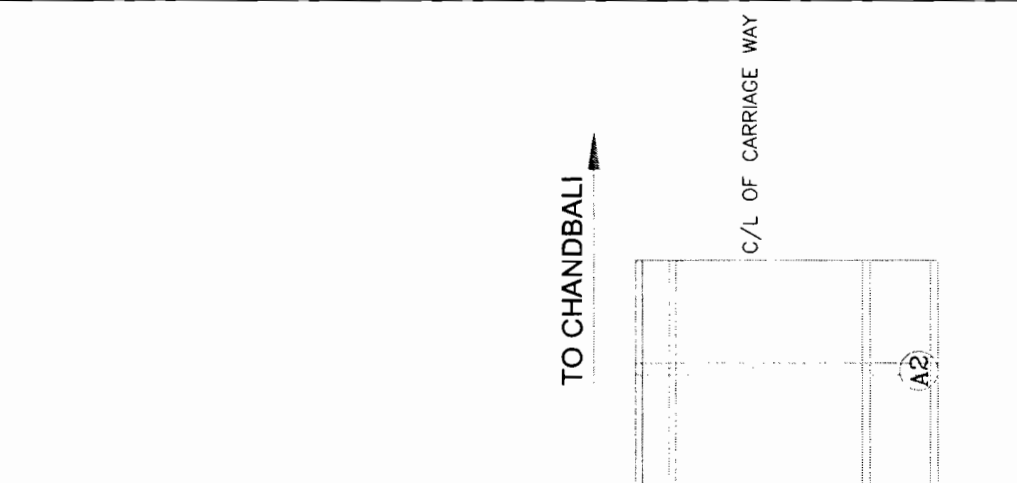
KEY PLAN

EXISTING BRIDGE DETAILS	
1	Existing Chaining
2	Proposed Chaining
3	Name of the nailah
4	Name of contractor
5	Type of bridge
6	Span arrangement
7	Carriageway width
8	Thickness of superstructure
9	Type of foundation
10	Type of substructure
11	Type of superstructure
12	Existing Formation Level
13	Final Formation Level
14	Bed Level
15	Distance of PCL w.r.t ECL

WIDENING AND REHABILITATION MEASURES SUGGESTED		
S. no.	Items	Reference Drawings
1	Superstructure	WORK STANDARD DRAWINGS FOR ROAD BRIDGES, S.O. (3) (Proposed deck slab width shall be widened on both sides. Wearing coat shall be replaced completely, modified to 1:2 mt)
2	Substructure	OSR/PCTG/SH-9A/BR-WTD/01 Abutment & pier shall be widened and Return wall to be done
3	Crash barrier	Existing railings shall be dismantled and crash barrier shall be cast
4	Expansion joint	OSR/PCTG/BR/MISC-02 Expansion joint not functioning and shall be replaced by asphaltic plug type
5	Wearing Coat	Wearing coat damaged and 50mm BC laid over 6mm thick mastic asphalt shall be provided
6	Distress	Reinforcement exposed on superstructure in between A1 to P1 on U/S side edge of three patches of size (0.4 x 0.2), (0.2 x 0.2) & (0.1 x 0.1) mt & on D/S of two patches of size (0.2 x 0.2) and (0.1 x 0.1), shall be grouted by polymer cement concrete
7	Distress	Reinforcement exposed on P2 cap towards Kendraparah side of two patches of size (0.8 x 0.1), (1.5 x 0.15) & two patches towards Patamuandi side of size (4.5 x 0.05), (0.35 x 0.3) mt, shall be grouted by polymer modified concrete
8	Distress	Reinforcement exposed on P3 cap towards Kendraparah side of three patches of size (0.8 x 0.3), (0.8 x 0.1) & (0.2 x 0.2) mt, shall be grouted by polymer modified concrete
9	Honeycombing	Honey combing observed on the bottom portion of some of piers and shall be grouted by cement mortar
10	Pitching	Side pitching required on all four sides
11	Vegetation	Vegetation to be removed from the structure

NOTES:

1. Core cutting shall be done during execution to assess the residual strength of concrete.
2. Reinforcements must conform to Fe500 of IS 1786



DPJ
Contractor

Volume-IV: Page 184 of 200

REHABILITATION BRIDGE DETAILS
BRIDGE AT PROPOSED CH. 56+491

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

PROJECT

CONTRACT NO. 56/350
SHEET NO. 184 OF 200

DATE	SCALE	DESIGNED BY	CHECKED BY	APPROVED BY

CHIEF ENGINEER
 World Bank Project
 On the E.T.C. (O) in, Orissa
 Bhubaneswar

EXISTING BRIDGE DETAILS

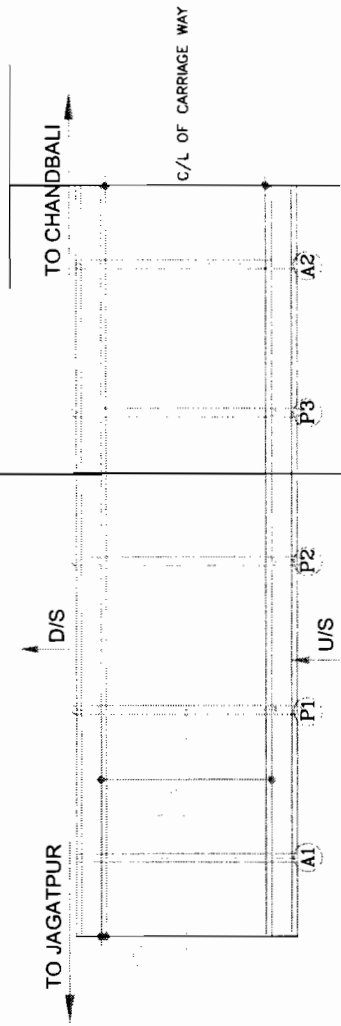
1	Existing Chamage	78/800
2	Proposed Chamage	78/642
3	Name of the nallah	Chhaputi Polo
4	Year of construction	1980
5	Type of bridge	High level Bridge
6	Existing span arrangement	4 x 7.0 m
7	Existing carriageway width	7.0 m
8	Thickness of superstructure	0.6 m
9	Type of foundation	Open foundation
10	Type of substructure	RCC wall type
11	Type of superstructure	RCC solid slab
12	Existing Formation Level	10.117 m
13	Final Formation Level	10.117 m
14	Bed Level	3.890 m
15	Distance of PCL w.r.t.ECL	0.0 m

WIDENING AND REHABILITATION MEASURES SUGGESTED

Sl. No.	Items	Rehabilitation Measures	Reference Drawings
1	Superstructure	Existing slab shall be widened on both sides. Wearing coat shall be replaced completely. (Proposed deck slab width shall be modified to 12 mt)	MOST STANDARD DRAWINGS FOR ROAD BRIDGES, SD/163
2	Substructure	Abutment & pier shall be widened and Return wall to be done	OSRP/CEG/SH-9A/BR-WID/01
3	Crash barrier	Existing railings shall be dismantled and crash barrier shall be cast	
4	Expansion joint	Expansion joint burried and shall be replaced by asphaltic plug type	OSRP/CEG/BR/MISC-02
5	Wearing Coat	Minor touch up repair to be done in existing wearing coat	
6	Distress	Reinforcement exposed on A1 cap of size (2 x 0.1), on P1 cap of size (0.7 x 0.1), on P3 cap of size (1 x 0.1) & (0.2 x 0.1) mt and on A2 cap of size (0.4 x 0.4) mt, shall be gouted by polymer modified concrete	
7	Distress	Reinforcement exposed on A1 - P1 slab bottom of size (2-1 x 0.1) mt, shall be gouted by polymer modified concrete	OSRP/CEG/BR/MISC-01
8	Approach slab	Approach slab to be constructed on both sides	OSRP/CEG/SH-9A/BR/FPW/02
9	Pitching	Side pitching to be done on all four sides	
10	Vegetation	Vegetation to be removed from the structure	

NOTES:

1. Core cutting shall be done during execution to assess the residual strength of concrete.
2. Reinforcements must confirm to IS 1786 of IS 1786



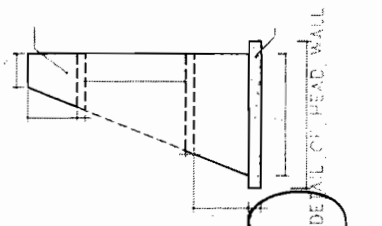
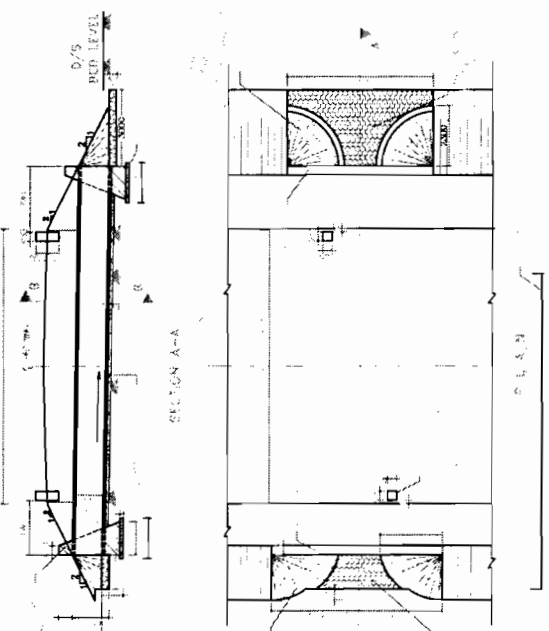
SHEET NO. :	08P/CEG/SH-9A/BR/FPW/02
DATE :	DEC. 2017
Drawn by :	CS
Checked by :	CS
Approved :	CS

REHABILITATION BRIDGE DETAILS
BRIDGE AT PROPOSED CH. 78+642

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERING LTD.
PLOT NO. 10, SECTOR-10, INDUSTRIAL AREA, PHASE-1, CUTTACK, ODISHA, INDIA.
TEL: 0674-2535201, 2535202, 2535203, 2535204
FAX: 0674-2535205, 2535206, 2535207, 2535208

NOTES:



NEW SINGLE PIPE 1x1.0m Dia

Sl. No.	Proposed No. Chainage	Proposed Formation Level		Camber/Super Elevation		Bed level		Height of Fill		Direction of flow	Total Length	No. of Pipe	Us. Approx.	Dis. Approx.	Total Length
		Left	Right	Left	Right	Left	Right	Left (H1)	Right (H2)						
1	50+085	9.997	-2.5%	7.839	8.261	0.9	0.49	1.82	1	R to L	14.79	6	2.3	3.0	20.3
2	50+850	10.496	-2.5%	9.337	9.567	0.2	0	0.42	0	R to L	12.42	5	2.3	3.0	17.80
3	51+240	10.573	-2.5%	9.575	9.012	0	-0.61	0.1	1.2	L to R	13.32	6	2.3	3.0	20.3
4.0	53+370	9.281	6.11%	7.486	7.586	1.4	0.53	2.72	1.1	R to L	15.78	7	2.3	3.0	22.8
5.0	53+719	9.150	-2.5%	8.213	7.463	0	0.74	0	1.5	L to R	13.48	6	2.3	3.0	20.3
6.0	54+460	8.874	-2.5%	7.587	7.367	0.3	0.56	0.67	1.1	L to R	13.79	6	2.3	3.0	20.3
7.0	55+080	8.178	-2.5%	7.450	6.846	0	0.38	0	0.8	L to R	12.76	6	2.3	3.0	20.3
8.0	55+425	8.131	-2.5%	6.875	7.282	0.3	0	0.61	0	R to L	12.61	6	2.3	3.0	20.3
9.0	55+600	8.123	-2.5%	6.843	6.872	0.3	0.52	0.66	1	R to L	13.7	6	2.3	3.0	20.3
10.0	55+920	8.109	-2.5%	7.194	6.873	0	0.29	0	0.6	L to R	12.57	6	2.3	3.0	20.3
11.0	56+860	8.110	-2.5%	6.973	6.843	0.2	0.32	0.37	0.6	L to R	13.01	6	2.3	3.0	20.3
12.0	57+850	9.205	-2.5%	6.458	7.219	1.8	1.04	3.59	2.1	R to L	17.66	8	2.3	3.0	22.8
13.0	65+900	8.364	-2.5%	6.481	6.442	0.9	0.97	1.87	1.9	L to R	15.81	7	2.3	3.0	22.8
14.0	71+500	10.670	-2.5%	7.965	8.957	1.8	0.76	3.51	1.5	R to L	17.04	7	2.3	3.0	22.8
15.0	72+000	10.670	-1.4%	7.012	9.367	2.8	0.35	5.55	0.7	R to L	18.25	8	2.3	3.0	25.3
16.0	72+660	10.670	-2.5%	7.272	9.784	2.4	0	4.9	0	R to L	16.9	7	2.3	3.0	22.8
17.0	79+260	9.819	-7.0%	6.918	7.728	1.7	1.71	3.36	3.4	R to L	18.78	8	2.3	3.0	25.3
18.0	81+720	9.500	-2.5%	7.308	6.274	1.2	0.28	2.48	0.6	R to L	15.04	7	2.3	3.0	22.8
19.0	82+017	9.586	-2.5%	7.588	6.900	1	1.74	2.1	3.5	L to R	17.57	8	2.3	3.0	25.3
20.0	83+570	9.505	-7.0%	8.321	7.698	0	1.43	0	2.9	L to R	14.85	6	2.3	3.0	20.3
21.0	84+915	9.357	-2.5%	7.682	8.255	0.7	0.15	1.45	0.3	R to L	13.75	6	2.3	3.0	20.3
22.0	85+500	9.300	-2.5%	8.267	8.443	0.1	0	0.17	0	R to L	12.17	5	2.3	3.0	17.80
23.0	85+826	9.020	-1.78%	7.211	6.917	0.9	1.15	1.8	2.3	L to R	16.11	7	2.3	3.0	22.8
24.0	94+600	8.495	-2.5%	8.055	7.311	0	0.23	0	0.5	L to R	12.47	5	2.3	3.0	17.80
25.0	95+300	8.189	-2.5%	7.746	7.861	0	0	0	0	R to L	12	5	2.3	3.0	17.80
26.0	95+460	8.539	-2.5%	5.926	6.888	1.7	0.7	3.33	1.4	R to L	16.73	7	2.3	3.0	22.8
27.0	97+778	10.203	-2.5%	7.116	5.718	2.1	3.68	4.28	7.4	L to R	23.63	10	2.3	3.0	31.1
28.0	102+940	8.735	-2.5%	5.720	6.488	2.1	0	4.13	0	R to L	16.13	7	2.3	3.0	22.8
29.0	103+092	8.616	-2.5%	6.619	7.375	1	0.52	2.09	1	R to L	15.13	7	2.3	3.0	22.8
30.0	103+206	8.550	-6.3%	6.555	5.267	0.8	0.86	1.63	1.7	R to L	15.36	7	2.3	3.0	22.8
31.0	103+500	8.345	-5.7%	6.918	5.061	0.3	2.83	0.57	5.7	L to R	18.22	8	2.3	3.0	25.3
32.0	104+300	8.081	-2.5%	5.773	6.440	1.40	0.99	2.8	2.0	R to L	16.76	7	2.3	3.0	22.8

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

TYPICAL ARRANGEMENT
FOR R.C.C SINGLE PIPE CULVERTS (1X1.0m DIA)
(DUHURIA - CHANDBALI-57KM)

CONTRACTOR: DPJ - NKC Gurgaon

Chief Engineer
World Bank Project
On the E.C.C. (Hill), Odisha
Bhubaneswar

ENGINEERS GROUP LTD.
E-12, 1st Floor, Connaught Place, New Delhi-110022
Tel: 2311341, Fax: 2311342, Email: conga@engineersgroup.com

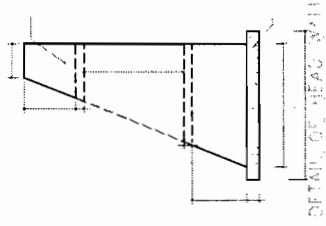
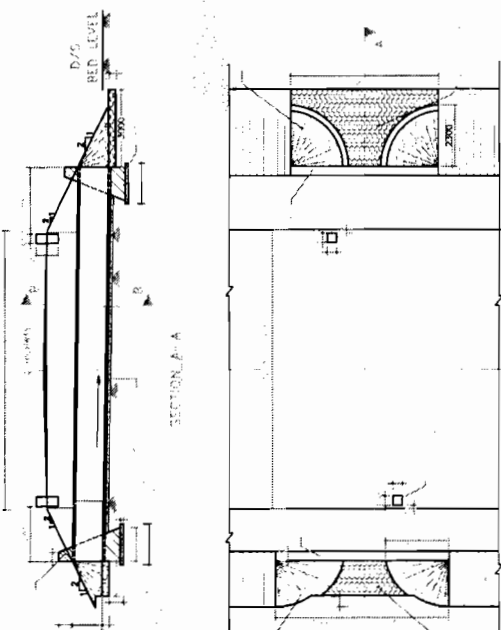
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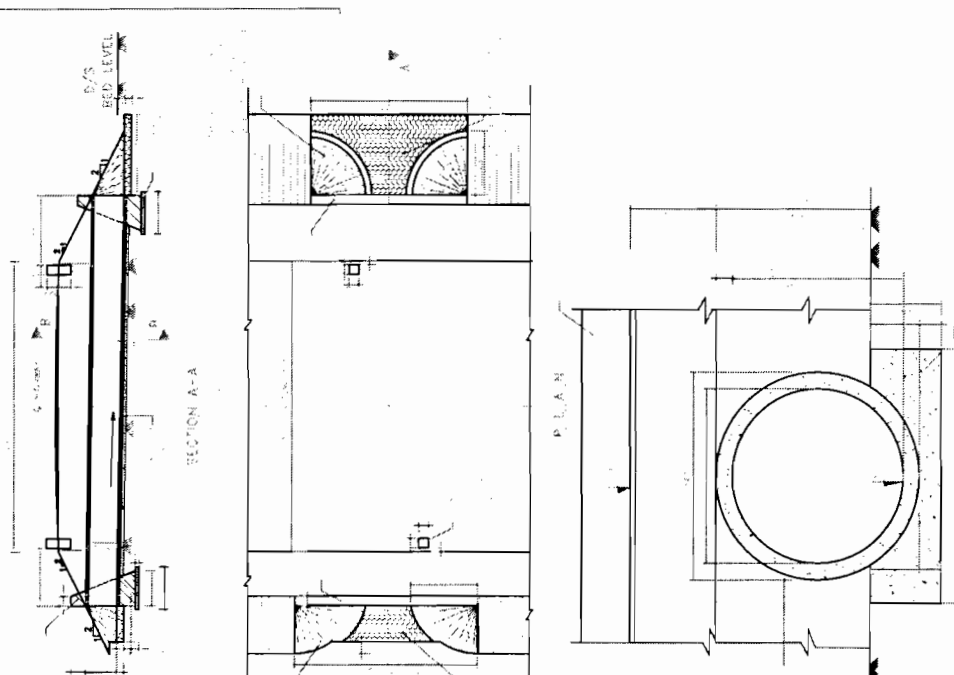
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NOTES



Sl. No.	Proposed No. Chaining	Proposed Foundation Level	Camber/Super Elevation		Bed level		Height of Fill (Hf) (M)		LW1 RW1	Direction of flow	Total Length	No. of Piles	US Approx	D/S Approx	Total Approx Length	
			Left	Right	Left	Right	Left	Right								
1	50+085	9.697	-2.5%	-2.5%	7.839	8.261	0.9	0.49	1.82	1	R to L	14.79	6	2.3	3.0	20.3
2	50+850	10.496	-2.5%	-2.5%	9.337	9.567	0.2	0	0.42	0	R to L	12.42	5	2.3	3.0	17.80
3	51+240	10.573	-2.5%	-2.5%	9.575	9.012	0	0.61	0.1	1.2	L to R	13.32	6	2.3	3.0	20.3
4.0	53+370	9.281	6.11%	-6.11%	7.486	7.586	1.4	0.53	2.72	1.1	R to L	15.78	7	2.3	3.0	22.8
5.0	53+719	9.150	-2.5%	-2.5%	8.213	7.463	0	0.74	0	1.5	L to R	13.48	6	2.3	3.0	20.3
6.0	54+460	8.874	-2.5%	-2.5%	7.587	7.367	0.3	0.56	0.67	1.1	L to R	13.79	6	2.3	3.0	20.3
7.0	55+080	8.178	-2.5%	-2.5%	7.450	6.846	0	0.38	0	0.8	L to R	12.76	6	2.3	3.0	20.3
8.0	55+425	8.131	-2.50%	-2.28%	6.875	7.282	0.3	0	0.61	0	R to L	12.61	6	2.3	3.0	20.3
9.0	55+600	8.123	-2.5%	1.1%	6.843	6.872	0.3	0.52	0.66	1	R to L	13.7	6	2.3	3.0	20.3
10.0	55+920	8.109	-2.5%	-2.5%	7.194	6.873	0	0.29	0	0.6	L to R	12.57	6	2.3	3.0	20.3
11.0	56+860	8.110	-2.5%	-2.5%	6.973	6.843	0.2	0.32	0.37	0.6	L to R	13.01	6	2.3	3.0	20.3
12.0	57+850	9.205	-2.5%	-2.5%	6.458	7.219	1.8	1.04	3.59	2.1	R to L	17.66	8	2.3	3.0	25.3
13.0	65+900	8.364	-2.5%	-2.5%	6.481	6.442	0.9	0.97	1.87	1.9	L to R	15.81	7	2.3	3.0	22.8
14.0	71+500	10.670	-2.5%	-2.5%	7.965	8.957	1.8	0.76	3.51	1.5	R to L	17.04	7	2.3	3.0	22.8
15.0	72+000	10.670	-1.4%	-2.5%	7.012	9.367	2.8	0.35	5.55	0.7	R to L	18.25	8	2.3	3.0	25.3
16.0	72+660	10.670	-2.5%	-2.5%	7.272	9.794	2.4	0	4.9	0	R to L	16.9	7	2.3	3.0	22.8
17.0	79+260	9.819	-7.0%	7.0%	6.918	7.728	1.7	1.71	3.36	3.4	R to L	18.78	8	2.3	3.0	25.3
18.0	81+720	9.500	-2.5%	-2.5%	7.308	8.274	1.2	0.28	2.48	0.6	R to L	15.04	7	2.3	3.0	22.8
19.0	82+017	9.586	-2.5%	-2.5%	7.588	6.900	1	1.74	2.1	3.5	L to R	17.57	8	2.3	3.0	25.3
20.0	83+570	9.505	-7.0%	7.0%	8.321	7.698	0	1.43	0	2.9	L to R	14.85	6	2.3	3.0	20.3
21.0	84+915	9.357	-2.5%	-2.5%	7.682	8.255	0.7	0.15	1.45	0.3	R to L	13.75	6	2.3	3.0	20.3
22.0	85+500	9.300	-2.5%	-2.5%	8.267	8.443	0	0.17	0	0	R to L	12.17	5	2.3	3.0	17.80
23.0	85+826	9.020	-1.78%	-2.5%	7.211	6.917	0.9	1.15	1.8	2.3	L to R	16.11	7	2.3	3.0	22.8
24.0	94+800	8.495	-2.5%	-2.5%	8.055	7.311	0	0.23	0	0.5	L to R	12.47	5	2.3	3.0	17.80
25.0	95+300	8.189	-2.5%	-2.5%	7.746	7.861	0	0	0	0	R to L	12	5	2.3	3.0	17.80
26.0	95+460	8.539	-2.5%	-2.5%	5.926	6.888	1.7	0.7	3.33	1.4	R to L	16.73	7	2.3	3.0	22.8
27.0	97+778	10.203	-2.50%	-0.10%	7.116	5.718	2.1	3.68	4.28	7.4	L to R	23.63	10	2.3	3.0	31.1
28.0	102+940	8.735	-2.5%	-2.5%	5.720	8.488	2.1	0	4.13	0	R to L	16.13	7	2.3	3.0	22.8
29.0	103-092	8.616	-2.5%	1.28%	6.619	7.375	1	0.52	2.09	1	R to L	15.13	7	2.3	3.0	22.8
30.0	103+206	8.550	-6.3%	6.3%	6.555	7.267	0.8	0.86	1.63	1.7	R to L	15.36	7	2.3	3.0	22.8
31.0	103+500	8.345	-5.7%	5.7%	6.918	5.061	0.3	2.83	0.57	5.7	L to R	18.22	8	2.3	3.0	25.3

ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE
 CONSULTING ENGINEERS GROUP LTD.
 E-12, 1st Colony, Midway, Nagar, Bhubaneswar-751009, Odisha
 Ph: 2301341, 2301342, 2301343, 2301344, 2301345, 2301346, 2301347, 2301348, 2301349, 2301350, 2301351, 2301352, 2301353, 2301354, 2301355, 2301356, 2301357, 2301358, 2301359, 2301360, 2301361, 2301362, 2301363, 2301364, 2301365, 2301366, 2301367, 2301368, 2301369, 2301370, 2301371, 2301372, 2301373, 2301374, 2301375, 2301376, 2301377, 2301378, 2301379, 2301380, 2301381, 2301382, 2301383, 2301384, 2301385, 2301386, 2301387, 2301388, 2301389, 2301390, 2301391, 2301392, 2301393, 2301394, 2301395, 2301396, 2301397, 2301398, 2301399, 2301400, 2301401, 2301402, 2301403, 2301404, 2301405, 2301406, 2301407, 2301408, 2301409, 2301410, 2301411, 2301412, 2301413, 2301414, 2301415, 2301416, 2301417, 2301418, 2301419, 2301420, 2301421, 2301422, 2301423, 2301424, 2301425, 2301426, 2301427, 2301428, 2301429, 2301430, 2301431, 2301432, 2301433, 2301434, 2301435, 2301436, 2301437, 2301438, 2301439, 2301440, 2301441, 2301442, 2301443, 2301444, 2301445, 2301446, 2301447, 2301448, 2301449, 2301450, 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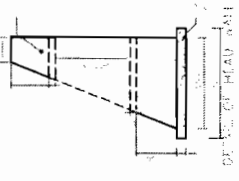


NOTES:

Sl. No.	Proposed Formation Level	Proposed Chamber Elevation	Combustion		Bed level		Height of Fill	Direction of flow	Total No. of US	DB	Total Length
			Left	Right	Left	Right					
10	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
11	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
12	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
13	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
14	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
15	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
16	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
17	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
18	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
19	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
20	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
21	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
22	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
23	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
24	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
25	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
26	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
27	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
28	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
29	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
30	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
31	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
32	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
33	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
34	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
35	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
36	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
37	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
38	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
39	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
40	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
41	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
42	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
43	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
44	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
45	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
46	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
47	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
48	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
49	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
50	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
51	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
52	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
53	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
54	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
55	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
56	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
57	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
58	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
59	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30
60	491-400	10873	-2.5%	-2.5%	8177	8196	171	L to R	1901	8	30

DPJ - NKC (JV)
Contractor

P.J. NKC
Engineering



Chief Engineer
World Bank Projects, Odisha
Employer

Chief Engineer
World Bank Project
The E.I.C. Civil, Odisha
Bhubaneswar.

Project: ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

FOR R.C.C SINGLE PIPE CULVERTS (1x1.2m DIA)
(DURGIA - CHANDBALI)-57KM

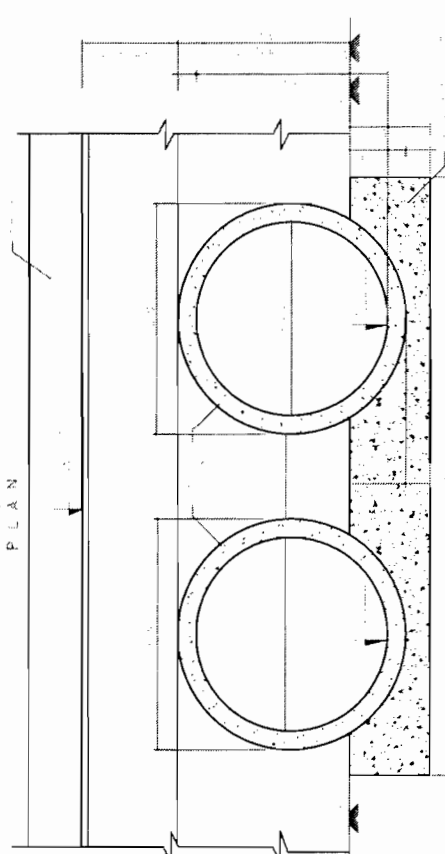
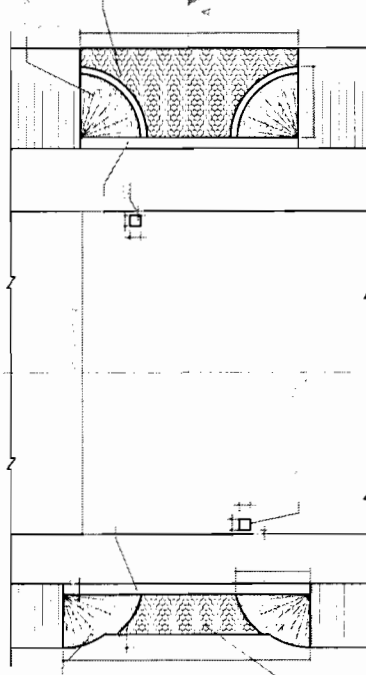
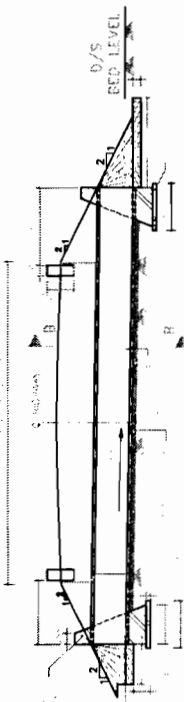
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Approved by: [Signature]

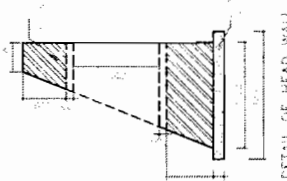
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NEW 2x 1.0 m HPC

Sl. No	Proposed Formation No	Proposed Formation Level	Camber/Superelevation		Bed level		Height of Fill		RW1	Direction of flow	Total No. of Length Pipes	U/S Approx. Length	D/S Approx. Length	Total Length
			Left	Right	Left	Right	Left (H1)	Right (H2)						
1.0	54+170	8.982	-2.5%	-2.5%	7.331	7.468	0.702	0.564	1.403	1.128	6	2.3	3.0	20.3
2.0	54+760	8.715	-2.5%	-2.5%	7.354	7.215	0.411	0.550	0.822	1.100	6	2.3	3.0	20.3
3.0	62+983	8.252	0.96%	-2.5%	7.367	7.608	0.143	0.000	0.286	0.000	5	2.3	3.0	17.80
4.0	72+456	10.670	7.0%	-7.0%	9.603	9.788	0.687	0.000	1.374	0.000	6	2.3	3.0	20.3
5.0	100+424	8.370	-2.5%	-2.5%	7.591	8.478	0.000	2.542	0.000	5.083	7	2.3	3.0	22.8
6.0	102+500	9.041	-2.5%	-2.5%	8.624	8.151	0.000	0.000	0.000	0.000	12	2.3	3.0	17.80
7.0	105+375	8.416	-2.5%	-2.5%	5.975	6.442	1.480	1.024	2.981	2.048	7	2.3	3.0	22.8



NOTES:



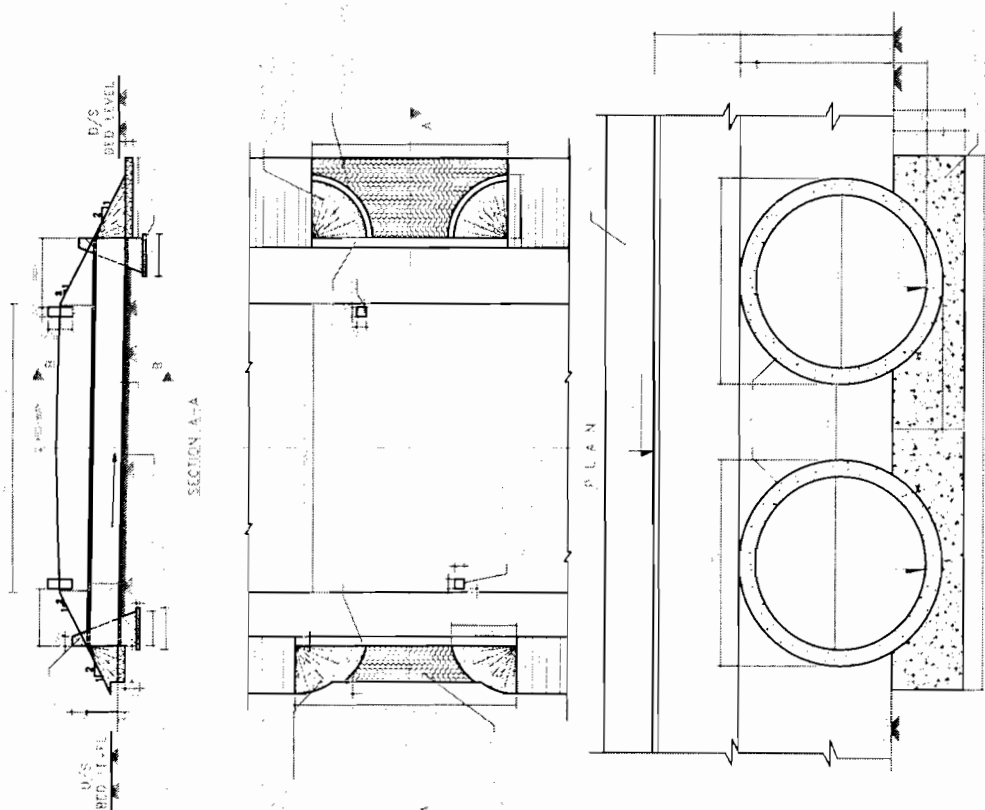
DPJ - NKC (JV), Contractor



Chief Engineer, World Bank Projects, Odisha, Employer

Chief Engineer, World Bank Projects, Odisha, Employer

<p>CONSULTING ENGINEERS GROUP LTD. E-19/43, 6th Cross Market, Mohor, Bhubaneswar-751005 Tel: +91-674-2520880, 2521880, 2520556 Fax: 2521348, e-mail: ceg@cegroup.co.in</p>		<p>Project: ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE (DUHURIA - CHANDBALLI-57KM)</p>	
DATE: 08-10-2007	DESIGNER: S. S. SINGH	DATE: 08-10-2007	DESIGNER: S. S. SINGH
DATE: 08-10-2007	DESIGNER: S. S. SINGH	DATE: 08-10-2007	DESIGNER: S. S. SINGH
DATE: 08-10-2007	DESIGNER: S. S. SINGH	DATE: 08-10-2007	DESIGNER: S. S. SINGH



NEW 2x 1.2 m HPC

Sl. No.	Proposed Formation Level	Proposed Formation Elevation		Bed level		Height of Fill		Direction of Flow	Total Length	No. of Pipes	US Approval	RIS Approval	Total Length
		Left	Right	Left	Right	Left	Right						
1.0	52.452	9.96	-2.5%	7.145	6.840	1.466	1.766	2.998	3.592	L to R	10.59	3.0	25.3
2.0	52.796	9.54	-2.5%	6.723	6.418	1.870	1.870	3.740	3.750	L to R	19.46	6	23
3.0	53.076	9.30	-2.5%	6.500	6.195	2.000	2.000	4.000	4.000	L to R	17.12	5	23
4.0	53.360	8.98	-2.5%	6.277	5.972	2.190	2.190	4.360	4.360	L to R	15.00	4	23
5.0	52.366	8.78	-2.5%	6.054	5.749	2.386	2.386	4.772	4.772	L to R	16.01	6	23
6.0	52.400	8.96	-2.5%	6.17	5.86	2.240	2.240	4.480	4.480	L to R	17.97	8	23
7.0	52.450	9.00	-2.5%	6.20	5.90	2.200	2.200	4.400	4.400	R to L	20.87	9	23
8.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
9.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
10.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
11.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
12.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
13.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
14.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
15.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
16.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
17.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
18.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
19.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
20.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
21.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
22.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
23.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
24.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
25.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
26.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
27.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
28.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
29.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
30.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
31.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
32.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
33.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
34.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
35.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
36.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
37.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
38.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
39.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
40.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
41.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
42.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
43.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
44.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
45.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
46.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
47.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
48.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
49.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
50.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
51.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
52.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
53.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
54.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
55.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
56.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
57.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
58.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
59.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
60.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
61.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
62.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
63.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
64.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23
65.0	52.450	8.74	-2.5%	6.04	5.73	2.310	2.310	4.620	4.620	L to R	17.39	6	23

NEW 4x 1.2 m HPC

Sl. No.	Proposed Formation Level	Left	Right	Height of Fill	Direction of Flow	Total Length	No. of Pipes	US Approval	RIS Approval	Total Length			
64	57.485	6.90	-2.5%	6.204	6.519	1.445	1.22	2.80	2.441	R to L	17.33	7	23
65	58.167	6.90	-2.5%	6.206	6.312	1.746	1.72	3.49	3.439	R to L	16.93	8	23

NOTE: THE END & INTERNAL SPACING OF PIPES SHALL BE AS PER THE 2 ROW PIPES.

ODISHA STATE ROAD PROJECT
UNDER WORLD BANK ASSISTANCE

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E-12/60 Connaught Place, New Delhi-17
Tel: +91-11-220899, 2321899, 2320506
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Chief Engineer,
World Bank Project,
R.O.C. Div., Odisha,
Bhubaneswar

Employer

CONTRACTOR
DPJ - NKC (P) Ltd.
Bhubaneswar

Volume-IV, Page 190 of 200

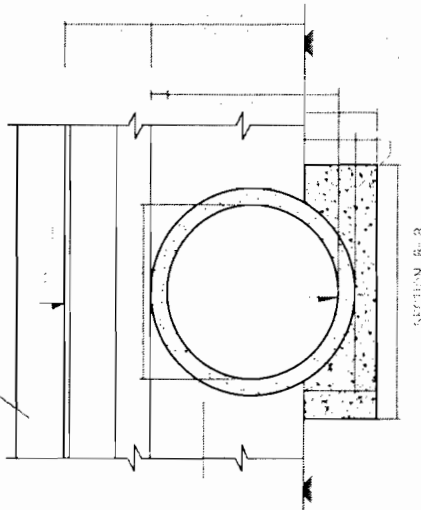
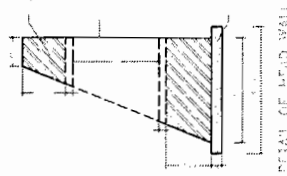
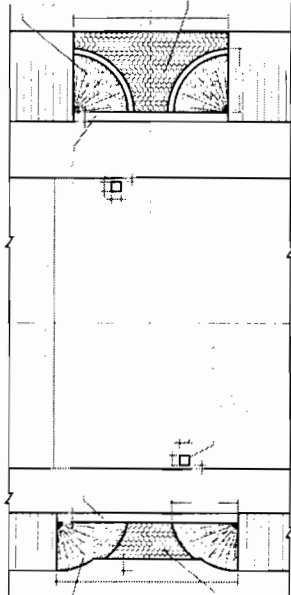
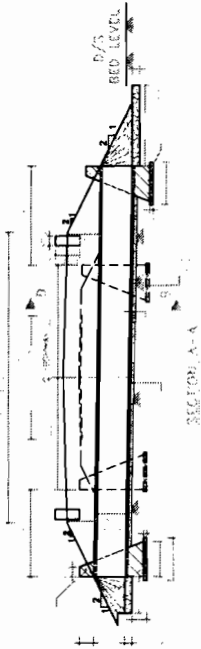
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APPROVED BY: [Signature]

TYPICAL ARRANGEMENT FOR R.O.C. DOUBLE PIPE CULVERTS (2x1.2 m DIA) (HEIGHT OF FILL VARYING FROM 0.6 TO 4.0 M) (DUHURA - CHANDBALI-BITOU)

PIPE CULVERTS LEVEL DETAIL (EXTENSION CASES)

Sl. No	Proposed Chainage	Proposed Formation Level		Camber/Super Elevation		Bed level		Height of Fill		LW1 RW1	Direction of flow	Total Length	No. of Pipes
		Left	Right	Left	Right	Left (H1)	Right (H2)						
1	87+160	9.350	-2.5%	6.240	6.925	2.2	1.48	4.32	3	R to L	19.27	8	
2	87+400	9.544	-2.5%	5.956	5.994	2.6	2.6	5.28	5.2	R to L	22.48	9	
3	87+600	9.510	-2.5%	6.792	6.917	1.8	1.64	3.54	3.3	R to L	18.82	8	
4	87+850	9.433	-2.5%	6.422	6.215	2.1	2.27	4.12	4.5	L to R	20.66	9	
5	88+100	9.355	-2.5%	6.304	6.519	2.1	1.89	4.2	3.8	R to L	19.97	8	
6	88+300	9.293	-2.5%	6.248	6.056	2.1	2.29	4.19	4.6	L to R	20.76	9	
7	88+600	9.200	-2.5%	6.057	6.349	2.2	1.9	4.39	3.8	R to L	20.19	9	
8	88+700	9.474	-2.5%	6.561	6.072	2	2.45	3.93	4.9	L to R	20.83	9	
9	89+000	15.226	-2.5%	7.800	7.387	6.5	6.89	13	14	L to R	38.73	16	
10	89+930	10.769	-2.5%	6.952	7.643	2.9	2.18	5.73	4.4	R to L	22.09	9	
11	90+300	10.695	-2.5%	6.705	7.222	3	2.52	6.08	5	R to L	23.13	10	
12	90+500	10.661	-2.5%	7.748	6.675	2	3.04	3.93	6.1	L to R	22	9	
13	90+800	9.926	-2.5%	6.737	7.453	2.2	1.52	4.48	3	R to L	19.52	8	
14	50+350	9.790	-2.5%	6.360	5.840	2.5	3	4.96	6	L to R	22.96	10	

NOTES:

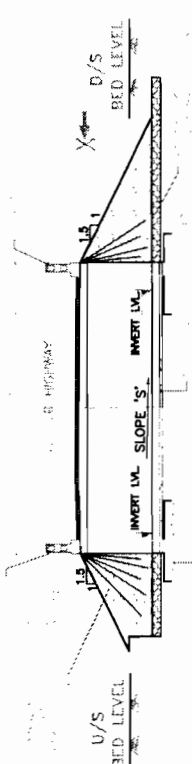


Chief Engineer
World Bank Road Project
Odisha State Road Project
Under World Bank Assistance
Ghubilipada

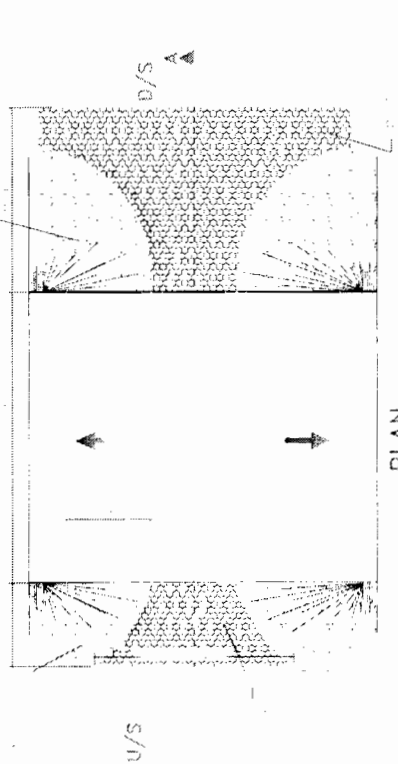
REV	DESCRIPTION	DATE	PROJECT	ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE	DESIGNED BY	CHKD BY	DATE
E	ISSUED AS PER THE CONTRACT	08-2007	PROJECT	TYPICAL WIDENING ARRANGEMENT FOR R.C.C EXTN. PIPE CULVERTS (DUHURIA - CHANDBALLI STKM)	DESIGNED BY	CHKD BY	DATE

REFERENCE DRAWING:-

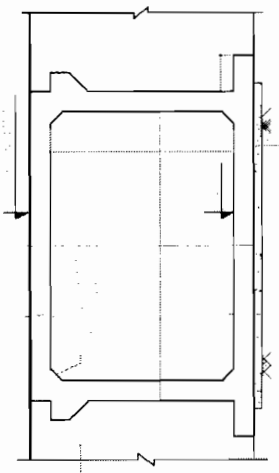
Sl. No.	Prop. Chainage	Prop. FRL		Camber		Bed Level		Direction of flow	Span 'a'
		Left	Right	Left	Right	Left	Right		
1/22/0	65+958	8.460	-2.50%	-2.50%	6.330	6.330	L to R	2	
3/33/0	73+540	10.670	-2.50%	-2.50%	7.804	7.804	R to L	3	
1/63/0	86+050	8.487	-2.50%	-2.50%	6.550	6.550	R to L	6	
1/33/0	86+434	8.552	-2.50%	-2.50%	5.225	5.442	R to L	3	
1/63/0	97+634	9.415	-7.00%	7.00%	6.031	7.351	R to L	6	
1/63/0	100+065	8.041	-2.50%	-2.50%	5.585	5.800	R to L	6	



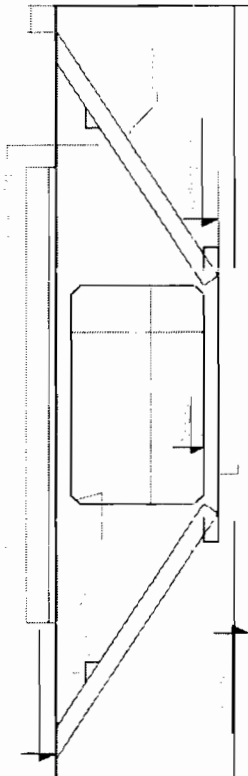
SECTION A-A



PLAN



DIMENSION DETAILS OF BOX



VIEW X

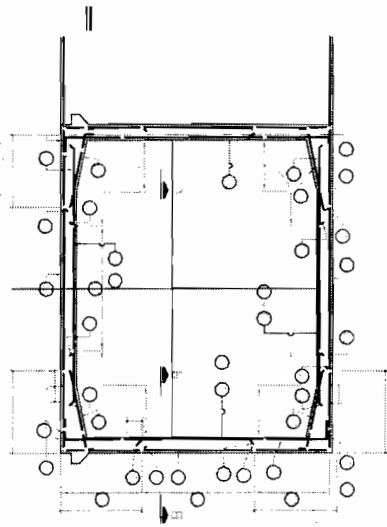
BOX/TYPE	WIDTH 'a' (mm)	HEIGHT 'b' (mm)	THICKNESS 'c' (mm)	THICKNESS 'd' (mm)	THICKNESS 'E' (mm)	THICKNESS 'f' (mm)	NET BEARING CAPACITY T/M ²

DPJ NKC (JV) Contractor *Adi Gurgaon*

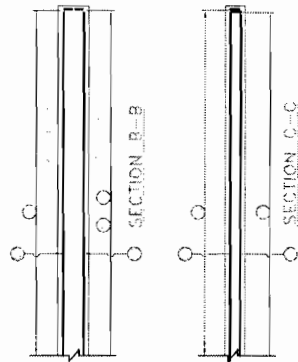
Chief Engineer, Orissa State Road Development Corporation, Bhubaneswar
 For the E.I.C. (JV), Bhubaneswar
 Employer

REV	DESCRIPTION	DATE	NO. OF APPROVED AND AMENDMENT SHEETS	CONSULTING ENGINEERS GROUP LTD. E-12, Mid-City Colony, Mahaveer Nagar, Jaipur-302015 Tel: 931-141-2520/89, 25210/6, 25205/56 Fax: 25217/46, 25217/45 e-mail: ceg@cegroupindia.com	MODEL:	CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED PROJECT PREPARATION OF PHASE - (I) ROADS FOR ORISSA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE					
						GENERAL ARRANGEMENT DRAWING					
SINGLE CELL R.C.C. BOX CULVERT						PROJECT NO. ORISSA/ST/04/01/100/04/100/04/01 DATE: 18/07/2007 DRAWN: [] CHECKED: [] APPROVED: [] J.E. []					

NOTES:



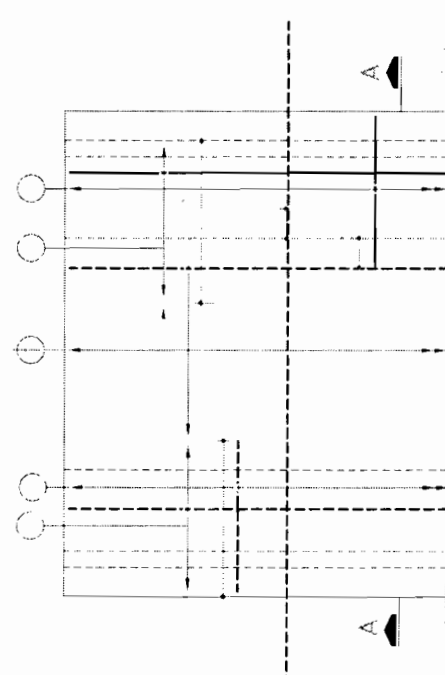
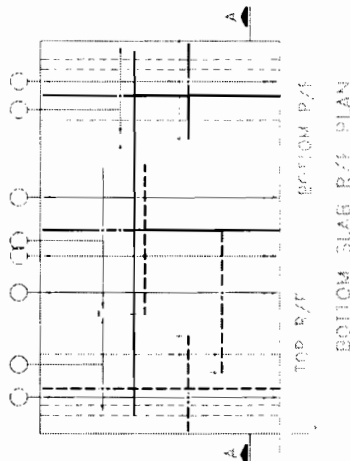
REFERENCE DRAWINGS:



REIN. DETAILS

NO.	SYMBOL	DESCRIPTION	SCALE
1	—	TOP REIN. BAR	1:1
2	—	BOTTOM REIN. BAR	1:1
3	—	TOP REIN. BAR	1:1
4	—	BOTTOM REIN. BAR	1:1
5	—	TOP REIN. BAR	1:1
6	—	BOTTOM REIN. BAR	1:1
7	—	TOP REIN. BAR	1:1
8	—	BOTTOM REIN. BAR	1:1
9	—	TOP REIN. BAR	1:1
10	—	BOTTOM REIN. BAR	1:1

LEGEND:



TOP R/F BOTTOM R/F
TOP SLAB R/F PLAN
BOTTOM SLAB R/F PLAN

<p>PROJECT:</p> <p>ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE</p>	<p>DRAWING NO.: DPJ/NKC/02/02-07A/01/01/01/01/01</p> <p>DATE: DEC. 2013</p> <p>DESIGN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>APPROVED BY: [Signature]</p>



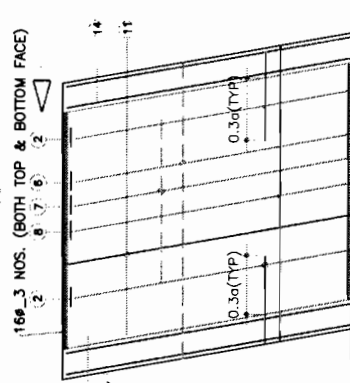
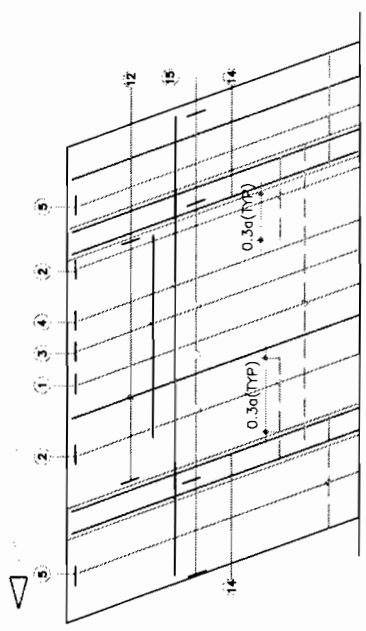
Chief Engineer
Road & Transport
G.O. the E.T. Project, Disha,
Employer

[Signature]

NOTES :-

- 1 ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
- 2 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRWG.NO.GRRP/CEC/SH-BA BOX CUL-04
- 3 MINIMUM CLEAR COVER TO MAIN REINFORCEMENT SHALL BE 40mm.
- 4 MINIMUM LAP LENGTH OF REINFORCEMENT SHALL BE KEPT AS 83 D WHERE D IS THE DIAMETER THE BAR, NOT MORE THAN 50% SHALL BE LAPPED AT ANY ONE LOCATION.
- 5 LINK SHOULD GO ROUND MAIN BAR AND CONTINUE ALONG BARREL.
- 6 LINK SHALL BE STARTED AT DISTANCE OF HALF THEIR SPACING FROM THE FACE OF SUPPORT.
- 7 MAXIMUM SIZE OF AGGREGATE TO BE USED IN RCC IS 20mm.
- 8 GRADE OF CONCRETE M-20.
- 9 ALL REINFORCEMENT BARS SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE F4 500 CONFORMING TO IS:1786-1985
- 10 JOINT OR LAPPING OF BARS SHALL BE SUITABLY STAGGERED AS PER CLAUSE 304.6 OF IRC:21-2000.

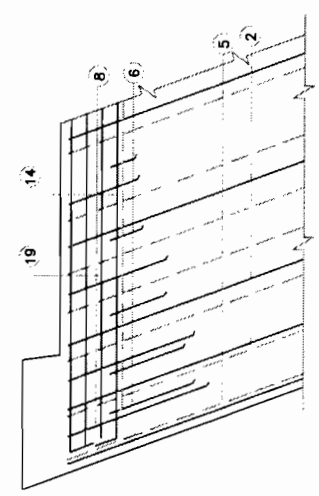
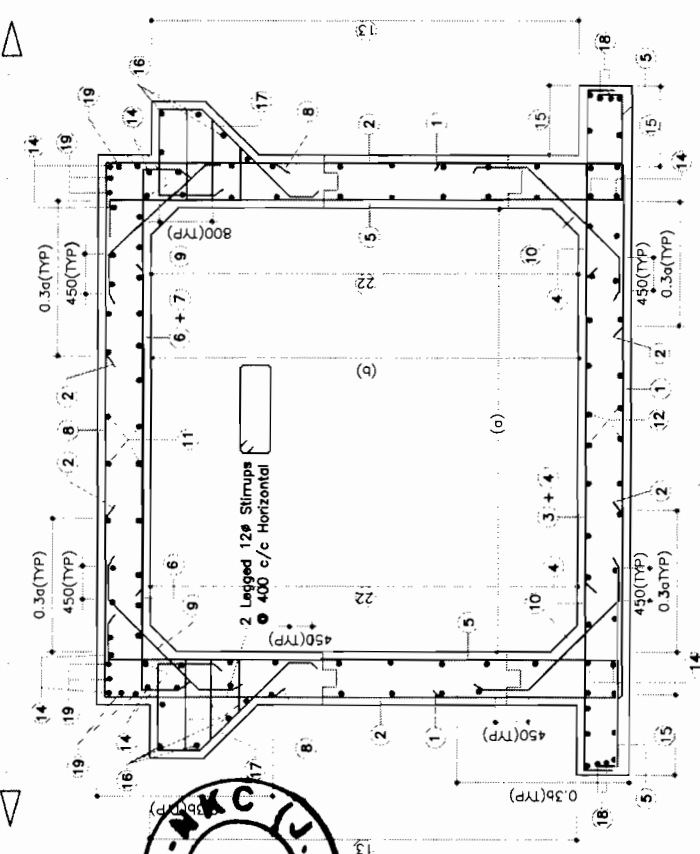
REFERENCE DRAWINGS:-



LEGEND :-

—— TOP FACE BARS/OUTER FACE BARS.

--- BOTTOM FACE BARS/INNER FACE BARS.



MARK	BAR SHAPE	1/227/0	1/237/0	1/337/0	1/347/0	1/437/0	1/447/0	1/457/0	1/467/0	1/477/0	1/487/0	1/497/0
1	16#	10	16	10	12	10	12	10	12	10	12	10
2	16#	16	16	16	16	16	16	16	16	16	16	16
3	16#	16	16	16	16	16	16	16	16	16	16	16
4	16#	16	16	16	16	16	16	16	16	16	16	16
5	16#	16	16	16	16	16	16	16	16	16	16	16
6	16#	16	16	16	16	16	16	16	16	16	16	16
7	16#	16	16	16	16	16	16	16	16	16	16	16
8	16#	16	16	16	16	16	16	16	16	16	16	16
9	16#	16	16	16	16	16	16	16	16	16	16	16
10	16#	16	16	16	16	16	16	16	16	16	16	16
11	16#	16	16	16	16	16	16	16	16	16	16	16
12	16#	16	16	16	16	16	16	16	16	16	16	16
13	16#	16	16	16	16	16	16	16	16	16	16	16
14	16#	16	16	16	16	16	16	16	16	16	16	16
15	16#	16	16	16	16	16	16	16	16	16	16	16
16	16#	16	16	16	16	16	16	16	16	16	16	16
17	16#	16	16	16	16	16	16	16	16	16	16	16
18	16#	16	16	16	16	16	16	16	16	16	16	16
19	16#	16	16	16	16	16	16	16	16	16	16	16
20	16#	16	16	16	16	16	16	16	16	16	16	16
21	16#	16	16	16	16	16	16	16	16	16	16	16
22	16#	16	16	16	16	16	16	16	16	16	16	16
23	16#	16	16	16	16	16	16	16	16	16	16	16

REINFORCEMENT DETAIL OF SINGLE CELL SKEW BOX

ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

CONSULTING ENGINEERS GROUP LTD.
E-12/69 Colony, Mahap Nagar, Jaipur-302008
Tel: +91-141-2520892, 2521898, 2520558
Fax: 2521340, e-mail: cege@cegeindia.com

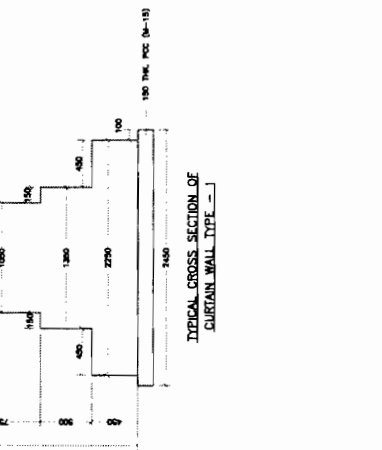
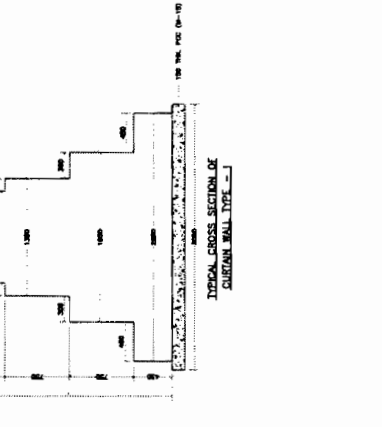
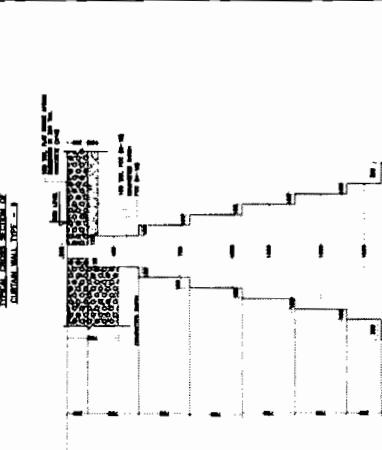
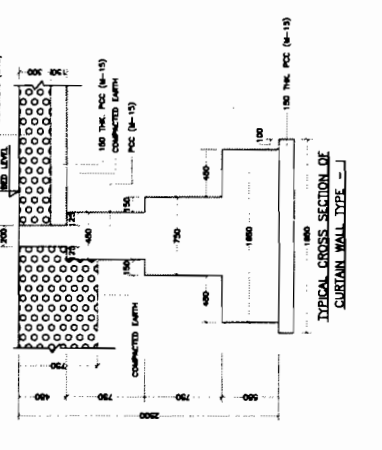
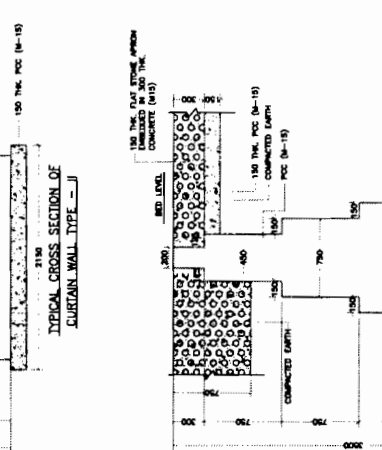
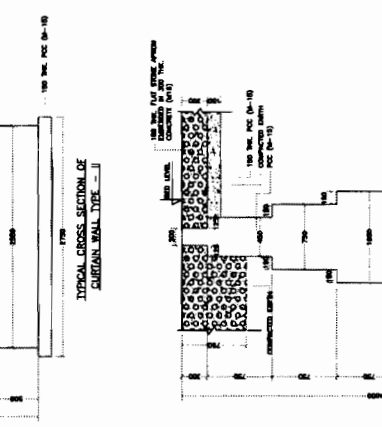
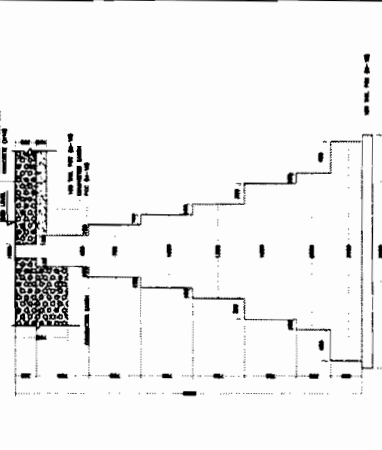
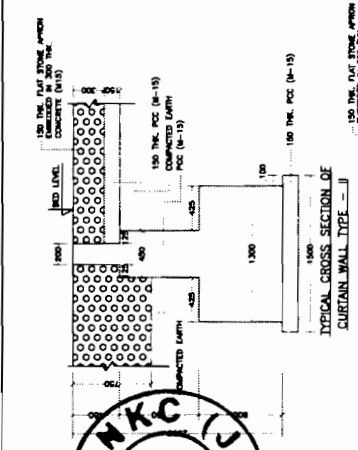
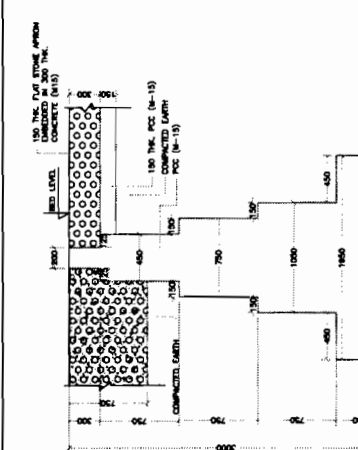
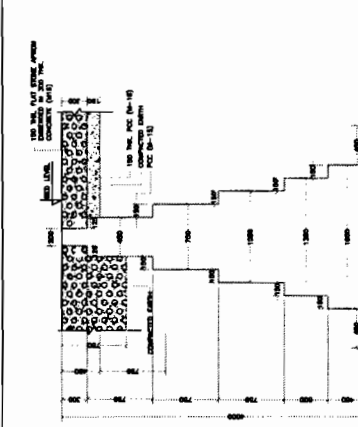


Chief Engineer
World Bank Projects, Odisha
Emp-160
Chief Engineer
World Bank Projects
the E.C.O. Group, Odisha
Bhubaneswar



DESIGNED	DATE	SCALE	BY
CHECKED	DATE	SCALE	BY
APPROVED	DATE	SCALE	BY

NOTES:
 REFERENCE DRAWING:-
 OSRP/CEG/SH-9A/BR/FPW/01
 1. OSRP/CEG/SH-9A/BR/32+075/01
 2. OSRP/CEG/SH-9A/BR/81+200/01
 3. OSRP/CEG/SH-9A/BR/83+400/01
 4. OSRP/CEG/SH-9A/BR/86+700/01
 5. OSRP/CEG/SH-9A/BR/93+850/01



GENERAL ARRANGEMENT DRAWING		DESIGNED BY: OSRP/CEG/SH-9A/BR/FPW/01	DATE: 15/01/2017	APPROVED:
TYPICAL SECTIONS OF CURTAIN WALL		DRAWN BY: OSRP/CEG/SH-9A/BR/FPW/01	DATE: 15/01/2017	APPROVED:

ODISHA STATE ROAD PROJECT
 UNDER WORLD BANK ASSISTANCE

PROJECT: ODISHA STATE ROAD PROJECT UNDER WORLD BANK ASSISTANCE

DPJ - NKCC
 Gurgaon

Chief Engineer
 World Bank Projects Odisha,
 Employer



GOVERNMENT OF ODISHA
WORKS DEPARTMENT

CIVIL WORKS CONTRACT

[PACKAGE No. OSRP- CW-ICB-P04B]

For

*Widening & Strengthening of existing carriageway to 2-lane Road from
Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to
Km. 51/500 of SH –9)*

under
Odisha State Roads Project

between

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

and

M/s DPJ-NKC (JV) ,
Plot No. 63, Udyog Vihar, Phase-IV,
Gurgaon-122016, Haryana

[VOLUME-V : SCHEDULES]

Agreement Value: Rs. 170,42,73,538

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

Dated: 16th September, 2013

CONTENTS of CONTRACT

Volume – I	:	Letter of Acceptance, Letter 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 Summery of Price Schedule	1
2	Daywork Summery	2
3.	Price Schedule	3-40




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

Grand Summary of Price Schedule

Contract Name: Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)
- ICB Package OSRP-CW-ICB-P04B

Contract No.: Agreement No. 10 of 2013 - 14

<i>General Summary</i>	<i>Page</i>	<i>Amount</i>
BILL NO.1 : SITE CLEARANCE	3-4	6,826,585.00
BILL NO.2 : EARTH WORKS	5-6	320,873,068.00
BILL NO.3 : SUB-BASE AND BASE COURSES	7	279,082,635.00
BILL NO.4 : BITUMINOUS COURSES	8-9	552,573,274.00
BILL NO.5 : CULVERTS AND UNDERPASSES	10-13	132,691,331.00
BILL NO.6 : BRIDGES	14-20	122,359,584.00
BILL NO.7 : RETAINING WALL, DRAINAGE AND PROTECTIVE WORKS	21-22	195,188,350.00
BILL NO.8 : ROAD SAFETY AND AMENITIES	23-29	106,203,771.00
BILL NO.9 : MAINTENANCE, REPAIR AND REHABILITATION	30	30,824,230.00
BILL NO.10 : ENVIRONMENTAL MITIGATION MEASURES	31-33	36,650,804.00
Subtotal of Bills	(A)	1,783,273,632.00
Total for Daywork (Provisional Sum)	(B)	3,176,617.50
Total Bid Price (A + B)	(C)	1,786,450,249.50
Discount @4.60% on Total Bid Price (C) (4.60% Discount shall be effected in each Work Bill)	(D)	82,176,711.48
Final Bid Price (C-D)	(E)	1,704,273,538.02
	Say,	1,704,273,538.00

Rupees One Hundred Seventy Crores Forty Two Lakhs Seventy Three Thousand Five Hundred Thirty Eight Only



Volume-V:1 of 40


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

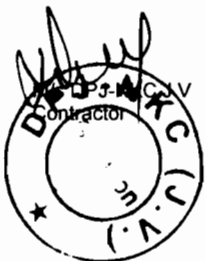
Daywork Summary

Contract Name: Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandbali (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH -9)
- ICB Package OSRP-CW-ICB-P04B

Contract No.: Agreement No. 10 of 2013 - 14

	<i>Amount (Rs.)</i>	<i>% Foreign</i>
1. Total for Daywork: Labour	751,950.00	NIL
2. Total for Daywork: Materials	1,461,442.50	NIL
3. Total for Daywork: Contractor's Equipment	963,225.00	NIL

Total for Daywork (Provisional Sum) 3,176,617.50
(carried forward to Bid Summary, p.1)



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

Contract Name: Widening & Strengthening of existing carriageway to 2-lane Road from Duhuria to Chandball (Km. 49/000 to Km. 99/000 of MDR & Km 45/000 to Km. 51/500 of SH-9)- ICB Package OSRP-CW-ICB-P04B
PRICE SCHEDULE (Works Items & Dayworks)


SI. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
1.01	BILL NO.1 : SITE CLEARANCE Cleaning and Grubbing for road land complete as per Technical Specification Clause 201 and as per the direction of Engineer.	Hectare	102.00	32857.00 Rupees Thirty Two Thousand Eight Hundred Fifty Seven Only	3,351,414.00 Rupees Thirty Three Lakhs Fifty One Thousand Four Hundred Fourteen Only
1.02	Dismantling structures and pavement including disposal of resulting material complete as per Technical Specification Clause 202, 2809 and as per the direction of Engineer.				
	a) Brick/ Stone Structures	Cum	569.00	253.00 Rupees Two Hundred Fifty Three Only	143,957.00 Rupees One Lakh Forty Three Thousand Nine Hundred Fifty Seven Only
	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	234.00	253.00 Rupees Two Hundred Fifty Three Only	59,202.00 Rupees Fifty Nine Thousand Two Hundred Two Only
	ii)R.C.C.	Cum	145.00	316.00 Rupees Three Hundred Sixteen Only	45,820.00 Rupees Forty Five Thousand Eight Hundred Twenty Only
	c) Dismantling all types of Pavement course	Cum	16080.00	190.00 Rupees One Hundred Ninety Only	3,055,200.00 Rupees Thirty Lakhs Fifty Five Thousand Two Hundred Only
	d) Hume pipe	Lm	229.00	316.00 Rupees Three Hundred Sixteen Only	72,364.00 Rupees Seventy Two Thousand Three Hundred Sixty Four Only



Chief Engineer
World Bank Projects, Odisha
Employer

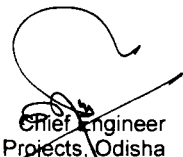
Chief Engineer
World Bank Project
Of the E.P.C.(Civil), Odisha
Bhubaneswar.

M/s DPZ NKCC U.V
Contractor




Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
e)	Kerb	Lm	27.00	101.00 Rupees One Hundred One Only	2,727.00 Rupees Two Thousand Seven Hundred Twenty Seven Only
f)	Dry stone pitching	Cum	137.00	190.00 Rupees One Hundred Ninety Only	26,030.00 Rupees Twenty Six Thousand Thirty Only
g)	Expansion joint	Lm	103.00	632.00 Rupees Six Hundred Thirty Two Only	65,096.00 Rupees Sixty Five Thousand Ninety Six Only
h)	Bituminous Concrete Wearing Course	Sqm	191.00	25.00 Rupees Twenty Five Only	4,775.00 Rupees Four Thousand Seven Hundred Seventy Five Only
	Total for Bill No. 1 Carried forward to Summary				6,826,585.00 Rupees Sixty Eight Lakhs Twenty Six Thousand Five Hundred Eighty Five Only

Chief Engineer
World Bank Projects, Odisha
Employer




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

M/s DPJ-NKC J.V
Contractor



Volume-V : 5 of 40

Chief Engineer
World Bank Projects, Odisha
Employer



Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), O-
Bhubaneswar

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
2.01	BILL NO.2 : EARTH WORKS Roadway and Drainage excavation necessary for construction of roadway complete as per Technical Specification Clause 301 and as per the direction of Engineer.				
	a) All kinds of soil	Cum	105443.00	80.00 Rupees Eighty Only	8,435,440.00 Rupees Eighty Four Lakhs Thirty Five Thousand Four Hundred Forty Only
	b) Soft Rock (Blasting not required) (LS)	Cum	500.00	253.00 Rupees Two Hundred Fifty Three Only	126,500.00 Rupees One Lakh Twenty Six Thousand Five Hundred Only
	c) Hard Rock (Blasting required) (LS)	Cum	500.00	821.00 Rupees Eight Hundred Twenty One Only	410,500.00 Rupees Four Lakhs Ten Thousand Five Hundred Only
	d) Hard rock (Blasting not required) (LS)	Cum	500.00	1074.00 Rupees One Thousand Seventy Four Only	537,000.00 Rupees Five Lakhs Thirty Seven Thousand Only
2.02	Construction of embankment with approved material having CBR value not less than 10% 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	194689.00	252.00 Rupees Two Hundred Fifty Two Only	49,061,628.00 Rupees Four Crores Ninety Lakhs Sixty One Thousand Six Hundred Twenty Eight Only
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	433394.00	365.00 Rupees Three Hundred Sixty Five Only	158,188,810.00 Rupees Fifteen Crores Eighty One Lakhs Eighty Eight Thousand Eight Hundred Ten Only
2.04	Construction of subgrade and earthen shoulder with approved material as per drawing complete and Technical Specification Clause 305 and as per the direction of Engineer.	Cum	385595.00	252.00 Rupees Two Hundred Fifty Two Only	97,169,940.00 Rupees Nine Crores Seventy One Lakhs Sixty Nine Thousand Nine Hundred Forty Only
2.05	Construction of embankment and subgrade with suitable material deposited at site from roadway and drainage excavation all complete as per drawing and Technical Specification Clause 305 and as per the direction of Engineer.	Cum	31633.00	104.00 Rupees One Hundred Four Only	3,289,832.00 Rupees Thirty Two Lakhs Eighty Nine Thousand Eight Hundred Thirty Two Only

Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
2.06	Loosening and re-compacting the existing sub grade in all kinds of soil up to required depth to meet the requirement of table 300-2 complete as per Technical Specification Clause 305 and as per the direction of the Engineer.	Cum	22454.00	80.00 Rupees Eighty Only	1,796,320.00 Rupees Seventeen Lakhs Ninety Six Thousand Three Hundred Twenty Only
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	1458.00	252.00 Rupees Two Hundred Fifty Two Only	367,416.00 Rupees Three Lakhs Sixty Seven Thousand Four Hundred Sixteen Only
2.08	Scarifying the existing bituminous surface layers without disturbing the base including carrying, processing, laying and disposal of waste material complete as per Technical Specification Clause 501 and as per the direction of the Engineer.	Sqm	47209.00	18.00 Rupees Eighteen Only	849,762.00 Rupees Eight Lakhs Forty Nine Thousand Seven Hundred Sixty Two Only
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	6736.00	95.00 Rupees Ninety Five Only	639,920.00 Rupees Six Lakhs Thirty Nine Thousand Nine Hundred Twenty Only
Total for Bill No. 2 Carried forward to Summary					320,873,068.00 Rupees Thirty Two Crores Eight Lakhs Seventy Three Thousand Sixty Eight Only

M/s DPJ-NAC J.V
Contractor

Volume-V:6 of 40

Chief Engineer
World Bank Projects, Odisha
Employer

Chief Engineer
World Bank Project
on the E.I.C.(Civil), Odisha
Bhubaneswar

M/s DPJ-NK
Contractor



Chief Engineer
World Bank Projects, Odisha
Employer



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

Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount in Figure and Words
3.01	BILL NO.3 : SUB-BASE AND BASE COURSES Construction of Granular Sub-base course using crushed stone aggregate by providing the materials conforming to Gr-I of Table 400-2 complete as per Technical Specification Clause 401 and as per the direction of the Engineer.	Cum	128267.00	1135.00 Rupees One Thousand One Hundred Thirty Five Only	145,583,045.00 Rupees Fourteen Crores Fifty Five Lakhs Eighty Three Thousand Forty Five Only
3.02	Construction of Wet Mix Macadam Grading-I complete as per Technical Specification clause 406 and as per the direction of Engineer.	Cum	91126.00	1465.00 Rupees One Thousand Four Hundred Sixty Five Only	133,499,590.00 Rupees Thirteen Crores Thirty Four Lakhs Ninety Nine Thousand Five Hundred Ninety Only
	Total for Bill No. 3 Carried forward to Summary				279,082,635.00 Rupees Twenty Seven Crores Ninety Lakhs Eighty Two Thousand Six Hundred Thirty Five Only

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
4.01	BILL NO.4 : BITUMINOUS COURSES Providing Primer coat over granular surface complete all as per Technical specification clause 502 and as per the direction of Engineer.	Sqm	350204.00	32.00 Rupees Thirty Two Only	11,206,528.00 Rupees One Crore Twelve Lakhs Six Thousand Five Hundred Twenty Eight Only
4.02	Providing Tack coat complete as per Technical Specification clause 503 and as per the direction of Engineer. a) Granular surface treated with primer	Sqm	350204.00	13.00 Rupees Thirteen Only	4,552,652.00 Rupees Forty Five Lakhs Fifty Two Thousand Six Hundred Fifty Two Only
	b) Over normal bituminous surface	Sqm	350204.00	11.00 Rupees Eleven Only	3,852,244.00 Rupees Thirty Eight Lakhs Fifty Two Thousand Two Hundred Forty Four Only
4.03	Providing Dense Bituminous Macadam course using Bitumen Grade-60/70 (VG-30) complete as per Technical Specification Clause 507 and as per the direction of Engineer.	Cum	18056.00	8300.00 Rupees Eight Thousand Three Hundred Only	149,864,800.00 Rupees Fourteen Crores Ninety Eight Lakhs Sixty Four Thousand Eight Hundred Only
4.04	Providing Bituminous Concrete wearing course using CRMB-55 complete as per Technical Specification Clause 509 & 521 and as per the direction of Engineer.	Cum	14008.00	9800.00 Rupees Nine Thousand Eight Hundred Only	137,278,400.00 Rupees Thirteen Crores Seventy Two Lakhs Seventy Eight Thousand Four Hundred Only
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 fixed form paver, compacting with 8-10 tonnes vibratory roller, finishing and curing as per Technical Specification Section 600 and as per the direction of the Engineer.	Cum	17083.00	2950.00 Rupees Two Thousand Nine Hundred Fifty Only	50,394,850.00 Rupees Five Crores Three Lakhs Ninety Four Thousand Eight Hundred Fifty Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
4.06	Construction of un-reinforced, dowel jointed plain cement concrete pavement, thickness as per design, over DLC with M 40 grade as per drawing, technical specification and as directed by the Engineer.	Cum	34165.00	5720.00 Rupees Five Thousand Seven Hundred Twenty Only	195,423,800.00 Rupees Nineteen Crores Fifty Four Lakhs Twenty Three Thousand Eight Hundred Only
	Total for Bill No.4 Carried forward to Summary				552,573,274.00 Rupees Fifty Five Crores Twenty Five Lakhs Seventy Three Thousand Two Hundred Seventy Four Only

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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
5.01	BILL NO.5 : CULVERTS AND UNDERPASSES Earthwork in excavation of foundation for structures complete as per drawing and technical specifications clause 304 & 2903 including all leads and lifts and as per the direction of Engineer.	Cum	16430.00	80.00 Rupees Eighty Only	1,314,400.00 Rupees Thirteen Lakhs Fourteen Thousand Four Hundred Only
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 Engineer.	Cum	2807.00	250.00 Rupees Two Hundred Fifty Only	701,750.00 Rupees Seven Lakhs One Thousand Seven Hundred Fifty Only
5.03	Providing and filling behind abutment, wing wall and return wall etc. with granular material and below pipe bed in layers not exceeding 150mm thick including All leads and lifts complete as per drawings, direction of the Engineer and Technical specification clause 304 and as per the direction of Engineer.	Cum	1640.00	457.00 Rupees Four Hundred Fifty Seven Only	749,480.00 Rupees Seven Lakhs Forty Nine Thousand Four Hundred Eighty Only
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 Engineer.	Cum	603.00	1104.00 Rupees One Thousand One Hundred Four Only	665,712.00 Rupees Six Lakhs Sixty Five Thousand Seven Hundred Twelve Only
5.05	Cement Concrete M-15 grade in leveling course etc. including centering and shuttering all complete as per Drawings and Technical Specification Sections 1500, 1700, 2100 and as per the direction of Engineer.	Cum	3295.00	4414.00 Rupees Four Thousand Four Hundred Fourteen Only	14,544,130.00 Rupees One Crore Forty Five Lakhs Forty Four Thousand One Hundred Thirty Only
5.06	Cement Concrete M-15 grade in substructure & headwall including centering and shuttering all complete as per Drawings and Technical Specification Sections 1500, 1700, 2100, 2200 and as per the direction of Engineer.	Cum	6429.00	4730.00 Rupees Four Thousand Seven Hundred Thirty Only	30,409,170.00 Rupees Three Crores Four Lakhs Nine Thousand One Hundred Seventy Only
5.07	Reinforced cement concrete of M-20 grade in all types of culverts as per drawing and technical specification Section 1500, 1700 & 2200 and as per the direction of Engineer.	Cum	2276.00	5448.00 Rupees Five Thousand Four Hundred Forty Eight Only	12,399,648.00 Rupees One Crore Twenty Three Lakhs Ninety Nine Thousand Six Hundred Forty Eight Only
5.08	Reinforced cement concrete M-30 grade in approach slabs including cost of reinforcement all complete as per Drawing and Technical Specification Clause 1500, 1700 & 2704 and as per the direction of Engineer.	Cum	288.00	8257.00 Rupees Eight Thousand Two Hundred Fifty Seven Only	2,378,016.00 Rupees Twenty Three Lakhs Seventy Eight Thousand Sixteen Only



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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
5.09	HYSD (TMT) bar reinforcement complete as per Drawing and Technical Specifications Clause 1600 and as per the direction of the Engineer.	MT	80.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	4,792,160.00 Rupees Forty Seven Lakhs Ninety Two Thousand One Hundred Sixty Only
5.10	Providing laying and joining NP-4(I.S 458) hume pipes for culverts complete as per drawing Tech. Specification section.2900 and IRC special publication no.13 and as per the direction of Engineer.				
	a) 1m dia Hume Pipe in Single Row	Lm	780.00	4055.00 Rupees Four Thousand Fifty Five Only	3,162,900.00 Rupees Thirty One Lakhs Sixty Two Thousand Nine Hundred Only
	b) 1.2m dia Hume Pipe in Single Row	Lm	838.00	5680.00 Rupees Five Thousand Six Hundred Eighty Only	4,759,840.00 Rupees Forty Seven Lakhs Fifty Nine Thousand Eight Hundred Forty Only
	c) 1m dia Hume Pipe in Double Row	Double Row Lm	210.00	8110.00	1,703,100.00
	d) 1.2m dia Hume Pipe in Double Row	Double Row Lm	3121.00	11360.00	35,454,560.00
5.11	Providing & laying 0.3m dia NP-4 Hume Pipe with collars on first class bedding for utility duct and reptile pass including cost of 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	1690.00	930.00 Rupees Nine Hundred Thirty Only	1,571,700.00 Rupees Fifteen Lakhs Seventy One Thousand Seven Hundred Only
5.12	Providing & laying 0.6m dia NP-3 Hume Pipe with collars in single row on first class bedding for spur road drain including cost of 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	2740.00	2240.00 Rupees Two Thousand Two Hundred Forty Only	6,137,600.00 Rupees Sixty One Lakhs Thirty Seven Thousand Six Hundred Only



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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
5.13	Providing and laying filter material underneath stone pitching in slopes complete as per drawings and technical specification section 2504, 2509, 2510 and as per the direction of Engineer.	Cum	1039.00	1104.00 Rupees One Thousand One Hundred Four Only	1,147,056.00 Rupees Eleven Lakhs Forty Seven Thousand Fifty Six 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	2078.00	1420.00 Rupees One Thousand Four Hundred Twenty Only	2,950,760.00 Rupees Twenty Nine Lakhs Fifty Thousand Seven Hundred Sixty 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 Engineer.	Cum	1750.00	2512.00 Rupees Two Thousand Five Hundred Twelve Only	4,396,000.00 Rupees Forty Three Lakhs Ninety Six Thousand 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 Engineer.	No	336.00	196.00 Rupees One Hundred Ninety Six Only	65,856.00 Rupees Sixty Five Thousand Eight Hundred Fifty Six Only
5.17	Supplying and fixing Asphaltic Plug expansion joints complete as per Drawing and as per IRC; SP : 69-2005 and as per the direction of Engineer.	Lm	358.00	758.00 Rupees Seven Hundred Fifty Eight Only	271,364.00 Rupees Two Lakhs Seventy One Thousand Three Hundred Sixty Four Only
5.18	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 the Engineer.	Cum	347.00	4730.00 Rupees Four Thousand Seven Hundred Thirty Only	1,641,310.00 Rupees Sixteen Lakhs Forty One Thousand Three Hundred Ten Only
5.19	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 2700, Clause 512 and as per the direction of Engineer.	Sqm	2133.00	607.00 Rupees Six Hundred Seven Only	1,294,731.00 Rupees Twelve Lakhs Ninety Four Thousand Seven Hundred Thirty One Only
5.20	Synthetic enamel painting of culvert no. and span arrangement as per IRC - 7 - 1971 and as per the direction of Engineer.	No.	48.00	316.00 Rupees Three Hundred Sixteen Only	15,168.00 Rupees Fifteen Thousand One Hundred Sixty Eight Only

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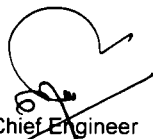
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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
5.21	Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface etc. complete as per the direction of Engineer.	Sqm	868.00	190.00 Rupees One Hundred Ninety Only	164,920.00 Rupees One Lakh Sixty Four Thousand Nine Hundred Twenty Only
	Total for Bill No.5 Carried forward to Summary				132,691,331.00 Rupees Thirteen Crores Twenty Six Lakhs Ninety One Thousand Three Hundred Thirty One Only

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
6.01	BILL NO.6 : BRIDGES 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 Engineer.	Cum	21322.00	80.00 Rupees Eighty Only	1,705,760.00 Rupees Seventeen Lakhs Five Thousand Seven Hundred Sixty Only
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 including all leads & lifts as per Technical specification Clause 304 and as per the direction of Engineer.	Cum	2568.00	457.00 Rupees Four Hundred Fifty Seven Only	1,173,576.00 Rupees Eleven Lakhs Seventy Three Thousand Five Hundred Seventy Six Only
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 Engineer.	Cum	444.00	1104.00 Rupees One Thousand One Hundred Four Only	490,176.00 Rupees Four Lakhs Ninety Thousand One Hundred Seventy Six Only
6.04	Cement concrete M-15 grade in leveling course etc including centering and shuttering all complete as per drawing and Technical specification Section 1500, 1700 & 2100 and as per the direction of Engineer.	Cum	767.00	4414.00 Rupees Four Thousand Four Hundred Fourteen Only	3,385,538.00 Rupees Thirty Three Lakhs Eighty Five Thousand Five Hundred Thirty Eight Only
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, 2200 and as per the direction of Engineer.	Cum	1305.00	4730.00 Rupees Four Thousand Seven Hundred Thirty Only	6,172,650.00 Rupees Sixty One Lakhs Seventy Two Thousand Six Hundred Fifty Only
6.06	Reinforced Cement Concrete of following grades in foundation complete as per Drawing & Technical Specification sections 1500, 1700, 2100, 2200 and as per the direction of the Engineer.				
	(a) M-20 Grade	Cum	175.00	4627.00 Rupees Four Thousand Six Hundred Twenty Seven Only	809,725.00 Rupees Eight Lakhs Nine Thousand Seven Hundred Twenty Five Only
	(b) M-35 Grade	Cum	713.00	5440.00 Rupees Five Thousand Four Hundred Forty Only	3,878,720.00 Rupees Thirty Eight Lakhs Seventy Eight Thousand Seven Hundred Twenty Only



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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
6.07	Reinforced cement concrete in substructure complete as per drawing & Technical specification sections 1500, 1700, 2200 and as per the direction of Engineer.				
	a) M-20 grade	Cum	881.00	5448.00 Rupees Five Thousand Four Hundred Forty Eight Only	4,799,688.00 Rupees Forty Seven Lakhs Ninety Nine Thousand Six Hundred Eighty Eight Only
	b) M-25 grade	Cum	59.00	5832.00 Rupees Five Thousand Eight Hundred Thirty Two Only	344,088.00 Rupees Three Lakhs Forty Four Thousand Eighty Eight Only
	c) M-30 grade	Cum	78.00	6084.00 Rupees Six Thousand Eighty Four Only	474,552.00 Rupees Four Lakhs Seventy Four Thousand Five Hundred Fifty Two Only
	d) M-35 grade	Cum	4323.00	6262.00 Rupees Six Thousand Two Hundred Sixty Two Only	27,070,626.00 Rupees Two Crores Seventy Lakhs Seventy Thousand Six Hundred Twenty Six Only
6.08	Reinforced Cement Concrete of following grades in super structure complete as per Drawing and Technical Specification section 1500, 1700, 2300 and as per the direction of the Engineer.				
	a) M-25 grade	Cum	584.00	6464.00 Rupees Six Thousand Four Hundred Sixty Four Only	3,774,976.00 Rupees Thirty Seven Lakhs Seventy Four Thousand Nine Hundred Seventy Six Only
	b) M-30 grade	Cum	279.00	6716.00 Rupees Six Thousand Seven Hundred Sixteen Only	1,873,764.00 Rupees Eighteen Lakhs Seventy Three Thousand Seven Hundred Sixty Four Only
6.09	Providing Bored cast-in-situ M-35 grade RCC Pile of 1200 mm diameter etc. complete as per Drawing and Technical Specification Clause 1100, 1700 and as per the direction of the Engineer.	Lm	393.00	10339.00 Rupees Ten Thousand Three Hundred Thirty Nine Only	4,063,227.00 Rupees Forty Lakhs Sixty Three Thousand Two Hundred Twenty Seven Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
6.10	HYSD (TMT) bar reinforcement complete as per drawing and technical specifications clause 1600 and as per the direction of Engineer.				
	a) in Foundation	MT	100.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	5,990,200.00 Rupees Fifty Nine Lakhs Ninety Thousand Two Hundred Only
	b) in Substructure	MT	502.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	30,070,804.00 Rupees Three Crores Lakh Seventy Thousand Eight Hundred Four Only
	c) in Superstructure	MT	94.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	5,630,788.00 Rupees Fifty Six Lakhs Thirty Thousand Seven Hundred Eighty Eight Only
6.11	Providing and fixing specified bearings complete as per Drawing and Technical Specification 2000 and as per the direction of the Engineer.				
	(a) Elastomeric Bearing	Cuqm	237120.00	1.00 Rupees One Only	237,120.00 Rupees Two Lakhs Thirty Seven Thousand One Hundred Twenty Only
	(b) Tar Paper Bearing	Sqm	152.00	253.00 Rupees Two Hundred Fifty Three Only	38,456.00 Rupees Thirty Eight Thousand Four Hundred Fifty Six Only
6.12	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 Engineer.	Cum	293.00	8257.00 Rupees Eight Thousand Two Hundred Fifty Seven Only	2,419,301.00 Rupees Twenty Four Lakhs Nineteen Thousand Three Hundred One Only

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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
6.13	Bituminous wearing course 56mm thick comprising 50mm thick asphaltic concrete in a single layer over Bituminous mastic course 6 mm thick with a prime Coat Complete as per drawing and Technical Specification Section 503, 509, 515 & 2700 and as per the direction of Engineer.	Sqm	4157.00	607.00 Rupees Six Hundred Seven Only	2,523,299.00 Rupees Twenty Five Lakhs Twenty Three Thousand Two Hundred Ninety Nine Only
6.14	Providing and fixing Drainage Spouts Complete as per drawing and Technical Specification Clause 2705 and as per the direction of Engineer.	No	86.00	5813.00 Rupees Five Thousand Eight Hundred Thirteen Only	499,918.00 Rupees Four Lakhs Ninety Nine Thousand Nine Hundred Eighteen Only
6.15	Providing and laying Stone pitching in slopes complete as per drawing and Technical Specification Section 2504 and as per the direction of Engineer.	Cum	888.00	1420.00 Rupees One Thousand Four Hundred Twenty Only	1,260,960.00 Rupees Twelve Lakhs Sixty Thousand Nine Hundred Sixty Only
6.16	Providing as laying filter material underneath Stone pitching in slopes Complete as per drawing and Technical Specification clause 2504 and as per the direction of Engineer.	Cum	543.00	1104.00 Rupees One Thousand One Hundred Four Only	599,472.00 Rupees Five Lakhs Ninety Nine Thousand Four Hundred Seventy Two Only
6.17	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 Engineer.	No	1100.00	196.00 Rupees One Hundred Ninety Six Only	215,600.00 Rupees Two Lakhs Fifteen Thousand Six Hundred Only
6.18	Providing rubble Stone flooring in Cement mortar (1Cement:3 sand) and joints Complete as per drawing and Technical Specification Section 1400 and 2505 and as per the direction of Engineer.	Cum	1771.00	2512.00 Rupees Two Thousand Five Hundred Twelve Only	4,448,752.00 Rupees Forty Four Lakhs Forty Eight Thousand Seven Hundred Fifty Two Only



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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
6.19	Supplying and fixing the following types of Expansion Joints Complete as per Drawing and as per the direction of the Engineer.				
	(a) Asphaltic plug	Lm	365.00	758.00 Rupees Seven Hundred Fifty Eight Only	276,670.00 Rupees Two Lakhs Seventy Six Thousand Six Hundred Seventy Only
	(b) Compression Seal	Lm	80.00	758.00 Rupees Seven Hundred Fifty Eight Only	60,640.00 Rupees Sixty Thousand Six Hundred Forty Only
6.20	Synthetic enamel painting of Culvert No. and span arrangement as per IRC - 7 - 1971 and as per the direction of Engineer.	No.	44.00	316.00 Rupees Three Hundred Sixteen Only	13,904.00 Rupees Thirteen Thousand Nine Hundred Four Only
6.21	Carrying and Confirmatory bores up to required depth at locations of bridges as directed by the Engineer complete in all respects, conducting all the tests required as directed by the Engineer and as per Technical Specification Section 2400 and interpretation of the bore data and presentation of the results and as per the direction of the Engineer.				
	a) In all types of soil (except hard rock)				
	(i) Depth from 0m to 10m	Lm	100.00	3159.00 Rupees Three Thousand One Hundred Fifty Nine Only	315,900.00 Rupees Three Lakhs Fifteen Thousand Nine Hundred Only
	(ii) Depth from 10m to 20m	Lm	15.00	3412.00 Rupees Three Thousand Four Hundred Twelve Only	51,180.00 Rupees Fifty One Thousand One Hundred Eighty Only
	(iii) Depth from 20m to 30m	Lm	10.00	3791.00 Rupees Three Thousand Seven Hundred Ninety One Only	37,910.00 Rupees Thirty Seven Thousand Nine Hundred Ten Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
	b) In Hard Rock				
	(i) Depth from 0m to 5m	Lm	10.00	4423.00 Rupees Four Thousand Four Hundred Twenty Three Only	44,230.00 Rupees Forty Four Thousand Two Hundred Thirty Only
	(ii) Depth from 5m to 10m	Lm	10.00	4423.00 Rupees Four Thousand Four Hundred Twenty Three Only	44,230.00 Rupees Forty Four Thousand Two Hundred Thirty Only
6.22	Providing and painting of flood gauge on substructure is fall height and 500mm width and as per the direction of Engineer.	Lm	60.00	632.00 Rupees Six Hundred Thirty Two Only	37,920.00 Rupees Thirty Seven Thousand Nine Hundred Twenty Only
6.23	Providing and laying 150mm dia. HDPE Service pipe as per drawing and as per the direction of Engineer.	Lm	1577.00	190.00 Rupees One Hundred Ninety Only	299,630.00 Rupees Two Lakhs Ninety Nine Thousand Six Hundred Thirty Only
6.24	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	1389.00	1104.00 Rupees One Thousand One Hundred Four Only	1,533,456.00 Rupees Fifteen Lakhs Thirty Three Thousand Four Hundred Fifty Six Only
6.25	Providing Sand Filling in Foundation Trenches as per Drawing & Technical Specification Clause 304, 305 and as per the direction of the Engineer.	Cum	2504.00	457.00 Rupees Four Hundred Fifty Seven Only	1,144,328.00 Rupees Eleven Lakhs Forty Four Thousand Three Hundred Twenty Eight Only
6.26	Providing and laying PCC of following grades in flooring as per Drawing & Technical Specification section 1700, 2500 and as per the direction of Engineer.				
	a) M-15 Grade	Cum	280.00	4414.00 Rupees Four Thousand Four Hundred Fourteen Only	1,235,920.00 Rupees Twelve Lakhs Thirty Five Thousand Nine Hundred Twenty Only



SI. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
	b) M-20 Grade	Cum	93.00	4627.00 Rupees Four Thousand Six Hundred Twenty Seven Only	430,311.00 Rupees Four Lakhs Thirty Thousand Three Hundred Eleven Only
6.27	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. The item includes the cost of reinforcement and its fabrication.	Lm	767.00	3757.00 Rupees Three Thousand Seven Hundred Fifty Seven Only	2,881,619.00 Rupees Twenty Eight Lakhs Eighty One Thousand Six Hundred Nineteen Only
	Total for Bill No.6 Carried forward to Summary				122,359,584.00 Rupees Twelve Crores Twenty Three Lakhs Fifty Nine Thousand Five Hundred Eighty Four Only


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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
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 Engineer.	Cum	34813.00	80.00 Rupees Eighty Only	2,793,040.00 Rupees Twenty Seven Lakhs Ninety Three Thousand Forty Only
(b)	Plain cement concrete M -15 in foundation leveling course etc. including centering and shuttering all complete as per drawing and Technical Clauses 1500, 1700 and as per the direction of Engineer.	Cum	2428.00	4414.00 Rupees Four Thousand Four Hundred Fourteen Only	10,717,192.00 Rupees One Crore Seven Lakhs Seventeen Thousand One Hundred Ninety Two Only
(c)	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 & 2200 and as per the direction of Engineer.	Cum	9795.00	4942.00 Rupees Four Thousand Nine Hundred Forty Two Only	48,406,890.00 Rupees Four Crores Eighty Four Lakhs Six Thousand Eight Hundred Ninety Only
(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	784.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	46,963,168.00 Rupees Four Crores Sixty Nine Lakhs Sixty Three Thousand One Hundred Sixty Eight Only
(e)	Providing weep holes in retaining wall complete as per drawing and Technical Specification Clause 2706 and as per the direction of Engineer.	No.	13760.00	196.00 Rupees One Hundred Ninety Six Only	2,696,960.00 Rupees Twenty Six Lakhs Ninety Six Thousand Nine Hundred Sixty Only
7.02	Providing and laying stone pitching on embankment slopes as per drawing and Technical Specification Clause 2504 and as per the direction of Engineer.	Cum	1278.00	1420.00 Rupees One Thousand Four Hundred Twenty Only	1,814,760.00 Rupees Eighteen Lakhs Fourteen Thousand Seven Hundred Sixty Only
7.03	Providing and laying filler material underneath stone pitching on embankment slopes as per drawing and Technical Specification Clause 2504 and as per the direction of Engineer.	Cum	639.00	1104.00 Rupees One Thousand One Hundred Four Only	705,456.00 Rupees Seven Lakhs Five Thousand Four Hundred Fifty Six Only
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 Engineer.	Sqm	149137.00	32.00 Rupees Thirty Two Only	4,772,384.00 Rupees Forty Seven Lakhs Seventy Two Thousand Three Hundred Eighty Four Only




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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
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	21000.00	2866.00 Rupees Two Thousand Eight Hundred Sixty Six Only	60,186,000.00 Rupees Six Crores One Lakh Eighty Six Thousand Only
7.06	Constructing RCC box type drains to the required lines and grades in built up areas including cost of steel and its fabrication as per Drawing and technical specification section 1500, 1600, 1700, 2100 and as per the direction of the Engineer. The rate shall be inclusive of cost for earth work excavation, PCC and RCC of required grade, and necessary steel reinforcement, shuttering and centering etc. complete for the complete item of work	Lm	1500.00	10755.00 Rupees Ten Thousand Seven Hundred Fifty Five Only	16,132,500.00 Rupees One Crore Sixty One Lakhs Thirty Two Thousand Five Hundred Only
	Total for Bill No.7 Carried forward to Summary				195,188,350.00 Rupees Nineteen Crores Fifty One Lakhs Eighty Eight Thousand Three Hundred Fifty Only


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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
8.01	BILL NO-8 : ROAD SAFETY AND AMENITIES Providing and laying plain cement concrete kerb as per drawing and Technical Specifications Clauses 408, Section 1500 & 1700 and as per the direction of Engineer.	Lm	5094.00	629.00 Rupees Six Hundred Twenty Nine Only	3,204,126.00 Rupees Thirty Two Lakhs Four Thousand One Hundred Twenty Six Only
8.02	Providing and laying service ducts with 160/130mm dia HDPE Double Walled Corrugated Pipes conforming to IS: 14930 (Part-II) including cutting of trenches and filling thereof as per the direction of Engineer.	Lm	11080.00	379.00 Rupees Three Hundred Seventy Nine Only	4,199,320.00 Rupees Forty One Lakhs Ninety Nine Thousand Three Hundred Twenty Only
8.03	Providing and fixing precast RCC boundary posts complete as per drawing and Technical Specification Clause 806 and as per the direction of Engineer.	No	620.00	1264.00 Rupees One Thousand Two Hundred Sixty Four Only	783,680.00 Rupees Seven Lakhs Eighty Three Thousand Six Hundred Eighty Only
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 Engineer.				
	a) No of (200) Hectometer Stone	No	228.00	758.00 Rupees Seven Hundred Fifty Eight Only	172,824.00 Rupees One Lakh Seventy Two Thousand Eight Hundred Twenty Four Only
	b) No of Kilometer stone	No	45.00	2780.00 Rupees Two Thousand Seven Hundred Eighty Only	125,100.00 Rupees One Lakh Twenty Five Thousand One Hundred Only
	c) No. of 5th Kilometer Stone	No	12.00	4423.00 Rupees Four Thousand Four Hundred Twenty Three Only	53,076.00 Rupees Fifty Three Thousand Seventy Six Only

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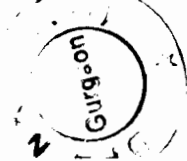
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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
8.05	Constructing footpath/ paved separator at toll plaza/ passenger platform / paved part of medians and islands with 50mm thick chequered tile flooring using 25mm 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, transportation, taxes, royalties, watering, curing, sundries, T&P etc.complete as per Drawing and Technical Specifications and as per the direction of the Engineer.	Sqm	3920.00	1017.00 Rupees One Thousand Seventeen Only	3,986,640.00 Rupees Thirty Nine Lakhs Eighty Six Thousand Six Hundred Forty 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 Engineer.	No	38.00	119652.00 Rupees One Lakh Nineteen Thousand Six Hundred Fifty Two Only	4,546,776.00 Rupees Forty Five Lakhs Forty Six Thousand Seven Hundred Seventy Six Only
8.07	Construction of temporary diversion including temporary cross drainage works for plying of traffic in both directions, wherever necessary and maintenance thereof including traffic control and safety complete till the operation of the original road/ structure as per Technical Specification Clause 112.3 and as per the direction of the Engineer	Lm	3030.00	8576.00 Rupees Eight Thousand Five Hundred Seventy Six Only	25,985,280.00 Rupees Two Crores Fifty Nine Lakhs Eighty Five Thousand Two Hundred Eighty Only
8.08(a)	Providing and laying of hot applied thermoplastic compound 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 per Technical Specification section 800 and as per direction of Engineer.				
	Lane line / Edge marking and other markings along the strips	Sqm	23153.00	442.00 Rupees Four Hundred Forty Two Only	10,233,626.00 Rupees One Crore Two Lakhs Thirty Three Thousand Six Hundred Twenty Six Only


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SI. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
8.08(b)	Painting lines, dashes, arrows etc on roads in two coats on new work with ready mixed road marking paint conforming to IS:164 on bituminous surface, including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control etc. complete as per the direction of Engineer.				
	Directional arrows and lettering etc. as per drawing and specifications.	Sqm	550.00	663.00 Rupees Six Hundred Sixty Three Only	364,650.00 Rupees Three Lakhs Sixty Four Thousand Six Hundred Fifty Only
8.09	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 / boarders and as per the direction of Engineer.				
(a)	Informatory Signs				
	(i) Facility Information (800 x 600)mm	No	24.00	8492.00 Rupees Eight Thousand Four Hundred Ninety Two Only	203,808.00 Rupees Two Lakhs Three Thousand Eight Hundred Eight Only
	(ii) Direction Signs (1200 x 700 mm)	No	4.00	21837.00 Rupees Twenty One Thousand Eight Hundred Thirty Seven Only	87,348.00 Rupees Eighty Seven Thousand Three Hundred Forty Eight Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
	(iii) Advance Direction (size 1800 x 1200mm) .	No	4.00	21837.00 Rupees Twenty One Thousand Eight Hundred Thirty Seven Only	87,348.00 Rupees Eighty Seven Thousand Three Hundred Forty Eight Only
	(iv) Re-Assurance Sign (1800 X 1200 mm) .	No	4.00	13648.00 Rupees Thirteen Thousand Six Hundred Forty Eight Only	54,592.00 Rupees Fifty Four Thousand Five Hundred Ninety Two Only
	(v) Destination Sign (1500 X 900 mm) .	No	4.00	13648.00 Rupees Thirteen Thousand Six Hundred Forty Eight Only	54,592.00 Rupees Fifty Four Thousand Five Hundred Ninety Two Only
	(vi) Place Identification (1500 X 900 mm) .	No	56.00	13648.00 Rupees Thirteen Thousand Six Hundred Forty Eight Only	764,288.00 Rupees Seven Lakhs Sixty Four Thousand Two Hundred Eighty Eight Only
	(vii) Bus Lane Sign (450mm x 600mm)	No	38.00	2730.00 Rupees Two Thousand Seven Hundred Thirty Only	103,740.00 Rupees One Lakh Three Thousand Seven Hundred Forty Only
	(viii) Other Informatory Signs (2100 x 1500mm)	No	4.00	2730.00 Rupees Two Thousand Seven Hundred Thirty Only	10,920.00 Rupees Ten Thousand Nine Hundred Twenty Only
(b)	Cautionary Signs triangular 900mm side	No	20.00	25200.00 Rupees Twenty Five Thousand Two Hundred Only	504,000.00 Rupees Five Lakhs Four Thousand Only

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
(c)	Mandatory Signs				
	(i) Circular 600mm dia	No	210.00	3640.00 Rupees Three Thousand Six Hundred Forty Only	764,400.00 Rupees Seven Lakhs Sixty Four Thousand Four Hundred Only
	(ii) Octagon 900 mm height	No	151.00	10110.00 Rupees Ten Thousand One Hundred Ten Only	1,526,610.00 Rupees Fifteen Lakhs Twenty Six Thousand Six Hundred Ten Only
	(iii) Triangular 900 mm side	No	466.00	25200.00 Rupees Twenty Five Thousand Two Hundred Only	11,743,200.00 Rupees One Crore Seventeen Lakhs Forty Three Thousand Two Hundred Only
8.10	Providing & fixing retro - reflectorised road delineators complete as per drawing . Technical specifications clause 805 and as per the direction of Engineer.				
	(i) Roadway delineator	No	1043.00	2527.00 Rupees Two Thousand Five Hundred Twenty Seven Only	2,635,661.00 Rupees Twenty Six Lakhs Thirty Five Thousand Six Hundred Sixty One Only
	(ii) Hazard Marker	No	64.00	3159.00 Rupees Three Thousand One Hundred Fifty Nine Only	202,176.00 Rupees Two Lakhs Two Thousand One Hundred Seventy Six Only
	(iii) Object Marker	No	70.00	3159.00 Rupees Three Thousand One Hundred Fifty Nine Only	221,130.00 Rupees Two Lakhs Twenty One Thousand One Hundred Thirty Only
8.11	Providing and fixing precast 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 Engineer.	No.	6387.00	442.00 Rupees Four Hundred Forty Two Only	2,823,054.00 Rupees Twenty Eight Lakhs Twenty Three Thousand Fifty Four Only



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Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
8.12	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 rate also includes the cost for supplying & fixing of terminal anchorages at both ends of barrier. The work is to be executed as per drawing, Specifications and as directed by the Engineer.	LM	4400.00	3035.00 Rupees Three Thousand Thirty Five Only	13,354,000.00 Rupees One Crore Thirty Three akhs Fifty Four Thousand Only
8.13	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 direction of the Engineer.	LM	7680.00	1175.00 Rupees One Thousand One Hundred Seventy Five Only	9,024,000.00 Rupees Ninety Lakhs Twenty Four Thousand Only
8.14	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	30.00	25275.00 Rupees Twenty Five Thousand Two Hundred Seventy Five Only	758,250.00 Rupees Seven Lakhs Fifty Eight Thousand Two Hundred Fifty Only
8.15	Providing and making rumble strips comprising of six rumbles in each set etc. complete at required places as per Drawing and as per the direction of the Engineer.	Lm	684.00	294.00 Rupees Two Hundred Ninety Four Only	201,096.00 Rupees Two Lakhs One Thousand Ninety Six Only




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SI. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
8.16	Providing road hump complete at required places as per drawing and as per the direction of Engineer.	Lm ^v	220.00	1245.00 Rupees One Thousand Two Hundred Forty Five Only	273,900.00 Rupees Two Lakhs Seventy Three Thousand Nine Hundred Only
8.17	Providing and fixing of bi-directional retro reflective raised pavement markers of approved colour, Quality & make conforming to ASTM-4280 as per approved drawing and locations provided in the schedule made from injection moulded high impact polymer including cleaning, preparation of surface and fixing at position with approved quality adhesives including cost of all materials labour, transportation, taxes, duties, sundries, T&P etc. Complete as per the technical specifications and direction of Engineer.	No	14897.00	480.00 Rupees Four Hundred Eighty Only	7,150,560.00 Rupees Seventy One Lakhs Fifty Thousand Five Hundred Sixty Only
Total for Bill No.8 Carried forward to Summary					106,203,771.00 Rupees Ten Crores Sixty Two Lakhs Three Thousand Seven Hundred Seventy One Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
9.01	BILL NO.9 MAINTENANCE, REPAIR AND REHABILITATION 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	763.00	400.00 Rupees Four Hundred Only	305,200.00 Rupees Three Lakhs Five Thousand Two Hundred Only
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 direction of the Engineer.	Sqm	61020.00	60.00 Rupees Sixty Only	3,661,200.00 Rupees Thirty Six Lakhs Sixty One Thousand Two Hundred Only
9.03	Maintenance of Earth Shoulder by 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	152550.00	30.00 Rupees Thirty Only	4,576,500.00 Rupees Forty Five Lakhs Seventy Six Thousand Five Hundred Only
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 per clause 511, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2) and as directed by the Engineer.	Sqm	40044.00	545.00 Rupees Five Hundred Forty Five Only	21,823,980.00 Rupees Two Crores Eighteen Lakhs Twenty Three Thousand Nine Hundred Eighty Only
9.05	Epoxy bonding of new concrete to old concrete for jacketing as Technical Specification clause 2805 and as per the direction of Engineer.	Sqm	1301.00	350.00 Rupees Three Hundred Fifty Only	455,350.00 Rupees Four Lakhs Fifty Five Thousand Three Hundred Fifty Only
9.06	Patching of damaged concrete surface with polymer concrete and curing compounds, initiator and promoter, available in present formulations, to be applied as per instructions of manufacturer, Technical Specification clause 2800 and as per the direction of Engineer.	Sqm	2.00	1000.00 Rupees One Thousand Only	2,000.00 Rupees Two Thousand Only
	Total for Bill No.9 Carried forward to Summary				30,824,230.00 Rupees Three Crores Eight Lakhs Twenty Four Thousand Two Hundred Thirty Only




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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
10.01	BILL NO.10 ENVIRONMENTAL MITIGATION MEASURES Earthwork in excavation in all kinds of soil of foundation for structures complete as per drawing no. OSRP/CEG/SH/ENV/1A,B,C,03,04-A,B,05-A,09,10 and Major Junction and technical specifications clause 304 including all leads and lifts etc. complete as per direction of the Engineer.	Cum	2051.00	80.00 Rupees Eighty Only	164,080.00 Rupees One Lakh Sixty Four Thousand Eighty Only
10.02	Filling sand below foundations for structures complete as per drawing no. OSRP/CEG/CDJN,09 and technical specifications clause 304 including all leads and lifts etc. complete as per the direction of the Engineer.	Cum	491.00	457.00 Rupees Four Hundred Fifty Seven Only	224,387.00 Rupees Two Lakhs Twenty Four Thousand Three Hundred Eighty Seven Only
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/1A,B,C,D, 03,04-A,B,05-A, 07, 09,10, 12 and Technical Specification Sections 1500 and 1700 and as per the direction of the Engineer.	Cum	1702.00	4414.00 Rupees Four Thousand Four Hundred Fourteen Only	7,512,628.00 Rupees Seventy Five Lakhs Twelve Thousand Six Hundred Twenty Eight Only
10.04	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 Section 2700 & 2200 and as per the direction of the Engineer.	No	1900.00	196.00 Rupees One Hundred Ninety Six Only	372,400.00 Rupees Three Lakhs Seventy Two Thousand Four Hundred Only
10.05	Providing & laying Reinforced Cement Concrete M-20 grade in foundation including centering and shuttering all complete as per Drawing No. OSRP/CEG/SH/ENV/04 - A,B,C, 05, 05A, 06, 07, 10 and Technical Specification Sections 1700, 2100 & 2200 and as per the direction of the Engineer.	Cum	65.00	4627.00 Rupees Four Thousand Six Hundred Twenty Seven Only	300,755.00 Rupees Three Lakhs Thousand Seven Hundred Fifty Five Only
10.06	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	3.00	59902.00 Rupees Fifty Nine Thousand Nine Hundred Two Only	179,706.00 Rupees One Lakh Seventy Nine Thousand Seven Hundred Six Only
10.07	Providing and laying filter material underneath pitching in slopes at water bodies and ponds as per Technical Specification Section-2500 and as per Drawing No- OSRP/CEG/SH/ENV/03 and as per the direction of the Engineer.	Cum	982.00	1104.00 Rupees One Thousand One Hundred Four Only	1,084,128.00 Rupees Ten Lakhs Eighty Four Thousand One Hundred Twenty Eight Only

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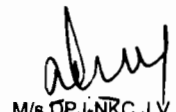
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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
10.08	Providing and laying stone pitching on slopes over filter media as per Technical Specification Section 2500 and as per Drawing No-OSRP/CEG/SH/ENV/03 and as per the direction of the Engineer.	Cum	1310.00	1420.00 Rupees One Thousand Four Hundred Twenty Only	1,860,200.00 Rupees Eighteen Lakhs Sixty Thousand Two Hundred Only
10.09	Providing cement paint two coats to the walls as per Drawing No-OSRP/CEG/SH/03, 04A, B, 05, 05A, 10 and as per the direction of the Engineer.	Sqm	1917.00	1000.00 Rupees One Thousand Only	1,917,000.00 Rupees Nineteen Lakhs Seventeen Thousand Only
10.10	Construction of approach road with GSB and moorum topping well mixed and compacted as hard sholder as per Technical Specification Clause 400.2 and Drawing No-OSRP/CEG/SH/ENV/05 and as per the direction of the Engineer.	Lm	420.00	756.00 Rupees Seven Hundred Fifty Six Only	317,520.00 Rupees Three Lakhs Seventeen Thousand Five Hundred Twenty Only
10.11	Maintenance of haulage road for 4 occurrences through out the construction period as per technical specification cl.no.3002 and as per the direction of Engineer.	Cum	22500.00	500.00 Rupees Five Hundred Only	11,250,000.00 Rupees One Crore Twelve Lakhs Fifty Thousand Only
10.12	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 Engineer.	Cum	30000.00	95.00 Rupees Ninety Five Only	2,850,000.00 Rupees Twenty Eight Lakhs Fifty Thousand Only
10.13	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.	No	1.00	100000.00 Rupees One Lakh Only	100,000.00 Rupees One Lakh Only

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Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
10.14	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	3500.00	500.00 Rupees Five Hundred Only	1,750,000.00 Rupees Seventeen Lakhs Fifty Thousand Only
10.15	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	684.00	2000.00 Rupees Two Thousand Only	1,368,000.00 Rupees Thirteen Lakhs Sixty Eight Thousand Only
10.16	Providing erosion control blanket made from coconut fibre reinforced with closely woven HDPE nets on both sides with aperture 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 diameter 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	18000.00	300.00 Rupees Three Hundred Only	5,400,000.00 Rupees Fifty Four Lakhs Only
Sub-Total Bill No. 10					36,650,804.00 Rupees Three Crores Sixty Six Lakhs Fifty Thousand Eight Hundred Four Only

Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount In Figure and Words
Schedule of Daywork Rates: 1. Labour					
D101	Labour (Un-skilled)	Day	200.00	600.00 Rupees Six Hundred Only	120,000.00 Rupees One Lakh Twenty Thousand Only
D102	Mason (Special)	Day	25.00	1200.00 Rupees One Thousand Two Hundred Only	30,000.00 Rupees Thirty Thousand Only
D103	Carpenter (Special)	Day	10.00	1200.00 Rupees One Thousand Two Hundred Only	12,000.00 Rupees Twelve Thousand Only
D104	Mason (Second Class)	Day	25.00	1000.00 Rupees One Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
D105	Carpenter (Second Class)	Day	10.00	1000.00 Rupees One Thousand Only	10,000.00 Rupees Ten Thousand Only
D106	Steelworker Erector	Day	35.00	1000.00 Rupees One Thousand Only	35,000.00 Rupees Thirty Five Thousand Only
D107	Driver for vehicle up to 10 tons	Day	25.00	1000.00 Rupees One Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
D108	Operator for excavator, dragline, shovel or crane	Day	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only
D109	Operator for tractor with dozer blade or ripper	Day	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only
D110	Operator grader	Day	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only

M/s DPJ-NKC J.V
Contractor

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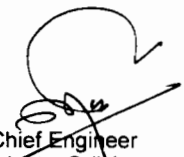
Chief Engineer
World Bank Projects, Odisha
Employer

Chief Engineer
World Bank Projects,
(No the E.I.C./Civil) Odisha
Bhubaneswar



M/s DPJ-NKC J.V
Contractor

Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount in Figure and Words
D111	Operator in other construction equipment	Day	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only
D112	Chowkidars for watch & ward	Day	250.00	600.00 Rupees Six Hundred Only	150,000.00 Rupees One Lakh Fifty Thousand Only
Total					557,000.00 Rupees Five Lakhs Fifty Seven Thousand Only
D113	Allow 35% (Thirty-five Percent) of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			35.00%	194,950.00
					751,950.00 Rupees Seven Lakhs Fifty One Thousand Nine Hundred Fifty Only


 Chief Engineer
 World Bank Projects, Odisha
 Employer



M/s DPJ-ANKC J.V.
Contractor


Chief Engineer
World Bank Projects, Odisha
Employer

Chief Engineer
World Bank Projects
Odisha
Employer

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
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	10.00	7000.00 Rupees Seven Thousand Only	70,000.00 Rupees Seventy Thousand Only
D202	HYSD reinforcing bars upto 25 mm dia conforming to IS:1786:1989	Per Mt	3.00	60000.00 Rupees Sixty Thousand Only	180,000.00 Rupees One Lakh Eighty Thousand Only
D203	Bricks of class designation 75 as per IS:1077:1992	Per 1000 Nos	10000.00	5.00 Rupees Five Only	50.00 Rupees Fifty Only
D204	Anti Corrosive Bituminous paint	Per Lit	5.00	200.00 Rupees Two Hundred Only	1,000.00 Rupees One Thousand Only
D205	Enamel Paint of any shade & colour (IS:2932-1964 & IS 137-1975)	Per Lit	5.00	300.00 Rupees Three Hundred Only	1,500.00 Rupees One Thousand Five Hundred Only
D206	Coarse Sand as per IS 1542	Per Cum	25.00	1000.00 Rupees One Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
D207	R.R. Stone for masonry	Per Cum	25.00	1000.00 Rupees One Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
D208	Crusher broken stone aggregates up to 25 mm nominal size	Per Cum	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only
D209	Crusher broken stone aggregates Above 25 mm nominal size	Per Cum	25.00	1500.00 Rupees One Thousand Five Hundred Only	37,500.00 Rupees Thirty Seven Thousand Five Hundred Only
D210	Portable water at site	KL	2500.00	200.00 Rupees Two Hundred Only	500,000.00 Rupees Five Lakhs Only



Sl. No.	Description	Unit	Quantity	Rate In Figure and Words	Amount in Figure and Words
D211	Gravel/ Moonum for Road Work	Per Cum	25.00	1000.00 Rupees One Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
D212	Bitumen-VG-30	Per Mt	3.00	60000.00 Rupees Sixty Thousand Only	180,000.00 Rupees One Lakh Eighty Thousand Only
1,082,550.00					
D213	Allow 35% (Thirty-five Percent) of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			35.00%	Rupees Ten Lakhs Eighty Two Thousand Five Hundred Fifty Only 378,892.50
1,461,442.50					
					Rupees Fourteen Lakhs Sixty One Thousand Four Hundred Forty Two And Fifty Paise Only


 Chief Engineer
 World Bank Projects, Odisha
 Employer

Chief Engineer,
 World Bank Project
 (to the E.I.C.(Civil), Odisha
 Bhubaneswar

M/s DPJ-NKC JV
Contractor



Chief Engineer
World Bank Projects, Odisha
Employer



Chief Engineer
World Bank Project
On the E.I.C.(Civil), Odisha
Bhubaneswar

Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
D307	Trucks, or Truck tipper, or Truck with mounted water tank or truck with crane for removal of accidental vehicles.	Hour	50.00	2000.00 Rupees Two Thousand Only	100,000.00 Rupees One Lakh Only
D308	Tractor with trolley, or tractor with water tanker trailer, tractor with ripper	Tractor with hydraulic scraper			
	(a) upto 25 HP	Hour	20.00	1500.00 Rupees One Thousand Five Hundred Only	30,000.00 Rupees Thirty Thousand Only
	(b) For 25-40 HP	Hour	15.00	2000.00 Rupees Two Thousand Only	30,000.00 Rupees Thirty Thousand Only
D309	Bitumen mixture (10-14 Cft.) C.C	Hour	10.00	1000.00 Rupees One Thousand Only	10,000.00 Rupees Ten Thousand Only
D310	Water pumping sets mounted on trolley (diesel driven)with inlet & outlet pipes.				
	a) Sets up to 10 HP	Hour	5.00	1000.00 Rupees One Thousand Only	5,000.00 Rupees Five Thousand Only
	b) Sets 11 to 20 HP	Hour	5.00	1500.00 Rupees One Thousand Five Hundred Only	7,500.00 Rupees Seven Thousand Five Hundred Only
	c) Sets above 20 HP	Hour	5.00	2000.00 Rupees Two Thousand Only	10,000.00 Rupees Ten Thousand Only
D311	Generator sets mounted on trolley				
	a) Sets upto 5 Kva	Hour	5.00	1000.00 Rupees One Thousand Only	5,000.00 Rupees Five Thousand Only
	b) Sets 5-15 Kva	Hour	5.00	1200.00 Rupees One Thousand Two Hundred Only	6,000.00 Rupees Six Thousand Only
D312	Mobile Crane / Power winch	Hour	5.00	1000.00 Rupees One Thousand Only	5,000.00 Rupees Five Thousand Only
D313	Bull Dozer 100/110 Hp	Hour	5.00	3000.00 Rupees Three Thousand Only	15,000.00 Rupees Fifteen Thousand Only



Sl. No.	Description	Unit	Quantity	Rate in Figure and Words	Amount in Figure and Words
D314	Plate compactors	Hour	5.00	1000.00 Rupees One Thousand Only	5,000.00 Rupees Five Thousand Only
D315	Jack hammers for dismantling	Hour	5.00	2000.00 Rupees Two Thousand Only	10,000.00 Rupees Ten Thousand Only
D316	Utility Vehicles	Hour	5.00	1000.00 Rupees One Thousand Only	5,000.00 Rupees Five Thousand Only
D317	Mini Hot Mix Plant (STPH)	Hour	5.00	5000.00 Rupees Five Thousand Only	25,000.00 Rupees Twenty Five Thousand Only
					713,500.00
					Rupees Seven Lakhs Thirteen Thousand Five Hundred Only
D318	Allow 35% (Thirty-five Percent) of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above			35.00%	249,725.00
					963,225.00
					Rupees Nine Lakhs Sixty Three Thousand Two Hundred Twenty Five Only

Chief Engineer
World Bank Projects, Odisha
Employer

Chief Engineer
World Bank Projects
Odisha
Via the E.I.C. (Civil), Or
Bhubaneswar